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ABSTRACT

Key pieces of information that are currently available and relevant to setting targets for achievement are organized to help inform goal setting. These include levels of academic proficiency during elementary school, middle school, and high school; rates of high school completion; and levels of literacy of young adults. Much of the information is drawn from data produced by the National Assessment of Educational Progress (NAEP), which is the only existing national measure of what students know and can do. This document is not designed to advise how the education goals can be achieved, but is a basis for goal setting by those who are expected to develop national goals in 1990. Twenty-two worksheets contain material about education in the United States in tables and graphs in the areas of mathematics; reading; science; writing; U.S. history; proficiency scores for Black, Hispanic, and White students; gender gaps; prose literacy; document literacy; quantitative literacy; literacy attainments in occupations; and high school completion. An appendix describes the NAEP scale levels. (SLD)

Information for

National Performance Goals For Education

A Workbook

Policy Information Center
EDUCATIONAL TESTING SERVICE

NAME _____ ADDRESS _____

SCHOOL _____ CLASS _____

		PERIOD 1	PERIOD 2	PERIOD 3	PERIOD 4	PERIOD 5	PERIOD 6	PERIOD 7	PERIOD 8
MONDAY	SUBJECT	Mathematics	Pages 6 to 15			Race, Ethnicity	Pages 34 to 37		
	ROOM								
	INSTRUCTOR								
TUESDAY	SUBJECT	Reading	Pages 16 to 21			Gender	Pages 38 to 39		
	ROOM								
	INSTRUCTOR								
WEDNESDAY	SUBJECT	Science	Pages 22 to 29			Literacy	Pages 40 to 47		
	ROOM								
	INSTRUCTOR								
THURSDAY	SUBJECT	Writing	Pages 30 to 31			School Completion	Pages 48 to 49		
	ROOM								
	INSTRUCTOR								
FRIDAY	SUBJECT	History	Pages 32 to 33						
	ROOM								
	INSTRUCTOR								

PREFACE

The mission of the Policy Information Center at Educational Testing Service is to provide useful and timely information to policy makers, calling principally on data and research uniquely available at E.T.S. As 1989 draws to a close, an historic educational policy effort is underway based on the statement issued by President Bush and the nation's Governors at the close of the Education Summit held last September in Charlottesville, Virginia:

> "We believe that the time has come, for the first time in U.S History, to establish clear, national performance goals that will make us internationally competitive."

The ability to set and fulfill the performance goals called for in that statement will depend in large part on the quality of the information available, not only to those who must shape the goals, but also to those who will measure progress in achieving them. To assist those directly engaged in the goal-setting process --- as well as the broader audience that might want to have a say in what the goals should be --- we have assembled the best and most current information available to us. Our desire has been to extract the most relevant data and condense it to a form that can be used by very busy people.

This workbook can be improved upon with more time, and we will make an effort to do so. However, the national performance goals are expected to be announced in early 1990, and we make this information available now in the hope that it may be of assistance to some.

We are indebted to Richard J. Coley for assistance in creating charts and to Carla Meadows for her desktop publishing skills.

Paul E. Barton
Director
ETS Policy Information Center
November 30, 1989

--- A Policy Center Working Paper ---

"THE OVERRIDING OBJECTIVE"

"The overriding objective", the statement of the September 1989 Education Summit said, "is to develop an ambitious, realistic set of (education) performance goals." The statement also set an ambitious time table for accomplishing this objective. The first such goals ever established by this nation are to be announced in "early 1990".

No new information base can be established that can be used to inform goal-setting now. They will be based on what the nation collectively knows late in 1989. The purpose of this document is to organize key pieces of information that are currently available and that are relevant to setting targets for achievement: levels of academic proficiency during elementary, middle and high school; rates of high school completion; and levels of literacy of young adults. In doing so, we have drawn heavily (but not exclusively) on the information produced by the National Assessment of Educational Progress (NAEP), administered by Educational Testing Service for the U.S. Department of Education, and available in the documents published by NAEP. Also included are data from the first International Assessment of Educational Progress conducted in 1988.

While we organized data from NAEP in a way that we hope will be useful, the individual assessments, and the "report cards" which ensue from them, are a valuable resource for all who wish to dig more deeply. These report cards, in addition to providing information on performance, provide rich information as to the characteristics of students, their academic efforts, their families, the instruction they have been exposed to, and their out-of-school activities.

There is no perfect data system for setting goals. However, NAEP serves a variety of needs and educational constituencies and is the <u>only</u> existing national measure of what all students know and can do. <u>No national goals will have utility if there are no means of tracking progress toward them</u>. The periodic national assessments provide a way to measure such progress.

This use for the NAEP data would not have been possible as few as six years ago, before the development of the new NAEP proficiency scales, combined with the "scale anchoring" that describes what students know and can do at different points along the scale. These proficiency scales and their interpretation provide a means of setting goals and tracking progress over time.

In using these NAEP scales and assessments to set goals it should be understood that the scales represent levels of <u>difficulty</u>. The top reaches of the NAEP scales are the most difficult to achieve. The higher the level on the scale, the smaller the proportion of students who reach the level. Level of difficulty will usually coincide with judgment about <u>importance</u>, but this is not necessarily the case. In examining these NAEP data, it remains necessary to make judgments about what students <u>need</u> to know and be able to do. As a key contributor to the re-design of NAEP, Samuel Messick, ETS Vice President for Research, wrote in 1985, that "what is still required to move on the setting of quality educational standards are value judgments as to which ranges of

performance are deemed unsatisfactory, adequate, or excellent...." Each assessment report includes extended descriptions of these scale levels, together with actual examples of questions students can successfully answer at different scale intervals; they will help make informed value judgments.

This document is designed to assist policy makers in making judgments, particularly those responsible for announcing goals "early in 1990". It is not designed as a scholarly exercise. It is not designed to advise how the goals can be achieved, or by what processes and programs they should be tackled. Further, we assume that setting goals, and adjusting them, will proceed well beyond early 1990, and that those responsible will gradually identify the improved information they need to do the job.

This is a working document, prepared quickly because of the compressed schedule for goal setting. We hope to refine and improve it, and welcome recommendations for doing so.

WORKSHEETS

THE WORKSHEETS

In this workbook we provide twenty two "worksheets" to aid in making decisions about goals. We do not presume to try to instruct those responsible on how to decide what goals should be; this is an information document. We do, however, offer a few comments about the use of these pages that may be helpful.

1. These worksheets are designed using presently available information about what students and adults know and can do, primarily from the National Assessment of Educational Progress (NAEP) and other similar national data sources as noted in the introduction. Three key characteristics of such sources of information are needed: (a) they should assess accomplishments of agreed-upon importance, (b) they should present a scale of accomplishment on which goals can reasonably be set, and (c) they should provide a mechanism for collecting representative data for the units of concern (e.g., nationally or states). The example data used in these worksheets meet those requirements.

2. While we have provided average proficiency scores (means), we have emphasized distributions for setting goals. This way, the wide variations among students of the same age and grade are recognized. The NAEP scales, by describing what students know and can do at each level on the scale, aids judgments about the percent of students who should obtain a particular level. We can deal with questions such as: Do we propose to raise more students at the bottom toward the middle? Raise students in the middle toward the top?

If we deal only with averages, we may end up, as one example, only increasing basic skills and doing nothing about achievement of the most able students. Or we may increase basic skills only and not improve problem solving abilities. Averages are a useful way to sum up, but they will not reveal or disclose where an improvement was made, or is intended to be made, and for which groups of students.

3. We do not know what time period will be established for attaining the goals to be set, and have not suggested a time frame on these worksheets. If NAEP is to be used for tracking progress the years for achieving goals and interim targets would need to coincide with the assessments. On the current NAEP assessment cycle, different subject areas are assessed every two years, so there will be assessments in 1992, 1994, 1996, 1998 and 2000.

4. We have provided information on trends in achievement, as well as distributions from the most recent assessment. The general picture conveyed is stability in achievement the last two decades, although there have been some modest improvements, and some substantial ones among minority students. The question this raises is what are we capable of achieving? Although we are surely capable of making gains with creative effort in particular school sites, it is difficult to make large enough gains in many schools, districts, or states to produce dramatic changes in state or national data. One piece of useful information is the present range in achievement by the socio-economic level of students. We have provided this range on each sheet, based on the

on the level of education of the parent. Information about the range of achievement of schools based on other characteristics may also be used to define reasonable expectations or goals.

5. One of the seven areas for goals described in the statement issued after the Education Summit was to improve in international comparisons. We have recent information for mathematics and science for 13 year olds and have compared the U.S. with four other countries.

6. The "objectives" set by NAEP committees are arrived at through a broad consensus; these objectives guide the development of assessment exercises. This parallels the consensus process that will be used to set performance goals.

7. While goals can be set initially one by one, a completed set would need to recognize interdependence. For example, a certain level of reading ability is necessary to comprehend a 12th grade history textbook. Similarly, a certain level of mathematics must be achieved to raise achievement in physics; more students will need to take physics courses, and this will require more teachers capable of teaching it.

8. While we show data on a cross section of all students, it is necessary to be sensitive to the need to build from an early age, even as we try to raise students from wherever they are in the system at the present time. Gains made early in school can be built upon at all stages; goals can be set for "cohorts" of students moving through the system. While NAEP does not track the same students, it does sample the same "class" of students as they move through the system.

MATHEMATICS (9 YEAR OLDS)

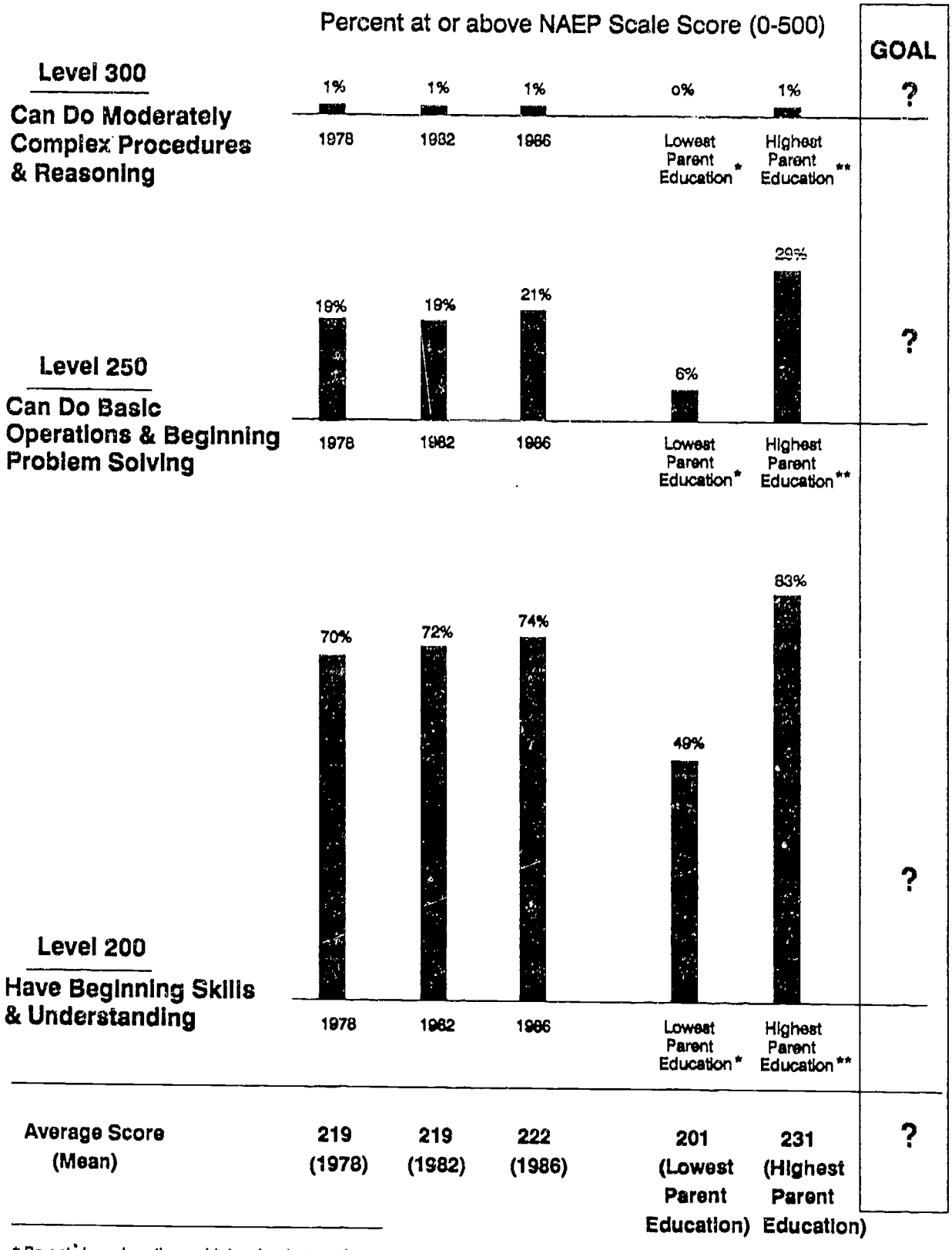
Since 1978, (on a scale of from 0 to 500), the percentage of students reaching levels 150, 200, and 250 have increased slightly, and the average scores improved modestly, from 219 to 222

In 1986, the average scores ranged from 201 for students whose parents had less than a high school education, to 231 for those whose parents were college graduates.

