Developed during 1975-76 by 40 primary teachers and 10 elementary principals from 12 small school districts in 2 Washington counties and first used during 1976-77 in more than 20 districts, this K-3 mathematics curriculum is designed to assist district compliance with Washington's Student Learning Objectives (SLO) Law, which requires identification of student learning objectives and evaluation of each student's performance related to the attainment of the objectives. Specific learning objectives for mathematics, suggested activities, monitoring procedures and possible resources used in teaching to the objectives are presented, following the unique Small Schools Curriculum format. Mathematics goals for the entire K-12 curriculum and areas of study for K-8 are outlined. Included in the scope of the K-3 curriculum are counting (serial, objects, order), equality and inequality, reading and writing numerals, place value, addition, subtraction, multiplication, division, story problems, common fractions, geometric shapes (square, circle, triangle, rectangle), simple graphs and measurements (time, money, linear, volume, weight, temperature). (NEC)
SMALL SCHOOLS
MATHEMATICS CURRICULUM
K-3

Reading  Language Arts  Mathematics  Science  Social Studies
SMALL SCHOOLS

MATHEMATICS CURRICULUM

K-3

Scope
Objectives
Activities
Resources
Monitoring Procedures

November 1978
This is a publication of the Instructional Programs Division of the Superintendent of Public Instruction, Olympia, Washington.

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The Small Schools Student Curriculum Materials were written by a consortium of teachers and administrators from local districts, Educational Service District 189 and the office of Superintendent of Public Instruction.

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APPRECIATION

Many educators have been involved in the development of the Small Schools Curriculum materials. Of these, Robert Groeschell, now retired from the office of the State Superintendent of Public Instruction, deserves special recognition for his insight, leadership and support in initiating the Small Schools Curriculum Project.

In order to provide assistance to small school districts, a curriculum assessment was conducted by Mr. Groeschell in the spring of 1975. The findings of this assessment pointed out the need for the development of curriculum guidelines to assist small districts in identifying learning objectives and in planning for program implementation. These findings were used to provide the basis for originally funding the Small Schools Curriculum Project.

Appreciation is extended to Dr. Charles Murray, Superintendent, and the staff of ESD 189 for providing meeting space, equipment and resources which facilitated the development of the Small Schools Curriculum materials.

Additional appreciation is given to the pilot districts and ESDs 171 and 189 for their assistance in field testing and revising the primary Small Schools Curriculum materials.
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<td>(See Mathematics Scope)</td>
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INTRODUCTION

The Small Schools materials were developed through the cooperative efforts of three levels of educational organizations: local, regional, and state. Forty primary teachers and ten elementary principals from small districts in Snohomish and Island Counties (Arlington, Darrington, Granite Falls, Lake Stevens, Lakewood, Monroe, Snohomish, Stanwood, Sultan, South Whidbey and Monroe Christian School), developed and sequenced student learning objectives for grades kindergarten through third in five curriculum areas: reading, language arts, mathematics, science and social studies. Suggested activities, monitoring procedures and possible resources used in teaching the objectives were identified and each student learning objective was correlated to the State Goals for Washington Common Schools and to broad program goals.

On the following pages you will find the Small Schools Mathematics Curriculum Materials for grades kindergarten through third. Included are student learning objectives, suggested activities, suggested monitoring procedures and possible resources. These materials were developed during 1975-76, and were piloted during the 1976-77 school year in more than twenty small districts within the state. Pilot districts included the districts which originally developed the materials, as well as Methow Valley, Chelan, Entiat, Orondo, Leavenworth, Peshastin-Dryden, Washtucna, Wahluke, Royal City, Wilson Creek, Othello and Quincy. Personnel from ESDs 189 and 171 assisted with the implementation of the pilot materials by providing regional organization, coordination, technical assistance and secretarial services. Data collected from the pilot districts were used to modify the materials in preparation for publication and statewide distribution.

Original funding for the project was made available through a Title IV, Part C grant awarded to the Lake Stevens School District. Technical assistance in the development of the winning proposal was provided by ESD 189 and SPI. Since November, 1975, funds for the project have been been available through the budget of the Superintendent of Public Instruction, Division of Curriculum and Instruction. ESD 189 and the office of the Superintendent of Public Instruction have worked cooperatively to provide participating districts with curriculum assistance, organization leadership, editorial services and the publication of materials. Curriculum Specialists from Washington colleges, universities, and local school districts also assisted with the development of materials.

ORGANIZATION OF THE SMALL SCHOOLS MATERIALS

Book covers and objective pages for all Small Schools materials have been color-coded for each subject: Reading--green, Language Arts--yellow, Mathematics--blue, Social Studies--buff, and Science--pink. Following each colored objective page there are several pages which identify activities, resources and monitoring procedures which may be used when teaching to the
objectives. See page viii of this book for a more detailed explanation of the format. On that objective page all objectives for an area of the scope are identified. Within each curriculum book the objectives have been correlated to the goals for the Washington Common Schools and to the Small Schools Program Goals for that subject area.

Accompanying the Small Schools curriculum books are resource assessment booklets for reading, language arts and mathematics, grades K-3. Within each assessment booklet test items are provided for a selected number of Small Schools objectives. The suggested test items may be used directly by teachers to assess student performance, or they may serve as models for other test items to be developed by the classroom teacher.

Another booklet containing only the Small Schools objectives is available. This booklet contains objectives for reading, language arts and mathematics, grades K-8, and for science and social studies, grades K-3. Also within this booklet are the program goals and the scope for each curriculum area.

RELATIONSHIP TO THE SLO LAW

The purpose of this book and all other Small Schools materials is to assist teachers with the improvement of curriculum and instruction. In addition, it is expected that many smaller districts lacking curriculum personnel will find this book helpful in complying with the SLO law. (This law requires districts to identify student learning objectives and to evaluate each student's performance related to the attainment of the objectives.) Contained within this book are many more objectives than any district would choose to identify as their SLO objectives. In order to provide districts with assistance in identifying objectives which might compose their SLO list, selected objectives are marked with an asterisk (*). These objectives have been selected with the understanding that they serve only as a model when using the Small Schools materials in helping district personnel meet the requirements of the SLO Law.

For more information concerning the SLO Law, see the Handbook for School District Implementation of the Student Learning Objectives Law available from the office of the State Superintendent of Public Instruction.
One unique feature of the Small Schools Curriculum is the format or arrangement of information on the page. The format was developed in order to facilitate the transportability of the product by allowing districts to personalize the curriculum materials to meet their own educational programs. The Small Schools Format provides a simple arrangement for listing objectives and identifying activities, monitoring procedures, and resources used in teaching.

Page One

The first format page lists the sequence of student learning objectives related to a specific area of the curriculum for either reading, language arts, mathematics, science or social studies. For each objective a grade placement has been recommended indicating where each objective should be taught and mastered. The grade recommendation is made with the understanding that it applies to most students and that there will always be some students who require either a longer or shorter time than recommended to master the knowledges, skills and values indicated by the objectives.

Columns at the right of the page have been provided so district personnel can indicate the grade placement of objectives to coincide with the curriculum materials available in their schools. District personnel may also choose to delete an objective by striking it from the list or add another objective by writing it directly on the sequenced objective page.
On the second format page, one or more objectives from the first format page are rewritten and suggested activities, monitoring procedures and possible resources used in teaching to the objective(s) are identified. The objectives are correlated to the State Goals for Washington Common Schools and to broad K-12 program goals. The suggested grade placement of the objectives and the activities is indicated and, wherever applicable, the relatedness of an objective to other curriculum areas have been shown. Particular effort has been given to correlating the materials with the areas of Environmental Education, and the use of the newspaper in the classroom.

Below is an example of a completed second format page. Teachers and principals in local districts may personalize this page by listing their own resources and by correlating their district goals to the student learning objectives.

### SMALL SCHOOLS PROJECT

<table>
<thead>
<tr>
<th>Student Learning Objective(s)</th>
<th>Suggested Objective Placement</th>
<th>State Goal</th>
<th>District Goal</th>
<th>Program Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>The student knows the addition facts with sums to nine (mastery).</td>
<td>1-2</td>
<td>1,7,10</td>
<td>1,7,10</td>
<td></td>
</tr>
<tr>
<td>Related Area(s)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Suggested Activities: Grade(s) 1

<table>
<thead>
<tr>
<th>Title:</th>
<th>Nine Holes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>pairs of students</td>
</tr>
<tr>
<td>Materials:</td>
<td>2 tapeboard strips with 9 holes, 2 cubes, one cube marked with numbers 0-5 and another cube marked with numbers 0-4 plus an extra 0, 9 golf tees for each student (18 total)</td>
</tr>
</tbody>
</table>
| Procedure: | Teacher directs as follows:  
(a) First player rolls the dice.  
(b) Player adds the addends and says the equation aloud (e.g., "zero plus five equals five.").  
(c) Player then puts a golf tee in the hole representing that sum (5).  
(d) The next player takes a turn, following the same procedure.  
(e) The first player to fill all 9 holes with golf tees wins the game.  
(f) When there are only 2 or 3 holes left to

<table>
<thead>
<tr>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
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</thead>
<tbody>
<tr>
<td>Student often uses manipulative aids or other aids.</td>
<td>Mastery of addition facts with sums to nine implies that a student responds to oral or written queries without hesitation. That is, if asked &quot;What is 6+3?&quot; or if shown [ \begin{array}{c} 6+3 \end{array} ] in written form, the student responds instantly from memory. Check one student at a time.</td>
</tr>
<tr>
<td>D'Augustine, Charles H., Multiple Methods of Teaching Mathematics in the Elementary School, Harper and Row, 1973, pp. 91-93</td>
<td></td>
</tr>
</tbody>
</table>

### District Resources
DEFINITION OF FORMAT TERMS
Small Schools Curriculum Project

Subject indicates a broad course of study. The subject classifies the learning into one of the general areas of the curriculum, i.e., reading, mathematics, social studies.

Specific Area indicates a particular learning category contained within the subject. Within the subject of reading there exist several specific areas, i.e., comprehension, study skills, word attack skills.

State Goal indicates a broad term policy statement relating to the education of all students within the State of Washington. In 1972, the State Board of Education adopted 10 State Goals for the Washington Common Schools.

District Goal generally reflects the expectations of the community regarding the kinds of learning that should result from school experience. These goals are employed mainly to inform the citizenry of the broad aims of the school. When district goals are correlated to student learning objectives, community members are able to see how their expectations for schools are translated daily into the teaching/learning process of the classroom.

Program Goals are K-12 goals which do not specify grade placement. These goals provide the basis for generating subgoals or objectives for courses or units of study within a subject area. Program goals are used as a basis for defining the outcomes of an entire area of instruction such as mathematics, language arts or social studies.

Student Learning Objectives

Three major types of learning objectives which have been identified are knowledge, process and value objectives.

Knowledge Student Learning Objectives identify something that is to be known and begins with the words, "The student knows...". Knowledge objectives specify the knowledge a student is expected to learn. These objectives include categories of learning such as specific facts, principles and laws, simple generalizations, similarities and differences, etc.

An example of a Knowledge Student Learning Objective is: "The student knows guide words in a dictionary indicate the first and last words on the page."

Process Student Learning Objectives identify something the student is able to do, and begins with the words, "The student is able to...". These objectives are associated with the rational thinking processes of communication, inquiry, problem solving, production, service and human relationships.

An example of a Process Student Learning Objective is: "The student is able to associate a consonant sound with the letter name."
Value Student Learning Objectives identify only the type of values which foster the context of the discipline. These objectives are thought to be most uniformly and consistently approved by society as supporting the major aims of the discipline.

An example of a Value Student Learning Objective is: The student values the role of plants in his/her daily life."

Suggested Learning Activities describe the behavior of both the teacher and students. The instructional strategies employed by the teacher, as well as the activities undertaken by the students, are included in this section. Each activity includes materials, group size and procedures.

Suggested Monitoring Procedures indicate informal methods for determining the progress a student is making towards the attainment of the objective. These methods include techniques such as teacher observation, student interest and attitude surveys and recording results of classroom instruction.

Possible Learning Resources indicate materials, teacher-made or commercially produced, which are needed by both the teacher and students in order to accomplish the learning activities.
GOALS FOR THE WASHINGTON COMMON SCHOOLS

1. As a result of the process of education, all students should have the basic skills and knowledge necessary to seek information, to present ideas, to listen to and interact with others, and to use judgment and imagination in perceiving and resolving problems.

2. As a result of the process of education, all students should understand the elements of their physical and emotional well-being.

3. As a result of the process of education, all students should know the basic principles of the American democratic heritage.

4. As a result of the process of education, all students should appreciate the wonders of the natural world, human achievements and failures, dreams and capabilities.

5. As a result of the process of education, all students should clarify their basic values and develop a commitment to act upon these values within the framework of their rights and responsibilities as participants in the democratic process.

6. As a result of the process of education, all students should interact with people of different cultures, races, generations, and life styles with significant rapport.

7. As a result of the process of education, all students should participate in social, political, economic, and family activities with the confidence that their actions make a difference.

8. As a result of the process of education, all students should be prepared for their next career steps.

9. As a result of the process of education, all students should use leisure time in positive and satisfying ways.

10. As a result of the process of education, all students should be committed to life-long learning and personal growth.
MATHEMATICS PROGRAM GOALS
(K-12)

1. The student values the study of mathematics for its usefulness and application to everyday life.

2. The student develops the ability to communicate with precision and confidence using the vocabulary and symbols unique to mathematics.

3. The student develops the concept of number and numeration including counting, place value, reading and writing numbers, various numbering systems, number theory and scientific notation.

4. The student develops general mathematical concepts of time-space relationships; equality-inequality; measurement; function; graphs, charts and tables; probability and statistics; and geometry.

5. The student develops accuracy in using the computational skills of adding, subtracting, multiplying and dividing.

6. The student develops the ability to use problem-solving techniques.

7. The student develops the knowledge and use of the structure of mathematical systems and real numbers.

8. The student knows and is able to use the symbols, elements, operations and structure of the following number systems: whole numbers, integers, rational numbers, real numbers and complex numbers.
# MATHEMATICS
## SCOPE (K-8)

## I. WHOLE NUMBERS
- **A. Counting (Serial, Objects, Order) -- K-3**
- **B. Equality and Inequality -- K-6**
- **C. Reading and Writing Numerals -- K-6**
- **D. Place Value -- K-6**
- **E. Addition -- K-8**
- **F. Subtraction -- 1-8**
- **G. Multiplication -- 3-8**
- **H. Division -- 3-8**
- **I. Story Problems -- 2-8**

## II. INTEGERS -- 7-8

## III. RATIONAL NUMBERS
- **A. Common Fractions -- K-8**
- **B. Ratios, Percentage, Proportion -- 6-8**
- **C. Decimals -- 6-8**

## IV. REAL NUMBERS -- 7-8

## V. ALGEBRAIC EXPRESSION -- 7-8

## VI. NUMERATION
- **A. Number Theory -- 4-8**
- **B. Scientific Notations, Exponents -- 6-8**

## VII. GEOMETRY
- **A. K-3**
- **B. Shapes - Two, Three Dimensional -- 4-8**
- **C. Points, Lines, Line Segments -- 4-8**
- **D. Angles, Triangles -- 5-8**
- **E. Circles -- 4-8**
- **F. Perimeter -- 4-8**
- **G. Area -- 6-8**
- **H. Volume -- 7-8**

## VIII. GRAPHS -- K-8

## IX. PROBABILITY AND STATISTICS -- 4-8

## X. MEASUREMENTS
- **A. Time -- K-8**
- **B. Money -- 1-8**
- **C. Linear -- K-8**
- **D. Capacity (Volume) -- 1-8**
- **E. Weight -- 2-8**
- **F. Temperature -- 3-8**
- **G. Maintenance of English Measurement -- 4-8**
The student knows:

- count to 10.
- count to 100.
- count objects to 10.
- count objects to 50.
- count objects by 2's to 100.
- count objects by 5's to 100.
* count objects by 10's to 100.
- identify the position of objects first through tenth.
- name the number before, after or between any number to 10.
* name the number before, after or between any number to 100.
- name the number before, after or between any number to 1,000.

The student is able to:

- count to 10.
- count to 100.
* count objects to 10.
* count objects to 50.
- count objects by 2's to 100.
- count objects by 5's to 100.
* count objects by 10's to 100.
- identify the position of objects first through tenth.
- name the number before, after or between any number to 10.
* name the number before, after or between any number to 100.
- name the number before, after or between any number to 1,000.
<table>
<thead>
<tr>
<th>Optional Goals and Activities</th>
<th>Physical Education</th>
<th>Music</th>
<th>Social Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Language Arts</td>
<td></td>
<td></td>
<td>Math</td>
</tr>
<tr>
<td>Science</td>
<td></td>
<td></td>
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<tr>
<td>Health</td>
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<td>Reading</td>
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<td>Career Education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environmental Education</td>
<td></td>
<td></td>
<td>Other</td>
</tr>
</tbody>
</table>
**Student Learning Objective(s)** The student is able to count to 10.

**Related Area(s)**

<table>
<thead>
<tr>
<th>Suggested Objective Placement</th>
<th>State Goal</th>
<th>District Goal</th>
<th>Program Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1,7,8</td>
<td></td>
<td>1,2,5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title:</strong> I Spy</td>
<td><strong>Mini-Test:</strong> &quot;Counting to 10&quot;</td>
<td>Baratta-Lorton, Mary, Mathematics Their Way, Addison-Wesley, 1976, pp. 98-99, 112-113</td>
</tr>
<tr>
<td><strong>Group Size:</strong> small group</td>
<td><strong>Group Size:</strong> one student</td>
<td></td>
</tr>
<tr>
<td><strong>Materials:</strong> any small object</td>
<td><strong>Procedure:</strong> Teacher asks student to count from 1 to 10.</td>
<td></td>
</tr>
</tbody>
</table>

**Procedure:**
- Teacher selects a student to be "it" (or other students may select a classmate).
- Selected student hides an object while the rest of the students close their eyes and count to 10.
- Students then open their eyes and search for the hidden object.
- The player who finds the object becomes the one who hides the object next.

**Title:** Circle Counting

**Group Size:** groups of 10 or less

**Materials:** none

**Procedure:**
- Ten or less students stand in each circle.
- One student is assigned to be the counting starter.
- The starter tells the groups to "begin counting". Each student counts in order and the one who says the last number in the circle sits on the floor. The next student begins once more; the last sits down.
- Activity continues until one student remains standing.
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>K</th>
</tr>
</thead>
</table>

| Title: | Bounce Counting |
| Group Size: | whole class or small group |
| Materials: | ball |

**Procedure:**
- One student bounces a ball while the students count: "one, two... ten."

| Title: | The Striking Clock |
| Group Size: | entire class |
| Materials: | a rhythm instrument, triangle and striker or a bell |

**Procedure:**
- Students stand in a circle with feet spread and rock from side to side as they say the poem below.
  **Poem:** "We are swinging pendulums
  Hanging from a clock.
  As we count the hours struck,
  We rock and tick and tock."
- One student stands in the center of the circle with a triangle to strike the hour when the poem has been said.
- The students count as each hour is struck.

---

**Possible Resources**

---

**District Resources**
Student Learning Objective(s): The student is able to count to 10.

Suggested Objective Placement: K

State Goal: 1, 7, 8
District Goal: 1, 2, 5
Program Goal: 1, 2, 5

Related Area(s):

**Suggested Activities:**

<table>
<thead>
<tr>
<th>Grade(s)</th>
<th>K</th>
</tr>
</thead>
</table>

**Title:** Poems and Fingerplays

**Group Size:** entire class

**Materials:** poems

**Procedure:**

Teacher reads poem and demonstrates action. Students then recite and follow the action as indicated.

**TEN FINGERS**

I have ten little fingers
And they all belong to me.
I can make them do things.
Would you like to see?
I can shut them up tight
Or open them wide.
I can put them together
Or make them all hide.
I can make them jump high,
I can make them jump low,
I can fold them quietly
And hold them just so.

**Suggested Monitoring Procedures**

**Possible Resources**

- Grayson, Marion F., *Let's Do Finger Plays*, Luce, 1962
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
</table>

**FIVE LITTLE FROGGIES**

Five little froggies sat on the shore,
(open hand; extend fingers. Push down one finger as each frog leaves.)
One went for a swim and then there were four.

Four little froggies looked out to sea,
One went swimming, and then there were three.
Three little froggies said, "What can we do?"
One jumped in the water and then there were two.
Two little froggies sat in the sun,
One swam off and then there was one.
One lonely froggie said, "This is no fun."
He dived into the water and then there was none.

**GRASSHOPPERS**

Ten little grasshoppers sitting on a vine;
(hold up ten fingers; fold one down at each count.)
One ate too much corn, and then there were nine.
Nine little grasshoppers swinging on a gate;
One fell off, then there were eight.
Eight little grasshoppers started off to Devon;
One lost his way, then there were seven.
Seven little grasshoppers lived between two bricks;
Along came a windstorm, then there were six.
Six little grasshoppers found a beehive;
One found a bumblebee, then there were five.
Five little grasshoppers playing on the floor;
Pussycat passed that way, then there were four.
Four little grasshoppers playing near a tree;
One chased a buzzy fly, then there were three.
Three little grasshoppers looked for pastures new;
A turkey gobbler saw them, then there were two.
Two little grasshoppers sitting in the sun;
A little boy went fishing, then there was one.
One little grasshopper left all alone;
He tried to find his brothers, then there was none.
Student Learning Objective(s) The student is able to count to 100.

Suggested Objective Placement 1-2

<table>
<thead>
<tr>
<th>State Goal</th>
<th>1,7,8</th>
</tr>
</thead>
<tbody>
<tr>
<td>District Goal</td>
<td></td>
</tr>
<tr>
<td>Program Goal</td>
<td>1,2,5</td>
</tr>
</tbody>
</table>

Related Area(s)  

<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s) 1-2</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title:</strong> Counting Game</td>
<td>Mini-Test: &quot;Counting to 100&quot;</td>
<td>Grossnickle, Foster E., Discovering</td>
</tr>
<tr>
<td><strong>Group Size:</strong> entire class</td>
<td><strong>Group Size:</strong> one student</td>
<td>Meanings in Elementary School</td>
</tr>
<tr>
<td><strong>Materials:</strong> none needed</td>
<td><strong>Procedure:</strong></td>
<td>Mathematics, Holt, Rinehart and</td>
</tr>
<tr>
<td></td>
<td>Ask student to count from 1 to 100.</td>
<td>Winston, 1973, pp. 126-127</td>
</tr>
<tr>
<td></td>
<td></td>
<td>D'Augustine, Charles H., Multiple</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Methods of Teaching Mathematics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>in the Elementary School, Harper and</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Row, 1973, pp. 70-72</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Computation and Structure, The</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nuffield Corporation, 1967,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>pp. 42-43</td>
</tr>
</tbody>
</table>

**District Resources**

Procedure:
- Teacher calls on someone to begin counting to 100. After a short time, the teacher says "stop" and calls on another student to continue where the first student left off.
- Teacher continues this process with students until 100 is reached.

**Title:** Student Counting

**Group Size:** whole class

**Materials:** none

Procedure:
- Designate one student as the counting starter.
- Agree on the order in which the students are to "count off".
- Starter begins with "one".
- Other students count in turn and in sequence.
- As soon as the last student "counts off", the counting starter picks up the counting sequence and the students continue to count.
- The student who counts off "100" stands and becomes the new counting starter.

Variation:
- Student could count backwards from 100 to 1.
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

District Resources
**Title:** Hangers and Clothespins  
**Group Size:** individual  
**Materials:** 10 hangers and 55 clothespins, 3" x 5" tagboard strips with numerals written 1-10

**Procedure:**
- Teacher fastens tagboard cards on hangers. Teacher directs student to put the appropriate number of clothespins on the hangers.

**Title:** Pincushions  
**Group Size:** individual  
**Materials:** 3" squares of cardboard, pincushions cut from foam rubber, glue, 55 large-headed pins, container for pins

**Procedure:**
- Teacher marks tagboard strips with numerals and corresponding dots from 1-10. Teacher glues pincushions on tagboard strips.  
- Student then puts the appropriate number of pins into cushions.  

Example:

---

**Mini-Test:** "Counting Objects to 10"  
**Group Size:** one student  
**Materials:** small box  
**Counters:** 10 counters

**Procedure:**
- Ask the student to count the counters and to place each counter in the box as it is counted.

---

**Possible Resources**


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**Suggested Objective Placement**

- **State Goal:** 1, 7, 8
- **District Goal:** 
- **Program Goal:** 1, 2, 5

---

**Related Area(s)**

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**Suggested Activities: Grade(s) K**

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**Suggested Monitoring Procedures**
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title: Counter Toss</td>
<td></td>
<td>Baratta-Lorton, Mary, Mathematics Their Way, Addison-Wesley, 1976, p. 102</td>
</tr>
<tr>
<td>Materials: bags containing sets of counters from 1-10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Procedure:**
- Each student selects a bag and records estimate of number of counters in the bag.
- When all have recorded their estimates, the bags are spilled on a rug or table.
- In turn, the students touch each counter as they count aloud.
- When all have counted in turn, the student(s) who estimated the counters correctly stand.
**Student Learning Objective(s)**
The student is able to count objects to 50.

