

U.S. Technical Report and User Guide for the 2019 Trends in International Mathematics and Science Study (TIMSS)

U.S. Technical Report and User Guide for the 2019 Trends in International Mathematics and Science Study (TIMSS)

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1. Introduction

The *U.S. TIMSS 2019 Technical Report and User's Guide* provides an overview of the design and implementation of the Trends in International Mathematics and Science Study (TIMSS) 2019 in the United States.

1.1 TIMSS 2019 in Brief

TIMSS is an international comparative study designed to measure trends in mathematics and science achievement at grades 4 and 8, as well as to collect information about educational contexts (such as students' schools, teachers, and homes) that may be related to student achievement. TIMSS has been administered every 4 years since 1995, with the seventh and most recent administration, in 2019, providing a 24-year trend line. The United States has participated in every administration of TIMSS, which includes 1995, 1999, 2003, 2007, 2011, 2015, 2019 for the eighth grade and all but 1999 for the fourth grade (when it was not administered internationally). TIMSS is sponsored by the International Association for the Evaluation of Educational Achievement (IEA) and conducted, in the United States, by the National Center for Education Statistics (NCES) in the Institute of Education Sciences within the U.S. Department of Education.

TIMSS is designed to align broadly with mathematics and science curricula in the participating education systems and, therefore, to reflect students' school-based learning. Because it is an international study, TIMSS provides valuable benchmarking information on how U.S. students compare to students around the world. The TIMSS assessments are developed through an international collaborative process involving input from the U.S. and international experts in mathematics, science, and measurement. These experts develop frameworks that define the knowledge and skills to be assessed and are designed to align broadly with mathematics and science curricula in the participating countries. The results, therefore, suggest the degree to which students have learned mathematics and science concepts and skills likely to have been taught in school.

A large and diverse group of education systems, spanning six of the world's continents, participated in TIMSS 2019. In this seventh cycle of TIMSS, mathematics and science assessments and associated questionnaires were administered in 64 education systems at the fourth-grade level and 46 education systems at the eighth-grade level during fall 2018 (in the Southern hemisphere) and during spring 2019 (in the Northern hemisphere).

TIMSS 2019 marked the beginning of the transition to a computer-based assessment by introducing a computerized version of TIMSS called eTIMSS. About half of the participating education systems, including the United States, chose to administer eTIMSS. A bridge study was conducted to form a link between eTIMSS countries' computer-based data in 2019 and their paper-based data in 2015 as well as to the paper-based TIMSS countries in 2019. The bridge study enabled the eTIMSS and paperTIMSS achievement results to be reported on the same achievement scale in each grade and subject.

As a part of the transition to digital assessment, eTIMSS 2019 included a series of extended Problem Solving and Inquiry (PSI) tasks in mathematics and science at both the fourth and the eighth grades. The eTIMSS 2019 PSIs, designed exclusively for eTIMSS, were a new and pioneering effort to improve measurement of higher-order mathematics and science skills by capitalizing on the digital mode of administration.

A detailed explanation of TIMSS 2019 from an international perspective can be found in the reports published by the IEA and available online at <https://timssandpirls.bc.edu/timss2019>:

- TIMSS 2019 International Results in Mathematics and Science (Mullis et al. 2020);
- *Findings From the TIMSS 2019 Problem Solving and Inquiry Tasks* (Mullis et al. 2021);
- *Methods and Procedures: TIMSS 2019 Technical Report* (Martin, von Davier, and Mullis 2020); and
- *TIMSS 2019 User Guide for the International Database* (Fishbein, Foy, and Yin 2021).

The U.S. national report, *TIMSS 2019 U.S. Highlights Web Report* (NCES 2021-021), is available as well, at <https://nces.ed.gov/timss/results19/index.asp>. This report describes the performance of U.S. students relative to their peers in other education systems, changes in mathematics and science achievement over time, and additional details about the achievement of U.S. students nationally that are not available in the international reports.

1.2 TIMSS 2019 U.S. Data Collection Activities and Schedule

Descriptions of data collection activities and schedule within the United States provide a foundation to understand the data. These activities are listed in exhibit 1-1 along with the timing of their implementation. The activities are described in detail in chapter 4 of this report.

Exhibit 1-1. Schedule for TIMSS 2019 data collection activities

	2018												2019											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
TIMSS 2019																								
School Sampling																								
National																								
Hiring Recruitment Staff																								
Recruitment phase																								
Recruiting states																								
Recruiting districts																								
Recruiting schools																								
Instrumentation																								
Cultural adaptation made to items																								
IEA approval of cultural adaptations																								
Production of instruments																								
Printing of instruments																								
Printing of assessment booklets																								
Printing of questionnaire booklets																								
Distribution of materials to field staff/schools																								
School Assessments																								
Data Collection Staffing																								
Hiring training administrators																								
Training for test administrators																								
Within School Sampling																								
Class listing forms																								
Student-teacher linkage forms																								
Tracking forms																								
Assessment Sessions in Schools																								
Receipt Control, School, Coding, Data Entry																								
Document receipt and processing																								
Coding, editing, processing of data																								
Constructed response response scoring																								
Data File Preparation																								
Cleaning and preparation of data files																								
Submissions of U.S. data files to IEA																								

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2019.

1.3 Overview of the Design and Administration of TIMSS 2019

The basic parameters of the design and administration of TIMSS 2019 in the United States are outlined below. A more detailed explanation is provided in subsequent chapters of this report. More detailed

information on the international design can be found in the *Methods and Procedures: TIMSS 2019 Technical Report* at <https://timssandpirls.bc.edu/timss2019/methods>.

Sampling

TIMSS 2019 is a sample-based assessment, meaning that while only a sample of students take the assessments, they are selected in such a way as to allow the results to be generalizable to a larger target population. The TIMSS target populations are based on standardized definitions, and the sampling is conducted following standardized and refereed international procedures.

TIMSS required participating countries and other education systems to draw probability samples of students who were nearing the end of their fourth or eighth year of formal schooling, counting from the first year of the International Standard Classification of Education (ISCED)¹ Level 1 (or primary schooling). In the United States, one sample was drawn to represent the nation at grade 4 and another at grade 8. The U.S. national sample included both public and private schools, randomly selected and weighted to be representative of the nation at grade 4 and at grade 8. (See the section on sampling weights and standard errors in this report for definitions.)

Test Administration

Test administration for TIMSS 2019 in the United States started in April and continued through June 2019. The administration was carried out by professional staff trained according to the international guidelines. School personnel were asked only to assist with listings of students, the identification of space for testing in the school, and the specification of any parental consent procedures required. The International Study Center monitored compliance with the standardized procedures.

Scoring

The TIMSS assessment items included both multiple choice and constructed-response items. A scoring rubric (guide) was provided for every constructed response item. The National Research Coordinator in

¹ The ISCED was developed by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) to facilitate the comparability of educational levels across countries. ISCED Level 1 begins with the first year of formal, academic learning (See [UNESCO ISCED 2011](#) for more information). In the United States, ISCED Level 1 begins at grade 1.

each country was responsible for the scoring and coding of data in that country, following established guidelines.

Scaling

Total scores for mathematics and science in TIMSS, along with scores that reflect performance in specific domains of each subject, were estimated using an item response theory (IRT) model. IRT estimation procedures were also used to place scores from the seven TIMSS assessments conducted in 1995, 1999, 2003, 2007, 2011, 2015, and 2019 on the same scale (the scale of the 1995 administration). This allows for the calculation of trends in achievement even though the makeup of the countries participating in TIMSS changes over time. More detailed information can be found in the *Methods and Procedures: TIMSS 2019 Technical Report* at <https://timssandpirls.bc.edu/timss2019/methods>.

Plausible Values

To keep student burden to a minimum, TIMSS purposefully administered a limited number of assessment items to each student—too few to produce accurate individual content-related scale scores for each student. The number of assessment items administered to each student, however, is sufficient to produce accurate *group* content-related scale scores for subgroups of the population. These scores are transformed during the scaling process into plausible values to characterize students participating in the assessment, given their background characteristics. Plausible values are imputed values and not test scores for individuals in the usual sense. If used individually, they provide biased estimates of the proficiencies of individual students. However, when grouped as intended, plausible values provide unbiased estimates of population characteristics (e.g., means and variances for groups).

Plausible values represent what the performance of an individual on the entire assessment might have been, had it been observed. They are estimated as random draws from an empirically derived distribution of score values based on the student's observed responses to assessment items and on background variables. Each random draw from the distribution is considered a representative value from the distribution of potential scale scores for all students in the sample who have similar background characteristics and similar patterns of item responses. Differences between plausible values drawn for a single individual quantify the degree of error (the width of the spread) in the underlying distribution of possible scale scores that could have caused the observed performances. More detailed information can

be found in the *Methods and Procedures: TIMSS 2019 Technical Report* at <https://timssandpirls.bc.edu/timss2019/methods>.

Weighting

Responses from the groups of students were assigned sampling weights to adjust for the complex sample design that resulted in students having an unequal, but known, probability of selection. Additionally, an adjustment for school and student nonresponse was built into the weighting. The estimation of sampling weights was carried out by Statistics Canada. More detailed information can be found in the *Methods and Procedures: TIMSS 2019 Technical Report* at <https://timssandpirls.bc.edu/timss2019/methods>. In analyses of the TIMSS data, it is necessary to use sampling weights to obtain accurate population estimates.

1.4 Reporting the TIMSS 2019 Results

Achievement results from TIMSS are reported on a scale from 0 to 1,000, with a scale center-point of 500 and standard deviation of 100. Even though the education systems participating in TIMSS have changed across the assessment rounds from the first administration (TIMSS in 1995), comparisons between the 2019 results and prior results are still possible because the achievement scores in each of the assessments are placed on a scale that is not dependent on the list of participating education systems in any particular year.

In addition to numerical scale results, TIMSS also includes international benchmarks. The international benchmarks provide a way to interpret the scale scores and to understand how students' proficiency in a subject varies at different points on the scales. Each successive point, or benchmark, is associated with the knowledge and skills that students successfully demonstrate at each level. TIMSS describes four benchmarks of achievement (Advanced, High, Intermediate, and Low). A more detailed explanation of the assessment's equating, scaling, and benchmarks can be found in the *Methods and Procedures: TIMSS 2019 Technical Report* at <https://timssandpirls.bc.edu/timss2019/methods>.

1.5 TIMSS 2019 U.S. International and National Data Files

Three versions of the U.S. national data are available as follows:

- The **TIMSS U.S. international data files** that are available as part of the international database released by the International Study Center. The U.S. data files in the TIMSS 2019 international databases (including eTIMSS 2019, TIMSS 2019 Bridge and eTIMSS 2019 with PSI) can be downloaded from <https://timssandpirls.bc.edu/timss-landing.html>. The TIMSS international data files are available in two versions: a public-use version and a restricted-use version. A number of variables are not included in the public-use version in order to minimize the risk of disclosing confidential information. These variables include information about students' year and month of birth, testing date, as well as school enrollment. The restricted-use version of the TIMSS international data files are available by request through the IEA Study Data Repository (<https://timssandpirls.bc.edu/timss-landing.html>) to obtain permission and access to the restricted-use version of the TIMSS international data files. A description of the restricted variables removed from the public-use data files are presented in chapter 2 of the *TIMSS 2019 User Guide for the International Database* (Fishbein, Foy, and Yin 2021). These data files conform to the international specifications common to the data files from all countries. There are some questions that were only administered in the U.S. Note, the U.S.-specific items are not included in the international database, such as the question on race/ethnicity added to the student questionnaire.
- The **TIMSS national public-use data files** that are available through the National Center for Education Statistics. The TIMSS U.S. national dataset can be downloaded from <https://nces.ed.gov/TIMSS/datafiles.asp>. These U.S. data files include the U.S.-specific adaptations made to questionnaire items and additional questions added to the school, teacher, and student questionnaires. These data files are add-on files that do not contain weight variables or replicate weights, and therefore must be merged with the U.S. data files in the international database before any analysis can be conducted.
- The **TIMSS national restricted-use data files** that are available through the National Center for Education Statistics. Access to these microdata files may be obtained by completing a restricted-use license agreement with NCES. These data files contain a number of the restricted variables from the international database. They also include supplemental link files that link TIMSS school ID numbers to the school ID numbers as they appear in the publicly available Common Core of Data (CCD) or the Private School Universe Survey (PSS). In addition, race/ethnicity is provided with all available categories and free or reduced-price lunch is provided as a continuous variable. Because these data can reveal the identities of participating schools, the restricted-use data files are only made available to those who obtain a NCES restricted-use data license. Directions on how to obtain the license can be found at <https://nces.ed.gov/pubsearch/licenses.asp>.

Researchers do not need to process the TIMSS microdata (public-use or restricted-use) in order to access and analyze the data. The TIMSS data, including national variables (race/ethnicity, free lunch) can be analyzed using the NCES International Data Explorer (IDE). The IDE provides for U.S. trend analysis as

well as comparisons with all participating TIMSS countries. The IDE generates user-defined reports that include options for tables, gap analysis, regression analysis, and significance testing. The IDE can be accessed at <https://nces.ed.gov/surveys/international/ide/>.

The most comprehensive explanation of the TIMSS international data, and hence of the U.S. international data file, is provided in the various TIMSS 2019 publications produced by the International Association for the Evaluation of Educational Achievement (IEA), particularly the *TIMSS 2019 User Guide for the International Database* (Fishbein, Foy, and Yin 2021). This publication provides detailed descriptions of the content and format of the data in the TIMSS 2019 international data files and should be seen as the primary reference. The *U.S. TIMSS 2019 Technical Report and User's Guide* draws heavily on the international user's guide for much of its data file-related content. This content is supplemented with detail on those aspects of the TIMSS data that were unique to the United States.

2. Sampling Schools

2.1 2019 TIMSS Sample Design

The sample design for the fourth- and eighth-grade school samples was developed to retain most of the properties of the previous TIMSS U.S. school samples, and to follow international requirements as detailed in chapter 3 of *Methods and Procedures: TIMSS 2019 Technical Report* at <https://timssandpirls.bc.edu/timss2019/methods>. Like the 2015 TIMSS sample, the U.S. sample followed a two-stage sampling process with the first stage a sample of schools, and the second stage a sample of classrooms within schools. All students in sampled classrooms were selected for the assessment.

There was no oversampling of any subgroup from the total school population for either grade in 2019. The overlap with the 2019 National Assessment of Educational Progress (NAEP) school samples was minimized for the 2019 TIMSS. The TIMSS samples were selected after the NAEP samples, so that the overlap between the samples was minimized when the TIMSS samples were selected.

The student population for the fourth- and eighth-grade 2019 TIMSS is the set of all fourth- and eighth-graders, respectively, in the United States in both public and private schools. The TIMSS school sample consists of 329 and 325 schools containing a fourth- and eighth-grade class, respectively. The schools were selected with probability proportionate to the school's estimated grade enrollment of fourth or eighth-graders from the 2019 NAEP school frame. A total of two target-grade mathematics classes were selected within each school in an equal probability sample (unless there were only one or two classes, in which case all target-grade classes were taken with certainty). The overall sample design was intended to approximate a self-weighting sample of students as much as possible in accordance with the international guidelines, with each fourth- and eighth-grade student in the United States having an approximately equal probability of being selected.

TIMSS 2019 marked the beginning of the TIMSS transition to a computer-based assessment. Countries had the option of administering the new computer-based version of the 2019 assessment, known as eTIMSS, or the paper-and-pencil (paperTIMSS) version as in previous assessment cycles. Although the two versions were developed to be as similar in content as possible, inevitably there are some differences between them as a result of the two modes of administration. In order to control for mode effects while linking the two versions to the TIMSS achievement scales and to safeguard the measurement of trends from previous assessments, eTIMSS countries also provide a separate sample of “bridge” data. The bridge data result from administering the paper version of the trend items (eight blocks of items for each subject

and grade that also were administered in 2015) to a separate, equivalent sample of students during the main data collection. These paper versions of the trend items are identical in most respects to the eTIMSS versions that are administered as part of the main eTIMSS assessment, and so comparing performance on the eTIMSS versions to performance on the paper versions administered to the bridge sample provides a bridge between the two assessment modes.

A bridge study was therefore necessary for countries, including the United States, transitioning to digital TIMSS (eTIMSS) from the paper assessment conducted in previous TIMSS cycles. An additional sample of 1,500 tested students was required to administer paper TIMSS booklets (paperTIMSS) containing the TIMSS 2015 trend assessment blocks. Therefore, a separate sample of schools was included in the bridge study. For the United States, in public schools selected to participate in the bridge study, the paperTIMSS assessment was conducted in one classroom, and the eTIMSS assessment was conducted in the other classroom. For public schools that had only one classroom, schools in the bridge study were randomly assigned such that half of the schools received the paperTIMSS assessment and half of the schools received the eTIMSS assessment. In private schools, both classrooms in schools selected for the bridge study received the paperTIMSS assessment. For both public and private schools, classrooms in schools not selected for the bridge study received the eTIMSS assessment. There were 78 and 75 public schools selected for the bridge study at grades 4 and 8, respectively, and eight private schools selected for the bridge study at both grades. This resulted in a total of 86 and 83 schools selected for the bridge study at grades 4 and 8, respectively. The bridge study sample schools are not included in the sample counts for the remainder of this chapter.

In addition to the standard TIMSS weights, countries with bridge data, including the United States, have an additional set of weights exclusively for the bridge sample. For public schools in the bridge study that had only one classroom, schools were randomly assigned to the paperTIMSS or eTIMSS assessment. In such cases, an adjustment was applied to the school weight in the corresponding explicit stratum sample that the school was not assigned to. The procedure for calculating weights and nonparticipation adjustments was the same for the bridge study.

2.2 School Sampling Frames

The U.S. school sampling frames for fourth and eighth grades were developed from two national databases in the National Center for Education Statistics—public schools in the Common Core of Data (CCD—<https://nces.ed.gov/ccd/>) and private schools in the Private School Survey (PSS—<https://nces.ed.gov/surveys/pss/>). These sources provide full coverage of students in all grades in the

education system in the United States. The TIMSS school frames were constructed using the 2016–17 CCD and the 2015–16 PSS, the most current data at the time of the frame construction.

The data preparation of the school frames benefited from procedures developed for the National Assessment of Educational Progress (NAEP), a large educational survey in the United States. The school frames used the NAEP 2019 school frame as an input data source.

Eligible schools in the school frames included schools operating in the 50 states and the District of Columbia, Department of Defense (DoD) domestic schools, and Bureau of Indian Education (BIE) schools. Schools in Puerto Rico and U.S. territories, DoD schools overseas, adult education institutions with no fourth- or eighth-grade students, and noneducation institutions (e.g., home schools and correspondence schools) were ineligible for the study.

2.2.1 Fourth-Grade Frame

Any school having a fourth grade was eligible and included on the TIMSS fourth-grade school sampling frame. Table 2-1 presents frame tabulations of the number of schools by the school grade span (lowest to highest grade level of the school).

Table 2-1. Number and percentage of students and schools included in the U.S. TIMSS fourth-grade school sampling frame, by grade span: 2019

Grade span	Students	Percent	Schools	Percent
Total	4,153,454	100	72,902	100
Grades 1 to 5	2,105,897	50.7	26,987	37.0
Grades 1 to 6	601,831	14.5	10,633	14.6
Grades 1 to 8	489,969	11.8	15,272	20.9
Grades 1 to 12	158,496	3.8	6,301	8.6
Other	797,261	19.2	13,709	18.8

NOTE: Detail may not sum to totals because of rounding. The “other” grade spans includes all additional grade spans.

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2019.

2.2.2 Eighth-Grade Frame

Any school having an eighth grade was eligible and included on the TIMSS eighth-grade school sampling frame. Table 2-2 presents frame tabulations of the number of schools by the school grade span (lowest to highest grade level of the school).

Table 2-2. Number and percentage of students and schools included in the U.S. TIMSS eighth-grade school sampling frame, by grade span: 2019

Grade span	Students	Percent	Schools	Percent
Total	4,059,757	100	48,557	100
Grades 1 to 8	489,969	12.1	15,272	31.5
Grades 6 to 8	2,168,970	53.4	10,346	21.3
Grades 1 to 12	158,496	3.9	6,301	13.0
Grades 7 to 12	135,110	3.3	2,965	6.1
Grades 7 to 8	630,615	15.5	2,482	5.1
Other	476,597	11.7	11,191	23.0

NOTE: Detail may not sum to totals because of rounding. The “other” grade spans includes all additional grade spans.

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2019.

2.3 Stratification

The sample design was a stratified systematic sample within each stratum, with sampling probabilities proportional to size (PPS). Stratification was used for sample efficiency by ensuring an appropriate representation of each type of school in the selected sample. Compared to previous TIMSS cycles, the explicit stratification for TIMSS 2019 was slightly different due to the inclusion of the bridge study. Westat had recently implemented a similar bridge study for the International Computer and Information Literacy Study (ICILS) 2018, where private schools were stratified by Catholic/non-Catholic schools rather than by Census region. The same stratification was also used for the TIMSS samples. This was done for two reasons. First, it makes for a more efficient bridging study design that required at least four bridge schools as opposed to two schools without the bridge study in each explicit stratum. Thus, there were two explicit strata rather than four as in previous cycles for private schools, which kept the total number of private schools near the same level (i.e., eight required) as previous PIRLS and TIMSS cycles. Secondly, this enhances the school nonresponse adjustment cells (that are based on the explicit stratification variables) as Catholic schools tend to respond at a much higher rate than non-Catholic

schools. For fourth and eighth grade, 10 explicit strata were formed by crossing the following variables, shown in alphabetical order:

- Census region²/type of private school—for public schools: Northeast, Midwest, South, and West; and for private schools: Catholic and other private;
- poverty level³—for public schools, “high” poverty is defined as having 50 percent or more of the students eligible for participation in the free or reduced-price lunch program,⁴ and “low” poverty is defined as having less than 50 percent eligible; and
- school type—school is either under public control (operated by publicly elected or appointed officials) or private control (operated by privately elected or appointed officials and derives its major source of funds from private sources).

Within each explicit stratum, the frame was implicitly stratified by the following three categorical stratification variables:

- locale—urban-centric locale code (i.e., city, suburb, town, rural);
- race/ethnicity status—student population in the school is “15 percent or above” or “below 15 percent” Black, Hispanic, Asian, Hawaiian/Pacific Islander, American Indian and Alaska Native students, and multiracial students;⁵
- state—50 states and DC for public schools and none for private schools; and
- estimated grade enrollment.

2.3.1 Fourth-Grade Stratification

The following tables show the total number and percentage of fourth-grade students and schools in the TIMSS 2019 school frame by the explicit stratification variables Census region/type of private school (table 2-3), poverty level (table 2-4), school type (table 2-5), and by poverty level, school type, and region/type of private school (table 2-6).

² States in each region: Northeast: Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont. Midwest: Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin. South: Alabama, Arkansas, Delaware, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, West Virginia, and the District of Columbia. West: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

³ The sample frame did not contain a direct measure of poverty. No free or reduced-price lunch program (FRPL) data were available for private schools; thus all private schools are treated as low-poverty schools.

⁴ FRPL refers to the same program that is sometimes called the National School Lunch Program (NSLP). TIMSS has traditionally used the name FRPL and that will be used in this report hereinafter.

⁵ Black includes African American and Hispanic includes Latino. Racial categories exclude Hispanic origin. Multiracial includes more than one race.

Table 2-3. Number and percentage of students and schools included in the U.S. TIMSS fourth-grade school sampling frame, by region/type of private school: 2019

Region/type of private school	Students	Percent	Schools	Percent
Total	4,153,454	100	72,902	100
Northeast	583,405	14.0	8,013	11.0
Midwest	779,043	18.8	12,329	16.9
South	1,516,934	36.5	17,778	24.4
West	935,763	22.5	13,451	18.5
Catholic	133,673	3.2	5,013	6.9
Other private	204,636	4.9	16,318	22.4

NOTE: Detail may not sum to totals because of rounding. Region of country is based on Census Bureau definitions. SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2019.

Table 2-4. Number and percentage of students and schools included in the U.S. TIMSS fourth-grade school sampling frame, by poverty level: 2019

Poverty level	Students	Percent	Schools	Percent
Total	4,153,454	100	72,902	100
High	1,899,203	45.7	26,027	35.7
Low	2,254,251	54.3	46,875	64.3

NOTE: For public schools, “high” poverty is defined as having 50 percent or more of the students eligible for participation in the free or reduced-price lunch program (FRPL), and “low” poverty is defined as having less than 50 percent eligible. Because no FRPL data were available for private schools, all private schools are categorized as “low.”

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2019.

Table 2-5. Number and percentage of students and schools included in the U.S. TIMSS fourth-grade school sampling frame, by school type: 2019

School type	Students	Percent	Schools	Percent
Total	4,153,454	100	72,902	100
Private	338,309	8.1	21,331	29.3
Public	3,815,145	91.9	51,571	70.7

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2019.

Table 2-6. Number and percentage of students and schools included in the U.S. TIMSS fourth-grade school sampling frame, by region/type of private school, poverty level, and school type: 2019

Region/type of private school	Poverty level	School type	Students	Percent	Schools	Percent
Total			4,153,454	100	72,902	100
Northeast	High	Public	235,252	5.7	3,210	4.4
Midwest	High	Public	326,767	7.9	5,513	7.6
South	High	Public	811,448	19.5	9,721	13.3
West	High	Public	525,736	12.7	7,583	10.4
Catholic	Low	Private	133,673	3.2	5,013	6.9
Other private	Low	Private	204,636	4.9	16,318	22.4
Northeast	Low	Public	348,153	8.4	4,803	6.6
Midwest	Low	Public	452,276	10.9	6,816	9.3
South	Low	Public	705,486	17.0	8,057	11.1
West	Low	Public	410,027	9.9	5,868	8.0

NOTE: Region of country is based on Census Bureau definitions. For public schools, “high” poverty is defined as having 50 percent or more of the students eligible for participation in the free or reduced-price lunch program (FRPL), and “low” poverty is defined as having less than 50 percent eligible. Because no FRPL data were available for private schools, all private schools are categorized as “low.”

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2019.

2.3.2 Eighth-Grade Stratification

The following tables show the total number and percentage of eighth-grade students and schools in the TIMSS 2019 eighth-grade school frame by the explicit stratification variables Census region (table 2-7), poverty level (table 2-8), school type (table 2-9), and region/type of private school (table 2-10).

Table 2-7. Number and percentage of students and schools included in the U.S. TIMSS eighth-grade school sampling frame, by region/type of private school: 2019

Region/type of private school	Students	Percent	Schools	Percent
Total	4,059,757	100	48,557	100
Northeast	584,189	14.4	4,565	9.4
Midwest	782,651	19.3	7,823	16.1
South	1,446,331	35.6	9,394	19.3
West	915,992	22.6	7,135	14.7
Catholic	134,506	3.3	4,628	9.5
Other private	196,088	4.8	15,012	30.9

NOTE: Detail may not sum to totals because of rounding. Region of country is based on Census Bureau definitions. SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2019.

Table 2-8. Number and percentage of students and schools included in the U.S. TIMSS eighth-grade school sampling frame, by poverty level: 2019

Poverty level	Students	Percent	Schools	Percent
Total	4,059,757	100	48,557	100
High	1,686,186	41.5	14,022	28.9
Low	2,373,571	58.5	34,535	71.1

NOTE: For public schools, “high” poverty is defined as having 50 percent or more of the students eligible for participation in the free or reduced-price lunch program (FRPL), and “low” poverty is defined as having less than 50 percent eligible. Because no FRPL data were available for private schools, all private schools are categorized as “low.”

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2019.

Table 2-9. Number and percentage of students and schools included in the U.S. TIMSS eighth-grade school sampling frame, by school type: 2019

School type	Students	Percent	Schools	Percent
Total	4,059,757	100	48,557	100
Private	330,594	8.1	19,640	40.4
Public	3,729,163	91.9	28,917	59.6

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2019.

Table 2-10. Number and percentage of students and schools included in the U.S. TIMSS eighth-grade school sampling frame, by region/type of private school, poverty level, and school type: 2019

Region/type of private school	Poverty level	School type	Students	Percent	Schools	Percent
Total			4,059,757	100	48,557	100
Northeast	High	Public	201,212	5.0	1,903	3.9
Midwest	High	Public	277,594	6.8	3,243	6.7
South	High	Public	722,705	17.8	4,989	10.3
West	High	Public	484,675	11.9	3,887	8.0
Catholic	Low	Private	134,506	3.3	4,628	9.5
Other private	Low	Private	196,088	4.8	15,012	30.9
Northeast	Low	Public	382,977	9.4	2,662	5.5
Midwest	Low	Public	505,057	12.4	4,580	9.4
South	Low	Public	723,626	17.8	4,405	9.1
West	Low	Public	431,317	10.6	3,248	6.7

NOTE: Detail may not sum to totals because of rounding. Region of country is based on Census Bureau definitions. For public schools, “high” poverty is defined as having 50 percent or more of the students eligible for participation in the free or reduced-price lunch program (FRPL), and “low” poverty is defined as having less than 50 percent eligible. Because no FRPL data were available for private schools, all private schools are categorized as “low.” SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2019.

2.4 National School Samples

2.4.1 Measure of Size

The goal for the TIMSS sample was to attain a self-weighting student sample. To achieve this, schools’ probability of selection was related to their measure of size (MOS), which is proportional to its share of the target population, that is, the fourth- or eighth-grade enrollments. This method also reduces the chance of selection for smaller schools. This improves cost efficiency by increasing the number of students per school. However, students in schools with enrollments of only a few students would have very large weights if selected. To minimize the impact of these small schools on variances and estimates, the minimum measure of size was set to 5.

The following is a summary of the steps for assigning measures of size to the schools on the TIMSS frames.

First, determine the estimated target population size for the school. This is the estimated enrollment per grade (4 or 8) from the school frame. If the grade enrollment was not available, it was calculated by dividing the school's total enrollment by the number of grades in the school.

Secondly, the measure of size according to the estimated enrollment per grade is 5 if the grade enrollment is less than or equal to 5, and is equal to the grade enrollment (grade 4 or grade 8) otherwise.

2.4.2 School Samples

The U.S. national fourth- and eighth-grade samples used a two-stage design—a stratified systematic sample of schools with sampling probabilities proportional to size (PPS) and then classes within sampled schools. The school selection probability was configured such that all fourth- or eighth-grade students in the United States would have approximately equal probability of being selected in the samples. Note that in large schools, a smaller proportion of the classes (and therefore of the students) is selected, but this lower rate of selecting students in large schools is offset by a larger probability of selection of large schools, as schools are selected with probability proportional to size. A sample of 329 and 325 schools was drawn from the fourth- and eighth-grade frames, respectively. A systematic sample was selected independently in each stratum where the measure of size is the estimated number of students in fourth or eighth grade.

The overlap with the 2019 NAEP school samples was minimized for the 2019 TIMSS samples by grade. The NAEP sample was selected before the TIMSS sample, and therefore the overlap between the samples was minimized when the TIMSS samples were selected. The TIMSS samples were selected using a version of the Keyfitz procedure (Keyfitz 1951); Chowdhury, Chu, and Kaufman (2000) have described the implementation of the procedure. The method is used to minimize overlap between one or more surveys. By minimizing the overlap with the NAEP sample, the assessed students could be included in only one study with proper probabilities. This was accomplished by partitioning the frame into the following two groups shown in order as in table 2 of the paper. The two groups were as follows:

1. Schools not selected for the NAEP sample; and
2. Schools selected for the NAEP sample.

With this design, the method accomplished the goal of minimizing overlap with the NAEP samples by selecting the majority of the TIMSS samples from group 1.

Within each explicit stratum, the frames were implicitly stratified by three categorical stratification variables. The order of the stratification is not given because of confidentiality concerns. Each frame was sorted in alternating (serpentine) sort order according to these school characteristics, implicitly stratifying the frame. The last sort within the implicit stratification was by grade enrollment (measure of size or *MOS*) in descending order. Alternating the “sort order” sorts a frame from lowest to highest value with respect to the first sort variable, then within each level of the first sort variable, the second sort variable alternates its sort order, from lowest to highest for the first level of the first sort variable, then from highest to lowest for the second level of the first sort variable, then again from lowest to highest for the third level of the first sort variable, and so on. Each of the variables will alternate the sort order within each level of the preceding sort variable. This means that schools adjacent on the list are not substantially different or at most different by one sorting characteristic.

2.4.3 Substitute Schools

Although efforts were made to secure the participation of all schools selected, it was anticipated at the time of sampling that not all schools would choose to participate. Therefore, as each school was selected for a sample, the two neighboring schools in the sampling frame were designated as substitute schools. The first school following the sampled school was the first substitute, and the first school preceding it was the second substitute. If an original school refused to participate, the first substitute was then contacted. If that school also refused to participate, the second substitute was then contacted.

There were several constraints on the assignment of substitutes. One sampled school was not allowed to be a substitute for another, and a given school could not be assigned to be a substitute for more than one sampled school. Furthermore, substitutes were required to be in the explicit stratum as the sampled school. If the sampled school was the first or last school in the stratum, then the second school following or preceding the sampled school was identified as the substitute. If the first substitute school did not have the same implicit stratification values as the sampled school, the first and second substitute were switched. With international consent, the substitute school assignment also avoided the NAEP sample schools whenever possible within the above rules. Under these rules, it was possible to identify two substitutes for each sampled school.

2.4.4 Selecting Classrooms

The final stage of selection for grades 4 and 8 was of classrooms within schools. Within each sampled school that agreed to participate in TIMSS at fourth or eighth grade, all classrooms in the school were listed on the classroom sampling frame. Classroom lists were gathered from participating schools electronically using an adaptation of a secure E-Filing process. E-Filing was successfully used in ICILS 2018, and provides advantageous features such as efficiency and data quality checks. Schools accessed the E-Filing system through the MyTIMSS.com website. Once the list of classrooms was received from a school, it was formatted for importing into WinW3S, the international sampling and data management software.

Schools were asked to indicate the names of all classes containing fourth- or eighth-grade students, the number of fourth- or eighth-grade students in the class, and whether it was a “special class” in which all or most of the students were learning disabled or classified as having limited English proficiency. Even though TIMSS does provide accommodations, classrooms were excluded from the subsequent classroom sampling if all or most of the students were learning disabled. Classrooms with fewer than 15 students were collapsed into *pseudoclassrooms* so that each classroom on the school’s classroom sampling frame had at least 20 students.⁶ An equal probability sample of two classrooms or pseudoclassrooms was sampled from the classroom frame for each school. All students in sampled classrooms (pseudoclassrooms) were selected for assessment.

2.5 Tabulations Within Subgroups for Frame and Sample

This section provides an overview of the frame and sample for the explicit and implicit strata used in the sample process. The PPS sampling and stratification worked effectively: the sample percentage of schools is close to the measure-of-size (MOS) percentage of the frame for all the implicit strata. For these strata-defining subgroups, tables 2-11 through 2-18 present the following summary tabulations for these subgroups:

- **Total measure of size.** This is the summation of MOS_{ij} over the subgroup. Note that this is larger than the national population student size because the minimum MOS_{ij} is set to 5 for small schools; and

⁶ Pseudoclasses were automatically created during the sampling of classes if there were small classes in a school. A small class was defined as a class for which the number of students was smaller than half the average class size in the explicit stratum across all schools. When pseudoclasses were sampled, WinW3S automatically sampled the two or more classes that were grouped together to form a pseudoclass.

- **Sample size.** This is the final realized sample size of schools in the subgroup for the U.S. TIMSS fourth- or eighth-grade samples.

2.5.1 Fourth-Grade Tabulations

This section provides an overview of the fourth-grade frame and sample distribution by each of the stratification variables. Each table shows the total number and percentage of fourth-grade students in the sampling frame and the total number and percentage of schools in the TIMSS school sample.⁷ By each stratification variable, the tables are Census region/type of private school (table 2-11), poverty level (table 2-12), school type (table 2-13), and by Census region/type of private school, poverty level, and school type (table 2-14).

Table 2-11. Number and percentage of students in the sampling frame and number and percentage of schools in the sample, U.S. TIMSS fourth grade, by region/type of private school: 2019

Region/type of private school	Frame		Sample	
	Measure of size	Percent	Number of schools	Percent
Total	4,163,916	100	329	100
Northeast	583,675	14.0	49	14.9
Midwest	779,798	18.8	62	18.8
South	1,517,236	36.4	122	37.1
West	936,995	22.5	75	22.8
Catholic	133,847	3.2	8	2.4
Other private	212,365	5.1	13	4.0

NOTE: Detail may not sum to totals because of rounding. Measure of size is the estimated number of students enrolled in the target grade with a minimum of 5 students per school. Region of country is based on Census Bureau definitions.

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2019.

⁷ The measure of size (MOS) is defined as the estimated number of students enrolled in the target grade with a minimum of 5 students per school. These are consistently larger than the estimated student sample size (reported in tables 2-1 through 2-14), which is the estimate of the number of students in the sampled schools and has no minimum per school.

Table 2-12. Number and percentage of students in the sampling frame and number and percentage of schools in the sample, U.S. TIMSS fourth grade, by poverty level: 2019

Poverty level	Frame		Sample	
	Measure of size	Percent	Number of schools	Percent
Total	4,163,916	100	329	100
High	1,900,362	45.6	153	46.5
Low	2,263,554	54.4	176	53.5

NOTE: Measure of size is the estimated number of students enrolled in the target grade with a minimum of 5 students per school. For public schools, “high” poverty is defined as having 50 percent or more of the students eligible for participation in the free or reduced-price lunch program (FRPL), and “low” poverty is defined as having less than 50 percent eligible. Because no FRPL data were available for private schools, all private schools are categorized as “low.”

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2019.

Table 2-13. Number and percentage of students in the sampling frame and number and percentage of schools in the sample, U.S. TIMSS fourth grade, by school type: 2019

School type	Frame		Sample	
	Measure of size	Percent	Number of schools	Percent
Total	4,163,916	100	329	100
Private	346,212	8.3	21	6.4
Public	3,817,704	91.7	308	93.6

NOTE: Measure of size is the estimated number of students enrolled in the target grade with a minimum of 5 students per school.

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2019.

Table 2-14. Number and percentage of students in the sampling frame and number and percentage of schools in the sample, U.S. TIMSS fourth grade, by region/type of private school, poverty level, and school type: 2019

Region/type of private school	Poverty level	School type	Frame		Sample	
			Measure of size	Percent	Number of schools	Percent
Total			4,163,916	100	329	100
Northeast	High	Public	235,373	5.7	20	6.1
Midwest	High	Public	327,136	7.9	26	7.9
South	High	Public	811,577	19.5	65	19.8
West	High	Public	526,276	12.6	42	12.8
Catholic	Low	Private	133,847	3.2	8	2.4
Other private	Low	Private	212,365	5.1	13	4.0
Northeast	Low	Public	348,302	8.4	29	8.8
Midwest	Low	Public	452,662	10.9	36	10.9
South	Low	Public	705,659	16.9	57	17.3
West	Low	Public	410,719	9.9	33	10.0

NOTE: Detail may not sum to totals because of rounding. Measure of size is the estimated number of students enrolled in the target grade with a minimum of 5 students per school. Region of country is based on Census Bureau definitions. For public schools, “high” poverty is defined as having 50 percent or more of the students eligible for participation in the free or reduced-price lunch program (FRPL), and “low” poverty is defined as having less than 50 percent eligible. Because no FRPL data were available for private schools, all private schools are categorized as “low” poverty.

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2019.

2.5.2 Eighth-Grade Tabulations

This section provides an overview of the eighth-grade frame and sample distribution by each of the stratification variables. Each table shows the total number and percentage of eighth-grade students in the sampling frame (data shown in tables 2-15 through 2-18 and the total number and percentage of schools in the TIMSS eighth-grade school sample. By each stratification variable, the tables are Census region/type of private school (table 2-15), poverty level (table 2-16), school type (table 2-17), and by Census region/type of private school, poverty level, and school type (table 2-18).

Table 2-15. Number and percentage of students in the sampling frame and number and percentage of schools in the sample, U.S. TIMSS eighth grade, by region/type of private school: 2019

Region/type of private school	Frame		Sample	
	Measure of size	Percent	Number of schools	Percent
Total	4,071,514	100	325	100
Northeast	584,461	14.4	47	14.5
Midwest	783,925	19.3	64	19.7
South	1,447,373	35.5	120	36.9
West	917,438	22.5	73	22.5
Catholic	134,641	3.3	8	2.5
Other private	203,676	5.0	13	4.0

NOTE: Detail may not sum to totals because of rounding. Measure of size is the estimated number of students enrolled in the target grade with a minimum of 5 students per school. Region of country is based on Census Bureau definitions.

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2019.

Table 2-16. Number and percentage of students in the sampling frame and number and percentage of schools in the sample, U.S. TIMSS eighth grade, by poverty level: 2019

Poverty level	Frame		Sample	
	Measure of size	Percent	Number of schools	Percent
Total	4,071,514	100	325	100
High	1,688,372	41.5	137	42.2
Low	2,383,142	58.5	188	57.8

NOTE: Measure of size is the estimated number of students enrolled in the target grade with a minimum of 5 students per school. For public schools, “high” poverty is defined as having 50 percent or more of the students eligible for participation in the free or reduced-price lunch program (FRPL), and “low” poverty is defined as having less than 50 percent eligible. Because no FRPL data were available for private schools, all private schools are categorized as “low.”

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2019.

Table 2-17. Number and percentage of students in the sampling frame and number and percentage of schools in the sample, U.S. TIMSS eighth grade, by school type: 2019

School type	Frame		Sample	
	Measure of size	Percent	Number of schools	Percent
Total	4,071,514	100	325	100
Private	338,317	8.3	21	6.5
Public	3,733,197	91.7	304	93.5

NOTE: Measure of size is the estimated number of students enrolled in the target grade with a minimum of 5 students per school.

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2019.

Table 2-18. Number and percentage of students in the sampling frame and number and percentage of schools in the sample, U.S. TIMSS eighth grade, by region/type of private school, poverty level, and school type: 2019

Region/type of private school	Poverty level	School type	Frame		Sample	
			Measure of size	Percent	Number of schools	Percent
Total			4,071,514	100	325	100
Northeast	High	Public	201,304	4.9	17	5.2
Midwest	High	Public	278,349	6.8	22	6.8
South	High	Public	723,273	17.8	59	18.2
West	High	Public	485,446	11.9	39	12.0
Catholic	Low	Private	134,641	3.3	8	2.5
Other private	Low	Private	203,676	5.0	13	4.0
Northeast	Low	Public	383,157	9.4	30	9.2
Midwest	Low	Public	505,576	12.4	42	12.9
South	Low	Public	724,100	17.8	61	18.8
West	Low	Public	431,992	10.6	34	10.5

NOTE: Detail may not sum to totals because of rounding. Measure of size is the estimated number of students enrolled in the target grade with a minimum of 5 students per school. Region of country is based on Census Bureau definitions. For public schools, “high” poverty is defined as having 50 percent or more of the students eligible for participation in the free or reduced-price lunch program (FRPL), and “low” poverty is defined as having less than 50 percent eligible. Because no FRPL data were available for private schools, all private schools are categorized as “low.”

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2019.

3. Participation Rates and Nonresponse Bias

To minimize the potential for response biases, International Association for the Evaluation of Educational Achievement (IEA) developed participation or response rate standards that apply to all participating education systems and govern whether data are included in the TIMSS 2019 international datasets and the way in which aggregate statistics are presented in the international reports. These standards were set using composites of participation rates at the school, classroom, and student levels, and were calculated both with and without the inclusion of substitute schools (for an explanation of substitute schools, see section 2.4.3) that were selected to replace schools refusing to participate.

The standards take the following three forms, distinguished primarily by whether meeting the school participation rate of 85 percent requires the counting of substitute schools:

Category 1: Met requirements. Participants that meet one of the following three sets of conditions are considered to have fulfilled the IEA requirements:

- (A) Obtain an unweighted school response rate of at least 85 percent without replacement with substitute schools (rounded to nearest whole percent) AND an unweighted student response rate (after rounding) of at least 85 percent.

OR

- (B) A weighted school response rate of at least 85 percent without replacement with substitute schools (rounded to nearest whole percent) AND a weighted student response rate (after rounding) of at least 85 percent.

OR

- (C) The product of the (unrounded) weighted school response rate without replacement with substitute schools and the (unrounded) weighted student response rate of at least 75 percent (after rounding to the nearest whole percent).

Participants in this category appear in the tables and figures in international reports without annotation, and are ordered by achievement score.

Category 2: Met requirements after substitutes. In the case of participants not meeting the category 1 requirements, but who had a weighted school response rate of at least 50 percent without replacement with substitute schools (after rounding to the nearest percent) AND HAD EITHER

- (A) A weighted school response rate of at least 85 percent with replacement with substitute schools (after rounding to nearest whole percent) AND a weighted student response rate (after rounding) of at least 85 percent.

OR

- (B) The product of the (unrounded) weighted school response rate with replacement with substitute schools and the (unrounded) weighted student response rate of at least 75 percent (after rounding to the nearest whole percent).

Those participants able to satisfy only the category 2 standard are included in the tables and figures but are annotated to indicate their response rate status.

Category 3: Unacceptable sampling response rate even when substitute schools are included.

Participants that could provide documentation to show that they complied with TIMSS and TIMSS Advanced sampling procedures and requirements but did not meet the requirements for category 1 or category 2 were placed in category 3. Participants in this category appeared in a separate section of the achievement tables, below the other participants, in international reports. These countries were presented in alphabetical order.

3.1 Exclusions

The nationally defined target population is described in chapter 3 of *Methods and Procedures: TIMSS 2019 Technical Report* at <https://timssandpirls.bc.edu/timss2019/methods>. All schools and students excluded from this population are referred to as the “excluded population.” Exclusions could occur at the school level, with entire schools being excluded, or within schools, with specific students or entire classrooms excluded.

3.1.1 School Exclusions

Countries could exclude schools that

- were geographically inaccessible;
- were of extremely small size;

- offered a curriculum or school structure radically different from the mainstream educational system; or
- provided instruction only to students in the excluded categories defined under “within-school exclusions,” such as schools for the blind.

3.1.2 Within-School Exclusions

Countries were asked to adapt the following international within-school exclusion rules to define excluded students:

Students with intellectual disabilities. Students who, in the professional opinion of the school principal or other qualified staff members, were considered to be intellectually disabled or who had been tested psychologically as such. This included students who were emotionally or mentally unable to follow even the general instructions of the test. Students were not to be excluded solely because of poor academic performance or normal disciplinary problems. It should be noted that students with dyslexia, or other such learning disabilities, should be accommodated in the test situation if possible, rather than excluded.

Students with functional disabilities. Students who were permanently physically disabled in such a way that they could not perform in the TIMSS testing situation. Functionally disabled students who were able to respond were included in the testing.

Non-native language speakers. Students who were unable to read or speak the language(s) of the test and were unable to overcome the language barrier of the test. Typically, a student who had received less than 1 year of instruction in the language(s) of the test was excluded.

3.1.3 Exclusions in the U.S. National Samples

As noted earlier, schools were given the opportunity to exclude any special classes among the total number of classes in the fourth or eighth grade. These classes were made up largely of students with functional or intellectual disabilities or students who were non-native language speakers, as defined above. Classes identified in this way were excluded from the class sampling procedure. Subsequently, schools were given the opportunity to exclude students from the sampled classes—essentially, students with functional or intellectual disabilities, or non-native language speaking students in the United States who had been mainstreamed. Nevertheless, students with disabilities and/or English language learners were allowed access to many accommodations that they received on their state assessments.