Source of data for chart: The Mathematics Report Card: Are We Measuring Up?, National Assessment of Educational Progress, Educational Testing Service, 1988.

Mathematics -- 9 Year Olds

Percent at or above NAEP Scale Score (0-500)



	1978	1982	1986	Lowest Parent Education *	Highest Parent Education **	GOAL
Average Score (Mean)	219 (1978)	219 (1982)	222 (1986)	201 (Lowest Parent Education)	231 (Highest Parent Education)	?

* Parents have less than a high school education

** Parents are college graduates

MATHEMATICS (13 YEAR OLDS)

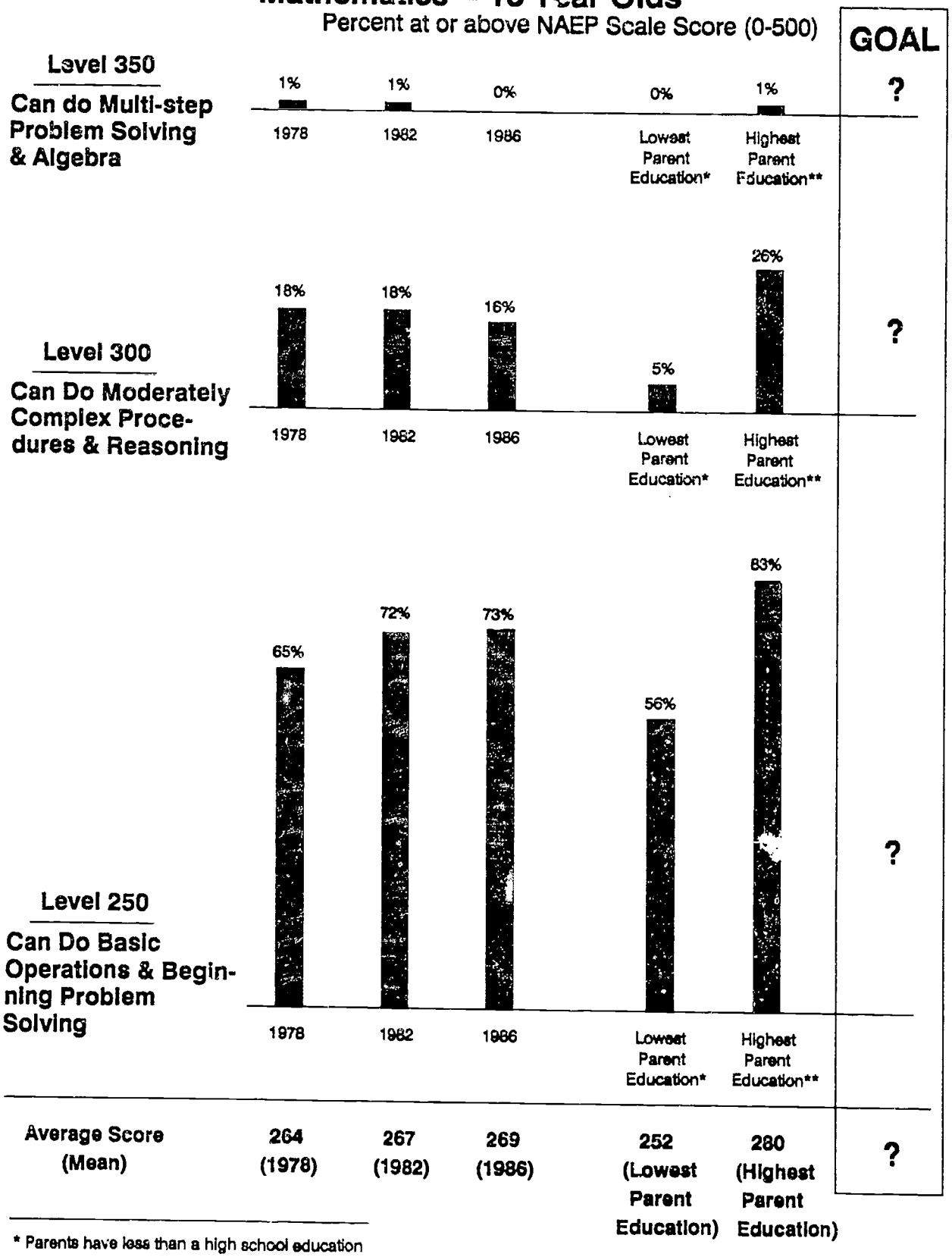
Average mathematics scores improved from 264 in 1978 to 269 in 1986. However, the percent scoring at or above the higher levels (300 and 350) declined slightly. There were increases in the number of students scoring at the lower levels of 200 and 250, enough so as to raise the average.

The range of average scores was from 252 for students whose parents had less than a high school education, to 280 for those whose parents graduated from college.

Source of data for chart: The Mathematics Report Card: Are We Measuring Up?, National Assessment of Educational Progress, Educational Testing Service, 1988.

Mathematics -- 13 Year Olds

Percent at or above NAEP Scale Score (0-500)



* Parents have less than a high school education

** Parents are college graduates

MATHEMATICS: INTERNATIONAL COMPARISONS (13 YEAR OLDS)

In 1988, an Educational Testing Service assessment* compared the U.S. with other countries in mathematics and science. Twelve student populations were involved, and the U.S. was among those ranking in the lowest scoring group.

The facing page shows the percent scoring at each scale level for four countries at various performance levels and the U.S.; the boxes show the average scores for each country.

On a scale of from 0 to 1000 the differences are huge at the more difficult end of the scale: under one in ten U.S. students reach the 600 level, contrasted with 4 in 10 Korean students.

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*This assessment was financed (U.S. costs) by the National Science Foundation and the US Department of Education.

Source of data for table: A World of Differences, Educational Testing Service, 1989.

Mathematics, 13 Year Olds, ETS International Assessment (1988)

		Percent of 13 Year Olds at or above Scale Score (0-1000)					GOAL
		Korea	Ontario (English)	Spain	United Kingdom	United States	
Level 700 - Understand & Apply More Advanced Concepts	700	5%	1%	1%	2%	1%	____%
Level 600 - Understand Measurement & Geometry Concepts & Solve More Complex Problems	600	40%	16%	14%	18%	9%	____%
		Korea Avg. (568)					
		Ontario (Eng.) Avg. (516)					Avg. ___?
		Spain Avg. (512)					
		UK Avg. (510)					
Level 500 - Use Intermediate Level Skills to Solve Two-Step Problems	500	78%	58%	57%	55%	40%	____%
		U.S. Avg. (474)					
Level 400 - Use Basic Operations to Solve Simple Problems	400	95%	92%	91%	87%	78%	____%
Level 300 - Perform Addition & Subtraction	300	100%	99%	99%	98%	97%	____%

MATHEMATICS (17 YEAR OLDS)

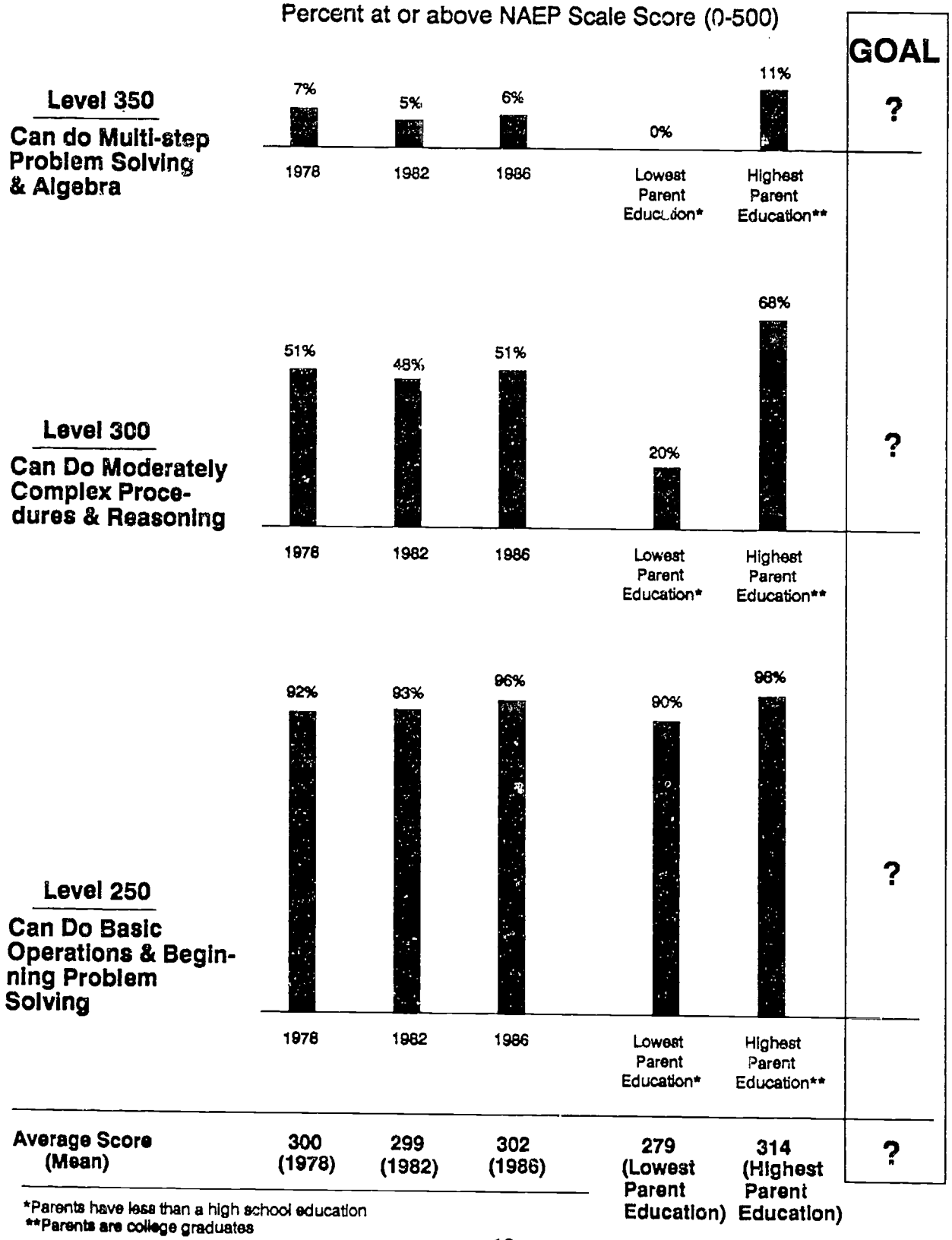
From 1978 to 1982 there was a very slight decline in the percent achieving the 350 level, with some recovery in 1986; there was a similiar pattern at the 300 level. Some gain was made at level 250, of "Basic operations and beginning problem solving".