**Related Area(s)**

**Suggested Activities: Grade(s)** 1

<table>
<thead>
<tr>
<th>Title</th>
<th>Group Size</th>
<th>Materials</th>
<th>Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collage</td>
<td>small group</td>
<td>colored scraps of paper, sheet of paper 12&quot;x18&quot;, glue</td>
<td>Teacher directs students to make a collage of the fifty scraps of colored paper (by gluing the scraps to the large sheet).</td>
</tr>
<tr>
<td>Collecting Stuff</td>
<td>entire class</td>
<td>large container, rocks, leaves, twigs, pine cones, etc.</td>
<td>Teacher takes class to a park or the school yard. Students collect various objects and place them in the container. When sufficient objects have been collected, students, one at a time, remove an object from the container and count it. Continue the process until the students reach 50. Variation: Discuss groupings of objects. How many rocks, leaves, etc.? Group 5 types of objects to make 50.</td>
</tr>
</tbody>
</table>

**Mini-Test**

<table>
<thead>
<tr>
<th>Group Size</th>
<th>Materials</th>
<th>Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>one student</td>
<td>small box 50 counters</td>
<td>Ask the student to count the counters and to place each counter in the box as it is counted.</td>
</tr>
</tbody>
</table>

**Possible Resources**

- Step Math Board (with counting strips)
- District Resources
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title:</strong> Count to 50</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Group Size:</strong> small group</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Materials:</strong> blocks, cubes, tongue depressors</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Procedure:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Each student is given cubes, blocks, etc. to count to see how many are in a group of a hundred.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. If the students come up with 50 each, they exchange with a classmate to check the figure.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Title:</strong> Count The Squares</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Group Size:</strong> individual or small group</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Materials:</strong> 1/2&quot; graph paper</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Procedure:</strong></td>
<td></td>
<td>Baratta-Lorton, Mary, Workjobs, Addison-Wesley, 1972, pp. 142-143</td>
</tr>
<tr>
<td>1. Students are directed to count 50 squares and to draw a line around the area enclosing the 50 squares.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Variation:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Students may color or mark each square as they count.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Title:</strong> My Count</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Group Size:</strong> pairs</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Materials:</strong> small box, 50 counters</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Procedure:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Student counts as counters are placed one at a time in a box.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Student records the number of counters that were counted.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. The other student takes the counters out of the box one at a time counting aloud.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. The final &quot;out loud count&quot; is compared with the recorded count.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Title: Count Me Out
Group Size: partners
Materials: 50 counters

Procedure:
1. One student is the "caller". This student selects and says any number from 1 to 50, for example, thirty-seven.
2. The other student counts out loud as each counter is separated from the set of 50 until thirty-seven counters are removed from the original set.

Possible Resources:
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

District Resources
**Student Learning Objective(s)**

The student is able to count by 2's to 100.

---

**Suggested Objective Placement**

State Goal

District Goal

Program Goal

---

**Related Area(s)**

---

**Suggested Activities:**

<table>
<thead>
<tr>
<th>Grade(s)</th>
<th>1-2</th>
</tr>
</thead>
</table>

### Counting by Two's

**Title:** Counting by Two's

**Group Size:** individual

**Materials:** large quantity of counters (beans, buttons, beads, styrofoam packing pellets, etc.), recording paper

**Procedure:**

1. Each student places a pile of counters on one side of his/her desk top.
2. The student removes two counters at a time from the pile saying, "2, 4, 6", etc., writing these numbers on recording paper as he/she counts.

### Counting Chains

**Title:** Counting Chains

**Group Size:** individual or partners

**Materials:** light gauge wire in 5 ft. lengths, buttons or styrofoam pellets

**Procedure:**

1. Working alone or in pairs, students thread a piece of wire with 100 counters (wire can be stuck through styrofoam like a needle). There will be some extra length of wire left.
2. Partner slides counters, two at a time, to the end, counting by 2's to 20. Then the other partner continues the process from 20 through 40. Repeat the procedure from 42 to 60 and on up by 2's to 100.

---

**Possible Resources**

- **Mini-Test: "Counting by 2's"
  **Group Size:** one student
  **Procedure:** Teacher asks student to count by 2's to 100.


- **Thyer, Dennis, Teaching Mathematics to Young Children, Holt, Rinehart and Winston, 1971, p. 52**

---

**District Resources**
Title: Counting Board

Group Size: individual or partners

Materials: teacher-made counting board with rows of nails or pegboard hooks to hold number tags 1 to 100-odd numbers in red, even numbers yellow, and a second set in blue tags for numbers which are multiples of 5 (for counting by 5's, 10's); use paper punch to make a hole in each tag for hanging on board (see illustration)

Procedure:
- Student places all numbers on board in order.
- Student reads the yellow number tags in order across the board. (If desired, student may remove the red tags.) Point out to student that the yellow number tags form vertical rows on the board. Ask: "Which numbers are common in these rows?" (Answer: 2, 4, 6, 8, 0.)
Student Learning Objective(s): The student is able to count by 2's to 100.

<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>1-2</th>
</tr>
</thead>
</table>

### Swish

**Title:** Swish  
**Group Size:** small group  
**Materials:** none  

**Procedure:**  
- The group will count out loud but instead of saying "two" or any multiple of two, the word "swish" will be substituted.  
- Every time a mistake is made, that is, instead of "swish" a multiple of two such as "four" or "eight" is said, the group must begin again.  
- Repeat until the group reaches 100.  
- Compare the group's time with that of another group.

### Counting by Two's

**Title:** Counting by Two's  
**Group Size:** entire class  
**Materials:** worksheet with puzzle  

**Procedure:**  
- Students decide what part of the puzzle is missing and fill in the correct number.

<table>
<thead>
<tr>
<th>2</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>12</td>
<td>16</td>
</tr>
</tbody>
</table>
Title: Counting by Two's

Group Size: partners

Materials: teacher-made card marked with even numbers 0-38, etc, 2 4
30 counters, 2 game cards (3"x5" matrix with arrangements of multiples of 2 from 2 through 40—vary the arrangements on the two cards.

Sample of one game card:

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>10</td>
<td>8</td>
<td>20</td>
<td>12</td>
</tr>
<tr>
<td>2</td>
<td>26</td>
<td>4</td>
<td>30</td>
<td>24</td>
</tr>
<tr>
<td>22</td>
<td>16</td>
<td>40</td>
<td>36</td>
<td>6</td>
</tr>
</tbody>
</table>

Procedure:

1. Teacher designates student (or partners select one) to shuffle numeral cards.
2. Students place the cards face down between them.
3. Students take turns turning over the top card one card at a time.
4. Students place a counter on a numeral that means 2 more than the numeral on the card just turned over.
5. The first player to cover all the numerals in a row or column wins.

Extension:

1. Count student's shoes, eyes, ears by one's, with emphasis on the idea there are pairs of each.
2. Count sets of two's by one's, emphasizing the even numbers (e.g., one, two, three, four, etc.).
**Student Learning Objective(s)**

The student is able to count by 5's to 100.

---

**Suggested Activities: Grade(s)**

| Title:      | Five Fingers
| Group Size: | small group or entire class
| Materials:  | chalkboard and chalk

**Procedure:**

1. Students, one at a time, trace their hand on the chalkboard and write in the number on each hand.
2. Students then write the number 5 times more than the preceding hand. This procedure should continue until the students reach 100.

**Title:      | Counting by 5's on the Number Line
| Group Size: | small group/entire class
| Materials:  | chalk and chalk

**Procedure:**

1. Draw a large number line across the chalkboard (0-100)
2. Have group count by 5's and have one student circle each multiple of 5's.

**Suggested Monitoring Procedures**

- Students record the sets by five.
- Teacher listens to the students taking turns counting the hands by five, or the counters by fives, orally.
- **Mini-Test:** "Counting by 5's"

**Group Size:** one student

**Procedure:**

- Ask the student to count by 5's to 100.

**Possible Resources**

- Bead Frame
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title</strong></td>
<td>Counting by 5's</td>
</tr>
<tr>
<td><strong>Group Size:</strong></td>
<td>pairs</td>
</tr>
<tr>
<td><strong>Materials:</strong></td>
<td>numeral cards from 5 to 70 in multiples of 5, 18 counters, 2 game cards—teacher makes two different game cards; in a 3&quot;x3&quot; matrix write different arrangements of multiples of 5 from 5 through 70.</td>
</tr>
<tr>
<td>Sample of one game card:</td>
<td><img src="image" alt="Game Card" /></td>
</tr>
<tr>
<td>Procedure:</td>
<td>Teacher gives the following directions to students:</td>
</tr>
<tr>
<td></td>
<td>(a) Shuffle the numeral cards.</td>
</tr>
<tr>
<td></td>
<td>(b) Place the cards face down between the two students.</td>
</tr>
<tr>
<td></td>
<td>(c) Take turns turning over the top card.</td>
</tr>
<tr>
<td></td>
<td>(d) Place a block on the numeral that means 5 more than the numeral on the card turned over.</td>
</tr>
<tr>
<td></td>
<td>(e) The first to cover all the numerals in a column or row wins.</td>
</tr>
</tbody>
</table>

**Possible Resources**

Student Learning Objective(s): The student is able to count by 5's to 100.

Related Area(s): 

Suggested Objective Placement: 1-2

- State Goal: 1
- District Goal:
- Program Goal: 1, 3, 5

Suggested Activities: Grade(s) 2

Title: Solve The Puzzle
Group Size: entire class
Materials: worksheet of puzzle

Procedure:
- Students decide what parts of the puzzle are missing and fill in the correct number.

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>10</td>
<td>15</td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>20</td>
<td>30</td>
<td></td>
<td></td>
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<tr>
<td>25</td>
<td>35</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>25</td>
<td></td>
<td>40</td>
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<tr>
<td>30</td>
<td>35</td>
<td>40</td>
<td></td>
<td></td>
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<tr>
<td>40</td>
<td>45</td>
<td></td>
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</tbody>
</table>

Possible Resources:
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>District Resources</td>
</tr>
</tbody>
</table>
**Student Learning Objective(s)** The student is able to count by 10's to 100.

**Related Area(s)**

---

<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Group Size:</strong> individual or small group</td>
<td><strong>Group Size:</strong> one student</td>
<td>D'Augustine, Charles H., Multiple Methods of Teaching Mathematics in the Elementary School, Harper and Row, 1973, pp. 69-72</td>
</tr>
<tr>
<td><strong>Materials:</strong> counters, beads</td>
<td><strong>Procedure:</strong> Ask the student to count by 10's to 100.</td>
<td>Pagne, Joseph N. (editor), Mathematics Learning in Early Childhood, National Council of Teachers of Mathematics, 1976, pp. 141-142</td>
</tr>
<tr>
<td><strong>Title:</strong> Graphs</td>
<td></td>
<td>Sharp, F.A., These Kids Don't Count, Academic Therapy Publications, 1971, pp. 57-59</td>
</tr>
<tr>
<td><strong>Group Size:</strong> entire class, small groups</td>
<td></td>
<td>Bead Frame</td>
</tr>
<tr>
<td><strong>Materials:</strong> 1/2&quot; graph paper</td>
<td></td>
<td>Hundreds Chart</td>
</tr>
<tr>
<td><strong>Procedure:</strong> Teacher directs student to cut graph paper into strips of ten and then count the strips by ten to 100.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suggested Activities: Grade(s) 1-2</td>
<td>Suggested Monitoring Procedures</td>
<td>Possible Resources</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>---------------------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td><strong>Title:</strong> Ten Strips</td>
<td></td>
<td>Henderson, George, <em>Let's Play</em></td>
</tr>
<tr>
<td><strong>Group Size:</strong> individual or small groups, entire class</td>
<td></td>
<td><em>Games in Mathematics: Vol. 2</em>,</td>
</tr>
<tr>
<td><strong>Materials:</strong> strips of colored paper or dittos cut into strips</td>
<td></td>
<td>National Textbook Co., 1970,</td>
</tr>
<tr>
<td><strong>Procedure:</strong></td>
<td></td>
<td>pp. 31-32</td>
</tr>
<tr>
<td>Students will separate the paper strips into groups of ten. Students then count by ten's to see how many make 100.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Variation:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tongue depressors or bean sticks in bundles of ten may be used.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Title:</strong> Counting by 10's on the Number Line</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Group Size:</strong> small group/entire class</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Materials:</strong> chalk and chalkboard</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Procedure:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Draw a large number line across the chalkboard (0-100).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have the group/class count by 10's and have one student circle each multiple of tens.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

District Resources
Student Learning Objective(s): The student is able to identify the position of objects first through tenth.

<table>
<thead>
<tr>
<th>Suggested Objective Placement</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Goal</td>
<td>1</td>
</tr>
<tr>
<td>District Goal</td>
<td></td>
</tr>
<tr>
<td>Program Goal</td>
<td>1,3,5</td>
</tr>
</tbody>
</table>

Related Area(s):  

<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>K-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title:</td>
<td>Train</td>
</tr>
<tr>
<td>Group Size:</td>
<td>entire class divided into groups of 10</td>
</tr>
<tr>
<td>Materials:</td>
<td>10 chairs</td>
</tr>
</tbody>
</table>

**Procedure:**  
- Teacher places a row of 10 chairs in front of the group (train fashion).  
- Students sit in the chairs.  
- Teacher gives the following directions orally:  
  - (a) The first person in each train raise your hand, clap, stand up, etc.  
  - (b) The second person raise your hand, etc.  
- Teacher continues to give directions until each member has participated.  
- Change train positions until each student has been in each chair.

<table>
<thead>
<tr>
<th>Title:</th>
<th>First Through Tenth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>class divided into groups of 5</td>
</tr>
<tr>
<td>Materials:</td>
<td>none needed</td>
</tr>
</tbody>
</table>

**Procedure:**  
- Teacher lines up the class into groups of five.  
- Teacher gives directions orally, such as:  
  - (a) The fifth person touch the floor.  
  - (b) The third person tap the second person on the shoulder.  
- Teacher continues until each student has been given a direction.

**Possible Resources**
- Skip, Donald E. Developing Arithmetic Concepts and Skills, Prentice Hall, Inc., 1964, p. 75  
<table>
<thead>
<tr>
<th>Title: Popsicle Sticks</th>
<th>Group Size: entire class</th>
<th>Materials: 10 popsicle sticks per student, beans (at least 10 per student), glue</th>
</tr>
</thead>
</table>

**Procedure:**
1. Teacher gives each student a set of popsicle sticks and at least 55 beans.
2. Teacher suggests that the student make a set of bean sticks by gluing one to ten beans on each of the 10 sticks.
3. When the glue is dry, the students play a game of ordering their bean sticks, placing them from first to last.

**Variation:**
Students may color the bean sticks different colors (for example, the first bean stick red).

<table>
<thead>
<tr>
<th>Title: Moving Counters</th>
<th>Group Size: individual, small group</th>
<th>Materials: 10 counters per student</th>
</tr>
</thead>
</table>

**Procedure:**
1. Give the following directions to students:
   (in reference to the initial position)
   (a) Place the counters in line from left to right.
   (b) Remove the third counter.
   (c) Place the second counter above the first counter.
   (d) Place the fourth counter below the fifth counter, etc.
Student Learning Objective(s): The student is able to identify the position of objects first through tenth.

<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s) K-1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title:</strong> Place Me In Order</td>
</tr>
<tr>
<td><strong>Group Size:</strong> small or large group</td>
</tr>
<tr>
<td><strong>Materials:</strong> 10 comic strip pictures, 10 cards with the ordinal numbers first through tenth</td>
</tr>
</tbody>
</table>

**Procedure:**
- Cut out and mount five frames of a comic strip on separate sheets of tagboard.
- Place the comic strip frames in order from left to right.
- Beneath each comic strip frame, place the ordinal word name.
- Check your answer by turning over each picture and matching the ordinal names.

<table>
<thead>
<tr>
<th>Suggested Monitoring Procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title:</strong> Ordinal Relay Race</td>
</tr>
<tr>
<td><strong>Group Size:</strong> small or large group</td>
</tr>
<tr>
<td><strong>Materials:</strong> chairs for each student</td>
</tr>
</tbody>
</table>

**Procedure:**
- Arrange students in two equal rows. Assign each student a name, indicating the position in the row (first, second, etc.—these can be written for the students to refer to).
- Each student stands behind a chair. The teacher directs: "Third person put hands on head." The student who complies first and correctly sits down.
- The teacher continues to give directions in this manner. The first row which is seated wins.

**Possible Resources**

**District Resources**
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>District Resources</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Student Learning Objective(s)
The student is able to name the number before, after, or between any number to 10.

### Related Area(s)

### Suggested Activities: Grade(s) K-1

<table>
<thead>
<tr>
<th>Title: Covered Number Line</th>
<th>Group Size: small group</th>
<th>Materials: 10 9&quot;x12&quot; laminated numerals, 10 9&quot;x12&quot; laminated covers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Procedure:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher tapes laminated numerals in a number line. Tape covers on the number line to facilitate covering and exposing the numerals.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher uncovers any number and asks students what number comes before, what number follows.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uncover every other number and ask students what number comes between the two numerals.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Title: Long Doggie</th>
<th>Group Size: individual</th>
<th>Materials: 9&quot;x12&quot; tagboard dachshund, 9&quot;x12&quot; tagboard numerals, 0-10</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Procedure:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher places tagboard numerals in reverse order face down on a table.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher directs students to take the first number (0) and place it between the head and the tail.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If the student can name the next numeral, he/she may place that number next to 0.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Process continues until the student has completed the game or said an incorrect number.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Suggested Monitoring Procedures

<table>
<thead>
<tr>
<th>Mini-Test: &quot;Before, After, Between&quot;</th>
<th>Group Size: entire class</th>
<th>Materials: written exercise as below</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Procedure:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ask students to complete the following:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Before After Between</td>
<td></td>
<td></td>
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<tr>
<td>---   ---   ---</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4     1     5     7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6     9     8     10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1     7     3     5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Possible Resources

- Hundreds Board

### District Resources
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>District Resources</td>
</tr>
</tbody>
</table>


Student Learning Objective(s) | The student is able to name the number before, after or between any number to 100.
--- | ---

Suggested Objective Placement | Suggested Objective Placement 2

Suggested Activities: Grade(s) | Suggested Monitoring Procedures | Possible Resources
--- | --- | ---

**Title:** Counting Cards
**Group Size:** small group
**Materials:** cut tagboard or construction paper cards 2"x3", crayons or marking pens

**Procedure:**
- Teacher gives the following directions:
  - Individual students write ten consecutive numerals on ten cards. Student A may write 1 through 10, student B from 11 to 20, student C from 21 to 30, and so on until there is a card for each numeral 1 through 100.
  - Shuffle cards and give each pair of students about 20 cards. One student holds up a card and the partner must give either the number which would come before or after that numeral. (Keep the entire deck of cards for remedial drill.)


District Resources

1

2

1, 3, 5
Title: Counting Puzzle
Group Size: individual and partners
Materials: 10"x10" tagboard lined into 100 squares

<p>| | | | | | | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
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<td>96</td>
<td>97</td>
<td>98</td>
<td>99</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Procedure:
1. Teacher writes numeral 1 to 100 consecutively, 10 numbers per row. Laminate or cover with clear contact paper. Cut out random squares from the puzzle. (Cut on marked lines to form puzzle pieces.)
2. Have students assemble the puzzle by taking a number, naming the number which comes before and after.
3. Students then place the number in the appropriate place in the puzzle.
Student Learning Objective(s): The student is able to name the number before, after, or between any number to 100.

Suggested Objective Placement

<table>
<thead>
<tr>
<th>Suggested Objective Placement</th>
<th>State Goal</th>
<th>District Goal</th>
<th>Program Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td></td>
<td>1, 3, 5</td>
</tr>
</tbody>
</table>

Related Area(s):

<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
</table>

Title: Bureau of Missing Numbers

Group Size: small group

Materials: none needed

Procedure:

- Teacher gives clues involving descriptions of numbers and students guess the answers.

Examples:

"Attention all detectives! We have a missing number. He is even. He has an older sister who is four. Can you identify him?" (2)

"Attention all detectives! A number is missing. It was last seen around the middle of the numeral line. It has five tens, it is odd and it is smaller than 53. What is it?" (51)

"All cars be on the lookout for a missing number. It's hundred's place is an even number between 6 and 10. It's ten's place is 7. It's one's place is an odd number less than three. What is it?" (871)

Possible Resources:


District Resources
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s):</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

District Resources
Student Learning Objective(s) The student is able to name the number before, after or between any number to 1,000.

Suggested Activities: Grade(s) 3

Title: Bureau of Missing Numbers
Group Size: small group
Materials: none needed

Procedure:

Teacher says to class: "Today you may be detectives and investigate some missing numbers. Listen carefully for their descriptions. If you think you know the answer, raise your hand."

Examples:
"Attention all detectives! We have a missing number. It is even. It comes between 5 and 10. Can you identify it?" (6 or 8)

"Officer's attention! Pick up a blue car doing just over 90. How fast is it going?" (91)

"Robbery at the bank! Attention all squads! The robber got just under $1,000. What did he/she get?" ($999)
Suggested Activities: Grade(s) 3

Title: Fishbowl
Group Size: small groups
Materials: tagboard cards (3"x5"), fishbowl

Procedure:
1. Teacher directs students to make cards 3"x5". Put the numerals on it to 1,000. Place the cards in a fishbowl.
2. One student draws out a card and names the number that comes before or after it.
3. All the correct answers receive 1 point. The player with the most points after all the cards are drawn is the winner.

Variation:
1. A student draws two cards and names any numeral that comes between. Give a point for a correct answer.

District Resources
the student knows:

- the symbol "=" means "equal to".
- the symbol "\(\geq\)" means "greater than". (one activity)
- the symbol "\(<\)" means "less than".

The student is able to:

- use one-to-one matching with sets of objects less than 10.
- compare sets of objects for equality and inequality using the words: "more than", "less than", and "equal to".
- compare the sets of objects by the use of symbols "\(\geq\)" and "\(<\)".
- compare numbers to 100 by the use of symbols "\(\geq\)", "\(<\)", "\(=\)".
- compare numbers to 999 by the use of symbols "\(\geq\)", "\(<\)", "\(=\)".
- compare numerical expressions by the use of the symbols "\(\geq\)", "\(<\)", "\(=\)", i.e.,

\[
\begin{align*}
3 + 2 &= 4 + 1 \\
10 + 4 &= 14 - 3 \\
1 + 6 &= 10 - 1
\end{align*}
\]
<table>
<thead>
<tr>
<th>Optional Goals and Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Education</td>
</tr>
<tr>
<td>Music</td>
</tr>
<tr>
<td>Social Studies</td>
</tr>
<tr>
<td>Art</td>
</tr>
<tr>
<td>Language Arts</td>
</tr>
<tr>
<td>Math</td>
</tr>
<tr>
<td>Science</td>
</tr>
<tr>
<td>Health</td>
</tr>
<tr>
<td>Reading</td>
</tr>
<tr>
<td>Career Education</td>
</tr>
<tr>
<td>Environmental Education</td>
</tr>
<tr>
<td>Other</td>
</tr>
</tbody>
</table>
Student Learning Objective(s)  The student is able to use one-to-one matching with sets of objects less than 10.

Suggested Objective Placement  K-1

State Goal

District Goal

Program Goal  3, 4, 5

Related Area(s)

Suggested Activities: Grade(s)  K-1

<table>
<thead>
<tr>
<th>Title</th>
<th>Group Size</th>
<th>Materials</th>
<th>Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mailing Time</td>
<td>one student</td>
<td>9 envelopes, 9 letters, 8 word stamps</td>
<td>Have students match the letters to the envelopes. Student determines if there are enough stamps for each envelope.</td>
</tr>
<tr>
<td>Musical Chairs</td>
<td>small or large group</td>
<td>matched number of chairs with students</td>
<td>As music is played, students circle around the chairs. The teacher moves a chair, stops the music and a student who fails to find a chair is eliminated. Repeat.</td>
</tr>
<tr>
<td>Dot Cards</td>
<td>one student</td>
<td>index cards</td>
<td>Place the cards dot side down. Student picks a card. He/she must match the dots one-to-one with a set of objects. Students may select any set of objects. Students may continue the game until the cards have been matched correctly</td>
</tr>
</tbody>
</table>

Suggested Monitoring Procedures

<table>
<thead>
<tr>
<th>Mini-Test  “Matching Objects”</th>
<th>Group Size</th>
<th>Materials</th>
<th>Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>one student</td>
<td>6 counters</td>
<td>Teacher forms 2 sets of counters, a set of 3 and a set of 3 counters. Teacher asks student to match the 2 sets</td>
</tr>
</tbody>
</table>

Possible Resources

Baratta-Lorton, Mary, Workjobs, Addison-Wesley Publishing Co., 1972


Liedtke, Werner, Mathematical Experience, Primary Division, Encyclopedia Britannia Publications, Ltd., 1974, pp. 12-14

Pagne, Joseph N. (editor), Mathematics Learning in Early Childhood, National Council of Teachers of Mathematics, 1976, pp. 131-133
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title:</strong> Matching Jars and Lids</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Group Size:</strong> one</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Materials:</strong> set of jars (varying in style) set of lids (varying in style)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Procedure:</strong> Have students match lids to jar by screwing lids on jars.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Title:</strong> Color Match</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Group Size:</strong> one</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Materials:</strong> 5 tongue depressors, 5 crayons of different colors</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Procedure:</strong> Teacher colors each tongue depressor with a different color crayon. Match each colored tongue depressor to a crayon of the same color.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Title:</strong> Number Cans</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Group Size:</strong> individual</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Materials:</strong> orange juice cans covered with contact paper, round adhesive 'r'els, tongue depressors (may be spray painted to resist soil)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Procedure:</strong> Teacher puts dots on can - each can having a different number of dots from 1-9. Student places tongue depressors into the can as indicated by the dot on outside of can.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Possible Resources:
- Bean Sticks
- Step Board
- Magnetic One-More-Than Strips
- Set Cards
- Ice Cream Cones
- Art-Foam Sets
- Number and Numeral Puzzle

District Resources
Student Learning Objective(s) The student is able to compare sets of objects for equality and inequality using the words "more than", "less than" and "equal to".

| State Goal | 1 |
| District Goal | 3, 4, 5, 7 |
| Program Goal | |

Related Area(s)  

Suggested Objective Placement  

<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title:</strong> Sets</td>
<td><strong>Group Size:</strong> one student</td>
<td><strong>D'Augustine, Charles H., Multiple Methods of Teaching Mathematics in the Elementary School,</strong> Harper and Row, 1973, pp. 59-61</td>
</tr>
<tr>
<td><strong>Group Size:</strong> small or large group</td>
<td><strong>Materials:</strong> 7 counters</td>
<td><strong>Schminke, C. W., Teaching the Child Mathematics,</strong> The Dryden Press, Inc., 1973, pp. 100-105</td>
</tr>
<tr>
<td><strong>Materials:</strong> paper, crayons</td>
<td><strong>Procedure:</strong></td>
<td><strong>Ginsburg, Herbert, Children's Arithmetic,</strong> The Learning Process, D. Van Nostrand Co., 1977, chapter 2</td>
</tr>
<tr>
<td><strong>Procedure:</strong></td>
<td></td>
<td><strong>Bean Sticks</strong></td>
</tr>
<tr>
<td>- Each student draws a set on a piece of paper using no more than nine members to the set.</td>
<td></td>
<td><strong>District Resources</strong></td>
</tr>
<tr>
<td>- Select a student to come to the front of the group and show his/her set to the class. Ask the student who have a set with more members, fewer members or the same number of members to show their sets.</td>
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<td></td>
</tr>
<tr>
<td><strong>Title:</strong> Dots</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Group Size:</strong> small group</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Materials:</strong> 12 3&quot;x5&quot; index cards on which are drawn sets of dots (1 to 5)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Procedure:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Place the index cards face down in the rows of 4 each. A student turns over one card and then a second. If the second card has fewer dots than the first, the student keeps the pair.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- If the second card has more dots or the same number of dots, both cards are turned face down, and the other player gets a turn.</td>
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<td></td>
</tr>
<tr>
<td>- Variation:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- If the second card has more dots the student keeps the pair. If the cards have an equal number of dots, the cards are turned down.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Suggested Activities: Grade(s)  K-1

Title:   Fall Walk  
Group Size:  small or large group  
Materials:  park or school yard with leaves, twigs, rocks, pine cones

Procedure:
. Take the students on a visit to a park or the school yard during the fall.
. Teacher gives directions using objects from the environment.