These procedures resulted in a (weighted) student exclusion rate of 7.2 percent in the fourth grade for TIMSS, and 3.9 percent for TIMSS in the eighth grade based on the combination of whole-class and within-class exclusions. IEA standards define this degree of coverage of the national target population (93 and 96 percent for TIMSS at fourth- and eighth-grade, respectively) as acceptable although falling below the desired range of 95 percent or better for the fourth grade. The tabulations shown in the international reports show the United States fourth grade annotated to indicate this fact.

3.2 TIMSS and TIMSS Bridge Participation Rates of U.S. Schools, Classrooms, and Students

The raw numbers on which the various participation rates are based, along with the participation rates themselves, are shown in table 3-1 separately for the TIMSS fourth- and eighth-grade samples and table 3-2 separately for the TIMSS fourth- and eighth-grade TIMSS Bridge samples.

To explain how to interpret these participation rates, subsections 3.1.1 through 3.1.3 describe a complete interpretation of the TIMSS fourth-grade numbers. The participation rates for TIMSS eighth-grade and both TIMSS Bridge samples can be interpreted in the same way.

Table 3-1. Number of U.S. schools, classrooms, and students participating in TIMSS, and participation rates, by grade: 2019

Item	Number		Participation rates				
	Grade 4	Grade 8	Grade 4		Grade 8		
			Un-weighted	Weighted	Un-weighted	Weighted	
Schools							
Original sample	329	325	†	†	†	†	
Excluded and ineligible	4	4	†	†	†	†	
Eligible	325	321	†	†	†	†	
Participating (all schools)	287	273	88	88	85	85	
Participating (original sample)	249	231	77	76	72	72	
Participating (substitutes)	38	42	†	†	†	†	
Classrooms in participating schools							
Total	1,195	2,741	†	†	†	†	
Excluded	50	99	†	†	†	†	
Eligible	1,145	2,642	†	†	†	†	
Sampled	490	479	†	†	†	†	
Participating	489	478	100	100	100	100	
Students in participating schools							
Sampled	9,955	9,924	†	†	†	†	
Excluded	601	242	†	†	†	†	
Withdrawn	152	307	†	†	†	†	
Eligible	9,202	9,375	†	†	†	†	
Absent	426 ¹	677 ²	†	†	†	†	
Assessed	8,776	8,698	95	96	93	94	

¹ Includes 67 students whose parents denied permission to participate.

² Includes 116 students whose parents denied permission to participate.

NOTE: NCES standards (Standard 1-3-8) indicate that participation rates should be calculated without including substitute schools since substitute schools do not have an independent probability of selection (National Center for Education Statistics 2012). However, the participation rates shown in this table are those reported by TIMSS and do include substitute schools in the calculations.

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2019.

Table 3-2. Number of U.S. schools, classrooms, and students participating in TIMSS Bridge, and participation rates, by grade: 2019

Item	Number		Participation rates			
			Grade 4		Grade 8	
	Grade 4	Grade 8	Un-weighted	Weighted	Un-weighted	Weighted
Schools						
Original sample	86	83	†	†	†	†
Excluded and ineligible	1	1	†	†	†	†
Eligible	85	82	†	†	†	†
Participating (all schools)	79	65	93	93	79	80
Participating (original sample)	65	58	76	77	71	72
Participating (substitutes)	14	7	†	†	†	†
Classrooms in participating schools						
Total	99	98	†	†	†	†
Excluded	16	28	†	†	†	†
Eligible	83	71	†	†	†	†
Sampled	83	71	†	†	†	†
Participating	83	71	100	100	100	100
Students in participating schools						
Sampled	1,827	1,644	†	†	†	†
Excluded	74	18	†	†	†	†
Withdrawn	22	32	†	†	†	†
Eligible	1,731	1,594	†	†	†	†
Absent	79 ¹	110 ²	†	†	†	†
Assessed	1,652	1,484	95	96	93	93

¹ Includes 9 students whose parents denied permission to participate.

² Includes 17 students whose parents denied permission to participate.

NOTE: NCES standards (Standard 1-3-8) indicate that participation rates should be calculated without including substitute schools since substitute schools do not have an independent probability of selection (National Center for Education Statistics 2012). However, the participation rates shown in this table are those reported by TIMSS and do include substitute schools in the calculations.

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2019.

3.2.1 Interpreting School Participation Rates (TIMSS Fourth-Grade Example)

The fourth-grade school sample consisted of 329 schools and was designed to yield a representative school sample for TIMSS. Four ineligible schools were identified on the basis that they served special student populations or had closed or altered their grade makeup since the sampling frame was developed. This left 325 eligible schools, of which 249 agreed to participate. The fourth-grade school participation rate before substitution was 77 percent (unweighted). The analogous weighted school participation rate was 76 percent.

In addition to the 249 participating schools from the original sample, 38 substitute schools also participated for a total of 287 participating schools at the fourth grade in the United States. This gave a weighted (and unweighted) school participation rate after substitution of 88 percent.

3.2.2 Interpreting Classroom Participation Rates (TIMSS Fourth-Grade Example)

In accordance with the international requirements, schools agreeing to participate in TIMSS at grade 4 were asked to list their fourth-grade mathematics classes as the basis for sampling at the classroom level. A total of 1,195 mathematics classrooms were identified as a result. At this time, schools were given the opportunity to identify special classes—classes containing all, or a majority of, students with intellectual and/or functional disabilities, or students who were non-native language speakers. While these classes were regarded as eligible, the students as a group were treated as excluded since, in the opinion of the school, the assessment would not accurately measure their performance. A total of 50 classrooms were excluded in this way. This left a pool of 1,145 eligible classrooms from which the sample was drawn. While the students in these excluded classrooms did not figure in the participation rate calculations, they did count in the population coverage calculations, and this is reflected in the higher exclusion rate (7.2 percent) than the international standard for the United States. In the international report, the United States is annotated to reflect this fact.

Classrooms with fewer than 15 students were collapsed into “pseudoclassrooms” prior to sampling so that each eligible classroom in a school had at least 20 students. Two classrooms (regardless of whether regular classrooms or pseudoclassrooms) were selected per school where possible. In schools where there were only one or two classrooms, these classrooms were selected with certainty. Some 490 classrooms were selected as a result of this process, and 489 participated in TIMSS. Weighted and unweighted classroom participation rates were 100 percent.

Subsequently, schools were asked to list the students in each of the 490 sampled classrooms at the fourth grade, along with the teachers who taught mathematics and science to these students. At this time, schools were given the opportunity to identify particular students who would not take the test because of functional and/or intellectual disabilities and/or because they were non-native language speakers (students with disabilities or non-native language speakers who had been mainstreamed; see definitions in section 4.2.1).

3.2.3 Interpreting Student Participation Rates (TIMSS Fourth-Grade Example)

A total of 9,955 fourth-grade students were listed as being in these classrooms. (In mixed-grade classrooms, only students in the target population were considered.) At the outset, 601 of these were excluded because of functional or intellectual disabilities or because they were non-native language speakers. Additionally, in the months between the listing of students and the time of the assessment, 152 students were classified as withdrawn, as they were no longer in the school/classroom at the time of the assessment. As a consequence, 9,202 students were considered eligible to take the assessment. On the day of the assessment, some 426 students were absent, leaving 8,776 students who completed a TIMSS 2019 assessment booklet. Participation rates were calculated on the number of eligible students (9,202). Since 8,776 of the 9,202 eligible students were assessed, the unweighted student participation rate was 95 percent. The analogous weighted student participation rate was 96 percent.

3.2.4 Combined Participation Rates

The combined school, classroom, and student weighted participation rate standard of 75 percent used by TIMSS in situations in which it was necessary to recruit substitute schools was met for the grade 4 and 8 samples in TIMSS 2019. The weighted product of the separate participation rates for TIMSS at grade 4 was 84 percent (also unweighted) and at grade 8 was 79 percent (also unweighted). The application of international guidelines means, however, that U.S. statistics describing fourth- and eighth-grade students in TIMSS are annotated in international reports to indicate that participation rates were met only after substitute schools were included.

3.3 Participation Rates for All Countries

For comparable fourth- and eighth-grade school, classroom, and student participation rates in other nations in TIMSS, see chapter 9 of *Methods and Procedures: TIMSS 2019 Technical Report* at <https://timssandpirls.bc.edu/timss2019/methods>.

3.4 Nonresponse Bias Analysis

The National Center for Education Statistics (NCES) standards for surveys stipulate that a nonresponse bias analysis is required at any stage of data collection with a weighted unit response rate of less than 85 percent (without substitution). Because the U.S. TIMSS 2019 weighted school response rates at grade 4 and grade 8 are below 85 percent, NCES required an investigation into the potential magnitude of nonresponse bias at the school level in the U.S. samples, which is the focus of this section. Only schools that administered the eTIMSS assessment are included in this analysis because TIMSS 2019 scores were computed based on the performance of the U.S. students in the eTIMSS sample.

A bias analysis was conducted in the United States to address potential problems in the data owing to school nonresponse for TIMSS grades 4 and 8. The purpose of the analysis was to examine whether the participation status of schools was related to various characteristics and thus introduced the potential for bias in the results. The results suggested that there is some potential for nonresponse bias in the U.S. grades 4 and 8 samples (prior to substitution) based on the characteristics studied. It also suggested that, while there was some evidence that the use of substitute schools at grade 4 reduced the potential for bias, it did not reduce it substantially. However, after the application of school nonresponse adjustments, there was no evidence of resulting potential bias in the final sample at grade 4. At grade 8, the net effect of substitution and nonresponse adjustment on the validity of grade 8 estimates is ambiguous but has not added substantially to the bias. For more information on the nonresponse bias analysis, see appendix F.

4. Survey Operations

This chapter describes data collection and related activities for TIMSS 2019 in the United States. These activities included recruitment of schools for the national sample, sampling of classes within schools, development of the instruments, field operations undertaken to administer the assessment, post-assessment activities associated with scoring and data entry, and several activities associated with the preparation of the data to meet international standards.

4.1 Recruiting Districts and Schools

The established protocol for seeking the participation of schools in studies such as TIMSS, where participation is voluntary, is to (1) notify state education authorities that they have districts and schools selected for the assessment; (2) inform authorities at the district level that schools within their districts are being sampled, and obtain approval as needed; and (3) contact the sampled schools. For public schools in most states, steps 2 and 3 were conducted by National Assessment of Educational Progress (NAEP) State Coordinators in each state education agency. Participation may be refused at any of these levels, so several considerations were important in this context, specifically the need to establish the value of participation; establish the timing of the assessment window in conjunction with mandatory federal, state, and local assessments; and address concerns about the burden on schools. Private schools—including nonreligious, affiliated private schools—were contacted directly. In the case of Catholic schools, the diocese was informed, approval was sought and obtained when needed, and schools were then contacted.

4.1.1 Timing of Recruitment Activities

Assessment dates needed to be established early in the school year in which the assessment was to take place or, better still, toward the end of the previous school year. In total, the recruitment phase for TIMSS 2019 extended from April 2018 through May 2019, as indicated in exhibit 1-1 in chapter 1. States were contacted in the beginning of April 2018. Following this, contact with districts began in May 2018 and continued through spring 2019. Schools were contacted beginning in June 2018 and activities continued through May 2019.

4.1.2 The Impact of the Sampling Design on Recruitment Activities

The sampling design played an important role in the design of recruitment activities. At fourth grade, 338⁸ schools were sampled in the first instance, along with 338 first substitutes and 338 second substitutes, for a total of 1,014 schools. At eighth grade, there were 333⁹ schools in the original sample, along with 333 first substitutes and 333 second substitutes, for a total of 999 schools. In gaining the cooperation of schools, at each grade level the sampled schools were approached in the first instance. Operationally, this meant first informing the districts in which these schools are located and then approaching the schools themselves. If a sampled school refused to participate, the district of the first substitute school was approached and the district-school permission procedure began anew. If the first substitute school refused as well, then the district of the second substitute school was approached, and then the second substitute school.

4.1.3 Contacting States and Districts

The Chief State School Officer and State Assessment Director in each of the 50 states and Washington, DC, were contacted beginning in April 2018. Each person received a TIMSS package that included a National Center for Education Statistics (NCES) cover letter, instructions on how to obtain the sampled schools in the state, a brochure describing the study, a timeline of activities, a summary of activities for the school coordinator, and a sheet of frequently asked questions. A copy of the letter sent to states is provided as exhibit A-1 in appendix A. Several items of TIMSS information materials (exhibits B-1 through B-3 in appendix B) were included with the letter.

Similar packages were supplied to NAEP State Coordinators. NCES and Westat held a series of webinars to explain TIMSS, to describe the processes used to report participation, and to answer questions about the study. In many cases, NAEP State Coordinators created personalized contact letters for districts and schools. Westat tracked cooperation status weekly through a secure automated reporting system used by NAEP State Coordinators.

After informing the states, similar packages of recruitment materials were sent to the superintendent and the assessment director of each district by the NAEP State Coordinator (or diocese by Westat field staff) containing sampled schools. A copy of the letter sent to districts is provided as exhibit A-2 in appendix A.

⁸ This number includes the 329 schools in the eTIMSS sample (77 of which were also sampled for the Bridge Study) and 9 schools that were in sampled only for the Bridge Study.

⁹ This number includes the 325 schools in the eTIMSS sample (75 of which were also sampled for the Bridge Study) and 8 schools that were in sampled only for the Bridge Study.

Several items of TIMSS information materials (exhibits B-1 through B-3 in appendix B) and a list of sampled schools were included with the letter. MyTIMSS registration information (exhibit B-4) was sent after this initial communication.

During this time, if a sampled school in a cooperating district refused to participate and was deemed a firm refusal, a similar district package was sent out to the district of the first substitute school linked to the sampled school. A parallel procedure was adopted with the second substitute district and school in those cases where a first substitute school refused to participate.

Follow-Up Contact

In each case, NAEP State Coordinators or Westat field staff were available to discuss the study and answer questions with district contacts.

Special security requirements. As a matter of course, each TIMSS field staff member had a current FBI clearance and fingerprints on file. In addition, all field staff had an eQIP clearance as well. These requirements satisfied school security requirements.

4.1.4 Contacting Schools

After district approval was secured, schools were contacted with an initial school information packet. Private schools and some parochial schools not linked with a diocese were contacted directly. Each school information package was sent by the NAEP State Coordinator on a flow basis governed by receipt of district approval. A copy of the cover letter included in the school package is shown as exhibit A-3 in appendix A. Copies of TIMSS information materials (exhibits B-1 through B-3 in appendix B) were included with the letter.

Follow-Up Contact

For private schools, each school was contacted by a Westat field staff member to discuss the school's participation in TIMSS. NAEP State Coordinators continued follow-up with public schools when necessary.

Nomination of school coordinator. School principals were asked to identify an individual within the school who would act as the TIMSS school coordinator for their school. Principals, deputy principals, teachers, test coordinators, or guidance counselors took on this role. School coordinator responsibilities included the following:

- working with Westat to finalize an assessment date;
- preparing an electronic list of all classrooms in grade 4 and mathematics classrooms in grade 8;
- identifying excluded classrooms;
- identifying students and teachers in the sampled classrooms at grades 4 and 8;
- identifying excluded students in the sampled classrooms at grades 4 and 8;
- liaison with staff, students, and parents as necessary;
- arranging for space and for the release of students from classes on assessment day;
- ensuring completion and return of the school and teacher questionnaires; and
- holding secure, until the end of the school year, the confidential files that linked student names with IDs and then destroying them.

4.1.5 Informational Materials – Initial Communication

Given that most of the initial contact with states, districts, and schools was by mail, particular attention was paid to developing materials that would promote the value of participation and assure all concerned that the burden on schools would be minimal. These materials included the following:

- A TIMSS brochure, a trifold describing TIMSS, its history, and its importance for the United States (exhibit B-1 in appendix B);
- A TIMSS Frequently Asked Questions sheet (exhibit B-2 in appendix B); and
- A Summary of School Activities listing broad time frames and activities occurring within them for TIMSS (exhibit B-3 in appendix B).

After the assessment, schools and school coordinators were paid incentives of \$200 and \$100, respectively. Private schools, schools committed to also participating in the NAEP assessment and schools notified late in the recruitment season, received incentives up to \$800. Students each received a stringed backpack and completion certificate to express appreciation for their participation. Eighth-grade

students' completion certificates acknowledged completion of 3 community service hours. Additionally, teachers received a \$20 Amazon gift card for completing the teacher questionnaire.

Some additional documents were used to maintain contact with schools throughout the year, inform school coordinators of upcoming TIMSS activities, and guide them through how to complete those activities. A MyTIMSS website was launched in early 2019 that shared information about school coordinator responsibilities and other information in preparation for assessment day. Drafts of parent notification letters were available to all schools, and the parent approval letter, forms, and fact sheets were supplied to those schools indicating that parent approval was required. Examples of the parent approval materials are provided in exhibits A-4 through A-14 in appendix A. The parent notification/approval process is discussed further below in section 4.4.5.

4.1.6 Gaining Cooperation Recruiters

Private schools and some public schools were recruited by four experienced Westat recruiters known as “gaining cooperation recruiters (GCRs),” who were experienced with recruiting schools from previous rounds of similar studies (NAEP, PISA, TIMSS, and PIRLS). The GCRs were supervised by staff from Westat.

GCR supervisor responsibilities. The supervisor engaged in the recruiting phase of the study had the following responsibilities:

- coordinating recruitment activities of the GCRs within their assignment;
- holding weekly telephone meetings with GCRs to monitor progress on gaining-cooperation activities and to troubleshoot recruitment strategies;
- monitoring the MyTIMSS School Control System and recruitment reports, ensuring that the disposition codes provided by GCRs gave an accurate portrayal of participation status; and
- acting as troubleshooters to handle special issues that arose during the recruiting process.

GCR responsibilities. The primary responsibility of the GCRs was person-to-person interaction with the schools along with some more administrative tasks, as follows:

- sending information materials to districts, diocese, and sampled schools to inform them of their school selection status;

- making telephone contact with sampled schools, and in some cases, their diocese, within their assignment to obtain permission to conduct TIMSS;
- completing an electronic record of calls (EROC) of each contact within the MyTIMSS School Control System;
- maintaining the most current disposition codes within the MyTIMSS School Control System; and
- meeting weekly with the supervisor by conference call to discuss progress.

4.1.7 Monitoring the Recruiting Progress

Progress in recruiting districts and schools was monitored by Westat through the MyTIMSS School Control System. MyTIMSS is a secure password-protected website with access restricted to NAEP State Coordinators and Westat staff. NAEP State Coordinators and GCRs were required to update the MyTIMSS School Control System for each contact made with districts or schools using an electronic record of calls that included updating the disposition code for the district/school in question. The disposition codes in the MyTIMSS School Control System indicated whether the school was pending, refusing, or cooperating. Using these status codes, the Westat home office tracked the progress of recruitment and generated weekly reports. These weekly reports enabled the operations of recruitment (and eventually assessments) to be closely monitored.

Difficulties in Gaining Cooperation

The principal reasons given by both districts and schools for refusing to participate included, in approximate order of occurrence, the following:

- the related matter of the burden that additional testing placed on students at the cost of instructional time;
- conflict with mandatory federal, state, and/or local assessments whose outcomes had direct implications for districts, schools, teachers, and students;
- concerns about too much testing and parents opting out of assessments; and
- the limited return on the school's investment of time because they would not receive much usable information on the school, and none on particular students.

4.2 Sampling Students Within Schools

For TIMSS 2019, grade 4 classes and grade 8 mathematics classes in participating schools were sampled in a two-stage process. In the first stage, schools were asked to provide lists of fourth-grade classrooms/homerooms or eighth-grade mathematics classrooms that indicated the number of students in each class. In the second stage all students in sampled classrooms or pseudo-classrooms were selected for assessment. An equal probability sample of two classrooms or pseudo-classrooms was identified from the classrooms listed for each school. A pseudo-classroom is two or more classes that were too small to be assessed alone but were combined with other small classes in the sampling software. Detailed descriptions of sampling designs and methods are covered in chapter 2.

These procedures are standardized internationally and embodied in software made available to each country. The software was developed by the International Association for the Evaluation of Educational Achievement (IEA) Data Processing Center and is known as IEA Windows Within School Sampling Software, or WinW3S (IEA Data Processing Center 2014). The WinW3S system provides for forms generation, data entry, class sampling, student sampling, student-teacher linkages, the random assignment of assessment booklets to students, the production of various survey tracking forms, and the printing of labels for test instruments and questionnaires.

Westat home office staff attended a WinW3S training session led by IEA. Westat used an E-File system developed for the TIMSS 2019 administration to integrate the data collection with the WinW3S sampling system. This eliminated the hard-copy collection of class, student, and teacher data and the requisite resulting data entry and cumbersome back and forth with schools. The staff assigned to process the electronic data collection reviewed the incoming data, clarified any issues or inconsistencies with the schools (via school coordinators), properly formatted and imported the data into the WinW3S, and executed the sampling procedures within the WinW3S system. The staff responsible for the sampling processing also generated the materials (all of the forms and labels) needed by field staff and schools for the TIMSS assessment. All Westat staff handling personally identifiable information (PII) signed nondisclosure affidavits, and all PII were kept secure on Westat secure servers.

4.2.1 Informational Materials - Obtaining Electronic Class Lists From Schools

A list of all classes or homerooms from the grade 4 schools (and a list of all mathematics classes from the grade 8 schools) were requested along with the list of all students in those classes (see section 4.2.2). School coordinators collected, reviewed, and provided Westat with the list of classes. The data collection

for the sampling information from schools was conducted electronically through a Westat-developed E-File system that was made available to school coordinators on the MyTIMSS site. To collect and confirm this information, the following materials were provided to schools:

- Grade 4 Submit Class List Instructions (exhibit B-5 in appendix B);
- Grade 4 Submit Student List Instructions (exhibit B-6 in appendix B);
- Grade 8 Submit Class List Instructions (exhibit B-7 in appendix B);
- Grade 8 Submit Student List Instructions (exhibit B-8 in appendix B);
- Student Tracking Form (STF) Instructions (exhibit B-9 in appendix B);

The Class List Form required that school coordinators input a list of all homerooms/classes for grade 4 and mathematics classes for grade 8, some attributes of each class, and the names of the teacher(s) teaching each class along with their email addresses. The Class List Form for grade 4 is shown in exhibit 4-1 and its accompanying instructions shown in exhibit B-5 for grade 4 schools; exhibit B-7 shows the instructions for grade 8 schools. For grade 8, only the student list form and not the class list form asked for the science teacher information; whereas, the grade 4 class list form asked for science teacher information as well. Grades 4 and 8 differed in this regard as one homeroom or class of grade 4 students is likely to have the same mathematics and science teacher. For grade 8 students, students in one math class may each have different science teachers. To link these students to a science teacher to complete the questionnaire, the schools submitted a student list (as seen in exhibit 4-2) that identified a science teacher for each student. Instructions for submitting student lists were also provided to schools as shown in exhibit B-6 for grade 4 and exhibit B-8 for grade 8. For the first time in TIMSS, this information was able to be linked within the WinW3S software, so there was no need to generate a Student-Teacher-Linking Form for schools to complete.

The templates provided to the schools allowed for some flexibility in how the schools provided the data. For example, if the school information system stored students' month and year of birth (MOB and YOB) in a single field, or in multiple fields, Westat provided alternative templates for them to use. Westat wanted to minimize the burden for schools in providing the requisite data. Often schools could provide much of the data requested in an automated way by pulling the data directly from their school information systems. By eliminating much of the manual entry by schools, and by providing flexibility even when manual entry was necessary, the quality and speed of obtaining data from schools were enhanced. That allowed TIMSS data collection and sampling to take place closer to the time of assessment, which provided for a more stable sample of classes and students in these classes than if samples were provided earlier in the school year.

Since the E-File system was set up to communicate with each school, the administrative information (school name, TIMSS-generated ID, and grade assessed) was already preloaded into the data request Westat would send and receive from the schools. Schools were asked to complete the remaining information for each eligible fourth-grade class or eighth-grade mathematics class in the school.

Exhibit 4-1. Sample Class Listing Form – Grade 4

Grade 4							
* Class Name (each class name must be unique)	* Class Group	* Number of 4th-grade students in class (most classes have less than 30 students)	Class Exclusion Status (If applicable)	* Name of Mathematics Teacher	* Email address of Mathematics Teacher	Name of Science Teacher (only if different from Mathematics Teacher)	Email address of Science Teacher (only if different from Mathematics Teacher)
<input type="text"/>	Select.. v	<input type="text"/>	Select.. v	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2019.

TIMSS 2019: Class Roster Definitions

- Class name.** Record the class name that is typically used by your school to refer to the class. For example, it may be that your school uses the grade plus a letter for the class name (4a, 4b, etc.), the grade plus a number (4.1, 4.2, etc.), the teacher name, the class period (Period 1, Period 2, etc.), the class location (Room 7, Room 8, etc.), or some other combination of these items. **It is important that unique class names are entered because these names will be used to indicate to the Test Administrator which classes will be tested.** (Mathematics class name was asked for grade 8 schools).
- Class group or track** (if applicable). If your school assigns students to specific classes based on their ability, please indicate the relevant level: Low ability, Average ability, or High ability.
- Number of students.** Enter the number of fourth-grade (eighth-grade for grade 8 schools) students in each class. In the case of *multigrade classes* (e.g., students from more than one grade level in the same class), only the fourth-grade students should be counted as a class in the list. For example, if three grade 3 students, five grade 4 students, and 10 grade 5 students form a multigrade class, then you should record five students for the number of students in this multigrade class.
- Class exclusion status** (if applicable). As a rule, all classes are to be included. TIMSS 2019 will offer many accommodations that should allow most students to participate. Click on the Documents link on the left panel to see what accommodations are provided or allowed. **All class-level exclusions must be approved.** If you indicate a class-level exclusion, a TIMSS representative will contact you to discuss it.

Examples of *potential* class-level exclusions include classes where *all* students belong to at least one of the following three exclusion status categories, and none of the students can be assessed with TIMSS accommodations:

1 = students with functional disabilities (i.e., students who have physical disabilities in such a way that they cannot perform in the TIMSS testing situation). Students with functional disabilities who are able to perform should be accommodated in the test situation, within reason, rather than excluded.

2 = students with intellectual disabilities (i.e., students who are considered, in the professional opinion of the school principal or by other qualified staff members, to have severe intellectual disabilities or who have been tested as such). This category includes students who are emotionally or mentally unable to follow even the general instructions of the test. Students should not be excluded solely because of poor academic performance or normal disciplinary problems. It should be noted that students with dyslexia, or other such learning disabilities, should be accommodated in the test situation, within reason, rather than excluded.

3 = non-native language speakers (i.e., students who are unable to read or speak the language(s) of the test and would be unable to overcome the language barrier in the test situation).

If all students in the excluded class do not belong to the same exclusion category, please identify the category corresponding to the majority of students.

- ***Name of mathematics teacher:*** Name of the mathematics teacher of the class.
- ***Email address of mathematics teacher:*** E-mail address of the mathematics teacher of the class.
- ***Name of Science Teacher (only if different from Mathematics Teacher).*** For grade 4 only.
- ***E-mail address of Science Teacher (only if different from Mathematics Teacher).*** For grade 4 only.

4.2.2 Identifying Students and Their Teachers

For TIMSS, grades 4 and 8 schools were given the option of providing the list of the students in each of the classes listed in the Class Listing Form template or to wait for the results of the WinW3S class sampling selections. In the latter case, after class sampling was completed, Westat provided the schools with the sampled classes. The schools then provided Westat with the students of these selected classes using the Student Listing Form template. Westat provided the schools with multiple templates to allow

them flexibility in completing the templates. The format of the student names and the format of the month and year of birth are often stored differently across schools so the templates attempt to simplify and lessen the burden on schools when they provide these data. Exhibit 4-2 presents the grade 4 student list template.

Exhibit 4-2. Grade 4 student list template

Student Full Name <i>(list only the 4th-graders of this 4th-grade class)</i>	Sex	DOB	Student with a Disability status <i>(1=Yes, student has disability and/or IEP 2=No, student does not have disability or IEP)</i>	English Language Learner status <i>(1=Yes, student is ELL 2=No, student is formerly ELL 3=No, student is not ELL)</i>	Class Name <i>(enter the exact class names you typed in the MyTIMSS class list page)</i>	Mathematics Teacher Name	Mathematics Teacher Email <i>(work email)</i>	Student Current Grade Level	Science Teacher Name <i>(only needed if different from math teacher)</i>	Science Teacher Email <i>(only needed if different from math teacher)</i>
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SOURCE: National Center for Education Statistics (NCES), Trends in International Mathematics and Science Study (TIMSS), 2019.

4.2.3 Student Tracking Form

Once the class sampling has been conducted, the student lists submitted by the schools were imported into the WinW3S for each sampled class. The WinW3S then generated the Student Tracking Forms (STF) for each sampled class. The STFs were provided to the schools around the assessment time. These forms were transmitted back to the schools for further updates. The Student Tracking Form was designed to provide test administrators with student IDs, student identifiers in the form of date of birth and sex, the booklet assignment to each student, and the means to record the completion of the assessment and associated questionnaire. The student names shown in the first column of the form were removed following the assessment and retained by the school to ensure confidentiality. Examples of STFs for eTIMSS and the Bridge study, which was delivered in a paper-and-pencil format, are provided in exhibits 4-3 and 4-4. The participation and eligibility status were recorded in the electronic form and imported into the WinW3S to update the participation fields.

As the school and teacher questionnaires were conducted online in the IEA Online Survey System (OSS), the tracking of teacher and school participation in the survey could be automated. This system contained a monitoring feature to track completion of teacher and school surveys.

Exhibit 4-3. Grade 4 eTIMSS 2019 Student Tracking Form

eTIMSS 2019 - Student Tracking Form - Grade 4												
School Name:			TIMSS Participant Country:									
			United States									
			[a]	[b]	[c]	[d]	[e]					
			School ID	Class ID	Class Name	Grade	Language of Test					
					4	English						
①	②	③	④			⑤	⑥	⑦				
Student Name or Number	Student ID	Password	Date of Birth			Gender	Exclusion Status	Participation Status				
								Main Session			Make-Up Session	
			DD	MM	YYYY			Achievement Session	Session Number	Questionnaire Session	Achievement Session	Questionnaire Session

Gender (column 5): 1 = Female; 2 = Male
Exclusion Status (column 6): 1 = Students with functional disabilities; 2 = Students with intellectual disabilities; 3 = Non-native language speakers
Participation Status (column 7): 1 = Left school permanently; 2 = Absent/Student refusal; 3 = Participated; 4 = No parental permission; 5 = Participated with special accommodation
Session Number (Column 7): Session number is applicable if eTIMSS is administered in more than one session due to the number of computers available

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2019.

Exhibit 4-4. Grade 4 Bridge Study TIMSS 2019 Student Tracking Form

TIMSS 2019 - Student Tracking Form - Grade 4													
School Name:			TIMSS Participant Country:										
			United States										
			[a]	[b]	[c]	[d]	[e]						
			School ID	Class ID	Class Name	Grade	Language of Test						
						4	English						
①			②		③			④	⑤	⑥	⑦	⑧	
Student Name or Number	Student ID	Date of Birth			Gender	Exclusion Status	Booklet	Reliability Scoring Booklet	Participation Status				
		DD	MM	YYYY					Main Session		Make-Up Session		
									Achievement Session	Questionnaire Session	Achievement Session	Questionnaire Session	

Gender (column 4): 1 = Female; 2 = Male
Exclusion Status (column 5): 1 = Students with functional disabilities; 2 = Students with intellectual disabilities; 3 = Non-native language speakers
Participation Status (column 8): 1 = Left school permanently; 2 = Absent/Student refusal; 3 = Participated; 4 = No parental permission; 5 = Participated with special accommodation

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2019.

4.3 Instruments for the TIMSS 2019 Main Study

All TIMSS instruments were developed by the IEA as a collaborative effort involving representatives from every country participating in the study. For TIMSS, at each grade, the primary instruments for TIMSS 2019 consisted of a combined mathematics and science assessment; a student questionnaire; a school questionnaire; and teacher questionnaires to be completed by the teachers teaching mathematics and/or science to the students in the sampled classrooms. The U.S. National Research Coordinator also completed a TIMSS curriculum questionnaire to answer questions on the structure of the U.S. education system as well as the organization, content, and implementation of the mathematics and/or science curriculum.

Additionally, TIMSS 2019 was the first cycle of TIMSS’ two-cycle transition to a digital assessment. About half the countries administered TIMSS as a digitally based assessment (eTIMSS) and the rest as a

paper-based assessment (paperTIMSS). To maintain international comparability, the TIMSS items were designed to be as identical as possible between eTIMSS and paperTIMSS. The United States participated in eTIMSS and administered paper booklets of trend items from TIMSS 2015 to a subsample of schools as part of a TIMSS Bridge study, to provide a “bridge” between the two administration modes (eTIMSS and paperTIMSS).

The eTIMSS assessment included a short questionnaire about students’ experience with the eTIMSS digitally based assessment. The eTIMSS questionnaire was administered after the eTIMSS student assessment and before the TIMSS student questionnaire. The TIMSS student questionnaires were grade-specific and administered in a bound booklet. The school and teacher questionnaires were designed as online instruments. The school questionnaire was to be completed by the school principal, and the teacher questionnaire was to be completed by the teacher. School questionnaires and teacher questionnaires were also made available in bound paper booklets as requested by individual schools or respondents. A single fourth-grade teacher questionnaire was designed for TIMSS mathematics and/or science teachers of the students in the sampled classrooms. Separate questionnaires were provided for the TIMSS mathematics teachers and science teachers of the students in the sampled eighth-grade classrooms.

The international versions of the TIMSS questionnaires are available on the TIMSS & PIRLS International Study Center website at <https://timssandpirls.bc.edu/timss2019/questionnaires/index.html>. The U.S. versions of all seven U.S. TIMSS questionnaires are provided in appendix D of this report and are available on the NCES website <https://nces.ed.gov/timss/questionnaire.asp>.

4.3.1 The TIMSS Mathematics and Science Assessment

The following summarizes the rationale for and development of the TIMSS 2019 assessments. Complete detail is provided in *Methods and Procedures: TIMSS 2019 Technical Report* at <https://timssandpirls.bc.edu/timss2019/methods>.

Assessment Frameworks

The test development effort for mathematics and science began with a revision of the frameworks that define the knowledge and skills assessed in previous TIMSS assessments (Mullis and Martin 2017). The frameworks were updated to reflect changes in the curriculum and instruction of participating countries. Extensive input from U.S. and international experts in mathematics, science, and measurement

contributed to the final shape of the frameworks. The complete subject area frameworks for TIMSS are available at <https://timssandpirls.bc.edu/timss2019/frameworks/>.

Content and Cognitive Domains

The TIMSS assessment measures students’ knowledge and skills across specific content domains defined for each grade and subject (exhibit 4-5). The assessment items across these content domains measure what students can do across a range of cognitive skills or processes: knowing, applying, and reasoning. TIMSS science frameworks also describe the science inquiry practices to be measured.

Exhibit 4-5. Content domains in TIMSS 2019

TIMSS assessment	Mathematics	Science
TIMSS 2019 Grade 4	Number Measurement and Geometry Data	Life science Physical science Earth science
TIMSS 2019 Grade 8	Number Algebra Geometry Data and Probability	Biology Chemistry Physics Earth science

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS) 2019.

Item Development

Every 4 years since 1995, the majority of the TIMSS achievement items are carried forward from the previous assessment cycle to measure trends; nevertheless, updating the assessment instruments for each new cycle is a substantial undertaking. To replace assessment items that had been released following the previous assessments, subject matter experts submitted items for review by National Research Coordinators (NRCs) of participating countries, the Science and Mathematics Item Review Committees (SMIRC) for TIMSS, and subject matter experts in assessment to ensure that the content, as defined in the frameworks, was covered adequately. Items were field-tested in most of the participating education systems. Results from the field test were used to evaluate item difficulty, how well items discriminated between high- and low-performing students, the effectiveness of distracters in multiple-choice items, scoring suitability and reliability for constructed-response items, and evidence of bias toward or against individual countries or in favor of boys or girls. In addition, cognitive labs were conducted in the United

States with a sample of 32 grade 4 and 8 students to evaluate the clarity, format, and content of these items.

The TIMSS 2019 assessments consisted of approximately 40 percent new items and 60 percent trend items. The TIMSS 2019 fourth-grade assessments required developing and field testing 261 new mathematics and science items in both digital and paper formats as well as 66 new paper-based items for the less difficult version of the mathematics assessment. The TIMSS 2019 eighth-grade assessments required developing and field testing 325 new mathematics and science items in both digital and paper formats.

For eTIMSS 2019, the field test also included eight mathematics and science problem solving inquiry (PSI) tasks at grade 4 (totaling 72 items) and seven mathematics and science PSI tasks at grade 8 (totaling 83 items). The eTIMSS 2019 PSIs were a new and pioneering effort to improve measurement of higher-order mathematics and science skills by capitalizing on the digital mode of administration. Each PSI consisted of a sequence of 4 to 16 items that were set in a cohesive context and addressed a range of topics from the TIMSS 2019 Assessment Frameworks (Mullis and Martin 2017), such as solving a series of mathematics problems or conducting a virtual scientific experiment. The items within these situational tasks included a broader array of innovative digital features than the regular eTIMSS achievement items and provided scaffolding for complex mathematics problems and science investigations.

The number of new and trend mathematics and science items for the fourth- and eighth-grade TIMSS assessment are shown in table 4-1.

Table 4-1. Number of trend and new assessment items, by grade and subject, TIMSS 2019

	Trend	New	Total
TIMSS 2019 Grade 4			
Mathematics	92	83	175
Mathematics—less difficult	111	68	179
Science	98	77	175
PSI - Mathematics	n/a	29	29
PSI - Science	n/a	19	19
TIMSS 2019 Grade 8			
Mathematics	117	94	211
Science	122	98	220
PSI - Mathematics	n/a	25	25
PSI - Science	n/a	29	29

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2019.

Preparing the eTIMSS field test and main study items for digital delivery required the additional step of entering each item into IEA’s Item Builder, a web-based application for creating digital achievement items and instruments for delivery to students via computers and tablets. After drafting and reviewing the field test and main study items on paper, staff at the TIMSS & PIRLS International Study Center entered all eTIMSS items into the Item Builder and collaborated with IEA Hamburg to conduct extensive quality control tests to ensure each item would appear and function as intended for students.

More information about the TIMSS item development can be found in chapter 1 of *Methods and Procedures: TIMSS 2019 Technical Report* at <https://timssandpirls.bc.edu/timss2019/methods>.

Booklet Design

To keep the testing burden to a minimum while ensuring broad subject matter coverage, TIMSS used a rotated block design that included both mathematics and science items. This is consistent with other large-scale assessments such as the National Assessment of Educational Progress (NAEP). The rotated item design meant that, while no students responded to all of the items, each student encountered both mathematics and science items during the assessment.

The 2019 fourth- and eighth-grade assessments consisted of 14 booklets, assembled from 28 distinct item blocks at each grade level, and two booklets containing PSI tasks. Fourth-grade blocks contained approximately 10–14 assessment items, while eighth-grade blocks contained 12–18 items. Each booklet contained four blocks, with two mathematics and science blocks each. The achievement items in the

fourth-grade booklets required about 72 minutes, and achievement items in the eighth-grade booklets required about 90 minutes.

Translation and Verification of Instruments and U.S. Adaptations

Source versions of all instruments (assessment booklets, questionnaires, and manuals) were prepared by the IEA in English and translated by the participating countries into the primary language or languages of instruction in each country. In addition, it was sometimes necessary to adapt the instruments to better fit language usage, even in countries that use English as the primary language of instruction. Other adaptations to fit national education characteristics were sometimes required as well. All adaptations were reviewed and approved by the IEA to ensure they did not change the substance or intent of the question or answer choices. As the international versions of the instruments are produced in English, the United States did not need to engage in the full-fledged translation required of many nations. However, the adaptations made to the U.S. instruments required verification by the IEA to ensure their suitability for the current cycle of TIMSS and, if trend items, their continuity with previous cycles. Further details on the translation process can be found in TIMSS 2019 International Results in Mathematics and Science (Mullis, et al. 2020).

As in previous cycles of TIMSS, the U.S. adaptations to the international instruments were minimal and designed to make the assessment more readable to U.S. students without changing the essence of the assessment item. For example, nouns with British origins were changed to their U.S. equivalent (for example, “cinema” to “movie theater”), British English spellings were changed to American English (for example, “organisation” to “organization,” “programme” to “program”), some metric units were changed to imperial, and some changes to the text of instructions were also made to better mirror the administration procedures in the United States.

For the eTIMSS achievement materials, the procedures for translation and verification took place in the eTIMSS Online Translation system, part of IEA Hamburg’s eAssessment system (see chapter 4). The translation system was designed to mimic the same overarching procedures of paperTIMSS but also contained additional features for accommodating eTIMSS. These features included a “player preview” mode that displayed how each item would appear in the player software, an editor to edit images and/or labels on images, a button to duplicate translations that appear in more than one item, and a feature to add comments or document national adaptations.

4.3.2 TIMSS Contextual Questionnaires

As in prior administrations, TIMSS 2019 included self-administered questionnaires for principals, teachers, and students. To create the questionnaires for 2019, the 2015 versions of the TIMSS questionnaires were reviewed extensively by the National Research Coordinators from the participating countries as well as the Questionnaire Item Review Committee (QIRC). Based on this review, the QIRC eliminated or revised some questions and added several new ones. Like the assessment items, all questionnaire items were field-tested and the results reviewed. As a consequence, some of the questionnaire items were revised prior to their inclusion in the final questionnaires. Materials used to collect this information included the following:

- School Principal Questionnaire Login (exhibit B-10 in appendix B); and
- Teacher Questionnaire Login (exhibit B-11 in appendix B).

The questionnaires requested information to help provide a context for the performance scores:

- Student questionnaires – focus on such topics as students’ attitudes and beliefs about learning, their habits and homework, and their lives both in and outside of school;
- Teacher questionnaires – focus on teachers’ attitudes and beliefs about teaching and learning, teaching assignments, class size and organization, instructional practices, and participation in professional development activities; and
- Principal questionnaires – focus on principals’ viewpoints on policy and budget responsibilities, curriculum and instruction issues, and student behavior, as well as descriptions of the organization of schools and courses.

For 2019, online versions of the school and teacher questionnaires were offered to respondents as the primary mode of data collection. Paper versions were also available, if requested.

U.S. Adaptations to the School, Teacher, and Student Questionnaires

Similar to the assessment instruments, questionnaires went through a process of translation verification and U.S. adaptations. Adaptations made to the school, teacher, and student questionnaires were of the following six main types:

- changes to general instructions made in the interests of enhancing clarity and to reflect the digital or paper mode;

- changes designed to make question text more readable to U.S. students, similar to those made to the assessment items as described above;
- changes to response alternatives where the international response set did not adequately reflect the U.S. context;
- additional questionnaire items included to address particular issues of national interest;
- changes to ensure some questions were kept in trend with previous assessments; and
- changes in dates to reflect the general U.S. timelines.

A detailed list of changes made to the questionnaires is provided in appendix E. Both the original text from the international version of the questionnaire and the changed text from the U.S. version are shown. Text that has been changed in the U.S. version is underlined in that version. Both international and U.S. questionnaire item numbers, or other location indicators, are provided in each instance. Where appropriate, a crosswalk between the U.S. and international versions of the set of response categories of items is provided in the “Comments” column.

Upon receiving IEA approval of the paper-based TIMSS 2019 Bridge study translations, Pearson Educational Measurement (Pearson) assembled the paper-based student cognitive booklets and student questionnaires. The student questionnaires were used in both the paper-based and digitally based assessments. Quality control procedures for this process included a review of each adaptation made to the questionnaires and Bridge study item blocks, as well as a full review of the assembled instruments in a final layout proof.

In mid-November 2018, electronic files of the assembled booklets were sent to the TIMSS & PIRLS International Study Center for layout verifications. Final approval to print was given at the end of December 2018. The student assessment booklets and student questionnaires were printed on scannable forms. Teacher and school hard-copy versions of the questionnaires were printed on non-scannable forms.

A similar procedure was applied to the online cognitive item blocks, school, and teacher questionnaires. Adaptations were made to the online instruments using software provided by the IEA Data Processing and Research Center (DPC). A set of output files was produced for each questionnaire, and these were uploaded to a secure server and verified by the IEA DPC.

4.3.3 Final Instruments

eTIMSS Assessment System

eTIMSS offered an engaging, interactive, and visually attractive assessment that enabled TIMSS 2019 to better assess complex areas of the mathematics and science frameworks. The eTIMSS Player was used to administer the eTIMSS assessment—present the items on tablet or computer, record students’ responses, and upload the data to the IEA servers. To access the Player, the student entered their assigned login credentials. These consisted of a unique ID number and password, which incorporated a code that determined the specific assessment item block combination assigned to each student. The paperTIMSS assessment instrument took the form of booklets containing mathematics and science items in rotated item blocks.

The United States chose to deliver the assessments using the local server method. This involved running the eTIMSS Player from a server on a local area network, with the client computers running a browser to connect to the server. Following the test session, the test administrator could use an escape code to return to the main menu in order to upload the results. For eTIMSS, it was recommended to upload upon returning to their home or hotel by the end of the day of the assessment. This was applicable to both regular and makeup sessions, regardless of whether a makeup was needed. The upload feature was programmed to work from their home or hotel. Further, it was possible to copy the results databases from several student local machines to one single drive and use that to perform the upload function.

More information about the TIMSS eAssessment System can be found in chapter 4 of *Methods and Procedures: TIMSS 2019 Technical Report* at <https://timssandpirls.bc.edu/timss2019/methods>.

Bridge Study Paper Booklets

The 16 student cognitive booklets and two student questionnaires were designed and printed as scannable documents for the paper-based Bridge study. Document production was divided into two phases. The preparation phase included the mockup and design of forms, typesetting, composition, and editing for text accuracy and process ability. The production phase included final platemaking, printing, binding, and any finishing procedures (counting, wrapping, etc.) that were required prior to packaging and distribution. This process began after approval of the adaptations from IEA.

After a form was created, it was thoroughly inspected for grammar, spelling, and punctuation to ensure that it matched the approved electronic files. Reviews of the documents were completed by NCES. Once approved, the electronic files were sent to IEA for layout verification. Upon receiving approval from the IEA, and if no additional changes are needed, digital proofs are created. This is the final step before the actual printing process begins. Subsequently, copies of these proofs were subject to a technical review of “scan ability,” oval placement, and spine code assignment. Immediately after printing, sample documents were selected from predetermined locations throughout the print run for testing. Before shipping, a sample from each carton of multipage documents was inspected to ensure that the pages of the booklets were in the correct sequence. After binding, all documents were boxed to ensure that material quality was maintained during transit to the packaging facility.

School and Teacher Questionnaires

Once verified by IEA DPC, each questionnaire for schools and teachers was loaded to a secure NCES server and thoroughly tested by NCES and Westat to ensure that responses were being captured correctly and that the instruments were functioning properly. The final questionnaires were administered online to teachers and principals.

Additional teacher and school questionnaires were printed as non-scannable documents. Paper proofs of each document were reviewed against the original approved electronic files. Once accuracy was certified, printing was initiated. During this process, staff checked a 10 percent sample of the printed form against the approved document to ensure that accuracy was maintained throughout the printing process. These paper questionnaires were provided to respondents who were unable to complete the online questionnaires.

4.4 Field Operations

The activities discussed here refer to those associated with the administration of the assessments in participating schools. In the United States, the administration of the assessments was carried out by professional staff trained according to the international guidelines. School personnel were asked only to assist with listings of students, the identification of school space for the assessment, and the specification of parental consent procedures needed for sampled students.