Average achievement was basically flat: 300 in 1978 and 302 in 1986. The low and high by parents education was from 279 to 314.

Source of data for chart: The Mathematics Report Card: Are We Measuring Up?, National Assessment of Educational Progress, Educational Testing Service, 1988.

Mathematics -- 17 Year Olds

Percent at or above NAEP Scale Score (0-500)



Average Score (Mean)	**300 (1978)**	**299 (1982)**	**302 (1986)**	**279 (Lowest Parent Education)**	**314 (Highest Parent Education)**	**?**

*Parents have less than a high school education
**Parents are college graduates

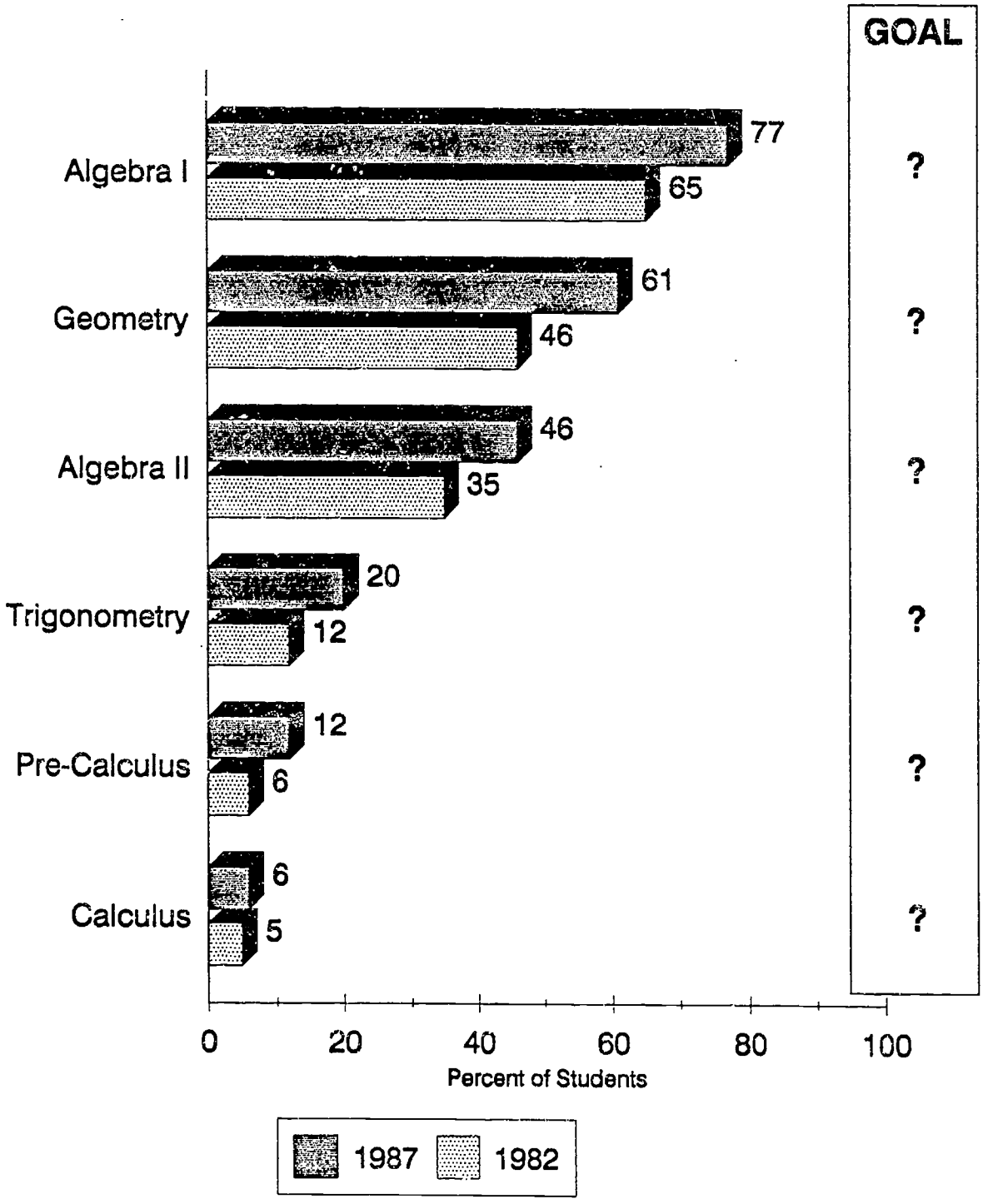
MATHEMATICS COURSES

Performance goals are appropriately set for final outcomes: actual achievement. But it may be considered desirable to have goals in terms of intermediate outcomes. For example, we are not likely to raise higher level mathematics performance unless more students take advanced mathematics courses.

While there have been improvements since 1982, only one in five high school graduates of the Class of '87 took trigonometry, and only 1 in 18 took calculus.

Source of data for chart: What Americans Study, Policy Information Center, Educational Testing Service, 1989.

Mathematics Courses Taken in High School



READING (9 YEAR OLDS)

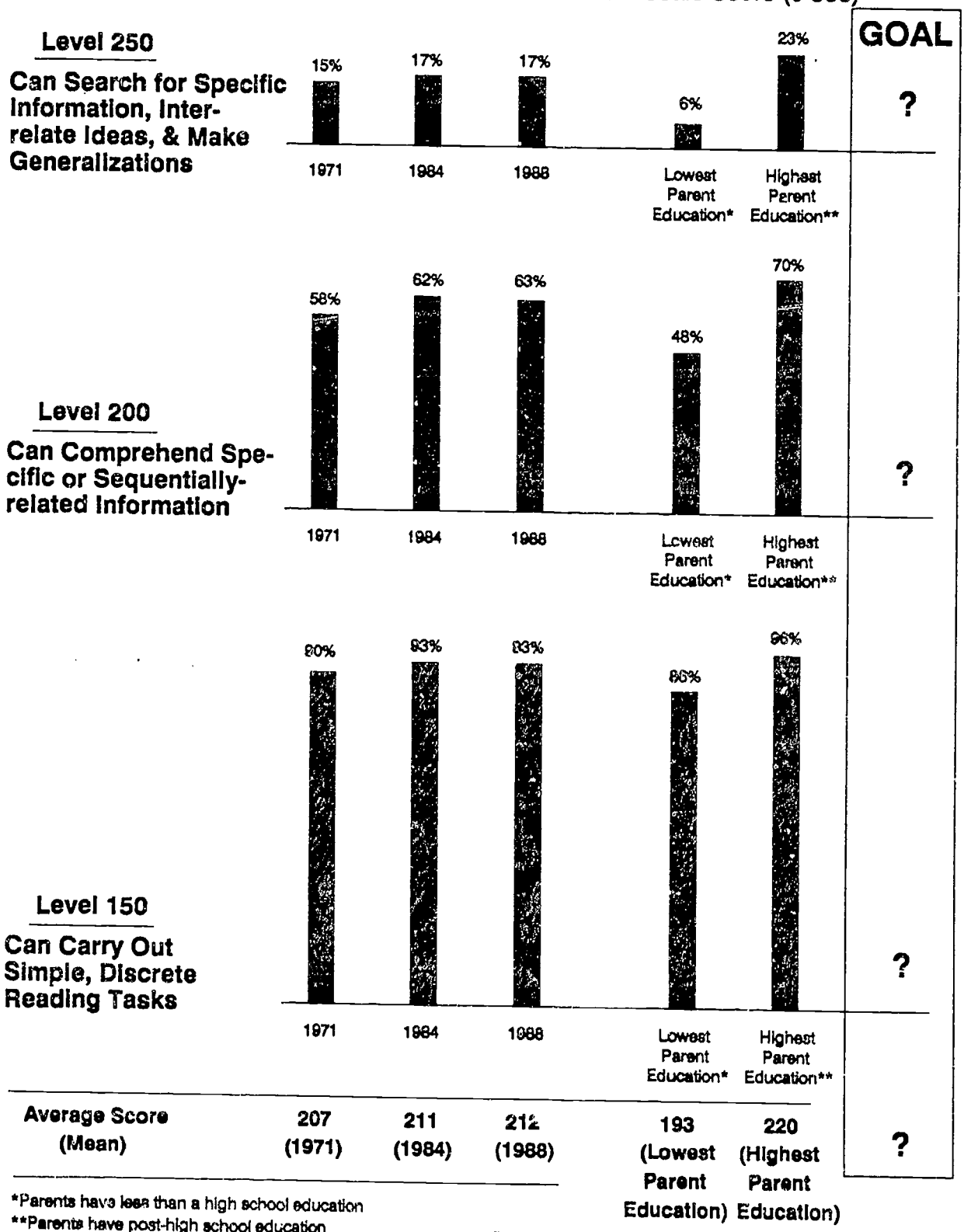
There was a gain in average reading scores from 1971 to 1984, from 207 to 211. These gains were registered at levels 150, 200, and 250.

There was no improvement from 1984 to 1988.

Source of data for chart: The Reading Report Card, 1971 to 1988, National Assessment of Educational Progress, Educational Testing Service, in press.

Reading -- 9 Year Olds

Percent at or above NAEP Scale Score (0-500)



*Parents have less than a high school education
**Parents have post-high school education

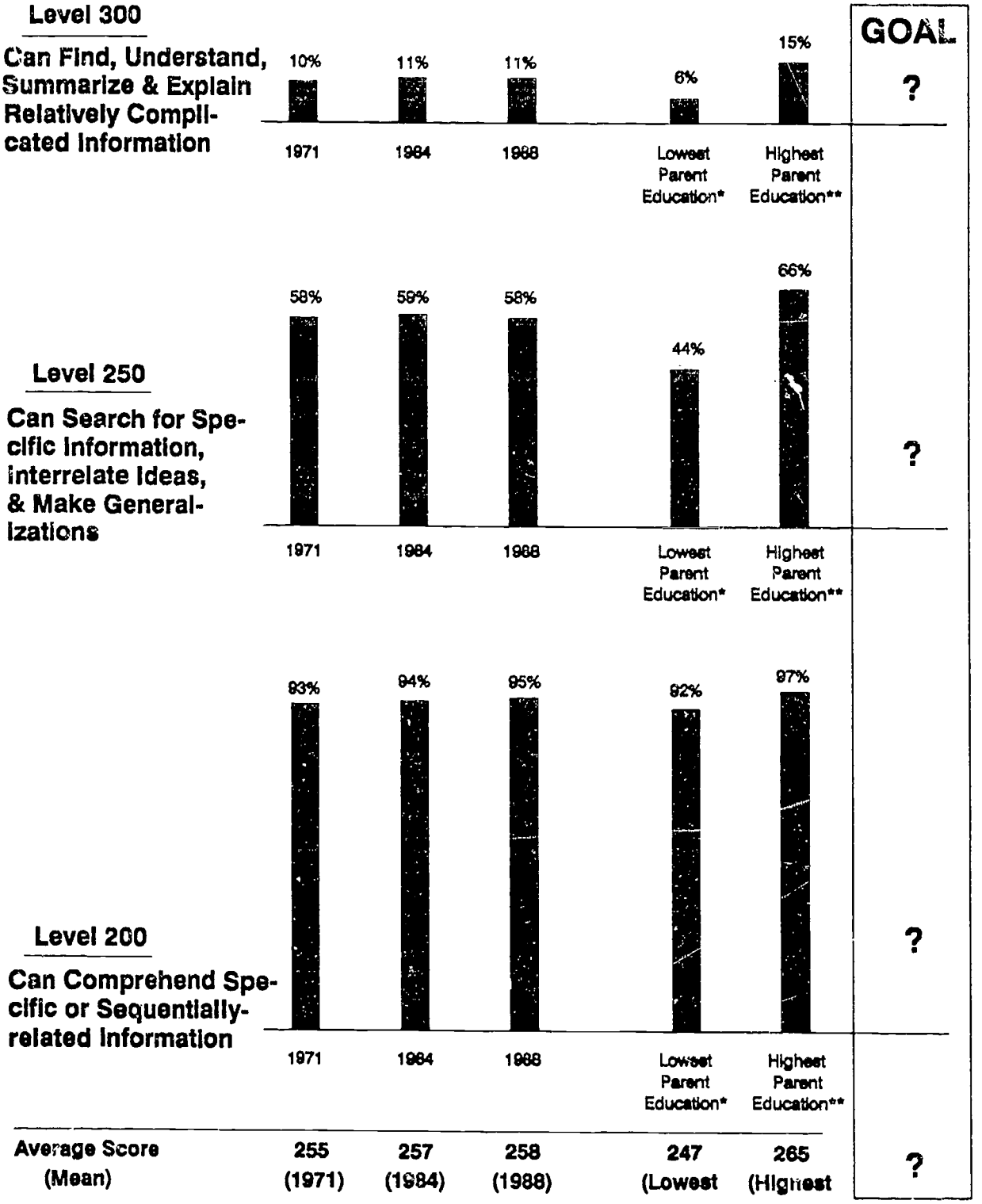
READING (13 YEAR OLDS)

Average reading scores advanced from 255 in 1971 to 258 in 1988, with most of the gain taking place between 1971 and 1980. These gains occurred principally at the 200 level on the scale.