Example
. "Find 6 rocks and 5 leaves. Which set has more? Which set has less?"
. "Find a set of rocks that is less than 5."
. "Find a set of leaves that is more than 3."
. "Find a set of twigs less than 7."
. "Now find a partner who has 1 less than you."
. "Find a partner who has 1 more than you."

Can also do two more or two less:
"Find 3 leaves. Arrange them so that the middle leaf is greater than the one on the left and less than the one on the right."

Note: Be sure students return the objects to where they found them and discuss why.

District Resources
Title: Equalities and Inequalities
Materials: 2 sets of cards (symbol and word cards)

### Related Area(s)
3, 4, 5, 7

### Group Size:
partners

### Grade(s):
1-3

### Procedures:
1. One player lays down one card at a time.
2. The partner must match each card, e.g., if the match of cards is correct the player keeps both cards.
3. If the cards do not match, the cards are placed in a discard pile.
4. After all cards are played, record the number of cards that were kept.
5. If the cards do not match, the cards are placed in a discard pile.
6. After all cards are played, record the number of cards that were kept.
7. Reverse roles.
8. The winner is the player who took the most cards.

### Possible Resources
Henderson, George L., Let's Play Games in Mathematics, National Textbook Co., 1970, p. 34
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>1-3</th>
</tr>
</thead>
</table>

**Title:** Symbol Cards

**Group Size:** three students

**Materials:** two sets of numeral cards (1-9); cards about the size of regular playing cards; three symbol cards marked "<", ">", and "=", e.g.,

\[ \begin{array}{c} < \\ > \\ = \end{array} \]

**Procedure:**

1. One player takes the symbol cards, sits between the other two players, and turns the symbol cards face up.
2. The other two players each take a set of numeral cards (1-9), shuffle them and place them face down in front of each other.
3. The player to the left of the player having the symbol cards takes one numeral card and turns it face up.
4. The player to the right of the player having the symbol cards takes a numeral card off the top of the deck and turns it face up.
5. The third player places the correct symbol card (>, <, or =) between the two numeral cards. If the correct symbol card is played, the player who played the correct symbol card keeps both numeral cards and takes back the symbol card that was played. If the wrong symbol card is played, the two numeral cards are placed in a discard pile.
6. After all the numeral cards have been played, the player with the symbol cards counts and records the number of numeral cards he/she has.
7. Players exchange positions until all three have a turn playing the symbol cards.
8. The winner is the player who took the most numeral cards.

**Possible Resources**

Student Learning Objective(s) The student is able to compare the sets of objects by the use of symbols \( > \), \( < \), and \( = \).

Suggested Objective Placement

- State Goal
- District Goal
- Program Goal

Related Area(s)

Suggested Activities: Grade(s) 1-2

Title: Greater Than, Less Than Wheel
Group Size: individual, partners or group
Materials: 5" x 7" cards of railroad board, one for each student

Procedure:

- Using a brad attach a 3" circle in the center of the rectangle, allowing the circle to rotate. Cut parallel slits in each side of the circle.
- On the circle mark symbols for "less than" and "greater than" and "equal".
- Use strips of paper or vinyl to slide through the slits showing numbers 0 to 9. (Ends of strips can be glued together to form loops so they won't slip out.) Students can help making these cards.

- Partners use card, moving number strips and adjusting symbol wheel to make a true statement. Partners check each other. Or, one student can move both number strips and the partner can adjust the symbol wheel to make a true statement.

Possible Resources

D’Augustine, Charles H., Multiple Methods of Teaching Mathematics in the Elementary School, 1973, pp. 68-69

Suggested Monitoring Procedures

Mini-Test: "Symbols"
Group Size: small group
Materials: set of 3 symbol card cards for each student and counters

Procedure:

- Ask the students to form a set of four counters on their left and a set of five on their right.
- Place the correct symbol card \( > \) between the two sets of objects.
- Ask the students to form a set of two counters on their left and a set of five counters on their right.
- Place the correct symbol card \( < \) in position.
- Form equivalent sets so that \( = \) card is used.
Student Learning Objective(s) A. The student is able to compare numbers to 100 by the use of symbols "<", ">", and "=". B. The student can compare the numbers to 999 by the use of symbols "<", ">", "=".

Related Area(s)

State Goal

District Goal

Program Goal

Suggested Objective Placement 2-3

Suggested Activities: Grade(s) 2-3

Title: Greater Than Or Less Than Cards
Group Size: small group
Materials: cards or slips of paper with numbers from 1-100 (for each student)

Procedure:
1. (Note: Students should have prior knowledge of meaning of "<", ">", and "="; should be able to count to 100 and to 999.
2. Student shuffle slips of paper or cards and place them face down.
3. Each player then draws the top slip of card. The player having the greater number says: "My _____ is greater than your _____, so I win."
4. The winner keeps the cards face up in another pile.

Variation:
5. Use numbers from 100-200, 1-999, etc.

Title: Who Is Greater Or Less Than?
Group Size: entire class divided into two teams
Materials: 2 sets of large cards with the number you are working with, 2 sets of large cards with "<" and ">" drawn on them.

Procedure:
1. Teacher gives each team a set of numeral cards and a "<" and a ">" sign.
2. Teams stand on opposite sides of the room.
3. Teacher calls out two numbers, e.g., 50 and 3.

Mini-Test: "Comparing Numbers"
Group Size: entire class
Materials: written exercise as below.

Procedure:
1. Ask the students to compare:
2. Use =, >, <.

<table>
<thead>
<tr>
<th>3</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>45</td>
<td>46</td>
</tr>
<tr>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td>248</td>
<td>127</td>
</tr>
</tbody>
</table>

Possible Resources


Step Counting Board

District Resources
The first two students on each team find the numbers. The third student picks out the correct sign. The students then go to the front of the room and position themselves correctly:

Award a point to the first team whose three members have positioned themselves correctly. The students with the highest number possible get a point. Continue playing for a predetermined number of turns.

Example: spin numbers 3, 7, 5. Possible combinations would be 753 (the largest) or 573, 735, etc.

Variation:
Smallest number gets winning point. Add two sets of 3-place numbers to get the largest or smallest answer.
Student Learning Objective(s) A. The student is able to compare numbers to 100 by the use of symbols "<", ">", and "=".  B. The student can compare the numbers to 999 by the use of symbols "<", ">", "=".

Related Area(s) 

Suggested Objective Placement 2-3

State Goal

District Goal

Program Goal

Suggested Activities: Grade(s) 2-3

<table>
<thead>
<tr>
<th>Title:</th>
<th>Spatt Card Game</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>small groups, pairs</td>
</tr>
<tr>
<td>Materials:</td>
<td>spinner card (dice could be used)</td>
</tr>
<tr>
<td></td>
<td>record sheet (ditto or student-made)</td>
</tr>
<tr>
<td></td>
<td>with columns marked H (hundreds), T (tens) and O (ones)</td>
</tr>
</tbody>
</table>

Procedure:

. Teacher gives each student a record sheet and a pencil.
. One player spins the spinner. All the players write the numbers on their record sheets in any column they want (hundreds, tens, ones).
. The leader spins the spinner two more times. After each spin, the students fill in another place value blank.
. The object is to make the largest possible number, but chance may overrule logic.
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

District Resources
Student Learning Objective(s): The student is able to compare numerical expressions by the use of the symbols "<", ">", and "=", i.e., \(3 + 2 = 4 + 1\)

\(10 + 4 > 14 - 3\)

\(1 + 6 < 10 - 1\)

**Suggested Activities:** Grade(s) 2-3

**Title:** Paper Clip Chains
**Group Size:** one student
**Materials:** 33 paper clips

**Procedure:**
1. Make chains of 3, 8 and 10 paper clips.
2. Put two chains together to show 3 + 8.
3. Compare the 3 + 8 chain with the 10 chain.
4. Use <, =, or > to complete this sentence: \(3 + 8 \quad 10\)
5. Make chains for the numbers in each of the following sentences. Use them to help you complete each sentence.

\[9 + 4 \quad 13\]
\[3 + 6 \quad 11 - 3\]
\[8 + 8 \quad 17 - 2\]

**Mini-Test:** "Number Phrases"
**Group Size:** entire class
**Materials:** written exercise, as below

**Procedure:**
1. Teacher asks student to compare: Use =, <, >.

\[2 + 3 \boxed{\quad} \quad 3 + 2\]
\[4 + 5 \boxed{\quad} \quad 6 + 2\]
\[2 + 7 \boxed{\quad} \quad 5 + 5\]

**Possible Resources**
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>District Resources</td>
</tr>
<tr>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
**SMALL SCHOOLS PROJECT**

**SUBJECT:** Mathematics  
**SPECIFIC AREA:** Whole Numbers: Reading and Writing Numerals

### The student knows:

<table>
<thead>
<tr>
<th>Grade Placement</th>
<th>K</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>read the numerals to 10.</strong></td>
<td>55-</td>
<td>K</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>read the numerals to 100.</strong></td>
<td>59-</td>
<td>1-2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>read any of the numerals to 999.</strong></td>
<td>61-</td>
<td>2-3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>read any of the numerals to 9,999.</strong></td>
<td>63-</td>
<td>3-4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>write the numerals to 10.</strong></td>
<td>65-</td>
<td>K</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>write the numerals to 100.</strong></td>
<td>69-</td>
<td>1-2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>write any of the numerals to 999.</strong></td>
<td>73</td>
<td>2-3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>read and write the number words to 10.</strong></td>
<td>75</td>
<td>1-2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>read the critical number words, i.e., ones, tens, hundreds, ten, twenty, thirty, etc.</strong></td>
<td>79</td>
<td>2-4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>write the numerals by two's to 100.</strong></td>
<td>81</td>
<td>1-2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>write the numerals by five's to 100.</strong></td>
<td>81</td>
<td>1-2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>write the numerals by ten's to 100.</strong></td>
<td>81</td>
<td>1-2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### The student is able to:

- read the numerals to 10.  
- read the numerals to 100.  
- read any of the numerals to 999.  
- read any of the numerals to 9,999.  
- write the numerals to 10.  
- write the numerals to 100.  
- write any of the numerals to 999.  
- read and write the number words to 10.  
- read the critical number words, i.e., ones, tens, hundreds, ten, twenty, thirty, etc.  
- write the numerals by two's to 100.  
- write the numerals by five's to 100.  
- write the numerals by ten's to 100.

### The student values:

- the ability to read and write numerals as a useful skill in daily living.  

-53-
<table>
<thead>
<tr>
<th>Optional Goals and Activities</th>
<th>Physical Education</th>
<th>Music</th>
<th>Social Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>PT</td>
<td>Language Arts</td>
<td>Math</td>
<td></td>
</tr>
<tr>
<td>Science</td>
<td>Health</td>
<td>Reading</td>
<td></td>
</tr>
<tr>
<td>Career Education</td>
<td>Environmental Education</td>
<td>Other</td>
<td></td>
</tr>
<tr>
<td>Suggested Activities:</td>
<td>Grade(s)</td>
<td>Suggested Monitoring Procedures</td>
<td>Possible Resources</td>
</tr>
<tr>
<td>-----------------------</td>
<td>----------</td>
<td>----------------------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Title:</td>
<td>K</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group Size:</td>
<td>small group/entire class</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Materials:</td>
<td>one large number line to be hung from top of the chalkboard or laid out on the floor — each number has an attached cover which may be flipped over one at a time.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procedure:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Write the numbers 0-10 very large. Place them in order side by side. Tape or laminate the sheets into one continuous strip. (Student models could also be made.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Have the student cover the number as the student reads it, or.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Have the student guess and uncover what comes next.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Mini-Test:             | "Reading Numerals to 10" | Number Concept Cards |
| Group Size:            | one student            | Peg Numbers          |
| Materials:             | numerals from 0-10     | Picture Number Puzzle|
|                       | presented in random    | Available through Jays Catalog, 1976, p. 3 |
|                       | order on chalkboard,   |                   |
|                       | flannelboard, paper,   |                   |
|                       | etc.                  |                   |
| Procedure:             | Teacher points to numerals one at a time and has the student name the numeral. |                   |
|                       | Example:              |                   |
|                       | 8 3 7 2 5 0 4 1 9 6   |                   |

District Resources
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>District Resources</td>
</tr>
</tbody>
</table>

123
Student Learning Objective(s) The student is able to read the numerals to 10.

<table>
<thead>
<tr>
<th>State Goal</th>
<th>1, 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>District Goal</td>
<td>1, 5</td>
</tr>
<tr>
<td>Program Goal</td>
<td>1, 5</td>
</tr>
</tbody>
</table>

Related Area(s) 

<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s) K</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title: Number Line Count</td>
<td></td>
<td>Sharp, F.A., These Kids Don't Count, Academic Therapy Publications, 1971, p. 27</td>
</tr>
<tr>
<td>Group Size: small group/entire class</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Materials: large numer line to 10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procedure:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>. Cover &quot;0&quot;.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>. Students read numerals in order from 1-10.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>. Uncover &quot;0&quot; and students read.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>. Teacher, then, points to the numerals in random order and students give the word name for each.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suggested Activities: Grade(s)</td>
<td>Suggested Monitoring Procedures</td>
<td>Possible Resources</td>
</tr>
<tr>
<td>-------------------------------</td>
<td>---------------------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

District Resources
Student Learning Objective(s)  The student is able to read the numerals to 100.

<table>
<thead>
<tr>
<th>Suggested Objective Placement</th>
<th>State Goal</th>
<th>District Goal</th>
<th>Program Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>1,8</td>
<td>1,5</td>
<td></td>
</tr>
</tbody>
</table>

Related Area(s)

Suggested Activities: Grade(s) 1

<table>
<thead>
<tr>
<th>Title:</th>
<th>Group Size: small group</th>
<th>Materials: pointer, number line to 100</th>
</tr>
</thead>
</table>

Procedure:

1. Student or teacher points to any number on the number line, calling on another student to give the word names to five different numerals.
2. If the student can do this he/she can take a turn with the pointer and call on any student to name five other numerals.
3. The rest of the student monitor this and if the one who is reading the numeral makes a mistake, another student is chosen to read the numerals.

Title:  
Group Size: student or students  
Materials: flash cards with numbers to 100

Procedure:

1. Two students take turns giving the flash cards to each other or one student gives the cards to a group. The first person in the group who gives the correct response receives the card. The winner has the most cards and that student, in turn, holds up the individual cards for the other(s) to say. This activity can be done by the teacher with an entire group.

Mini-Test: "Reading Numerals to 100"

Group Size: one student  
Materials: selected numerals from 0-100 presented in random order on chalkboard, flannel-board, paper, etc.

Procedure:

1. Teacher points to the numerals one at a time and has the student name the numeral.

Possible Resources


District Resources
<table>
<thead>
<tr>
<th>Title:</th>
<th>Suggested Monitoring Procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td></td>
</tr>
<tr>
<td>small group with similar reading/spelling skills</td>
<td></td>
</tr>
<tr>
<td>Materials:</td>
<td></td>
</tr>
<tr>
<td>dictionary with numerals to 100 or more for each student</td>
<td></td>
</tr>
</tbody>
</table>

**Procedure:**

1. The teacher writes a word on the chalkboard for students to find in their dictionary. As students find the word, they stand up.

2. When three, four, or five people are standing, the teacher asks one of the students to give the page number on which the word is found.
Student Learning Objective(s)  The student is able to read any of the numerals to 999.

<table>
<thead>
<tr>
<th>State Goal</th>
<th>District Goal</th>
<th>Program Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>2, 5, 7</td>
</tr>
</tbody>
</table>

Related Area(s)

### Suggested Objective Placement

**Grade(s):** 2-3

### Suggested Activities: Grade(s) 2-3

<table>
<thead>
<tr>
<th>Title:</th>
<th>Group Size:</th>
<th>Materials:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Say It Right</td>
<td>entire classroom/groups</td>
<td>any of the following: numbered cards 0-999, number line 0-999, number board 0-999; pointer or number line which goes around the room</td>
</tr>
<tr>
<td>Color Out</td>
<td>small group or entire class</td>
<td>worksheet with number boards to 999 (can be made by students), crayons</td>
</tr>
</tbody>
</table>

### Suggested Monitoring Procedures

<table>
<thead>
<tr>
<th>Mini-Test:</th>
<th>&quot;Reading Numerals to 999&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>one student</td>
</tr>
<tr>
<td>Materials:</td>
<td>selected numerals from 0-999 presented in random order on chalkboard, flannel-board, paper, etc.</td>
</tr>
</tbody>
</table>

### Procedure:

Title: Say It Right

- Teacher points to a numeral at random. Students are to read them, or hold up a flash card and have student read it.

Title: Color Out

- Teacher points to the numerals one at a time and has the student name the numeral.

### Possible Resources


<table>
<thead>
<tr>
<th>District Resources</th>
</tr>
</thead>
</table>
### Suggested Activities: Grade(s) 2-3

<table>
<thead>
<tr>
<th>Procedure:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Teacher directs students to count by one’s, ten’s, five’s, two’s, etc.</td>
</tr>
<tr>
<td>2. Students circle each numeral as it is called or read out.</td>
</tr>
<tr>
<td>3. Students draw red circles for the ten’s, blue for the five’s, and so on.</td>
</tr>
<tr>
<td>4. After each, students describe any pattern they see.</td>
</tr>
</tbody>
</table>

### Possible Resources

<table>
<thead>
<tr>
<th>District Resources</th>
</tr>
</thead>
</table>
### Student Learning Objective(s)

The student is able to read any of the numerals to 9,999.

### Related Area(s)

| State Goal | 1 |
| District Goal | |
| Program Goal | 5 |

### Suggested Activities: Grade(s) 3-4

| Title: Tic-Tac-Toe |
| Group Size: partners with teacher supervision |
| Materials: worksheet for tic-tac-toe, 1"x2" cards with numerals to 9,999 written on them. |

### Procedure:

1. Teacher makes flash cards with numerals to 9,999 and places them face down on table. Students have one tic-tac-toe worksheet.
2. One student takes a card from the stock and if he/she reads it correctly, places an X or an O in the square of his choice. If he/she is incorrect and the other student knows the answer, the other student gets to place an X or O in the square of his choice.
3. If both students are incorrect, teacher reads the numeral to both students and places it back in the piles.
4. Follow these procedures until one student gets a tic-tac-toe.

### Possible Resources


### District Resources
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

District Resources
**Title:** Formboards  
**Group Size:** group of ten  
**Materials:** 10 pie tins, plaster of paris into each pie tin  

**Procedure:**  
1. Trace out a numeral in each pie tin. After the numerals have hardened, have each student trace his/her finger over the shape.  
2. Lay a sheet of paper over the form and the student writes the number, tracing the form.

**Title:** Salt Boxes  
**Group Size:** small group  
**Materials:** old ditto boxes, salt or sand  

**Procedure:**  
1. Pour salt or sand into the boxes and students practice tracing numerals in the salt box.  
2. Have students practice making the numerals in the air.  
3. Have students write the numerals first on extra large sheets of paper, gradually reducing the size of the paper.
<table>
<thead>
<tr>
<th>Suggested Activities:</th>
<th>Grade(s)</th>
<th>K</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Title:</th>
<th>Step Board Trace</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>individual</td>
</tr>
<tr>
<td>Materials:</td>
<td>step board</td>
</tr>
</tbody>
</table>

**Procedure:**
- Have students place paper over numerals of a step board and trace the numerals.

<table>
<thead>
<tr>
<th>Title:</th>
<th>Writing Numbers Rhyme</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>individual/entire class</td>
</tr>
<tr>
<td>Materials:</td>
<td>paper, pencils</td>
</tr>
</tbody>
</table>

**Procedure:**
- As students practice writing the numbers, teach them the following rhymes:

1. A zero goes around for a ride with nothing inside.
2. A straight line down is one – that’s fun.
3. Around and back on a railroad track – two, two, two.
4. Around a tree and around a tree – is three.
5. Down and over – then down once more – that’s four.
6. Five goes down and around. Put a hat on and see what you’ve got.
7. Down to a loop. A six rolls a hoop.
8. Across the sky and down from heaven – that’s seven.
9. Around to me; away around; down and back to me; then cross up and away.
Student Learning Objective(s): The student is able to write the numerals to 10.

<table>
<thead>
<tr>
<th>Suggested Objective Placement</th>
<th>K</th>
<th>State Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>District Goal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Program Goal</td>
</tr>
<tr>
<td>Related Area(s)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Suggested Activities: Grade(s): K

| 9  | Round a loop and down a line - makes a nine. |
| 10 | A one and a zero. Big ten is a hero.         |

Title: Math Recording

Group Size: individual

Materials: 10 6"x6" squares of cardboard, objects to form sets from 0-10, marking pen, glue, answer card

Procedure:
- Teacher glues objects to cards and labels each card, e.g., _____ pegs.
- Student records what he/she sees on each answer sheet.

<table>
<thead>
<tr>
<th>3 pegs</th>
<th>answer card</th>
</tr>
</thead>
</table>

Teacher observation of student activities.

-67-
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s): K</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title:</strong> Numerals and Stars</td>
<td><strong>Procedure:</strong></td>
<td>District Resources</td>
</tr>
<tr>
<td><strong>Group Size:</strong> individual</td>
<td>Teacher writes numerals 0-10 on the laminated cards. Student draws on sets of stars corresponding to the correct numeral.</td>
<td></td>
</tr>
<tr>
<td><strong>Materials:</strong> laminated cards with the numerals 0-10 on them, marking pencil</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| **Title:** Show and Write | **Procedure:** | |
| **Group Size:** individual | Make 10 sets of counters. Let set one contain one object. Write the numeral representing the set. Let set two contain two objects. Write the numeral representing the set. Let set three contain three objects. Write the numeral representing the set. Continue making sets until the last set is made with ten objects. Write the numeral representing the last set. Put the numerals in order from one to ten. Have students use these sets when writing the numerals to ten. | |
| **Materials:** counters, paper, pencil | | |
**Student Learning Objective(s)**

The student is able to write the numerals to 10.

**Related Area(s)**

**Suggested Activities: Grade(s) 2**

<table>
<thead>
<tr>
<th>Title:</th>
<th>Group Size: entire class</th>
<th>Materials: 1&quot; graph paper, pencil, color</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procedure:</td>
<td></td>
<td>Students place the numerals in the squares to see how many squares, or writes the numerals in the squares. (Write 1 to 10 on the first row, 11 to 20 on the second, 21 to 30, etc.)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Title:</th>
<th>Group Size: individual or small groups</th>
<th>Materials: graph paper (or ordinary paper), pencil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procedure:</td>
<td>Teacher gives random number between 0 and 100. Student will continue writing the consecutive numbers to 100 or another predetermined number less than 100.</td>
<td></td>
</tr>
</tbody>
</table>

**Mini-Test: Writing Numerals to 100**

<table>
<thead>
<tr>
<th>Group Size: entire class</th>
<th>Materials: paper and pencil</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procedure:</td>
<td>Teacher asks students to write selected numerals in random order.</td>
</tr>
<tr>
<td></td>
<td>Students write each numeral in turn.</td>
</tr>
<tr>
<td></td>
<td>Teacher asks students to write numerals in order (1-100) from memory in rows of 10.</td>
</tr>
</tbody>
</table>

**Possible Resources**


**District Resources**
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>District Resources</td>
</tr>
</tbody>
</table>
Student Learning Objective(s): The student is able to write the numerals to 100.

Suggested Objective Placement: 1-2

State Goal: 1

District Goal

Program Goal 7

Related Area(s)

Suggested Activities:

<table>
<thead>
<tr>
<th>Title:</th>
<th>Group Size: entire class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials: 1&quot; graph paper, pencil</td>
<td></td>
</tr>
</tbody>
</table>

Procedure:
- Students place the numerals in the squares to see how many squares, or writes the numerals in the squares. (Write 1 to 10 on the first row, 11 to 20 on the second, 21 to 30, etc.)

<table>
<thead>
<tr>
<th>Title: Missing Number Puzzle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size: individual or entire class</td>
</tr>
<tr>
<td>Materials: worksheet puzzle</td>
</tr>
</tbody>
</table>

Procedure:
- Have students fill in the missing numerals to the puzzle.

Example:

```
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>47</td>
<td>48</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>52</td>
</tr>
<tr>
<td>49</td>
<td>50</td>
<td>52</td>
</tr>
<tr>
<td></td>
<td>52</td>
<td>54</td>
</tr>
<tr>
<td>51</td>
<td></td>
<td>55</td>
</tr>
</tbody>
</table>
```

Suggested Monitoring Procedures:
- Teacher checks the written work of the students.
- Students check each other's work.

Possible Resources:
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
</table>

**Title:** Grab Bag  
**Group Size:** partners  
**Materials:** a bag with a large set of objects, pencil and paper

**Procedure:**
- One student reaches into the bag and removes his/her choice of the objects.
- This student writes a numeral representing the number of objects that were taken.
- The partner counts the remaining objects in the sack and records the number.

**Student Learning Objective(s):** The student is able to write any of the numerals to 999.

**Related Area(s):**

**State Goal:** 1

**District Goal:** Program Goal: 3, 5, 7

---

**Suggested Activities: Grade(s) 2-3**

<table>
<thead>
<tr>
<th>Title:</th>
<th>Numeral Sequence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>entire class</td>
</tr>
<tr>
<td>Materials:</td>
<td>1/2&quot; graph paper, pencil, coloring crayon</td>
</tr>
</tbody>
</table>

**Procedure:**

- Students write the numerals in the squares to see how many squares there are.
- **Extension:**
  - Color the multiples of three's orange, four's green, five's yellow, etc. "Is there a pattern?"