Field operations centered on three main tasks: recruiting and training of field staff, scheduling the assessments, and administration of the assessments within the schools.

Field staff consisted of test administrators and assistant administrators. Test administrators managed the assessments in the schools. Assistant administrators assisted in the assessment administration, conducting one of the assessments because in most schools two separate classrooms were assessed simultaneously. All had previous experience with other educational assessments in schools, and all had FBI clearance based on fingerprint and background checks, as well as eQIP security clearances. Test administrators and assistant administrators also signed a statement of nondisclosure indicating that they would maintain confidentiality of all survey materials and of the data collected.

The total complement of field staff consisted of 1 field director, 4 field managers, 42 test administrators, and 84 assistant administrators. The field director reported directly to the Westat home office staff and met weekly to discuss progress and any problematic issues arising in the field. Field managers reported to the field director, test administrators reported to a field manager who coordinated and monitored their work and, in turn, the test administrators coordinated and supervised the work of the assistant administrators.

4.4.1 Responsibilities of Field Director, Field Managers, Test Administrators, and Assistant Administrators

Field director and field managers involved in the data collection phase had responsibility for

- scheduling assessment dates;
- providing input to the TIMSS data collection in-person training;
- tracking the test administrators' receipt of assessment booklets and other materials;
- coordinating data collection activities undertaken by their assigned test administrators;
- holding weekly one-on-one telephone meetings with their test administrators to monitor progress and to troubleshoot any problems arising;
- ensuring that their test administrators followed TIMSS procedures and guidelines; and
- reporting progress and problems in weekly conference calls with Westat home office staff and other field managers.

Test administrators had responsibility for

- attending TIMSS data collection in-person training;
- receiving and securing assessment materials;
- training assistant administrators;
- working with the school coordinator to notify parents and students of the assessment, and obtaining permission of parents, if this was required by the school;
- making arrangements with the school for the assessment sessions;
- preparing and assigning assessment materials for students;
- conducting the assessment according to TIMSS-specified procedures;
- completing the Test Administration Form, Student Tracking Form, and Student Response Rate Form;
- determining if a makeup session was needed and scheduling makeup sessions;
- ensuring tablets and additional equipment are collected and accounted for at the end of the assessment;
- securing, packing, and shipping all tablets and additional equipment to Westat at the end of the assessment window;
- securing, packing, and shipping all TIMSS Bridge booklets and questionnaire materials to Pearson at the conclusion of the assessment (within 24 hours) for scoring;
- reporting any instrument or data security breaches to the field manager;
- recording the status of the assessment in the MyTIMSS School Control System; and
- reporting progress to their field manager on a regular basis.

Assistant administrators had responsibility for

- attending the TIMSS in-person training conducted by their test administrator;
- administering the assessment according to TIMSS-specified procedures; and
- consulting regularly with their test administrator.

4.4.2 Training

A 2-day, in-person training for test administrators was held on March 13–14, 2019. The attendees received the Test Administrator Manual 5 days prior to the training session and were given up to 8 paid “study hours” to become familiar with the information and complete an online module prior to training. The agenda for this training session is provided as exhibit C-1 in appendix C.

The first day of training focused on how to use reports in the School Control System (SCS), reporting time and expenses, preparing for and completing the preassessment call, and preparing to administer an assessment. The second day included discussion about the procedures to be followed in setting up testing equipment, conducting the assessment, what to do once the assessment was completed, and the appropriate methods for packing and shipping the assessment materials to Pearson Educational Measurement. Privacy and security of test materials was reviewed and test administrators met with their field managers to review assignments and schedules.

Field staff were assigned laptop computers to take with them for the duration of the TIMSS data collection period. Printers for use with the laptops were issued and sent to each test administrator after training. Test administrators were also provided with an official TIMSS photo ID badge to wear while representing TIMSS.

Training for assistant administrators was conducted as a separate exercise by their respective test administrator. Approximately 4 hours was allocated for this training. Training materials consisted of an Assistant Administrator Manual, session scripts, and a subset of material from the test administrator training on assessment day tasks.

4.4.3 Scheduling Assessments

The approximately 573¹⁰ schools taking part in TIMSS were dispersed across the country, although with concentrations in the more populous states and cities. Scheduling assessment dates for these schools required the optimization of school preferences for a particular date with the assessment date preferences of nearby schools and the location of field staff in an effort to keep travel and related expenses to a minimum. The basic approach adopted involved the geographic mapping of schools and assignment of a preliminary date, along with the location of field staff. This formed the foundation for discussions with

¹⁰ This number includes the 560 schools in the eTIMSS sample (144 of which were also sampled for the Bridge Study) and 13 schools that were in sampled only for the Bridge Study.

schools, and the assignment of schools to field staff. In essence, geographical clusters of schools were assigned assessment dates clustered in time when this was possible.

Obtaining Assessment Dates From Schools

Prior to recruitment of schools, Westat staff collected date information for the sampled schools, including dates associated with state testing, holidays, breaks, field trips, and the like. This information was used to set a tentative date for each school.

Mapping Schools

In a second step, a geographic map of participating grade 4 and grade 8 schools was developed based on the addresses of the schools. The map allowed the ready identification of obvious clusters of schools in large metropolitan areas and also allowed for identification of less concentrated clusters in broader geographical areas as well as isolated schools. To establish optimal regions for assessment administrators, geographic clusters of schools were defined in an iterative process that took into account the location of field staff and their caseload. A total of 59 regions of varying size were identified in this way.

Assigning Tentative Assessment Dates

The provisional assessment dates were then mapped to the schools in each cluster and represented in the MyTIMSS School Control System. Within clusters, assessment dates were balanced against the location of schools in relation to one another. With some minor modifications to regions, schools in relatively close proximity were assigned to provisional assessment weeks. This process identified smaller clusters of schools that could be assessed within a week without undue travel and related expenses. For the most part, assessments were scheduled Tuesday through Thursday, leaving Monday and Friday as travel days.

Negotiating Final Assessment Dates

Once tentative dates were established, field staff contacted schools to negotiate a final assessment date. For the most part, schools accepted the dates proposed. When this was not possible, field staff used the work area spreadsheet and a work area map to negotiate an alternative assessment date that would

minimize staff travel. Final assessment dates and times were confirmed by e-mail with the school coordinator.

4.4.4 Assignment of Schools to Test Administrators

For the most part, field staff were assigned a region based on their location and availability with most regions relatively close to the test administrator's home address. Balancing these several demands resulted in some variation in the caseload of test administrators. During the course of the assessments, which ran from the beginning of April 2019 through early June 2019, some reassignments of schools and/or work areas were necessary.

Troubleshooting

Four of the test administrators and 12 assistant administrators served as regional troubleshooters who would be available to cover last-minute changes in assessment dates, staff illnesses, and the like. Each of these staff also had their own assignments, essentially schools that did not easily fit into an identified region or assessment date window.

4.4.5 Recruiting Parents and Students

During recruitment and scheduling contacts with schools, field staff asked about district and/or school requirements for notifying parents about their child's participation in TIMSS. School requirements fell into the following three main categories:

- **Notification.** The school would simply send parents a notification of the child's participation in TIMSS along with some informational material;
- **Implicit consent.** The school was required to ask parents for permission for the child to participate but permission would be assumed unless there was a formal objection; and
- **Explicit consent.** The school was required to ask parents for permission for the child to participate and the child could not participate until the parents provided formal approval.

Almost all schools opted for parental notification.

To assist schools in this task, the school coordinator was provided with one of three draft letters to parents—one for each of the three forms of parent permission. These letters could be edited as appropriate and sent out on school stationery. Consent forms to accompany the implicit and explicit consent letters were also provided along with an information sheet describing TIMSS. English and Spanish versions of each of these documents were made available to the schools. Copies of these materials as they apply to fourth- and eighth-grade students are provided as exhibits A-4 through A-13 in appendix A.

4.4.6 Organizing the Assessment Session at the School

Approximately 2 to 4 weeks prior to each school’s assessment date, the test administrator called the assigned school coordinator. Using a Preassessment Call Log, test administrators were instructed to review the STFs, discuss student and parent notification, set assessment time and location, discuss arrival logistics, discuss assessment logistics, and review questionnaire completion and incentives. The information obtained was maintained within the School Folder and updated as a basic reference. The Preassessment Call Log is provided as exhibit C-2 in appendix C.

On assessment day each test administrator, accompanied by an assistant administrator, arrived at the school with all of the materials needed for the assessment. Field staff brought three pelican cases (i.e., storage cases) full of enough tablets and keyboards to administer the assessment to all of the students in each session and an additional 10 tablets in case of technological problems. Routers, surface dock, mice and mousepads, tablet accessories, and cleaning wipes were also included in the pelican cases. For schools participating in the TIMSS Bridge study, one session box of materials was provided for each of the sampled classes. Each session box contained the estimated number of student assessment booklets required, plus three unassigned booklets to accommodate any changes in class enrollments at grades 4 and 8.

Test administrators arrived at the school about an hour before the scheduled assessment to set up and sanitize the tablets, keyboards, mice, and other equipment needed for the assessment. Upon arrival, the test administrator met with the school coordinator to make any updates to the Student Tracking Form that would affect the preparation of student materials (for example, the addition of new students, the withdrawal of listed students from the school or class, or a change in exclusion status of a sampled student). Field staff also distributed login cards and scratch paper with a pencil for each student. Simple-function calculators were built into the eTIMSS assessment platform for items where they were allowed.

For schools participating in the TIMSS Bridge study, the test administrator prepared the booklets for distribution prior to or shortly after arriving at the school. Following the prescribed international procedures, the test administrator did not open the booklet bundles until 45 minutes before the assessment. At that time, the booklets were assigned to students in the random order established by the IEA sampling software, and labels were placed on the booklets. TIMSS pencils were provided to all students. As required by international rules, simple-function calculators were allowed if provided by the school or student, and even then, only at the discretion of the school.

Administering the Assessment

Assessments were administered by reading verbatim from a standardized script according to the instructions in the TIMSS Test Administrator Manuals. A copy of each of the session scripts are provided in appendix C. The script began with a brief introduction to the study. Students were then provided with codes to login to the assessment, and the general instructions and instructions for part 1 were read. Following this, the students were instructed to begin part 1 of the assessment. After the allotted 36/45 minutes (grade 4/grade 8, respectively), a short break was provided. After the break, the instructions for part 2 were read and students were instructed to begin part 2 of the assessment. After the allotted 36/45 minutes for this part of the assessment, students were instructed to stop work, and another short break was provided. Following the break, the student questionnaire was administered; it was not time-limited but was typically completed in about 30 minutes. While students completed each section of the assessment, the test administrator checked that the students were working in the correct section of the assessment booklet, answered any questions students had, and ensured the allotted section timing was followed as specified by the assessment procedures and guidelines.

Postassessment Activities

Following the assessment, students were instructed to remove the identifying name labels from any booklets they used. The students waited for their booklets and student login cards (for eTIMSS) to be collected, received their gifts, and were dismissed. The test administrator then verified participation codes for each session and packed the booklets into the shipping box. The test administrators made copies of the Student Tracking Form and the Accommodations Planning Form, placing one copy of each document in the TIMSS Storage Envelope to be kept at the school. To maintain the security of student names, the test administrator removed the column of student names from the copies of the STF and Accommodations

Planning Form, and placed them in the TIMSS Storage Envelope along with any student login cards and name labels removed from booklets. Test administrators placed one de-identified STF in with the assessment booklets and questionnaires to be shipped to Pearson for scoring.

Within 24 hours following an eTIMSS assessment, the test administrator uploaded student data files to a server and completed data entry in the School Control System.

4.5 Receipt Control, Scoring, Coding, Data Entry, and Editing

Westat field staff sent the completed paper TIMSS Bridge study assessment materials along with any related materials directly to Pearson following the completion of the assessment at each school. Pearson also received paper student questionnaires from those students who participated in eTIMSS. Pearson recorded the receipt of materials, captured and edited the multiple-choice assessment items, scored the open-ended responses, and created and sent data files from this information to Westat.

4.5.1 Receipt Control

TIMSS documents were received at Pearson from April 3, 2019 through June 11, 2019. As assessment materials were returned to Pearson, receipt dates were recorded and sent to Westat twice a week. Pearson updated the electronic Student Tracking Forms with the participation status and any other updates made by the test administrators during and after testing. These electronic files were sent to Westat weekly.

Pearson checked in and processed assessment booklets and student questionnaires from approximately 80 grade 4 and 70 grade 8 sessions for the TIMSS Bridge study and 500 grade 4 and 530 grade 8 student questionnaire sessions from the eTIMSS assessment. School personnel completed school and teacher questionnaires online. Hard copies were available upon request.

Receipt Control System

Two systems were used to monitor the receipt and processing of assessment booklets and student questionnaires—the Process Control System (PCS) and Work Flow Management (WFM) system. These systems enabled Pearson’s project staff to determine the status of any selected school, verify materials

from a completed school had been received, identify discrepancies in student or school information, and obtain information on the status of data processing activities for a particular batch of booklets.

The PCS was used to monitor the status of all schools participating in the TIMSS Bridge study and eTIMSS. The PCS contained all participating schools and the completion status. Assessment booklets and student questionnaires for the Bridge study and the student questionnaires for eTIMSS were returned to Pearson packaged in their original boxes. Prior to shipping, a barcoded label, containing a school number and session number, was applied to each session box for a school. Upon arrival at Pearson, the barcode on each box was scanned and school information uploaded into the PCS. A daily receipt report was provided to project staff.

Field staff checked each school/session shipment to verify that the contents in the box matched the school ID on the label and the Student Tracking Form returned with each session. Each school shipment was then checked for completeness and accuracy based on procedures outlined in the IEA Survey Operations Manual. Any discrepancies were noted and project staff were alerted to determine the cause. Once a school shipment (all session boxes) was opened and verified as being complete, the assessment booklets and student questionnaires were organized into work units and batched. The computerized Workflow Management System allowed project staff to track the flow of work through every processing step.

Booklet Accountability

Prior to the distribution of the TIMSS Bridge study assessment booklets, a barcode was applied to each assessment booklet. These booklets were then organized into bundles. The barcodes within each bundle were scanned to a file that was used to control distribution to a particular school or field staff. The bundles were then assigned to each TIMSS Bridge study session on the file sent to Pearson from Westat. Assignment of bundles to schools and/or administrators was recorded in the Materials Distribution System.

After receipt of the school shipment, a manual count was made to ensure all assessment booklets from the original bundle(s) were present. The assessment booklets were submitted for scanning and editing. Any unused booklets were batched and the barcode on each booklet scanned. This file and the processed documents file were compared to the original bundle security file created before distribution. This comparison provided a list of nonreceipt of individual assessment booklets. The list was given to the Westat home office, where further inquiries were done on return of the assessment booklets to Pearson. It was determined all assessment booklets were returned to Pearson.

After the batches of assessment booklets and student questionnaires successfully passed the scanning and editing process, they were sent to the warehouse for storage. The storage locations of all documents were recorded in Pearson’s inventory control system, which permits the rapid retrieval of any document, should it be necessary. Used and unused materials were securely stored until permission was given to destroy them.

4.5.2 Scoring the Assessment Items

In the United States, the scoring of the open-ended, constructed-response item in mathematics and science at grades 4 and 8 for the 2019 eTIMSS, TIMSS Bridge study, Trend Scoring Reliability Study (TSRS), and Cross-Country Scoring Reliability Study (CCSRS) items was completed by Pearson. Scoring rubrics developed internationally were available to guide the scoring of each open-ended, constructed-response item.

Training activities for the scorers followed the same routine as the international training, with supervisors leading each small team reading the item prompt; reading the rubric or scoring guide aloud; reading aloud each of the anchor papers and explaining the reasoning behind the score; allowing the scorers time to complete the practice papers; reviewing each of the practice papers; and opening individual scoring on Pearson’s scoring system for the TIMSS Bridge items and the international contractor’s eTIMSS scoring system based on the IEA’s CodingExpert software.

Training

The United States sent one scoring representative to attend the grade 4 and grade 8 international scoring training in Cape Town, South Africa, in November 2018. These training sessions were sponsored by IEA (International Association for the Evaluation of Educational Achievement) and were mandatory to participate in the TIMSS 2019 assessment. Materials from these sessions along with additional materials constructed specifically for this purpose were used to train the scoring supervisors, team leaders, and scorers.

There were 10 scoring trainers hired to train and oversee the scorers. Ten team leaders and 69 scorers were organized into 10 teams, with 6 to 8 scorers per team to score these items. All were hired based on their experience with similar mathematics and science scoring projects.

Once responses from 2019 were available in the eTIMSS scoring system and Pearson’s scoring system, all 10 trainers reported to review responses and to create new training sets. The current year responses were used to assemble a set for all items with no TIMSS-provided set. In some cases, responses were used to supplement existing national paper trend item training sets. The typical training set consisted of approximately 10 example responses and 10 practice responses that were prepared with a key and brief annotations.

Scorers reviewed the relevant information from the TIMSS 2019 Scoring Operations Manual on how to access and use the eTIMSS Scoring System. The leaders also reviewed the process for scoring the responses from the paper booklets via the Pearson scoring system.

Scoring

The U.S. TIMSS scoring continued with the train-score model used in past administrations. The items were trained one at a time with all student responses from a single item being scored before the team moved on to the next item. For items that had both paper and eTIMSS responses, the items were trained and scored back-to-back in most cases. The distinct scoring guides for each version were presented even when they were essentially identical. Team leaders controlled the assignments so that scorers could only work on the appropriate pool of responses for one item at a time.

The scoring of the eTIMSS constructed-response items, as well as the trend and cross-country reliability scoring for all countries, was completed via the eTIMSS Scoring System, which is based on the IEA’s CodingExpert software.

All items had examples provided as part of the training sets. Nearly all sets included practice papers as well. Trainers first covered the rubric, the example papers, and then, had the scorers complete the practice papers. The group discussed the fine lines of scoring categories before proceeding into scoring.

For trend items with Bridge study and eTIMSS responses, the judgement of which pool of responses was scored first was left to the discretion of the trainer. For many items, it proved beneficial to score the eTIMSS responses and then move to the handwritten paper responses. In some cases, usually due to a wider variety of responses, the trainers chose to score the paper responses first. Regardless of which set of responses was scored first, trainers made a point of taking a breather between modes. Prior to moving to the other scoring mode, the scoring teams reviewed the pertinent version of the rubric.

Scoring quality was monitored continuously throughout the scoring session. Both scoring systems provided inter-rater reliability reports. However the reports from the CodingExpert system did not provide data until scoring was completed. Another monitoring method used was the back-reading of already scored responses. This allowed the scoring team leader to look at responses by category. The scoring team leader also could review responses either by scorer or by score point agreements or splits. Scoring team leaders checked completion statistics as well. The United States scored approximately 404,200 grade 4 and grade 8 open-ended, constructive student responses in mathematics (122,447 responses) and science (281,740 responses). See table 4-2.

Table 4-2. Number of student responses in mathematics and science, by grade, TIMSS 2019

	Mathematics items	Science items
Total	122,447 responses	281,740 responses
eTIMSS		
Grade 4	29,114 responses	110,771 responses
Grade 8	45,754 responses	124,690 responses
Bridge		
Grade 4	18,921 responses	17,640 responses
Grade 8	18,533 responses	18,919 responses
Trend (TSRS)		
Grade 4	2,255 responses	2,255 responses
Grade 8	2,870 responses	2,665 responses
Cross-country (CCSRS)		
Grade 4	2,200 responses	2,200 responses
Grade 8	2,800 responses	2,600 responses

SOURCE: International Association for the Evaluation of Educational Achievement (IEA), Trends in International Mathematics and Science Study (TIMSS), 2019.

Trend Reliability Scoring

To document the reliability of constructed-response scoring between the TIMSS 2019 scorers and the TIMSS 2015 scorers in the United States, TIMSS included a trend scoring reliability study. The trend reliability scoring allows scorers of the TIMSS 2019 assessment to score a subset of student responses collected in the United States for TIMSS 2015.

The IEA Data Processing Center (DPC) assembled a sample of student responses to be scored and distributed it to each participating education system. Only education systems participating in 2019 that also participated in TIMSS 2015 took part in the trend scoring reliability study.

The trend reliability scoring was conducted using the IEA's CodingExpert software provided by IEA. Student responses included in the trend reliability scoring were actual student responses to 22 fourth-grade and 27 eighth-grade items (four item blocks) collected during the TIMSS 2015 assessment administration.

Similar to the within-country reliability scoring, the trend reliability was blended in with the eTIMSS scoring procedures and was ongoing throughout the scoring process.

The total number of responses (typically around 200) were divided equally by the number of scorers who were assigned to the items. The main trend reliability scoring process took place in parallel with the main study scoring for TIMSS 2019.

Cross-Country Scoring Reliability Study

In international assessments, it is also important to gather information about how reliably the scoring was conducted from country to country so that valid international comparisons can be made of students' achievement. To document the reliability of constructed-response scoring across TIMSS countries, a Cross-Country Scoring Reliability Study was conducted. The Cross-Country Scoring Reliability Study was introduced to estimate the degree of agreement between scorers in different countries. Cross-country reliability scoring allows scorers from each participating country to score the same set of student responses from other English-speaking countries.

The IEA Data Processing Center assembled a sample of student responses to be scored and distributed the sample to each participating education system. The sample responses involved 22 items at grade 4 and 27 items at grade 8. All of the items were trend items from TIMSS 2015.

Just like the trend reliability scoring, the cross-country reliability scoring was conducted using the IEA's CodingExpert software provided by IEA. All scorers from each of the small TIMSS 2019 teams assigned to the items in this study participated in the cross-country reliability scoring. The CodingExpert software distributed the student responses among all the scorers assigned to a specific item. Once scoring was completed, the scored files were sent back to the IEA through a secure FTP site.

4.5.3 Data Entry and Editing

The data in the TIMSS Bridge scannable student booklets and student questionnaires was collected with an optical-scanning equipment that captured images of the open-ended, constructed-response items; multiple-choice responses, and intelligent character recognition (ICR) fields.

The data values captured from the multiple-choice items were coded as numeric data. Unmarked fields were coded as blanks and the editing staff was alerted to missing or encoded critical data. The images of open-ended, constructed-response items were saved as a digitized computer file and uploaded into the scoring system for TIMSS Bridge scoring. ICR was used to read various hand and machine printing in the documents. Image clips of the ICR fields were displayed to online editing staff for verification. In addition to capturing the student responses, the barcode identification numbers used to maintain process control were decoded and transcribed to the TIMSS computerized data file.

Each data set produced by the scanning system was validated for type and range of response. The data-entry and resolution system used was able to simultaneously process a variety of materials from all grades, subject areas, assessment booklets, and student questionnaires as the materials were submitted to the system from scannable media.

The data records in the scan file were organized in the same order in which the paper materials were processed by the scanner. As the program processed each record within a batch from the scan file, it wrote the edited and reformatted data records to the pre-edit file and recorded all errors on the edit file. The program generated an online edit file of the data problems and resolution guidelines. Image clips requiring edits were routed to online editing stations for the imaged scanned documents.

All data values that were out of range were read “as is” but were flagged as suspect. All data fields that were read as asterisks (*) were recorded on the online edit file. Since the asterisk code indicated a double-response, these items were identified for possible resolution by editing staff. Each field was validated for range response and any values outside of the specified range. Corrections were made immediately. The system employed an edit/verify system, which meant two different people viewed the same suspect data and operated on it separately. The verifier made sure the two responses (one from either the entry operator or the ICR engine) were the same before the system accepted the item as being correct. If it could not be determined, it was escalated to a supervisor.

When the edit process produced an error-free file, the booklet ID number was posted to the TIMSS 2019 tracking file by grade and school. This permitted staff to monitor the TIMSS processing effort by accurately measuring the number of documents processed. The posting of booklet IDs also ensured that a booklet ID was not processed more than once.

File Creation and Consistency Checks

In a final step, the data from the assessment score files were merged with the student scanned data. At this time, final output files were produced for each file type. The final files were checked to ensure the data were in the correct format. In earlier editing functions, data were checked for completeness and compliance with the international codebook specifications. In addition, a check was performed to verify correct linking and matching of student and school data files. The student data files were loaded in the IEA Data Management Expert (DME) software such that all data from the assessments and questionnaires were available in the format required by IEA.

4.6 Data Preparation

Data collected for the TIMSS 2019 main study were imported into data files according to a common international format, as specified in the IEA Data Management Expert—TIMSS 2019 MS data entry software. The software facilitated the data verification, correction, and validation by providing various internal data consistency checks.

The data files in this format were sent to the IEA Hamburg (formerly known as the IEA Data Processing Center), where they were subjected to an extensive series of data cleaning and consistency checks. The overriding concern of these checks was to ensure that all information in the database conformed to the internationally defined data structure, national adaptations to questionnaires are reflected appropriately in the codebooks and documentation, and all variables used for the international comparisons were comparable and valid across participating countries and education systems.

4.6.1 International Data Cleaning Procedures

The IEA Hamburg is responsible for checking the data files from each country and education system, applying international standard data cleaning rules to verify and validate the accuracy and consistency of the data and documenting electronically any deviations from the international file structure and approved

national adaptations. Queries arising during the data cleaning process were addressed to national centers, and the process was repeated as necessary to ensure all data are consistent and comparable within and between participating countries.

Following the international data cleaning process, countries and education systems were provided national univariate and reliability statistics along with data almanacs containing international univariate and item statistics. These materials allowed countries and education systems to examine their data with those of other participating nations and education systems. Once any problems arising from this examination were resolved, sampling weights produced by Statistics Canada and IRT-scaled student proficiency scores in mathematics and science were added to the data files.

Detailed information on the entire data entry and cleaning process can be found online in the *Methods and Procedures: TIMSS 2019 Technical Report* at <https://timssandpirls.bc.edu/timss2019/methods>.

4.6.2 Data Confidentiality Safeguards

While the National Center for Education Statistics (NCES) and data contractors routinely pledge confidentiality to respondents, concerns about the potential for disclosure of information about individual survey respondents have recently increased, particularly with software and online services available to individuals that could facilitate respondent identification. Data confidentiality laws have been enacted since the Privacy Act of 1974 to further ensure the protection of personally identifiable information (PII). The Education Sciences Reform Act of 2002 explicitly requires that NCES protect the confidentiality of all data collected from respondents in NCES-sponsored surveys. More specifically, NCES Standard 4-2, *Maintaining Confidentiality*, provides the guidelines for limiting the risk of data disclosure for data released by NCES (Seastrom 2002). Data disclosure occurs when an individual respondent has been identified with the survey item responses and other external data sources. The procedures used to reduce the risk of data disclosure for TIMSS 2019, in accordance with the guidelines specified in NCES Standard 4-2, are described below.

All students, teachers, and schools participating in TIMSS 2019 do so with the assurance that their identities would not be disclosed. All employees handling the data have signed affidavits of data confidentiality. The names of schools, students, and teachers are removed from the TIMSS questionnaires and assessment booklets by the field staff, who either physically cut or black out the names on the corresponding TIMSS forms. Computer-generated school, student, and teacher IDs replace school, student, and teacher names. Furthermore, hard-copy questionnaires and assessment booklets are sealed by

security stickers to ensure that neither school nor project field staff can access the questionnaire responses provided by the respondents.

Additionally, the following NCES disclosure statement appears on the login page for TIMSS 2019 and the front cover of the printed questionnaires (the phrase “*search existing data resources, gather the data needed*” is not included on the student questionnaire):

The National Center for Education Statistics (NCES), within the U.S. Department of Education, conducts TIMSS in the United States as authorized by the Education Sciences Reform Act of 2002 (ESRA 2002, 20 U.S.C. §9543). All of the information you provide may be used only for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law (20 U.S.C. §9573 and 6 U.S.C. §151).

According to the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless such collection displays a valid OMB control number. The valid OMB control number for this voluntary information collection is 1850-0695. The time required to complete this information collection is estimated to average [XX] minutes per [respondent type], including the time to review instructions, [search existing data resources, gather the data needed], and complete and review the information collection. If you have any comments or concerns regarding the accuracy of the time estimate(s), suggestions for improving the form, or questions about the status of your individual submission of this form, write directly to: Trends in International Mathematics and Science Study (TIMSS), National Center for Education Statistics, Potomac Center Plaza (PCP), 550 12th St., SW, 4th floor, Washington, DC 20202. OMB No. 1850-0695, Approval Expires 01/31/2021.

After the TIMSS 2019 data are collected, procedures are implemented to ensure the confidentiality of the school, student, and teacher responses. The Institute of Education Sciences (IES) requires that survey data cannot be transmitted to foreign entities prior to ensuring the confidentiality of the data and approval by the IES Disclosure Review Board. The TIMSS 2019 disclosure analyses focused on the two Disclosure Review Board-required components for securing the confidentiality of the TIMSS 2019 data. These components include the following:

- The identification and masking of potential disclosure-risk TIMSS 2019 schools by comparing the study variables with publicly available school files, using probabilistic matching and deterministic swapping on school-level data; and
- The implementation of an additional measure of uncertainty of school, student, and teacher identification with the random swapping of data elements within the school, student, and teacher files.

The confidentiality analyses are designed to provide reasonable assurance that the TIMSS 2019 U.S. public-use data files will not allow identification of individual schools, students, or teachers when compared to publicly available data collections. No publicly available data collections identify either students or teachers by name, but two data collections identify schools by name.

The NCES regularly publishes the Common Core of Data (CCD), a detailed public school listing, and the Private School Survey (PSS), a detailed private school listing. Merging of the restricted-use files with the CCD/PSS data may reveal the identities of the participating schools. However, the confidentiality procedures included perturbing student- and teacher-level data thus providing a reasonable degree of assurance that teachers and students, who participated in the TIMSS 2019 schools remain unidentifiable. It should be noted that the TIMSS 2019 data do not contain any information of a personal or sensitive nature.

Because the variables in the TIMSS 2019 data files are obtained from responses to the school questionnaire, which often vary from the CCD and PSS data, exact profile matches are unlikely. Even then, one would not know with certainty whether any of the matched schools are the actual TIMSS 2019 schools or whether the match had simply arisen by chance. Nevertheless, school matching analyses were undertaken using probabilistic matching algorithms approved by the IES Disclosure Review Board for use in the data disclosure analyses. These algorithms identify schools whose school questionnaire responses provided some potential for identification. To provide further protection, elements of the data from schools identified as “disclosure risks” in this way are perturbed using the procedures approved by the IES Disclosure Review Board. After perturbation, the data are subjected to another round of analyses to ensure that the potential for identification no longer existed.

An additional measure is taken to reduce further the risk of disclosure of an individual respondent. This random data swapping measure is an IES Disclosure Review Board requirement that reduces disclosure risk by modifying microdata. In random data swapping, a probability sample of records is paired with other records on the file using selected characteristics, and then some identifying variables are swapped between the pairs of records (Kaufman, Seastrom, and Roey 2005). The sampling rate and variables for TIMSS 2019 swapping are designed to protect the confidentiality of the data without affecting the usability of the dataset. All questionnaire data (school, teacher, and student) are involved in the swapping. This method is an effective way of keeping as much valuable data as possible while protecting respondent identity. Swapping preserves the univariate frequencies, means, and variances, although it may slightly affect multivariate relationships. Pre- and post-swapping percentage distributions (unweighted and weighted) and correlations are reviewed to ensure data quality was maintained.

Confidentiality analyses are conducted before the TIMSS 2019 U.S. data files are submitted to the IEA Hamburg for data cleaning and review, and prior to the score scaling and estimation of sampling weights. Because of increasing security concerns from the international community, an additional data confidentiality measure is implemented by the IEA Hamburg for TIMSS 2019. School IDs are scrambled for each education system's participating schools as a security measurement for de-identification. This procedure puts an additional safeguard in place that makes it difficult to trace collected information back to the source. Because of the hierarchical ID naming convention employed by IEA Hamburg, the scrambling of the school IDs also affected the teacher and student IDs, thus making these IDs scrambled as well.

5. TIMSS 2019 Data for the United States

5.1 TIMSS 2019 U.S. International Files Released by IEA

The TIMSS and PIRLS International Study Center in cooperation with the International Association for the Evaluation of Educational Achievement (IEA) releases the TIMSS 2019 international database. The database provides comparable data across education systems on detailed measures of student achievement in mathematics and science for the TIMSS 2019 participating education systems. The databases also include information on educational practices and student outcomes—linking variables from students, teachers, school principals, and curriculum experts on an achievement scale metric that is common to all cycles of TIMSS—allowing for the analysis of trends.

The following list includes the types of data available from the international databases:

- Background questionnaire files with information from students, from their mathematics and science teachers, and from the principals of their schools;
- Achievement files containing item response data and scale scores for the TIMSS assessment;
- Student-teacher linkage files that contain the information needed to link data on students to that of their teachers;
- Constructed-response scoring reliability files providing data on the reliability of scoring for this type of item; and
- Curriculum data files that contain the responses of countries or participating education systems to the curriculum questionnaires.

The TIMSS 2019 International Database is available in two versions: A public-use version and a restricted-use version. Discussions of the public- and restricted-use datasets can be found in *Methods and Procedures: TIMSS 2019 Technical Report* at <https://timssandpirls.bc.edu/timss2019/methods>, and the *TIMSS 2019 User Guide for the International Database* at <https://timssandpirls.bc.edu/timss2019/international-database/>. These two documentations are the more comprehensive and detailed information for the TIMSS 2019 data and should represent as the primary references.

The public-use version is available on the TIMSS 2019 International Database webpage: at <https://timssandpirls.bc.edu/timss2019/international-database/>. The TIMSS 2019 International Database is also available for download at the IEA Study Data Repository website: <https://www.iea.nl/data>. The

repository allows users to download the data files and accompanying support materials from all recent IEA studies, including eTIMSS 2019, the TIMSS 2019 Bridge, and eTIMSS with Problem Solving and Inquiry (PSI) 2019.

In the public use version, some variables are removed to minimize the risk of disclosing confidential information. The list of variables removed from the public use version is given in chapter 2 of the International User Guide. Users who require any of the removed variables to conduct analyses should contact the IEA through the IEA Data Repository to obtain permission and access to the restricted-use version of the TIMSS 2019 international database (<https://www.iea.nl/node/3263>).

The U.S. international data files, which are part of the TIMSS 2019 international databases, do not include the U.S.-specific items added to the school, teacher, and student questionnaires, such as the question on race/ethnicity added to the student questionnaire. NCES releases the U.S.-specific variables separately from the international databases mentioned above. This chapter focuses on the contents of the NCES released data files.

5.2 TIMSS 2019 U.S.-Specific Data Files Released by NCES

For the U.S.-specific data files, NCES releases the data in two versions: public- and restricted-use data files. *These files are considered add-on files and do not contain plausible values, weight variables, or replicate weights; therefore, they must first be merged with the U.S. data files in the IEA's international database before any analyses can be conducted.* The U.S. national public- and restricted-use files include U.S.-specific variables that are not part of the U.S. international data files.

- Public-use data files: These data are available by download from <https://nces.ed.gov/timss/publications.asp>. The data files are in ASCII format and are named as indicated in exhibit 5-1 for the main study and the bridge study. Researchers can download the SAS and SPSS codes for reading these data files from the NCES website.
- Restricted-use data files: Researchers can only obtain these data by completing a restricted-use license agreement with NCES. These datasets contain the supplemental link files that link TIMSS 2019 school identification numbers to the school identification numbers as they appear in the publicly available Common Core of Data (CCD) or the Private School Universe Survey (PSS). In addition, the student race/ethnicity variable is provided with all available categories, and the percentage of students eligible for free or reduced-price lunch in the school is provided as a continuous variable. The NCES U.S. restricted-use files also include variables in the IEA international restricted-version of the U.S. files. Because these data can reveal the

identities of participating schools, the restricted-use data files are only made available to those who obtain a NCES restricted-use data license. Researchers can find the directions on how to obtain the license at <https://nces.ed.gov/pubsearch/licenses.asp>. Exhibits 5-2 lists the restricted-use data files released by NCES.

Exhibit 5-1. U.S. TIMSS 2019 data files released by NCES, public-use version

Contents	File name
eTIMSS Grade 4:	
School national variables	T4_SCHOOL19
Teacher national variable	T4_TEACHER19
Student national variables	T4_STUDENT19
eTIMSS Grade 8:	
School national variables	T8_SCHOOL19
Mathematics teacher national variables	T8_MTEACHER19
Science teacher national variables	T8_STEACHER19
Student national variables	T8_STUDENT19
TIMSS Grade 4 Bridge Study:	
School national variables	T4_SCHOOL19_BRIDGE
Teacher national variable	T4_TEACHER19_BRIDGE
Student national variables	T4_STUDENT19_BRIDGE
TIMSS Grade 8 Bridge Study:	
School national variables	T8_SCHOOL19_BRIDGE
Mathematics teacher national variables	T8_MTEACHER19_BRIDGE
Science teacher national variables	T8_STEACHER19_BRIDGE
Student national variables	T8_STUDENT19_BRIDGE

SOURCE: U.S. Department of Education, National Center for Education Statistics, Trends in International Mathematics and Science Study (TIMSS), 2019.

Exhibit 5-2. U.S. TIMSS 2019 data files released by NCES, restricted-use version

Contents	File name
eTIMSS Grade 4:	
Restricted-use school variables	T4_RESTRICTED_USE19_SCH
Restricted-use student variables	T4_RESTRICTED_USE19_STUD
eTIMSS Grade 8:	
Restricted-use school variables	T8_RESTRICTED_USE19_SCH
Restricted-use student variables	T8_RESTRICTED_USE19_STUD
TIMSS Grade 4 Bridge Study:	
Restricted-use school variables	T4_RESTRICTED_USE19_SCH_BRIDGE
Restricted-use student variables	T4_RESTRICTED_USE19_STUD_BRIDGE
TIMSS Grade 8 Bridge Study:	
Restricted-use school variables	T8_RESTRICTED_USE19_SCH_BRIDGE
Restricted-use student variables	T8_RESTRICTED_USE19_STUD_BRIDGE

SOURCE: U.S. Department of Education, National Center for Education Statistics, Trends in International Mathematics and Science Study (TIMSS), 2019.

5.3 TIMSS 2019 U.S. Questionnaires

The U.S. national questionnaires differ from the TIMSS 2019 international questionnaires in several ways:

- Minor language/expression adaptations were made to some of the instructions on the school, teacher, and student questionnaires.
- For a few questionnaire items, response categories were adapted but in a way that allowed mapping to the international response categories in the U.S. international data files.
- Several U.S.-specific variables without international counterparts were added to the school, teacher, and student questionnaires.

Otherwise, the U.S. questionnaires are the same as the international questionnaires. For standard international versions of TIMSS 2019 questionnaires, please see Supplement 1 of the *TIMSS 2019 User Guide for the International Database* (Fishbein, Foy, and Yin 2021) at https://timss2019.org/international-database/downloads/T19_UG_Suppl-international-context-questionnaires.pdf. For the U.S. versions of TIMSS questionnaires, please download from the NCES website at <https://nces.ed.gov/timss/questionnaire.asp>. The TIMSS and PIRLS International Study Center also provides a supplement that documents the national adaptations of the international context questionnaires for all participating countries for TIMSS 2019 and it can be found here: https://timss2019.org/international-database/downloads/T19_UG_Suppl2-national-adaptations-database.pdf.

5.3.1 Background Questionnaire Items with U.S. Adaptation to Response Alternatives

There were a number of relatively minor changes to the wording of the international item stems and response alternatives in the questionnaires. Most of these adaptations do not require comment, as they are identical in format between the international and U.S. versions of the questionnaires (e.g., they contain simple wording changes). In some cases, however, the adaptations resulted in item response formats not immediately comparable between the international and national versions of the questionnaires. As indicated in appendix E, there are instances in which the international and U.S. versions of variables have different sets of response codes, for example “highest level of formal education” in the teacher questionnaire. However, as indicated in appendix E, crosswalks between international and U.S. versions of these questions allow for the conversion of the U.S. response codes to the international format.

5.3.2 Overview of the U.S.-Specific Variables

There are two types of U.S.-specific variables: those with data from a source other than a questionnaire, and those with data collected through questionnaires from national questions added to the international version of the questionnaires.

Variables With Data from Sources Other Than a Questionnaire

Data collected from school records covered the following information:

- **PUBPRIV:** Whether a school was public or private. Information for this variable is derived from the Common Core of Data (CCD) 2016–2017 for the public schools and the Private School Universe Survey (PSS) 2015–2016 for the private schools. Although information about the type of school is available in the school questionnaire with nine separate categories that differentiate the types of public, private, charter, and alternative schools, the derived variable for public or private school provides a collapsed binary indicator for identifying schools as either public or private. Because the 9-category “type of school” variable came from the principals’ responses while the binary variable is derived from CCD, the data from the former variable may not match the data from the latter one. For example, for the schools with missing data in the 9-category “type of school” variable, data are available in the derived variable. This variable is included in the public-use school files.
- **PCTFRPL:** The categorical variable of the poverty level in school as measured by the percentage of students eligible for free or reduced-price lunch. Information for this variable is derived from the Common Core of Data (CCD) 2016–2017 for the public schools and the Private School Universe Survey (PSS) 2015–2016. Although information about the poverty level in school is available in the school questionnaire as a continuous response, the derived variable for the percentage of students eligible for free or reduced-price lunch provides a collapsed categorical indicator for identifying schools in five categories for poverty level. For the public-use school data file, information from CCD is used to derive a new variable with five categories: (1) less than 10 percent; (2) 10 to 24.9 percent; (3) 25 to 49.9 percent; (4) 50 to 74.9 percent; and (5) 75 percent or more.

Variables with Data Collected Through Questionnaires

Several U.S.-specific items were added to the school, teacher, and student questionnaires. At grade 4, five questions were added to the TIMSS **school** questionnaires, and six questions were added for grade 8. In grade 8, the question about evaluating the practice of teachers was asked separately for mathematics and science teachers:

1. The percentage of students in the school eligible for free or reduced-price lunch;
2. The percentage of students in the school who are English learners;
3. A specification of the type of school;
4. A question about the average income level of the school's immediate area; and
5. A multiple-part question about evaluating the practice of teachers.

For the TIMSS **teacher** questionnaires, one question was added at grade 4 that asked teachers to identify the year they started teaching. At grade 8, mathematics and science teachers were asked to identify the year they started teaching. Grade 8 mathematics teachers were asked to identify the title of the mathematics course being taught to the students being assessed. Grade 8 science teachers were asked to identify the title of the science course being taught to the students being assessed.

Nine questions were added to the TIMSS 2019 **student** questionnaires:

1. A two-part question designed to measure the student's race/ethnicity;
2. A question that asked for language other than English spoken at home;
3. A question about additional activities outside of school;
4. A question about participation in science club, science fair, or science competition;
5. A multiple-part question that asked students to indicate whether they had repeated a grade in school;
6. A question that asked about number of days absent;
7. A question that asked students to indicate how hard the test was compared to other tests they have taken this year in school;
8. A question that asked students to indicate how hard did the students try on the test compared to other tests they have taken this year in school; and
9. A question that asked students to indicate the importance of doing well on the test.

The following sections include detailed descriptions of the U.S.-specific variables.

5.3.3 U.S.-Specific Variables on School Questionnaire

This section describes the U.S.-specific variables added to the TIMSS 2019 school questionnaire for both grades 4 and 8.

Free or Reduced-Price Lunch

ACXG04/BCXG04 (Grade 4/Grade 8): NAT\PERCENT STUD FREE REDUCE LUNCH

The percentage of students in the school eligible for free or reduced-price lunch is used as a school measure of poverty level, and it is obtained from school principals' responses to the school questionnaire. The question asked the school principal to report, as of approximately October 2018, the percentage of students at the school eligible to receive free or reduced-price lunch through the National School Lunch Program (NSLP). This continuous variable is provided in the restricted-use school data file. Because the continuous form of the variable came from the principals' responses while the categorical form of the variable is derived from CCD for the public schools and PSS for the private schools (as described in 5.3.2, in the *Variables with Data from Sources Other Than a Questionnaire*), the data from the former form may not match the data from the latter form. For example, if data from the school questionnaire is unavailable, information from the CCD for the public schools and PSS for the private schools is recorded in the public-use school file, but recorded as "missing" in the restricted-use school file. The effect of this replacement on the confidentiality of the data was examined as part of the confidentiality analyses described earlier in chapter 4. The percentage of students in the school eligible for free or reduced-price lunch variable is provided in the restricted-use school data file.

Limited-English Proficient (LEP)/English Language Learners (ELL)

ACXG06/BCXG06 (Grade 4/Grade 8): NAT\PERCENT ENROLLED LEP/EL

The percentage of students in the school who are English learners is obtained from school principals' responses to the school questionnaire. School principals are asked to report the percentage of currently enrolled students who have been identified as limited-English proficient (LEP)/English learners (EL) at the school. The school principals were asked to report the percentage of such students with the following eight response categories: (1) 0 percent; (2) 1–5 percent; (3) 6–10 percent; (4) 11–25 percent; (5) 26–50 percent; (6) 51–75 percent; (7) 76–90 percent; and (8) more than 90 percent. The percent enrolled LEP/EL variable is provided in the public-use school data file.

Type of School

ACXG07/BCXG07 (Grade 4/Grade 8): NAT\TYPE OF SCHOOL

School principals were asked to identify their schools using one of the following 10 response categories: (1) regular public school, (2) regular public school with magnet program, (3) magnet school or school with special program, (4) special education, (5) alternative curriculum, (6) vocational, (7) charter school, (8) independent private school, (9) religiously affiliated private school, or (10) other school. The type of school variable is provided in the public-use school data file.

Average Income Level of School's Immediate Area

ACXG09/BCXG09 (Grade 4/Grade 8): NAT\AVG INCOME LEVEL SCH IMMEDIATE AREA

School principals were asked to indicate the average income level of the school's immediate area using one of the following three response categories: (1) high, (2) medium, or (3) low. The question did not offer income ranges to go with the categories. The average income level of the school's immediate area variable is provided in the public-use school data file.

Evaluating the Practice of Teachers

ACXG21A (Grade 4): NAT\TEACHER EVAL\OBSERV BY PRIN OR SNR STAFF
ACXG21B (Grade 4): NAT\TEACHER EVAL\OBSERV BY EXTERNAL PERSONS
ACXG21C (Grade 4): NAT\TEACHER EVAL\STUDENT ACHIEVE
ACXG21D (Grade 4): NAT\TEACHER EVAL\TEACHER PEER REVIEW

BCXG22A (Grade 8): NAT\TEACHER EVAL\MATH\OBSERV BY PRIN OR SNR STAFF
BCXG22B (Grade 8): NAT\TEACHER EVAL\MATH\OBSERV BY EXTERNAL PERSONS
BCXG22C (Grade 8): NAT\TEACHER EVAL\MATH\STUDENT ACHIEVE
BCXG22D (Grade 8): NAT\TEACHER EVAL\MATH\TEACHER PEER REVIEW
BCXG23A (Grade 8): NAT\TEACHER EVAL\SCIENCE\OBSERV BY PRIN OR SNR STAFF
BCXG23B (Grade 8): NAT\TEACHER EVAL\SCIENCE\OBSERV BY EXTERNAL PERSONS
BCXG23C (Grade 8): NAT\TEACHER EVAL\SCIENCE\STUDENT ACHIEVE
BCXG23D (Grade 8): NAT\TEACHER EVAL\SCIENCE\TEACHER PEER REVIEW

School principals were asked to indicate practices that were used to evaluate teachers at their schools in yes/no responses. For grade 4, this question asked about the fourth-grade teachers. For grade 8, this question asked separately about mathematics and science teachers. These variables are provided in the public-use data file. The following is the list of practices for evaluating teachers:

- Observations by the principal or senior staff;
- Observations by inspectors or other persons external to the school;
- Student achievement; and
- Teacher peer review.