Source of data for chart: The Reading Report Card, 1971 to 1988, National Assessment of Educational Progress, Educational Testing Service, in press.

Reading -- 13 Year Olds

Percent at or above NAEP Scale Score (0-500)



*Parents have less than a high school education
**Parents have post-high school education

READING (17 YEAR OLDS)

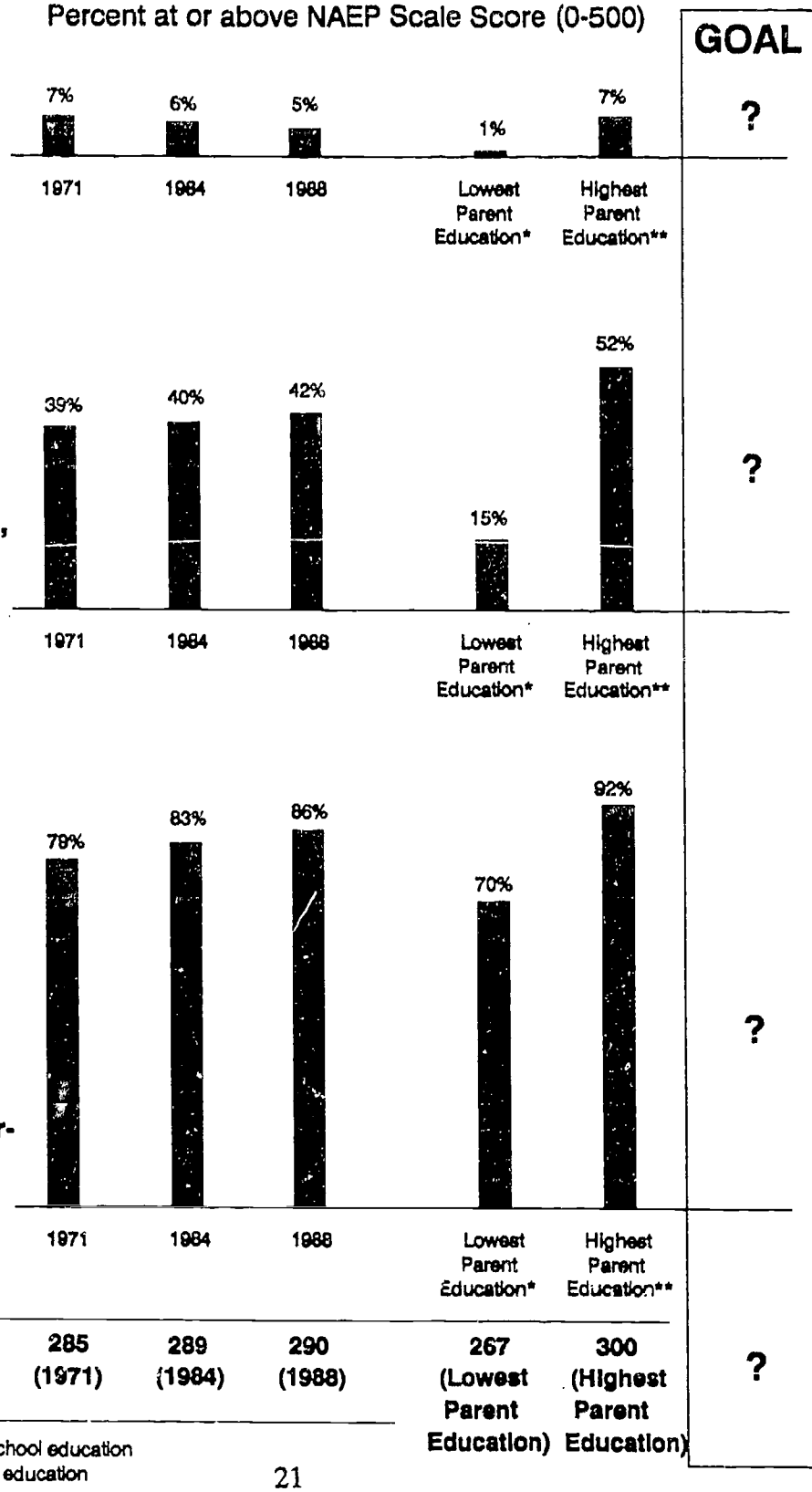
Reading scores advanced in 1984 for 17 year olds, for the first time since NAEP was created, from 285 in 1971 to 289 in 1984. The improvements were made at the 250 and 300 levels: there was a slight decline at the 350 level. According to NAEP, students need to read at level 300 in order to understand a 12th grade academic text book.

The chart shows the range by education level of the parents.

Source of data for chart: The Reading Report Card, 1971 to 1988, National Assessment of Educational Progress, Educational Testing Service, in press.

Reading -- 17 Year Olds

Percent at or above NAEP Scale Score (0-500)



Average Score (Mean)	**285 (1971)**	**289 (1984)**	**290 (1988)**	**267 (Lowest Parent Education)**	**300 (Highest Parent Education)**	**?**

*Parents have less than a high school education
**Parents have post-high school education

SCIENCE (9 AND 17 YEAR OLDS)

Age 9

From 1977 to 1986, the average science score (mean) went from 220 to 224. There were gains at level 150, 200, and 250; the percent scoring at the 300 level only 3.4% in 1986.

Age 17

The average score was the same level in 1986 as it was in 1977.

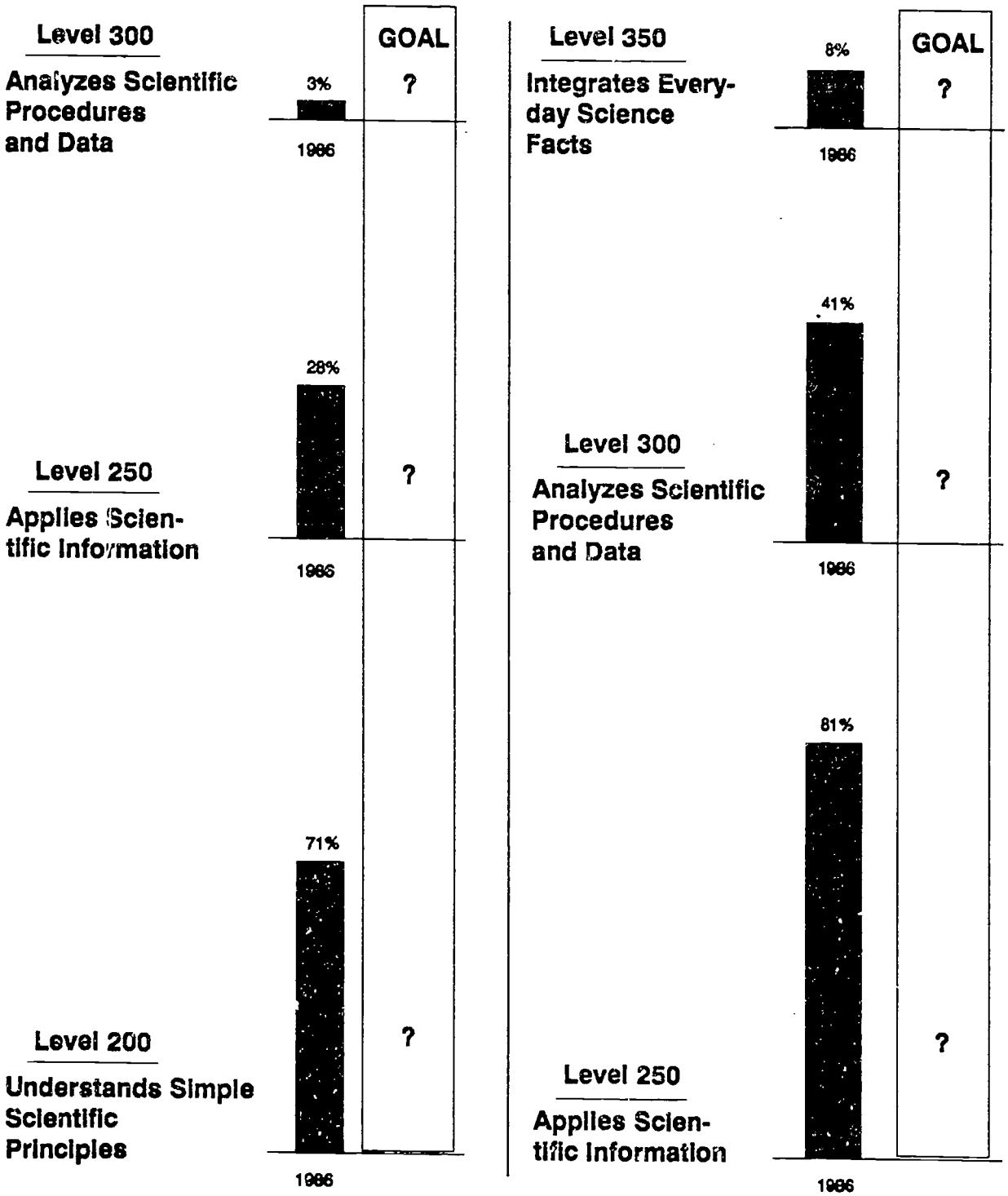
Only four in ten students reach the 300 level where they "can evaluate the appropriateness of the design of an experiment".

Source of data for chart: The Science Report Card: Elements of Risk and Recovery, National Assessment of Educational Progress, Educational Testing Service, 1988.