**Title:** Write One and Ten More

<table>
<thead>
<tr>
<th>Group Size:</th>
<th>small group or entire class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials:</td>
<td>pencil, paper</td>
</tr>
</tbody>
</table>

**Procedure:**

- The students will write the numbers as the teacher calls them off, or,
- The students will write the numbers, read off by the teacher or a student, and the following ten numerals (e.g., teacher says "789". Student writes 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799.).

---

**Suggested Monitoring Procedures**

<table>
<thead>
<tr>
<th>Mini-Test:</th>
<th>&quot;Writing Numerals to 999&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>entire class</td>
</tr>
<tr>
<td>Materials:</td>
<td>paper and pencil</td>
</tr>
</tbody>
</table>

**Procedure:**

- Teacher asks class to write selected numerals given in random order.
- Students write each numeral in turn.

---

**Possible Resources**


---

**District Resources**
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**District Resources**
**Student Learning Objective(s):** The student is able to read and write the number words to ten.

**Related Area(s):**

**Suggested Activities: Grade(s):** 1-2

<table>
<thead>
<tr>
<th>Title:</th>
<th>Lacing Board</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>individual</td>
</tr>
<tr>
<td>Materials:</td>
<td>9&quot;x11&quot; lacing board and yarn</td>
</tr>
<tr>
<td>(shoelace, string)</td>
<td></td>
</tr>
</tbody>
</table>

**Answer Card**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>two</td>
</tr>
<tr>
<td>2</td>
<td>eight</td>
</tr>
<tr>
<td>3</td>
<td>three</td>
</tr>
<tr>
<td>4</td>
<td>ten</td>
</tr>
<tr>
<td>5</td>
<td>one</td>
</tr>
<tr>
<td>6</td>
<td>four</td>
</tr>
<tr>
<td>7</td>
<td>five</td>
</tr>
<tr>
<td>8</td>
<td>seven</td>
</tr>
<tr>
<td>9</td>
<td>six</td>
</tr>
<tr>
<td>10</td>
<td>nine</td>
</tr>
</tbody>
</table>

**Procedure:**

- Student laces numbers with respective number words. When the lacing is completed, the student may check response by using the answer card in the pocket behind the board.

**Mini-Test:** "Write and Read Number Words"

<table>
<thead>
<tr>
<th>Group Size:</th>
<th>entire class write number words/individuals read number words</th>
</tr>
</thead>
</table>

**Materials:** paper and pencil

**Procedure:**

- Ask the class to write the number words from zero to ten as they are dictated by the teacher in random order.
- Students read the number words back to the teacher. After the words have been written, they are read back too in random order. The teacher points to each word to be read.

**Possible Resources**


<table>
<thead>
<tr>
<th>District Resources</th>
<th>1-2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Suggested Activities:</td>
<td>Grade(s) 1-2</td>
</tr>
<tr>
<td>----------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Title:</td>
<td>Number Words and Stars</td>
</tr>
<tr>
<td>Group Size:</td>
<td>partners</td>
</tr>
<tr>
<td>Materials:</td>
<td>11 blank cards for each student</td>
</tr>
<tr>
<td>Procedure:</td>
<td>Have the students:</td>
</tr>
<tr>
<td></td>
<td>- Write the number words zero to ten on the blank cards.</td>
</tr>
<tr>
<td></td>
<td>- Place the cards in order from left to right beginning with zero.</td>
</tr>
<tr>
<td></td>
<td>- Draw stars on each number card to show the number named by each number word.</td>
</tr>
<tr>
<td></td>
<td>- Compare the order of their number cards with that of their partners'.</td>
</tr>
<tr>
<td></td>
<td>- Compare the number of stars on each card with their partners'.</td>
</tr>
</tbody>
</table>

| Title:               | Number Words |                  |                   |
| Group Size:          | partners     |                                  |                   |
| Materials:           | slate or yarn |                                |                   |
| Procedure:           | Have students practice writing number words with partners on small chalk slates and write number words using yarn on colored paper. |                  |                   |

District Resources
### Student Learning Objective(s)
The student is able to read and write the number words to ten.

### Related Area(s)

### Suggested Activities:

**Title:** Number Wheel  
**Group Size:** individual  
**Materials:** 10 clothes pins (clip-on kind) with numbers 1-10 written on them

**Procedure:**
- The student takes a clothespin and pins the number word to correspond with the number on the wheel. The number word is written on the back so the student can check his own.

### Suggested Monitoring Procedures

- Give a spelling test of number words written from 1-10.
- The student will be able to write these correctly.

### Possible Resources

---

**District Resources**
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>District Resources</td>
</tr>
</tbody>
</table>

1.55
Student Learning Objective(s) The student is able to read the critical number words, e.g., ones, tens, hundreds, ten, twenty, thirty, etc.

Related Area(s) Reading, Spelling, Language

Suggested Activities: Grade(s) 2-3

Title: What's Your Hangup?
Group Size: small group
Materials: clothesline, paper socks with the number words on them, clothespins

Procedure:
- Hang a clothesline (or wire) across one end of the room (e.g., between two tables or across the bottom of a bulletin board).
- Mark regularly spaced intervals with a magic marker along the rope.
- Provide one or more sets of "socks". Each sock should bear a number word.
- Provide a sack of clothespins and a sack for the socks.
- Ask students to order the numerals in each set and hang them at the proper intervals.

Mini-Test: "Critical Number Words"
Group Size: one student
Materials: cards with the critical number words printed on them

Procedure:
- Ask the student to shuffle the critical number words and place them face down on a table.
- Student turns over the number words one at a time and reads the number words to the teacher or his/her partner.
- Words are placed in two piles when read, the "correct" pile and the "incorrect" pile.
- At the end of the Mini-Test student copies and studies any number words that were incorrect.
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>District Resources</td>
</tr>
</tbody>
</table>

1.2
Student Learning Objective(s) 

A. The student is able to write the numerals by two's to 100.  

B. The State Goal student is able to write the numerals by five's to 100.  

C. The student is able to write the numerals by ten's to 100.  

Related Area(s)  

Program Goal  

### Suggested Activities: Grade(s) 1-2

<table>
<thead>
<tr>
<th>Title</th>
<th>Group Size</th>
<th>Materials</th>
<th>Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Counting by Two's</td>
<td>small/large</td>
<td>1/2&quot; ruled graph paper, crayon, pencil</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procedure:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Each student is given a graph paper of 100 squares and will color the first square, skip the second, color the third, etc. Thus, the student will color every other square. When the student has finished, each student will take his/her pencil and write the numerals by two's in every square that is not colored.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Title</th>
<th>Group Size</th>
<th>Materials</th>
<th>Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Counting by Five's</td>
<td>students or student/small group</td>
<td>graph paper, scissors, pencil</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Procedure:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The student will cut the graph paper into sets of five and then record the numbers by 5's to 100.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Suggested Monitoring Procedures

- Teacher checks the students' written work of 2's, 5's and 10's to 100 with a test sheet.
- Mini-Test: "Writing by Two's and Five's"
- Group Size: entire class
- Materials: written exercise such as one below
- Procedure:
  - Ask students to write the missing numerals:

### Possible Resources

<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
</table>

Title: Counting by Ten's  
Group Size: small  
Materials: graph paper, scissors, pencil

Procedure:  
Students cut graph paper into strips of ten squares each out of the 100 square paper. After cutting the paper into ten-squared paper, the students record their findings by 10's.

```
  10  20  30  
  Etc.  
```
**SMALL SCHOOL PROJECT**

**Suggested Objective Placement**

<table>
<thead>
<tr>
<th>Student Learning Objective(s)</th>
<th>State Goal (1,7)</th>
<th>District Goal</th>
<th>Program Goal (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. The student is able to write the numerals by two's to 100.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. The student is able to write the numerals by five's to 100.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. The student is able to write the numerals by ten's to 100.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Related Area(s):**


**Suggested Activities: Grade(s) 2**

<table>
<thead>
<tr>
<th>Title:</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials: 1/2&quot; ruled graph paper, crayon, pencil</td>
<td></td>
<td>District Resources</td>
</tr>
</tbody>
</table>

**Procedure:**

- Each student is given a graph paper of 100 squares and will color the first square, skip the second, color the third, etc. Thus the student will color every other square.

- When the student has finished each student will take his/her pencil and write the numerals by two's in every square that is not colored.

![Graph Paper Example](image-url)
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Group Size:</strong></td>
<td>students or student/small group</td>
</tr>
<tr>
<td><strong>Materials:</strong></td>
<td>graph paper, scissors, pencil</td>
</tr>
<tr>
<td><strong>Procedure:</strong></td>
<td>The student will cut the graph paper into sets of five and then record the numbers by 5's to 100.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>etc.</td>
</tr>
<tr>
<td></td>
<td>5 10 15</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Possible Resources**
**Student Learning Objective(s)** The student is able to write the numerals by two's to 100.

<table>
<thead>
<tr>
<th>Related Area(s)</th>
</tr>
</thead>
</table>

**Suggested Activities:**

**Title:** Write the Next "Two"  
or  
Write the Next Even Number

**Group Size:** small group/entire class  
**Materials:** pencil and paper

**Procedure:**

1. Student or teacher says an even number between 0 and 98.
2. Other students write the next "two" or even number.

<table>
<thead>
<tr>
<th>Suggested Monitoring Procedures</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Possible Resources</th>
</tr>
</thead>
</table>

**District Resources**

**State Goal** 1, 7

**District Goal**

**Program Goal** 5
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>District Resources</td>
</tr>
</tbody>
</table>

184

185
Student Learning Objective(s)  The student is able to write by fives to 100.

Suggested Objective Placement  1-2

State Goal  1, 7

District Goal

Program Goal  5

Related Area(s)  

<table>
<thead>
<tr>
<th>Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Suggested Activities: Grade(s)  1-2

Title: The Next Five
Group Size: small group/entire
Materials: pencil and paper

Procedure:
1. Student or teacher says a multiple of five between 0 and 95.
2. Other students write the next five or multiple of five.

District Resources
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>District Resources</td>
</tr>
</tbody>
</table>

188 189
Student Learning Objective(s): The student is able to write numerals by tens to 100.

Suggested Activities: Grade(s) 1-2

<table>
<thead>
<tr>
<th>Title:</th>
<th>The Next Ten</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>small group/entire class</td>
</tr>
<tr>
<td>Materials:</td>
<td>pencil and paper</td>
</tr>
</tbody>
</table>

Procedure:
- Student or teacher is the "caller" and says a multiple of 10 between 0 and 90.
- The other students write the next ten or multiple of 10.

Possible Resources:
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
</table>

District Resources
Student Learning Objective(s): The student values the ability to read and write numerals as a useful skill in daily living.

<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>2-3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title:</strong> Our Numbers</td>
<td></td>
</tr>
<tr>
<td><strong>Group Size:</strong> large group</td>
<td></td>
</tr>
<tr>
<td><strong>Materials:</strong> none needed</td>
<td></td>
</tr>
</tbody>
</table>

**Procedure:**
- Discuss some ways that numbers are used in their daily life, e.g., clock, telephone, street numbers, house numbers, money, etc.
- Ask students if all the numbers were removed from these things how would they:
  - Know what time it was?
  - Dial the telephone?
  - Find streets?
  - Find homes?
  - Know how much money they have?
  - Etc.

<table>
<thead>
<tr>
<th>Suggested Monitoring Procedures</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Discuss problems students con-</td>
<td>Have students share ways they use numbers in reading and writing and how they would feel without them.</td>
</tr>
<tr>
<td>front when no numbers are used.</td>
<td></td>
</tr>
<tr>
<td>Monitor by their actions and</td>
<td></td>
</tr>
<tr>
<td>answers to discussion questions.</td>
<td></td>
</tr>
</tbody>
</table>

**Possible Resources**
- Local Newspaper

**District Resources**
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>District Resources</td>
</tr>
</tbody>
</table>

196

197
THE STUDENT KNOWS:

. the place value of ones and tens in base ten numeration.
. the place value of hundreds in base ten numeration is the third numeral from the right.
. the place value of thousands in base ten numeration is the fourth numeral from the right.

THE STUDENT IS ABLE TO:

. write the expanded form of any two-digit number, i.e., 34 = three tens + four ones.
. write the corresponding numeral from any two-digit number written in expanded form, i.e., three tens + four ones = 34.
. write the expanded form of any three-digit number, i.e., 342 = three hundreds + forty tens + two ones.
. write the corresponding numeral from any three-digit number written in expanded form, i.e., three hundreds + four tens + two ones = 342.
. write the expanded form of any four-digit number, i.e., 4,322 = four thousands + three hundreds + two tens + two ones.
. write the corresponding numeral from any four-digit number written in expanded form, i.e., four thousands + three hundreds + two tens + two ones = 4,322.
. round numbers to the nearest ten and hundred.
<table>
<thead>
<tr>
<th>PHYSICAL EDUCATION</th>
<th>MUSIC</th>
<th>SOCIAL STUDIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART</td>
<td>LANGUAGE ARTS</td>
<td>MATH</td>
</tr>
<tr>
<td>SCIENCE</td>
<td>HEALTH</td>
<td>READING</td>
</tr>
<tr>
<td>CAREER EDUCATION</td>
<td>ENVIRONMENTAL EDUCATION</td>
<td>OTHER</td>
</tr>
</tbody>
</table>
Student Learning Objective(s) A. The student knows the place value of ones and tens in base 10 numeration. B. The student is able to write the expanded form of any two digit numeral, e.g., \(34 = 3\) tens + 4 ones. C. The student is able to write the corresponding numeral from any two digit numeral written in expanded form. \((3\) tens + 4 ones = 34\)

Related Area(s)

Suggested Activities: Grade(s) 1

Title: What Number Am I?

Group Size: two to twelve students

Materials: chalkboard and chalk

Procedure:

Choose one student who stands before the group and makes a statement such as:

"I am thinking of a number that is one ten and three ones. If you know what the number is, raise your hand."

The leader then calls on a student who goes to the board and writes the numeral. If it is correct this player becomes the leader.

Extension:

The idea of hundreds and of thousands could also be practiced using this game.

Suggested Monitoring Procedures

Circle the number that has 5 tens.

\[65 \quad 59 \quad 81 \quad 72\]

etc.

Record the number correct.

or

Paper and pencil test with items similar to the following:

\[37 = (3)\) tens and (7) ones\]
\[46 = (4)\) tens and (6) ones\]

and

\[4\) tens and 7 ones = (47)\]
\[2\) tens and 9 ones = (29)\]

Mini-Test: "Ones and Tens"

Group Size: entire class

Materials: exercise as below

Procedure:

Complete:

What does the digit 4 mean in 49?

___________

What does the digit 9 mean in 49?

___________

What does the digit 0 mean in 60?

___________

What does the digit 6 mean in 60?

___________

Possible Resources


Chip Trading Activity, Book 1

Place Value Chart

Cuisenaire Rods

Dienes Blocks

Bean Sticks
Suggested Activities: Grade(s) 1

<table>
<thead>
<tr>
<th>Title:</th>
<th>Who Am I?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>whole class</td>
</tr>
<tr>
<td>Materials:</td>
<td>paper/pencil</td>
</tr>
</tbody>
</table>

Procedure:

Teacher prepares worksheets with the following questions and gives one to each student:

(Record in the space provided "Who I am").

a. I'm greater than 40 and my digits are 3 and 4.

b. I'm greater than 39 and my digits are 5 and 2.

c. I'm less than 42 and my digits are 5 and 1.

d. I'm less than 65 and my digits are 5 and 6.

e. I'm less than 53 and my digits are 6 and 1.

f. I'm greater than 47 and my digits are 8 and 1.

Possible Resources:


Student Learning Objective(s)  
A. The student knows the place value of ones and tens in base 10 numeration.  
B. The student is able to write the expanded form of any two digit numeral, e.g., \(34 = 3\) tens and 4 ones.  
C. The student is able to write the corresponding numeral from any two digit numeral written in expanded form. (3 tens + 4 ones = 34) 

<table>
<thead>
<tr>
<th>Related Area(s)</th>
<th>1,8</th>
<th>1,2,3</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>2</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Title:</th>
<th>Show Me The Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>whole class</td>
</tr>
<tr>
<td>Materials:</td>
<td>1/2&quot; graph paper and 12&quot; x 18&quot; construction paper</td>
</tr>
</tbody>
</table>

Procedure:  
Fold construction paper in half length wise, then fold up 4" from the bottom.

Cut 1/2" graph paper in groups of 10 and in individual units.

Example:

Teacher asks: "Who can show me 3?"
### Suggested Activities: Grade(s) 2

<table>
<thead>
<tr>
<th>TENS</th>
<th>ONES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Keep asking for numbers with a single digit, then ask, "Who can show me 12?" Some students will respond with 12 ones and some will use a ten stick and two units or ones. Teacher can then talk about the differences. Keep calling numbers until the students have the idea.

**Game:** Show Me A Larger Number

Ask the student to show a number with the paper squares then write their number on a sheet of paper and slip under flap.

**Example:**

Under flap place a paper with 25 on it.

Teacher comes around, says a number and the student lifts flap and shows the teacher.

- a. Divide class into two teams. Again have each student make a number, record that number and place under the flap.
- b. Pass out 6 markers, counters, bottle caps or beans to each student.
- c. Have one team get up and read as many numbers as they can within a certain time period. One or two minutes. Each time they name a number correctly the other students gives up a marker. The object is to read as many numbers as you can and collect as many markers as you can.
- d. If a student calls out a number incorrectly that student must give up a marker.
- e. Teacher calls time and the other team has a turn.

**Winner:** team with the most counters.

### District Resources
Student Learning Objective(s) A. The student knows the place value of 100's in base 10 numeration  
B. The student is able to write the expanded form of any three-digit numeral, i.e., (342 + 3 hundreds + 4 tens + 2 ones)  
C. The student is able to write the corresponding numeral from any three-digit number written in expanded form (3 hundreds + 4 tens + 2 ones = 342)

<table>
<thead>
<tr>
<th>Suggested Objective Placement</th>
<th>2-3</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>State Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,8</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>District Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,2,5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Program Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Related Area(s)</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s) 2-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same activities expanded to include hundreds, as described for objectives related to ones and tens.</td>
</tr>
<tr>
<td><strong>Title:</strong> What Three-Digit Number Am I?</td>
</tr>
<tr>
<td><strong>Group Size:</strong> entire class</td>
</tr>
<tr>
<td><strong>Materials:</strong> paper/pencil</td>
</tr>
<tr>
<td><strong>Procedure:</strong></td>
</tr>
<tr>
<td>Record Who I Am.</td>
</tr>
</tbody>
</table>
| (a) I have three digits: 2,4,6.  
I am the largest number possible. |
| (b) I have three digits all the same.  
I am between 250 and 400. |
| (c) I have three digits: 2,3,5.  
I am even. My tens digit is 5. |
| (d) I have three digits: 3,6,9.  
I am between 550 and 700, and I have 9 in one's place. |
| (e) I have three digits. I am less than 400.  
My tens digit is greater than my ones digit.  
My ones digit is greater than my hundreds digit. My digits are: 5,7,3. |

<table>
<thead>
<tr>
<th>Level of Difficulty:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommended as an activity for your &quot;front runners&quot; or the more able.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Suggested Monitoring Procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mini-Test:</strong> &quot;Place Value&quot;</td>
</tr>
<tr>
<td><strong>Group Size:</strong> entire class</td>
</tr>
<tr>
<td><strong>Materials:</strong> written exercise as below</td>
</tr>
<tr>
<td><strong>Procedure:</strong></td>
</tr>
<tr>
<td>In what place is each underlined digit?</td>
</tr>
<tr>
<td>239 ones</td>
</tr>
<tr>
<td>567 ones</td>
</tr>
<tr>
<td>375 ones</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Experiences in Mathematical Ideas, Vol. 1.</strong> National Council of Teachers of Mathematics, 1970, pp. 11-18</td>
</tr>
<tr>
<td>Twin Choice 3,4,5</td>
</tr>
<tr>
<td>Dienes Block</td>
</tr>
<tr>
<td>Place Value Chart</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>District Resources</th>
</tr>
</thead>
</table>

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209

---

210
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

District Resources

211

212
Student Learning Objective(s)  A. The student knows the place value of thousands in base numeration is the fourth numeral from the right.  B. The student is able to write the expanded form of any four-digit numeral, e.g., 4,322 = 4 thousands + 3 hundreds + 2 tens + 2 ones.  C. The student is able to write the corresponding numeral from any four-digit number written in expanded form, e.g., 4 thousands + 3 hundreds + 2 tens + 2 ones = 4,322.

Suggested Objective Placement  3-4

State Goal  1,8

District Goal

Program Goal  1,2,5

Related Area(s)

Suggested Activities: Grade(s)  3-4

Title: Expanded Notation Cards

Group Size: small group; entire class

Materials: cut a set of Expanded Notation Cards

Procedure:

- Teacher calls out a 3 or 4 digit number. Student then puts the appropriate cards together to show the number.

Example:

- Teacher says 3,742. The student puts down 3,000, places 700 on top, then 40 on that and finishes by placing 2 on the very top. By holding the number at the notched corner, the student can display 3742. The teacher should be sure to include some numbers with zero in them, i.e., 3402. The student would have no tens card but only 3000, 400, and 2.

Possible Resources

Suggested Monitoring Procedures

- Paper and pencil test with items like the following:

3567 = (3) thousands + (5) hundreds + (6) tens + (7) ones

and

5 thousand + 4 hundreds + 0 tens + 3 ones = (5,403)

- Circle the number that has 6 hundreds:

3762  6372  7632  3726

- District Resources
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
</table>

**District Resources**

215  

216
Student Learning Objective(s)  
A. The student knows the place value of thousands in base ten numeration.  
State Goal is the fourth numeral from the right.  
B. The student is able to write the expanded form of any four-digit number, i.e., $4,322 = \text{four thousands + three hundreds + two tens + two ones}$.  
The student is able to write the corresponding numeral for any four-digit number written in expanded form, i.e., four thousands + three hundreds + two tens + two ones = $4,322$.

**Related Area(s)**

**Suggested Activities:** Grade(s)  

<table>
<thead>
<tr>
<th>Title:</th>
<th>Models of Four-Digit Numbers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>small groups; entire class</td>
</tr>
<tr>
<td>Materials:</td>
<td>graph paper to show:</td>
</tr>
<tr>
<td></td>
<td>units of one</td>
</tr>
<tr>
<td></td>
<td>units of ten</td>
</tr>
<tr>
<td></td>
<td>units of 100</td>
</tr>
<tr>
<td></td>
<td>units of 1000 = 10 units of ten</td>
</tr>
</tbody>
</table>

**Suggested Monitoring Procedures**

<table>
<thead>
<tr>
<th>Mini-Test:</th>
<th>Expanded Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>Entire class</td>
</tr>
<tr>
<td>Materials:</td>
<td>Written exercise as below</td>
</tr>
<tr>
<td>Procedure:</td>
<td>Write in expanded form:</td>
</tr>
<tr>
<td></td>
<td>$5,326 = \underline{\text{thousands}} + \underline{\text{hundreds}} + \underline{\text{tens}} + \underline{\text{ones}}$</td>
</tr>
</tbody>
</table>

**Possible Resources**

- Experiences in Mathematical Ideas, Volume 1, National Council of Teachers of Mathematics, 1970, pp. 19-27
- Mathematics for Elementary School Teachers, NCTM, 1966, pp. 28-33
**Title:** Charting 4-Digit Numbers  
**Group Size:** Entire class  
**Materials:** Place Value Chart (see below)  
4 counters

**Procedure:**
1. Teacher names a 4-digit number, say 8,653.
2. Students place a counter on appropriate digit in each column.
3. Students write the number.
4. Students write number in expanded form, e.g.,
   \[ 8,653 = 8000 + 600 + 50 + 3 \]

---

### Place Value Chart

<table>
<thead>
<tr>
<th>Thousands</th>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>6</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>7</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

### District Resources

220
SMALL SQ1001PROJECT
Suggested Objective Placement
Student Learning Objective(s)

student is able t

3-4

ud numbers
State Goal

District Goal

011MAY.....M11....,14...

dn,.1...mwmom/!.alm

Program Goal

Related Area(s)

Suggested Activities:

Crade(s)

3-4

Suggested Monitoring

IIIIkINOMINIMINE..
Title:
Class Size:

Materials:

Possible Resources
Procedures

Number Line Rounding
Mini-Test:

"Rounding Numbers"

Group Size:

Entire class

Materials:

Exercises as below

partners

Adding machine tape (100"); a blade,
green and red crayons,

counting chips

Grossnickle, Foster E.,

Discoveriu Meanings in Elementary_
School Mathematics, Harper, Row &
Winston, 1973, pp. 177-78.

or markers
Procedure:
.

Procedure:
. Work together.

Round to nearest ten:
56

Use a black

crayon to draw a line

21

from end to end.

83
. Add arrows, dots, and number the
. Draw boxes around the dots for

dots (0-100)

.

multiples of 10.

. Round to nearest hundred:

. Color the first box red, the second

green, the
third red, the fourth green, and so on.

572
144

. Draw circles around all of the other dots.
, Color them to match
the box for the nearest ten.

776

I L943.4-11 q 10tt LOt IS4t1tttt.LottLitz
.

District Resources

The teacher names a number.

. The students place a counting chip

or marker on

the number.

. Move the marker to the left

or the right on the

number line to the closer 10 in order to round
to the nearest ten.
.

If neither is closer

move the counter to the ten

on the right.

-105-


<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

District Resources
The student knows:

- Addition is the combining of numbers.
- An addend is one of a set of numbers to be added. $4+2+3=9$
- A sum is the total of all addends.
- That adding zero to a number does not affect the sum.
- The addition facts with sums to nine. (mastery)
- The addition facts with sum to 18. (mastery)
- That the order in which two numbers are added does not change their sum (commutative property), i.e., $3+5=8$ or $5+3=8$.
- When adding three or more numbers, the way addends are grouped does not affect the sum (associative property), i.e., $(1+2)+4=1+(2+4)$

The student is able to:

- Add two two-digit numbers without renaming (carrying), i.e., $21+32=53$.
- Add three or more one-digit numbers.
- Add two three-digit numbers without renaming (carrying), i.e., $123+234=357$.
- Add three or more two-digit numbers with a sum of less than 100 without renaming (carrying), i.e., $21+23+14=58$.
- Add any numbers with two or more digits that require renaming (carrying), i.e., $26+48=74$.
- Add any three or more two-digit numbers, i.e., $39+65+87+88=279$.
- Add any two or more three-digit numbers with renaming.
- Add any two or more four-digit numbers with renaming.