5.3.4 U.S.-Specific Variables on Teacher Questionnaire

This section describes the U.S.-specific variables added to the TIMSS 2019 teacher questionnaire.

Year Started Teaching

ATXG01/BTXG01 (Grade 4/Grade 8): NAT\YEAR STARTED TEACHING

TIMSS grades 4 and 8 teachers were asked to indicate the year that they started teaching. This variable is provided in the public-use teacher data file.

Mathematics Course Taught (TIMSS 8 Teacher Questionnaire only)

BTXM17: NAT\MATH COURSE TEACHING TO TIMSS CLASS

Eighth-grade mathematics teachers were asked about the nature of the mathematics course they taught to the TIMSS students. This variable is provided in the public-use teacher data file.

The response alternatives provided were as follows:

- (1) Basic or general eighth-grade mathematics (not algebra or pre-algebra);
- (2) Pre-algebra or introduction to algebra;
- (3) Two-year pre-algebra;
- (4) Algebra I (1-year course);
- (5) Algebra I (first year of a 2-year algebra I course);
- (6) Algebra I (second year of a 2-year algebra I course);
- (7) Geometry;
- (8) Algebra II;
- (9) Integrated or sequential math; and
- (10) Other math class.

Science Course Taught (TIMSS 8 Teacher Questionnaire only)

BTXS17: NAT\SCIENCE COURSE TEACHING TO TIMSS CLASS

Eighth-grade science teachers were asked about the nature of the science course they taught to the TIMSS students. This variable is provided in the public-use teacher data file. The response alternatives provided were as follows:

- (1) General science (several content areas of science taught separately);

- (2) Integrated science (several content areas of science taught combined and taught together throughout the year);
- (3) Life science (e.g., biology, ecosystems, human health);
- (4) Physical science (e.g., physics or chemistry); and
- (5) Earth science (e.g., geology, Earth and the solar system, fossils).

5.3.5 U.S.-Specific Variables on Student Questionnaire

This section describes the U.S.-specific variables added to the TIMSS 2019 student questionnaire.

Race/Ethnicity

MSRACE: NAT\DERIVED RACE

MSRACE2: NAT\DERIVED RACE-COLLAPSED

Students' race/ethnicity was obtained through student responses to a two-part question in the student questionnaire. Students were asked first whether they were Hispanic or Latino and then whether they were members of the following five racial/ethnic groups: (1) White, (2) Black or African American, (3) Asian, (4) American Indian or Alaska Native, or (5) Native Hawaiian or other Pacific Islander. Multiple responses to the second of these questions were allowed. Race/ethnicity is provided with all categories (seven in total) in the restricted-use dataset.

A collapsed version of this variable with six categories was constructed in which results are shown separately for the following groups: (1) White; (2) Black; (3) Hispanic; (4) Asian; and (5) Two or more races. The sixth category was labeled as "Other" and consisted of students indicating that they were American Indian or Alaska Native, and Native Hawaiian or other Pacific Islander. These two groups were collapsed to maintain student privacy because only a small percentage of students were in these two groups. Race/ethnicity is provided as a composite variable in the public-use dataset.

Language Other Than English Spoken at Home

ASXG03B/BSXG03B (Grade 4/Grade 8): NAT\LANGUAGE SPOKEN AT HOME

This item extended the international question about how often students spoke English at home to ask those students who indicated that they did not always speak English if they spoke Spanish or another language. At grades 4 and 8, students who responded to items ASBG03 (grade 4) and BSBG03 (grade 8) that they “always” speak English at home were supposed to skip items ASXG03B (grade 4) and BSXG03B (grade 8), which ask students to identify the foreign language that they sometimes use at home. However, about 14 percent of students (1255 cases) at grade 4, and 7 percent of students (584 cases) at grade 8 responded that they “always” speak English at home and also identified a foreign language that they sometimes use at home. Language spoken at home is provided as a variable in the public-use dataset.

Additional Outside Activities

ASXG08A/BSXG10A (Grade 4/Grade8): NAT\ACTIVITIES OUTSIDE SCHOOL - SPORTS TEAM

ASXG08B/BSXG10B (Grade 4/Grade 8): NAT\ACTIVITIES OUTSIDE SCHOOL - MUSICAL INSTRUMENT

ASXG08C/BSXG10C (Grade 4/Grade 8): NAT\ACTIVITIES OUTSIDE SCHOOL - STUDYING IN CLASS

ASXG08D/BSXG10D (Grade 4/Grade 8): NAT\ACTIVITIES OUTSIDE SCHOOL - CLUB

The measure of outside of school activities was collected using a prompt with four yes/no questions. These variables are provided in the public-use dataset. The prompt states, “The following questions ask about the activities you do outside of school.” The yes/no questions were as follows:

- Do you play on a sports team outside of school?
- Do you often play a musical instrument outside of school?
- Are you studying something in a class outside of school?
- Do you belong to a club outside of school (like Girl Scouts, Cub Scouts, 4-H, or Boys and Girls Club)?

Participation in Science Club, Science Fair, or Science Competition

ASXG09 (Grade 4): NAT\PARTICIPATED IN SCIENCE CLUB, FAIR, OR COMPETITION

BSXG11A (Grade 8): NAT\PARTICIPATED IN SCIENCE ACTIVITIES\SCIENCE FAIR

BSXG11B (Grade 8): NAT\PARTICIPATED IN SCIENCE ACTIVITIES\SCIENCE CLUB
BSXG11C (Grade 8): NAT\PARTICIPATED IN SCIENCE ACTIVITIES\SCIENCE COMPETITION

For TIMSS grade 4, students were asked if they are preparing for or have participated in a science club, a science fair, or a science competition in a yes/no question. For TIMSS grade 8, students were given three yes/no questions. These variables are provided in the public-use dataset. The prompt states, “In this school year, are you preparing for or have you participated in any of the following activities?” The yes/no questions were as follows:

- Science fair;
- Science club; and
- Science competition.

Number of Days Absent

ASXG11B/BSXG12B (Grade 4/Grade 8): NAT\DAYS ABSENT FROM SCHOOL

TIMSS students were asked about their school attendance over the last month prior to the assessment. The students were asked to select one response option. This variable is provided in the public-use dataset. The question and response options were as follows: How many days were you absent from school in the last month?

- None;
- 1 or 2 days;
- 3 or 4 days;
- 5 to 10 days; or
- More than 10 days.

Repeating a Grade

ASXG10 (Grade 4): NAT\REPEATED A GRADE IN ELEM SCHOOL
BSXG13A (Grade 8): NAT\REPEAT GRADE\ELEMENTARY
BSXG13B (Grade 8): NAT\REPEAT GRADE\MIDDLE OR JUNIOR HIGH SC

Fourth-grade students were asked whether they had ever repeated a grade in “elementary school.” Eighth-grade students were asked whether they had ever repeated a grade in either “elementary school” and/or “middle or junior high school.” The response alternatives were yes/no in each case. These variables are provided in the public-use dataset.

Difficulty of the Test

ASXG24/BSXG31 (Grade 4/Grade8): NAT\HOW HARD WAS TEST

TIMSS students were asked how hard was the TIMSS assessment compared to most other tests they have taken this year in school. This variable is provided in the public-use dataset. The response options were as follows:

- Easier than other tests;
- About as hard as other tests;
- Harder than other tests; or
- Much harder than other tests.

Effort on the Test

ASXG25/BSXG32 (Grade 4/Grade8): NAT\HOW HARD DID YOU TRY ON TEST

TIMSS students were asked how hard they tried on the TIMSS assessment compared to most other tests they have taken this year in school. This variable is provided in the public-use dataset. The response options were as follows:

- Not as hard as on other tests;
- About as hard as other tests;
- Harder than other tests; or
- Much harder than other tests.

Importance of the Test

ASXG26/BSXG33(Grade 4/Grade8): NAT\HOW IMPORTANT TO DO WELL

TIMSS students were asked how important it was to them to do well on the TIMSS assessment. This variable is provided in the public-use dataset. The response options were as follows:

- Not very important;
- Somewhat important;
- Important; or
- Very important.

5.3.6 Missing Data

Data derived from the school, teacher, and student questionnaires and from the student assessments contain missing data in varying amounts. There are three categories of missing data:

- Not administered (SAS: .A ; SPSS: SYSMIS) The respondent was not administered the item. Respondent had no chance to read and answer the question.
- Omitted or invalid (SAS: . ; SPSS: 9, 99, 999, ...). The respondent had a chance to answer the question but did not do so. This code also was used for responses that were not interpretable.
- Not applicable (SAS: .B ; SPSS: 6, 96, 996, ...). The respondent answered a preceding filter question in a way that made the following dependent questions not applicable to the respondent.

SAS and SPSS control code for all the data files include the code for handling/converting missing data.

5.3.7 Imputation

No imputation for missing values was undertaken. However, missing data on the measure of school poverty (proportion of students eligible for free or reduced-price lunch) reported by schools was replaced in the public-use school file as described in the Free or Reduced-Price Lunch section of this chapter.

5.4 Variable Names

5.4.1 Identification Variables

The following identification variables are used to identify uniquely each record in the U.S. data files:

- IDCNTRY is a three-digit country identification code based on the ISO 3166 classification. This variable should always be used as the first linking variable whenever files are linked within and across countries.
- IDSCHOOL is a four-digit identification code that uniquely identifies the participating schools within each country. The school codes are generated and assigned specifically for TIMSS 2019 and are not meant to represent actual school identifiers in the participating countries. They are not unique across countries. Schools across countries can be identified uniquely only with the IDCNTRY and IDSCHOOL combination of linking variables.
- IDSTUD is an eight-digit identification code that uniquely identifies each sampled student in a country. The variable IDSTUD also has a hierarchical structure and is formed by concatenating the IDCLASS variable and a two-digit sequential number identifying all students within each classroom. Students can be identified uniquely in the database by the combination of IDCNTRY and IDSTUD as linking variables.
- IDTEALIN is an aggregation of IDTEACH and IDLINK. IDTEACH is a six-digit identification code that uniquely identifies a teacher within a school. It has a hierarchical structure and is formed by the concatenation of IDSCHOOL and a two-digit sequential number within each school. IDLINK uniquely identifies the class for which a teacher answered a questionnaire. IDTEALIN can be used with IDCNTRY, instead of IDTEACH and IDLINK, to uniquely identify all teacher-class combinations in the database.

These variables are duplicates of the variables in the in the international files and are used for merging the U.S. national public-use or restricted-use files with the international files. Additional information about the variables can found in the *TIMSS 2019 User Guide for the International Database* (Fishbein, Foy, and Yin 2021), available at this web address: <https://timssandpirls.bc.edu/timss2019/international-database/>.

5.4.2 Variable Naming Conventions for Background Variables

The background variable naming convention is based on a seven- or eight-character string defined below. These conventions are illustrated by reference to an item in the fourth-grade school questionnaire. This item asks principals to report the population size of the community in which the school is located.

First character of the variable name (ACBG05A):

- A – TIMSS 2019 fourth grade
- B – TIMSS 2019 eighth grade

Second character of the variable name (ACBG05A):

- C – school principal
- T – teacher
- S – student

Third character of the variable name (ACBG05A):

- X – national background variable
- B – all international background variables in the questionnaire data files
- D – all international derived variables

Fourth character of the variable name (ACBG05A):

- G – general question (not subject specific)
- M – question related to mathematics
- S – question related to science
- B – question specific to biology
- C – question specific to chemistry
- E – question specific to Earth science
- P – question specific to physics

Note that in the fourth character of the variable name, the letters “B,” “C,” and “E,” and “P” are used in the eighth-grade student background data files for variables corresponding to questions about separate sciences asked in the separate science version of the student questionnaire for countries that administered this version of the questionnaire. The United States administered integrated science questions in the student questionnaire. Therefore, U.S. data are only available for the questions asked about integrated science “S”. The letter “M” is used in the fourth- and eighth-grade student background data files for variables corresponding to questions about mathematics.

Fifth through eighth characters of the variable name (ACBG05A):

- Used to represent the sequential numbering of each question

5.5 TIMSS 2019 NCES U.S. Public-Use Data Files

The country identification variable (numeric codes) and the school identification variable are included in the NCES public-use school, teacher, and student data files. These identification variables are specific to TIMSS 2019 and can be used to merge with TIMSS 2019 IEA international data files. As indicated in exhibit 5-1, the NCES U.S. public-use data files include eTIMSS grades 4 and 8 and the bridge study grades 4 and 8.

5.5.1 Public-Use School Data Files

In addition to the country (IDCNTRY) and the school (IDSCHOOL) identification variables used to merge the files, the public-use school data files include the two non-questionnaire variables listed in section 5.3.2, and the school questionnaire variables listed in 5.3.3. Researchers can merge the public-use school data files with the student and teacher data files by using the country and school identification variables. These variables are also used to merge the NCES U.S. files with the U.S. files in the International Database.

5.5.2 Public-Use Teacher Data Files

Similar to the public-use school data files, the public-use teacher data files include the country (IDCNTRY) and the school identification (IDSCHOOL) variables, as well as the teacher identification variable (IDTEALIN) which is used to merge the teacher data with the student data. The public-use teacher files also include one teacher questionnaire variable in the grade 4 data file and two teacher questionnaire variables in the grade 8 files, as shown in section 5.3.4.

5.5.3 Public-Use Student Data Files

Similar to the public-use school data files, the public-use student data files include the country (IDCNTRY) and the school identification (IDSCHOOL) variables, as well as the student identification variable (IDSTUD), which is used to merge the different student files. The public-use student files also include 13 student questionnaire variables in the grade 4 data file, and 16 student questionnaire variables in the grade 8 files, as shown in section 5.3.5.

5.6 TIMSS 2019 NCES U.S. Restricted-Use Data Files

As indicated in previous section, there is a restricted-use school data file and a restricted-use student data file containing data that may reveal the identities of participating TIMSS 2019 schools. The restricted-use school and student data files include the country identification variable (numeric codes) and the school identification variable. These identification variables are specific to TIMSS 2019 and researchers can use these variables to merge with TIMSS 2019 data files.

5.6.1 Restricted-Use School Data Files

Similar to the public-use school data files, the restricted-use school data files include the country (IDCNTRY) and the school (IDSCHOOL) identification variables. Besides these TIMSS study-related identification variables, the restricted-use school data files also include:

- two enrollment variables, that are not U.S.-specific variables, but are part of the IEA restricted-use files (please see exhibit 2.3 of the *TIMSS 2019 User Guide for the International Database* for a complete list of internationally restricted variables, available at <https://timss2019.org/international-database/>).
 - ACBG01/BCBG01 (GEN\TOTAL ENROLLMENT OF STUDENTS)
 - ACBG02/BCBG01 (GEN\TOTAL ENROLL FOURTH/EIGHT GRADE STD)
- two school identification variables, showing school identification numbers as they appear in the publicly available Common Core of Data (CCD) for public schools, or the Private School Universe Survey (PSS) for private schools:
 - NCESSCH (UNIQUE NCES PUBLIC SCHOOL ID FROM COMMON CORE OF DATA)

- PPIN (UNIQUE PRIVATE SCHOOL ID FROM PRIVATE SCHOOL SURVEY)
- one school questionnaire variable on the percentage of students at the school eligible to receive free or reduced-price lunch through the National School Lunch Program (NSLP) detailed in section 5.3.2.

Researchers may merge the restricted-use school data files with the public-use school, teacher, and student data files by using the country and school identification variables. These variables are also used to merge the NCES U.S. files with the U.S. files in the International Database.

5.6.2 Restricted-Use Student Data Files

Similar to the public-use student data files, the restricted-use student data files include the country (IDCNTRY), school identification (IDSCHOOL), and student (IDSTUD) identification variables. Besides these TIMSS study-related identification variables, the restricted-use school data files also include:

- two student birth date variables, that are not U.S.-specific variables, but are part of the IEA restricted-use files (please see exhibit 2.3 of the *TIMSS 2019 User Guide for the International Database* for a complete list of internationally restricted variables, available at <https://timss2019.org/international-database/>).
 - ASBG02A/ BSBG02A (GEN\DATE OF BIRTH\MONTH)
 - ASBG02B/ BSBG02B (GEN\DATE OF BIRTH\YEAR)
- one student questionnaire variable on students' race/ethnicity detailed in section 5.3.5.

Researchers may merge the restricted-use student data file with the public-use school, teacher, and student data files by using the country, school, and student identification variables. These variables are also used to merge the NCES U.S. files with the U.S. files in the International Database.

5.7 TIMSS 2019 Supplemental Documents and Codebook Files

There are several supplemental documents accompanying each data file released by NCES. As mentioned previously, each data file is in the ASCII format and researchers can use the SAS or SPSS codes provided with the data files to read in the data. Quick guides and README files containing information about the data files are included separately for public- and restricted-use data files. Each data file also has an accompanying codebook in the html format. Illustrative merging codes are included separately for public-

and restricted-use data files for merging the U.S. international and national data files, and merging the U.S.-specific, public- and restricted-use data files.

Researchers can download the files for public-use data from <https://nces.ed.gov/timss/publications.asp>. The codebook files for restricted-use data will require users to complete a restricted-use license agreement with NCES. Researchers can find the directions on how to obtain the license at <https://nces.ed.gov/pubsearch/licenses.asp>.

5.8 Merging TIMSS 2019 Data Files

In preparing the TIMSS 2019 data for analysis, users must merge the NCES U.S.-specific, public- and restricted-use data files with the U.S. TIMSS 2019 international data files released by IEA. The U.S.-specific, public- and restricted-use data file names are included in exhibits 5-1 and 5-2. The list of names for the U.S. international data files that are corresponding to the U.S. data files released by the NCES are in exhibit 5-3.¹¹ Examples of data file merging provided in the following sections are illustrative SAS and SPSS codes using the grade 4 data files. Users of SAS or SPSS software may adapt the illustrative codes for various merges, such as for grade 8 data files, bridge data files, and PSI data files.

Exhibit 5-3. Selected U.S. TIMSS 2019 international data files released by IEA, public-use version

Contents	eTIMSS file name	Bridge Study file name	eTIMSS with PSI 2019 file name
TIMSS Grade 4			
School questionnaire	acgusam7	acgusab7	acgusaz7
Teacher questionnaire	atgusam7	atgusab7	atgusaz7
Student questionnaire	asgusam7	asgusab7	asgusaz7
TIMSS Grade 8			
School questionnaire	bcgusam7	bcgusab7	bcgusaz7
Mathematics teacher questionnaire	btmusam7	btmusab7	btmusaz7
Science teacher questionnaire	btsusam7	btsusab7	btsusaz7
Student questionnaire	bsgusam7	bsgusab7	bsgusaz7

SOURCE: U.S. Department of Education, National Center for Education Statistics, Trends in International Mathematics and Science Study (TIMSS), 2019.

For detailed information on the international data files, users should refer to the *TIMSS 2019 User Guide for the International Database* (Fishbein, Foy, and Yin 2021). This documentation provides comprehensive descriptions and discussions on the data file names, format, structure, and response code

¹¹ The TIMSS 2019 U.S. PSI data files are planned to be released by the NCES at a later date following the release of the TIMSS 2019 U.S. eTIMSS data files and U.S. Bridge Study data files.

values. As mentioned earlier, the public-use version of the U.S. international data files is available through the IEA Data Repository for TIMSS (<https://www.iea.nl/data-tools/repository/timss/>). The restricted-use datasets are available by request. Contact the IEA Data Repository to obtain permission and access to the restricted-use version of the TIMSS 2019 international database (<https://www.iea.nl/node/3263>).

5.8.1 Merging TIMSS 2019 NCES U.S. National Public-Use School Questionnaire Data to IEA U.S. International School Questionnaire Data

The following illustrative SAS and SPSS codes can be adapted to merge NCES U.S. national public-use school questionnaire data to IEA U.S. international school questionnaire data.

Exhibit 5-4. Illustrative SAS and SPSS codes for merging grade 4 U.S. TIMSS 2019 national public-use school questionnaire data to U.S. international school questionnaire data

SAS code	SPSS code
<pre>libname T19 "C:\TIMSS19\Data"; data G4SCHOOL1; set T19.acgusam7; proc sort; by IDSCHOOL; run; data G4SCHOOL2; set T19.T4_SCHOOL19; proc sort; by IDSCHOOL; run; data T19.T19_MERGE_G4SCHOOL; merge G4SCHOOL1 G4SCHOOL2; by IDSCHOOL; run;</pre>	<pre>get file = 'C:\TIMSS19\Data\T4_SCHOOL19.SAV'. sort cases by IDSCHOOL. save outfile = "C:\TIMSS19\Data\G4SCHOOL1.SAV". get file = 'C:\TIMSS19\Data\acgusam7.SAV'. sort cases by IDSCHOOL. save outfile = "C:\TIMSS19\Data\G4SCHOOL2.SAV". match files / file= 'C:\TIMSS19\Data\G4SCHOOL2.SAV' / table= 'C:\TIMSS19\Data\G4SCHOOL1.SAV' / by IDSCHOOL. save outfile = "C:\TIMSS19\Data\T19_MERGE_G4SCHOOL.SAV".</pre>

SOURCE: U.S. Department of Education, National Center for Education Statistics, Trends in International Mathematics and Science Study (TIMSS), 2019.

5.8.2 Merging TIMSS 2019 NCES U.S. National Public-Use Student Questionnaire Data to IEA U.S. International Student Questionnaire Data

The following illustrative SAS and SPSS codes can be adapted to merge U.S. national public-use student questionnaire data to U.S. international student questionnaire data.

Exhibit 5-5. Illustrative SAS and SPSS codes for merging grade 4 U.S. TIMSS 2019 national public-use student questionnaire data to U.S. international student questionnaire data

SAS code	SPSS code
<pre>libname T19 "C:\TIMSS19\Data"; data G4STUDENT1; set T19.asgusam7; proc sort ; by IDSTUD; run; data G4STUDENT2; set T19.T4_STUDENT19; proc sort; by IDSTUD; run; data T19.T19_MERGE_G4STUDENT; merge G4STUDENT1 G4STUDENT2; by IDSTUD; run;</pre>	<pre>get file = 'C:\TIMSS19\Data\T4_STUDENT19.SAV'. sort cases by IDSTUD. save outfile = "C:\TIMSS19\Data\G4STUDENT1.SAV". get file = 'C:\TIMSS19\Data\asgusam7.SAV'. sort cases by IDSTUD. save outfile = "C:\TIMSS19\Data\G4STUDENT2.SAV". match files / file= 'C:\TIMSS19\Data\G4STUDENT2.SAV' / table= 'C:\TIMSS19\Data\G4STUDENT1.SAV' / by IDSTUD. save outfile = "C:\TIMSS19\Data\T19_MERGE_G4STUDENT.SAV".</pre>

SOURCE: U.S. Department of Education, National Center for Education Statistics, Trends in International Mathematics and Science Study (TIMSS), 2019.

5.8.3 Merging TIMSS 2019 NCES U.S. National Public-Use Teacher Questionnaire Data to IEA U.S. International Teacher Questionnaire Data

The following illustrative SAS and SPSS codes can be adapted to merge U.S. national public-use teacher questionnaire data to U.S. international teacher questionnaire data.

Exhibit 5-6. Illustrative SAS and SPSS codes for merging grade 4 U.S. TIMSS 2019 national public-use teacher questionnaire data to U.S. international teacher questionnaire data

SAS code	SPSS code
<pre>libname T19 "C:\TIMSS19\Data"; data G4TEACHER1; set T19.atgusam7; proc sort; by IDTEALIN; run; data G4TEACHER2; set T19.T4_TEACHER19; proc sort; by IDTEALIN; run; data T19.T19_MERGE_G4TEACHER; merge G4TEACHER1 G4TEACHER2; by IDTEALIN; run;</pre>	<pre>get file = 'C:\TIMSS19\Data\T4_TEACHER19.SAV'. sort cases by IDTEALIN. save outfile = "C:\TIMSS19\Data\G4TEACHER1.SAV". get file = 'C:\TIMSS19\Data\atgusam7.SAV'. sort cases by IDTEALIN. save outfile = "C:\TIMSS19\Data\G4TEACHER2.SAV". match files / file= 'C:\TIMSS19\Data\G4TEACHER2.SAV' / table= 'C:\TIMSS19\Data\G4TEACHER1.SAV' / by IDTEALIN. save outfile = "C:\TIMSS19\Data\T19_MERGE_G4TEACHER.SAV".</pre>

SOURCE: U.S. Department of Education, National Center for Education Statistics, Trends in International Mathematics and Science Study (TIMSS), 2019.

5.8.4 Merging TIMSS 2019 NCES U.S. National Restricted-Use School Questionnaire Data to U.S. Public-Use National and IEA U.S. International School Questionnaire Data

The following illustrative SAS and SPSS codes can be adapted to merge U.S. national restricted-use school questionnaire data to U.S. public-use national and international school questionnaire data.

Exhibit 5-7. Illustrative SAS and SPSS codes for merging grade 4 U.S. TIMSS 2019 national restricted-use school questionnaire data to U.S. public-use national and international school questionnaire data

SAS code	SPSS code
<pre> libname T19 "C:\TIMSS19\Data"; data G4SCHOOL1; set T19.acgusam7; proc sort; by IDSCHOOL; run; data G4SCHOOL2; set T19.T4_SCHOOL19; proc sort; by IDSCHOOL; run; data T19_MERGE_G4SCHOOL; merge G4SCHOOL1 G4SCHOOL2; by IDSCHOOL; run; data MERGEG4SCH1; set T19_MERGE_G4SCHOOL; proc sort; by IDSCHOOL; run; data MERGEG4SCH2; set T19.T4_RESTRICTED_USE19_SCH; proc sort; by IDSCHOOL; run; data T19.T19_MERGE_G4SCHOOL_R; merge MERGEG4SCH1 MERGEG4SCH2; by IDSCHOOL; run; </pre>	<pre> get file = 'C:\TIMSS19\Data\T4_SCHOOL19.SAV'. sort cases by IDSCHOOL. save outfile = "C:\TIMSS19\Data\G4SCHOOL1.SAV". get file = 'C:\TIMSS19\Data\acgusam7.SAV'. sort cases by IDSCHOOL. save outfile = "C:\TIMSS19\Data\G4SCHOOL2.SAV". match files / file= 'C:\TIMSS19\Data\G4SCHOOL2.SAV' / table= 'C:\TIMSS19\Data\G4SCHOOL1.SAV' / by IDSCHOOL. save outfile = "C:\TIMSS19\Data\T19_MERGE_G4SCHOOL.SAV". get file = 'C:\TIMSS19\Data\T19_MERGE_G4SCHOOL.SAV'. sort cases by IDSCHOOL. save outfile = "C:\TIMSS19\Data\MERGEG4SCH1.SAV". get file = 'C:\TIMSS19\Data\T4_RESTRICTED_USE19_SCH.SAV'. sort cases by IDSCHOOL. save outfile = "C:\TIMSS19\Data\MERGEG4SCH2.SAV". match files / file= 'C:\TIMSS19\Data\MERGEG4SCH2.SAV' / table= 'C:\TIMSS19\Data\MERGEG4SCH1.SAV' / by IDSCHOOL. save outfile = "C:\TIMSS19\Data\T19_MERGE_G4SCHOOL_R.SAV". </pre>

SOURCE: U.S. Department of Education, National Center for Education Statistics, Trends in International Mathematics and Science Study (TIMSS), 2019.

5.8.5 Merging TIMSS 2019 NCES Grade 4 U.S. National Restricted-Use Student Questionnaire Data to U.S. Public-Use National and IEA U.S. International Student Questionnaire Data

The following illustrative SAS and SPSS codes can be adapted to merge U.S. national restricted-use student questionnaire data to U.S. public-use national and international student questionnaire data.

Exhibit 5-8. Illustrative SAS and SPSS codes for merging grade 4 U.S. TIMSS 2019 national restricted-use student questionnaire data to U.S. public-use national and international student questionnaire data

SAS code	SPSS code
<pre> libname T19 "C:\TIMSS19\Data"; data G4STUDENT1; set T19.asgusam7; proc sort; by IDSTUD; run; data G4STUDENT2; set T19.T4_STUDENT19; proc sort; by IDSTUD; run; data T19_MERGE_G4STUDENT; merge G4STUDENT1 G4STUDENT2; by IDSTUD; run; data MERGEG4STUD1; set T19_MERGE_G4STUDENT; proc sort; by IDSTUD; run; data MERGEG4STUD2; set T19.T4_RESTRICTED_USE19_STUD; proc sort; by IDSTUD; run; data T19.T19_MERGE_G4STUDENT_R; merge MERGEG4STUD1 MERGEG4STUD2; by IDSTUD; run; </pre>	<pre> get file = 'C:\TIMSS19\Data\T4_STUDENT19.SAV'. sort cases by IDSTUD. save outfile = "C:\TIMSS19\Data\G4STUDENT1.SAV". get file = 'C:\TIMSS19\Data\asgusam7.SAV'. sort cases by IDSTUD. save outfile = "C:\TIMSS19\Data\G4STUDENT2.SAV". match files / file= 'C:\TIMSS19\Data\G4STUDENT2.SAV' / table= 'C:\TIMSS19\Data\G4STUDENT1.SAV' / by IDSTUD. save outfile = "C:\TIMSS19\Data\T19_MERGE_G4STUDENT.SAV". get file = 'C:\TIMSS19\Data\T19_MERGE_G4STUDENT.SAV'. sort cases by IDSTUD. save outfile = "C:\TIMSS19\Data\MERGEG4STUD1.SAV". get file = 'C:\TIMSS19\Data\T4_RESTRICTED_USE19_STUD.SAV'. sort cases by IDSTUD. save outfile = "C:\TIMSS19\Data\MERGEG4STUD2.SAV". match files / file= 'C:\TIMSS19\Data\MERGEG4STUD2.SAV' / table= 'C:\TIMSS19\Data\MERGEG4STUD1.SAV' / by IDSTUD. save outfile = "C:\TIMSS19\Data\T19_MERGE_G4STUDENT_R.SAV". </pre>

SOURCE: U.S. Department of Education, National Center for Education Statistics, Trends in International Mathematics and Science Study (TIMSS), 2019.

5.8.6 Merging TIMSS 2019 NCES U.S. School Data to CCD and PSS Data

The following illustrative SAS and SPSS codes can be adapted to merge U.S. school data to CCD and PSS data.

Exhibit 5-9. Illustrative SAS and SPSS codes for merging grade 4 U.S. TIMSS 2019 school data to CCD and PSS data

SAS code	SPSS code
libname T19 "C:\TIMSS19\Data"; libname CCD "C:\CCD_FILES"; libname PSS "C:\PSS_FILES";	GET FILE='C:\TIMSS19\Data\T4_RESTRICTED_USE19_SCH.SAV'. USE ALL.
data SCHOOL; set T19.T4_RESTRICTED_USE19_SCH; run; proc sort; by NCESSCH ; run; data CCD ; set CCD.CCD; run; proc sort; by NCESSCH; run;	COMPUTE filter_\$=(NCESSCH = ' VARIABLE LABELS filter_\$ "NCESSCH = ' (FILTER)". VALUE LABELS filter_\$ 0 'Not Selected' 1 'Selected'. FORMATS filter_\$ (f1.0). FILTER BY filter_\$. SELECT IF (filter_\$ = 0). SORT CASES by NCESSCH. DELETE VARIABLES filter_\$. SAVE OUTFILE='C:\TIMSS19\Data\SCHOOL.SAV'.
data T19.MERGECCD_G4; merge CCD(IN=IN1) SCHOOL (IN=IN2); by NCESSCH; IF IN1 AND IN2; run;	MATCH FILES / file='C:\TIMSS19\Data\CCD.SAV' / table='C:\TIMSS19\Data\SCHOOL.SAV' / by NCESSCH. SELECT IF NOT MISSING(IDSCHOOL). SAVE OUTFILE='C:\TIMSS19\Data\MERGECCD_G4.SAV'.
data SCHOOL; set T19.T4_RESTRICTED_USE19_SCH; run; proc sort ; by PPIN ; run; data PSS ; set PSS.PSS; run; proc sort; by PPIN; run;	GET FILE='C:\TIMSS19\Data\T4_RESTRICTED_USE19_SCH.SAV'. USE ALL. COMPUTE filter_\$=(PPIN = ' VARIABLE LABELS filter_\$ "PPIN = ' (FILTER)". VALUE LABELS filter_\$ 0 'Not Selected' 1 'Selected'. FORMATS filter_\$ (f1.0). FILTER BY filter_\$. SELECT IF (filter_\$ = 0). SORT CASES by PPIN. DELETE VARIABLES filter_\$. SAVE OUTFILE='C:\TIMSS19\Data\SCHOOL2.SAV'.
data T19.MERGEPPSS_G4; merge PSS(IN=IN1) SCHOOL (IN=IN2); by PPIN; IF IN1 AND IN2; run;	GET FILE='C:\PSS_FILES\PSS.SAV'. SORT CASES by PPIN. SAVE OUTFILE='C:\TIMSS19\Data\PSS.SAV'.

See note at end of table.

Exhibit 5-9. Illustrative SAS and SPSS codes for merging grade 4 U.S. TIMSS 2019 school data to CCD and PSS data—Continued

SAS code	SPSS code
	<pre> MATCH FILES / file='C:\TIMSS19\Data\PSS.SAV' / table='C:\TIMSS19\Data\SCHOOL2.SAV' / by PPIN. SELECT IF NOT MISSING(IDSCHOOL). SAVE OUTFILE='C:\TIMSS19\Data\MERGE PSS_G4.SAV'. </pre>

SOURCE: U.S. Department of Education, National Center for Education Statistics, Trends in International Mathematics and Science Study (TIMSS), 2019.

5.9 Using the TIMSS 2019 Data Files

The design of TIMSS raises several special considerations for the analysis of TIMSS data. First, the assessment design necessitates the use of five plausible values rather than a single score for each of the various measures of mathematics and science for grades 4 and 8. Second, since the sampling design is not a simple random sample in which each student had an equal probability of selection, sampling weights need to be applied to generate unbiased estimates of population parameters. Third, the complex sampling design also means that the calculation of the standard errors of the various statistics generated requires special procedures.

5.9.1 Plausible Values

The assessment design was based on Balanced Incomplete Block (BIB) spiraling of assessment items to increase content-area coverage without a concomitant increase in the assessment time demanded of students. Each student completed only a subset of the total pool of assessment items, with the resulting data containing missing values for other items in the pool but not in the subset administered to the student. The trade-off for increased coverage through BIB spiraling is increased measurement error in the scores available for each student. This is accommodated through the estimation of five plausible values for each student rather than a single unreliable point estimate. Plausible values are random draws from the estimated distribution of a student's achievement. A description of the TIMSS 2019 scaling can be found in *Methods and Procedures: TIMSS 2019 Technical Report* at <https://timssandpirls.bc.edu/timss2019/methods>. What this means for those analyses of TIMSS data that include achievement measures is that the analyses need to be done five times and the results averaged. For example, if one was regressing mathematics achievement on a number of family and school attributes, it

would be necessary to estimate this equation five times and then average each set of five parameter estimates. It would not be legitimate to take the mean of the five plausible values in the first instance and then regress this mean on a number of family and school attributes.

5.9.2 Estimating Sampling Variance

The complex sampling design used in TIMSS 2019 complicates the task of computing standard errors. Most standard analysis software systems such as SAS and SPSS default to providing estimates based on the assumption of a simple random sample. Given the TIMSS sampling design, such standard errors underestimate the true standard errors. TIMSS adopts the jackknife repeated replication (JRR) technique because it is computationally straightforward and provides approximately unbiased estimates of the sampling errors of means, totals, and percentages. The variables necessary for these JRR procedures are included as part of the TIMSS 2019 international data files: JKZONE, the sampling zone (stratum) of the student's school; and JKREP, the sampling replicate (primary sampling unit) of the student's school. There are options for estimating sampling errors that avoid the assumption of simple random sampling. The SPSS- and SAS-linked International Database (IDB) Analyzer software is designed specifically by International Association for the Evaluation of Educational Achievement (IEA) for analyzing TIMSS international data files. This software is freely available from the IEA website at <https://www.iea.nl/data-tools/tools>. Special-use software is also available for estimating the standard errors of statistics generated from complex sampling designs. Among the packages available are AM, available from the American Institutes for Research at <https://am.air.org/>; WesVar, available from Westat at <https://www.westat.com/capability/information-technology/wesvar>; and SUDAAN, available from Research Triangle Institute at <https://www.rti.org/impact/sudaan-statistical-software-analyzing-correlated-data>. Some software packages provide for these capabilities as well.

In addition, SAS macros suitable for this purpose are available as part of the *TIMSS 2019 User Guide for the International Database* (Fishbein, Foy, and Yin 2021). See also the work by Stapleton (2006, 2008), which suggests procedures that can be used to generate appropriate standard errors for statistics generated by structural equation modeling techniques.

5.9.3 Tools for Analyzing the TIMSS Data

The IEA International Database (IDB)

The IEA Hamburg (formerly known as the IEA Data Processing and Research Center) developed the IEA IDB Analyzer as a plug-in for SPSS and SAS, which can be downloaded at <https://www.iea.nl/data-tools/tools>. It can be used in conjunction with SPSS and SAS. It is not a stand-alone analysis system. The IEA IDB Analyzer enables users to combine SPSS and SAS data files and conduct analyses using SPSS and SAS without actually writing programming code. The IEA IDB Analyzer generates SPSS syntax and SAS programs that take into account information from the sampling design in the computation of statistics and their standard errors. In addition, the generated SPSS syntax and SAS programs make appropriate use of plausible values for calculating estimates of achievement scores and their standard errors, combining both sampling variance and imputation variance.

The IEA IDB Analyzer consists of two modules—a merge module and an analysis module. The merge module is used to create analysis datasets by combining data files of different types and from different countries and selecting subsets of variables for analysis. The analysis module provides procedures for computing various statistics and their standard errors. All statistical procedures offered within the analysis module of the IEA IDB Analyzer make appropriate use of sampling weights, and standard errors are computed using the jackknife repeated replication (JRR) method. Percentages, means, regressions, and correlations may be specified with or without achievement scores. When achievement scores are used, the analyses are performed five times—once for each plausible value—and the results are aggregated to produce accurate estimates of achievement and standard errors that incorporate both sampling and imputation errors. The use of the IEA IDB Analyzer is described in detail with worked examples in chapter 2 of the *TIMSS 2019 User Guide for the International Database* (Fishbein, Foy, and Yin 2021). Readers intending to use this user-friendly software are urged to read this user guide in detail. Researchers who intend to use the IEA IDB Analyzer with SPSS should execute the SPSS programs. Likewise, those who intend to use the IEA IDB Analyzer with SAS should execute the SAS programs described in chapter 3 of the *TIMSS 2019 User Guide for the International Database* (Fishbein, Foy, and Yin 2021).

The International Data Explorer (IDE)

In addition to IEA IDB Analyzer for basic analysis and exploration of TIMSS data, NCES has developed a relatively simple, interactive online data analysis tool: the International Data Explorer (IDE), which can

be found at <https://nces.ed.gov/surveys/international/ide>. The IDE allows users to analyze all the international variables for all participating education systems and the U.S.-specific variables; however, it does not include U.S. restricted-use data. The IDE does not require SPSS or SAS for analyzing the data. It provides users with the capabilities to create statistical tables and charts of TIMSS data across countries and years on the website. This tool allows users to point and click in a self-contained module, unlike the IEA IDB Analyzer software that must be used in conjunction with SPSS and SAS. Also, unlike the IEA IDB Analyzer, the IDE does not provide access to data files for merging, transforming, or otherwise manipulating data. This tool reports averages for subject by selected variables and exports reports in HTML, Excel, Word, or PDF.

The EdSurvey Package

Another tool for analyzing TIMSS data is EdSurvey, a statistical package in R, which was developed by the American Institutes for Research. EdSurvey is tailored to the processing and analysis of NCES large-scale education data with appropriate procedures to analyze these data efficiently—taking into account their complex sample survey design and the use of plausible values. Additional information can be found here: <https://www.air.org/project/nces-data-r-project-edsurvey>.

5.9.4 Special SPSS and SAS Programs

The *TIMSS 2019 User Guide for the International Database* (Fishbein, Foy, and Yin 2021) provides assistance for those investigators who wish to conduct their analyses using SPSS and SAS. The user guide includes a number of SPSS and SAS programs needed to process the SPSS and SAS data files, compute survey results, and carry out example analyses. These are described in detail with worked examples in chapter 3 of the user guide. Readers intending to use SPSS and SAS for their analyses are urged to read this chapter in detail.

The following SPSS and SAS programs are available at https://timss2019.org/international-database/downloads/T19_Programs.zip:

- T19_CONVERT, T19Br_CONVERT, and eT19PSI_CONVERT are used to convert SPSS and SAS Export files into data files. Additional information about how to use the converting SPSS and SAS programs is provided in chapter 3 of the *TIMSS 2019 User Guide for the International Database* (Fishbein, Foy, and Yin 2021).

- ASASCR and BSASCR are used to convert the response codes on the achievement items to their corresponding score levels. ASASCRM7 and BSASCRM7 score the fourth- and eighth-grade items, respectively, for the data files with the “M7” suffix. ASASCRB7 and BSASCRB7 score the fourth- and eighth-grade items, respectively, for the data files with the “B7” suffix for the TIMSS 2019 Bridge data. ASASCRZ7 and BSASCRZ7 score the fourth- and eighth-grade items, respectively, for the data files with the “Z7” suffix for the eTIMSS with PSI data. Additional information about how to use the converting SPSS and SAS programs is provided in chapter 3 of the *TIMSS 2019 User Guide for the International Database* (Fishbein, Foy, and Yin 2021).

5.9.5 Special Considerations in Using the Teacher Data

The teachers in the TIMSS 2019 data files are the teachers of nationally representative samples of students and are not representative samples of teachers in the participating countries. As a result, analyses with teacher data should be made with students as the units of analysis and reported in terms of students who are taught by teachers with a particular attribute. When analyzing teacher data, it is first necessary to link the students to their respective teachers. The international student-teacher linkage data files were created for this purpose. Since student achievement scores (plausible values), jackknife replication information, and teacher weighting variables are found in the student-teacher linkage data files, it is only necessary to merge the teacher background data files with the student-teacher linkage data files. For analyses linking teacher variables to student background variables, it is also necessary to merge the student background data files with the teacher background data files after having been combined with the student-teacher linkage data files.

In general, to perform analyses using the teacher background data files, follow the steps below.

1. Identify the variables of interest in the teacher background data files and note any specific national adaptations to the variables.
2. Retrieve the relevant variables from the teacher background data files, including analysis variables, classification variables, identification variables (IDCNTRY and IDTEALIN), and any other variables used in the selection of cases.
3. Retrieve the relevant variables from the student-teacher linkage data files, including plausible values of achievement, classification variables, identification variables (IDCNTRY, IDSTUD, and IDTEALIN), sampling (JKZONE and JKREP) and weighting (MATWGT, SCIWGT, or TCHWGT) variables, and any other variables used in the selection of cases.
4. Merge the teacher background data files with the student-teacher linkage data files using the variables IDCNTRY, and IDTEALIN.

5. If student background variables also are needed, merge the student background data files with the merged student-teacher data files from the previous step using the variables IDCNTRY and IDSTUD. One further point to note: fourth-grade teachers were given a single questionnaire with mathematics and science sections. If a teacher taught only mathematics or only science to the TIMSS fourth-graders, that teacher would complete only one of these sections. In frequency distributions of the variables in these sections, teachers who did not answer the questions for this reason are shown as “not administered.”

5.9.6 Special Considerations in Using the School Data

In general, to perform analyses using the school background data files, follow the steps below.

1. Identify the variables of interest in the school and student background data files and note any specific national adaptations to the variables.
2. Retrieve the relevant variables from the school background data files, including analysis variables, classification variables, identification variables (IDCNTRY and IDSCHOOL), and any other variables used in the selection of cases.
3. Retrieve the relevant variables from the student background data files, including plausible values of achievement, classification variables, identification variables (IDCNTRY and IDSCHOOL), sampling (JKZONE and JKREP) and weighting (TOTWGT) variables, and any other variables used in the selection of cases.
4. Merge the school background data files with the student background data files using the variables IDCNTRY and IDSCHOOL.

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Appendix A
TIMSS 2019 Recruitment Materials

Appendix A: TIMSS 2019 Recruitment Materials

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State TIMSS Main Study Letter



[Date]

[Title] [Name First] [Name Last]

[Title/Department]

[State]

[Address 1]

[Address 2]

[City], [State] [Zip code]

Dear [Title] [Name Last]:

The United States is participating in an important international study in 2019: the Trends in International Mathematics and Science Study (TIMSS). TIMSS is the longest ongoing international student assessment. Since 1995, TIMSS has measured trends in academic achievement at grades 4 and 8 in countries around the world, including the United States. Results from TIMSS are used by researchers and policymakers to chart national progress against international standards and other countries around the world, informing national discussions about international competitiveness. For the first time, in 2019 TIMSS will be administered digitally. The electronic version of TIMSS, sometimes called “eTIMSS,” will be on the same scale and comparable to the previous paper versions of TIMSS.

TIMSS is described in more detail in the enclosed materials. In the United States, TIMSS is conducted by the National Center for Education Statistics (NCES), part of the U.S. Department of Education. The U.S. Office of Management and Budget has approved the data collection under OMB#1850-0695. Study findings will not identify participating districts, schools, students, or individual staff. Please see the enclosed FAQ for information about data confidentiality.

NCES is in contact with your state assessment director and NAEP State Coordinator to keep them informed about TIMSS and how it fits in with other NCES data collections, and to facilitate recruitment of sampled schools. While participation in this study is voluntary, your support of school participation in your state is invaluable so that the United States has a representative sample of schools across the country.

If you have questions about the study, please do not hesitate to call Dr. Chris Averett at Westat at (240) 314-2492 or send an email to TIMSS@westat.com. Westat is under contract to NCES to collect the TIMSS data. You may also get more information about this study by contacting Lydia Malley at NCES at (202) 245-7266 or lydia.malley@ed.gov, or by visiting the TIMSS website at <http://nces.ed.gov/timss>.

Thank you for your time and support.

Exhibit A-1. TIMSS 2019 State Letter—Continued

Sincerely,

Peggy Carr, Ph.D.
Acting Commissioner
National Center for Education Statistics

cc: [State assessment director]
[NAEP State Coordinator]

Enclosures

NCES is authorized to conduct this study under the Education Sciences Reform Act of 2002 (ESRA 2002, 20 U.S.C. §9543). All of the information provided by school staff and students may be used only for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law (20 U.S.C. §9573 and 6 U.S.C. §151).

School District TIMSS 2019 Main Study Letter [First Tier/Second Tier]

Dear [District Superintendent name]:

I am writing to notify you that [number] schools in your district have been randomly selected to participate in an important international study: the Trends in International Mathematics and Science Study (TIMSS). TIMSS is the longest ongoing international student assessment. Since 1995, TIMSS has measured trends in academic achievement at grades 4 and 8 in countries around the world, including the United States. Results from TIMSS are used by researchers and policymakers to chart national progress against international standards and other countries around the world, informing national discussions about international competitiveness. For the first time, in 2019, TIMSS will be administered digitally. The electronic version of TIMSS, sometimes called “eTIMSS,” will be on the same scale and comparable to the previous paper versions of TIMSS.