Science -- 9 Year Olds

Science -- 17 Year Olds

Percent at or above NAEP Scale Score (0-500)



Average Score (Mean)	224	289

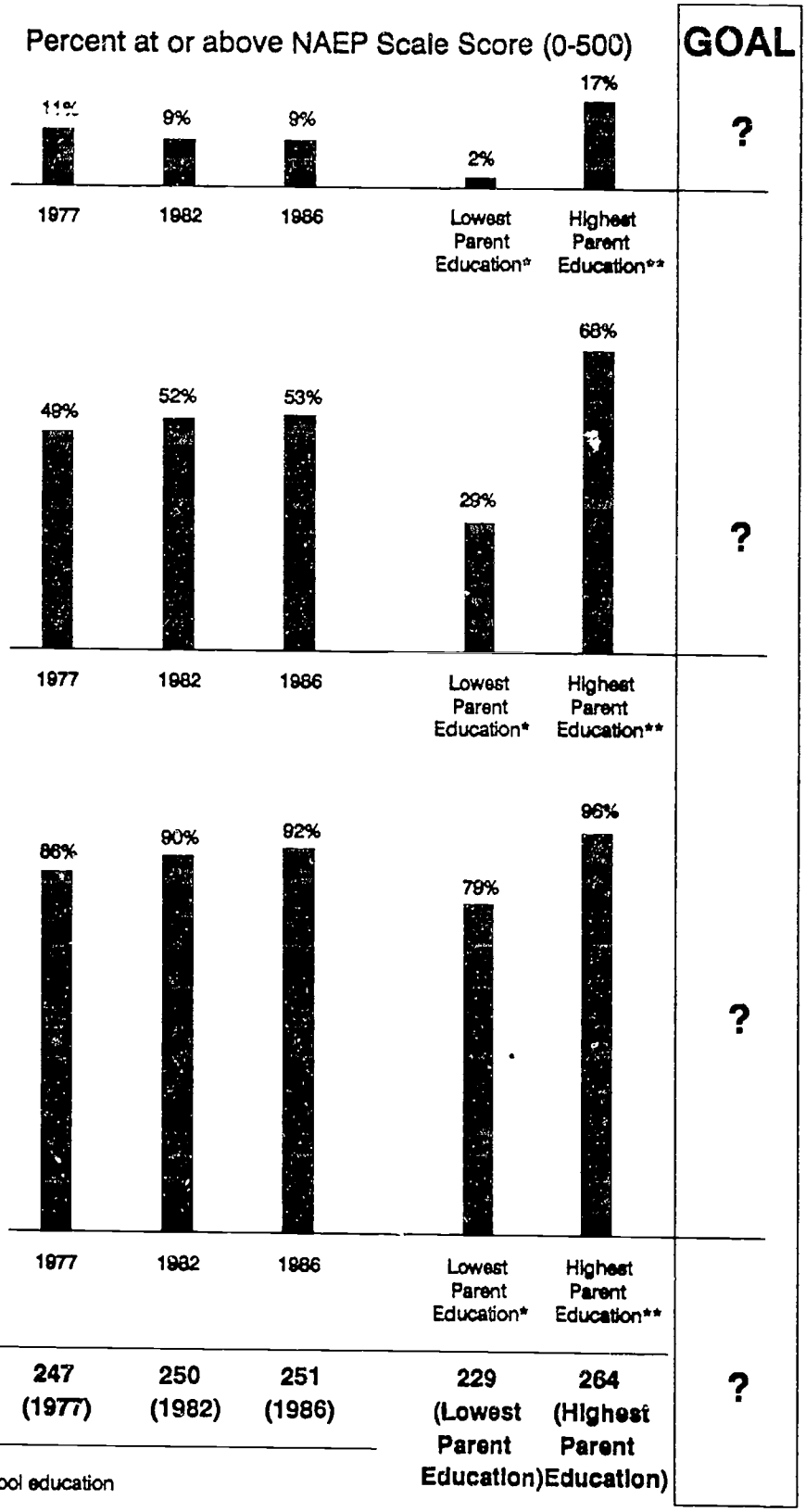
SCIENCE (13 YEAR OLDS)

Science proficiency rose somewhat from 1977 to 1986, from an average (mean) of 247 to 251. The gains in proficiency occurred at the 200 and 250 levels.

Source of data for chart: The Science Report Card, Elements of Risk and Recovery, National Assessment of Educational Progress, Educational Testing Service, 1988.

Science -- 13 Year Olds

Percent at or above NAEP Scale Score (0-500)



Average Score (Mean)	**247 (1977)**	**250 (1982)**	**251 (1986)**	**229 (Lowest Parent Education)**	**264 (Highest Parent Education)**	**?**

*Parents have less than a high school education
**Parents are college graduates

SCIENCE: INTERNATIONAL COMPARISONS (13 YEAR OLDS)

In 1988, an Educational Testing Service assessment* compared the U.S. with other countries. Twelve student populations were involved, and the U.S. was among those ranking in the lowest scoring group.

The facing page shows the percent scoring at each scale level for four countries and the U.S. The boxes show the average scores for each country.

The differences are particularly striking at the higher levels of difficulty; only 12% of U.S. 13 year olds were at the 600 level where they could "Understand and apply intermediate scientific knowledge and principles", compared with one in three Korean students, and one in five students in the United Kingdom.

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*This assessment was financed (U.S. costs) by the National Science Foundation and the US Department of Education.

Source of data for chart: A World of Differences, Educational Testing Service, 1989.

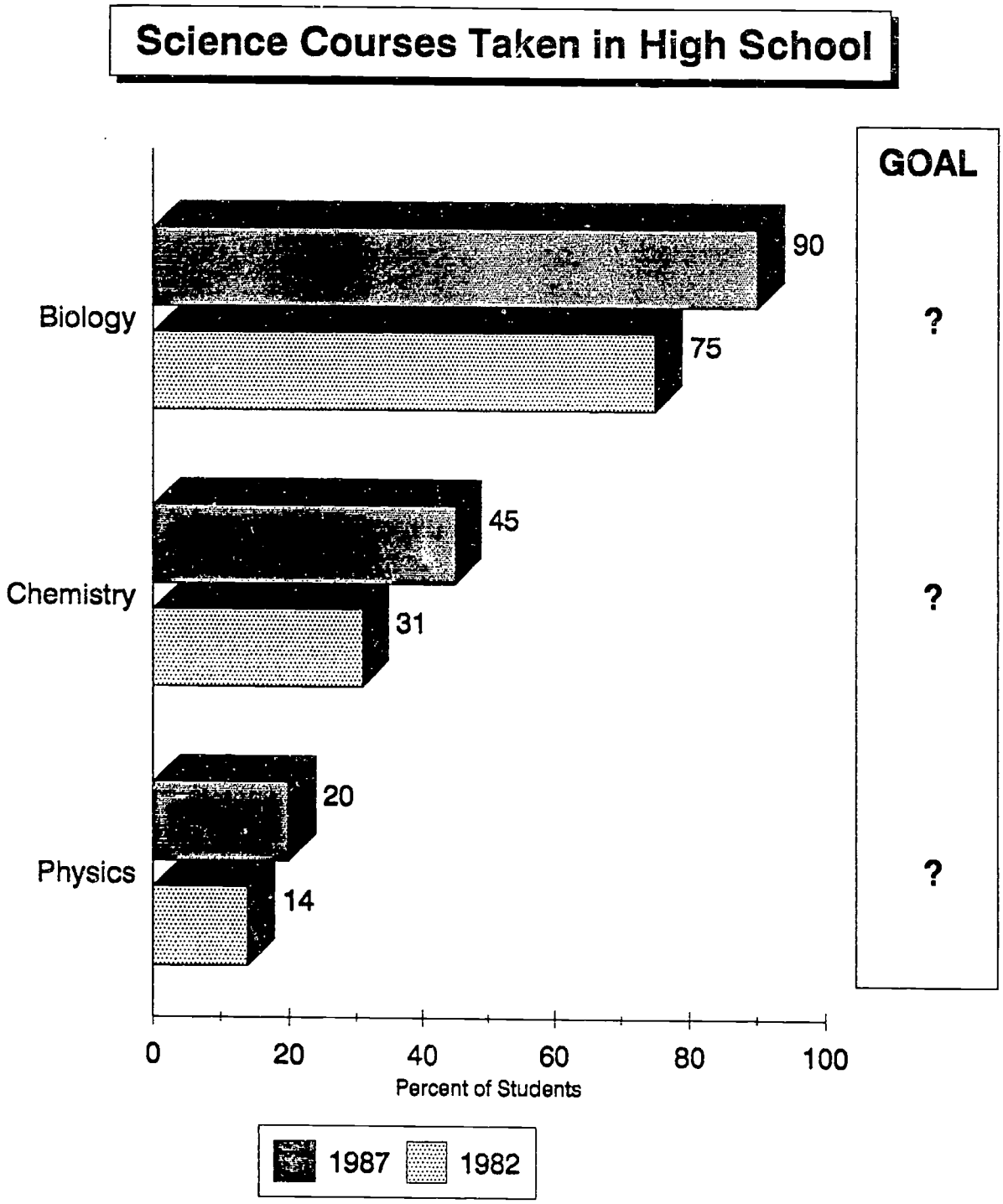
Science, 13 Year Olds, ETS International Assessment, 1988

		Percent of 13 Year Olds at or above Scale Score (0-1000)					GOAL
		Korea	Ontario (English)	Spain	United Kingdom	United States	
Level 700 - Integrate Scientific Information & Experimental Evidence	700	2%	2%	1%	2%	1%	____ %
Level 600 - Understand & Apply Intermediate Scientific Knowledge & Principles	600	33%	17%	12%	21%	12%	____ %
		Korea Avg. (550)					
		U.K. Avg. (520)					Avg. ___?
		Ontario (Eng.) Avg. (515)					
		Spain Avg. (504)					
Level 500 - Use Scientific Procedures & Analyze Scientific Data	500	73%	56%	53%	59%	42%	____ %
		U.S. Avg. (479)					
Level 400 - Understand & Apply Simple Scientific Principles	400	93%	91%	88%	89%	78%	____ %
Level 300 - Know Everyday Science Facts	300	100%	99%	99%	98%	96%	____ %

SCIENCE COURSE TAKING

While we are nearing universality in the study of biology, less than half of the Class of '87 took chemistry and just one in five students took physics.

Source of data for chart: What Americans Study, Policy Information Center, Educational Testing Service, 1989.


Science Courses Taken in High School
GOAL
Biology
90
75
?
Chemistry
45
31
?
Physics
20
14
?
0
20
40
60
80
100
Percent of Students
1987
1982

WRITING

Writing proficiency in the U.S. is very low, and it has not improved in the two decades NAEP has been assessing it. While the great majority of 11th graders reach a "minimal" level, this level does "not assure that the purpose of the task would be achieved". On the writing tasks used to measure trend, from 32% to 85% do not reach an "adequate" level; only a handfull reached the "elaborated" level.

Source of data for chart: The Writing Report Card, 1984 to 1988, National Assessment of Educational Progress, Educational Testing Service, in press.

Writing -- 11th Grade Students, 1988

	Percent at or above "Minimal" Level*	Percent at or above "Adequate" Level**	GOAL
INFORMATIVE WRITING - Writing that is used to convey ideas -- to inform others about facts, feelings, or procedures			
"Job Application" - required students to provide a brief description of a desirable summer job and to summarize their previous experiences or qualifications.	85.9%	68.4%	?
"Appleby House" - required writing a newspaper article based on notes they were given about an unusual haunted house.	90.3%	53.3%	?
"Food on the Frontier" - required reading a social studies passage about frontier life and then to explain why modern-day food differs from frontier food.	89.9%	14.2%	?
PERSUASIVE WRITING - Writing to convince other of a point of view or a course of action			
"Space Program" - required students to write a letter to their senator adopting a point of view about whether funding for the space program should be reduced.	79.4%	27.9%	?
"Bike Lane" - required students to take a stand on whether or not a bike lane should be installed in their locality, and to refute the opposing view.	69.4%	21.4%	?

*Minimal: recognized some or all of the elements needed to complete the task but did not manage these elements well enough to assure that the purpose of the task would be achieved.

**Adequate: adequate responses included the information and ideas necessary to accomplish the underlying task and were considered likely to be effective in achieving the desired purpose.

BASIC KNOWLEDGE OF U.S. HISTORY (11TH GRADERS)

This special assessment was to find out if 11th graders had acquired basic knowledge of U.S. History. It was not designed to be a comprehensive history assessment.* The Committee that designed it had the goal of ensuring that "the questions fairly represent a broad consensus about the basic knowledge of history and literature that students can reasonably be expected to have acquired..."

From one third to one half of the students could not correctly answer the questions in the categories listed on the facing page.

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*A complete NAEP assessment of history will be available in 1990.

Source of data for chart: Literature and U.S. History: The Instructional Experience and Factual Knowledge of High School Juniors, National Assessment of Educational Progress, Educational Testing Service, 1987.