The student values:
<table>
<thead>
<tr>
<th>Optional Goals and Activities</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Education</td>
<td>Music</td>
</tr>
<tr>
<td>Language Arts</td>
<td>Health</td>
</tr>
<tr>
<td>Career Education</td>
<td>Environmental Education</td>
</tr>
</tbody>
</table>
Student Learning Objective(s): The student knows addition is the combining of numbers.

Suggested Objective Placement: K-1

State Goal: 1, 7, 10

District Goal:

Program Goal:

Related Area(s):

Suggested Activities: Grade(s) K-1

Title: Bead Cards

Group Size: pairs/small groups/entire class

Materials: laminated bead cards with elastic to hold the 10 beads in place for counting. Draw a line down the middle of the card for sub-sets.

Procedure:

Students will work in pairs. One student will divide the beads into two sets, e.g., 6 and 4. The other students will count the beads in each set, e.g., 6 and 4. The student then will count them all together, i.e., 10. Now the students change jobs. The counting student now makes the sets and the set making student does the counting. They continue making as many sets as they can noting their sets always add to 10.

Teacher asks: "How many combinations can you make?"

Give students an opportunity to combine and determine the sum of a variety of sets of objects such as chips, students, books, sticks, etc.

Variation:

Give students worksheets to record answers.

Possible Resources:


Pagne, Joseph N. (editor), Mathematics Learning in Early Childhood Education, NCTM, 1976, p. 167

Bead Fact Finder
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>District Resources</td>
</tr>
</tbody>
</table>

230

231
### Student Learning Objective(s)
A. An addend is one of a set of numbers to be added.  
B. A sum is the total of all addends.

### Related Area(s)

### Suggested Objective Placement

<table>
<thead>
<tr>
<th>Grade(s)</th>
<th>1-3</th>
</tr>
</thead>
</table>

### Suggested Activities: Grade(s) 1-3

<table>
<thead>
<tr>
<th>Title:</th>
<th>Number Sentence Vocabulary (Addition)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>entire class</td>
</tr>
<tr>
<td>Materials:</td>
<td>paper, pencil, counters, word names on tagboard for: addend (2 cards) sum symbols on tagboard for: &quot;+&quot; and &quot;=&quot;</td>
</tr>
</tbody>
</table>

### Suggested Monitoring Procedures

#### Procedure:
1. Teacher and students form a physical model for $3+2=5$ with counters.  
2. Teacher and students write the number sentence for the model.  
3. Teacher and students read the number sentence together "Three plus two equals five."  
4. One student places the word name for the addend on the chalkrail beneath "3".  
5. Another student places the card for $+$ between the two numbers.  
6. Another student places the word name addend beneath the number "2".  
7. Another student places the symbol card $=$ in position.  
8. Finally another student places the word name sum below the number "5".  

### Possible Resources

- Baratta-Lorton, Mary, Mathematics Their Way, Addison-Wesley, 1976, pp. 219-220  
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>District Resources</td>
</tr>
</tbody>
</table>

234

235
### Suggested Objective Placement

**Student Learning Objective(s)**  
The student knows that adding zero to a number does not affect the sum.

**State Goal**  
1, 7, 10

**District Goal**

**Program Goal**

**Related Area(s)**

### Suggested Activities

|Grade(s)|
|---|---|
|1| |

**Title:** Can We Handle Zero?  
**Group Size:** individual or entire class  
**Materials:** worksheet and crayons

### Suggested Monitoring Procedures

- Oral questioning  
- Paper and pencil test  
- Mini-Test: "Adding Zero"  
- Group Size: entire class  
- Materials: exercise such as example below

**Procedure:**

Ask the students to circle problems where the sum is the same as the larger of the two addends.

**Example:**

<table>
<thead>
<tr>
<th>2</th>
<th>3</th>
<th>0</th>
<th>1</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>+0</td>
<td>+4</td>
<td>+8</td>
<td>+2</td>
<td>+1</td>
</tr>
</tbody>
</table>

### Possible Resources


### District Resources
### Suggested Activities: Grade(s) 1

**Procedure:**
- Students are asked to add all problems, recording the sums. Then they are to color all the problems that have a zero in the equation.
- Ask the student what happens to the sum when zero is one of the addends.

**Note:** See diagram.

**Title:**

**Group Size:** small group

**Materials:**
- 10 styrofoam cups
- 15 counters
- paper and pencil

**Procedure:**
- Set up five stations in different parts of the room.
- At each station there are two cups, paper and pencil.
- At each station place one to five counters in the first cup and none in the second.

**Directions to students:**
(a) Go to each station and count the number of counters in each cup.
(b) Determine the number of objects there will be when the counters in the two cups are joined in one cup.
(c) Write the addition fact involving zero to describe what has taken place in the activity with the cups.

\[
2 + 0 = 2
\]
Student Learning Objective(s): The student knows that adding zero to a number does not affect the sum.

Suggested Objective Placement: 1-2

State Goal: 1.7.10

District Goal:

Program Goal:

Related Area(s):

Suggested Activities: Grade(s) 2

<table>
<thead>
<tr>
<th>Title</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size</td>
<td>2 or 3 players</td>
</tr>
<tr>
<td>Materials</td>
<td>two sets of cards. One set with equations where zero is added to a number 20 or less (example: [20+0], [15+0]). One set of cards will be the corresponding answer cards to the equation cards, (example: [20] 15)</td>
</tr>
</tbody>
</table>

Procedure:
- Shuffle both sets of cards together. Lay all the cards face down in 5 or 6 rows. In turn, each player turns 2 cards face up. If they match, the student keeps the pair and takes another turn. If the cards do not match, they are placed face down in their former positions. The next player takes a turn, following the same procedure. The player having the most cards when all the cards have been matched, wins the game.

Suggested Monitoring Procedures:
- Paper-pencil test
- Student gives verbal response to flash cards

Possible Resources:
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>District Resources</td>
</tr>
</tbody>
</table>

212

213
### Student Learning Objective(s)

The student knows the addition facts with sums to nine (mastery).

### Suggested Objective Placement

<table>
<thead>
<tr>
<th>Grade(s)</th>
<th>Suggested Objective Placement</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>1-2</td>
</tr>
</tbody>
</table>

### State Goal

1, 7, 10

### District Goal


### Program Goal


### Related Area(s)


### Suggested Activities

<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>1</th>
</tr>
</thead>
</table>

### Title:

Nine Holes

### Group Size:

Pairs of students

### Materials:

- 2 tagboard strips with 9 holes,
- 2 cubes, one cube marked with numbers 0-5 and another cube marked with numbers 0-4 plus an extra 0,
- 9 golf tees for each student (18 total)

### Procedure:

Teacher directs as follows:

(a) First player rolls the dice.

(b) Player adds the addends and says the equation aloud (e.g., "Zero plus five equals five.").

(c) Player then puts a golf tee in the hole representing that sum (5).

(d) The next player takes a turn, following the same procedure.

(e) The first player to fill all 9 holes with golf tees wins the game.

(f) When there are only 2 or 3 holes left to fill, the first player to fill all 9 holes wins the game.

### Suggested Monitoring Procedures

Student often uses manipulative aids or other aids.

Mastery of addition facts with sums to nine implies that a student responds to oral or written queries without hesitation. That is, if asked "What is 6+3?" or if shown \[\begin{array}{c} 6 \\ +3 \end{array}\] in written form, the student responds instantly from memory. Check one student at a time.

### Possible Resources


---

**District Resources**

- 2
- A1
## Suggested Activities: Grade(s) 1

<table>
<thead>
<tr>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>fill, and a player does not get the needed combination, next player takes one turn.</td>
<td>Kelley, S. Jeanne, Learning Mathematics Through Activities, James E. Freel and Associates, Inc., 1973, p. 31</td>
</tr>
</tbody>
</table>

### Note:
Golf tees fit best if put through only one hole or piece of tagboard, rather than two.

### Title: Rocks, Paper, Scissors

### Group Size:
pairs of students

### Materials:
four fists (see diagram)

### Procedure:
- Teacher demonstrates to students the positions for rock, paper, scissors.
- Teacher then gives the following directions:
  - Students pound their fists together 3 times. On the third time, they each thrust out as many fingers as they want (up to 5).
  - Each student then adds the two sets of fingers together (adding both students' fingers).
  - The first student to call out the correct answer gets a point. The one with the most points wins.
- Teacher can set a time limit of 10 minutes.

### Diagrams:
- **Diagram 1**
  - [Diagram of fists representing rock, paper, scissors]
- **Diagram 2**
  - [Diagram of fists representing rock, paper, scissors]
Student Learning Objective(s): The student knows the addition facts with sums to nine. (mastery)

Suggested Activities:

- **Title:** Match Boxes
- **Group Size:** Individual
- **Materials:** Flat box (nylon stocking box), cardboard or tagboard to be cut into pieces to match the regions on the inside of the box lid, colorful picture to glue on the back of the cardboard or tagboard.

**Procedure:**

1. Making the match box:
   - (a) Cut tagboard to fit inside of box lid. (Make length and width 1/4" smaller than the box lid.)
   - (b) Glue picture to the tagboard with rubber cement.
   - (c) Rule inside of the box lid into rectangles of the same size. (Three rows of four regions each works well.)
   - (d) Rule the tagboard (not the picture side) into rectangles that match those of the box lid.
   - (e) Write problems and answers on a piece of paper, making sure that no problem or answer is repeated. Write the problems on the inside of the box lid, and the corresponding answers on the matching rectangles on the tagboard.
   - (f) Cut out the tagboard rectangles.

Possible Resources:

<table>
<thead>
<tr>
<th>Suggested Activities:</th>
<th>Grade(s) 2</th>
</tr>
</thead>
</table>

### Instructions for use:
1. Place answer pieces on the matching problem regions on the inside of the box lid.
2. Put the bottom of the box inside the lid. Press down firmly and turn the box and lid over. If each piece has been put in the correct place, the picture will have been put together and can be seen by removing the lid.

### Title:
Speedo - (Game)

### Group Size:
large group

### Materials:
- spinning wheel marked 0 to 9
- equation cards without answers:

   ![Spinning Wheel]

   (Make cards for every possible addition with sums 9 or less. If equation cards are 1"x3", they can all fit into a cottage cheese carton, and the spinner wheel can be made on the lid for a completely stored game.)

### Procedure:
1. Leader gives each student four equation cards. Students lay them on their desks and study them.
2. The leader spins the spinner and calls out the number. Any student who has an equation card whose sum is that number, calls out "Speedo". The first person to call out gets to read his/her equation card. If it makes a true equation, he/she gets to turn that equation card face down. (If the equation card does not match the number called out, the student does not turn over the equation card and if he/she has any cards turned over from previous turns, he/she must turn one back up.)

### Possible Resources
- District Resources
Student Learning Objective(s): The student knows the addition facts with sums to nine. (mastery)

Related Area(s):

Suggested Activities: Grade(s) 2

- The game continues until a student has turned over all four cards. That student wins and becomes the next "leader".

Variation:
- Make equation cards with:
  (a) Sums to 18.
  (b) Subtraction facts 9 or less.
  (c) Subtraction facts with sums 18 or less.

Possible Resources

District Resources
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>District Resources</td>
</tr>
</tbody>
</table>

254

255
**Student Learning Objective(s):** The student knows the addition facts with sums to nine (mastery)

<table>
<thead>
<tr>
<th>State Goal</th>
<th>District Goal</th>
<th>Program Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 7, 10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Related Area(s):**

**Suggested Activities:** Grade(s) 2

- **Title:** What Number Am I Now?
- **Group Size:** whole class
- **Materials:** paper-pencil

**Procedure:**
1. Record the number I am now in the following:
   - I am the number 7. Add 2 to me. What number am I now?
   - I am the number 3. Add 6 to me. What number am I now?
   - I am the number 4. Add 0 to me. What number am I now?

**Suggested Monitoring Procedures**
- Paper-pencil test
- Student answers flash cards

**Possible Resources**
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Distinct Resources</td>
</tr>
</tbody>
</table>

259

259
**Student Learning Objective(s)**
The student knows the addition facts with sums to nine. (mastery)

**State Goal**
1, 7, 10

**District Goal**

**Program Goal**

**Related Area(s)**

**Suggested Activities:**

**Grade(s):** 2

**Suggested Monitoring Procedures**

**Possible Resources**

---

**Title:** Round-n-Round

**Group Size:** entire class

**Materials:** paper-pencil

**Procedure:**

Give the missing number in each spoke of the wheel:

---

![Diagram of a wheel with numbers and operations](image-url)
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

District Resources
**Student Learning Objective(s)**
The student knows the addition facts with sums to 18. (mastery)

**Related Area(s)**

**Suggested Activities:**

**Grade(s)**: 2-3

<table>
<thead>
<tr>
<th>Title:</th>
<th>Bean Bag Toss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>partners</td>
</tr>
<tr>
<td>Materials:</td>
<td>two bean bags, large chart</td>
</tr>
<tr>
<td></td>
<td>(to be placed on the floor)</td>
</tr>
<tr>
<td>Sample:</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

**Procedure:**
1. Throw two bean bags onto the chart.
2. Add the two numbers shown in the squares in which the bean bags land.
3. The player with the higher score wins one point.
4. The first to score 10 points wins the game.

**Suggested Monitoring Procedures**

Mastery of addition facts with sums to 18 implies that a student responds to oral or written queries without hesitation. That is, if asked "What is 6+7?" or if shown \[ \begin{array}{ccc} 6 & +7 \\ \end{array} \] in written form, the student responds instantly from memory. Check one student at a time.

**Possible Resources**


**District Resources**
Suggested Activities: Grade(s) 2-3

Title: Circle Sums
Group Size: entire class
Materials: paper/pencil

Procedure:
1. Circle adjacent squares that add to a particular sum, e.g., 11. (Adjacent squares are squares that have a common side.)
2. Note the horizontal and vertical examples.

Possible Resources
Student answers flash card
Paper/pencil test

District Resources
Student Learning Objective(s): The student knows the addition facts with sums to 18. (mastery)

Suggested Objective Placement: 2-3

State Goal: 1.7.10

District Goal

Program Goal

Related Area(s)

<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s) 2-3</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title:</strong> Thinking</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Group Size:</strong> entire class</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Materials:</strong> paper/pencil</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Procedure:**
- Examine the one example that is given.
- Now think about what is required and complete the six tables.

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>12</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>5</td>
<td></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>4</td>
<td>7</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>8</td>
</tr>
</tbody>
</table>
# Complete the Sentences

**Title:** Complete the Sentences  
**Group Size:** entire class  
**Materials:** paper/pencil

## Procedure:

(a)  
\[ \square \quad \square = 2 \text{ different numerals} \]

(b) Complete the number sentences by writing the missing numerals in the frames:

<table>
<thead>
<tr>
<th>+</th>
<th>= 13</th>
<th>+</th>
<th>= 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>[ \square ]</td>
<td>[ \square ]</td>
<td>[ \square ]</td>
<td>[ \square ]</td>
</tr>
<tr>
<td>[ \square ]</td>
<td>[ \square ]</td>
<td>[ \square ]</td>
<td>[ \square ]</td>
</tr>
<tr>
<td>[ \square ]</td>
<td>[ \square ]</td>
<td>[ \square ]</td>
<td>[ \square ]</td>
</tr>
</tbody>
</table>

Possible Resources
Student Learning Objective(s): The student knows the addition facts with sums to 18. (mastery)

Suggested Activities: Grade(s) 3

Title: Group Size: individual
Materials: ditto copy of cut away worksheet or tagboard cut up in squares, scissors (if worksheet is used)

Procedure:
1. Cut out the squares. Fit them together so that the edges that touch name the same numbers.

Example:

```
    7    3+5
    5

5+2    9
6+1
```

Variation:
1. Match other cards to all sides of original card.

Diagram of cut-away worksheet:

```
   4   9   1   3+4   2+5
  2  10  8   1     6
  3+5 0+2 6+1 9+2 3
4+5
  5 2+1 6+9 7+2 9 8
  1+3 3+9 7 9 8
  7 6+3 10 10+3 3+2
   5 5 8
```

Suggested Monitoring Procedures:
1. Teacher uses flash cards to check facts.
2. Teacher observes student in math activity.
3. Paper and pencil test of math facts with sums to 18.

Possible Resources:
### Solitary

**Title:** Solitary

**Group Size:** individual

**Materials:** cards with addition facts to 18 and sums to correspond to the facts. Include ten, twenty, or twenty-five facts.

**Example:** Cards 3"x2"

### Procedure:

1. Shuffle the cards.
2. Place them face down on the table in a pile.
3. Turn up one card at a time, placing it face down on the table, not in the pile.
4. When a fact and its sum match place them in a separate pile face up.

### Search 'n Circle

**Title:** Search 'n Circle

**Group Size:** individual

**Materials:** worksheet of Search 'n Circle

**Procedure:**

1. Give copies of this number puzzle to students.
2. Ask them to follow the written directions. (See below.)

**Written directions:**

- Circle 10 addition equations.

**Variation:**

- Circle 10 subtraction equations. Can you find more?

**Example:**
Student Learning Objective(s): The student knows the addition facts with sums to 18.

<table>
<thead>
<tr>
<th>State Goal</th>
<th>District Goal</th>
<th>Program Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,7,10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Related Area(s): 1, 7, 10

Suggested Objective Placement: 2-3

Suggested Activities: Grade(s) 3

Diagram of Search 'n Circle game:

```
<table>
<thead>
<tr>
<th>4</th>
<th>7</th>
<th>11</th>
<th>9</th>
<th>2</th>
<th>8</th>
<th>10</th>
<th>4</th>
<th>14</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>6</td>
<td>15</td>
<td>8</td>
<td>7</td>
<td>6</td>
<td>13</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td>13</td>
<td>1</td>
<td>12</td>
<td>3</td>
<td>9</td>
<td>2</td>
<td>7</td>
<td>8</td>
<td>5</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
<td>12</td>
<td>5</td>
<td>7</td>
<td>9</td>
<td>11</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>11</td>
<td>8</td>
<td>19</td>
<td>3</td>
<td>16</td>
<td>1</td>
<td>18</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>6</td>
<td>10</td>
<td>12</td>
<td>8</td>
<td>4</td>
<td>17</td>
<td>12</td>
</tr>
<tr>
<td>6</td>
<td>8</td>
<td>14</td>
<td>4</td>
<td>10</td>
<td>6</td>
<td>4</td>
<td>9</td>
<td>13</td>
</tr>
<tr>
<td>6</td>
<td>3</td>
<td>9</td>
<td>2</td>
<td>12</td>
<td>9</td>
<td>3</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>11</td>
<td>4</td>
<td>16</td>
<td>8</td>
<td>8</td>
<td>15</td>
<td>10</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>
```

Possible Resources

District Resources
### Title:
Peek-A-Fact

### Group Size:
Individual

### Materials:
These cards are made by the teacher:
- Two 3"x6" tagboard cards divided into squares 1½"x1½".
- Staple the addition equation on the corresponding answers.

<table>
<thead>
<tr>
<th>9</th>
<th>3</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>+9</td>
<td>+7</td>
<td>+0</td>
<td>+6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6x2</th>
<th>6+1</th>
</tr>
</thead>
<tbody>
<tr>
<td>6x2</td>
<td>6+1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>18</th>
<th>10</th>
<th>5</th>
<th>12</th>
</tr>
</thead>
</table>
| Staple | **TOP CARD**
These are cut individually and stapled on the bottom card where the answer matches the equation.

<table>
<thead>
<tr>
<th>12</th>
<th>PEAK-A-FACT</th>
<th>13</th>
</tr>
</thead>
</table>
| Staple | **BOTTOM CARD**

### Procedure:
The student reads the number fact that is on the top of the card, e.g., (9+9). Then they determine what they think is the answer and check themselves by lifting up the card and finding the correct answer.
Student Learning Objective(s): The student knows the addition facts with sums to 18. (mastery)

Related Area(s): W11.1.,

Program Goal:

Suggested Objective Placement: 2-3

Suggested Activities:

Variation:
- Write the under fact, say 9x9, and then the answer you think is, say 18. Then peek to see if you are right.
- Counters can be used if needed.

Title: Spin-A-Sum
Group Size: pairs
Materials: 9x12 sheets that look like the following. These should be laminated or covered with contact paper, crayon.

Procedure:
- Each student needs a sheet like the above and a crayon. In turn, the students spin their own spinner and determine the difference. They then
 mark the answer with an "x" on the 3x3 grid (e.g., the spinner points to +4. The answer, 11, is marked with an "x" on the grid only once. The next player follows the same procedure on their own 9x12 sheet. The first player to get 3 in a row wins. Up and down, across, etc. When they are finished, the student wipes the sheet off with a paper tissue for the next player.

Note: See following page for directions on how to make a spinner.
DIRECTIONS
CONSTRUCTING SPINNERS

Of the several ways that spinners may be constructed, the method described below is one of the simplest.

Materials needed:  
spinner dial(s)  
chipboard on which to mount spinner dial(s)  
clear self-stick plastic  
spinner arrow(s) - ticket board or plastic  
No. 4 (1 inch) brass fastener(s)  
small washer(s)  
plastic drinking straw  
glue  
masking tape

Step 1 - Cut spinner dial to fit chipboard or vice versa.

Step 2 - Attach spinner dial to chipboard.

Step 3 - Cover spinner dial with clear self-stick plastic: overlap, fold over, and secure plastic to underside of chipboard (cut off the excess plastic at each corner so that it will fold neatly without "bunching" up).

Step 4 - Make a small slit at the center of each spinner dial with a pointed Exacto blade. (Do not make the slit any larger than needed in order to be able to force through a brass fastener -- see Step 9.)

Step 5 - Cut a 5mm length of plastic drinking straw for each spinner.

Step 6 - Make a small washer from ticket board for each spinner if you do not have a metal washer. (Just punch a quarter-inch hole and trim to a hexagonal shape.)

Step 7 - Make a spinner arrow from ticket board or plastic for each spinner: the arrow should be about one-half inch wide and from two to two and a half inches long. The hole should be punched as nearly in the middle as possible.

Step 8 - Put the piece of straw, arrow and washer on the brass fastener: make sure that the straw is inside the washer and arrow holes and that the arrow is nearest the head of the fastener.

Step 9 - Push the fastener through the slot in the spinner board, bend the fastener prongs flat against the chipboard and use masking tape to hold them in this position.

If assembled correctly, the small piece of drinking straw will hold the head of the fastener away from the spinner dial and the washer will keep the arrow from rubbing on the dial, allowing it to rotate freely.
Student Learning Objective(s) The student knows that the order in which two numbers are added does not change their sum. (commutative property) e.g., $3+5 = 8$, or $5+3 = 8$.

Suggested Objective Placement 1-2

State Goal

District Goal

Program Goal

Related Task(s)

Suggested Activities: Grade(s) __?

Title: Fido Facts

Group Size: individual or small group

Materials:
- 11 heavy duty paper plates (small size)
- 20 brads (brass fasteners)
- brown railroad board
- 1 9x12 red construction paper
- glue or rubber cement

Teacher makes 20 dog ears from brown cardboard and 10 dog faces (on plates).

On each ear write a numeral 0-9. (There will be 2 ears for each number.) On the dog’s red tongue write a number 0-11.

Procedure:

- Students choose a plate, look at the number on the tongue, and find two ears whose sum equal that number. Fasten ears to dog with brads.

The students will see that the sum will remain the same no matter which side of the dog either ear is placed. They will also find that there are various combinations of numbers making one sum.

Individual students can show teacher commutative property using counters and recording on paper using equations.

Possible Resources


Baratta-Lorton, Mary, Mathematics Their Way, Addison-Wesley, 1976, pp. 181-182


District Resources
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Title: Pebbles In A Bag</th>
<th>Group Size: small group or whole class</th>
<th>Materials: paper bag, pebbles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procedure:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Have a student put several pebbles in a bag as the class observes. (Class watches, hears, pebbles drop, and participant feels pebble.) Record the number of pebbles on the board.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Have another student add more pebbles to the bag. Write the number sentence on the board.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Class guesses how many pebbles are in the bag. A student can then remove all the pebbles from the bag and answer the equation.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leave the equation on the board, going through steps 1 through 3 again, only reversing the equation to read 5+3=8.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have the students &quot;make a rule&quot; about the two equations. (Elicit the law of commutativity.)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Suggested Monitoring Procedures:
Student demonstrates commutativity using objects and recording number sentence.

Possible Resources:
E.S.D. 109
Film: F-1887a "Commutativity"
### Suggested Objective Placement

<table>
<thead>
<tr>
<th>State Goal</th>
<th>District Goal</th>
<th>Program Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-3</td>
<td>1, 7, 10</td>
<td></td>
</tr>
</tbody>
</table>

### Related Area(s)

### Student Learning Objective(s)

A. The student knows that when adding three or more numbers the way the addends are grouped does not affect the sum, associative property, e.g., \((1+2)+4 = 1+(2+4)\).