[Selected schools are notified in advance so that principals can place the assessment date on their calendars and incorporate TIMSS into the planned school program. I am writing to ask for your support of the participation of those selected schools. Most selected students will take the TIMSS assessment on supplied tablets. Some students will take a paper and pencil assessment in order to bridge eTIMSS to previous paper versions of TIMSS. Participating schools will receive \$200, and each school’s TIMSS school coordinator (the school staff person designated to work with TIMSS staff) will receive \$100 as a thank you for his or her time and effort./Selected schools are notified so that principals can place the assessment date on their calendars. I am writing to ask your district to support the participation of those selected schools. We understand that we are asking schools to participate in TIMSS later in the school year when school calendars are set <or> in addition to participating in the National Assessment of Educational Progress (NAEP) and therefore are offering each school <up to \$800> as a thank you for participation. In addition, each school’s TIMSS school coordinator (the school staff person designated to work with TIMSS staff) will receive \$100 as a thank you for his or her time and effort.] A school administrator and teachers of the selected students will each be asked to complete a questionnaire. Teachers will receive a \$20 Amazon gift card as a thank you for completing the questionnaire. Each student who participates will receive a small gift as a token of appreciation.

TIMSS is described in more detail in the enclosed materials. In the United States, TIMSS is conducted by the National Center for Education Statistics (NCES), part of the U.S. Department of Education, and its data collection is administered by Westat in Rockville, Maryland. The U.S. Office of Management and Budget has approved the data collection under OMB#1850-0695. For information on the confidentiality of the data collected, please see the enclosed FAQ. While participation in this study is voluntary, your support of school participation in your district is invaluable so that the United States has a representative sample of schools across the country. The schools will be contacted soon with more information about the assessment.

The list of selected schools in your district is attached, along with schools selected for NAEP 2019. Please include the TIMSS assessment window (March to May 2019) on your district test calendar. [Name], our NAEP State Coordinator, will contact your staff with additional information.

If you have any questions, please do not hesitate to contact [Name of NSC] call 1-855-445-5604 or send an email to TIMSS@westat.com. You may also get more information about this study by contacting Lydia Malley at NCES at (202) 245-7266 or lydia.malley@ed.gov, or by visiting the TIMSS website at <http://nces.ed.gov/timss>.

I know that I can count on you to help accomplish our goal of 100 percent participation. Thank you for your time and support.

Exhibit A-2. TIMSS 2019 District Letter—Continued

[Name of Chief State School Officer]

Enclosures

cc: [State Testing Director]
[District Test Coordinator]
[NAEP State Coordinator]

NCES is authorized to conduct this study under the Education Sciences Reform Act of 2002 (ESRA 2002, 20 U.S.C. §9543). All of the information provided by school staff and students may be used only for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law (20 U.S.C. §9573 and 6 U.S.C. §151).

School TIMSS 2019 Main Study Letter [First Tier/Second Tier]

Dear [Principal name],

I am writing to inform you that [school name] has been randomly selected to represent schools across the United States by participating in an important international study: the Trends in International Mathematics and Science Study (TIMSS). TIMSS is the longest ongoing international student assessment. Since 1995, TIMSS has measured trends in academic achievement at grades 4 and 8 in more than 60 countries around the world, including the United States. Results from these assessments are used by researchers and policymakers to chart national progress against international standards and other countries around the world, informing national discussions about international competitiveness. For the first time, in 2019, TIMSS will be administered digitally. The electronic version of TIMSS, sometimes called “eTIMSS,” will be on the same scale and comparable to the previous paper versions of TIMSS.

NCES recognizes the burden of assessments on schools and works to reduce that burden as much as possible both in terms of time and resources. TIMSS will sample two classes of fourth-graders [or two math classes of eighth-graders] in your school. A school administrator and teachers of the selected students will be asked to complete a questionnaire. [As a token of appreciation for participating in TIMSS, your school will receive \$200. / We are notifying your school after the school year has already begun, and recognize that school calendars are set <or> We understand that your school has also been selected for the National Assessment of Education Progress (NAEP) and are offering a special indication of appreciation for your school’s time. If you participate, we will provide your school a thank you of <up to \$800>.] Your school’s TIMSS school coordinator (a staff person designated to work with TIMSS staff) will receive \$100 for his or her time and effort. Teachers of selected students will receive a \$20 Amazon gift card for completing a questionnaire. Students who participate in the test will receive a small token of appreciation.

TIMSS is described in more detail in the enclosed materials. In the United States, TIMSS is conducted by the National Center for Education Statistics (NCES), part of the U.S. Department of Education, and its data collection is administered by Westat in Rockville, Maryland. The U.S. Office of Management and Budget has approved the data collection under OMB#1850-0695. Study findings will not identify participating districts, schools, students, or individual staff. For information on the confidentiality of the data collected, please see the enclosed FAQ. While participation in TIMSS is voluntary, your school’s participation is invaluable in ensuring that the United States has a representative sample of schools across the country.

The assessment window is March to May, 2019. Within the next few weeks I will send you an assessment date. Should there be a conflict on this date, a TIMSS representative will work with you to identify an alternative time. Please put this date on your 2018-2019 school calendar. At the beginning of the school year, I will send you detailed information about the assessment and will ask you to identify a school coordinator. TIMSS representatives will provide significant support to schools, bring all necessary materials, including tablets and all equipment, and administer the assessment.

If you have any questions, please do not hesitate to contact me or call the toll-free TIMSS information hotline 1-855-445-5604, or send an email to TIMSS@westat.com. You may also get more information about this study by contacting Lydia Malley at NCES at (202) 245-7266 or lydia.malley@ed.gov, or by visiting the TIMSS website at <http://nces.ed.gov/timss>.

Exhibit A-3. TIMSS 2019 School Notification Letter—Continued

Your participation in TIMSS 2019 is very important to its success. We need to ensure that students in schools like yours are represented in our evaluation of assessment items and questionnaires. Thank you for your time and for supporting this important international study.

[Name of Coordinator]

NAEP State Coordinator

cc: [District Test Coordinator]

Enclosures

NCES is authorized to conduct this study under the Education Sciences Reform Act of 2002 (ESRA 2002, 20 U.S.C. §9543). All of the information provided by school staff and students may be used only for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law (20 U.S.C. §9573 and 6 U.S.C. §151).

TIMSS Main Study Sample Parent Notification Letter: Grade 4

Insert SCHOOL LETTERHEAD
Please also customize the text in red font

Dear Parent or Guardian,

This letter is to inform you about an important international study of student learning being conducted in our school this spring. The Trends in International Mathematics and Science Study (TIMSS) provides important information for benchmarking student performance in mathematics and science at grades 4 and 8 in the United States against countries around the world. Since 1995, TIMSS has measured worldwide trends in student knowledge of mathematics and science.

Our school has accepted an invitation from the National Center for Education Statistics (NCES), part of the U.S. Department of Education, to participate in TIMSS 2019. {Insert number} of our 4th-grade classes will take part. {This/One of these} is your child's class. The enclosed summary sheet provides some background information about TIMSS, explains what is involved for each student selected to participate in the study, and gives a contact phone number and email address where you can find answers to any questions you might have.

To have an accurate picture of what U.S. 4th graders can do in mathematics and science, it is important that each student selected take part in the study. In addition to answering mathematics and science questions, students will be asked to complete a questionnaire about themselves. I urge you to support this effort by encouraging your child to take part; however, participation in this study is entirely voluntary. Previous experience suggests that students actually enjoy taking part, and participating students will receive a small gift, which we think they will like.

All of the information collected is safeguarded, as required by law. NCES is authorized to conduct this study under the Education Sciences Reform Act of 2002 (ESRA 2002, 20 U.S.C. §9543). All of the information provided by school staff and students may be used only for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law (20 U.S.C. §9573 and 6 U.S.C. §151). Students and schools are never identified in any reports. All reported statistics refer to the United States as a whole.

Thank you for taking the time to learn about this important study.

Sincerely,

[School official]

Enclosures:

Facts for Parents about TIMSS 2019

TIMSS Main Study Sample Parent Notification Letter: Grade 8

SCHOOL LETTERHEAD

Please also customize the text in red font

Dear Parent or Guardian,

This letter is to inform you about an important international study of student learning being conducted in our school this spring. The Trends in International Mathematics and Science Study (TIMSS) provides important information for benchmarking student performance in mathematics and science at grades 4 and 8 in the United States against countries around the world. Since 1995, TIMSS has measured worldwide trends in student knowledge of mathematics and science.

Our school has accepted an invitation from the National Center for Education Statistics (NCES), part of the U.S. Department of Education, to participate in TIMSS 2019. {Insert number} of our 8th-grade classes will take part. {This/One of these} is your child's class. The enclosed summary sheet provides some background information about TIMSS, explains what is involved for each student selected to participate in the study, and gives a contact phone number and email address where you can find answers to any questions you might have.

To have an accurate picture of what U.S. 8th graders can do in mathematics and science, it is important that each student selected take part in the study. In addition to answering mathematics and science questions, students will be asked to complete a questionnaire about themselves. I urge you to support this effort by encouraging your child to take part; however, participation in this study is entirely voluntary. Previous experience suggests that students actually enjoy taking part, and participating students will receive a small gift, which we think they will like.

All of the information collected is safeguarded, as required by law. NCES is authorized to conduct this study under the Education Sciences Reform Act of 2002 (ESRA 2002, 20 U.S.C. §9543). All of the information provided by school staff and students may be used only for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law (20 U.S.C. §9573 and 6 U.S.C. §151). Students and schools are never identified in any reports. All reported statistics refer to the United States as a whole.

Thank you for taking the time to learn about this important study.

Sincerely,

[School Official]

Enclosures:

Facts for Parents about TIMSS 2019

TIMSS Main Study Sample Parent Notification Letter: Grade 4 (Spanish version)

Muestra de la carta de notificación del estudio piloto del TIMMS 4° Grado

Insert SCHOOL LETTERHEAD
Please also customize the text in red font

Estimado padre/ madre o tutor,

Por medio de la presente queremos informarle acerca de un importante estudio internacional que se realizará en nuestra escuela esta primavera acerca del aprendizaje de los estudiantes. El Estudio Internacional sobre las Tendencias en Matemáticas y Ciencias (TIMSS, por sus siglas en inglés), proporciona información importante para evaluar el rendimiento de los estudiantes de 4° y 8° grado en Estados Unidos en matemáticas y ciencias en comparación con otros países del mundo. Desde 1995, TIMSS ha medido las tendencias a nivel mundial en el aprendizaje de los estudiantes de matemáticas y ciencias.

Nuestra escuela ha aceptado una invitación del Centro Nacional de Estadísticas de la Educación (NCES, por sus siglas en inglés), parte del Departamento de Educación de Estados Unidos, para participar en TIMSS de 2019. Participarán {Insert number} de nuestras clases de 4° grado. {Esta/Una de estas} es la clase de su hijo. **El resumen adjunto ofrece información de trasfondo de TIMSS, explica lo que implica la participación en el estudio para cada estudiante seleccionado e incluye un número de teléfono y un correo electrónico de contacto donde usted podrá encontrar respuestas a cualquier pregunta que tenga.**

Para tener una imagen precisa de lo que los estudiantes de 4° grado en Estados Unidos pueden hacer en matemáticas y ciencias, es importante que cada estudiante seleccionado participe en el estudio. Además de contestar las preguntas de matemáticas y ciencias, a los estudiantes se les pedirá que contesten un cuestionario acerca de ellos mismos. Quisiéramos pedirle que apoye esta iniciativa animando a su hijo a participar; sin embargo, la participación en este estudio es completamente voluntaria. Las experiencias anteriores sugieren que los estudiantes disfrutaron de la participación. **Además, los estudiantes que participen recibirán un pequeño regalo que creemos les gustará.**

Toda la información que se reúna está protegida, como lo exige la ley. El NCES está autorizado a realizar este estudio de acuerdo con la Ley de reforma de ciencias de la educación de 2002 (ESRA, 2002, Código de Estados Unidos, Título 20, Sección 9543). Según esa ley, la información proporcionada por las escuelas, el personal y los estudiantes únicamente se puede usar con fines estadísticos y no se puede dar a conocer ni usar de alguna manera que pueda identificar a los participantes para ningún otro fin, excepto cuando lo exige la ley (Código de Estados Unidos, Título 20 Sección 9573 y Título 6 Sección 151). En los informes nunca se identifica ni a los estudiantes ni a las escuelas. Todas las estadísticas publicadas se refieren a Estados Unidos en conjunto.

Gracias por tomarse el tiempo de informarse acerca de este importante estudio.

Atentamente,

[School official]

Se adjuntan los siguientes documentos: Información para los padres acerca de TIMSS de 2019

TIMSS Main Study Sample Parent Notification Letter: Grade 8 (Spanish version)

Muestra de la carta de notificación del estudio piloto del TIMSS 8° Grado

Insert SCHOOL LETTERHEAD
Please also customize the text in red font

Estimado padre/madre o tutor,

Por medio de la presente queremos informarle acerca de un importante estudio internacional que se realizará en nuestra escuela esta primavera acerca del aprendizaje de los estudiantes. El Estudio Internacional sobre las Tendencias en Matemáticas y Ciencias (TIMSS, por sus siglas en inglés), proporciona información importante para evaluar el rendimiento de los estudiantes de 4° y 8° grado en Estados Unidos en matemáticas y ciencias en comparación con otros países del mundo. Desde 1995, TIMSS ha medido las tendencias a nivel mundial en el aprendizaje de los estudiantes de matemáticas y ciencias.

Nuestra escuela ha aceptado una invitación del Centro Nacional de Estadísticas de la Educación (NCES, por sus siglas en inglés), parte del Departamento de Educación de Estados Unidos, para participar en TIMSS de 2019. Participarán **{Insert number}** de nuestras clases de 8° grado. **{Esta/Una de estas}** es la clase de su hijo. **El resumen adjunto ofrece información de trasfondo de TIMSS, explica lo que implica la participación en el estudio para cada estudiante seleccionado e incluye un número de teléfono y un correo electrónico de contacto donde usted podrá encontrar respuestas a cualquier pregunta que tenga.**

Para tener una imagen precisa de lo que los estudiantes de 8° grado en Estados Unidos pueden hacer en matemáticas y ciencias, es importante que cada estudiante seleccionado participe en el estudio. Además de contestar las preguntas de matemáticas y ciencias, a los estudiantes se les pedirá que contesten un cuestionario acerca de ellos mismos. Quisiéramos pedirle que apoye esta iniciativa animando a su hijo a participar; sin embargo, la participación en este estudio es completamente voluntaria. Las experiencias anteriores sugieren que los estudiantes disfrutaban de la participación. **Además, los estudiantes que participen recibirán un pequeño regalo que creemos les gustará.**

Toda la información que se reúna está protegida, como lo exige la ley. El NCES está autorizado a realizar este estudio de acuerdo con la Ley de reforma de ciencias de la educación de 2002 (ESRA, 2002, Código de Estados Unidos, Título 20, Sección 9543). Según esa ley, la información proporcionada por las escuelas, el personal y los estudiantes únicamente se puede usar con fines estadísticos y no se puede dar a conocer ni usar de alguna manera que pueda identificar a los participantes para ningún otro fin, excepto cuando lo exige la ley (Código de Estados Unidos, Título 20 Sección 9573 y Título 6 Sección §151). En los informes nunca se identifica ni a los estudiantes ni a las escuelas. Todas las estadísticas publicadas se refieren a Estados Unidos en conjunto.

Gracias por tomarse el tiempo de informarse acerca de este importante estudio.

Atentamente,

[School official]

Se adjuntan los siguientes documentos:

Información para los padres acerca de TIMSS de 2019

TIMSS Main Sample Implicit Consent Letter: Grade 4

SCHOOL LETTERHEAD

Please also customize the text in red font

Dear Parent or Guardian,

This letter is to inform you about an important international study of student learning being conducted in our school this spring. The Trends in International Mathematics and Science Study (TIMSS) provides important information for benchmarking student performance in mathematics and science at grades 4 and 8 in the United States against countries around the world. Since 1995, TIMSS has measured worldwide trends in student knowledge of mathematics and science.

Our school has accepted an invitation from the National Center for Education Statistics (NCES), part of the U.S. Department of Education, to participate in TIMSS 2019. {Insert number} of our 4th-grade classes will take part. {This/One of these} is your child's class. The enclosed summary sheet provides some background information about TIMSS, explains what is involved for each student selected to participate in the study, and gives a contact phone number and email address where you can find answers to any questions you might have.

To have an accurate picture of what U.S. 4th graders can do in mathematics and science, it is important that each student selected take part in the study. In addition to answering mathematics and science questions, students will be asked to complete a questionnaire about themselves. I urge you to support this effort by encouraging your child to take part; however, participation in this study is entirely voluntary. Previous experience suggests that students actually enjoy taking part, and participating students will receive a small gift, which we think they will like.

All of the information collected is safeguarded, as required by law. NCES is authorized to conduct this study under the Education Sciences Reform Act of 2002 (ESRA 2002, 20 U.S.C. §9543). All of the information provided by school staff and students may be used only for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law (20 U.S.C. §9573 and 6 U.S.C. §151). Students and schools are never identified in any reports. All reported statistics refer to the United States as a whole.

If you have any objection to your child joining in the TIMSS activities, please let us know by completing the attached consent form and returning it to the school.

Thank you for taking the time to learn about this important study.

Sincerely,

[School Official]

Enclosures:

Facts for Parents about TIMSS 2019

Parent/Guardian Consent Form

TIMSS Main Study Sample Implicit Consent Letter: Grade 8

SCHOOL LETTERHEAD

Please also customize the text in red font

Dear Parent or Guardian,

This letter is to inform you about an important international study of student learning being conducted in our school this spring. The Trends in International Mathematics and Science Study (TIMSS) provides important information for benchmarking student performance in mathematics and science at grades 4 and 8 in the United States against countries around the world. Since 1995, TIMSS has measured worldwide trends in student knowledge of mathematics and science.

Our school has accepted an invitation from the National Center for Education Statistics (NCES), part of the U.S. Department of Education, to participate in TIMSS 2019. {Insert number} of our 8th-grade classes will take part. {This/One of these} is your child's class. The enclosed summary sheet provides some background information about TIMSS, explains what is involved for each student selected to participate in the study, and gives a contact phone number and email address where you can find answers to any questions you might have.

To have an accurate picture of what U.S. 8th graders can do in mathematics and science, it is important that each student selected take part in the study. In addition to answering mathematics and science questions, students will be asked to complete a questionnaire about themselves. I urge you to support this effort by encouraging your child to take part; however, participation in this study is entirely voluntary. Previous experience suggests that students actually enjoy taking part, and participating students will receive a small gift, which we think they will like.

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If you have any objection to your child joining in the TIMSS activities, please let us know by completing the attached consent form and returning it to the school.

Thank you for taking the time to learn about this important study.

Sincerely,

[School Official]

Enclosures:

Facts for Parents about TIMSS 2019
Parent/Guardian Consent Form

TIMSS Implicit Consent Form: Grades 4 and 8

Trends in International Mathematics and Science Study (TIMSS) 2019

Parent/Guardian Consent Form

Your child has been asked to participate in an important international study of student learning called the Trends in International Mathematics and Science Study (TIMSS). Each student who participates will receive a small gift. This assessment will be administered by a team of researchers from Westat, who are operating under contract on behalf of the National Center for Education Statistics (NCES), with the U. S. Department of Education. In spring 2019, 4th and 8th grade questions in electronic formats will be tested on tablet computers in approximately 650 schools in the United States in preparation for the 2019 international study (325 schools that include 4th grade and 325 that include 8th grade).

If you grant permission for your child to participate in TIMSS 2019, you do not need to return this form.

If you do not consent to your child's participation in TIMSS 2019 please return this form to your child's school as soon as possible.

I do not grant permission for my child, _____, to participate in the Trends in International Mathematics and Science Study 2019 assessment.

(Signature of parent or guardian)

Date of signature: ____/____/____

PLEASE PRINT:

Student name: _____

School name: _____

FOR OFFICE USE ONLY:

Student ID: _____

TIMSS Main Study Sample Explicit Consent Letter: Grade 4

SCHOOL LETTERHEAD

Please also customize the text in red font

Dear Parent or Guardian,

This letter is to inform you about an important international study of student learning being conducted in our school this spring. The Trends in International Mathematics and Science Study (TIMSS) provides important information for benchmarking student performance in mathematics and science at grades 4 and 8 in the United States against countries around the world. Since 1995, TIMSS has measured worldwide trends in student knowledge of mathematics and science.

Our school has accepted an invitation from the National Center for Education Statistics (NCES), part of the U.S. Department of Education, to participate in TIMSS 2019. {Insert number} of our 4th-grade classes will take part. {This/One of these} is your child's class. The enclosed summary sheet provides some background information about TIMSS, explains what is involved for each student selected to participate in the study, and gives a contact phone number and email address where you can find answers to any questions you might have.

To have an accurate picture of what U.S. 4th graders can do in mathematics and science, it is important that each student selected take part in the study. In addition to answering mathematics and science questions, students will be asked to complete a questionnaire about themselves. I urge you to support this effort by encouraging your child to take part; however, participation in this study is entirely voluntary. Previous experience suggests that students actually enjoy taking part, and participating students will receive a small gift, which we think they will like.

All of the information collected is safeguarded, as required by law. NCES is authorized to conduct this study under the Education Sciences Reform Act of 2002 (ESRA 2002, 20 U.S.C. §9543). All of the information provided by school staff and students may be used only for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law (20 U.S.C. §9573 and 6 U.S.C. §151). Students and schools are never identified in any reports. All reported statistics refer to the United States as a whole.

Before we can allow your child to join in the TIMSS activities, we must have your written consent. Please let us know by completing the attached form and returning it to the school.

Thank you for taking the time to learn about this important study and to consider your child's participation in it.

Sincerely,

[School Official]

Enclosures:

Facts for Parents about TIMSS 2019

Parent/Guardian Consent Form

TIMSS Main Study Sample Explicit Consent Letter: Grade 8

SCHOOL LETTERHEAD

Please also customize the text in red font

Dear Parent or Guardian,

This letter is to inform you about an important international study of student learning being conducted in our school this spring. The Trends in International Mathematics and Science Study (TIMSS) provides important information for benchmarking student performance in mathematics and science at grades 4 and 8 in the United States against countries around the world. Since 1995, TIMSS has measured worldwide trends in student knowledge of mathematics and science.

Our school has accepted an invitation from the National Center for Education Statistics (NCES), part of the U.S. Department of Education, to participate in TIMSS 2019. {Insert number} of our 8th-grade classes will take part. {This/One of these} is your child's class. The enclosed summary sheet provides some background information about TIMSS, explains what is involved for each student selected to participate in the study, and gives a contact phone number and email address where you can find answers to any questions you might have.

To have an accurate picture of what U.S. 8th graders can do in mathematics and science, it is important that each student selected take part in the study. In addition to answering mathematics and science questions, students will be asked to complete a questionnaire about themselves. I urge you to support this effort by encouraging your child to take part; however, participation in this study is entirely voluntary. Previous experience suggests that students actually enjoy taking part, and participating students will receive a small gift, which we think they will like.

All of the information collected is safeguarded, as required by law. NCES is authorized to conduct this study under the Education Sciences Reform Act of 2002 (ESRA 2002, 20 U.S.C. §9543). All of the information provided by school staff and students may be used only for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law (20 U.S.C. §9573 and 6 U.S.C. §151). Students and schools are never identified in any reports. All reported statistics refer to the United States as a whole.

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Thank you for taking the time to learn about this important study and to consider your child's participation in it.

Sincerely,

[School Official]

Enclosures:

Facts for Parents about TIMSS 2019

Parent/Guardian Consent Form

TIMSS Explicit Consent Form: Grades 4 and 8

Trends in International Mathematics and Science Study (TIMSS)

Parent/Guardian Consent Form

Your child has been asked to participate in an important international study of student learning called the Trends in International Mathematics and Science Study (TIMSS). Each student who participates will receive a small gift. This assessment will be administered by a team of researchers from Westat, who are operating under contract on behalf of the National Center for Education Statistics (NCES), with the U. S. Department of Education. In spring 2019, 4th and 8th grade questions in electronic formats will be tested on tablet computers in approximately 650 schools in the United States in preparation for the 2019 international study (325 schools that include 4th grade and 325 that include 8th grade).

Yes, I grant permission for my child to participate in TIMSS 2019.

No, I do not grant permission for my child to participate in TIMSS 2019.

(Signature of parent or guardian)

Date of signature: _____/_____/_____

PLEASE PRINT:

Student name: _____

School name: _____

FOR OFFICE USE ONLY:

Student ID: _____



About TIMSS 2019

Between April and May of this year, your child's school will be one of about 325 nationwide taking part in a 4th-grade important international assessment: TIMSS 2019. Schools were selected randomly to represent the nation's schools and, within each school, 4th-grade students were selected randomly to represent the nation's 4th-graders. Your child was among those students selected to take part in the TIMSS assessment.

What is TIMSS?

TIMSS (Trends in International Mathematics and Science Study) is an international assessment that measures student learning in mathematics and science. Every 4 years since 1995, TIMSS documents worldwide trends in the knowledge of 4th-graders. The National Center for Education Statistics (NCES), within the U.S. Department of Education, conducts TIMSS in the United States. Along with more than 60 other nations, the U.S. will take part in the 2019 TIMSS cycle as we did in 1995, 1999, 2003, 2007, 2011, and 2015.

What is involved?

TIMSS staff will visit the school and administer the assessment on tablet computers that they will bring to the school. In a small number of classes the assessment will be administered on paper. The session will take approximately 2½ hours. The assessment itself is 72 minutes with breaks between sections. Students will also be asked some questions about themselves and their educational experiences. Participation in the study is voluntary.

What are the benefits?

The nation as a whole benefits from TIMSS by having a greater understanding of how the knowledge and skills of U.S. 4th-graders compare with those of 4th-graders in other countries. Schools that participate in TIMSS will receive \$200, and students who participate will receive a small gift that we believe they will like.

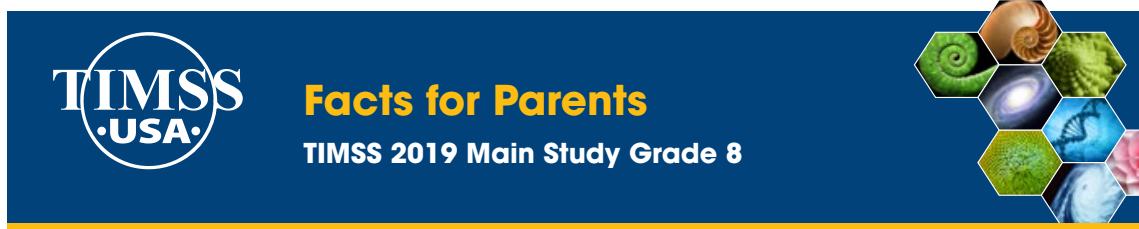
Who administers TIMSS?

The entire assessment is administered by trained staff from Westat, a research organization under contract to the U.S. Department of Education's National Center for Education Statistics.

All of the information collected is safeguarded, as required by law. NCES is authorized to conduct this study under the Education Sciences Reform Act of 2002 (ESRA 2002, 20 U.S.C. §9543). All of the information provided by school staff and students may be used only for statistical purposes and may not be disclosed or used in identifiable form for any other purpose except as required by law (20 U.S.C. §9573 and 6 U.S.C. §151). Students and schools are never identified in any reports. All reported statistics refer to the United States as a whole.

Where can I find out more about TIMSS?

More information about TIMSS is available at the TIMSS website at <http://nces.ed.gov/timss> or <http://timss.bc.edu>. If you would like to contact a TIMSS staff member directly, please feel free to call the TIMSS hotline at **855-445-5604** or email us at TIMSS@westat.com.



About TIMSS 2019

Between April and May of this year, your child's school will be one of about 325 nationwide taking part in an 8th-grade important international assessment: TIMSS 2019. Schools were selected randomly to represent the nation's schools and, within each school, 8th-grade students were selected randomly to represent the nation's 8th-graders. Your child was among those students selected to take part in the TIMSS assessment.

What is TIMSS?

TIMSS (Trends in International Mathematics and Science Study) is an international assessment that measures student learning in mathematics and science. Every 4 years since 1995, TIMSS documents worldwide trends in the knowledge of 8th-graders. The National Center for Education Statistics (NCES), within the U.S. Department of Education, conducts TIMSS in the United States. Along with more than 60 other nations, the U.S. will take part in the 2019 TIMSS cycle as we did in 1995, 1999, 2003, 2007, 2011, and 2015.

What is involved?

TIMSS staff will visit the school and administer the assessment on tablet computers that they will bring to the school. In a few classes nationwide, the assessment will be administered on paper. The session will take approximately 2½ hours. The assessment itself is 90 minutes with breaks between sections. Students will also be asked some questions about themselves and their educational experiences. Participation in the study is voluntary.

What are the benefits?

The nation as a whole benefits from TIMSS by having a greater understanding of how the knowledge and skills of U.S. 8th-graders compare with those of 8th-graders from other countries. Schools that participate in TIMSS will receive \$200, and students who participate will receive a small gift that we believe they will like.

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Where can I find out more about TIMSS?

More information about TIMSS is available at the TIMSS website at <http://nces.ed.gov/timss> or <http://timss.bc.edu>. If you would like to contact a TIMSS staff member directly, please feel free to call the TIMSS hotline at **855-445-5604** or email us at TIMSS@westat.com.

Exhibit A-16. Translation Notice

Dear Parents/Guardians: This important notice concerns an upcoming activity at your child's school. If necessary, please have the notice translated.

عربي	الذباء الاعزاء/الولياء الامور المهمه الاخطار نشاطه حتى قادم مدرسهن طفلكم ظرورا كاعلو ترجمهجونر هذا هظار الا
ខ្មែរ	ជូនចំពោះម្ចាស់តា/អ្នករក្សាណាព្យាបាល : សេចក្តីជូនដំណឹងដ៏សំខាន់នេះទាក់ទងនឹងសកម្មភាព ដែលនឹងកើតមានឡើងនៅពេលខាងមុខ នៅតាមសាលារៀនរបស់កូនលោកអ្នក ។ បើសិនជាចាំ បាច់ សូមអ្នកជួយបកប្រែសេចក្តីជូនដំណឹងនេះកុំខាន ។
中文	亲爱的家长们/监护人们：本通知非常重要，它是关于您孩子的学校近期将举办的一项活动。如果必要的话，请您找人翻译这份通知。
FRANÇAIS	Chers parents/gardiens: Cette importante notification concerne une prochaine activité à l'école de votre enfant. Si nécessaire, veuillez traduire cette notification.
DEUTSCH	Liebe Eltern! Diese Mitteilung enthält wichtige Informationen über eine Aktivität in der Schule, an dem Ihr Kind demnächst teilnehmen würde. Bei Bedarf, lassen Sie diese Mitteilung bitte übersetzen!
Ελληνικά	Σεβασμενη Γονης / Επιτροποι, Αυτο το σπουδαιω γραμα ειναι κατι που θα ειναι για το παιδιε σου στο σχολιω. Σε παρα καλο, να μεταφερεις η να μιλεισεις η να γραπσις τουτο το γραμα στα Ελληνικα.
KREYÒL AYISYEN	Chè Paran/Granmoun ki responsab timoun lan: Notis enpòtan sa konsène yon aktivite ki pral fèt nan lekòl pitit ou an. Si nesesè, tanpri fè yon moun tradui notis sa a pou ou.
עברית	הורים ואפוטרופוס על ילדים יקרים: הודעה חשובה זו קשור לפעילות שתתבצע בבית ספר של ילדיכם. במידת הצורך אנא דאגו לתרגום ההודעה.
ILOKANO	Inay-ayat nga nagannac/taga-aw-awir: Daytoy importante nga bannawag quet maipanggep iti sumarsaruno nga aramid dita escuelaan ti anac yo. No casapulan, ipabaga iyo ti sabale nga sao daytoy nga bannawag.
ITALIANO	Cari Genitori/Guardiani: Questo avviso importante riguarda un'attività imminente nella scuola di tuo/a figlio/a. Se necessario, la prego di far tradurre l'avviso.
日本語	父兄/保護者各位：この通知書は、近く行われる予定のお子様の学校活動に関するものです。重要な通知ですので日本語に翻訳してもらってお読みください。
한국어	부모님/보호자분께: 본 통지문은, 귀댁 자녀의 앞으로 있을 학교 활동에 관한 것입니다. 필요하시다면 통역의 도움을 받으셔서, 통지문의 내용을 검토하여 주시기 바랍니다.
POLSKI	Szanowni Rodzice/Opiekunowie: To jest ważna informacja dotycząca aktywności, które będą miały niedługo miejsce w szkole Państwa dziecka. Jeżeli jest to konieczne, prosimy o przetłumaczenie tej informacji.
PORTUGUÊS (BRASIL)	Caros pais/guardiões: Este aviso importante refere-se a uma atividade a ser realizada na escola de seu(sua) filho(a). Se necessário, favor pedir para que alguém o traduza.
ROMÂNĂ	Stimați părinți/tutori: Această înștiințare importantă se referă la o activitate școlară ce va avea loc la școala copilului dumneavoastră. Dacă este necesar, vă rugăm să obțineți/solicitați traducerea ei în limba română.
РУССКИЙ	Дорогие Родители/Опекуны: Это важное сообщение касается приближающейся деятельности в школе вашего ребёнка. Если необходимо пожалуйста попросите когонибудь перевести это сообщение.
SOMALI	Waaalidiinta/masuuliinta ubadka: Ogaysiiskaan muhiimka ah wuxuu ku saabsan yahay arrimaha iman doona ee laga qaban doono dugsiiga ilmahaaga.
ESPAÑOL	Estimados padres/guardianes: Este importante aviso está relacionado con una actividad a realizarse en la escuela de su niño o niña. De ser necesario, por favor haga que le traduzcan este aviso.
TAGALOG	Minamahal na magulang/tagapag-alaga: Ang abisong ito ay napakaimporante. Ito ay tungkol sa isang gawain sa eskuwela para sa inyong batang anak/alaga. Mangyaring ipasalin ang abisong ito.
TÜRKÇE	Sevgili Veliler: Bu önemli bildiri çocuğunuzun okulunda uygulanacak olan bir aktivite ile ilgilidir. Gerekirse bildiriyi tercüme ettiriniz.
УКРАЇНСЬКА	Шановні батьки/опікуни. Це важливе повідомлення стосується майбутньої діяльності у школі вашої дитини. Якщо необхідно, попросайте перекласти це повідомлення.
اردو	پیارے والدین یہ زوری نوٹس آپ کے بچے کے سکول میں ہونے والے کام کے متعلق ہے اگر زوروت ہو تو اس کا ترجمہ کروالین
TIẾNG VIỆT	Kính gửi quý vị phụ huynh/Quý vị giám hộ: Thông báo này rất quan trọng. Nội dung là quan tâm về sinh hoạt sắp tới của con quý vị tại trường. Nếu cần thiết, xin nhờ người nào hiểu tiếng Anh dịch thông báo này cho quý vị.

Appendix B
Informational Materials

Appendix B: Informational Materials

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Other information collected by TIMSS

TIMSS is more than an assessment of student knowledge in mathematics and science. TIMSS also considers the context in which learning occurs. Students, teachers, and schools are asked about a variety of aspects of the environments in which content is taught, learned, practiced, and applied. In this way, TIMSS provides each country with a rich source of information on the factors influencing mathematics and science achievement.

Participating countries and other education systems in TIMSS 2019

North and South America	Kosovo	Israel
Canada	Latvia	Japan
Chile	Lithuania	Jordan
United States	Macedonia	Kazakhstan
	Malta	Korea, Rep. of
Europe	Montenegro	Kuwait
Albania	Netherlands	Lebanon
Austria	Northern Ireland	Malaysia
Azerbaijan	Norway	Oman
Belgium (Fl.)	Poland	Pakistan
Bosnia and Herzegovina	Portugal	Philippines
Bulgaria	Romania	Qatar
Croatia	Russian Federation	Saudi Arabia
Cyprus	Serbia	Singapore
Czech Republic	Slovak Republic	United Arab Emirates
Denmark	Spain	
England	Sweden	Africa
Finland	Turkey	Egypt
France		Morocco
Georgia	Asia and Middle East	South Africa
Germany	Armenia	
Hungary	Bahrain	Oceania
Ireland	Chinese Taipei	Australia
Italy	Hong Kong SAR	New Zealand
	Iran, Islamic Rep. of	

Benchmarking participants

Abu Dhabi, UAE	Moscow City, Russian Federation
Dubai, UAE	Ontario, Canada
Madrid, Spain	Quebec, Canada

NCES is authorized to conduct TIMSS under the Education Sciences Reform Act of 2002 (ESRA 2002, 20 U.S.C. §9543). Information collected will help the U.S. Department of Education's ongoing efforts to benchmark student achievement in the United States. Participation is voluntary. All of the information you provide may only be used for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law (20 U.S.C. §9573 and 6 U.S.C. §151). The U.S. Office of Management and Budget has approved the data collection under OMB# 1850-0695 (Expires 01/31/2021). Individual responses will be combined with those from other participants to produce summary statistics and reports.



For questions about TIMSS 2019, contact the toll-free TIMSS information hotline at 855-445-5604 or email TIMSS@westat.com.

52278.0418



Trends in International Mathematics and Science Study (TIMSS)

2019 Main Study



What is TIMSS?

The Trends in International Mathematics and Science Study (TIMSS) is an international assessment and research project designed to measure trends in mathematics and science achievement at the fourth- and eighth-grade levels as well as school and teacher practices related to instruction. Since 1995, TIMSS has been administered every 4 years. TIMSS 2019, the seventh study in the series, will involve students from more than 60 countries, including the United States.

TIMSS is sponsored by the International Association for the Evaluation of Educational Achievement (IEA) and conducted in the United States by the National Center for Education Statistics (NCES), part of the U.S. Department of Education.

Why is TIMSS important?

TIMSS provides a unique opportunity to compare U.S. students' math and science knowledge and skills at the fourth- and eighth-grade levels with that of their peers in countries around the world. TIMSS complements what we learn from national assessments by identifying the strengths and weaknesses of student performance relative to students around the world. The results inform national discussions about education as well as international competitiveness.

TIMSS provides valuable benchmark information on how U.S. students compare to students around the world, allows educators and policymakers to examine other educational systems for practices that could have application to the United States, and contributes to ongoing discussions of ways to improve the quality of education of all students.

What type of assessment is TIMSS?

In 2019, for the first time TIMSS will be a digitally based assessment administered on supplied tablets. A subset of students will take a paper-and-pencil TIMSS in order to bridge the study to TIMSS 2015 and prior TIMSS. The assessment contains a mix of questions; some require students to select appropriate

responses, while others require that students solve problems and provide written answers. The TIMSS mathematics and science assessment is developed through an international process involving input from U.S. and international experts in mathematics, science, and measurement. In a final step, the assessment is endorsed as suitable by all participating countries. Examples of released TIMSS items are available at <http://nces.ed.gov/timss/educators.asp>.

How does the United States compare internationally? Results from TIMSS 2015 ^b

Mathematics

U.S. fourth-graders' average score in mathematics was 539, which was higher than the average scores of students in 34 education systems and lower than the average scores of students in 10 education systems. U.S. fourth-grade students have, on average, shown long-term improvement on the TIMSS mathematics assessments. At the fourth grade, U.S. students' average mathematics scores increased from 1995, 2003, and 2007 to 2015. The average mathematics score in 2015, however, was not measurably different from the most recent assessment in 2011. Over 20 years, U.S. fourth-graders' average mathematics score increased from 518 points in 1995 to 539 points in 2015.

U.S. eighth-graders' average score in mathematics was 518, which was higher than the average scores of students in 24 education systems and lower than the average scores of students in 8 education systems. At the eighth grade, U.S. students' average mathematics scores increased from all prior time points (1995, 1999, 2003, 2007 and 2011) to 2015. Over 20 years, U.S. eighth-graders' mathematics scores increased from 492 points in 1995 to 518 points in 2015.

Science

- U.S. fourth-graders' average score in science was 546, which was higher than the average scores of students in 38 education systems and lower than the average scores of students in 7 education systems. U.S. fourth-grade students have shown improvement on the TIMSS science assessments over some time periods: average scores in 2015 were higher than in 2003 and 2007. However, there was no measurable difference between the average science score in 2015 and the average science score in 1995 or 2011. The apparent difference between the average score in 1995 and in 2015 (542 vs. 546 points) was not statistically significant.
- U.S. eighth-graders' average score in science was 530, which was higher than the average scores of students in 26 education systems and lower than the average scores of students in 7 education systems. At the eighth grade, U.S. students' average science scores increased from 1995, 1999, and 2007 to 2015, but there were no measurable differences from 2003 or the most recent time point (2011) to 2015. Over 20 years, U.S. eighth-graders' science scores increased from 513 points in 1995 to 530 points in 2015.

Additional TIMSS 2015 results can be found at <https://nces.ed.gov/timss/timss2015/findings.asp>.



What is TIMSS?

The Trends in International Mathematics and Science Study (TIMSS) is an international assessment and research project designed to measure trends in mathematics and science achievement at the fourth- and eighth-grade levels as well as school and teacher practices related to instruction. Since 1995, TIMSS has been administered every 4 years. TIMSS 2019, the seventh study in the series, will involve students from more than 60 countries, including the United States. In 2019, for the first time TIMSS will be administered digitally. The electronic version of TIMSS, sometimes called “eTIMSS,” will be on the same scale and directly comparable to the previous paper versions of TIMSS.

Why was my school selected for participation?

Schools of varying demographics and locations were randomly selected so that the overall U.S. sample is representative of the overall U.S. school population. The random selection process is important for ensuring that a country’s sample accurately reflects its schools and, therefore, can fairly be compared with samples of schools from other countries.

Why should my school and students participate?

TIMSS informs national discussions about student skills, education policy, and international competitiveness. It is important for selected schools to participate because they represent similar U.S. schools across the country. When students participate and give their best effort, TIMSS gets the most accurate measure possible of student achievement in the U.S. to compare with other countries.

Will all our fourth- or eighth-grade students be asked to participate?

It depends on the number of fourth- or eighth-grade classrooms in the school. In schools with only one or two such classrooms, all students will be asked to participate. In schools with more than two such classrooms, only students in two randomly selected classrooms will be asked to participate. In addition, some students with special needs or who are English language learners may be excused from the assessment.

Who conducts the TIMSS assessment?

The National Center for Education Statistics (NCES), within the U.S. Department of Education, is authorized to conduct this study under the Education Sciences Reform Act of 2002 (ESRA 2002, 20 U.S.C. §9543), and approval of the U.S. Office of Management and Budget under OMB# 1850-0695. The entire assessment process will be administered on behalf of NCES by trained staff from Westat, a research organization under contract with NCES.

How are the school and teacher questionnaires administered?

The teacher and school questionnaires are administered online from a secure website. Teacher questionnaires ask teachers about their experience, available resources, and instructional practices and take about 30 minutes to complete. School questionnaires ask about school practices and resources and take about 30 minutes to complete.

Do teachers need to help administer the assessment?

No, Westat TIMSS staff will visit the school on the day of the assessment, bringing with them all the materials required. The Westat TIMSS staff will administer the assessments to students.

Do schools need to provide computer equipment for the assessment?

No, Westat TIMSS staff will bring all the equipment needed for the assessment, including tablets, styluses, and keyboards.

When will the assessment be conducted?

The assessment will be conducted between April and May 2019. Each school will be notified of its scheduled assessment date in summer/fall 2018. Westat TIMSS staff will work with schools to identify an alternate date should there be a conflict on that date.

How long does the assessment take?

The assessment takes 72 minutes at fourth grade and 90 minutes at eighth grade, and there will be breaks between sections and a questionnaire that takes 30 minutes. The two classes will be assessed in sequential sessions, with one class assessed in the morning and the second class assessed in the afternoon.

What will happen with the collected data?

The data from the assessment will be used to evaluate how the knowledge and skills of U.S. students compare to those of their peers in other participating countries. All of the information provided by school staff and students may be used only for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law (20 U.S.C. §9573 and 6 U.S.C. §151). Reports of the findings from the assessment will not identify participating districts, schools, students, or individual staff. Individual responses will be combined with those of other participants to produce summary statistics and reports.

Where can I find more information about TIMSS?

Visit the TIMSS website at <http://nces.ed.gov/timss>.

For additional information about the TIMSS 2019 assessment, contact the TIMSS information hotline at **855-445-5604** or email TIMSS@westat.com.



Exhibit B-3. TIMSS 2019 Summary of School Activities

Summary of School Activities

TIMSS
USA

Summary of School Activities

Trends in International Mathematics and Science Study (TIMSS)
2019 Main Study

For questions about TIMSS 2019, contact the toll-free TIMSS information hotline at 855-445-5604 or email TIMSS@westat.com
OMB# 1850-0695 (Expires 1/31/2021)

For additional information, go to <http://nces.ed.gov/timss> or the TIMSS international website at <http://timss.bc.edu>.

DEPARTMENT OF EDUCATION
UNITED STATES OF AMERICA

ies NATIONAL CENTER FOR EDUCATION STATISTICS
Institute of Education Sciences

IEA

52278-0418

Exhibit B-3. TIMSS 2019 Summary of School Activities—Continued

SUMMARY OF SCHOOL ACTIVITIES: TIMSS 2019				
	Fall 2018	January-March 2019 Prior to assessment day	April-May 2019 Assessment day	Benefits
Principal	<ul style="list-style-type: none"> Designate a school coordinator 	<ul style="list-style-type: none"> Complete an online school questionnaire on the characteristics of the school, its enrollment, resources, policies, and learning environment Share the importance of participation in the study with school staff 	<ul style="list-style-type: none"> Support assessment day activities Encourage students to participate and do their best on the assessment 	<ul style="list-style-type: none"> Represent other similar U.S. schools Receive a \$200 check for the school Receive a confidential report on how your school performed on select TIMSS assessment questions
School coordinator	<ul style="list-style-type: none"> Confirm an assessment date convenient for your school Register your school on the online MyTIMSS 2019 portal in late Fall 	<ul style="list-style-type: none"> Arrange assessment day location Confirm date and location with Westat TIMSS staff Provide class lists and student lists through online MyTIMSS 2019 portal Notify teachers, selected students, and students' parents of the study and benefits of participating Work with Westat TIMSS staff to identify students with special needs Collect parental consent forms where required and submit to Westat TIMSS staff Coordinate the principal's completion of the school questionnaire Coordinate the teachers' completion of teacher questionnaires 	<ul style="list-style-type: none"> Confirm space is appropriate for the assessment Collect completed school and teacher questionnaires (if not completed online) and give to Westat TIMSS staff Ensure all sampled students attend the assessment session Meet with Westat TIMSS staff and provide feedback about the assessment process 	<ul style="list-style-type: none"> Receive a \$100 personal check
Teachers of students selected for TIMSS		<ul style="list-style-type: none"> Complete online teacher questionnaire 		<ul style="list-style-type: none"> Represent U.S. teachers in the international study Receive \$20
Selected students			<ul style="list-style-type: none"> Attend the assessment sessions, complete the assessment and student questionnaire 	<ul style="list-style-type: none"> Represent the United States in the international study Receive a small thank-you gift
Westat TIMSS staff	<ul style="list-style-type: none"> Work with the school to set an assessment date Help school coordinator with assessment details and logistics Protect school and student information 	<ul style="list-style-type: none"> Call the school coordinator to discuss assessment day location and student participation Select classroom sample and notify school of selected classes 	<ul style="list-style-type: none"> Administer assessment from start to finish Furnish all assessment equipment or materials, e.g., tablets, styluses, keyboards, pencils, and test booklets Meet with the school coordinator to debrief at the end of the assessment Maintain security of all materials 	<ul style="list-style-type: none"> Ensure quality and uniformity of data collected across the United States

MyTIMSS Registration and Provide School Information (PSI) Guide

Registration + Username/Password

In order to prepare for the TIMSS 2019 main study in grades 4 or 8, you must log in to the MyTIMSS website (www.MyTIMSS2019.com). If you have never logged in to the website for the 2019 main study and cannot find the registration ID number provided to you by your state coordinator, please contact your state coordinator or the TIMSS hotline at TIMSS@westat.com / 1-855-445-5604.