U.S. History:
"Basic" Knowledge* of High School Juniors, 1986

History Topics	Percent of Items Correct	GOALS
The Origins of the United States		
Exploration and Early Colonization	52.1%	
Revolutionary War Era	58.5	
Constitution and the New Governments	65.0	
U.S. Social and Economic Developments		
Women's History	52.6	
Black History	57.1	
Other Social Trends and Movements	49.9	
International Affairs and Developments		
Territorial Expansion and Foreign Policy	51.6	
World War II	69.4	
People (such as Edison, Churchill, Lindbergh)	61.5	
Documents (such as the Magna Carta)	53.6	
Chronology (such as the Civil War & Jackson's Presidency)	52.7	
Maps (such as location of the Mississippi River)	71.3	

NARROWING THE GAP BETWEEN PROFICIENCY SCORES OF BLACK AND WHITE STUDENTS

On the facing page, the bar graph shows the number of scale points (on a 0-500 scale) by which White student scores exceed those of Black students.

In reading, the gap decreased in each assessment at ages 17 and 13. However, there has been only minor improvement at age 9.

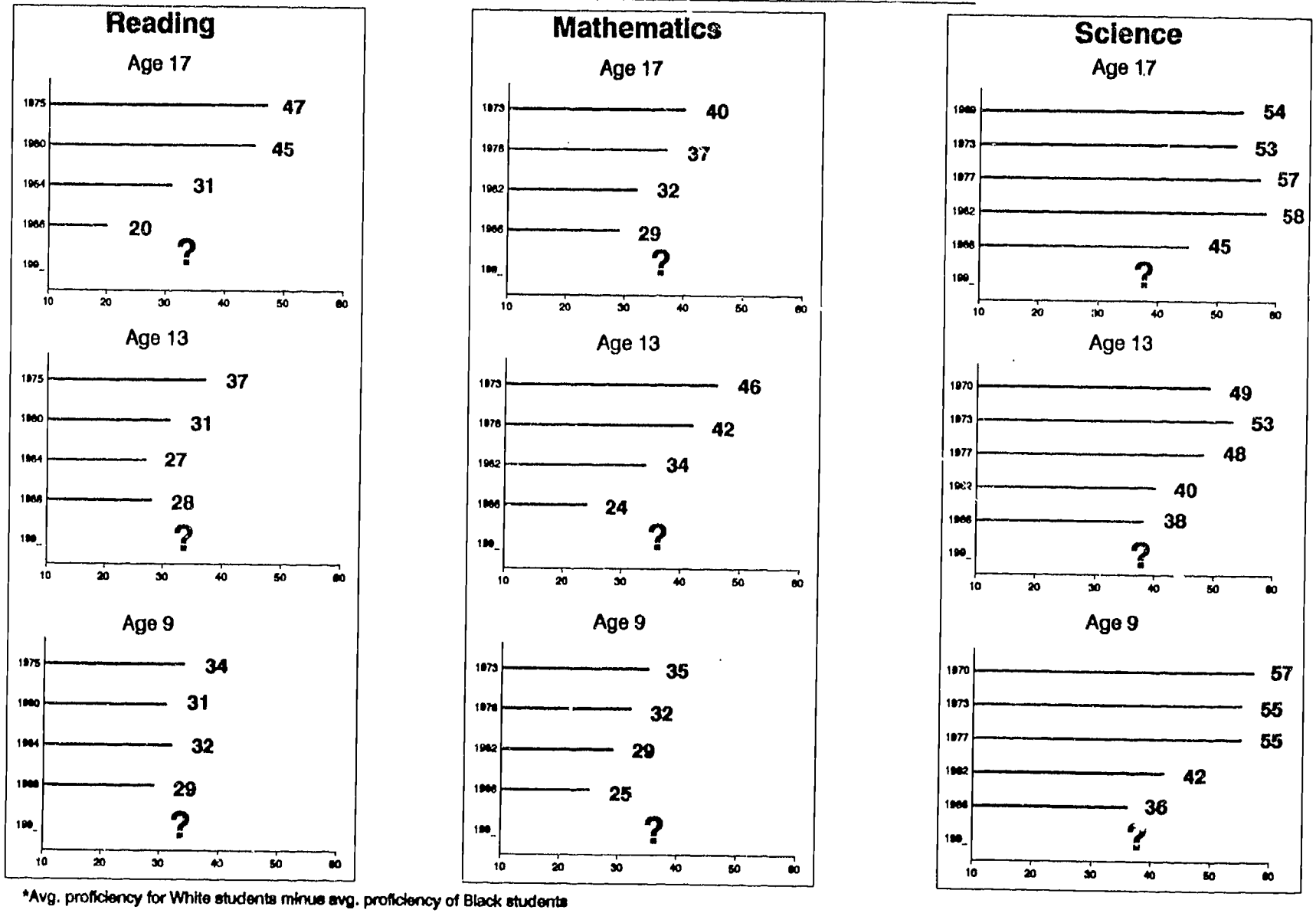
In mathematics, there has been continual improvement at all age levels assessed.

Reduction in the gap in science proficiency did not come until the 1986 assessment at age 17, and the 1982 assessment at ages 13 and 9.

Despite improvements, gaps remain considerable.

Source of data for graph: Adapted from graph in Crossroads in American Education, National Assessment of Educational Progress, Educational Testing Service, 1989.

Black and White Student Proficiency Gap*



*Avg. proficiency for White students minus avg. proficiency of Black students

NARROWING THE GAP BETWEEN PROFICIENCY SCORES OF HISPANIC AND WHITE STUDENTS

On the facing page, the bar graphs show the number of scale points (on a 0-500 scale) by which White student scores exceed those of Hispanic students.

In reading, the gap decreased in each of the NAEP assessments, and for all three ages.

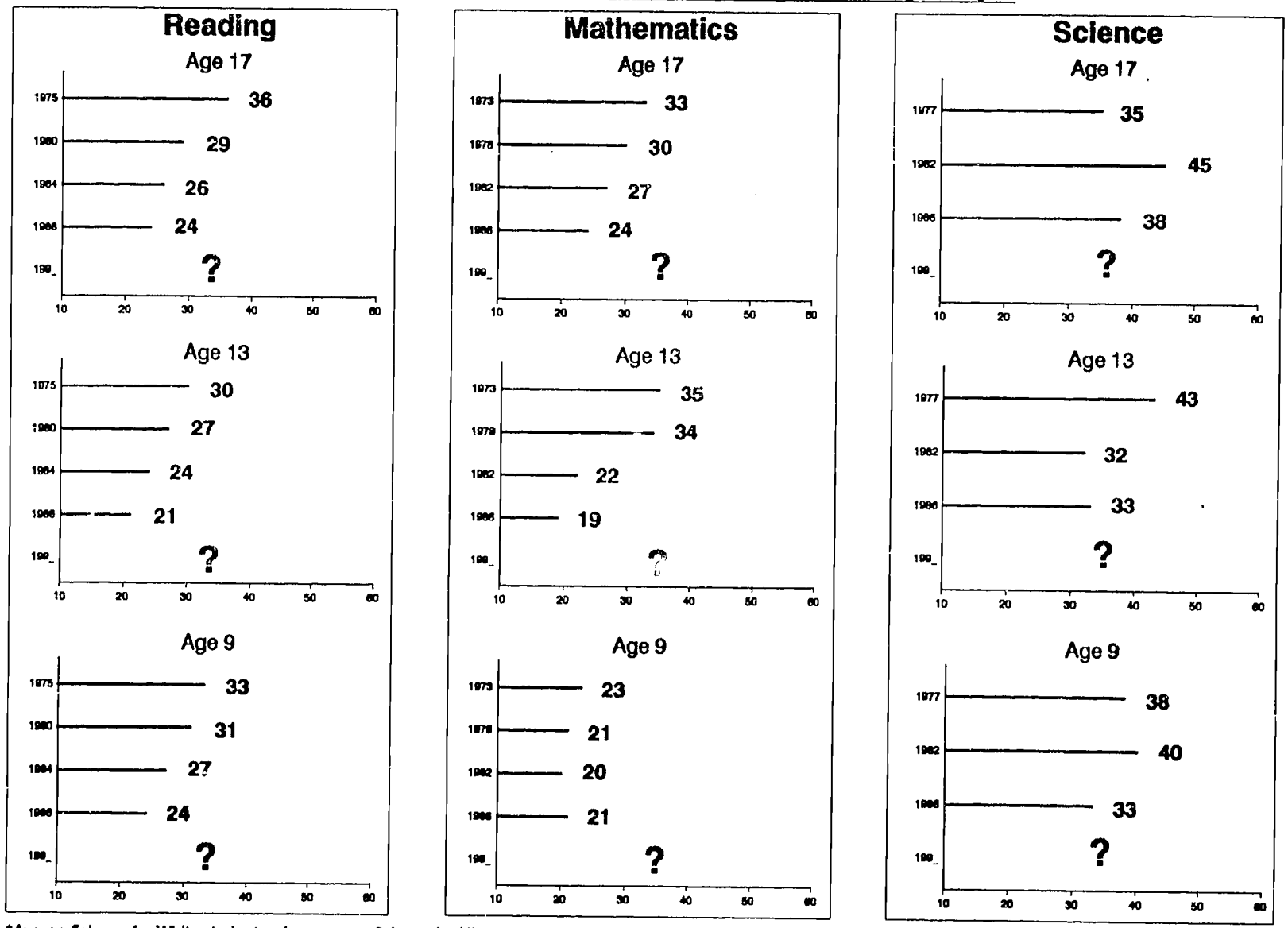
This was also true of mathematics at age 17 and 13. However, little change occurred at age 9.

The pattern for science is variable. At age 17, Hispanic students gained, and then slipped. There were gains from 1977 to 1986 at both age 13 and age 9.

Despite improvements, gaps remain considerable.

Source of data for graph: Adapted from graph in Crossroads in American Education, National Assessment of Educational Progress, Educational Testing Service, 1989.

Hispanic and White Student Proficiency Gap*



*Avg proficiency for White students minus avg proficiency for Hispanic students

CLOSING GENDER GAPS

The gap between male and female scores has been reduced slightly in science; male scores exceed those of females. But twice as many males as females reach the 350 level.

In mathematics, the gap on the average is small and slightly lower than in 1978. However, the difference in the percent of males and females reaching the 350 level is still considerable.

The reading score differential, favoring females, is little changed; more females continue to reach the 350 level than males.

In writing, fe. ıales outperform males considerably, by 18 points on a scale of from 0 to 500.

Source of data for chart: NAEP report cards for science, mathematics, reading and writing.

4

Closing Gender Gaps

Science - 17 Year Olds (0-500 Scale)

	1977	1982	1986	GOAL
Average Female Student Scores Are Lower Than Males	- 15 Points	- 17 Points	- 13 Points	
The Percent of Female Students Scoring 350 or Higher is Much Lower than Males	12% M 5% F	11% M 4% F	10% M 5% F	

Mathematics - 17 Year Olds (0-500 Scale)

	1978	1982	1986
Average Female Student Scores Are Lower than Males	- 7 Points	- 6 Points	- 5 Points
The Percent of Female Students Scoring 350 or Higher is Lower than Males	10% M 6% F	7% M 4% F	8% M 5% F

Reading - 17 Year Olds (0-500 Scale)

	1980	1984	1988
Average Male Student Scores Are Lower than Females	- 7 Points	- 10 Points	- 7 Points
The Percent of Female Students Scoring 350 or Higher is Slightly Higher than Males	5% M 6% F	5% M 7% F	4% M 6% F

Writing - 11th Graders (0-400 Scale)

	1984	1988
Average Male Student Scores Are Lower than Females	- 23 Points	- 18 Points

PROSE LITERACY

Prose literacy requires reading and interpreting materials such as newspaper articles, magazines, and books.

The facing page shows tasks that typify the information processing skills at various levels on the NAEP Prose Literacy scale. The table also shows the percent of high school graduates at or above each of the scale intervals.