B. The student is able to add three or more one-digit numbers.

### District Resources


### Suggested Activities: Grade(s) 1

<table>
<thead>
<tr>
<th>Title</th>
<th>Group Size</th>
<th>Materials Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trains</td>
<td>4</td>
<td>2&quot;x3&quot; cards with numerals 0-4 on the cards</td>
</tr>
<tr>
<td>Cops and Robbers</td>
<td>pairs</td>
<td>Two sets of cards: one with two facts together, e.g., ([3+1], [2+3], [0+2]), etc. One with a single number on it, e.g., ([4, 5, 2]), etc.</td>
</tr>
</tbody>
</table>

### Mini-Test

**Grouping Property of Addition**

- **Group Size:** one student
- **Materials:** 10 or more counters
- **Procedure:**
  1. Ask the student to create a physical model of the problem \(1+2+4\) with counters.
  2. Student shows:

```
  O  O  O  O
```

  3. Ask student to group counters \((1+2)+4\), then \(1+2(2+4)\) and compare results.
  4. Are their sums the same?
  5. What do you conclude:

### Possible Resources

<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s):</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Group Size:</strong></td>
<td>individual, entire class</td>
<td></td>
</tr>
<tr>
<td><strong>Materials:</strong></td>
<td>containers such as dixie cups or paper plates or pie plates with numerals on them (1-9); counters, beans or paper straws</td>
<td></td>
</tr>
<tr>
<td>Procedure:</td>
<td>Students are given straws in a cup with the number of straws labeled on the cup. Students are also given three empty cups in which they rearranged the straws into three different groupings using all the straws. The students record their findings with paper and pencil.</td>
<td></td>
</tr>
</tbody>
</table>
**Student Learning Objective(s)**

A. The student knows that when adding three or more numbers the way addends are grouped does not affect the sum (associative property) \((13 + 12) + 14 = 14 + (13 + 12)\).

B. The student is able to add three or more one-digit numbers.

**Related Area(s)**

**Suggested Activities: Grade(s) 2-3**

<table>
<thead>
<tr>
<th>Title</th>
<th>Group Size</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group-A-Pin</td>
<td>entire class</td>
<td>cord or rope for clothesline or edge of box and set of clothespins of 3 different colors.</td>
</tr>
</tbody>
</table>

**Procedure:**

1. Snap groups of the colored clothespins onto the clothesline or box edge.
   - e.g., 3 red, 1 yellow, and 2 green clothespins.
2. Ask how many clothespins altogether.
3. Then slide middle groups next to the first group, How many? \(3+1+4\).
4. Then add the total to the last group (2) to get 6.
5. You can write the equations on the chalkboard:

   \[(3+1) + 2 = 6\]

6. Then regroup the clothespins, placing the middle pin with the last group, etc.

**Suggested Monitoring Procedures**

- Paper and pencil test.
- Teacher observes students in an activity.

**Possible Resources**


**District Resources**
<table>
<thead>
<tr>
<th>Title:</th>
<th>Target Practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>small groups or pairs</td>
</tr>
<tr>
<td>Materials:</td>
<td>75 by 90 cm tagboard, 5 aluminum foil pie pans and brass paper fasteners</td>
</tr>
</tbody>
</table>

**Procedure:**

1. Make a target practice board by fastening five aluminum-foil pie pans to the tagboard with paper fasteners.
2. For scoring, paint numerals as shown (or with your own variation of) numbers.
3. Lay the tagboard on the floor and mark a throwing line 1.5 meters from it.
4. Let each student throw three bean bags.
5. The student then totals the points scored.
6. The student with the highest sum gets a point.
7. The first student to get 10 points is the winner.
SMALL SCHOOL PROJECT

Student Learning Objective(s): The student is able to add two two-digit numbers without renaming (carrying), e.g., 21+32 = 53.

Suggested Objective Placement

State Goal

1.7.10

District Goal

Program Goal

Related Area(s)

Suggested Activities: Grade(s) 1

Title: Spin-A-Sum

Group Size: pairs of students

Materials: 9"x12" tagboard worksheets laminated or covered with clear contact paper, two different colored crayons and cleaning rag, spinner with addition problems.

Suggested Monitoring Procedures

Teacher checks worksheet with addition of two 2-digit numbers.

Possible Resources


District Resources

Procedure:

Teacher gives each student a sheet and crayon, and the following directions:
(a) Each student takes turns spinning the spinner and determines the sum.
(b) The student then marks the answer with an "x" on the 3X3 grid (e.g., spinner points to 43 and the answer is 69.
\[ +26 \]
Student puts an "x" on 69 (only once).
(c) The next student follows the same procedure on his/her own sheet.
(d) The first student to get 3 "x's" in a row wins.
(e) When the game is over, students wipe the sheets off with a tissue or rag.
(f) Students should check each other for the correct answers.

Title: Beansticks
Group Size: small or large group
Materials: beansticks and individual beans (beansticks: paste 10 beans on a tongue depressor); paper plates (white and colored)

Procedure:
Teacher gives each student three paper plates (one should be a different color), and a supply of beansticks and loose beans.
Teacher gives students addition problems to solve involving two-digit numbers (e.g., 23
\[ +41 \]
The beansticks represent units of ten and the loose beans units of one.
Teacher directs students to place the beansticks necessary to add up to the first addend (23 would require two beansticks and 3 single beans) in one plate. The student then places 4 beansticks and one single bean in another plate (41). On the third or colored plate, student joint the two sets and finds the total is 6 tens and 4 ones, or
Student Learning Objective(s) The student is able to add two 3-digit numbers without renaming (carrying), e.g., \(123 + 234 = 357\).

Related Area(s).

Suggested Activities: Grade(s) 2

Title: Spin the Answer
Group Size: pairs of students
Materials: 5"x11" card with spinner and tic-tac-toe grid with the answer to the problems on the spinner. (Mount on colored paper 9"x12" and laminate.)

Directions: The pairs of students play against each other. Each student has a playing card. Player A spins spinner to a problem, then places a marker on the answer to the problem on the board. Player B follows the same procedure, placing a marker on his own tic-tac-toe chart. The first player to have three markers in a row on a card wins.

Possible Resources

Title: Spin the Answer
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Possible Resources
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>District Resources</td>
</tr>
</tbody>
</table>

3.3

3.4
**Student Learning Objective(s)**  The student is able to add three or more 2-digit numbers with a sum of less than 100 without renaming (carrying), e.g., $21 + 23 + 14 = 58$.

**State Goal**

**District Goal**

**Program Goal**

**Related Area(s)**

**Suggested Objective Placement** 2-3

**Related Area(s)**

**Suggested Activities:** Grade(s) 2-3

**Title:**

**Group Size:** small group of 2-3 students

**Materials:** 3"x4" cards numbered 0-9, a box to hold the cards, a dittoed recording sheet for each student.

**Example:**

```
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>/</td>
<td>/</td>
</tr>
</tbody>
</table>
```

```
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>/</td>
<td>/</td>
</tr>
</tbody>
</table>
```

**Procedure:**

1. Put the mixed number cards in the box.
2. One student picks a card with a number on it and the other students write that digit in any square on their record sheet.
3. Put that number card back on the table. (You may put it back in the box if you wish.)
4. Continue to draw numbers until all blanks are filled.
5. When all blanks are filled, add up the addends.
6. The winner is:
   (a) The player who builds the least sum, or
   (b) The player who builds the largest sum.

**Possible Resources**


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**District Resources**

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<table>
<thead>
<tr>
<th>Suggested Activities</th>
<th>Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>District Resources</td>
</tr>
</tbody>
</table>

3.7

-150

3.5
Student Learning Objective(s). The student is able to add any numbers with two or more digits that require renaming (carrying), e.g., \(26 + 48 = 74\).

**Suggested Activities:** Grade(s) 3

**Title:** Shopping

**Group Size:**

**Materials:** catalogs: Sear’s catalog, seed catalog, toy catalog, discount store catalog, book catalog, camping goods catalog, appliance catalog, automotive parts catalog, sporting goods catalog, etc.

**Procedure:**

- Using 3X5 cards, write a series of tasks requiring students to locate items, write amounts, and add numbers in order to solve problems.
- **Example:**

  ```
  Bicycle \( \$69.95 \)  \text{price of each}
  Bookcase \( \$34.50 \)  \text{Total}
  ```

- Have a sheet on which students can compute and share their answers.
- Students can make a poster advertising the product they choose as the best buy, or
- Show students how to make books containing one coupon for each item they decide to buy.

**Note:** If the cards were laminated, the student could solve the problem on the cards.

**Possible Resources**

- *Experiences in Mathematical Ideas: Volume 1*, National Council of Teachers of Mathematics, pp. 56-61
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>District Resources</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Learning Objective(s)**  
The student is able to add any three or more 2-digit numbers, e.g.,  
\[ 77 + 88 = 279. \]

**Suggested Objective Placement**  
3-4  

<table>
<thead>
<tr>
<th>State Goal</th>
<th>District Goal</th>
<th>Program Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1,7,10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Activities: Grade(s)** 3-4

<table>
<thead>
<tr>
<th>Patchwork Snake</th>
</tr>
</thead>
</table>

**Suggested Monitoring Procedures**

- **Paper/pencil test**
- **Observe the student in an activity.**

**Possible Resources**


**District Resources**


---

The students sew together scraps of fabric, about a foot in length, to make a long walk path.

A section pin or write a problem (these could be added and glued on so the student may write...
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>3-4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suggested Monitoring Procedures</td>
<td></td>
</tr>
<tr>
<td>Possible Resources</td>
<td></td>
</tr>
</tbody>
</table>

To play the game, all players begin at start. A non-playing official will hold the answer sheet to check the answers.

Player throws the dice and moves the number of patches indicated.

The player must work the problem on which he or she lands and call out the answer.

If the player does not have the correct answer the player must go back to the starting point.

The first player to reach the finish is the winner.

**Title:** Newspaper Idea  
**Group Size:** individual or small group  
**Materials:** newspapers, scissors, paste, pencil and paper

**Procedure:**

- Give students a list of groceries needed for dinner. Have the students locate the advertised price of the items in the newspaper. Then, have them cut and paste their grocery list with the prices to a plan sheet of newsprint. Last, have the students total the price of the items listed.

**Title:** Weigh-In  
**Group Size:** small group  
**Materials:** bathroom scale, paper and pencil

**Procedure:**

- Have the students weigh themselves on the scale and record their weight. Then have the students determine the total weight of the group by adding all the individual weights.

- Extension: Have students compare their total group weight to the weight of a car, truck, refrigerator, water bed, etc. This will force the students to research (ask questions of the experts or read) about the specific items.
**Student Learning Objective(s)**

A. The student is able to add two or more 3-digit numbers with renaming.

B. The student is able to add two or more 4-digit numbers with renaming.

**Related Area(s)**

**Suggested Activities: Grade(s) 3-4**

- **Title:** Addition on a Place Value Chart
- **Group Size:** small group, entire class
- **Materials:** paper, pencil or crayon, 50 counters

**Procedure:**

1. Make a place value chart by dividing the paper into 3 parts and labeling each column as shown.

2. Use these steps to find the sum of numbers that are each less than 500:
   
   (a) Put counters for each number on your chart.

   (b) Regroup counters if there are 10 or more in a column. Ten ones are replaced by one 10. Ten tens are replaced by one 100.

   (c) Write the addition problem that is shown by your display.

3. Choose other pairs of numbers and find their sums.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Suggested Monitoring Procedures**

Paper and pencil test.

**Possible Resources**


<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
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</tr>
</thead>
</table>

District Resources
The student knows:

- that subtraction is the inverse of addition.

- that subtracting zero from a number does not affect the sum.

- the minuend is the quantity from which another quantity is to be subtracted, i.e., 6 - 3 = 3.

- the subtrahend is the quantity to be subtracted from another, i.e., 4 - 1 = 3.

- the subtraction facts with sums less than five. (mastery)

- the subtraction facts with sums less than nine. (mastery)

- the subtraction facts with sums of 18 or less. (mastery)

- the difference is the result of subtracting one quantity from another, i.e., 5 - 3 = 2.

The student is able to:

- subtract a one-digit number from a one- or two-digit number without renaming (borrowing), i.e., 8 - 2 = 6, 25 - 2 = 23.

- subtract a two-digit number from a two-digit number without renaming (borrowing), i.e., 48 - 26 = 22.

- subtract a one-digit number from a two-digit number requiring renaming (borrowing), i.e., 17 - 8 = 9.

- subtract a two-digit number from a two-digit number requiring renaming (borrowing), i.e., 37 - 28 = 9.

- subtract a one-, two- or three-digit number from a three-digit number requiring renaming (borrowing), i.e., 463 - 7 = 456, 463 - 27 = 436 and 463 - 187 = 276.
<table>
<thead>
<tr>
<th>Optional Goals and Activities</th>
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</thead>
<tbody>
<tr>
<td>Physical Education</td>
</tr>
<tr>
<td>Music</td>
</tr>
<tr>
<td>Social Studies</td>
</tr>
<tr>
<td>P.E.</td>
</tr>
<tr>
<td>Language Arts</td>
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<tr>
<td>Math</td>
</tr>
<tr>
<td>Science</td>
</tr>
<tr>
<td>Health</td>
</tr>
<tr>
<td>Reading</td>
</tr>
<tr>
<td>Career Education</td>
</tr>
<tr>
<td>Environmental Education</td>
</tr>
<tr>
<td>Other</td>
</tr>
</tbody>
</table>

322 323
Student Learning Objective(s)  The student knows that subtraction is the inverse of addition.

Suggested Objective Placement  1-3

State Goal

District Goal

Program Goal  6,7

Related Area(s)

Suggested Activities: Grade(s)  1

Title: Blastoff

Group Size: individual or entire class

Materials: duplicated rocket worksheet

Procedure:

- Student makes the rocket blast off by working problems correctly from bottom to top.

Variation:

- Teacher draws rocket on blackboard and students place answers on a separate piece of paper.

Variation:

- Teacher draws rocket on blackboard and students place answers on a separate piece of paper.

Suggested Monitoring Procedures

Teacher observation

Paper-pencil test

Student verbalization

Mini-Test: "Related Sentences"

Group Size: entire class

Materials: exercises to develop the related subtraction sentences from given addition sentences

Procedure:

- Write the related subtraction sentences for:

  3 + 4 = 7

  4 + 3 = 7

Possible Resources

Addition and Subtraction Are Related, (filmstrip), Audio-Visual Division, Holt, Rinehart and Winston, Inc.

District Resources
Title: **Pebble Bag**  
Group Size: whole class or small group  
Materials: paper bags, pebbles

**Procedure:**
1. Pre-determine an equation, such as \(3 + 5 = 8\).
2. Call on student to put 3 pebbles in a bag (class will see and hear pebbles drop into bag). Draw a bag on the board with 3 pebbles in it.
3. Another student can add 5 more pebbles to the bag. As he/she does, the teacher adds a set of 5 pebbles to the board drawing.

**Board Drawing:**

![Diagram of pebbles in a bag](image)

- Ask: "How many pebbles are in the bag? Someone prove it."
- A student can take the pebbles out of the bag, dropping each on the table while the class counts aloud. Put all 8 pebbles back in the bag.
- Restate the addition equation. Show the inverse by having students remove 3 pebbles (erase set of 3 on the board, having class participate in same manner).
- Remove the remaining pebbles, which the students discover will be 5 by counting. Write equation under drawing \(8 - 3 = 5\).
Student Learning Objective(s): The student knows that subtraction is the inverse of addition.

Suggested Objective Placement: 1-3

State Goal: 1.7.10

District Goal:

Program Goal: 6,7

Related Area(s):

Suggested Activities: Grade(s) 2-3

Title: Number Trail

Group Size: individual or entire group

Materials: duplicated number trail

Procedure:

- Have students work through the trail to find the ending number by adding or subtracting the number indicated. Example of trail:

```
Start
+9
-9
+3
-6
+6
End
```

Variation:

- Supply the ending number and have students work through to find the starting number.

Suggested Monitoring Procedures:

- Teacher observation.
- Paper-pencil test.
- Student verbalization.

Possible Resources:


District Resources
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

District Resources:
Student Learning Objective(s) The student knows that subtraction is the inverse of addition.

Suggested Activities: Grade(s) 2-3

Title: Basic Fact Wheel
Group Size: pairs of students
Materials: tagboard, compass, scissors,

Procedure:
1. Each student begins with ten points, chips or any object that could refer to points.
2. The first student takes his/her turn by moving the window on the wheel spinner, adding 4 to show a number (2, for example); the second student gives the answer 6. A point is lost if the answer is incorrect.
3. Turns alternate in choosing the basic facts. The answer to each basic fact will appear in the window on the opposite side of the wheel as:

Give ten problems in the form 4+2=6. The student should give subtraction form 6-2=4.

Possible Resources
The game ends when one student has lost all the points. Notice that one side of the basic fact wheel shows one operation; the other side shows the opposite operation.

Title: Flash Cards  
Group Size: pairs  
Materials: tagboard, felt marker

Procedure:  
- Make flash cards with addition facts on one side and subtraction opposite on the other side.  

Example:

<table>
<thead>
<tr>
<th>Front</th>
<th>Back</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 + 2</td>
<td>6 - 2</td>
</tr>
<tr>
<td></td>
<td>6 - 4</td>
</tr>
</tbody>
</table>

- Give each pair of students 20 cards. One student flashes and the other student gives the opposite fact(s) in subtraction or addition form. If the student gives the right answer, he/she gets the card.  
- After each student has the opportunity to be a flasher, each adds their total cards. The one that has the most cards is the winner.
Student Learning Objective(s): The student knows that subtracting zero from a number does not affect the sum.

<table>
<thead>
<tr>
<th>State Goal</th>
<th>District Goal</th>
<th>Program Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.7.10</td>
<td></td>
<td>6,7</td>
</tr>
</tbody>
</table>

Related Area(s)

<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Baratta-Lorton, Mary, Mathematics Their Way, Addison-Wesley, 1976, p. 190</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Title:</th>
<th>Group Size:</th>
<th>Materials:</th>
</tr>
</thead>
<tbody>
<tr>
<td>'Concentration'</td>
<td>2 or 3 players</td>
<td>make two sets of cards, one with equations where 0 is subtracted from a number—example:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>-4 -0 = 0? 5 0 = ?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Second set of cards will have the corresponding answer to the equation cards—example:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>4 5</td>
</tr>
</tbody>
</table>

Procedure:
- Teacher shuffles both sets of cards together and lays all cards face down in 5 or 6 rows.
- Student, in turn, turns two cards over.
- If cards match, student keeps the pair and gets another turn.
- If the cards do not match, they are placed face down in former positions.
- The game ends when all cards have been taken by the players and the student with the most pairs wins.

Mini-Test: "Subtracting Zero"
Group Size: entire class
Materials: exercise in subtraction with zero as the subtrahend
Procedure:
- Ask students to circle problems where the difference is the same as the minuend.
  Example:
  6 2 8 5 9
  -0 -1 -2 -0 -8

Baratta-Lorton, Mary, Mathematics Their Way, Addison-Wesley, 1976, p. 190
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

District Resources
Student Learning Objective(s)  A. The minuend is the quantity from which another quantity is to be subtracted, i.e., $6 - 3 = 3$. B. The subtrahend is the quantity to be subtracted from another, i.e., $4 - 3 = 1$. C. The difference is the result of subtracting one quantity from another, i.e., $5 - 3 = 2$.

Related Area(s)

Suggested Activities: Grade(s) 1-2

<table>
<thead>
<tr>
<th>Title:</th>
<th>Number Sentence Vocabulary (Subtraction)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>entire class</td>
</tr>
<tr>
<td>Materials:</td>
<td>paper, pencil, counters, word names on tagboard for: minuend, subtrahend</td>
</tr>
<tr>
<td></td>
<td>symbols on tagboard for: &quot;+&quot; and &quot;-&quot;</td>
</tr>
</tbody>
</table>

Procedure:

1. Teacher and students form a physical model for $5 - 3 = 2$.
2. Teacher and students write the number sentence for $5 - 3 = 2$.
3. Teacher and students read the number sentence together: "five minus three equals two".
4. One student places the word name card for minuend on the chalkrail beneath 5.
5. Another student places the card for $-$ between the two numbers.
6. Another student places the card for subtrahends on the chalkrail beneath the number 3.
7. Another student places the symbol card $=$ in position.
8. Another student places the word name for difference below the number 2.

Suggested Monitoring Procedures

<table>
<thead>
<tr>
<th>Mini-Test:</th>
<th>&quot;Vocabulary in a Subtraction Sentence&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>entire class</td>
</tr>
<tr>
<td>Materials:</td>
<td>see exercise below</td>
</tr>
</tbody>
</table>

Procedure:

1. Ask students to do the following in the number sentence $5 - 2 = 3$:
   - Draw a circle around the minuend.
   - Enclose the subtrahend with a triangle.
   - Place a box or square around the difference.

Possible Resources

- D'Augustine, Charles, Multiple Methods of Teaching Mathematics in the Elementary School, Harper and Row, 1973, pp. 112-113
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
</table>

District Resources
Student Learning Objective(s) The student knows the subtraction facts with sums less than five. (mastery)

Related Area(s)

Suggested Activities: Grade(s)

Title: Spin-A-Difference
Group Size: pairs of students
Materials: 9" x 12" sheets, laminated or covered with contact paper, 2 crayons

Procedure:
1. Give one sheet to each student.
2. Teacher directs students to spin his/her spinner and determine the difference.
3. The student marks the answer with an "X" on the grid (inset) only once.
4. The next player does the same with his/her own sheet.

Mastery of subtraction facts with sums less than 5 implies that a student responds to oral or written queries without hesitation. That is, if asked "What is 5 minus 2?" or if shown \( \frac{5}{2} \) or \( \frac{5-2}{-2} \) in written form the student responds instantly from memory. Check one student at a time.

Possible Resources

Baratta-Lorton, Mary, Mathematics Their Way, Addison-Wesley, 1976, pp. 221-224

District Resources
Title: Peek-A-Fact

Group Size: individual

Materials: 3"x6" cards made by teacher

Procedure:
- Staple the top card to the bottom card where the answers match the equation.

TOP CARDS - these are cut individually and stapled onto the bottom card where the answers match the equation.

<table>
<thead>
<tr>
<th>4</th>
<th>2</th>
<th>3</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>-3</td>
<td>-1</td>
<td>0</td>
<td>-3</td>
</tr>
</tbody>
</table>

BOTTOM CARD

- Student reads the number fact that is on the top of the card (e.g., 4-3).
- Student then determines the answer and checks by lifting up the card and finding the correct answer.
Student Learning Objective(s)  
A. The student knows the subtraction facts with sums less than nine.  
B. The student knows the subtraction facts with sums of 18 or less.

Suggested Objectives Placement  2-3

State Goal  1,7,10

District Goal

Program Goal  6

Related Area(s)

Suggested Activities: Grade(s) 2-

Title: Barn Spin

Group Size: individual or teams of two and four

Materials: make barn wheel and subtraction cards from heavy tagboard

Mastery of subtraction facts with sums to 18 implies that a student responds to oral or written queries without hesitation. That is, if asked, "What is 13-7?" or if shown \[
\begin{array}{c}
13 \\
-7
\end{array}
\]
in written form, the student responds instantly from memory. Check one student at a time.

Possible Resources


District Resources
Suggested Activities: Grade(s) 2-3

Possible Resources

**Procedure:**
1. Teacher deals the cards to the students or teacher can select one student to deal.
2. Each student takes turns spinning the spinner. The player tries to spin a sum that is found on one of the playing cards. If the sum matches the card held by the player, the subtraction card is placed in the barn pocket.
3. The object is to get rid of all the cards.

**Title:** Subtract A Square

**Group Size:** individual

**Materials:** worksheet

**Procedure:**
1. Teacher directs students to subtract across and down.

```
\[
\begin{array}{ccc}
\text{Subtract A Square} \\
9 & 6 & 3 \\
5 & 2 & 3 \\
1\frac{1}{7} & 4\frac{1}{7} & \\
\end{array}
\]
```

Teacher directs students to fill in the correct answer in the blank squares.
Suggested Objective Placement 2-3

Student Learning Objective(s)

A. The student knows the subtraction facts with sums less than nine. (mastery)
B. The student knows the subtraction facts with sums of 18 or less. (mastery)

Related Area(s)

Suggested Activities: Grade(s) 2-3

<table>
<thead>
<tr>
<th>Title:</th>
<th>Subtraction Cards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>small group</td>
</tr>
<tr>
<td>Materials:</td>
<td>write 20 subtraction combinations on cards with sums less than nine; write the answers on 20 other cards.</td>
</tr>
</tbody>
</table>

Suggested Monitoring Procedures

See previous page for suggested procedure.

Possible Resources

Pagne, Joseph N. (editor), Mathematics Learning in Early Childhood, NCTM, 1976, pp. 178-180
Then the player must draw. If the card drawn is a match, player may draw again. If card is not a match, player gives up turn.

The first player to lay down all the cards in pairs is the winner.
**Small School Project**

**Student Learning Objective(s)**

A. The student is able to subtract a one-digit number from a two-digit number without renaming (borrowing), e.g., 25 - 2 = 23.

B. The student is able to subtract a two-digit number from a two-digit number without renaming (borrowing), e.g., 48 - 26 = 22.

**District Goal**

1, 7, 10

**Program Goal**

1, 2, 6

**Related Area(s)**

---

**Suggested Objective Placement**

---

**Suggested Activities**

<table>
<thead>
<tr>
<th>Grade(s)</th>
<th>Title</th>
<th>Group Size</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-2</td>
<td>Bean Sticks and Beans</td>
<td>any number</td>
<td>bean sticks (10 beans glued to a tongue depressor), beans, ditto worksheet or laminated card (for individual work)</td>
</tr>
</tbody>
</table>

**Suggested Monitoring Procedures**

- Paper-pencil test.
- Teacher observes students making new sets using bean sticks and beans and recording answer.

**Possible Resources**

<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
</table>

District Resources
SMALL SCHOOLS PROJECT

Suggested Objective Placement 2-3

Student Learning Objective(s) A. The student is able to subtract a one-digit number from a two-digit number, requiring (borrowing), e.g., 17-8=9. B. The student is able to subtract a two-digit number from a two-digit number, requiring renaming (borrowing), e.g., 37-28=9.

Related Area(s)

Suggested Activities: Grade(s) 2-3

Title: Stump The Experts

<table>
<thead>
<tr>
<th>Group Size:</th>
<th>entire class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials:</td>
<td>duplicated worksheet of items like those shown below:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>34</th>
<th>41</th>
<th>36</th>
<th>25</th>
</tr>
</thead>
<tbody>
<tr>
<td>-6</td>
<td>-7</td>
<td>-8</td>
<td>-7</td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>33</td>
<td>28</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td></td>
<td>94</td>
<td>86</td>
<td>20</td>
<td>77</td>
</tr>
<tr>
<td>-8</td>
<td>-9</td>
<td>-3</td>
<td>-8</td>
<td></td>
</tr>
<tr>
<td>86</td>
<td>67</td>
<td>17</td>
<td>59</td>
<td></td>
</tr>
</tbody>
</table>

Procedure:
- Teacher directs students to circle the incorrect answers and write correct answer below. Several students could have a race to see who finishes first, or work against the clock.