1. Once you have your registration ID number, go to the www.MyTIMSS2019.com website and click “Please register.”
2. Enter your registration ID and click “Continue.”
3. Make sure to confirm the district and school name shown at the top of the page are correct. Then follow the instructions to enter your name and other contact info. If you will be handling most of the TIMSS tasks at your school, make sure to click “Are you the school coordinator for?”

District:

School Name:

MyTIMSS Registration ID:

First Name:

Last Name:

Telephone:

Extension:

Email:

Confirm Email Address:

Are you the school coordinator for ?

Create your own password using the following criteria:

- Must have 8-14 characters
- Must have **all of the following:**
 - Uppercase(letter)
 - Lowercase(letter)
 - Numerical(digit)
 - Special character (*!,~%#@#\$?^+=&)

Sample password: KnightsR#1

Password:

Confirm Password:

Exhibit B-4. MyTIMSS Registration and Provide School Information—Continued

4. Then create a password that meets the password criteria and click **Register**.
5. Once created, your username will be emailed to you. Your username is **not** your email address.
6. If you check the “Are you the school coordinator for?” box, you will get an additional email with a Summary of upcoming activities.
7. When you first log in, you will see your school name, grade, and assessment date at the top banner. Please make sure those fields are accurate. If not, contact TIMSS@westat.com.

Site Home Page

Welcome to the TIMSS 2019 main study!

Your school is participating in the Trends in International Mathematics and Science Study (TIMSS) main study, which will be conducted in 2019 at grades 4 and 8. [One/both] of your classes will take a [digitally-based assessment] [and the other will take a paper-and-pencil assessment] of mathematics and science.

The website will help school coordinators prepare for the upcoming TIMSS main study. Each assessment will be administered by trained TIMSS representatives. Thank you for helping your school participate in this important assessment.

The “What You Need to Do” menu on the left will guide through these activities. You will need to visit this website several times throughout the next few months, so remember your MyTIMSS username and password. You will be asked to update your password every 120 days. Use the left-hand menu to complete the tasks listed below.

- Provide School Information—Late Fall, 2018
- Submit Class List—Late January, 2019
- Submit Student List—Late January, 2019
- Prepare for Assessment—Late February, 2019

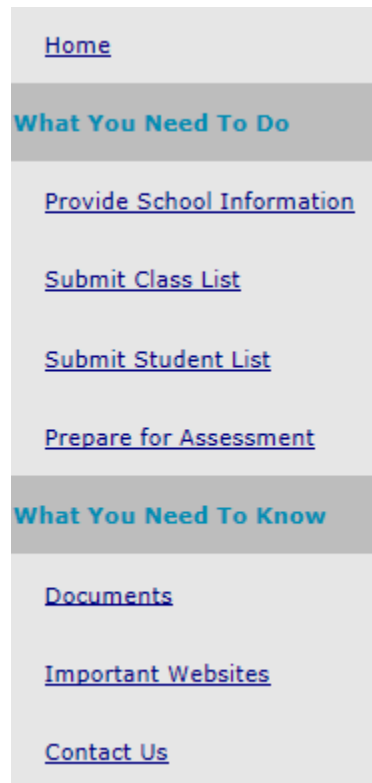


Exhibit B-4. MyTIMSS Registration and Provide School Information—Continued

Provide School Information (PSI)

The first step in MyTIMSS is to complete the **Provide School Information** page. Click the **Provide School Information** link at the left-hand menu to access this page.

On the PSI page, the information on the left is the current information available for your school. Please make updates in the fields on the right if the current information on the left is blank or incorrect. Make sure to complete both the **“School Contact Information”** and **“School Characteristics”** sections. Then click Save.

Note: You will see this red text banner below until all required fields are filled out completely:

***This section is incomplete, please review the missing fields below. (*)**

School Contact Information	
Current	New
School Name:	<input type="text"/>
School Address 1:	<input type="text"/>
School Address 2:	<input type="text"/>
City:	<input type="text"/>
State:	<input type="text"/>
Zip Code:	<input type="text"/>
Principal Prefix:	<input type="text"/>
Principal Firstname:	<input type="text"/>
Principal Lastname:	<input type="text"/>
Principal Suffix:	<input type="text"/>
Telephone Number: Ext:	<input type="text"/> Ext: <input type="text"/>
Email:	<input type="text"/>
School Coordinator Prefix:	<input type="text"/>
School Coordinator Firstname:	<input type="text"/>
School Coordinator Lastname:	<input type="text"/>
School Coordinator Suffix:	<input type="text"/>
School Coordinator's Title:	<input type="text"/>
Telephone: Ext:	<input type="text"/> Ext: <input type="text"/>
Fax:	<input type="text"/>
Email:	<input type="text"/>
School Characteristics	
Date school starts spring break:	<input type="text"/>
Date school returns from spring break:	<input type="text"/>
Last day of school for the current school year:	<input type="text"/>
Enrollment at grade 8 for entire school:	<input type="text"/>
Number of 8 th -grade math classes:	<input type="text"/>

If you are selected for grade 8, then the last two fields will ask about grade 8 (see pic above). For grade 8 schools, count all math classes **with at least one 8th-grade student.

Exhibit B-4. MyTIMSS Registration and Provide School Information—Continued

If you are selected for grade 4, then the last two fields will ask about grade 4. (see pic below).

Date school starts spring break:	<input type="text"/>
Date school returns from spring break:	<input type="text"/>
Last day of school for the current school year:	<input type="text"/>
Enrollment at grade 4 for the entire school: *	<input type="text"/>
Number of classes with at least one 4 th grade student: *	<input type="text"/>

Once complete, you will see this blue text bar shown below at the top of the page.

Thank you for completing the Provide School Information form! Your information should now show in the Current column.

In January, 2019, we will email to you instructions for submitting class and student lists.

Thank you for you school's participation in TIMSS 2019!

The TIMSS 2019 Team

855-445-5604

TIMSS@westat.com

Instructions for Submitting Class Lists—Grade 4

Submit Class List

TIMSS needs a complete and current list of all of your school's fourth-grade classes in order to randomly select classes to be assessed. Typically, two classes are sampled by the TIMSS team in each school, and all 4th-grade students in the selected classes are assessed. Submit your class list first, and then the TIMSS Team will email you the list of selected classes. After you receive the list of selected classes, you will be given instructions to submit student lists for the selected classes only.

Go to www.MyTIMSS2019.com and log in.

Enter information about all fourth-grade classes at your school

On www.MyTIMSS2019.com, select **Submit Class List** from the navigation menu on the left. The table on the page provides a description of all information that is needed. Enter information for each fourth-grade class in the web form. After you have entered information for each class, click on the *Save* button, and another row will appear for you to enter information about another class. If you have not completely filled out a row, you may get a warning message at the top of the screen that the data must be fixed and resaved. Continue until you have entered information for all classes that contain fourth-grade students. **Note: Do not click the Finished button until all classes have been entered. Make sure to click "Save" one last time prior to clicking "Finished."**

Include the following information for each class:

- a. *Class Name (each class name must be unique and descriptive, e.g. "Mrs. Johnson's 4th grade class;" each row must have a unique new name)*
- b. *Class Group or Track (Select "average" track if there are no tracks or group levels)*
- c. *Number of 4th grade students in the class (Do not include 3rd or 5th graders)*
- d. *Class Exclusion Status (If applicable; Only use this field if EVERY student in that class cannot take TIMSS)*
- e. *Name of Mathematics Teacher*
- f. *Email address of Mathematics Teacher*
- g. *Name of Science Teacher (Only enter if different from the mathematics teacher)*
- h. *Email address of Science Teacher (Only enter if different from the mathematics teacher)*

Additional tips for submitting information about your fourth-grade classes:

- Record the Class Name that is typically used by your school to refer to the class, but we recommend it be as descriptive as possible so you can later on identify it easily.
- For classes with students from more than one grade level, include in *Number of Students* only those students in Grade 4. For example, if the class has 5 third-graders, 6 fourth-graders, and 4 fifth-graders, enter "6" as the *Number of Students* in this class.
- Use the most current enrollment information.

Exhibit B-5. TIMSS 2019 Grade 4 Submit Class List Instructions—Continued

- Include all classes, even if they typically are excluded from your state testing program, or all students take alternate assessments. You can indicate information about the class in ***Class Exclusion Status***, but only if all students should be excluded.
- Name of Mathematics teacher and name of Science teacher may be the same.
- Print a list of the classes you included for your future reference using the *Print* button.

Once you have entered information for all the fourth-grade classes in your school, click **Save** and then the **Finished** button. Only click **Finished** AFTER clicking **Save**.

When you click “Submit Class List” for Grade 4, you will see this description table at the top and an empty form to enter information at the bottom of the page. Below is a detailed description of what will be needed.

Table of Fields to enter for Grade 4 Class List Submission

<p>★Class Name (each class name must be unique)</p>	<p>Record the class name that is typically used by your school to refer to the class. For example, it may be that your school uses the grade plus a letter for the class name (4a, 4b, etc.), the grade plus a number (4.1, 4.2, etc.), the teacher name, the class period (Period 1, Period 2, etc.), the class location (Room 7, Room 8, etc.), or some other combination of these items. It is important that unique class names are entered because these names will be used to indicate to the Test Administrator which classes will be tested.</p>
<p>★Class Group or Track (use Average if none)</p>	<p>If your school assigns students to specific classes based on their ability, please indicate the relevant level: Low ability, Average ability, or High ability. Use average if no group or track level.</p>
<p>★Number of 4th-grade students in each class</p>	<p>Enter the number of fourth-grade students in each class. In the case of <i>multi-grade classes</i> (e.g., students from more than one grade level in the same class), only the fourth-grade students should be counted as a class in the list. For example, if three Grade 3 students, five Grade 4 students, and ten Grade 5 students form a multi-grade class, then you should record five students for the number of students in this multi-grade class.</p>


Exhibit B-5. TIMSS 2019 Grade 4 Submit Class List Instructions—Continued

<p>Class Exclusion Status (if applicable; if at least one 4th-grade student in this class is able to be assessed, do not use this field)</p>	<p>1 = Students with functional disabilities; i.e., students who have physical disabilities in such a way that they cannot perform in the TIMSS testing situation. Students with functional disabilities who are able to perform should be accommodated in the test situation, within reason, rather than excluded.</p> <p>2 = Students with intellectual disabilities; i.e., students who are considered, in the professional opinion of the school principal or by other qualified staff members, to have severe intellectual disabilities or who have been tested as such. This category includes students who are emotionally or mentally unable to follow even the general instructions of the test. Students should not be excluded solely because of poor academic performance or normal disciplinary problems. It should be noted that students with dyslexia, or other such learning disabilities, should be accommodated in the test situation, within reason, rather than excluded.</p> <p>3 = Non-native language speakers; i.e., students who are unable to read or speak the language(s) of the test and would be unable to overcome the language barrier in the test situation.</p> <p>If all students in the excluded class do not belong to the same exclusion category, please identify the category corresponding to the majority of students.</p>
<p>★ Name of Mathematics Teacher</p>	<p>Name of Mathematics Teacher of class.</p>
<p>★ Email address of Mathematics Teacher</p>	<p>Email address of Mathematics Teacher of class.</p>
<p>Name of Science Teacher (only if different from Mathematics Teacher)</p>	<p>Name of Science Teacher of class (only if different from Mathematics Teacher).</p>
<p>Email address of Science Teacher (only if different from Mathematics Teacher)</p>	<p>Email address of Science Teacher of class (only if different from Mathematics Teacher).</p>


Exhibit B-5. TIMSS 2019 Grade 4 Submit Class List Instructions—Continued


Enter classes in this table:

Tips:



- Use the **Save** button to save information you have entered for each class.
- If you need to delete a class, click on the  at the beginning of a saved class row.
- Use the **Print** button to print a list of the classes you included for reference.
- Each class name must be unique. Do not just type in "Grade 4 class" several times. We must be able to differentiate between classes, so please use different class names for each class with at least one 4th-grade student.
- Click on the **Finished** button when you have entered all fourth-grade classes in the form. Then go to the Submit Student List page.

Grade 4							
*Class Name (each class name must be unique)	*Class Group	*Number of 4th-grade students in class (most classes have less than 30 students)	Class Exclusion Status (If applicable)	*Name of Mathematics Teacher	*Email address of Mathematics Teacher	Name of Science Teacher (only if different from Mathematics Teacher)	Email address of Science Teacher (only if different from Mathematics Teacher)
	Select...		Select...				

You can hover your mouse cursor over the  Information symbol to get more information about each field and its requirements.




The white asterisks indicates the field is required.  Enter class details and then click **Save** after each row. The row will not save if an error occurs. If you see an error message, please correct the text in that row and re-save to activate a new row to enter.

Continue to click "save" and make sure to click "save" after you enter the last class. Do Not click "Finished" until **after** you click "save" one last time and there are no error messages.

Grade 4						
	*Class Name	*Class Group	*Number of Students	Class Exclusion Status (If applicable)	*Name of Mathematics Teacher	*Name of Science Teacher
	Grade 4 - 1	Average	26	Students with intellectual disabilities	Paul Smith	Julia O'Donnell
	Grade 4 - 2	High	24	Select...	Mary Porter	Julia O'Donnell
	Grade 4 - 3	Low	23	Students with intellectual disabilities	William Peters	Julia O'Donnell

Choose "Finished" only when you have entered all classes. No further editing is possible once you choose this option.

You can print any time

Grade 4						
	*Class Name	*Class Group	*Number of Students	Class Exclusion Status (If applicable)	*Name of Mathematics Teacher	*Name of Science Teacher
	Grade 4 - 1	Average	26	Students with intellectual disabilities	Paul Smith	Julia O'Donnell
	Grade 4 - 2	High	24	Select..	Mary Porter	Julia O'Donnell
	Grade 4 - 3	Low	23	Students with intellectual disabilities	William Peters	Julia O'Donnell
		Select..		Select..		

"Save" records the class information and opens a new line for another class

Exhibit B-5. TIMSS 2019 Grade 4 Submit Class List Instructions—Continued

Some possible warnings/errors you may encounter are below.

- Please fill out each required field for every row and re-enter/retry again.
- *The class size you entered was over 75 students.
- Exclusion status must apply to all students in the class. If even one student does not fall in this status then this selection should be removed.
- Invalid email format
- You have entered that there are # grade 4 students in the PSI page for your selected grade; however, there are # total grade 4 students on the class list page. Please make sure this is correct before moving on. Please contact timssefile@westat.com if you have questions.
- You have entered that there are # grade 4 classes in the PSI page for your selected grade; however, there are # total classes on the class list page. Please make sure this is correct before moving on. Please contact timssefile@westat.com if you have questions.

Continue to click “save” and make sure to click “save” after you enter the last class. Do Not click “Finished” until **after** you click “save” one last time and there are no error messages.

Once finished, the TIMSS team will email you within 5-7 business days which grade 4 classes were selected. Then you can submit student lists for the selected classes only.

**If you need assistance, email TIMSSefile@westat.com
or call 1-(855)-445-5604.**

Instructions for Submitting Student Lists—Grade 4

Once you receive an email notifying you of the selected 4th-grade classes, please provide a complete and current list of all 4th-grade students for the selected classes only. Your electronic student data file (E-File) must be submitted as a Microsoft Excel file.

Go to www.mytimss2019.com and log in.

Use one of the **TIMSS Grade 4 Excel Templates** (located under the **Documents tab** on the navigation menu on www.mytimss2019.com). If you cannot submit your student data with this information in an Excel file, please call or email the TIMSS E-file Help Desk at TIMSSefile@westat.com or 1-(855)-445-5604.

Step 1—Compile Data in an Excel File

Prepare an Excel file with the following data elements for all 4th-grade students in the selected classes.

Data Element	Description
Student Name	The preferred format is First Name, Middle Name (or Initial), and Last Name in separate columns. However, TIMSS will accept student names in one column.
Sex	Codes (numeric or text) for Male/Female
Date of Birth	The preferred format is Month of Birth and Year of Birth in separate columns. However, TIMSS will accept Date of Birth in one column.
Student with a Disability (SD) Status	School-defined codes for: 1=Yes, student has disability and/or IEP 2=No, student does not have disability or IEP
English Language Learner (ELL) Status	School-defined codes for: 1=Yes, student is ELL 2=No, student is formerly ELL 3=No, student is not ELL
Class	The fourth-grade class the student is enrolled in. Please use the exact same class names you used in the Submit Class List section.
Mathematics Teacher Name	Math Teacher of the above named class.
Mathematics Teacher Email	Math Teacher Email address (work email)
Science Teacher Name	Science teacher of the above named class. <i>Only needed if different from math teacher.</i>
Science Teacher Email	Science Teacher Email address (work email). <i>Only needed if different than math teacher.</i>

Exhibit B-6. TIMSS 2019 Grade 4 Submit Student List Instructions—Continued

Data Element	Description
Student Current Grade Level	Enter student’s current grade level

You may use one of the templates provided or create your own Excel file with these data for each student. It is preferred that you include column headers as the first row in your E-File, as in these templates. However, E-Files without column headers will be accepted.

Template 1 has the student name in three separate columns, and month of birth and year of birth in two separate columns.

	A	B	C	D	E	F	G	H	I	J	K	L	M	
1	Student First Name <i>(list only the surnames of this 4th-grade class)</i>	Student Middle Name	Student Last Name	Sex	Month of Birth	Year of Birth	Student with a Disability status <i>(1=Yes, student has disability and/or IEP 2=No, student does not have disability or IEP)</i>	English Language Learner status <i>(1=Yes, student is ELL 2=No, student is formerly ELL 3=No, student is not ELL)</i>	Class Name <i>(enter the exact class names you typed in the MyTIMSS class list page)</i>	Mathematics Teacher Name	Mathematics Teacher Email <i>(work email)</i>	Science Teacher Name <i>(only needed if different from math teacher)</i>	Science Teacher Email <i>(only needed if different from math teacher)</i>	Student Current Grade Level
2														

Template 2 has the student name in one column, and month and year of birth in another column.

	A	B	C	D	E	F	G	H	I	J	
1	Student Full Name <i>(list only the surnames of this 4th-grade class)</i>	Month and Year of Birth	Sex	Student with a Disability status <i>(1=Yes, student has disability and/or IEP 2=No, student does not have disability or IEP)</i>	English Language Learner status <i>(1=Yes, student is ELL 2=No, student is formerly ELL 3=No, student is not ELL)</i>	Class Name <i>(enter the exact class names you typed in the MyTIMSS class list page)</i>	Mathematics Teacher Name	Mathematics Teacher Email <i>(work email)</i>	Science Teacher Name <i>(only needed if different from math teacher)</i>	Science Teacher Email <i>(only needed if different from math teacher)</i>	Student Current Grade Level
2											

Tips for ensuring the E-File process goes smoothly:

- Use the template or provide column headers. Student information should begin on the second row. There should be no empty rows within the student data.
- Be sure to give your file a unique, descriptive name. Within Excel, click on *File*, then *Save As*, and give your file a name such as “Your School Name Grade 4.xls.”
- The first row of data in your file will be read as the column header unless you indicate otherwise on the **Submit Student List** webpage. Each succeeding row will be considered a student record.
- There should be only one worksheet with data in the Excel file. If there are other worksheets, they must not contain any data.
- Do not provide any other student information.

Please go to the next page for more instructions.

Step 2—Upload Your Excel File

Once your file is prepared and checked for accuracy and completeness, login to www.mytimss2019.com and select “Submit Student List” from the left-hand menu.

Filename	Filesize	Uploaded	Uploaded By	
				Once you have submitted an E-File, the file’s information will appear under these headings, as shown in the box below
Does your student data file contain column headers : Yes ▾				The e-Filing system needs to know if the first row of the file contains headings
New file:	<input type="button" value="Browse..."/>	TIMSS Gr 4 test efile one col.xlsx		You can type in the file name or use "Browse" to find the file on your computer
<input type="button" value="Upload"/>	Click here to go to the next step			

You will see this link for your file if you have uploaded the file.

Please go to the next page for more instructions.

Step 3—Identify Your Columns

We need to know what information is in each column of your student data file (E-File). If you provided column headers in your E-File (preferred), they are displayed under **Column Heading Is** in the table. If you did not provide column headers, **Column Heading Is** will contain numbers for each column in your submitted E-File. Click on the down arrows in **Your Column Contains** to select descriptions for each column header. If there is no appropriate description in the drop-down list, please select N/A.

Column Heading Is	Your Column Contains
Student Name	Student Name ▼
Student Current Grade Level	Grade ▼
Sex	Sex ▼
Month of Birth	Birth Date: Month of Birth ▼
Year of Birth	Birth Date: Year of Birth ▼
Student with a Disability status __ (1=Yes, student has disability)	Students with a Disability Status ▼
English Language Learner status_ (1=Yes, student is ELL__2=No, student is not)	English Language Learner Status ▼
Mathematics Class Name (enter the exact class names you typed in)	Column Contains ... ▼
Mathematics Teacher Name	Student Name Student Name: First Student Name: Middle Student Name: Last
Science Teacher Name	Date of Birth Birth Date: Month of Birth Birth Date: Year of Birth
Science Teacher Email (work email)	Sex Mathematics: Teacher Name Mathematics: Teacher Last Name Mathematics: Teacher First Name Mathematics: Teacher Middle Name Mathematics: Teacher Email Science: Teacher Name Science: Teacher Last Name Science: Teacher First Name Science: Teacher Middle Name Science: Teacher Email
<input type="button" value="Previous"/> <input type="button" value="Next"/>	
any TIMSS questions, please email TIMSS@	

Select *Next* after all columns have been identified.

Step 4—Match Your Values to TIMSS Codes

TIMSS also needs to know the values for some of the columns in your E-File. The tables contain the following information for each column:

- Your Values: The values in your E-File
- TIMSS Codes: Click on the down arrow and select the TIMSS Code that best matches Your Values
- Number: The number of students in your E-File with that value
- Percentage: The percentage in your E-File with that value

a. Update Birth codes

If you only used one column for DOB instead of separate MOB and YOB columns, you will see this screen below. You can use the “Update all TIMSS Codes” to update all values in the table. If you used separate MOB and YOB columns, go to the next screenshot. TIMSS prefers only receiving separate MOB and YOB columns.

Date of Birth - Column 1 of 3

Update All TIMSS Codes: ▼

Your Values	TIMSS Codes	Number	Percentage
1/2/2000 12:00:00 AM	<input type="button" value="MDY"/> ▼	1	20%
1/3/2000 12:00:00 AM	<input type="button" value="MDY"/> ▼	1	20%
1/4/2000 12:00:00 AM	<input type="button" value="MDY"/> ▼	1	20%
1/5/2000 12:00:00 AM	<input type="button" value="MDY"/> ▼	1	20%
1/6/2000 12:00:00 AM	<input type="button" value="MDY"/> ▼	1	20%

b. Update Gender Codes

Your Values	TIMSS Codes	Number	Percentage
F	<input type="button" value="Female"/> ▼	10	47.62%
M	<input type="button" value="Select Code"/> ▼	11	52.38%

Select Code

N/A

Male

Female

In this step, you explain to the system what the data in your columns mean

Use the *Previous* and *Next* buttons to navigate from column header to column header.

Exhibit B-6. TIMSS 2019 Grade 4 Submit Student List Instructions—Continued

c. Class Student Counts

The second to last page should show the counts of students in each class.

If there is an error in your data file, exit E-File, correct the problem in your Excel file, and upload the file again.

Class - Column 3 of 3

Your Values	Number	Percentage
mathclassonemr.jeter	2	40%
mathclassthreemr.williams	1	20%
mathclasstwomr.oneill	2	40%

[Previous](#) [Next](#)

If there is an error in your data file, exit E-File, correct the problem in your Excel file, and upload the file again.

Step 5—Verify Your E-File

The table in this section summarizes the information you have provided on your student list (E-File). Please review this summary and verify that the information is correct. *Total Enrollment* at the bottom of the table should match the number of students in your E-File and the total number of students currently enrolled in the selected grade 4 classes.

One possible warning you may encounter is shown below. Please contact TIMSSefile@westat.com if you have questions.

You have entered that there are # students in the PSI page for your selected grade; however, there are # students in your excel file. Please confirm your excel file has the correct number of students.

Record whether the information is correct or incorrect by selecting the appropriate button at the bottom of the page. Then click the *Submit* button. If you select INCORRECT, you will need to correct your E-File and resubmit it.

Verify Your E-File

The table below summarizes the information you have provided on your student list (E-File). Please compare the students in your E-File, and the total number of students currently enrolled in grade 8.

Record whether the information is correct or incorrect by selecting the appropriate button at the bottom.

	Number	Percentage
Date of Birth		
MDY	5	100%
Sex		
Male	2	40%
Female	3	60%
Class		
	5	100%
Total Enrollment:	5	

- Information is **CORRECT and CURRENT**.
- Information is **INCORRECT**.

Exhibit B-6. TIMSS 2019 Grade 4 Submit Student List Instructions—Continued

You can also see your column mappings again by clicking the file name link below.

Filename	Filesize	Uploaded
AE_Sample1_TIMSS_2018_Blank_Student_List_Template_-_Grade_4.xlsx	14793	1/23/2018 11:47:36 AM

Does your student data file contain [column headers](#): ▼

New file: No file chosen

If you need assistance, please contact the TIMSS E-Filing Help Desk at TIMSSefile@westat.com or 1-(855)-445-5604.

Within 5-10 business days, you will be sent an email with instructions to go to the Prepare for Assessment Page. You do not have to navigate to the Prepare for Assessment page until you get this email.

A TIMSS representative will contact you to make arrangements for the assessment.

Instructions for Submitting Class Lists—Grade 8

Submit Class List

Thank you for your school’s participation in TIMSS and thank you for registering on MyTIMSS! TIMSS now needs a complete and current list of all of your school’s eighth-grade mathematics classes in order to randomly select classes to be assessed. Typically, two mathematics classes are sampled by the TIMSS team in each school, and all students in the selected classes are assessed. Submit your class list first, and then the TIMSS Team will email you the list of selected classes. After you receive the list of selected classes, you will be given instructions to submit student lists for the selected classes only.

Go to www.MyTIMSS2019.com and log in.

Enter information about all eighth-grade mathematics classes at your school

On www.MyTIMSS2019.com, select **Submit Class List** from the navigation menu on the left. The table on the page provides a description of all information that is needed. Enter information for each eighth-grade mathematics class in the web form found at the bottom of the page. After you have entered information for each mathematics class, click on the *Save* button, and another row will appear for you to enter information about another mathematics class. If you have not completely filled out a row, you may get a warning message at the top of the screen that the data must be fixed and resaved. Make sure to fill out every required field. Continue until you have entered information for all mathematics classes that contain eighth-grade students. **Note: Do not click the **Finished** button until all classes have been entered. Make sure to click “Save” one last time prior to clicking “Finished.”**

Include the following information for each class:

- a. *Mathematics Class Name (Be descriptive with names, e.g., Mrs. Johnson’s 4th period algebra class; each row must have a new class name)*
- b. *Class Group or Track (Select “average” track if there are no tracks or group levels)*
- c. *Number of 8th-grade students in the class (Do not include 7th or 9th-grade students)*
- d. *Class Exclusion Status (If applicable; Only use this field if EVERY student in that class cannot take TIMSS)*
- e. *Name of Mathematics Teacher*
- f. *Email address of Mathematics Teacher*

Additional tips for submitting information about your eighth-grade mathematics classes:

- Record the Class Name that is typically used by your school to refer to the class, but we recommend it be as descriptive as possible so you can later on identify it easily.
- For mathematics classes with students from more than one grade level, include in the *Number of 8th-grade students in this Mathematics class* column only those students in grade 8. For example, if the class has 5 seventh-graders, 6 eighth-graders, and 4 ninth-graders, enter “6” as the *Number of 8th-grade students in this mathematics class*.
- Use the most current enrollment information.

Exhibit B-7. TIMSS 2019 Grade 8 Submit Class List Instructions—Continued

- Include all classes, even if they typically are excluded from your state testing program, or all students take alternate assessments. You can indicate information about the class in **Class Exclusion Status**, but only if all students should be excluded.
- Print a list of the mathematics classes you included for your future reference using the *Print* button.

Once you have entered information for all the eighth-grade mathematics classes in your school, **click *Save* and then the *Finished* button. Only click *Finished* AFTER clicking *Save*.**

When you click “Submit Class List” for Grade 8, you will see this description table at the top and an empty form to enter information at the bottom of the page.

Below is a detailed description of what will be needed.

Table of Fields to enter for Grade 8 Class List Submission

<p>★ Mathematics Class Name (each class name must be unique)</p>	<p>Record the class name that is typically used by your school to refer to the class. For example, it may be that your school uses the grade plus a letter for the class name (8a, 8b, etc.), the grade plus a number (8.1, 8.2, etc.), the teacher name, the class period (Period 1, Period 2, etc.), the class location (Room 7, Room 8, etc.), or some other combination of these items. It is important that unique class names are entered because these names will be used to indicate to the Test Administrator which classes will be tested.</p>
<p>★ Class Group or Track (use Average if none)</p>	<p>If your school assigns students to specific classes based on their ability, please indicate the relevant level: Low ability, Average ability, or High ability. Use average if no group or track level.</p>
<p>★ Number of 8th-grade students in this mathematics class</p>	<p>Enter the number of eighth-grade students in each class. In the case of <i>multi-grade classes</i> (e.g., students from more than one grade level in the same class), only the eighth-grade students should be counted as a class in the list. For example, if three Grade 7 students, five Grade 8 students, and ten Grade 9 students form a multi-grade class, then you should record five students for the number of students in this multi-grade class.</p>

Exhibit B-7. TIMSS 2019 Grade 8 Submit Class List Instructions—Continued

<p>Class Exclusion Status (if applicable; if at least one 8th-grade student in this class is able to be assessed, do not use this field)</p>	<p>1 = Students with functional disabilities; i.e., students who have physical disabilities in such a way that they cannot perform in the TIMSS testing situation. Students with functional disabilities who are able to perform should be accommodated in the test situation, within reason, rather than excluded.</p> <p>2 = Students with intellectual disabilities; i.e., students who are considered, in the professional opinion of the school principal or by other qualified staff members, to have severe intellectual disabilities or who have been tested as such. This category includes students who are emotionally or mentally unable to follow even the general instructions of the test. Students should not be excluded solely because of poor academic performance or normal disciplinary problems. It should be noted that students with dyslexia, or other such learning disabilities, should be accommodated in the test situation, within reason, rather than excluded.</p> <p>3 = Non-native language speakers; i.e., students who are unable to read or speak the language(s) of the test and would be unable to overcome the language barrier in the test situation.</p> <p>If all students in the excluded class do not belong to the same exclusion category, please identify the category corresponding to the majority of students.</p>
<p>*Name of Mathematics Teacher</p>	<p>Name of the Mathematics Teacher of class.</p>
<p>*Email address of Mathematics Teacher</p>	<p>Email address of Mathematics Teacher of class.</p>

Enter classes in this table:

Grade 8					
*Mathematics Class Name (each class name must be unique)	*Class Group or Track	*Number of 8th-grade students in this mathematics class (most classes have less than 30 students)	Class Exclusion Status (If applicable)	*Name of Mathematics Teacher	*Email address of Mathematics Teacher
<input type="text"/>	Select... ▾	<input type="text"/>	Select... ▾	<input type="text"/>	<input type="text"/>

You can hover your mouse cursor over the Information symbol to get more information about each field and its requirements.

The white asterisks indicates the field is required.

Enter class details and then click **Save** after each row. The row will not save if an error occurs. If you see an error message, please correct the text in that row and re-save to activate a new row to enter.

Exhibit B-7. TIMSS 2019 Grade 8 Submit Class List Instructions—Continued

Grade 8				
*Mathematics Class Name (each class name must be unique)	*Class Group or Track	*Number of 8th-grade students in this mathematics class (most classes have less than 30 students)	Class Exclusion Status (If applicable)	*Name of Mathematics Teacher
Math8A	Low	20	Students with intellectual disabilities	Mr. Chestnut
Math8B	Average	23	Select...	Mrs. Wilson
Math8C	High	22	Select...	Ms. Reed
	Select...		Select...	

Save Print Finished

Some possible warnings/errors you may encounter are below.

- Please fill out each required field for every row and re-enter/retry again.
- *The class size you entered was over 75 students.
- Exclusion status must apply to all students in the class. If even one student does not fall in this status then this selection should be removed.
- Invalid email format
- You have entered that there are # grade 8 students in the PSI page for your selected grade; however, there are # total grade 8 students on the class list page. Please make sure this is correct before moving on. Please contact timssefile@westat.com if you have questions.
- You have entered that there are # grade 8 classes in the PSI page for your selected grade; however, there are # total classes on the class list page. Please make sure this is correct. Please contact timssefile@westat.com if you have questions.

Continue to click “save” and make sure to click “save” after you enter the last class. Do Not click “Finished” until **after** you click “save” one last time and there are no error messages.

Once finished, the TIMSS team will email you within 5-7 business days which grade 8 mathematics classes were selected. Then you can submit student lists for the selected classes only.

If you need assistance, email TIMSSefile@westat.com
or call 1-(855)-445-5604.

Instructions for Submitting Student Lists—Grade 8

Along with the list of classes, TIMSS needs a complete and current list of **all students** in grade 8 in order to draw a random sample of mathematics classes (and therefore students) to participate in the assessment. Your student data electronic file (E-File) must be submitted as a Microsoft Excel file. After you submit the class list, the TIMSS Team will email you the list of selected classes. Please submit the list of students after you have received the names of the selected classes.

Go to www.mytimss2019.com and log in.

Use one of the **TIMSS Grade 8 Excel Templates** (located in **Documents** on www.mytimss2019.com and described below). If you cannot submit your student data with this information in an Excel file, please call or email the TIMSS E-Filing Help Desk at TIMSSefile@westat.com or 1-(855)-445-5604.

Step 1—Compile Data in an Excel File

Prepare an Excel file with the following data elements for all students in grade 8.

Data Element	Description
Student Name	The preferred format is First Name, Middle Name (or Initial), and Last Name in separate columns. However, TIMSS will accept student names in one column.
Sex	Codes (numeric or text) for Male/Female
Date of Birth	The preferred format is Month of Birth and Year of Birth in separate columns. However, TIMSS will accept Date of Birth in one column.
Student with a Disability (SD) Status	School-defined codes for: 1=Yes, student has disability and/or IEP 2=No, student does not have disability or IEP
English Language Learner (ELL) Status	School-defined codes for: 1=Yes, student is ELL 2=No, student is formerly ELL 3=No, student is not ELL
Mathematics Class	The mathematics class the student is enrolled in. Please use the same class names you used in Submit Class List .
Mathematics Teacher Name	Teacher of the above named mathematics class that the student is taking
Mathematics Teacher Email	Email address of Mathematics Teacher
Science Teacher Name	Name of science teacher who teaches science to each student
Science Teacher Email	Email address of Science Teacher
Student Current Grade Level	Enter student's current grade level

Exhibit B-8. TIMSS 2019 Grade 8 Submit Student List Instructions—Continued

You may use one of the templates provided or create your own Excel file with these data for each student. It is preferred that you include column headers as the first row in your E-File, as in these templates. However, E-Files without column headers will be accepted.

Template 1 has the student name in three separate columns, and month of birth and year of birth in two separate columns.

	A	B	C	D	E	F	G	H	I	J	K
1	Student Name <i>(List only the 8th-graders in this 8th-grade math class!)</i>	Sex	DOB	Student with a Disability status <i>(1=Yes, student has disability and/or IEP 2=No, student does not have disability or IEP)</i>	English Language Learner status <i>(1=Yes, student is ELL 2=No, student is formerly ELL 3=No, student is not ELL)</i>	Mathematics Class Name <i>(enter the exact class names you typed in the MyTIMSS class list page!)</i>	Mathematics Teacher Name	Mathematics Teacher Email <i>(work email)</i>	Science Teacher Name	Science Teacher Email <i>(work email)</i>	Student Current Grade Level

Template 2 has the student name in one column, and month and year of birth in another column.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Student First Name <i>(List only the 8th-graders in this 8th-grade math class!)</i>	Student Middle Name	Student Last Name	Sex	Month of Birth	Year of Birth	Disability status <i>(1=Yes, student has disability and/or IEP 2=No, student does not have disability or IEP)</i>	English Language Learner status <i>(1=Yes, student is ELL 2=No, student is formerly ELL 3=No, student is not ELL)</i>	Mathematics Class Name <i>(enter the exact class names you typed in the MyTIMSS class list page!)</i>	Mathematics Teacher Name	Mathematics Teacher Email <i>(work email)</i>	Science Teacher Name	Science Teacher Email <i>(work email)</i>	Student Current Grade Level

Tips for ensuring the E-File process goes smoothly:

- Use the template or provide column headers. Student information should begin on the second row. There should be no empty rows within the student data.
- Be sure to give your file a unique, descriptive name. Within Excel, click on *File*, then *Save As*, and give your file a name such as “Your School Name Grade 8.xls.”
- The first row of data in your file will be read as the column header unless you indicate otherwise on the **Submit Student List** webpage. Each succeeding row will be considered a student record.
- There should be only one worksheet with data in the Excel file. If there are other worksheets, they must not contain any data.
- Do not provide any other student information

Please go to the next page for more instructions.

Exhibit B-8. TIMSS 2019 Grade 8 Submit Student List Instructions—Continued

Step 2—Upload Your Excel File

Once your file is prepared and checked for accuracy and completeness, log in to www.mytimss2019.com and select “Submit Student List” from the left-hand menu.

Filename	Filesize	Uploaded	Uploaded By
Once you have submitted an E-File, the file’s information will appear under these headings, as shown in the box below			
Does your student data file contain column headers : Yes ▾			The e-Filing system needs to know if the first row of the file contains headings
New file:	<input type="button" value="Browse..."/>	TIMSS Gr 8 test efile one col.xlsx	
<input type="button" value="Upload"/>		Click here to go to the next step	
			You can type in the file name or use "Browse" to find the file on your computer

You will see this link for your file after you have uploaded the file.

Filename	Filesize	Uploaded
BK TIMSS 2018 Student List - Grade 8 1.xlsx	12229	1/23/2018 12:01:07 PM

Please go to the next page for more instructions.

Step 3—Identify Your Columns

We need to know what information is in each column of your student data file (E-File). If you provided column headers in your E-File (preferred), they are displayed under **Column Heading Is** in the table. If you did not provide column headers, **Column Heading Is** will contain numbers for each column in your submitted E-File. Click on the down arrows in **Your Column Contains** to select descriptions for each column header. If there is no appropriate description in the drop-down list, please select N/A.

Column Heading Is	Your Column Contains
Mathematics Class	Class
Mathematics Teacher Name	Mathematics Teacher Name
Science Teacher Name	Science Teacher Name
Student Name	Student Name
Sex	Sex
DOB	Date of Birth
IEP Status	Student with a Disability
ELL Status	Column Contains ...

- Column Contains ...
- Column Contains ...
- Student Name
- Student Name: First
- Student Name: Middle
- Student Name: Last
- Date of Birth
- Birth Date: Month of Birth
- Birth Date: Year of Birth
- Sex
- Student with a Disability
- English Language Learner
- Mathematics Teacher Name
- Mathematics Teacher Name: Last
- Mathematics Teacher Name: First
- Mathematics Teacher Name: Middle
- Science Teacher Name
- Science Teacher Name: Last
- Science Teacher Name: First
- Science Teacher Name: Middle
- Class

Select *Next* after all columns have been identified.

Please go to the next page for more instructions.

Step 4—Match Your Values to TIMSS Codes

TIMSS also needs to know the values for some of the columns in your E-File. The tables contain the following information for each column:

- Your Values: The values in your E-File
- TIMSS Codes: Click on the down arrow and select the TIMSS Code that best matches Your Values
- Number: The number of students in your E-File with that value
- Percentage: The percentage in your E-File with that value

d. Update Birth codes

If you only used one column for DOB instead of separate MOB and YOB columns, you will see this screen below. You can use the “Update all TIMSS Codes” to update all values in the table. If you used separate MOB and YOB columns, go to the next screenshot. TIMSS prefers only receiving separate MOB and YOB columns.

Date of Birth - Column 1 of 3

Update All Codes:

Your Values	Codes	Number	Percentage
10/3/1999 12:00:00 AM	Select Code ▼	1	20%
12/2/2000 12:00:00 AM	Select Code ▼	1	20%
2/7/2000 12:00:00 AM	Select Code ▼	1	20%
5/6/1999 12:00:00 AM	Select Code ▼	1	20%
9/26/2000 12:00:00 AM	Select Code ▼	1	20%

e. Update Gender Codes

Your Values	TIMSS Codes	Number	Percentage
F	Female ▼	10	47.62%
M	Select Code ▼	11	52.38%

Select Code
 N/A
Male
 Female

In this step, you explain to the system what the data in your columns means

Use the *Previous* and *Next* buttons to navigate from column header to column header.

If there is an error in your data file, exit E-File, correct the problem in your Excel file, and upload the file again.

Exhibit B-8. TIMSS 2019 Grade 8 Submit Student List Instructions—Continued

f. Class Student Counts

The second to last page should show the counts of students in each class.

Your Values	Number	Percentage
Math8A	1	25%
Math8B	1	25%
Math8C	2	50%

Step 5—Verify Your E-File

The table in this section summarizes the information you have provided on your student list (E-File). Please review this summary and verify that the information is correct. *Total Enrollment* at the bottom of the table should match the number of students in your E-File and the total number of students currently enrolled in grade 8.

One possible warning you may encounter is shown below. Please contact TIMSSefile@westat.com if you have questions.

You have entered that there are # students in the PSI page for your selected grade; however, there are # students in your excel file. Please confirm your excel file has the correct number of students.

Record whether the information is correct or incorrect by selecting the appropriate button at the bottom of the page. Then click the *Submit* button. If you select INCORRECT, you will need to correct your E-File and resubmit it.

Verify Your E-File

The table below summarizes the information you have provided on your student list (E-File). Please verify the information is correct. The table shows the number of students in your E-File, and the total number of students currently enrolled in grade 8.

Record whether the information is correct or incorrect by selecting the appropriate button at the bottom of the page.

	Number	Percentage
Date of Birth		
MDY	5	100%
Sex		
Male	2	40%
Female	3	60%
Class		
	5	100%
Total Enrollment:	5	

- Information is **CORRECT and CURRENT**.
- Information is **INCORRECT**.

Exhibit B-8. TIMSS 2019 Grade 8 Submit Student List Instructions—Continued

You can also see your column mappings again by clicking the file name link below.

Filename	Filesize	Uploaded
BK TIMSS 2018 Student List - Grade 8 1.xlsx	12229	1/23/2018 11:45:42 AM

New file: No file chosen

If you need assistance, please contact the TIMSS E-Filing Help Desk at TIMSSefile@westat.com or 1-(855)-445-5604. Within 5-10 business days, you will be sent an email with instructions to go to the Prepare for Assessment Page. You do not have to navigate to the Prepare for Assessment page until you get this email.

A TIMSS representative will contact you to make arrangements for the assessment

Instructions for Student Tracking Form (STF)

Reviewing the Student Tracking Form (STF)

The two **Student Tracking Form (STF)** lists the students who have been selected to participate in the assessment at your school. This list is based on the student information you submitted. You can take notes on this form in preparation for the pre-assessment call in which the Test Administrator will ask you about any updates to this form over the phone. To access the STF, please login at www.MyTIMSS2019.com, then go to **Prepare for Assessment** and select “**Click here to download the STF.**” Student Appointment/invitations cards to give to selected students will be sent to you in a FedEx delivery.

As the first step in reviewing the Student Tracking Form, please verify the student information for accuracy after you open the excel file you just downloaded. See below for what should be reviewed. Please also make sure the school name and students match what you expect.

- Student’s name is listed in **Column 1**.
- Date of birth is listed in **Column 4**.
- Gender (using codes—1 for female and 2 for male) is listed in **Column 5**.
- Exclusion status in **Column 6**.
- Participation status in **Column 7**.

Student Exclusions and Accommodations

If a student is to be excluded from the assessment because he or she requires an accommodation, please make a note in column 6 using the codes at the bottom of the STF.

Participation Status + Newly-enrolled or no-longer-enrolled students

If many of the students listed in the STF are not enrolled in the school, please contact TIMSSefile@westat.com ASAP, but you do not need to contact TIMSSefile@westat.com if only 1 to 3 students are no longer enrolled or are newly enrolled. These new or no-longer-enrolled students can be discussed with your Test Administrator when they call you for the pre-assessment call (usually 1-2 weeks before assessment date). You can make a note on the form regarding these students in the first column in column 7 using the status codes shown at the bottom of the STF. You can also use status codes 1 through 4 to provide more information about a student.

Updates and Questions

If you have updates to the STF, please have the form ready for the pre-assessment call. You can also provide the hardcopy to the Test Administrator when they come to your school on assessment day. If you have any questions about completing this form, please address them with your Test Administrator when they contact you. For urgent questions on the STF, you can also contact the TIMSS E-Filing Help Desk (TIMSSefile@westat.com). The STF is just for you to take notes on in preparation for the pre-assessment call so you know parents of which students should be notified. Please do not send the STF back to us. You can however give it to the Test Administrator in person, if you would like, when they come on the assessment day.

School Principal Questionnaire Login Instructions Card/Email

Front of Card:

Welcome to TIMSS!

Your school is participating in the main study for Trends in International Mathematics and Science Study (TIMSS) 2019. This online questionnaire seeks information about schools and provides important context to understanding the achievement of students taking the assessment.

Please go to the web address (URL) given below and log in to the online questionnaire with your “School ID” and “Password”, which are printed on the label attached below. Please contact the TIMSS hotline (TIMSS@westat.com) if you have problems logging on.

The website link is: [https://portalg\[4/8\].mytimss2019.com](https://portalg[4/8].mytimss2019.com)

[Insert Label]

The online questionnaire does NOT require JavaScript or cookies to work. Responses are saved automatically as you go from question to question. The “Table of Contents” link on the bottom of each page provides an overview of all questions and whether you have completed them. You may leave the questionnaire at any time and log in again later. See notes on the back of this card.

OMB# 1850-0695 (expires 01/31/2021).

Back of Card:

NOTES

- Please use the Previous and Next buttons to navigate backward and forward
- You may exit the questionnaire at any time and log in again later— all of your responses will be saved automatically.
- The Table of Contents provides an overview of all questions and shows whether you have completed all questions.
- To exit the Table of Contents, click on any question link or section header.
- If you would like a printed copy of the online questionnaire, click on the “Prepare Printer Version” link on the Table of Contents page.
- It is estimated that it will take approximately 30 minutes to complete the questionnaire.
- If you have problems accessing the online questionnaire or need assistance, please contact the TIMSS hotline at 1-855-445-5604 or email TIMSS@westat.com.
- If you would prefer to complete a paper questionnaire, please contact your TIMSS School Coordinator.

Thank you for the thought, time, and effort you have put into completing the questionnaire!