While most all can do simple task, about a third cannot do a moderately complex tasks, illustrated by the ability to write a letter to state that an error has been made in billing.

Source of data for chart: Literacy: Profiles of America's Young Adults, National Assessment of Educational Progress, Educational Testing Service, 1986.

Prose Literacy of High School Graduates*

Task Examples at Proficiency Levels:	Proficiency Scale (0-500)	Percent at or above Scale Score Level	GOAL
Orally interpret distinctions between types of employee benefits (371)	375	3%	
State in writing argument made in lengthy newspaper column (340)	350	12%	
Locate information in news article (313)	325	27%	
	300	48%	
Write a letter to state that an error has been made in billing (277)	275	66%	
Locate information in sports article (262)	250	81%	
	225	91%	
Write about a job one would like (199)	200	97%	
	175		

*High school diploma and/or some postsecondary experience, but no degree

DOCUMENT LITERACY

Document literacy requires identifying and using information located in documents such as forms, tables, charts and indexes.

The NAEP Document Literacy scale comes closest of the three literacy scales to representing skills needed in entry level jobs. As on the Prose scale, the tasks illustrating the scale levels are on the side.

Again, while most can do simple tasks, half were not at a level illustrated by the task of using a map to travel from one location to another.

Source of data for chart: Literacy: Profiles of America's Young Adults, National Assessment of Educational Progress, Educational Testing Service, 1986.

Document Literacy of High School Graduates*

Task Examples at Proficiency Levels:	Proficiency Scale (0-500)	Percent at or above Scale Score Level
	375	3%
Use bus schedule to select appropriate bus for given departures and arrivals (334-365)	350	11%
	325	28%
Follow directions to travel from one location to another using a map (300)	300	50%
Use index from an almanac (278)	275	71%
Locate intersection on street map (249)	250	83%
Enter date on a deposit slip (221)	225	92%
Enter personal information on job application (196)	200	97%
Enter caller's number on phone message form (181)	175	99%
Locate expiration date on driver's license (160)	150	99.8%

GOAL

*High school diploma and/or some postsecondary experience, but no degree

QUANTITATIVE LITERACY

Quantitative literacy requires applying numerical operations to information contained in printed material such as a menu, a checkbook, or an advertisement.

While these tasks involve arithmetic, the problems are conveyed in print form. Only half were at a level (300) typified by balancing a checkbook.

Source of data for chart: Literacy: Profiles of America's Young Adults, National Assessment of Educational Progress, Educational Testing Service, 1986.

Quantitative Literacy of High School Graduates*

Task Examples at Proficiency Levels:	Proficiency Scale (0-500)	Percent at or above Scale Score Level	GOAL
	425		
	400		
Estimate cost using grocery unit-price labels (376)	375	5%	
Determine tip given percentage of bill (356)	350	13%	
Plan travel arrangements for meeting using flight schedule (340)			
Determine correct change using menu (337)	325	30%	
Enter and calculate checkbook balance (two tasks, 281-293)	300	49%	
	275	67%	
	250	83%	
Total bank deposit entry (233)			
	225	93%	
	200	97%	

*High school diploma and/or some postsecondary experience, but no degree

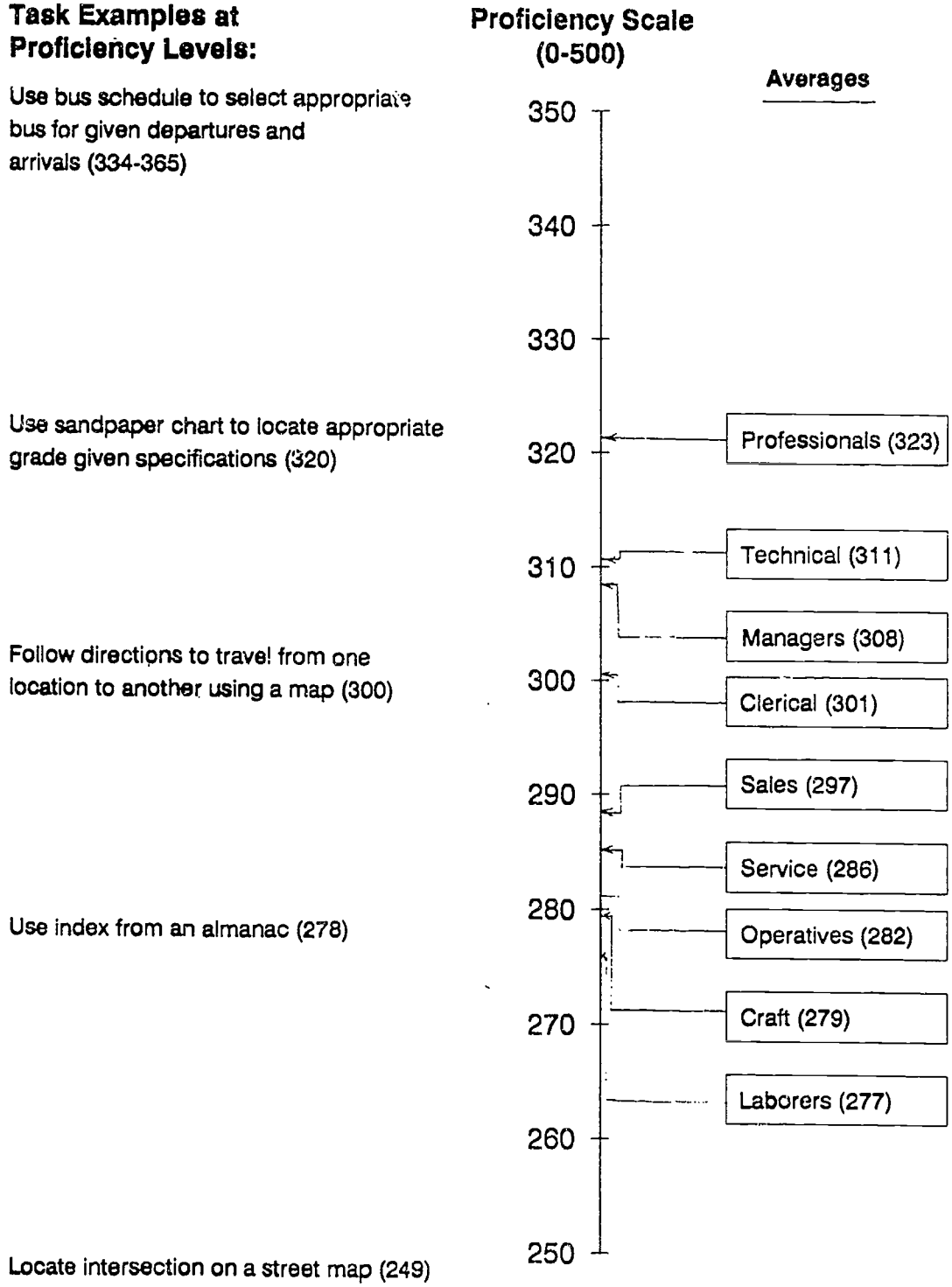
LITERACY ATTAINMENTS IN OCCUPATIONS

This table is to help in setting goals on the prior three tables, and is an example of the kind of information that we think would be helpful generally in setting goals.

The information applies only to the young adults in the 1986 literacy study who were working full time for a full year, and therefore were no longer students. The average (mean) document scale score is shown for each occupation, in the column on the right. Of course, there is a wide range of scores in each of these broad occupations; it would be more useful to have such information for detailed occupations.

Source of data for chart: Workplace Competencies: The Need to Improve Literacy and Employment Readiness, Paul E. Barton and Irwin Kirsch, forthcoming.

Document Literacy of 21-25 Year Olds Who Work Full-Time for a Full Year, by Occupation*



HIGH SCHOOL COMPLETION

Achievement goals for high school graduates apply only to those who graduate --- about three in every four by age 18-19. How many more is it realistic to get through high school--and by when?

The possible interplay between graduation rates and the average achievement of graduates needs to be recognized; Increasing achievement with declining retention rates is a different story than increases with increasing retention.

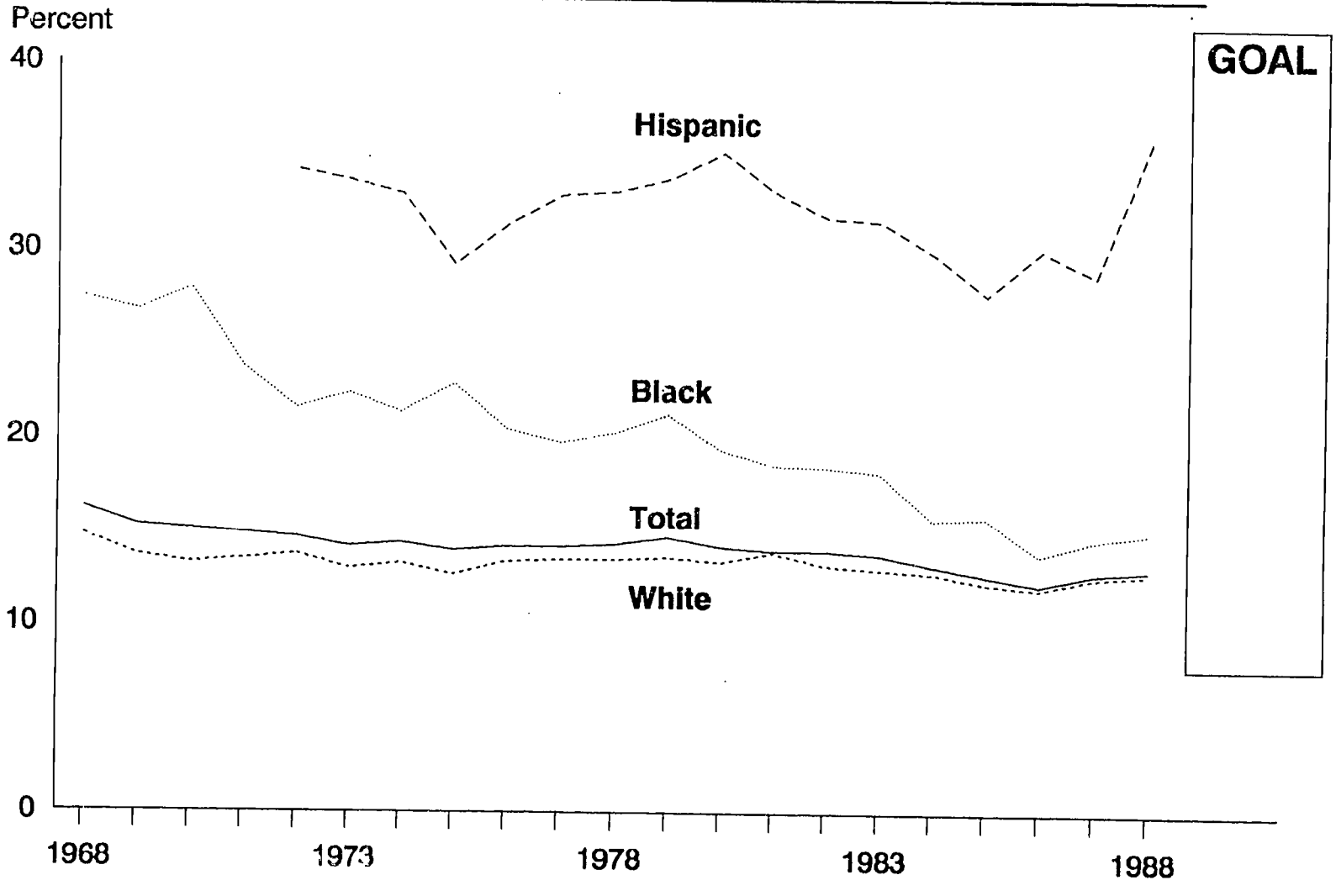
The overall school retention rate (18-19 year olds) has been fluctuating within two or three percentage points. Black youth have registered a substantial improvement, which has been accompanied by increases in average achievement in National Assessments.