Extension:
- Include the subtraction of two-digit numbers from two-digit numbers requiring renaming.

Variation:
- Make worksheet with two-digit numbers subtracted from two-digit numbers requiring renaming, i.e.,
  - 34 26 45
  - -16 -17 -26
  - 18 9 19

- Have students circle incorrect answers and write correct answer below.

Suggested Monitoring Procedures

Paper-pencil test on these types of problems.

Possible Resources

Record success on practice sheets with suggested types of problems.

District Resources
<table>
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<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>District Resources</td>
</tr>
</tbody>
</table>

3:3
Student Learning Objective(s) A. The student is able to subtract a one-, two- or three-digit number from a three-digit number, requiring renaming (borrowing), e.g., 463-7=456; 463-27=436 and 463-187=276.

Related Area(s)

Suggested Activities: Grade(s) 3

Title: Subtraction 500

Group Size: individual or pair of students

Materials: racetrack with worksheets

Procedure:

1. On a bulletin board or large table make a racetrack with Start, Finish and four pit stops.
2. At the Start, and at each pit stop, place an envelope with five subtraction problems more difficult at each stop. For example, Start—should have problems in which a one-digit number is subtracted from a 3-digit number; pit stop #1, problem in which a 2-digit number is subtracted from a 3-digit number; at pit stop #2, etc.
3. Each student begins with the start sheet. When these problems are correctly solved, the student moves the car to the first pit stop, solves problems and moves to the next pit stop, and so on until he/she has finished the race.
4. Choose one student to be official "checker" for each pit stop. Give that student an answer sheet for the problems.

Possible Resources

Experiences in Mathematical Ideas, Volume 1, NCTM, 1970, pp. 62-65


District Resources
<table>
<thead>
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<th>Possible Resources</th>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Possible Resources
that multiplication can be pictured as the combination of equal sets.

a factor is one of two or more quantities having a designated product.

a product results when two numbers are multiplied.

the product of any number multiplied by the factor of zero is zero (6 x 0 = 0).

the product of any number multiplied by the factor of one is that number (3 x 1 = 3).

* the multiplication facts with products through 81 (mastery).

The student is able to:

* multiply one-, two- and three-digit numbers by a one-digit number: 4 x 5 = 20

<table>
<thead>
<tr>
<th>x5</th>
<th>x 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>110</td>
<td>1,110</td>
</tr>
</tbody>
</table>

- estimate products using concepts of "greater than" and less than".

The student values:

* the quick and accurate recall of facts.
<table>
<thead>
<tr>
<th>Optional Goals and Activities</th>
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</thead>
<tbody>
<tr>
<td><strong>Physical Education</strong></td>
</tr>
<tr>
<td><strong>Music</strong></td>
</tr>
<tr>
<td><strong>Social Studies</strong></td>
</tr>
<tr>
<td><strong>Art</strong></td>
</tr>
<tr>
<td><strong>Language Arts</strong></td>
</tr>
<tr>
<td><strong>Math</strong></td>
</tr>
<tr>
<td><strong>Science</strong></td>
</tr>
<tr>
<td><strong>Health</strong></td>
</tr>
<tr>
<td><strong>Reading</strong></td>
</tr>
<tr>
<td><strong>Careers Education</strong></td>
</tr>
<tr>
<td><strong>Environmental Education</strong></td>
</tr>
<tr>
<td><strong>Other</strong></td>
</tr>
</tbody>
</table>
**Suggested Objective Placement**

<table>
<thead>
<tr>
<th>Learning Objective(s)</th>
<th>The student knows that multiplication can be pictured as the combination of equal sets.</th>
</tr>
</thead>
</table>

**Activities:** Grade(s) 3

**Possible Resources**

- Number Line
- Peg Board
- Bead Frame

**Suggested Monitoring Procedures**

- **Mini-Test:** "Showing Multiplication Through Equal Sets:

- **Group Size:** entire class
- **Materials:** pencil and paper
- **Procedure:** Make a drawing to show 3 x 2 by means of sets

**Solution**

```
3 x 2
```

- **Possible Resources**

- **District Resource**

```
3 x 2
```

**Possible Resources**

- Number Line
- Peg Board
- Bead Frame

**District Resource**

```
3 x 2
```
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>3</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Title:</th>
<th>Multiplication Using Sets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>entire class</td>
</tr>
<tr>
<td>Materials:</td>
<td>three disjoint sets, i.e., sets in which no member belongs to any other set</td>
</tr>
</tbody>
</table>

**Procedure:**
- Ask each student to determine the number of items in each of the three sets.
- Write the multiplication sentences for the three sets, e.g., $3 \times 2 = 6$.

**Possible Resources**

**District Resources**
Student Learning Objective(s) A. The student knows a factor is one of two or more quantities having a designated product. B. The student knows that a product results when two numbers are multiplied.

Suggested Objective Placement

State Goal 1, 7, 18

District Goal

Program Goal

Related Area(s)

Suggested Activities: Grade(s) __________

Title: Multiple Ways of Reading Multiplication Sentences

Group Size: small group or entire class

Materials: counters

Procedure:

1. Have students make an array to show six sets of five counters.
2. Then have students write the multiplication sentences that describe their picture.
3. Have students read these number sentences together: "Six times 5 equals 30." 6x5 = 30
4. Have students read to indicate they know how to describe these sentences using the terms factors and product: "The product of the factors 6 and 5 equals 30."

Possible Resources

Pagne, Joseph N. (editor), Mathematics Learning in Early Childhood, National Council of Teachers of Mathematics, 1976, p. 183


District Resources
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
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<tbody>
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<td></td>
<td></td>
<td>District Resources</td>
</tr>
</tbody>
</table>

3.7

3.6
**Title:** Using Zero as A Factor  
**Group Size:** entire class  
**Materials:** overhead projectors

**Procedure:**
1. Use an overhead projector or chalkboard to develop examples such as the following with the students:

   - $2 \times 2 = 4$  
   - $1 \times 2 = 2$  
   - $0 \times 2 = 0$

2. Do several more examples such as $2 \times 0$, $3 \times 0$, $5 \times 0$, to develop what happens to the products when 0 is used as a factor.

**Mini-Test:** "Factors of Zero"  
**Group Size:** entire class  
**Materials:** exercise with a variety of one-digit factors including zero

**Procedure:**
- Students are to circle all problems where the product is "0".

**Example:**

<table>
<thead>
<tr>
<th>$\times$</th>
<th>$0$</th>
<th>$8$</th>
<th>$4$</th>
<th>$5$</th>
<th>$1$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1\times$</td>
<td>$x$</td>
<td>$0\times$</td>
<td>$x\times$</td>
<td>$x\times$</td>
<td>$x\times$</td>
</tr>
</tbody>
</table>

---

**Possible Resources**

Suggested Activities: Grade(s) 3

Title: Special Property of Zero
Group Size: entire class or small groups
Materials: paper cups, buttons or beans

Procedure:
1. Divide the class or group and give them six cups and twelve buttons or beans. Have each group use four of the six cups and place two buttons or beans in each cup. Ask them how many cups they are using, how many buttons or beans are in each cup and how many buttons or beans in all. Write a multiplication sentence on the board showing the total number of beans.
2. Have the groups use three cups with no buttons or beans. Ask them how many cups they are using and how many buttons or beans in all.
3. Have a student write a multiplication sentence on the board showing how many buttons or beans in all. Repeat this procedure until the concept of zero as a factor is well understood.

District Resources
Student Learning Objective(s) The student knows the product of any number multiplied by the factor of one is the number, e.g., 3 x 1 = 3.

Related Area(s)

Suggested Activities: Grade(s) 3

| Title         | One As A Factor
|---------------|------------------|
| Group Size    | entire class
| Materials     | overhead projector, 1/2" graph paper

Procedure:
1. Teacher draws a grid on the overhead, similar to students' graph paper.
2. Teacher gives multiplication problem (e.g., 3 x 1) and teacher marks it off on the grid and students on their graph.
3. Teacher gives students various problems using the factor of one (e.g., 1 x 3, 1 x 2, 2 x 1, etc.)

Grid on overhead and graph paper.

Suggested Monitoring Procedures

| Mini-Test     | "Factors of 1"
|---------------|------------------|
| Group Size    | entire class
| Materials     | Exercise with a variety of one-digit factors including 1

Procedure:
1. Students are to circle all problems where one factor neither increases or decreases the other factor.
Example:

\[
\begin{array}{cccc}
0 & 5 & 2 & 1 & 4 \\
\times 2 & \times 1 & \times 7 & \times 6 & \times 0 \\
\end{array}
\]

Possible Resources


Title: Bean Bag Toss

Group Size: pairs of students

Materials: 2 bean bags, matrix draw on butcher paper or made with masking tape on the floor, multiplication facts are on the matrix

Procedure:

Matrix drawn on paper on floor.

<table>
<thead>
<tr>
<th></th>
<th>7</th>
<th>1</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>x</td>
<td>x2</td>
<td>x1</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>x5</td>
<td>x1</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>x9</td>
<td>x1</td>
<td></td>
</tr>
</tbody>
</table>

Each player tosses a bean bag and tells the answer to the combination in that square. The player having the greater product scores a point. If the products are equal, neither player scores a point. The player with the most points wins the game.
SMALL SCHOOL PROJECT

**Student Learning Objective(s)**
The student knows the product of any number multiplied by the factor of one is the number, e.g., \(3 \times 1 = 3\).

**Related Area(s)**

<table>
<thead>
<tr>
<th>Suggested Objective Placement</th>
<th>State Goal</th>
<th>District Goal</th>
<th>Program Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>1, 7, 10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Suggested Activities: Grade(s)** 3

**Title:** Factor of One  
**Group Size:** small group/entire class  
**Materials:** crayon, newsprint

**Procedure:**
1. Have students draw an array to show \(1 \times 4 = 4\) and label their drawing.  
2. Have students draw an array to show \(4 \times 1 = 4\) and label their drawing.  
3. Have students draw an array to show \(1 \times 7 = 7\), label it, and so on.

**Possible Resources**
Student Learning Objective(s) The student knows the multiplication facts with products through 81 (mastery).

<table>
<thead>
<tr>
<th>Suggested Objective Placement</th>
<th>State Goal</th>
<th>District Goal</th>
<th>Program Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-5</td>
<td>1,7,10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Related Area(s)  

<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>3-5</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Title: Egg Carton Multiplication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size: partners</td>
</tr>
<tr>
<td>Materials: egg carton, 81 counters</td>
</tr>
</tbody>
</table>

Procedure:

- **7's** Start by putting 7 counters in one pocket.
- Write the multiplication fact $\frac{7}{1\times 7}$.
- Put 7 counters in the second pocket, and so on until counters have been put in each of 9 pockets.
- Write the multiplication fact that is shown by the display each time counters are put in another pocket.
- **8's** Do the same thing with sets of 8 counters.
- **9's** Do the same thing with sets of 9 counters.

Mastery of Multiplication facts implies that a student responds to oral or written queries without hesitation. That is, if asked, "What is 6 times 7?" or shown in written form $6\times7$ or the student responds instantly.

Possible Resources


District Resources
<table>
<thead>
<tr>
<th>Suggested Activities:</th>
<th>Grade(s)</th>
<th>2-5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title:</strong></td>
<td>Products Race</td>
<td></td>
</tr>
<tr>
<td><strong>Group Size:</strong></td>
<td>partners</td>
<td></td>
</tr>
<tr>
<td><strong>Materials:</strong></td>
<td>multiplication-charts</td>
<td></td>
</tr>
</tbody>
</table>

**Procedure:**

1. Complete the multiplication chart below by writing the product where the row and the column for the factors meet.

```
   x  0  1  2
  3   0  3
  5   0 15
  7   0 21
```

2. Play "Product Race" with a friend.

3. Write four factors across the top of one of the blank charts and four factors at the side. Use factors that are less than 10.

4. Trade charts with your friend. See who can complete the other's chart first.
Student Learning Objective(s) The student is able to multiply one-, two- and three-digit numbers by a one-digit number: 4 \times 5 = 20 \quad 22 \quad 222 \\
\begin{array}{c}
\times 5 \\
110 \\
\end{array} \\
\begin{array}{c}
\times 5 \\
1110 \\
\end{array} \\

Suggested Objective Placement 3-5

State Goal 1, 7, 10

District Goal

Program Goal

Related Area(s)

Suggested Activities: Grade(s) 3-5

Title: Multiplication Toss

Group Size: partners

Materials: 3 cubes marked from 1 through 6
10 counters

Procedure:

1. Roll the cubes. One player arranges them for the other player to solve.
2. Then the other player arranges them in a different order to make a problem for the first player to solve. In each case, the factor must be less than 10.
3. Each time a problem is solved correctly, the player takes a counter.
4. The winner is the player who receives 5 counters first.

Possible Resources

<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

District Resources
**SMALL SCHOOLS PROJECT**

**SUBJECT:** Mathematics

**SPECIFIC AREA:** Whole Numbers: Division

<table>
<thead>
<tr>
<th>Page</th>
<th>Suggested Grade Placement</th>
</tr>
</thead>
<tbody>
<tr>
<td>199</td>
<td>3-4</td>
</tr>
<tr>
<td>203</td>
<td>3-5</td>
</tr>
<tr>
<td>205</td>
<td>3-4</td>
</tr>
<tr>
<td>207</td>
<td>3</td>
</tr>
</tbody>
</table>

The student knows:
- that division is the inverse of multiplication.
- the basic division facts (mastery).

The student is able to:
- divide a one- or two-digit number by a one-digit number without remainders.

The student values:
- the quick and accurate recall of facts.
<table>
<thead>
<tr>
<th>Optional Goals and Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Education</td>
</tr>
<tr>
<td>Music</td>
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<tr>
<td>Social Studies</td>
</tr>
<tr>
<td>Art</td>
</tr>
<tr>
<td>Language Arts</td>
</tr>
<tr>
<td>Math</td>
</tr>
<tr>
<td>Science</td>
</tr>
<tr>
<td>Health</td>
</tr>
<tr>
<td>Reading</td>
</tr>
<tr>
<td>Career Education</td>
</tr>
<tr>
<td>Environmental Education</td>
</tr>
<tr>
<td>Other</td>
</tr>
</tbody>
</table>
The student knows division is the inverse of multiplication.

**State Goal**

1.7.10

**District Goal**

**Program Goal**

**Related Area(s)**

<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Materials:</strong> 12 blocks for each student, 3 boxes for each student</td>
<td><strong>Materials:</strong> 12 or more counters</td>
<td>Pagne, Joseph N., <em>Mathematics Learning in Early Childhood</em>, National Council of Teachers of Mathematics, 1976, p. 187</td>
</tr>
</tbody>
</table>

**Grades 3-4**

| **Title:** Division Wheel | **Procedure:** Use your counters to form an array to show 3x4=12 that is: 
| **Group Size:** individual or small group |  |  |
| **Materials:** tagboard, compass, scissors, brass fasteners (pairs). Make 2 circles of tagboard and paste them together. On the face write the numbers 1 through 9 and on the reverse, write the product of 1 through 9 multiplied by the factor you are working with. (Example: Using 8 as the factor, the numbers would be 8, 16, 24, etc.) Cut a |  |  |

-199-
Suggested Activities: Grade(s) 3-4

Procedure:
- Each student begins with 25 points. The first student takes a turn by moving the window on the wheel spinner (multiplying) to show a number (e.g., 2). The second student gives the answer (16). A point is lost for an incorrect answer. Turns alternate. The answer to each basic fact will appear in the window on the opposite side of the wheel as shown.
- The game ends when one student has no points left.

## District Resources

<table>
<thead>
<tr>
<th>Procedure:</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

![Diagram of the wheel spinner](attachment://wheel_diagram.png)
**Student Learning Objective(s):** The student knows division is the inverse of multiplication.

**Suggested Objective Placement:** 3-4

**Related Area(s):** 1, 7, 10

**Suggested Activities:** Grade(s) 3-4

<table>
<thead>
<tr>
<th>Title: Concentration</th>
<th>Materials: set of Concentration cards — sets need not be the same, but should be set up as follows:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size: 2-4 for each set of cards</td>
<td>(a) 20 to 30 cards</td>
</tr>
<tr>
<td></td>
<td>(b) separated into 2 equal stacks</td>
</tr>
<tr>
<td></td>
<td>(c) make matching pairs of cards — on one card a multiplication fact (2x6 or 2x6=12) and on the other card the division fact that is the inverse of the multiplication fact (12+6 or 12+6=2). Be careful not to duplicate facts (e.g., don't use the above cards, and cards for 6x2 and 12+2, in the same set unless students are quite experienced with the concept.</td>
</tr>
</tbody>
</table>

**Suggested Monitoring Procedures:**

- Paper-pencil test as follows:
  - A random list of multiplication facts in the left-hand column — without answers. In the right-hand column, a list of matching division facts in a different order.
  - Students are to draw lines from each multiplication fact to the matching division fact.
  - Example:
    - 4x6 30-5
    - 5x2 24-8
    - 3x8 28-7
    - 4x7 24-6
    - 6x5 10-2
    - Record the number correct.

**Possible Resources:**


**District Resources**
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
</table>

District Resources
**Student Learning Objective(s)**
The student knows the basic division facts.

**Related Area(s)**

**Suggested Activities:**

<table>
<thead>
<tr>
<th>Grade(s)</th>
<th>3-5</th>
</tr>
</thead>
</table>

**Title:** Chalkboard Race

**Group Size:** two small groups or teams

**Materials:** Chalk and chalkboard

**Procedure:**
1. Write two sets of numbers on the board, e.g.,
   - \[ \square + \text{by 6} \quad 18 \ 36 \ 42 \ 54 \ 6 \ 24 \]
   - \[ \square + \text{by 6} \quad 24 \ 12 \ 48 \ 30 \ 18 \ 36 \]
2. Have two players, one from each team, go to the chalkboard.
3. Say "Divide by 6" and have the players record the quotients beneath the numbers.
4. The first one finished with all the correct quotients wins a point for his/her team.
5. Use a different factor with the next pair of players.
<table>
<thead>
<tr>
<th>Suggested Objective Placement</th>
<th>3-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Goal</td>
<td></td>
</tr>
<tr>
<td>District Goal</td>
<td></td>
</tr>
<tr>
<td>Program Goal</td>
<td></td>
</tr>
</tbody>
</table>

**Possible Resources**


**District Resources**
**Title:** Egg Carton Division  
**Group Size:** partners  
**Materials:** egg carton, 25 counters

**Procedure:**
- Take turns doing Tasks 1 and 2.
  - **Task 1:** Pick one of the division facts given below. Put counters in the pockets of the egg carton to show the fact.
  - **Task 2:** Tell the fact that is shown by the display: $4+2=2$  $6+2=3$  $10+2=5$  $12+3=4$
  - **Task 3:** Both solve the following using any method.

**Possible Resources**
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

District Resources
Title: The Shortcut
Group Size: partners
Materials: pencil and paper, stopwatch, set of 4 exercises, two problems in each set

Procedure:
1. Teacher gives two students the following problem to solve; each student does every other problem.

   \[
   \begin{array}{cccc}
   6 \times 4 & 7 \times 6 & 3 \times 9 & 7 \times 7 \\
   5 \times 7 & 5 \times 8 & 8 \times 4 & 8 \times 8 \\
   \end{array}
   \]

   The first problem is to be solved by using arrays. Each student is timed by his/her partner, e.g.,

   \[
   6 \times 4 = \ldots \ldots \ldots \to 24
   \]

   ... Partners take turns solving problems.

   ... 

   ... 

   The second problem is to be solved by using sets, e.g., \(7 \times 6 = 42\)

\[\ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \]

Suggested Activities: Grade(s) 3

The third problem is to be solved by repeated addition, e.g., \(3 \times 9 = 9 + 9 + 9 = 27\) or \(9 + 9 + 9 = 27\)

Now use the short cut method.
Call on your memory bank to solve problem, e.g., \(7 \times 7 = 49\)

Compare times to solve problems using each method.
The value of an accurate "shortcut" method should be self-evident.

<table>
<thead>
<tr>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>District Resources</td>
<td></td>
</tr>
</tbody>
</table>
**SMALL SCHOOLS PROJECT**

**SUBJECT:** Mathematics

**SPECIFIC AREA:** Whole Numbers: Story Problems

<table>
<thead>
<tr>
<th>The student knows:</th>
<th>K</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>characteristics of a number sentence are operational sign(s) and an equal sign.</td>
<td>211</td>
<td>2-8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>basic facts.</td>
<td>213</td>
<td>3-5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>that - and + are inverse operations.</td>
<td>215</td>
<td>3-4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>not all information given in a story problem may be relevant to the solution of the problem.</td>
<td>217</td>
<td>2-8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>clue words (total, sum, more, product, remainder, average, quotient).</td>
<td>219</td>
<td>3-5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>The student is able to:</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>develop (write) a story problem from a given number sentence.</td>
<td>221</td>
<td>2-8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>project a mental image (draw a picture) of the problem from an appropriate story problem.</td>
<td>223</td>
<td>2-8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>identify relevant information necessary for solution.</td>
<td>225</td>
<td>2-8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>solve story problems with one operation.</td>
<td>227</td>
<td>2-8</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The student values:
## Optional Goals and Activities

<table>
<thead>
<tr>
<th>Physical Education</th>
<th>Music</th>
<th>Social Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art</td>
<td>Language Arts</td>
<td>Math</td>
</tr>
<tr>
<td>Science</td>
<td>Health</td>
<td>Reading</td>
</tr>
<tr>
<td>Career Education</td>
<td>Environmental Education</td>
<td>Other</td>
</tr>
</tbody>
</table>
Student Learning Objective(s) The student knows that the characteristics of a number sentence are operational sign(s) and an equal sign.

Suggested Activities: Grade(s) 2-3

Title: Show Me The Sign
Group Size: entire class
Materials: five operational signs on cards for each student (cards about the size of regular playing cards)

Procedure:
- Teacher: Students hold up correct sign card.
  - Show me the sign that is read "plus".
  - Show me the sign that is read "minus".
  - Show me the sign that is read "times".
  - Show me the sign that is read "divided by".
  - Show me the sign that is called "equals".

Mini-Test: "Signs"
Group Size: entire class
Materials: exercise as below
Procedure:
- Complete each number sentence by placing operational and equal signs in boxes.

Possible Resources
- Kane, Robert, Helping Children Read Mathematics, American Book Co., 1974, pp. 58-63

District Resources
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>District Resources</td>
</tr>
</tbody>
</table>
Student Learning Objective(s): The student knows the basic facts.

Suggested Objective Placement: 3-5

State Goal

District Goal

Program Goal

Related Area(s):

Suggested Activities: Grade(s) 2-3

<table>
<thead>
<tr>
<th>Title:</th>
<th>Beat The Bounce</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>small group</td>
</tr>
<tr>
<td>Materials:</td>
<td>one ball</td>
</tr>
</tbody>
</table>

Procedure:

- One student takes a ball and holds it at shoulder height.
- The student with the ball calls out a subtraction phrase (e.g., 9-2).
- Then the student calls out the first name of another student in the group.
- As the name is called, the ball is dropped.
- The student whose name is called has to respond with the correct answer before the ball hits the floor.
- If he/she does respond correctly, that player gets to be the questioner.
- If he/she misses, the original student gets to continue dropping the ball.
- The teacher or a monitor records the facts that are missed by individual students.
- At the game's end, each student studies the facts he/she missed.

Suggested Monitoring Procedures:

**Basic Facts Mastery**

Mastery of the basic facts implies the ability to respond to oral and written queries without hesitation. That is, the student recalls the basic fact from memory immediately when asked.

Possible Resources:


District Resources
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

District Resources
Student Learning Objective(s) The student knows that \(-\) and \(+\) are inverse operations.

<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s) 3</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title:</strong> Related Sentences</td>
<td><strong>Mini-Test:</strong> &quot;Related Sentences&quot;</td>
<td>Lovell, Kenneth, <em>The Growth of Understanding in Mathematics</em>, Holt, Rinehart and Winston, 1971, pp. 54-55</td>
</tr>
<tr>
<td><strong>Group Size:</strong> entire class</td>
<td><strong>Group Size:</strong> entire class</td>
<td>District Resources</td>
</tr>
<tr>
<td><strong>Materials:</strong> none</td>
<td><strong>Materials:</strong> exercise as below</td>
<td></td>
</tr>
<tr>
<td><strong>Procedure:</strong></td>
<td><strong>Procedure:</strong> Write the related number sentences for each pair of sentences:</td>
<td></td>
</tr>
</tbody>
</table>
| Have two girls stand at the front of the classroom. | A 3+2=5  
2+3=5 |                    |
| Have five boys join them.         | B. 7−4=3  
7−3=4 |                    |
<p>| Write the number sentence to illustrate this action, i.e., 2+5=7. | |                    |
| Have five boys stand at the front of the classroom. | |                    |
| Have two girls join them.         | |                    |
| Write the number sentence to illustrate this action, i.e., 5+2=7. | |                    |
| Repeat the first action and have the five boys return to their seats and write the subtraction sentence describing the action, i.e., 7−5=2. | |                    |
| Repeat the second action and have the two girls return to their seats and write the subtraction sentence describing the action, i.e., 7−2=5. | |                    |
| Then discuss why the following are related sentences: 2+5=7, 5+2=7, 7−5=2, 7−2=5. | |                    |</p>
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>District Resources</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Student Learning Objective(s)  The student knows that not all information given in a story problem may be relevant to the solution of the problem.

-related Area(s)

Suggested Activities: Grade(s)  2-3

Title: Find The Extra Number
Group Size: small group
Materials: two problems with irrelevant data

Procedure:
1. Write problems to be discussed orally on the chalkboard.
2. Read each problem orally.
3. Determine what is asked in each problem.
4. Find the extra number in each problem.
5. Write the number sentence to describe each problem.

Problem 1: Josie bought a box of 48 crayons for $0.90. She gave the clerk $5.00. How much change should she receive?
Extra number 48, Number sentence _________
Answer _________

Problem 2: Bill spent two hours cutting the lawn and 20 minutes helping Dad cut three bushes. How many minutes was this?
Extra number 2, Number sentence _________
Answer _________

Possible Resources

Kane, Robert, Helping Children Read Mathematics, American Book Co., 1974, p. 66

District Resources
<table>
<thead>
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<tbody>
<tr>
<td>District Resources</td>
</tr>
<tr>
<td>Possible Resources</td>
</tr>
</tbody>
</table>

- Grade(s)

- District Resources

- Possible Resources
**Student Learning Objective(s)**
The student knows clue words (total, sum, more, product, remainder, average, quotient).