NCES is authorized to conduct TIMSS under the Education Sciences Reform Act of 2002 (ESRA 2002, 20 U.S.C. §9543). All of the information provided by school staff and students may be used only for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law (20 U.S.C. §9573 and 6 U.S.C. §151). The U.S. Office of Management and Budget has approved the data collection under OMB# 1850-0695. Individual responses will be combined with those from other participants to produce summary statistics and reports.

Teacher Questionnaire Login Instructions Card/Email

Welcome to TIMSS!

Your school is participating in the main study for the Trends in International Mathematics and Science Study (TIMSS) 2019. This online questionnaire seeks information about teachers' academic and professional backgrounds, classroom resources, instructional practices, and attitudes toward teaching.

Please go to the web address (URL) given below and log in to the online questionnaire with your "User ID" and "Password", which are below. Please contact the TIMSS hotline (TIMSS@westat.com) if you have problems logging on. The website link is: [https://portalg\[4/8\].mytimss2019.com](https://portalg[4/8].mytimss2019.com)

User ID: [User ID]
Password: [Password]
Subject code: [Subject code]

Responses are saved automatically as you go from question to question. The "Table of Contents" link on the bottom of each page provides an overview of all questions and whether you have completed them. You may leave the questionnaire at any time and log in again later. You must click "Finish" at the last page for us to receive your submission. See notes below.

NOTES

- Please use the Previous and Next buttons to navigate backward and forward
- You may exit the questionnaire at any time and log in again later— all of your responses will be saved automatically.
- The Table of Contents provides an overview of all questions and shows whether you have completed all questions.
- To exit the Table of Contents, click on any question link.
- If you would like a printed copy of the online questionnaire, click on the "Prepare Printer Version" link on the Table of Contents page.
- It is estimated that it will take approximately 30 minutes to complete the questionnaire.
- You must click "Finish" at the last page for us to receive your submission.
- If you have problems accessing the online questionnaire or need assistance, please contact the TIMSS hotline at 1-855-445-5604 or email TIMSS@westat.com.
- If you would prefer to complete a paper questionnaire, please contact your TIMSS School Coordinator.
- After you have completed the questionnaire and within a few days, you will receive a \$20 Amazon gift card code from this email address as a token of appreciation for your participation.

Thank you for the thought, time, and effort you have put into completing the questionnaire!

Sincerely,
The U.S. TIMSS 2019 Team

NCES is authorized to conduct TIMSS under the Education Sciences Reform Act of 2002 (ESRA 2002, 20 U.S.C. §9543). All of the information provided by school staff and students may be used only for statistical purposes and may not be disclosed, or used, in identifiable form for any other purpose except as required by law (20 U.S.C. §9573 and 6 U.S.C. §151). The U.S. Office of Management and Budget has approved the data collection under OMB# 1850-0695. Individual responses will be combined with those from other participants to produce summary statistics and reports.

Appendix C
TIMSS 2019 Field Staff Training Materials

Appendix C: TIMSS 2019 Field Staff Training Materials

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TIMSS 2019 Test Administrator Training Agenda

March 13 – 14, 2019

Day 1: March 13		
9:00 – 9:30	Introduction	Personal introductions, introduction to training, and introductory speech
9:30 – 10:00	SCS Reports and Calendar	Demo + exercise
10:00 – 10:45	Reporting Time and Expenses	TER exercise, tech help with logging into accounts (cycle TAs into neighboring room for badge photos at this time)
10:45 – 11:00	BREAK	
11:00 – 11:30	Reviewing School Information	Reviewing SCS information and conducting the initial call (demo + exercise)
11:30 – 12:30	LUNCH	
12:30 – 3:00	The Preassessment Call	Preparing for the call (demo + exercise), conducting the call (demo + role plays + scenario questions), updating the SCS (demo + exercise)
3:00 – 3:10	BREAK	
3:10 – 3:30	Preparing for the Assessment	Group discussion (experienced TAs share advice about packing and preparation)
3:30 – 4:15	Preparing the Booklets	PPT demo (with pictures) + exercise
4:15 – 5:00	Setting up the Equipment	Demo + guided exercise
5:00 – 5:30	Meet with FMs	Discuss assignments, schedule, report calls, etc.

TIMSS 2019 Test Administrator Training Agenda

March 13 – 14, 2019

Day 2: March 14		
9:00 – 9:30	Setting up the Equipment (cont.)	Independent group exercise + troubleshooting scenario questions
9:30 – 11:45 (inc break)	Administering the Assessment	Go through the test twice (grade 4 and 8) while looking at session script (2 nd time includes troubleshooting training - scenario questions, demos, and practice)
11:45 – 12:00	Packing up the Equipment	Practice inserting tablets correctly into Pelicans
12:00 – 1:00	LUNCH	
1:00 – 1:10	Pass out AA Training Guides	Explain that TAs will do similar Setting up, Administering, and Packing up exercises (just completed) with AAs; answer any questions
1:10 – 2:00	Student Participation and Response Rate	Exercise + discussion + scenario questions
2:00 – 2:45	Uploading Data	Demo + guided exercise + independent exercise
2:45 – 3:00	BREAK	
3:00 – 3:30	Updating the SCS	Demo + exercise
3:30 – 3:45	Pack up FedEx boxes	
3:45 – 4:15	Completing Follow-up Visits	Discussion + scenario questions
4:15 – 4:30	SCS Questionnaire Completion Status and Reminder Emails	Mention that future training is coming
4:30 – 5:00	Contacting Schools to Increase Questionnaire Participation	Group discussion (experienced TA share tips about communicating with schools)
5:00 – 5:30	Training Wrap-up	Fill out DCIUFs

PROCEDURE 1

REVIEW SCHOOL INFORMATION

Open the school’s page in the SCS and look at the **General** tab.

- Record school contact information and assessment date on the cover of this Quality Control Booklet

Review the following information:

- Additional Study: _____
- School Type: Public / Private
- Uber Incentive?: Yes / No
- Special Case?: Yes / No
- Comments
 - If Special Case is set to “Yes,” look for specification: _____
- GCR: [Is a GCR recorded? Yes / No]
 - If there is a GCR, review the EROC
- HO Status Code: _____
 - Is the school ready for PAC? Yes / No
 - ✓ If “No,” conduct an initial call
 - ✓ If “Yes,” continue with Procedure 2

NOTES

PROCEDURE 2

PREPARE FOR THE PREASSESSMENT CALL

- Record the assessment date on **Procedure 3 - Page 2**
- Have the Accommodation Planning Form(s) available.
- Have Student Tracking Form(s) available:
 - I received the forms from Westat
- OR**
- I printed the forms from the school's MyTIMSS page
- Review school and teacher questionnaire statuses in the SCS:
 - School questionnaire completed? Yes / No
 - Teacher questionnaires all completed? Yes / No
 - Record uncompleted questionnaires on **Procedure 3 – Page 5**
- Be prepared to talk about incentives:
 - Does this school get an uber incentive? Yes / No
 - Circle the correct incentive amount on **Procedure 3 – Page 5**
 - Is this school allowed to receive incentives? Yes / No
 - If “No,” cross out references to incentives on **Procedure 3 – Page 5**

Whenever possible begin contacting the school coordinator at least two weeks prior to the assessment.

PROCEDURE 3

CONDUCT THE PREASSESSMENT CALL

Hello, this is _____ (your name) representing the Trends in International Mathematics and Science Study, or TIMSS. You were contacted by the Westat TIMSS team earlier this year to complete the sampling of the students who will be participating in TIMSS. I am calling to confirm the student information, assessment logistics, discuss accommodations, and to answer any questions you may have.

Is this a good time to talk?

1. Review the **Student Tracking Form (STF)** with the SC.

Confirm demographic information data for each sampled student

Record exclusions and accommodations as needed

If student IDs (rather than student names) were used on the Student Tracking Form, remind the SC that their copy of the Student Tracking Form (which includes student names) should be readily available when you arrive at the school.

2. Discuss plans to **notify the selected students** of the assessment.

Discuss book policy. The student appointment cards include a note about bringing a book.

If grade 8 paper TIMSS, discuss calculator use.

PROCEDURE 3

CONDUCT THE PREASSESSMENT CALL

3. Review **parent notification** procedures and receipt of consent forms, if applicable.

Notification / Implicit [*no response = consent*] / Explicit [*no response = refusal*]

If consent is needed in the school, discuss with the SC what can be done to obtain consent.

You must collect a dated copy of the letter sent to the parents on assessment day.

4. Confirm assessment day plans.

Assessment day: _____

- Confirm **time and location** of the sessions, *including accommodation sessions*.
- ✓ Verify the assessment room(s) are on the first floor, or elevator-accessible.
 - ✓ The assessment team needs to have access to the assessment location at least **[90 minutes]** before the students arrive to set up the equipment and get the room ready for the students.
 - ✓ **For eTIMSS**, the room must have tables or desk space for the assessment tablets.

Session Number	Time	Location	Administrator TA/AA

PROCEDURE 3

CONDUCT THE PREASSESSMENT CALL

5. Ask for **directions** to the school, if you need them.

6. Discuss the **equipment** and materials you will be bringing to the school. Ask about the best location to **park** in relation to the assessment room, as well as the availability of loading docks, school-provided carts, or anything else that will help your team get the equipment to the assessment location.

7. Ask **where you should report** when you arrive at the school and tell the SC that you will be arriving at least **[90 minutes]** before the scheduled assessment time to get your materials ready.

PROCEDURE 3

CONDUCT THE PREASSESSMENT CALL

8. Make arrangements for the SC, school principal, or classroom teacher to be available in each session to introduce you to the class and help manage the students.

9. Review the handling of **bathroom breaks** and procedures for **dismissing** students at the end of the session.

10. Ask if there are any procedures related to **emergencies** or **problem situations** that you should be aware of.

11. **If grade 8**, ask the SC if the school would like **Certificates of Community Service** for distribution to grade 8 students.

PROCEDURE 3

CONDUCT THE PREASSESSMENT CALL

12. Review the **school and teacher questionnaire statuses**.

Outstanding Qs: _____

If any questionnaires are outstanding, ask the SC to follow up with anyone who has not completed the electronic questionnaire.

✓ Teachers will receive a \$20 Amazon gift card for completing the questionnaire.

If hardcopy questionnaires were sent to the school, let the SC know that you will need to collect the completed questionnaires on assessment day.

13. Discuss school and school coordinator **incentives**.

✓ School will receive a \$[200 / 800] check for participating in the assessment.

To whom should the school honorarium check be made out?

Confirm spelling of the name (School, Principal, etc).

✓ SC will receive a \$100 check for participating in the assessment.

Confirm the spelling of the name.

Thank the SC.

PROCEDURE 4

UPDATE SCHOOL INFORMATION

School folder

- Complete questions 1 – 8 of the Test Administration Form for each class
- Place Certificates of Community Service in your school folder if you need to bring them to the school

SCS – General Tab

- If necessary, update school information or the assessment date (notify your field manager immediately)
- Enter the **Scheduled Assessment Time** and **Assessment Arrival Time**
- Change the School Status to **Preassessment Call Completed**
- Add an **EROC** entry

SCS – Assessment Tab

- Select the **Parent Consent Type** and **Parent Consent Language**
- Enter the names of the AAs assigned to help administer the assessment
- Enter the **Arrival Logistics** (in enough detail for others to understand)
- Enter the **Assessment Room Location**
- Enter any accommodations to be provided (no student names)
- Enter **Assessment Logistics**
- Select whether **Certificates of Community Service Requested?**

SCS – Post-Assessment Tab

- Enter the recipients of the school and SC incentive checks

Other

- Inventory your Pearson session boxes, Westat bulk supplies, and equipment. Request extra items, if needed.
- Request a third AA, if needed
- Send assessment day information to the AAs assisting with the assessment

PROCEDURE 5

PREPARE FOR THE ASSESSMENT

Ensure the following steps and checks are completed the **day before** the assessment.

- Send teacher questionnaire reminder emails, if necessary
- For eTIMSS, charge the tablets overnight
- For eTIMSS, the Student Login Cards are prepared and placed in the school folder
 - An asterisk is added to the end of the password for students with EXT
- Ensure you have the school folder and session boxes for the **correct school**
- Gather your bulk supplies, accessories, manual, and extra AA badges

Get the following information and materials from the school coordinator **upon arrival at the school**.

- Get a copy of the parent notification letter
- Update the Student Tracking Form to reflect
 - changes in parent consent,
 - newly withdrawn students, and
 - newly enrolled students.
- Collect hardcopy teacher or school questionnaires, if applicable
- Follow up on the status of outstanding questionnaires, if applicable

PROCEDURE 5

PREPARE FOR THE ASSESSMENT

All items below must be verified by the TA **before beginning the assessment.**

QC for eTIMSS Sessions

- The “STOP SERVER” button is visible on the server tablet screen
- The eTIMSS login screen appears on each student tablet
- Student Login Cards for the correct session are upright on each tablet keyboard
- Each student workspace has a mouse, mousepad, paper, and pencil

QC for Paper Sessions

- The booklets are in the order of the Student Tracking Form
- Booklets contain both a permanent and removable label
- Student ID numbers are recorded on the booklet covers underneath the labels
- The correct booklet numbers are assigned to the correct students

QC for Both Sessions

- The school has provided the applicable school staff, materials, and/or equipment to provide planned accommodations
- Login cards or test booklets for students with RA-O, EXT, SEA, and snacks during test (OTR) accommodations are placed appropriately
- The “Testing in Progress” sign is posted on each assessment room door
- Each student questionnaire booklet has a permanent and removable label
- The student questionnaire booklets are in the order of the Student Tracking Form

PROCEDURE 6

COMPLETE DATA COLLECTION

Verify the following **before leaving the school**.

- For paperTIMSS, participation status codes are recorded on the booklet covers
- The Student Response Rate Form is completed and you have determined whether a makeup session is needed
- There are 3 completed copies of each STF
- The storage envelope contains 1 copy of each STF, the names cut off of the other STF copies and the Accommodation Planning Form(s), and the Student Login Cards and/or the removable booklet labels
- The school coordinator has the red storage envelope and school certificate of appreciation

Complete the following tasks as soon as possible after completion of the assessment. Ideally, this should be done **within 24 hours of the assessment or follow-up visit**.

- For eTIMSS, submit data from the server tablet (or student tablets for Plan B)
- Only when follow-up is completed:* mail the school folder to Westat and record the FedEx tracking number
- Only when follow-up is completed:* mail session boxes to Pearson and record UPS tracking numbers

SCS – General Tab

- Change the School Status
- If a follow-up is needed:* enter the Follow-up Date and Follow-up Time
- If any problems were encountered or a follow-up is needed:* add a comment or **EROC** entry

PROCEDURE 6

COMPLETE DATA COLLECTION

SCS – Post-Assessment Tab

- Indicate that the assessment data has been submitted, if applicable.
- Only when follow-up is completed:* indicate that the school folder has been mailed to Westat and enter the FedEx tracking number
- Only when follow-up is completed:* indicate that the session boxes have been mailed to Pearson and enter the UPS tracking numbers

PROCEDURE 6

COMPLETE DATA COLLECTION

RECORD OF CONTACTS:


Person you spoke to	Date	Time	Outcome

4th

TRENDS IN INTERNATIONAL
MATHEMATICS AND SCIENCE
STUDY 2019

SESSION SCRIPT: GRADE 4 eTIMSS

Administering the Grade 4 eTIMSS Assessment

The instructions marked with the  symbol and printed in **bold** in the administration script must be read aloud to the students word for word to ensure that the testing sessions are conducted in the same way in all countries. Although you should become familiar with these instructions before the actual testing, do not attempt to memorize them. Read these instructions exactly as they are written.

Comments that are not in bold are not to be read aloud. They are instructions for you only.

Instructions for **TAs only** are printed in blue.

To begin the testing session:

- Make sure each student has a login card, mouse, pencil, piece of scratch paper.
- Verify that instructions for typing mathematical symbols are written on a white/blackboard, if one is available.
- Have a TIMSS pencil, scratch paper, login card, and drawstring backpack for display as you read the script.
- Make sure that students are seated quietly, with nothing on their desks except for the materials you distributed.
- **Record the current time in cell 8a of the Test Administration Form.**
- Begin reading the administration script.

Introduction



Good morning/afternoon, everyone! My name is (YOUR NAME). This school has been chosen to take part in an important international project to study what students around the world know and can do in mathematics and science. Different countries from all over the world are taking part in this study. You will be taking a mathematics and science test. While I talk to you about today’s test, I would like you all to be quiet, stay at your desks, and listen carefully.

EXCEPT IN INDIANA AND APPLICABLE SCHOOLS NOTED IN THE SCS:



At the conclusion of this session you will keep your TIMSS pencils (SHOW PENCIL) and I will give you a TIMSS drawstring backpack (SHOW BACKPACK) for your participation and trying your best in this important study.



If you still have any school books or other materials—for example, a ruler—on your desk, please put them away. All electronic devices, such as calculators, cell phones, personal tablets, portable computers, and photo or video cameras, must be turned off and stored away for the duration of the test administration.



Next to your tablet you have a piece of paper and a pencil to use at times during the test.

Hold up sample piece of paper and pencil



On your keyboard there is a Student Login Card with a label with your name on it.

Hold up sample login card.





Now, look at the information on the label on the login card. If the card does not have your name on it, please raise your hand.



Assist students with incorrect login cards.


Collect all login cards meant for absent students.





Now, place the login card to the left of your tablet. Make sure that you can still see it.


-  **I will explain how you log in and use the tablet. If you cannot get your tablet to work correctly, raise your hand for help.**
-  **On the tablet in front of you, each of you should see a login screen. Raise your hand if you need help.**

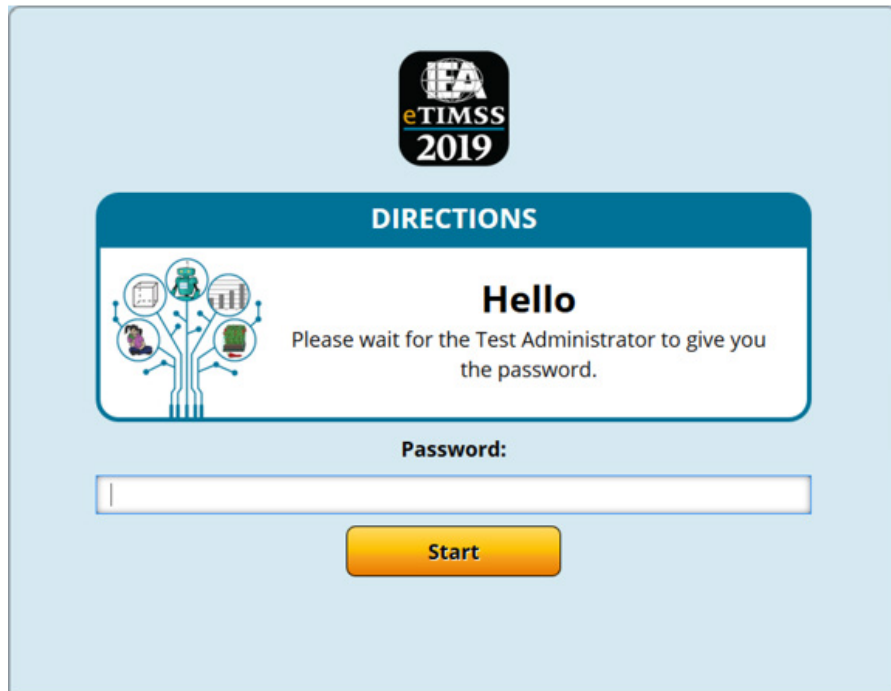
Assist students with login screen.
-  **On the screen, there is a box for your name. Do not enter your name.**
-  **Below that box there is a box for “Student ID” where you will enter the student ID from the label on the login card. It is an eight-digit number. Select the box and enter your Student ID now.**


Help students locate the student ID on the login card.
-  **When you finish entering your student ID, select the “Password” box.**


Assist students as necessary.
-  **Here you will enter the password that is printed on the login card. It is a five-digit number. Enter it now.**

Help students locate the password on the login card.
-  **When you finish entering the password, select the Log in button.**


Assist students as necessary.
-  **Everyone should now be looking at the screen that says Directions.**




 **First, I am going to explain the directions for answering the different types of questions, and then you will begin Part 1 of the test. After Part 1 of the test, there will be a short break, and then you will begin Part 2.**

 **Please select the “Password” box. Type “0000” and select “Start” to begin.**

If a student raises their hand because their name is on the screen, restart the player and have the student log back in without entering their name

 **We are going to work through the directions together so that you will know what to do. I will read the directions aloud while you follow along on your screen. We will go step by step, so please wait for me to tell you when to go on.**

 **Everybody should now be looking at a screen with “Taking eTIMSS” at the top.**

IEA
eTIMSS
2019

TIME LEFT
0

1
2
3
4
5
6
7
8
9

Taking eTIMSS

In this test, you will answer questions in mathematics and science. **It is important that you try your best to answer all the questions.**

Be sure you have scratch paper and a pencil for calculations and notes.






You will have 36 minutes for the first part of the test. Then, after a short break, you will work for another 36 minutes.







The timer at the top left of your screen will show how much time is left for each part. Below the timer there is a button for each question. When you go to a question, its button turns green.

Click the arrows at the bottom of the screen to move through the questions.

Directions_1_Taking_eTIMSS

English (United States)




-  Please read along with the directions on your screen as I read them aloud.
-  In this test, you will answer questions in mathematics and science. It is important that you try your best to answer all the questions.
-  Be sure you have paper and a pencil to work out your answers.
-  You may not use a calculator or cell phone during the test.
-  You will have 36 minutes for the first part of the test. Then, after a short break, you will work for another 36 minutes.


-  The timer at the top left of your screen will show how much time is left for each part.
-  Below the timer there is a button for each question. When you go to a question, its button turns green.
-  At the bottom of the screen in the middle you will see two arrow buttons. These buttons will allow you to move forward and back through the pages or screens. Please be sure to only select the arrow once so you don't skip a page or screen.
-  Now, select the right arrow button  to move forward to the next page or screen.
-  Everybody should now be looking at the screen with “Scroll to See the Whole Question” at the top. Please continue reading along as I read aloud.

The screenshot shows the eTIMSS 2019 interface. On the left is a vertical toolbar with the IEA eTIMSS 2019 logo, a 'TIME LEFT' indicator showing 0, and navigation icons (up, 1, down). The main content area has a white background with blue accents. It contains the following text and elements:


- Scroll to See the Whole Question**: A section header followed by the text: "Sometimes you will need to scroll down to see the whole question. Look for this arrow at the bottom of the screen:". Below this is a large grey downward-pointing arrow.
- Text: "When you see the arrow, make sure you scroll down."
- Choose Your Answer**: A section header followed by the text: "For some questions, you will be asked to choose your answer. Click the button next to your answer. If you are not sure about the answer, choose the answer you think is best."
- Example 1**: A section header followed by the question "How many minutes are there in an hour?". Below the question are four multiple-choice options: (A) 12, (B) 24, (C) 60, and (D) 120.
- Text: "Sometimes the answer choices will be in a drop-down menu. Click on 'Choose one' to see the options, then click your choice."
- Example 2**: A section header followed by the question "How many days are there in a week?". Below the question is a drop-down menu with the text "Choose one" and a downward arrow.

At the bottom of the interface is a blue bar with icons for a calculator, a ruler, and left/right navigation arrows. On the left side of this bar, the text "Directions: 2_MC_Drop-Down" is written vertically.

-  Sometimes you will need to scroll down to see the whole question.
-  Look for an arrow at the bottom of the screen that looks like the one shown in the directions.
-  When you see the arrow, make sure you scroll down.


 For some questions, you choose the answer you think is correct and select the button next to it.


 When you select the button, the button will turn green.


 If you are not sure about the answer, choose the answer you think is best.


 Now, read Example 1 and select the button next to your answer.

After the students have chosen an answer, continue reading.


 The example asks, “How many minutes are there in an hour?” You should have selected the button next to 60, because there are 60 minutes in an hour.


 If you decide to change your answer, you can do so by selecting another button. Try that now.

 If at any time you need to go back to a previous question you can do so by selecting the back arrow button. You can go back and review your answers any time while you work in the section.

 If at any time you need to go back to a previous question you can do so by selecting the back arrow button. You can go back and review your answers any time while you work in the section.

 Sometimes the answer choices will be in a drop-down menu.

 Select “Choose one” to see the options, then select your choice.

 Now read Example 2 and use the drop-down menu to choose your answer.

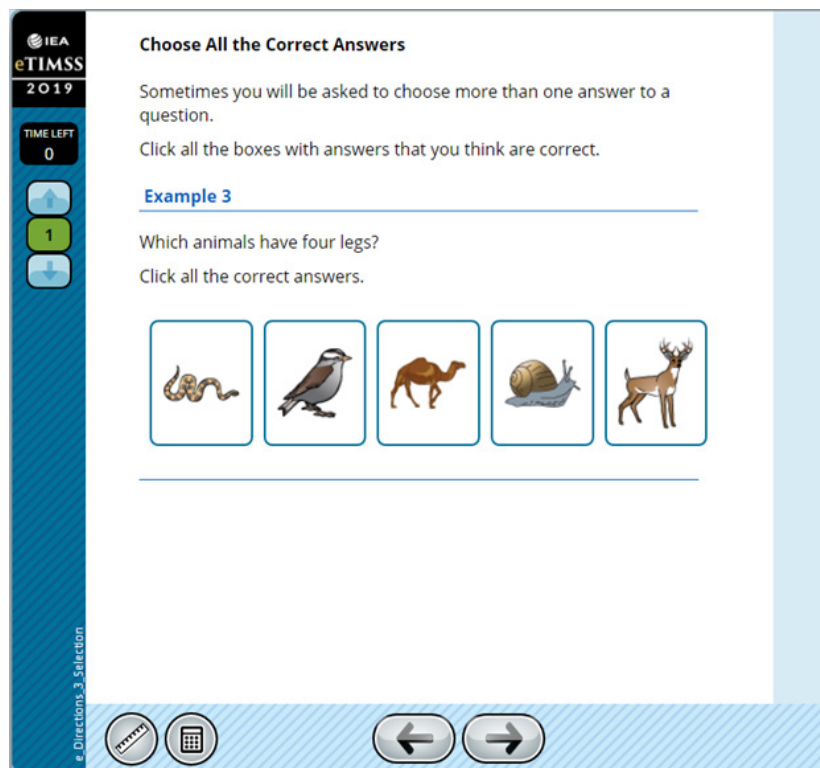
After the students have chosen an answer, continue reading.





 Example 2 asks, “How many days are there in a week?” You should have selected “7” in the drop-down menu, because there are 7 days in a week.

 Now select the right arrow button at the bottom of the screen to move forward.


 Everybody should now be looking at the screen with “Choose All the Correct Answers” at the top.

Confirm that all students have moved on to the next screen, and then continue.



-  Sometimes you will be asked to choose more than one answer to a question.
-  For these questions, you will need to select all the boxes with answers that you think are correct.
-  When you select a box it will turn blue. If you wish to change your answer, select the same box again.
-  Now read Example 3 and select all the boxes with answers that you think are correct.

After the students have finished answering Example 3, continue reading.

-  Example 3 asks, “Which animals have four legs? Click all the correct answers.” You should have selected the box with the camel and the box with the deer.

-  Now select the right arrow button at the bottom of the screen to move forward.

Confirm that all students have moved on to the next screen, and then continue reading.

IEA eTIMSS 2019

TIME LEFT
0

1

Use the Number Pad

You will use a number pad to answer questions that have a number as an answer.


Click the green answer box and the number pad will appear.

When you have finished entering your answer, click OK on the number pad.

Example 5: Whole Numbers

10 + 5 =

Answer:





To enter a fraction, click the fraction button  .





Example 6: Fractions

Enter the fraction $\frac{1}{2}$ as your answer.


Answer:


e_Directions.5_Number_Pad


   


-  **Now I will explain how to answer questions with numbers. Is everyone looking at the screen with “Use the Number Pad” at the top?**
If yes, then continue. If no, assist students as necessary.
-  **You will use a number pad for questions that have a number as an answer.**
-  **Example 4 shows a question like this. Select the green answer box and the number pad will appear.**
-  **Everyone should see a number pad appear after selecting the answer box in the example. If you do not see the number pad, please raise your hand.**

Assist students; they may not be in the correct question.


 The number pad contains numbers 0-9 as well as a decimal point, a negative sign, and a fraction button. It also has an OK button in the bottom right corner to confirm your answer and a backspace button to change your answer.


 If you wish to move the number pad, select and hold the four-sided arrow icon, located above the numbers, and drag the pad to move it. Please try this now.


 Select the numbers on the number pad to enter your answer. You can also change your answer by selecting the backspace button. Do that now.


 When you have finished entering your answer, select OK on the number pad.

After the students have answered and selected OK, continue reading.


 The correct answer to the example, 10 plus 5, is 15. If you need to change your answer, select the answer box to open the number pad again.


 Sometimes you will use the number pad for questions that have a fraction as an answer.

 To enter a fraction, select the fraction button in the number pad.


 Once you have selected the fraction button, the first number you select will appear in the top half of the fraction. To enter a number on the bottom half of the fraction, select the bottom box in the answer space and then, in the number pad, select the number you want to enter.

 Now practice entering a fraction in Example 5.

 Enter the fraction $\frac{1}{2}$ as your answer.

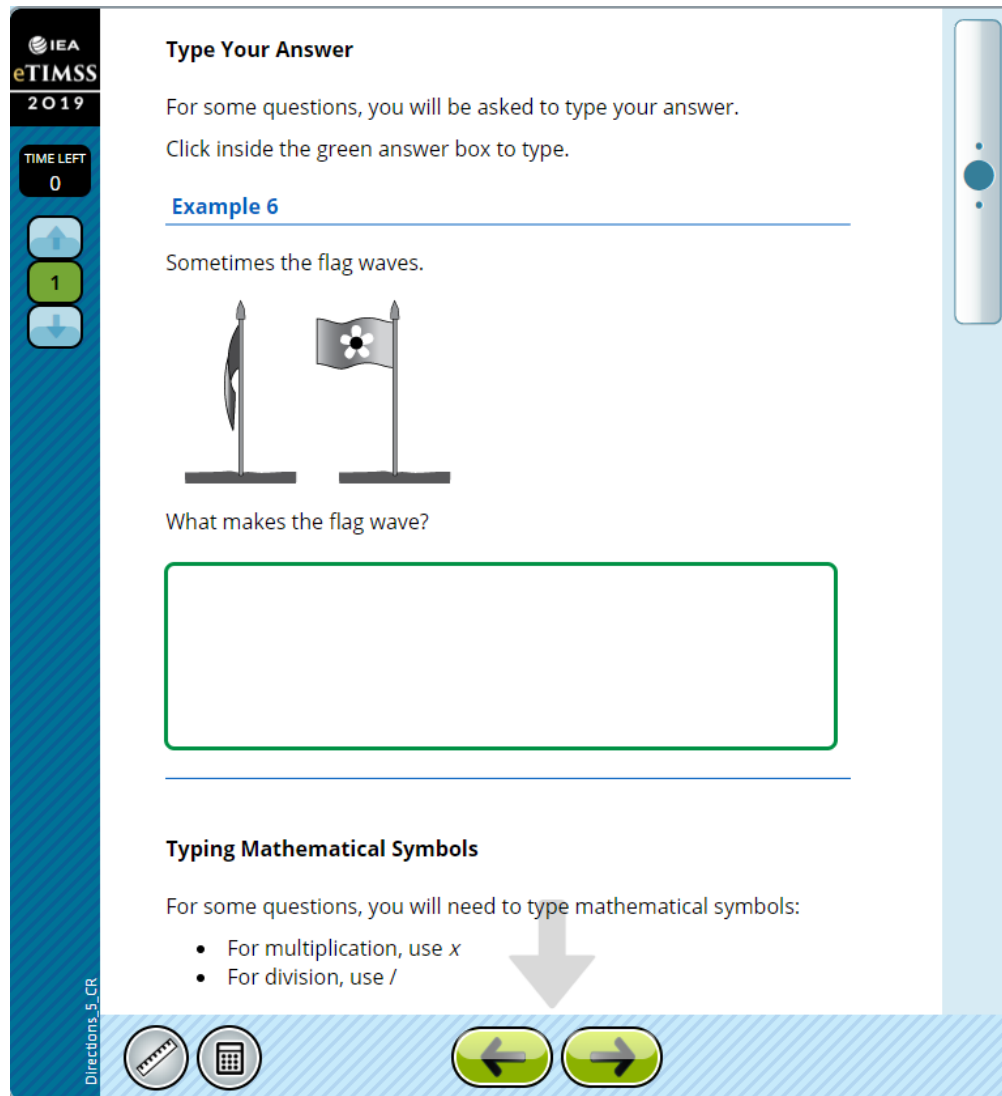
 If you have trouble or are not able to enter the fraction in the number pad, please raise your hand.

Take a few minutes to walk around the room and make sure that all students know how to enter in a fraction. After the students have finished answering Example 6 and all questions have been answered, continue on to the next screen.

 When ready, select the right arrow button at the bottom of the screen to move forward.


 Everybody should now be looking at the screen with “Type Your Answer” at the top.

Confirm that all students have moved on to the next screen, and then continue reading.




The screenshot shows the TIMSS 2019 eTIMSS interface. On the left sidebar, there is a logo for IEA eTIMSS 2019, a 'TIME LEFT' indicator showing 0, and three navigation buttons: an up arrow, a green button with the number 1, and a down arrow. The main content area is titled 'Type Your Answer' and contains the following text: 'For some questions, you will be asked to type your answer. Click inside the green answer box to type.' Below this is 'Example 6' with the text 'Sometimes the flag waves.' and two illustrations of flags on poles. The first flag is a simple vertical flag, and the second is a flag with a white circle and a black dot in the center, waving. Below the illustrations is the question 'What makes the flag wave?' and a large green rectangular answer box. At the bottom of the screen, there is a section titled 'Typing Mathematical Symbols' with the text 'For some questions, you will need to type mathematical symbols:' and a list: '• For multiplication, use x' and '• For division, use /'. A large grey arrow points down from this section to a blue bar at the bottom containing icons for a calculator, a pencil, and two green arrow buttons (left and right).

 For some questions, you will be asked to type your answer.


 Sometimes to get full points, you will need to explain your answers for science questions, or show your work for mathematics questions. Keep your typing and calculations as neat as possible, and give mathematics answers in their simplest form.


 Now, read Example 6 while I read it aloud.


 Sometimes the flag waves. What makes the flag wave?

 Select the green answer box and then use your keyboard to type your answer into the space provided.

After the students have answered, continue reading.

 Your answer should explain that the wind makes the flag wave. You can change your answer by using the keyboard.

 Now, look down to see the instructions below the answer box.

 For some questions, you will need to type mathematical symbols.


 For the multiplication symbol, use the letter “x.”

 For the division symbol, use the slash symbol.

 If you need help typing a symbol during the test, raise your hand.

Refer to the written instructions for typing mathematical symbols, if applicable. Check to see if any students have questions about how to type mathematical symbols. If there are no questions, continue reading.

 When ready, select the right arrow button at the bottom of the screen to move forward.

 You should now be looking at the screen with “Drag Your Answer” at the top.




Confirm that all students have moved on to the next screen and continue reading.


Drag Your Answer







Sometimes you will be asked to drag pictures, numbers, or words to give your answer.


Example 8

Which animal lives in the water?
Drag that animal to the water.


  




-  Sometimes you will be asked to drag pictures, numbers, or words to give your answer.
-  To drag an answer option, select and hold down on the answer using your mouse and drag the option into the area that is described in the instructions. You cannot use the touchscreen to drag with your finger; you must use the mouse.
-  Now let's try one together. Read the example below while I read it aloud.
-  Which animal lives in the water?
-  Drag that animal to the water.
-  Now answer the question by selecting the animal that you think is correct and dragging it into the water.

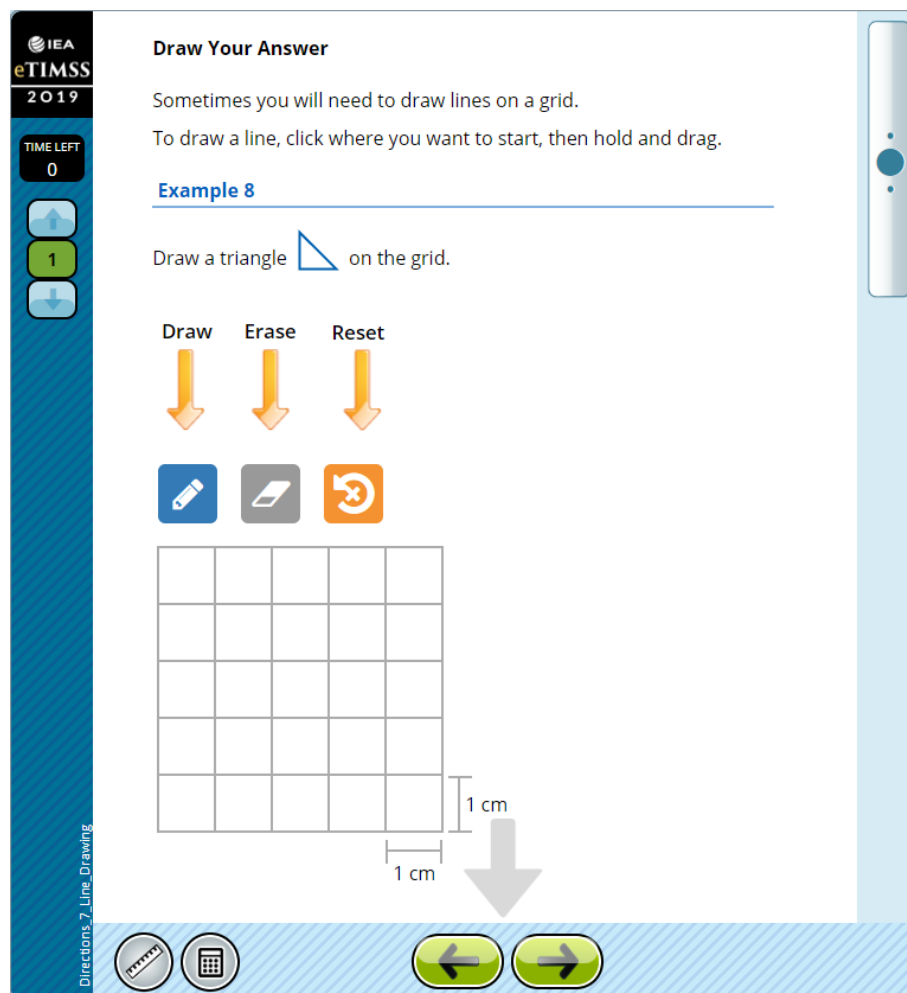
 To change your answer, select and drag the animal completely outside of the picture of water and then release it. This will cause the answer option to go back into its original position. Make sure that the answer option is dragged all of the way out of the water before letting go.


Give the students a minute or two to practice. Then, continue reading. .







 When you are ready, select the right arrow button at the bottom of the screen to move forward.

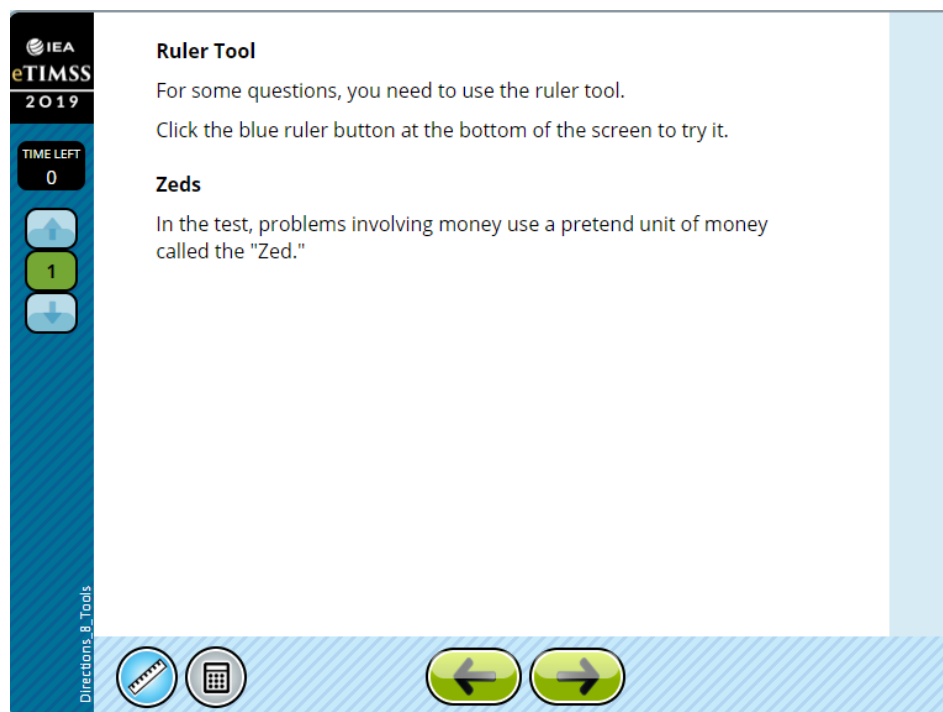
 Everyone should now be looking at the screen with “Draw Your Answer” at the top.





Confirm that all students are on this screen and continue reading.




 Sometimes you will need to draw lines on a grid.


-  To draw a line, select the point where you want the line to start, then hold and drag the line using your mouse. You cannot use the touchscreen to drag the line with your finger; you must use the mouse.
-  To erase a line, select the “Erase” button and select the line you want to erase.
-  To start over, select the “Reset” button to clear the grid and start over.
-  Now practice drawing a triangle on the grid to answer Example 8.
Give the students several minutes to finish practicing. Answer any questions.
-  When you are ready, select the right arrow button at the bottom of the screen to move forward.
-  Everyone should now be looking at the screen with “Ruler Tool” at the top.




-  For some questions, you need to use the ruler tool.
-  Select the blue ruler button at the bottom of the screen to try it.
-  To move the ruler, select it and drag with your mouse. Try this now.
Give the students a minute to practice moving the ruler tool. Answer any questions.
-  To rotate the ruler, select and hold on the rotation icon under the unit zero and drag the ruler up or down to rotate. Try this now.

Give the students a minute to practice rotating the ruler tool. Answer any questions.


 **Problems in the test involving money use a pretend unit of money called the “Zed.” Think of the Zed as similar to a dollar.**

 **Is that clear for everyone? Raise your hand if you have any questions.**

Give the students time to ask questions if they have any. Then, continue reading.

 **When you are ready, select the right arrow button at the bottom of the screen to move forward.**


 **We have now completed the Directions.**

 **Please select “Next” to continue.**

Part 1 of eTIMSS

All students should now be looking at the “Part 1” screen, shown below.



 **Everyone should now be looking at the screen that says Part 1. If you do not see the Part 1 screen, please raise your hand.**

If no students raise their hands, continue. Otherwise, help students get started.



You will have 36 minutes to work on this part of the test.



Read each question carefully and answer it as well as you can. If you are not sure about the answer to a question, choose or write the answer you think is best, and move on to the next question.



You can also go back and check your answers any time before you exit Part 1. Once you select the “Next” button to exit Part 1, you cannot go back.



If you complete Part 1 before time is up and have reviewed your work, you may sit quietly or read a book at your desk.



Do you have any questions?

When any questions are resolved, you may supply the password for Part 1.



Now please select the “Password” box. Type “1835” and select “Start Part 1” to begin.

Record the current time in cell 8b and 9a of the Test Administration Form, and record participation for the Achievement Session on the STF.

Make sure that all students are working on Part 1. Remember that you are not allowed to help the students with the test. While the students are working, you should move around the room.

At about 5 minutes before the end of the session, say:



You have about 5 minutes left before the break.



If you have reached the end of Part 1, you may go back to any questions you have not answered. You can also check the answers of questions you have done.



If you have finished and exited Part 1, please wait for the others to finish.

After the last 5 minutes have passed, say:



Your time is up. If you have not exited Part 1 yet, the system will exit Part 1 automatically once the time is up on your tablet.

Record the current time in cell 9b of the Test Administration Form.


When the students have exited Part 1, the login screen for Part 2 will appear.




We will now take a 5 minute break.

Part 2 of eTIMSS

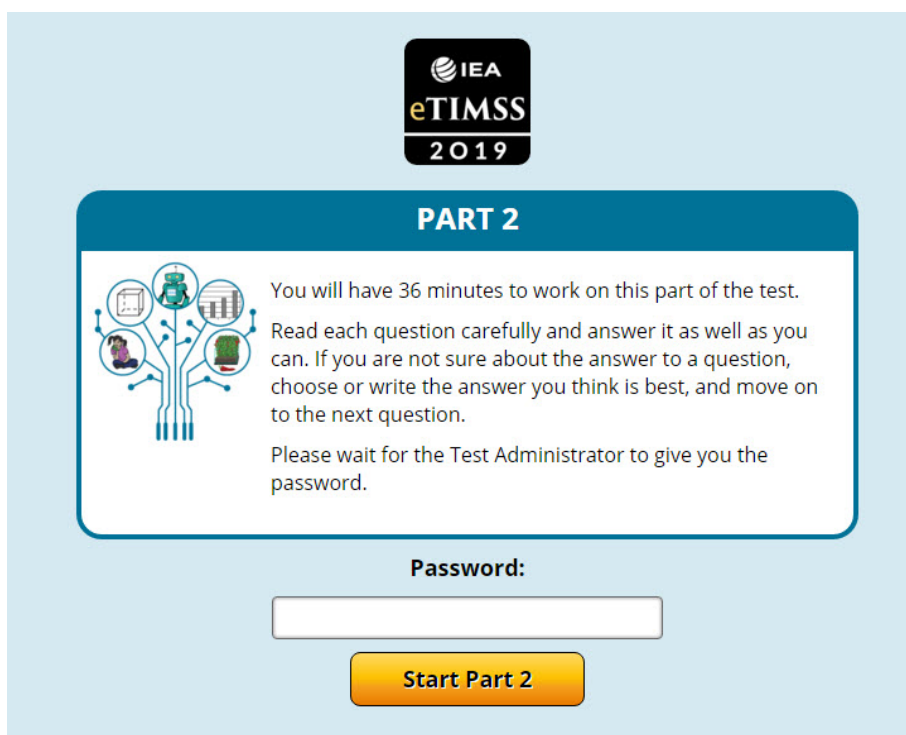
After the break, ask the students to be seated. Make sure each student is seated at the correct tablet. Record the current time in cell 10a of the Test Administration Form.


 **Welcome back. Make sure you are sitting at the same tablet as before with the login card with your name on it.**


Assist students as necessary.


 **Is everybody looking at the screen that says Part 2?**

If yes, then continue. If not, help students get started.



 **You will now have 36 minutes to work on Part 2.**

 **Read each question carefully and answer it as well as you can. If you are not sure about the answer to a question, choose or write the answer you think is best, and move on to the next question.**

 **If you complete Part 2 before time is up and have reviewed your work, you may sit quietly or read a book at your desk.**

 **Do you have any questions?**


When any questions are resolved, you may supply the password for Part 2.

 **Now please select the “Password” box. Type “3972” and select “Start Part 2” to begin.**

Record the current time in cells 10b and 11a of the Test Administration Form. Make sure that all students are working on Part 2. Remember that you are not allowed to help the students with the test. While the students are working, you should move around the room.


At about 5 minutes before the end of the session, say:

 **You have about 5 minutes left.**

 **If you have reached the end of Part 2, you may go back to any questions you have not answered. You can also check the answers of questions you have done.**

 **If you have finished and exited Part 2, please wait for the others to finish.**

After the last 5 minutes have passed, say:

 **Your time is up. If you have not exited Part 2 yet, the system will exit Part 2 automatically once the time is up on your tablet. Please stay seated so I can give you the password for the eTIMSS Questionnaire.**


Record the current time in cell 11b of the Test Administration Form.