Many dropouts later achieve the high school diploma in early adulthood, raising the percent completing by about 10 percentage points, and more for Black young adults.

A composite dropout rates is charted on the facing page for all 16 to 24 year olds, 1968 to 1988.

Source of data for chart: Dropout Rates in the United States, 1988, U.S. Department of Education, National Center for Education Statistics, 1989.

Dropout Rates by Race/Ethnicity, 1968 to 1988, Age 16 to 24



* * *

As we said at the outset this document is an attempt to organize available information quickly for use by those charged with the responsibility to set national performance goals, and on the assumption that this will be done early in 1990. The Policy Information Center welcomes any recommendations for adding to it or expanding it. If the nation remains serious about setting such goals it will not be a one-time exercise. Neither will the nation be satisfied with the present information, as improved as it is over the last few years.

APPENDIX

DESCRIPTIONS OF NAEP SCALE LEVELS

Levels of Mathematics Proficiency

Level 150—Simple Arithmetic Facts

Learners at this level know some basic addition and subtraction facts, and most can add two-digit numbers without regrouping. They recognize simple situations in which addition and subtraction apply. They also are developing rudimentary classification skills.

Level 200—Beginning Skills and Understanding

Learners at this level have considerable understanding of two-digit numbers. They can add two-digit numbers, but are still developing an ability to regroup in subtraction. They know some basic multiplication and division facts, recognize relations among coins, can read information from charts and graphs, and use simple measurement instruments. They are developing some reasoning skills.

Level 250—Basic Operations and Beginning Problem Solving

Learners at this level have an initial understanding of the four basic operations. They are able to apply whole number addition and subtraction skills to one-step word problems and money situations. In multiplication, they can find the product of a two-digit and a one-digit number. They can also compare information from graphs and charts, and are developing an ability to analyze simple logical relations.

Level 300—Moderately Complex Procedures and Reasoning

Learners at this level are developing an understanding of number systems. They can compute with decimals, simple fractions, and commonly encountered percents. They can identify geometric figures, measure lengths and angles, and calculate areas of rectangles. These students are also able to interpret simple inequalities, evaluate formulas, and solve simple linear equations. They can find averages, make decisions on information drawn from graphs, and use logical reasoning to solve problems. They are developing the skills to operate with signed numbers, exponents, and square roots.

Level 350—Multi-step Problem Solving and Algebra

Learners at this level can apply a range of reasoning skills to solve multi-step problems. They can solve routine problems involving fractions and percents, recognize properties of basic geometric figures, and work with exponents and square roots. They can solve a variety of two-step problems using variables, identify equivalent algebraic expressions, and solve linear equations and inequalities. They are developing an understanding of functions and coordinate systems.

THE NATION'S REPORT CARD naep

Levels of Proficiency

Rudimentary (150)

Readers who have acquired rudimentary reading skills and strategies can follow brief written directions. They can also select words, phrases, or sentences to describe a simple picture and can interpret simple written clues to identify a common object. *Performance at this level suggests the ability to carry out simple, discrete reading tasks.*

Basic (200)

Readers who have learned basic comprehension skills and strategies can locate and identify facts from simple informational paragraphs, stories, and news articles. In addition, they can combine ideas and make inferences based on short, uncomplicated passages. *Performance at this level suggests the ability to understand specific or sequentially related information.*

Intermediate (250)

Readers with the ability to use intermediate skills and strategies can search for, locate, and organize the information they find in relatively lengthy passages and can recognize paraphrases of what they have read. They can also make inferences and reach generalizations about main ideas and author's purpose from passages dealing with literature, science, and social studies. *Performance at this level suggests the ability to search for specific information, interrelate ideas, and make generalizations.*

Adept (300)

Readers with adept reading comprehension skills and strategies can understand complicated literary and informational passages, including material about topics they study at school. They can also analyze and integrate less familiar material and provide reactions to and explanations of the text as a whole. *Performance at this level suggests the ability to find, understand, summarize, and explain relatively complicated information.*

Advanced (350)

Readers who use advanced reading skills and strategies can extend and restructure the ideas presented in specialized and complex texts. Examples include scientific materials, literary essays, historical documents, and materials similar to those found in professional and technical working environments. They are also able to understand the links between ideas even when those links are not explicitly stated and to make appropriate generalizations even when the texts lack clear introductions or explanations. *Performance at this level suggests the ability to synthesize and learn from specialized reading materials.*

Levels of Science Proficiency

Level 150—Knows Everyday Science Facts

Students at this level know some general scientific facts of the type that could be learned from everyday experiences. They can read simple graphs, match the distinguishing characteristics of animals, and predict the operation of familiar apparatus that work according to mechanical principles.

Level 200—Understands Simple Scientific Principles

Students at this level are developing some understanding of simple scientific principles, particularly in the Life Sciences. For example, they exhibit some rudimentary knowledge of the structure and function of plants and animals.

Level 250—Applies Basic Scientific Information

Students at this level can interpret data from simple tables and make inferences about the outcomes of experimental procedures. They exhibit knowledge and understanding of the Life Sciences, including a familiarity with some aspects of animal behavior and of ecological relationships. These students also demonstrate some knowledge of basic information from the Physical Sciences.

Level 300—Analyzes Scientific Procedures and Data

Students at this level can evaluate the appropriateness of the design of an experiment. They have more detailed scientific knowledge, and the skill to apply their knowledge in interpreting information from text and graphs. These students also exhibit a growing understanding of principles from the Physical Sciences.

Level 350—Integrates Specialized Scientific Information

Students at this level can infer relationships and draw conclusions using detailed scientific knowledge from the Physical Sciences, particularly Chemistry. They also can apply basic principles of genetics and interpret the societal implications of research in this field.

THE NATION'S REPORT CARD

Levels of Writing Task Accomplishment

Not Rated. A small percentage of the responses were blank, undecipherable, totally off task, or contained a statement to the effect that the student did not know how to do the task; these responses were not rated.

Unsatisfactory. Students writing papers judged as unsatisfactory provided very abbreviated, circular, or disjointed responses that did not represent even a basic beginning toward addressing the writing task. The following letter asking for a summer job helping out at a local swimming pool is an example:

I want to work in the pool

Minimal. Students writing at the minimal level recognized some or all of the elements needed to complete the task, but did not manage the elements well enough to assure the purpose of the task would be achieved. The following letter of application is an example:

I have been experence at
cleaning house I've also work at a pool
be for I love keeping things neat
organized and clean I'm very social I'll
get to know peopl really fast I
never forget to do things

Adequate. Adequate responses included the information and ideas critical to accomplishing the underlying task and were considered likely to be effective in achieving the desired purpose. The following letter was judged adequate:

I feel that I would be a very
good choice for this job. I'm very responsible
and I like to work with kids. I will do my
best to be polite and to make the visitors
want to return again. I would enjoy and
appreciate this job very much. I would
never be late and I would even work over-
time to clean up if it's needed. I worked
at a swimming pool last summer so I've
had past experience in this area I
realize that there are many young people
who want this job. I would appreciate
it if you would consider me

Elaborated. Occasionally responses went beyond the essential, reflecting a higher level of coherence and providing more supporting detail; these responses were identified as elaborated.

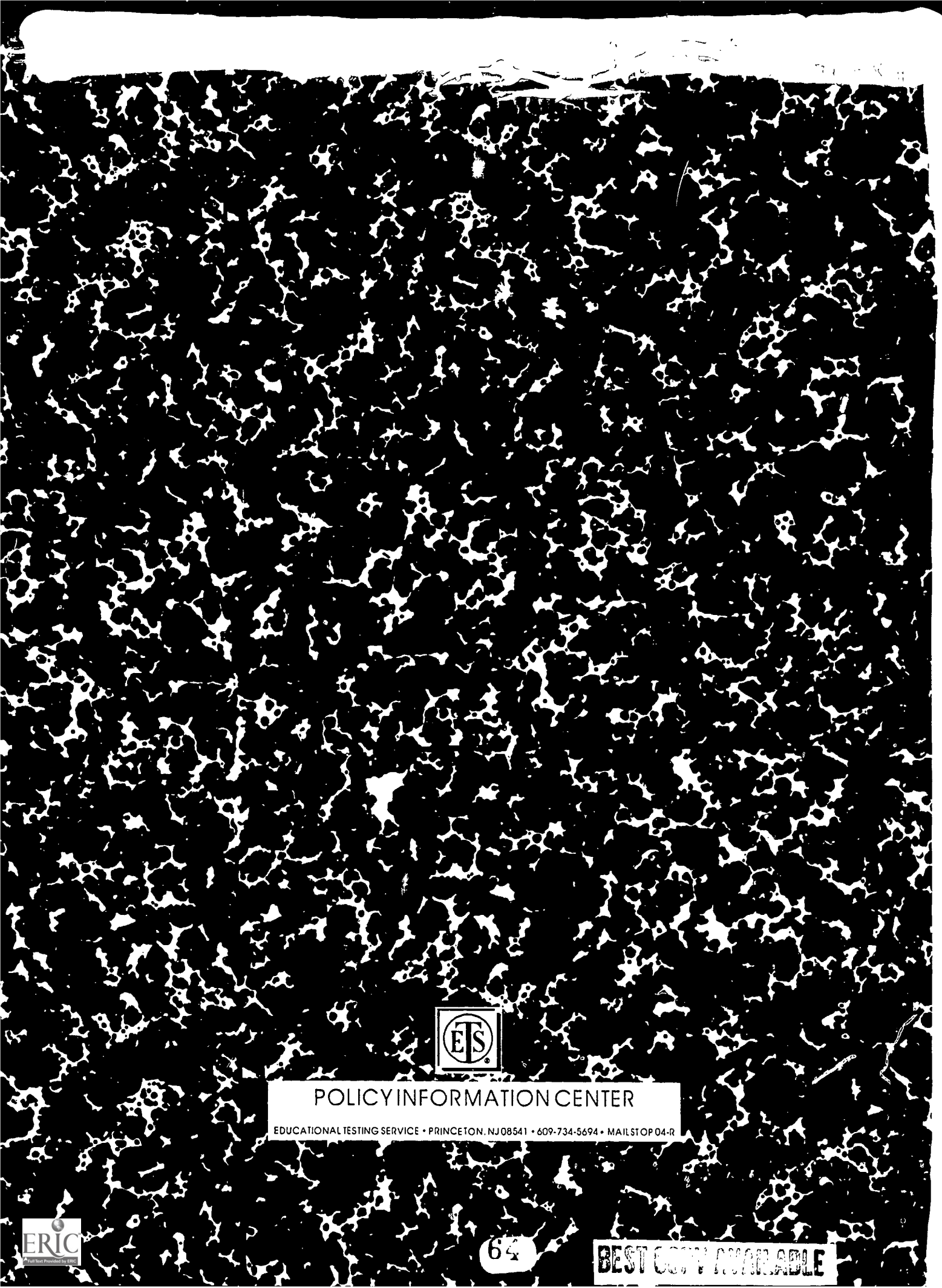
My name is Tracy, and I have just graduated from my junior year of high school. I feel that I am a very capable and responsible person for the job. Proof of this is seen during my junior year. I held down a very important and responsible job being the editor of the school yearbook. This was no easy task, but I got the job done meeting every deadline. That brings up another point, my punctuality. If I can meet demanding yearbook deadlines with no help from my various staffs, I can easily get to my job on time.

I am also an experienced swimmer. I had swimming lessons starting at the age of 4. I also have much experience vacuuming a pool. I know how important the upkeep of a swimming pool is and how costly it can be. I follow the rules of no running horseplay, or anything glass are to be around the swimming pool.

I also have plenty of experience handling customers for I have held down a part time job for almost seven months now. I deal with customers every day, but the good thing about that, is that I like it.

I think I am very qualified for your position that you are offering, and I hope that you will consider me for the job.

NOTE: These guidelines emphasize such features as content, logic, and development. A separate publication will present results for writing mechanics.



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