OMIT THE FOLLOWING SECTION IN COLORADO, NEW HAMPSHIRE AND SCHOOLS THAT DO NOT ALLOW THE QUESTIONNAIRES AS NOTED IN THE SCS. CONTINUE WITH THE DISMISSAL SECTION ON THE LAST PAGE

eTIMSS Questionnaire

 **Is everybody looking at the screen that says eTIMSS Questionnaire?**

If yes, then continue. If not, help students get started.

 **This questionnaire has some questions about using a computer.**

 **The password to begin the eTIMSS Questionnaire is “4745”. Please type in the password and select “Start the Questionnaire.” The questionnaire should take you about 5 minutes to complete.**

Record the current time in cell 12a of the Test Administration Form.

Make sure that students are completing the eTIMSS Questionnaire. If the students need help answering these questions, you are free to help them. Please note that these questions also have a “back” button.

After about 5 minutes, continue reading the directions below aloud to the students.



Once you have completed the eTIMSS Questionnaire, you can select the left arrow button if you wish to review your answers. When ready, select the “Submit” button to finish the questionnaire and raise your hand while waiting quietly.

Walk around the room to check that each student has selected “Submit.” Once the students have submitted their answers to the questionnaire, the “Finished” screen will appear.

[Record the current time in cell 12b of the Test Administration Form.](#)

Student Questionnaire



We will now fill out a paper Student Questionnaire as the final step in the assessment.



Without touching anything on your tablet, please close your tablet and place your login card on top, facing up, so that we can see it. We are going to distribute the questionnaires. Do not open the questionnaire until I tell you to do so.

- Distribute a paper student questionnaire to each student by matching the name on the student login card and booklet cover. If a student is absent, put that questionnaire aside. Do not give it to anyone else since each questionnaire is assigned to a specific student.
- As you are going around the room, collect the scratch paper. Discard any used scratch paper.



Does everybody have his or her questionnaire?

If yes, then continue. If not, find out why and proceed as described before.



The directions are printed at the beginning of your questionnaire. I will also read them to you. It is important that you follow the directions very carefully so that you understand how to mark your answers. Now open the questionnaire and turn to the first page titled “Directions”.

Make sure that the students have their questionnaires open to the Directions page before proceeding.



Please follow the directions in your questionnaire as I read them aloud.



In this booklet, you will find questions about you and what you think. For each question, you should choose the answer you think is best.



Let us take a few minutes to practice the kinds of questions you will answer in this booklet.



Example 1 is one kind of question you will find in this booklet.

Make sure that all students are following along and are looking at Example 1 in their questionnaires.

Example 1

Do you go to school?

Fill one circle only.

Yes --

No --



In Example 1, the question asks, “Do you go to school?” Below this question are a “Yes” and a “No.” Since you all go to school, you should all fill in the circle next to “Yes.”

Give students time to fill in the circle next to “Yes” and make sure they understand how to do it. Once everyone has completed the example, move on to Example 2.

Example 2

How often do you do these things?

Fill one circle for each line.

	Every day or almost every day	Once or twice a week	Once or twice a month	Never or almost never
a) I talk with my friends	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) I play sports	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) I ride a skateboard	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>



Example 2 is another kind of question you will find in this booklet.

Make sure that all students are following along and are looking at Example 2 in their questionnaires.



This question asks “How often do you do these things?” Letter (a) says, “I talk with my friends.” You are given four choices for how often you do this: Every day or almost every day; Once or twice a week; Once or twice a month; and Never or almost never.



Fill in the circle below your answer. For example, if you talk to your friends every day or almost every day, fill in the first circle under “Every day or almost every day.”



Then, fill in your answers for letters (b) and (c).


Give students time to fill in their answers to all parts of the Example 2 question and make sure they understand how to answer this kind of question. Once everyone has completed the example, move on to Example 3..

Example 3


What do you think? Tell how much you agree with these statements.


Fill one circle for each line.

	Agree a lot	Agree a little	Disagree a little	Disagree a lot
a) Watching movies is fun	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) I like eating ice cream	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) I do not like waking up early	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
d) I enjoy doing chores	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

 **Example 3 is another kind of question you will find in this booklet.**


Make sure that all students are following along and are looking at Example 3 in their questionnaires.


 **Example 3 says, “What do you think? Tell how much you agree with these statements.” Letter (a) says, “Watching movies is fun.” You are given four choices for how much you agree with the statement: Agree a lot, Agree a little, Disagree a little, or Disagree a lot.**


 **Fill in the circle below your answer. For example, if you really agree a lot with that, fill in the first circle under “Agree a lot.” If you really disagree a lot, fill in the circle under “Disagree a lot.”**

 **Then, fill in your answers for letters (b), (c), and (d).**

Give students time to fill in their answers to all parts of the Example 3 question and make sure they understand how to answer this kind of question. Then continue reading the final directions:

 **Read each question carefully, and pick the answer you think is best. You may skip any question you do not want to answer.**

 **Fill in the circle next to or under your answer.**

 **If you decide to change your answer, completely erase your first answer. Then, fill in the circle next to or under your new answer.**

 **Ask for help if you do not understand something or are not sure how to answer.**


 **Are there any questions before we start?**


If there are questions try to answer them the best you can.

Record the current time in Cell (13a) of the Test Administration Form


Reading the Questions Aloud to the Students

In some classes it might be necessary to read the questions aloud. If this is the case in your class, then say the following:

 **I will now read to you each question in the questionnaire and you will fill in your answer to each question in your questionnaire. If you have any questions, please raise your hand.**

 **Turn the page to the first question and I will read it aloud.**


Proceed to read each question aloud and allow time for the students to answer each question. Once all students have finished record the current time in Cell (13b) of the Test Administration Form. Then say:

 **Please close your questionnaires.**


Continue with the instructions for dismissal on the last page.

Letting Students Answer Independently

In some classes it will be possible to allow students to answer the questionnaire independently. If this is the case in your class, then say:


 **Turn the page to the first question and begin answering this questionnaire. You will have 30 minutes to answer these questions.**
Record participation for the Questionnaire Session on the STF.

After 30 minutes are up, say:


 **Please stop working and raise your hand if you have finished answering the questions.**

If all of the students raise their hands, say:

 **Thank you very much for participating in this study. Your work will help us to learn more about our students and schools.**

 **Please close your questionnaires.**


If not all of the students raise their hands, allow for additional time and say:

 **You will have more time to continue answering this questionnaire. If you have already finished all the questions, then you can use this time to review your answers. Once you have finished, please close your questionnaire and read quietly at your desk.**


Once all students have finished and have closed their questionnaires record the current time in cell (13b) of the Test Administration Form.

Dismissal

 **Thank you very much for participating in this study. Your work will help us to learn more about our students and schools.**

 **Please remove the label that contains your name from your booklet. Peel it off and stick it on your login card. Please stay seated while we collect your questionnaires, labels, and login cards.**

- Collect the all the labels, questionnaires, and login cards and keep them secure. Check against the Student Tracking Form to make sure that you have received all of them.
- Give a TIMSS drawstring backpack to each students as a thank you for their participation (except in IN and schools noted in the SCS). Students may also keep their TIMSS pencil.
- You may now dismiss the students.
- Place name labels in the red storage envelope.

 **Thank you again for your help in conducting this important international study.**

Dismiss the students according to school procedure.


[Answer questions 14 through 21 on the Test Administration Form.](#)

8th

TRENDS IN INTERNATIONAL
MATHEMATICS AND SCIENCE
STUDY 2019

SESSION SCRIPT: GRADE 8 eTIMSS

Administering the Grade 8 eTIMSS Assessment

The instructions marked with the  symbol and printed in **bold** in the administration script must be read aloud to the students word for word to ensure that the testing sessions are conducted in the same way in all countries. Although you should become familiar with these instructions before the actual testing, do not attempt to memorize them. Read these instructions exactly as they are written.

Comments that are not in bold are not to be read aloud. They are instructions for you only.

Instructions for **TAs only** are printed in blue.

To begin the testing session:

- Make sure each student has a login card, mouse, pencil, piece of scratch paper.
- Verify that instructions for typing mathematical symbols are written on a white/blackboard, if one is available.
- Have a TIMSS pencil, scratch paper, login card, and drawstring backpack for display as you read the script.
- Make sure that students are seated quietly, with nothing on their desks except for the materials you distributed.
- **Record the current time in cell 8a of the Test Administration Form.**
- Begin reading the administration script.

Introduction



Good morning/afternoon, everyone! My name is (YOUR NAME). This school has been chosen to take part in an important international project to study what students around the world know and can do in mathematics and science. Different countries from all over the world are taking part in this study. You will be taking a mathematics and science test. While I talk to you about today's test, I would like you all to be quiet, stay at your desks, and listen carefully.

EXCEPT IN INDIANA AND APPLICABLE SCHOOLS NOTED IN THE SCS:



At the conclusion of this session you will keep your TIMSS pencils (SHOW PENCIL) and I will give you a TIMSS drawstring backpack (SHOW BACKPACK) for your participation and trying your best in this important study.



If you still have any school books or other materials—for example, a ruler—on your desk, please put them away. All electronic devices, such as calculators, cell phones, personal tablets, portable computers, and photo or video cameras, must be turned off and stored away for the duration of the test administration.



Next to your tablet you have a piece of paper and a pencil to use at times during the test.

Hold up sample piece of paper and pencil



On your keyboard there is a Student Login Card with a label with your name on it.

Hold up sample login card.




Now, look at the information on the label on the login card. If the card does not have your name on it, please raise your hand.


Assist students with incorrect login cards.

Collect all login cards meant for absent students.





Now, place the login card to the left of your tablet. Make sure that you can still see it.

 **I will explain how you log in and use the tablet. If you cannot get your tablet to work correctly, raise your hand for help.**


 **On the tablet in front of you, each of you should see a login screen. Raise your hand if you need help.**

Assist students with login screen.


 **On the screen, there is a box for your name. Do not enter your name.**

 **Below that box there is a box for “Student ID” where you will enter the student ID from the label on the login card. It is an eight-digit number. Select the box and enter your Student ID now.**


Help students locate the student ID on the login card.

 **When you finish entering your student ID, select the “Password” box.**


Assist students as necessary.

 **Here you will enter the password that is printed on the login card. It is a five-digit number. Enter it now.**


Help students locate the password on the login card.


 **When you finish entering the password, select the Log in button.**

Assist students as necessary.


 **Everyone should now be looking at the screen that says Directions.**




 **First, I am going to explain the directions for answering the different types of questions, and then you will begin Part 1 of the test. After Part 1 of the test, there will be a short break, and then you will begin Part 2.**

 **Please select the “Password” box. Type “0000” and select “Start” to begin.**

If a student raises their hand because their name is on the screen, restart the player and have the student log back in without entering their name.

 **We are going to work through the directions together so that you will know what to do. I will read the directions aloud while you follow along on your screen. We will go step by step, so please wait for me to tell you when to go on.**

 **Everybody should now be looking at a screen with “Taking eTIMSS” at the top.**

The screenshot shows the eTIMSS 2019 interface. On the left side, there is a vertical navigation bar with the IEA eTIMSS 2019 logo at the top. Below the logo is a 'TIME LEFT' indicator showing '0'. A series of numbered buttons (1-9) are visible, with button '1' highlighted in green. At the bottom of the navigation bar are up and down arrow buttons. The main content area is titled 'Taking eTIMSS' and contains the following text:

In this test, you will answer questions in mathematics and science. It is important that you try your best to answer all the questions.







Be sure you have scratch paper and a pencil for calculations and notes.







You will have 45 minutes for the first part of the test. Then, after a short break, you will work for another 45 minutes.

The timer at the top left of your screen will show how much time is left for each part. Below the timer there is a button for each question. When you go to a question, its button turns green.




Click the arrows at the bottom of the screen to move through the questions.


At the bottom of the screen, there are icons for a calculator and a cell phone, two large green arrows for navigation, and a language selection dropdown set to 'English (United States)'. The text 'Directions_1_Taking_eTIMSS' is visible vertically on the left side of the interface.

-  **Please read along with the directions on your screen as I read them aloud.**
-  **In this test, you will answer questions in mathematics and science. It is important that you try your best to answer all the questions.**
-  **Be sure you have paper and a pencil to work out your answers.**
-  **You may not use a calculator or cell phone during the test.**
-  **There will be a calculator available on the screen for you to use that I will explain shortly.**
-  **You will have 45 minutes for the first part of the test. Then, after a short break, you will work for another 45 minutes.**


-  The timer at the top left of your screen will show how much time is left for each part.
-  Below the timer there is a button for each question. When you go to a question, its button turns green.
-  At the bottom of the screen in the middle you will see two arrow buttons. These buttons will allow you to move forward and back through the pages or screens. Please be sure to only select the arrow once so you don't skip a page or screen.
-  Now, select the right arrow button  to move forward to the next page or screen.
-  Everybody should now be looking at the screen with “Scroll to See the Whole Question” at the top. Please continue reading along as I read aloud.

The screenshot shows the eTIMSS 2019 interface. On the left is a vertical toolbar with the IEA logo, 'eTIMSS 2019', a 'TIME LEFT' indicator showing '0', and navigation buttons (up, 1, down). The main content area has a blue background with white text. It is divided into sections: 'Scroll to See the Whole Question' with an instruction to look for a downward arrow, a large gray arrow pointing down, and a note to scroll down when seen; 'Choose Your Answer' with instructions to click a button next to the answer and to choose the best answer if unsure; 'Example 1' with the question 'How many minutes are there in an hour?' and four multiple-choice options (A: 12, B: 24, C: 60, D: 120); and 'Example 2' with the question 'How many days are there in a week?' and a dropdown menu labeled 'Choose one'. At the bottom of the interface are icons for a pencil, a calculator, and left/right navigation arrows.

-  Sometimes you will need to scroll down to see the whole question.
-  Look for an arrow at the bottom of the screen that looks like the one shown in the directions.
-  When you see the arrow, make sure you scroll down.


 **For some questions, you choose the answer you think is correct and select the button next to it.**


 **When you select the button, the button will turn green.**


 **If you are not sure about the answer, choose the answer you think is best.**

 **Now, read Example 1 and select the button next to your answer.**


After the students have chosen an answer, continue reading.


 **The example asks, “How many minutes are there in an hour?” You should have selected the button next to 60, because there are 60 minutes in an hour.**

 **If you decide to change your answer, you can do so by selecting another button. Try that now.**


 **If at any time you need to go back to a previous question you can do so by selecting the back arrow button. You can go back and review your answers any time while you work in the section.**


 **Sometimes the answer choices will be in a drop-down menu.**

 **Select “Choose one” to see the options, then select your choice.**

 **Now read Example 2 and use the drop-down menu to choose your answer.**

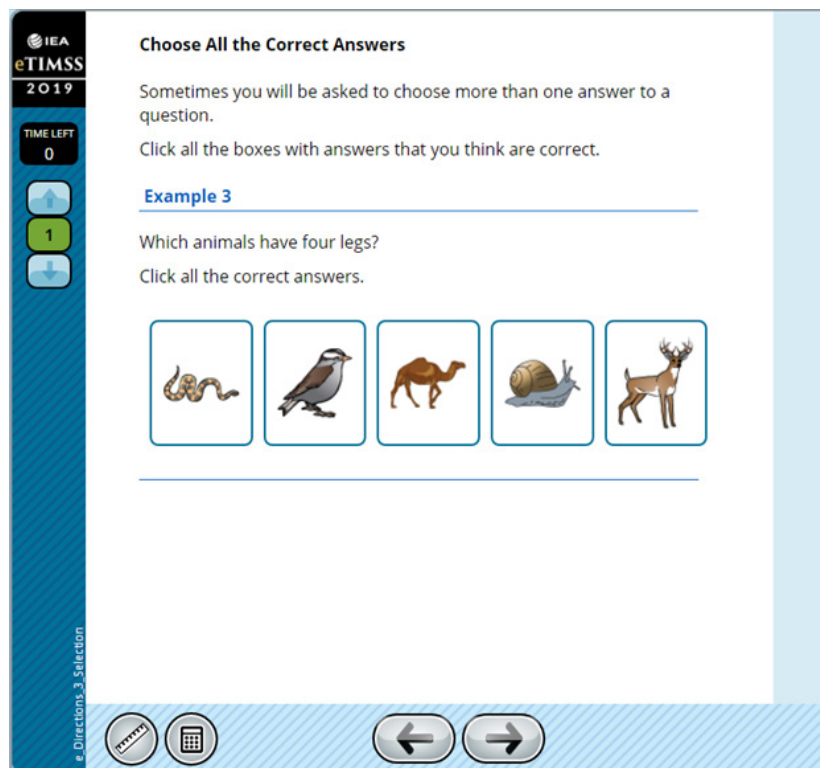
After the students have chosen an answer, continue reading.





 **Example 2 asks, “How many days are there in a week?” You should have selected “7” in the drop-down menu, because there are 7 days in a week.**

 **Now select the right arrow button at the bottom of the screen to move forward.**


 **Everybody should now be looking at the screen with “Choose All the Correct Answers” at the top.**


Confirm that all students have moved on to the next screen, and then continue.



-  Sometimes you will be asked to choose more than one answer to a question.
-  For these questions, you will need to select all the boxes with answers that you think are correct.
-  When you select a box it will turn blue. If you wish to change your answer, select the same box again.
-  Now read Example 3 and select all the boxes with answers that you think are correct.

After the students have finished answering Example 3, continue reading.

-  Example 3 asks, “Which animals have four legs? Click all the correct answers.” You should have selected the box with the camel and the box with the deer.

-  Now select the right arrow button at the bottom of the screen to move forward.

Confirm that all students have moved on to the next screen, and then continue reading.

IEA eTIMSS 2019

Use the Number Pad

You will use a number pad to answer questions that have a number as an answer.


Click the green answer box and the number pad will appear.

When you have finished entering your answer, click OK on the number pad.

Example 5: Whole Numbers

10 + 5 =

Answer:





To enter a fraction, click the fraction button  .





Example 6: Fractions

Enter the fraction $\frac{1}{2}$ as your answer.

Answer:

e_Directions.5_Number_Pad

Navigation icons:    

-  **Now I will explain how to answer questions with numbers. Is everyone looking at the screen with “Use the Number Pad” at the top?**
If yes, then continue. If no, assist students as necessary.
-  **You will use a number pad for questions that have a number as an answer.**
-  **Example 4 shows a question like this. Select the green answer box and the number pad will appear.**
-  **Everyone should see a number pad appear after selecting the answer box in the example. If you do not see the number pad, please raise your hand.**

Assist students; they may not be in the correct question.



The number pad contains numbers 0-9 as well as a decimal point, a negative sign, and a fraction button. It also has an OK button in the bottom right corner to confirm your answer and a backspace button to change your answer.



If you wish to move the number pad, select and hold the four-sided arrow icon, located above the numbers, and drag the pad to move it. Please try this now.



Select the numbers on the number pad to enter your answer. You can also change your answer by selecting the backspace button. Do that now.



When you have finished entering your answer, select OK on the number pad.

After the students have answered and selected OK, continue reading.



The correct answer to the example, 10 plus 5, is 15. If you need to change your answer, select the answer box to open the number pad again.



Sometimes you will use the number pad for questions that have a fraction as an answer.



To enter a fraction, select the fraction button in the number pad.



Once you have selected the fraction button, the first number you select will appear in the top half of the fraction. To enter a number on the bottom half of the fraction, select the bottom box in the answer space and then, in the number pad, select the number you want to enter.



Now practice entering a fraction in Example 5.



Enter the fraction $\frac{1}{2}$ as your answer.



If you have trouble or are not able to enter the fraction in the number pad, please raise your hand.

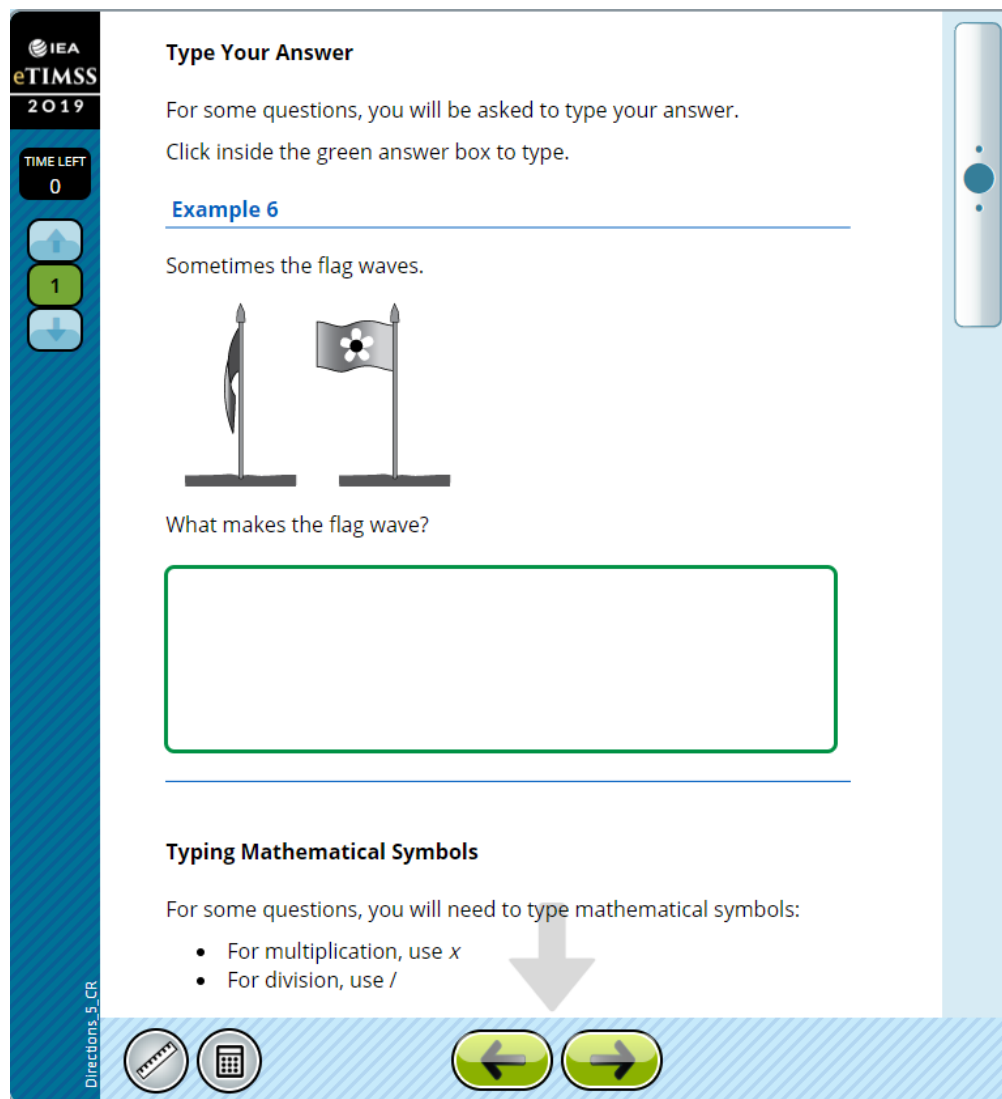
Take a few minutes to walk around the room and make sure that all students know how to enter in a fraction. After the students have finished answering Example 6 and all questions have been answered, continue on to the next screen.



When ready, select the right arrow button at the bottom of the screen to move forward.

 **Everybody should now be looking at the screen with “Type Your Answer” at the top.**

Confirm that all students have moved on to the next screen, and then continue reading.

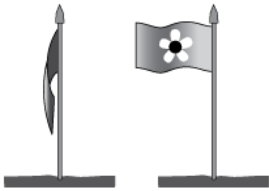


Type Your Answer

For some questions, you will be asked to type your answer.
Click inside the green answer box to type.

Example 6

Sometimes the flag waves.




What makes the flag wave?

Typing Mathematical Symbols

For some questions, you will need to type mathematical symbols:

- For multiplication, use \times
- For division, use $/$

 **For some questions, you will be asked to type your answer.**

 **Sometimes to get full points, you will need to explain your answers for science questions, or show your work for mathematics questions. Keep your typing and calculations as neat as possible, and give mathematics answers in their simplest form.**

 **Now, read Example 6 while I read it aloud.**

 **Sometimes the flag waves. What makes the flag wave?**



Select the green answer box and then use your keyboard to type your answer into the space provided.

After the students have answered, continue reading.



Your answer should explain that the wind makes the flag wave. You can change your answer by using the keyboard.



Now, look down to see the instructions below the answer box.



For some questions, you will need to type mathematical symbols.



For the multiplication symbol, use the letter “x.”



For the division symbol, use the slash symbol.



For exponents such as “x squared” use the letter “x” and the caret symbol followed by the number two.



If you need help typing a symbol during the test, raise your hand.

Refer to the written instructions for typing mathematical symbols, if applicable. Check to see if any students have questions about how to type mathematical symbols. If there are no questions, continue reading.



When ready, select the right arrow button at the bottom of the screen to move forward.



You should now be looking at the screen with “Drag Your Answer” at the top.




Confirm that all students have moved on to the next screen and continue reading.


Drag Your Answer

Sometimes you will be asked to drag pictures, numbers, or words to give your answer.







Example 8


Which animal lives in the water?
Drag that animal to the water.





e-Directions: 7_Drag-Drop

-  Sometimes you will be asked to drag pictures, numbers, or words to give your answer.
-  To drag an answer option, select and hold down on the answer using your mouse and drag the option into the area that is described in the instructions. You cannot use the touchscreen to drag with your finger; you must use the mouse.
-  Now let's try one together. Read the example below while I read it aloud.
-  Which animal lives in the water?
-  Drag that animal to the water.
-  Now answer the question by selecting the animal that you think is correct and dragging it into the water.

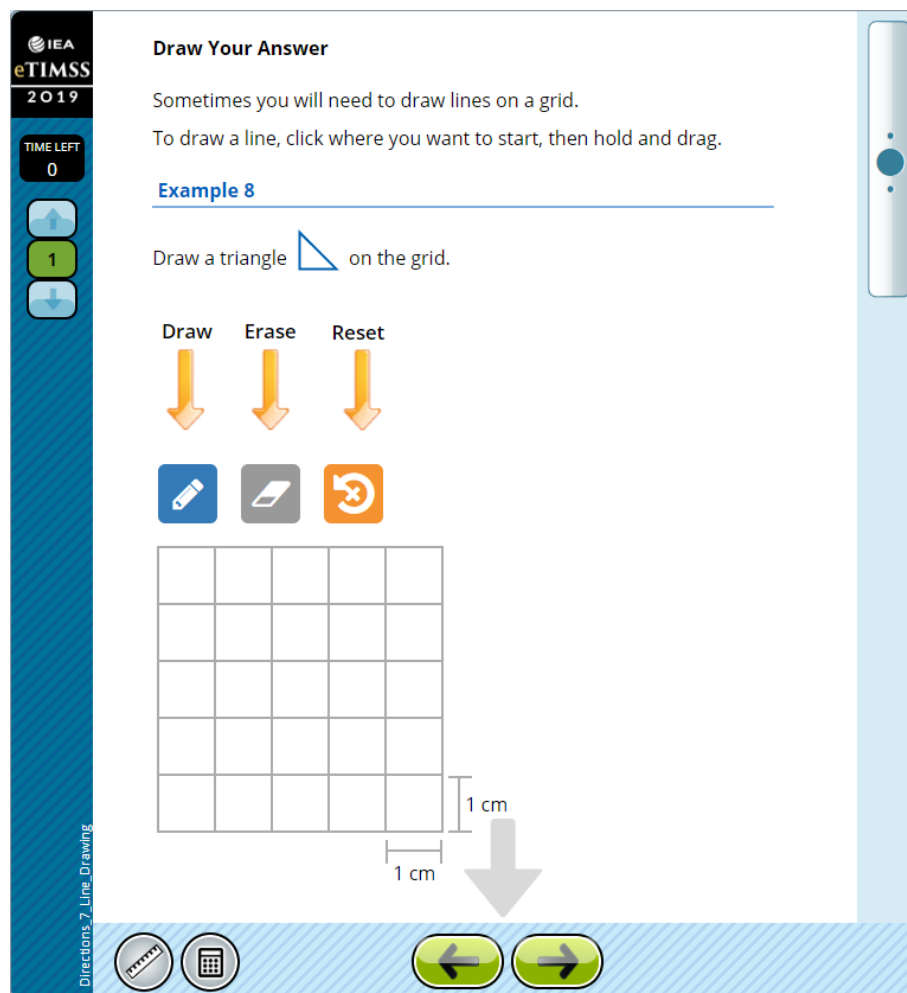
 **To change your answer, select and drag the animal completely outside of the picture of water and then release it. This will cause the answer option to go back into its original position. Make sure that the answer option is dragged all of the way out of the water before letting go.**


Give the students a minute or two to practice. Then, continue reading. .







 **When you are ready, select the right arrow button at the bottom of the screen to move forward.**

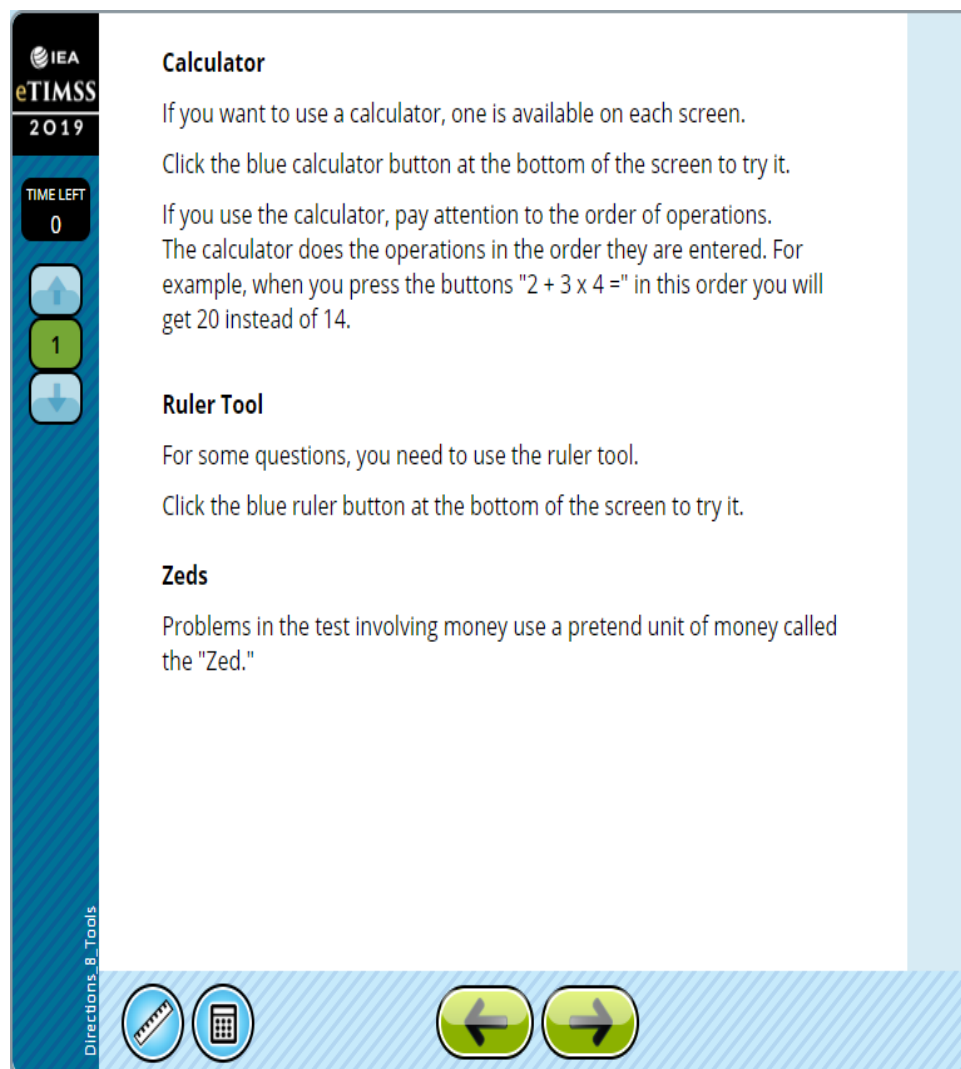
 **Everyone should now be looking at the screen with “Draw Your Answer” at the top.**






Confirm that all students are on this screen and continue reading.







 **Sometimes you will need to draw lines on a grid.**



-  **To draw a line, select the point where you want the line to start, then hold and drag your mouse. You cannot use the touchscreen to drag with your finger; you must use the mouse.**
-  **To erase a line, select the “Erase” button and select the line you want to erase.**
-  **To start over, select the “Reset” button to clear the grid and start over.**
-  **Now practice drawing a triangle on the grid to answer Example 8.**
Give the students several minutes to finish practicing. Answer any questions.
-  **When you are ready, select the right arrow button at the bottom of the screen to move forward.**
-  **Everyone should now be looking at the screen with “Calculator” at the top.**






-  **If you want to use a calculator, one is available for mathematics questions.**
-  **All questions can be answered without using a calculator, but there is one available for you to use. Select the blue calculator button at the bottom of the screen to try it.**
-  **If you use the calculator, pay attention to the order of operations. The calculator does the operations in the order they are entered. For example, when you press the buttons “2 plus 3 times 4 equals” in this order you will get 20 instead of 14.**
-  **To take a square root of a number, enter the number first then click the square-root button.**
-  **Now, select the calculator button at the bottom of the screen and try using the calculator.**

Give students a few minutes to practice using the calculator and answer any questions. Then continue reading.
-  **For some questions, you need to use the ruler tool.**
-  **Select the blue ruler button at the bottom of the screen to try it.**
-  **To move the ruler, select it and drag with your mouse. Try this now.**

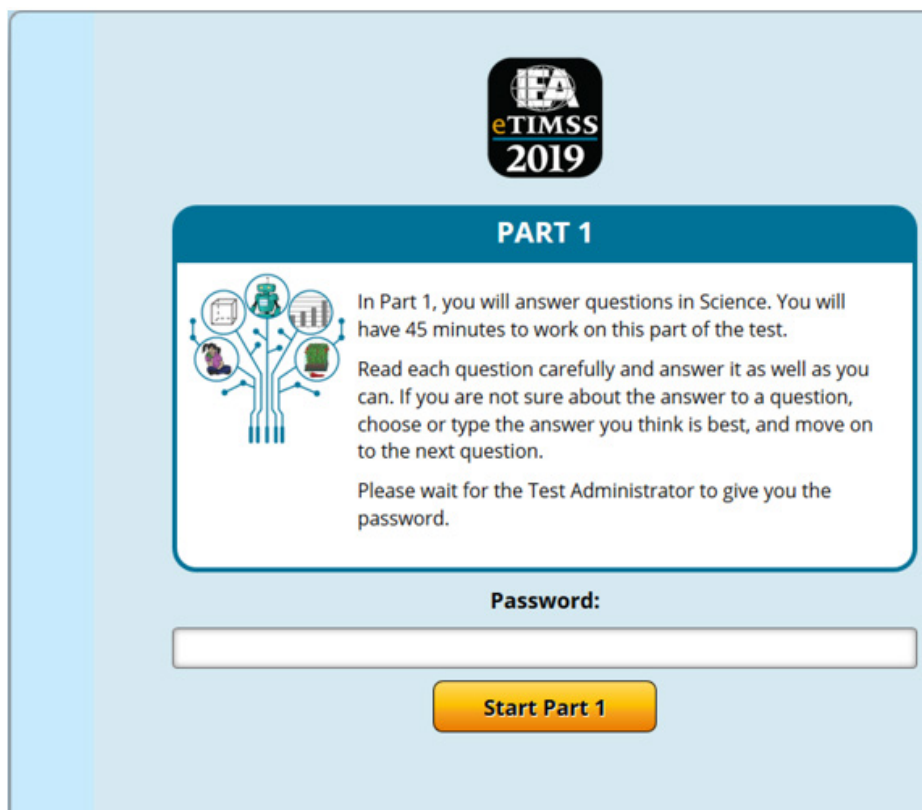
Give the students a minute to practice moving the ruler tool. Answer any questions.
-  **To rotate the ruler, select and hold on the rotation icon under the unit zero and drag the ruler up or down to rotate. Try this now.**


Give the students a minute to practice rotating the ruler tool. Answer any questions.
-  **Problems in the test involving money use a pretend unit of money called the “Zed.” Think of the Zed as similar to a dollar.**
-  **Is that clear for everyone? Raise your hand if you have any questions.**

Give the students time to ask questions if they have any. Then, continue reading.
-  **When you are ready, select the right arrow button at the bottom of the screen to move forward.**
-  **We have now completed the Directions.**
-  **Please select “Next” to continue.**


Part 1 of eTIMSS


All students should now be looking at the “Part 1” screen, shown below.




 **Everyone should now be looking at the screen that says Part 1. If you do not see the Part 1 screen, please raise your hand.**

If no students raise their hands, continue. Otherwise, help students get started.


 **You will have 45 minutes to work on this part of the test.**

 **Read each question carefully and answer it as well as you can. If you are not sure about the answer to a question, choose or write the answer you think is best, and move on to the next question.**

 **If you complete Part 1 before time is up and have reviewed your work, you may sit quietly or read a book at your desk.**

 **Do you have any questions?**

When any questions are resolved, you may supply the password for Part 1.

 **Now please select the “Password” box. Type “1835” and select “Start Part 1” to begin.**

Record the current time in cell 8b and 9a of the Test Administration Form, and record participation for the Achievement Session on the STF.

Make sure that all students are working on Part 1. Remember that you are not allowed to help the students with the test. While the students are working, you should move around the room.

At about 5 minutes before the end of the session, say:



You have about 5 minutes left before the break.



If you have reached the end of Part 1, you may go back to any questions you have not answered. You can also check the answers of questions you have done.



If you have reached the end of Part 1, you may go back to any questions you have not answered. You can also check the answers of questions you have done.



If you have finished and exited Part 1, please wait for the others to finish.

After the last 5 minutes have passed, say:



Your time is up. If you have not exited Part 1 yet, the system will exit Part 1 automatically once the time is up on your tablet.

Record the current time in cell 9b of the Test Administration Form.

When the students have exited Part 1, the login screen for Part 2 will appear.



We will now take a 5 minute break.

Part 2 of eTIMSS

After the break, ask the students to be seated. Make sure each student is seated at the correct tablet. Record the current time in cell 10a of the Test Administration Form.



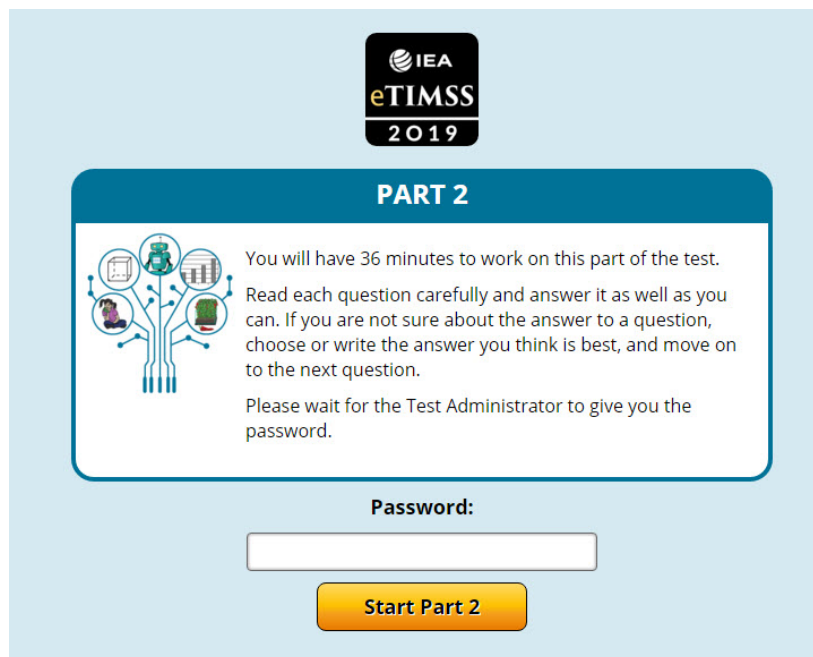
Welcome back. Make sure you are sitting at the same tablet as before with the login card with your name on it.


Assist students as necessary.





Is everybody looking at the screen that says Part 2?

If yes, then continue. If not, help students get started.



 **You will now have 45 minutes to work on Part 2.**

 **Read each question carefully and answer it as well as you can. If you are not sure about the answer to a question, choose or write the answer you think is best, and move on to the next question.**

 **If you complete Part 2 before time is up and have reviewed your work, you may sit quietly or read a book at your desk.**

 **Do you have any questions?**

When any questions are resolved, you may supply the password for Part 2.


 **Now please select the “Password” box. Type “3972” and select “Start Part 2” to begin.**


[Record the current time in cells 10b and 11a of the Test Administration Form.](#)


Make sure that all students are working on Part 2. Remember that you are not allowed to help the students with the test. While the students are working, you should move around the room.

At about 5 minutes before the end of the session, say:

 **You have about 5 minutes left.**

 **If you have reached the end of Part 2, you may go back to any questions you have not answered. You can also check the answers of questions you have done.**


 **If you have finished and exited Part 2, please wait for the others to finish.**
After the last 5 minutes have passed, say:


 **Your time is up. If you have not exited Part 2 yet, the system will exit Part 2 automatically once the time is up on your tablet. Please stay seated so I can give you the password for the eTIMSS Questionnaire.**


[Record the current time in cell 11b of the Test Administration Form.](#)

OMIT THE FOLLOWING SECTION IN COLORADO, NEW HAMPSHIRE AND SCHOOLS THAT DO NOT ALLOW THE QUESTIONNAIRES AS NOTED IN THE SCS. CONTINUE WITH THE DISMISSAL SECTION ON THE LAST PAGE

eTIMSS Questionnaire

 **Is everybody looking at the screen that says eTIMSS Questionnaire?**
If yes, then continue. If not, help students get started.


 **This questionnaire has some questions about using a computer.**

 **The password to begin the eTIMSS Questionnaire is “4745”. Please type in the password and select “Start the Questionnaire.” The questionnaire should take you about 5 minutes to complete.**

[Record the current time in cell 12a of the Test Administration Form.](#)

Make sure that students are completing the eTIMSS Questionnaire. If the students need help answering these questions, you are free to help them. Please note that these questions also have a “back” button.

After about 5 minutes, continue reading the directions below aloud to the students.

 **Once you have completed the eTIMSS Questionnaire, you can select the left arrow button if you wish to review your answers. When ready, select the “Submit” button to finish the questionnaire and raise your hand while waiting quietly.**

Walk around the room to check that each student has selected “Submit.” Once the students have submitted their answers to the questionnaire, the “Finished” screen will appear.

Record the current time in cell 12b of the Test Administration Form.

Student Questionnaire



We will now fill out a paper Student Questionnaire as the final step in the assessment.



Without touching anything on your tablet, please close your tablet and place your login card on top, facing up, so that we can see it. We are going to distribute the questionnaires. Do not open the questionnaire until I tell you to do so.

- Distribute a paper student questionnaire to each student by matching the name on the student login card and booklet cover. If a student is absent, put that questionnaire aside. Do not give it to anyone else since each questionnaire is assigned to a specific student.
- As you are going around the room, collect the scratch paper. Discard any used scratch paper.



Does everybody have his or her questionnaire?

If yes, then continue. If not, find out why and proceed as described before.



The directions are printed at the beginning of your questionnaire. I will also read them to you. It is important that you follow the directions very carefully so that you understand how to mark your answers. Now open the questionnaire and turn to the first page titled “Directions”.

Make sure that the students have their questionnaires open to the Directions page before proceeding.



Please follow the directions in your questionnaire as I read them aloud.



In this booklet, you will find questions about yourself. Some questions ask for facts while other questions ask for your opinion.



Each question is followed by a number of answers. Shade in the circle next to or under the answer of your choice as shown in Examples 1, 2, and 3.



Let’s look at Example 1.

Make sure that all students are following along and looking at Example 1.


Example 1

Do you go to school?

Fill one circle only.

Yes --

No --

 In Example 1, the question asks, “Do you go to school?” Below this question are a “Yes” and a “No.” Since you all go to school, the circle next to “Yes” is filled in.

 Now, let’s look at Example 2.


Make sure that all students are following along and looking at Example 2.


Example 2

How often do you do these things?

Fill one circle for each line.

	Every day or almost every day	Once or twice a week	Once or twice a month	Never or almost never
a) I talk with my friends	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) I play sports	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) I ride a skateboard	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>

 This question asks “How often do you do these things?” Letter (a) says, “I talk with my friends.” You are given four choices for how often you do this: Every day or almost every day; Once or twice a week; Once or twice a month; and Never or almost never.

 Fill in the circle below your answer. In this example, the student talks to his or her friends every day or almost every day and the first circle under “Every day or almost every day” is filled in.

 Now, look at Example 3.


Make sure that all students are following along and looking at Example 3.


Example 3

What do you think? Tell how much you agree with these statements.

Fill one circle for each line.


	Agree a lot	Agree a little	Disagree a little	Disagree a lot
a) Watching movies is fun	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
b) I like eating ice cream	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
c) I do not like waking up early	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
d) I enjoy doing chores	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input checked="" type="radio"/>


 Example 3 says, “What do you think? Tell how much you agree with these statements.” Letter (a) says, “Watching movies is fun.” You are given four choices for how much you agree with the statement: Agree a lot, Agree a little, Disagree a little, or Disagree a lot.


 Fill in the circle below your answer. In this example, the student agrees a little that watching movies is fun and the circle under “Agree a little” is filled in.

 Take a minute to review the three example questions.

Give students time to read through the examples. Then continue reading the final directions:

 Read each question carefully, and pick the answer you think is best. You may skip any question you do not want to answer.

 Fill in the circle next to or under your answer.


 If you decide to change your answer, completely erase your first answer. Then, fill in the circle next to or under your new answer.

 Ask for help if you do not understand something or are not sure how to answer.


 Are there any questions before we start?


If there are questions try to answer them the best you can.

Record the current time in Cell (13a) of the Test Administration Form.


-  **Turn the page to the first question and begin answering this questionnaire. You will have 30 minutes to answer these questions.**
Record participation for the Questionnaire Session on the STF.

After 30 minutes are up, say:

-  **Please raise your hand if you have finished answering the questions.**
If all of the students raise their hands, say:



-  **Please close your questionnaires.**

If not all of the students raise their hands, allow for additional time and say:

-  **You will have more time to continue answering this questionnaire. If you have already finished all the questions, then you can use this time to review your answers. Once you have finished, please close your questionnaire and read quietly at your desk.**
-

Once all students have finished and have closed their questionnaires record the current time in cell (13b) of the Test Administration Form.

Dismissal

-  **Thank you very much for participating in this study. Your work will help us to learn more about our students and schools.**
-  **Please remove the label that contains your name from your booklet. Peel it off and stick it on your login card. Please stay seated while we collect your questionnaires, labels, and login cards.**
- Collect the all the labels, questionnaires, and login cards and keep them secure. Check against the Student Tracking Form to make sure that you have received all of them.
 - Give a TIMSS drawstring backpack to each students as a thank you for their participation (except in IN and schools noted in the SCS). Students may also keep their TIMSS pencil.

- If the school approved, distribute the Certificates of Community Service to the students.
- You may now dismiss the students.
- Place name labels in the red storage envelope.



Thank you again for your help in conducting this important international study.

Dismiss the students according to school procedure.

[Answer questions 14 through 21 on the Test Administration Form.](#)