**Related Area(s)**

---

**Suggested Activities:** Grade(s) 3

<table>
<thead>
<tr>
<th>Title:</th>
<th>Clue Words</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>small group/entire class</td>
</tr>
<tr>
<td>Materials:</td>
<td>problems to discuss</td>
</tr>
</tbody>
</table>

**Procedure:**
Teacher:
- "What is the clue word for each problem, that is, what is the word that tells the correct operation (+, -, x, ÷)?

**Problem 1:**
$1.50 for a ball
$2.75 for a bat.
Find total cost. Answer: _______

**Problem 2:**
Three is one addend.
Four is another addend.
What is their sum? Answer: _______

---

**Possible Resources**

---

**District Resources**
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>District Resources</td>
</tr>
</tbody>
</table>

4.2

-200-

4.4
Title: Problem-Solving
Group Size: small group
Materials: story problems

Procedure:
1. Teacher writes one verbal problem at a time on the chalkboard for oral discussion.
2. Each problem presents the students with four tasks:
   1. What does the problem ask?
   2. What are the important facts?
   3. What information is not needed?
   4. Write a number sentence for each problem. Solve.

Sample Problems:
A. Susie bought a piece of cake for 40 cents, ice cream for 25 cents, and a ball for 69 cents. How much did she spend for food?
B. There are 3 basketballs, 2 footballs, 5 hockey sticks, and 4 tennis balls in the gym. How many balls are there in all?
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
</table>

*District Resources*
Student Learning Objective(s): The student is able to develop (write) a story problem from a given number sentence.

Suggested Activities: Grade(s) 2-8

Title: Pictures and Stories

Group Size: small group/entire class

Materials: chalkboard

Procedure:
1. Teacher writes a number sentence on the chalkboard, e.g., 5 + 3 = ___.
2. Students are given three tasks:
   1. Make a picture for your number sentence.
   2. Make up a story to go with your picture.
   3. Complete the number sentence, i.e., 5 + 3 = 8.
3. Continue to write other number sentences involving different operations.

Mini-Test: "Writing Story Problems"

Group Size: entire class

Materials: number sentences such as the one below:

Procedure:
1. Here is a number sentence.
   5 + 3 = ___.
2. Make a picture for the number sentence.
3. Make up a story to go with your picture.

Possible Resources

Pagne, Joseph N. (editor), Mathematics Learning in Early Childhood, National Council of Teachers of Mathematics, 1976, p. 260

VanRoekel, Byron H., How to Read Mathematics, Harper and Row, 1973, p. 29


Biggs, E. E., Mathematics in Primary Schools, Her Majesty's Stationary Office, 1969, p. 37

District Resources
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>District Resources</td>
</tr>
</tbody>
</table>
**Title:** A Picture Tells The Story  
**Group Size:** small group or entire class  
**Materials:** story problems  

**Procedure:**  
- Teacher presents a story problem to the class such as the following:  
  "There are nine frogs by the side of the pond. One frog jumps into the pond. How many frogs are left by the side of the pond?"  
- Read the story to and with the students.  
- Then assign the following tasks:  
  1. Draw a picture that tells the story.  
  2. Write the number sentence that tells a story about the picture, i.e., 9-1=8  
  3. Solve the number sentence, i.e., 9-1=8.

**Suggested Monitoring Procedures**  
**Mini-Test:** "Problem Solving With Drawings"  
**Group Size:** entire class  
**Materials:** problem solving exercises to illustrate  

**Procedure:**  
- Read the problem carefully and then use a drawing or diagram to help you solve it.  
**Example:** Al bought six valentines marked "3 for 25c. What was the cost of his purchase?"  

**Possible Resources**  
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<tr>
<td>125</td>
<td></td>
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</tr>
<tr>
<td>635</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

District Resources
**Suggested Objective Placement**

**Student Learning Objective(s):** The student is able to solve story problems with one operation.

**State Goal**

**District Goal**

**Program Goal**

**Related Area(s)**

---

**Suggested Activities:** Grade(s) 2-8

<table>
<thead>
<tr>
<th>Title:</th>
<th>For Problem Solvers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>small group/entire class</td>
</tr>
<tr>
<td>Materials:</td>
<td>one-step problems</td>
</tr>
</tbody>
</table>

**Procedure:**

1. Teacher presents group with one-step story problems written on chalkboard.
2. After the problem has been read to and with the group, three tasks are assigned:
   1. What does the problem ask?
   2. What are the important facts?
   3. Write a number sentence for the problem. Solve.

**Example:**

"Seven scouts go on a camping trip. One car can hold five scouts. How many will need to ride in another car?"

**Problem asks:** How many scouts will not be able to ride in first car?

**Important facts:** Number of boys who will ride in the cars. The number who will ride in the second car.

**Number sentence:** 7 - 5 = ___

**Answer sentence:** 7 - 5 = 2

---

<table>
<thead>
<tr>
<th>Suggested Monitoring Procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mini-Test:</strong> &quot;One-Step Problems&quot;</td>
</tr>
<tr>
<td><strong>Group Size:</strong> entire class</td>
</tr>
<tr>
<td><strong>Materials:</strong> one step verbal problems</td>
</tr>
</tbody>
</table>

**Procedure:**

1. Read the problem carefully.
2. Determine what is asked.
3. Draw a picture to illustrate the problem.
4. Write a number sentence to solve the problem.
5. Solve the problem.

**Example:**

Bill bought 18 guppies. Guppies sell at 6 for 10c. How much did the guppies cost?

---

**Possible Resources**

- Henney, Maribeth, "Improving Mathematics Verbal Problem-Solving Ability Through Reading Instruction", Arithmetic Teacher, April 1971, pp. 223-226
- Pagne, Joseph N. (editor), Mathematics Learning in Early Childhood, National Council of Teachers of Mathematics, 1976, Chapter 4.

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**District Resources**
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>District Resources</td>
</tr>
</tbody>
</table>

1.3

4.3
Mathematics

Specific Area: Fractions

The student knows:

- fractional regions of a model: halves.
- fractional regions of a model: halves, thirds, fourths.
- the fractional parts $\frac{1}{2}, \frac{1}{4}, \frac{1}{3}, \frac{2}{3}, \frac{2}{4}, 3/4$ when given a set or grouping.
- a fraction having like denominator and numerator represents one.
  Example: $\frac{2}{2} = 1$

The student is able to:

- label models for halves, thirds, fourths.
- use $>$ or $<$ and $=$ to compare fractional numbers with like denominators.
- add fractions with like denominators: halves, thirds, fourths.
- subtract fractions with like denominators.
<table>
<thead>
<tr>
<th>Optional Goals and Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Education</td>
</tr>
<tr>
<td>Music</td>
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<tr>
<td>Social Studies</td>
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<td>Art</td>
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<tr>
<td>Language Arts</td>
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<td>Math</td>
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<td>Science</td>
</tr>
<tr>
<td>Health</td>
</tr>
<tr>
<td>Reading</td>
</tr>
<tr>
<td>Career Education</td>
</tr>
<tr>
<td>Environmental Education</td>
</tr>
<tr>
<td>Other</td>
</tr>
</tbody>
</table>
Student Learning Objective(s): The student knows fractional regions of a model: halves

Suggested Activities:

Title: Halves
Group Size: pairs
Materials: one 18"x24" chart, pictures drawn on cards showing two parts, some equal, some not equal

Procedure:
. Students place the cards in their proper place on the 18"x24" chart.

<table>
<thead>
<tr>
<th>Chart</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Halves</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Halves</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Suggested Monitoring Procedures

Mini-Test: "Halves"
Group Size: entire class
Materials: shape exercise, crayon

Procedure:
. Give each student a sheet with the following figures:

-. Have students shade half of each figure.

Possible Resources


District Resources
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

District Resources
**Student Learning Objective(s)**

The student knows fractional regions of a model: halves, thirds, fourths.

**Related Area(s)**

**Student Learning Objective(s)**

The student knows fractional regions of a model: halves, thirds, fourths.

**Related Area(s)**

**Suggested Objective Placement**

K-1

**State Goal**

1, 7, 9, 1.

**District Goal**

**Program Goal**

1, 3

**Suggested Activities: Grade(s) K-1**

<table>
<thead>
<tr>
<th>Title: Get It Together</th>
<th>Group Size: small group</th>
<th>Materials: game board 17&quot;x21&quot;, game cards 3&quot;x3&quot; with pictures (hand drawn or from old math workbooks), use geometric shapes for markers</th>
</tr>
</thead>
</table>

**Suggested Monitoring Procedures**

Teacher directs student to point to a model or a drawing of a fractional region as teacher says: "Show me the item that shows 1/2, 1/4, 1/3."

**Mini-Test:** "Matching Fractions"

**Group Size:** entire class

**Materials:** fraction exercise (as below)

**Procedure:**
- Ask students to match figures with symbols.

**Possible Resources**


**District Resources**

-233-
### Suggested Activities: Grade(s) K-1

<table>
<thead>
<tr>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
</table>

**Procedure:**
- Teacher spreads cards out face down in a pile on the game board. Direct students to put markers at the start. In turn, each student selects a card and moves one space if it matches.
- If card does not match, student waits for next turn to select another card.
- All cards are put face down in a discard pile. This pile may be used when original pile is depleted.

**Variation:**
- Change game to an activity and the student draws a card and places it over its matching shape.

**District Resources**
Student Learning Objective(s): The student knows fractional regions of a model: halves, thirds, fourths.

<table>
<thead>
<tr>
<th>Suggested Objective Placement</th>
<th>K-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Goal</td>
<td>1</td>
</tr>
<tr>
<td>District Goal</td>
<td></td>
</tr>
<tr>
<td>Program Goal</td>
<td>1,3</td>
</tr>
</tbody>
</table>

Related Area(s): Science

<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>K-1</th>
</tr>
</thead>
</table>

Title: Pitcher Measuring  
Group Size: large group or entire class  
Materials: graph paper (1" square), worksheet with 4 pitchers drawn and marked a, b, c, d. (see diagram)

Procedure:  
Teacher directs students to cut a strip of graph paper 12 squares high. If students have trouble, teacher can cut 4 such strips for each student and pass them out with the worksheets.

Possible Resources:  

Diagram:

- A  
- B  
- C  
- D  

- 1  
- 1/2  
- 1/3  
- 1/4
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>K-1</td>
<td></td>
<td></td>
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</tbody>
</table>

Teacher directs the students to put 1 strip with 12 squares in (paste on) pitcher "A". Then fold the next strip in half, cut and put the resulting 6 squares in pitcher "B". Fold next strip into thirds, cut and put in pitcher "C". Finally, students take the last strip, fold and cut into fourths, or have them count and cut 3 squares and put into pitcher marked "D".

Variation:
Pass out worksheets with 4 pitchers with fractional regions marked. Direct students to color the regions.
SMALL SCHOOL. PROJECT

Student Learning Objective(s) The student knows the fractional parts 1/2, 1/3 and 1/4 when given a set or grouping.

Suggested Objective Placement

State Goal 1, 7, 9, 10
District Goal
Program Goal 1, 2, 4

Related Area(s)

Suggested Activities: Grade(s) 1

Title: Pieces of Pie
Group Size: individual or small groups
Materials: ditto sheet with pies or circles divided into parts of 1/2, 1/3, 1/4, paper plates cut into 1/2, 1/3 or 1/4 and a complete (whole) paper plate, counters to nine for 1/3 groupings, counters to ten for 1/2 groupings, counters to eight for 1/4 groupings

Procedure:

1. Teacher directs students to color one of the two pieces, one of the three pieces and one of the four pieces on the ditto sheet.
2. Students show teacher one-half of the plate, then one-fourth and one-third of a plate.
3. Direct students to separate counters into equal groups such as two groups, three groups, four groups and thus realize that the counters have been divided into 1/2, 1/3, 1/4.

Suggested Monitoring Procedures

Student will orally identify the shaded fractional unit of different shapes divided into fractional parts of 1/2, 1/3 or 1/4 correctly.

The student will be able to identify counters grouped in 1/3, 1/2, 1/4 orally.

Mini-Test: "Write The Fraction"

Group Size: entire class
Materials: shape exercise as below

Procedure:

1. Write the fraction for the shaded part of each set.

Possible Resources

Pagine, Joseph N. (editor), Mathematics Learning in Early Childhood, National Council of Teachers of Mathematics, 1976, pp. 200-201

Suydam, Marilyn N., Classroom Ideas from Research on Computational Skills, National Council of Teachers of Mathematics, 1976, pp. 31-32

District Resources
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>District Resources</td>
</tr>
</tbody>
</table>

4:3
SMALL SCHOOL PROJECT

Suggested Objective Placement 2-3

Student Learning Objective(s) The student knows the fractional parts 1/2, 1/4, 1/3, 2/3, 2/4, 3/4
when given a set or grouping.

State Goal 1, 7, 9, 10
District Goal
Program Goal 1, 2, 5

Related Area(s)

Suggested Activities: Grade(s) 2-3

Title: Fractions Picture Game
Group Size: small group—2 or 3 students
Materials: game board 17"x2" markers, game cards 3"x5" showing sets of objects with fractional part circled.

Example playing board:

The student constructs and labels given models by halves, thirds or fourths on a written test or on a one-to-one basis with teacher.

Mini-Test: "Fractional Parts"
Group Size: entire class
Materials: fractional parts exercise (see below)
Procedure: Write the fraction for the shaded part of each set.

Possible Resources
Experiences in Mathematical Ideas, Vol. 1, National Council of Teachers of Mathematics, 1970, pp. 137 and 149

District Resources
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
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</table>

**Procedure:**
- Teacher directs students as follows in order to match fractional parts of regions and sets of fractional numbers:
  A. Spread cards out face down.
  B. Teacher directs students to put a marker at start.
  C. Student selects a card and moves to the symbol represented by the card.
  D. Student to go around the board first wins.
**OBJECTIVE(S)**
The student knows that a fraction having like denominator and presents one. Example: $\frac{2}{2} = 1$

**Suggested Objective Placement**

<table>
<thead>
<tr>
<th>State Goal</th>
<th>1, 7, 9, 10</th>
</tr>
</thead>
<tbody>
<tr>
<td>District Goal</td>
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</tr>
<tr>
<td>Program Goal</td>
<td>3, 1</td>
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</table>

<table>
<thead>
<tr>
<th>Activities: Grade(s)</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suggested Monitoring Procedures</td>
<td></td>
</tr>
</tbody>
</table>

Teacher observes as student demonstrates how specific fractions make a whole.

**Mini-Test: "One Whole"**

<table>
<thead>
<tr>
<th>Group Size:</th>
<th>entire class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials:</td>
<td>fraction exercise as below</td>
</tr>
</tbody>
</table>

**Procedure:**
- Circle fractions that represent one whole.

| 2/3 | 1/2 | 4/4 | 2/4 | 2/2 |

**Possible Resources**

**District Resources**
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>District Resources</td>
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</tbody>
</table>

433

437
Student Learning Objective(s): The student is able to label models for halves, thirds, and fourths.

Suggested Objective Placement

State Goal 1, 7, 9, 10
District Goal
Program Goal 1, 2, 5

Related Area(s): Art

Suggested Activities: Grade(s) 2

Title: Group Size: entire class
Materials: construction paper--several 6"x6" and one large 18"x21", colors, scissors, pencil

Procedure:
- Have the students fold a piece of construction paper in half. Now have the students draw a half of an object. Cut it out. Color only one-half of the object. Now label the colored part "1/2"?

Suggested Monitoring Procedures

Given models of halves, thirds and fourths, the student can read and write the correct fractions.

Mini-Test: "Identifying Models"
Group Size: entire class
Materials: exercise with fractional models to label

Procedure:
- Label the shaded part of each fractional unit.

Possible Resources

Pagne, Joseph N. (editor), Mathematics Learning in Early Childhood, National Council of Teachers of Mathematics, p. 198
Health Elementary Mathematics, Dilley-Rucker-Jackson

District Resources
Title:  
Group Size: entire class  
Materials: cut squares, rectangles and/or circles about 4"x4", crayons

Procedure:
. Have students divide (by folding) a square or rectangle into thirds—3 equal parts. Have them color on one of the parts and ask for the fraction of the square that is colored.

. The fraction of the colored part is one-third.
. The paper could have been folded long ways and any one of the three areas be colored in.

. Divide into fourths. Color one part. The fraction of the colored part is one-fourth.

. The student pastes 12 of the best models he/she made on a 18"x21" construction paper in any order.
. The student now writes the fraction for each model.
. Have some students show their models and read the fractional part which is colored.
. Continue the activity having students color in the given fraction square.
**Student Learning Objective(s)**

The student is able to label models for halves, thirds and fourths.

---

**Related Area(s)**

Art

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**Suggested Objectives Placement**

State Goal: 1, 7, 9, 10

District Goal

Program Goal: 1, 2, 5

---

**Suggested Activities: Grade(s) 2**

**Title:** Make It - Divide It - Eat It

**Group Size:** Two, three or four

**Materials:** peanut butter, jelly, butter, knives, bread, paper towels, paper plates

**Procedure:**

- At a center the students make a peanut butter and jelly sandwich on a paper plate.
- The students are to cut the sandwich into halves, thirds or fourths. When this has been done, the students can eat the equally divided sandwich.

**Variations:**

- The class could make a cake, cookies, etc. Then divide them equally among the class.

**Suggested Monitoring Procedures**


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**Possible Resources**

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**Student Learning Objective(s):** The student is able to use < or > and = to compare fractional numbers with like denominators.

**Related Area(s):**
- State Goal: 1,7,9, 10
- District Goal: 
- Program Goal: 1, 2, 5

**Suggested Activities:**

| Grade(s) | 3 |

**Title:** Fractions on File

**Group Size:** individual

**Materials:** worksheets, file box for sheets -- teacher prepares several sheets of varying levels of difficulty (see diagram)

**Procedure:**
1. Teacher covers the pages with plastic and files them in order. Provide answer sheets so students may check own work.

**Possible Resources:**

**Suggested Monitoring Procedures:**

Teacher flashes card. Student responds orally by reading the number sentence, including "greater than", "less than" or "equal to".

**Examples of flash cards:**

- "Comparing Fractions"

**Mini-Test:**

| Group Size: | entire class |
| Materials: | fraction exercise |

**Procedure:**
- Compare. Use < or >.

<table>
<thead>
<tr>
<th>3/4</th>
<th>1/3</th>
<th>2/3</th>
<th>2/4</th>
</tr>
</thead>
</table>

<p>| 1/2 | 1/3 | 1/4 | 1/3 |</p>
<table>
<thead>
<tr>
<th>Suggested Activities:</th>
<th>Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>3</td>
<td></td>
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</tbody>
</table>

(Cards will wipe clean for re-use)

Example:

![Image of a grid with fractions]

Student answer: \( \frac{1}{4} \)
Student Learning Objective(s): The student is able to add fractions with like denominators.

Suggested Objective Placement: 3-3

State Goal: 1, 7, 9, 10

District Goal:

Program Goal:

1, 2, 3, 7

### Related Area(s)

### Suggested Activities:

- **Grade(s):** 3

- **Title:** Spin the Spinner
  - **Group Size:** individual or partners
  - **Materials:** Use the diagram as a model to make a gameboard 8"x12". Write in the problems and answers. Laminate. (Make several as you will want to put different problems on each. Make a spinner from laminated paper and place in the center of the board.)

### Suggested Monitoring Procedures

- **Mini-Test:** "Adding Like Fractions:
  - **Group Size:** entire class
  - **Materials:** fraction exercise as below
  - **Procedure:** Add: \( \frac{3}{5} + \frac{1}{3} \)

### Possible Resources


### District Resources
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Suggested Monitoring Procedures</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Possible Resources</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Procedure:**
1. Teacher directs students to use a crayon to write answers to the problems.
2. Student spins spinner and writes answer to the problem to which the spinner points.
3. Student then finds the answer in the box (see diagram), and crosses it out with the crayon.
4. Continue until student has three in a row crossed out, or
5. Play alone and cross out all the answers.
Suggested Objective Placement 3-4

**Objectives:**
- The student is able to subtract fractions with like denominators.

**State Goal:**
- 1,7, 9, 10

**District Goal:**

**Program Goal:**
- 1,2, 3, 6

**Activities:**

<table>
<thead>
<tr>
<th>Carton Calculators</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paste directions inside the cover of the carton.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demonstrates how the egg carton can be used to solve problems with denominators of 1, 2, 3, 4, 6.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For addends or sums greater than 1, use two cartons.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Directs student to fill the number of sections representing the first fraction and subtract the number represented by the second fraction. Then counts what remains in the carton.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Can cut apart cartons to represent 1/2, 1/3, 1/4, etc. Example: Cut 1/2 and color red; cut 1/4 and blue. Fit these sections one on top of the other into whole egg carton—colors will show fractional parts in relation to whole. This way, teacher can aid student in visualizing carton as a whole, halves, thirds, fourths, twelfths.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**District Resources**

- 505
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>District Resources</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The student knows:

- the positional terms, i.e., left, right, top, bottom, in front of, behind, below, next to, on, above, middle, between, inside and outside.
- the term "line segment" refers to part of a line and has two endpoints.
- a line segment is named by its endpoints.
- a pentagon is a closed shape with five sides.
- a hexagon is a closed shape with six sides.
- an octagon is a closed shape with eight sides.
- the radius is a line segment from the center of a circle to a point on the circle.
- the diameter is a line segment that goes from one side of a circle to another and passes through the center.

The student is able to:

* identify geometric shapes: square, circle, triangle and rectangle.
* locate positions, i.e., left, right, top, bottom, in front of, behind, below, next to, on, above, middle, inside and outside.
* identify congruent shapes, i.e., circles, squares, rectangles, triangles.
* identify the left side and right side of objects.
* use a straightedge to draw line segments to form recognizable shapes: square, rectangle and triangle.
* name a line segment by its endpoints.
* identify an angle and a right angle.
* put a radius or diameter on a circle.
<table>
<thead>
<tr>
<th>Optional Goals and Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Education</td>
</tr>
<tr>
<td>Art</td>
</tr>
<tr>
<td>Science</td>
</tr>
<tr>
<td>Career Education</td>
</tr>
</tbody>
</table>

503 | 510
Student Learning Objective(s): The student is able to identify an angle and a right angle.

Related Area(s): Physical Education (sit ups = right angle; flat = 180° angle)

Suggested Activities:  Grade(s) 3

**Title:** Angleboard
**Group Size:** entire class
**Materials:** large bulletin board, yarn, colored string or tape, numbers

**Procedure:**
- Make a large line design with several parallel and intersecting lines. Use yarn, colored string or tape to form the lines. Use a number to label each angle forward.
- Have students make individual charts on which they classify the angles by number. Have them designate which angles are right angles or not right angles.

**Suggested Monitoring Procedures:**
Teacher observes students identifying angles.

**Possible Resources:**
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>District Resources</td>
</tr>
</tbody>
</table>
Student Learning Objective(s)  
A. The student knows the positional terms: left, right, top, bottom.  
State Goal in front of, behind, below, next to, on, above, middle, between, inside, outside.  
B. The student is able to locate positions: left, right, top, bottom, in front of, behind, below, next to, on, above, middle, inside, outside.  
Program Goal C. The student is able to identify the left and right side of objects.  
Related Area(s) Reading  

Suggested Objective Placement

### Suggested Activities: Grade(s) K-1

<table>
<thead>
<tr>
<th>Title</th>
<th>Group Size</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left and Right</td>
<td>entire class</td>
<td>paint, paper, crayons</td>
</tr>
</tbody>
</table>

**Procedure:**

- Teacher directs students to make their own hand drawing on a piece of paper.
- Students label the left and right hand and keep the drawings in their desks for reference.
- Teacher directs students to lie on the floor on a large piece of paper or an old sheet, one at a time.
- Teacher traces around the student's body with a crayon.
- The students then draw in eyes, nose, mouth, clothing, etc.
- Teacher discusses with class the positions of the parts of the body and asks students to identify the right eye, left arm, etc.

<table>
<thead>
<tr>
<th>Title</th>
<th>Group Size</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right Hand, Left Hand (finger play)</td>
<td>entire class</td>
<td>self</td>
</tr>
</tbody>
</table>

**Procedure:**

- Follow actions as rhyme indicates:

Right Hand, Left Hand

This is my right hand,  
I'll raise it up high.  
This is my left hand.  

Right hand, left hand  
Roll them around.  
Left hand, right hand.  

Pound, pound, pound.

### Suggested Monitoring Procedures

<table>
<thead>
<tr>
<th>Mini-Test:</th>
<th>Group Size: entire class</th>
<th>Materials: diagram (see below)</th>
</tr>
</thead>
</table>

**Procedure:**

- Each student is given a diagram

```
  S A B C
    2
```

- Each student records answers to the following questions:
  What number is above the straight line?  
  What letter is to the right of "b"?  
  What letter is between "a" and "c"?  

### Possible Resources


### District Resources
<table>
<thead>
<tr>
<th>Suggested Activities:</th>
<th>Grade(s): K-1</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title:</strong></td>
<td>Top, Bottom, Middle</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Group Size:</strong></td>
<td>individuals or entire class</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Materials:</strong></td>
<td>flannel board, yarn, felt cutouts</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Procedure:</strong></td>
<td>Teacher divides flannel board in two parts with a piece of yarn, horizontally. Teacher asks a student to point to the top of the board and to the bottom. Teacher distributes a variety of felt cutouts to students and asks them to take turns placing them on the top or the bottom of the flannel board. Teacher then takes two pieces of yarn and marks off three parts, horizontally. Modify the above activity to include the middle position, as well as the top and bottom.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Title:</strong></td>
<td>On, Above, Below</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Group Size:</strong></td>
<td>large group</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Materials:</strong></td>
<td>pencil</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Procedure:</strong></td>
<td>Teacher asks students to sit by their desks with a pencil. Ask students to place the pencil on the desk; hold it above the desk; hold it below the desk.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Title:</strong></td>
<td>Next To Or Between</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Group Size:</strong></td>
<td>large group</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Materials:</strong></td>
<td>variety of objects</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Procedure:</strong></td>
<td>Direct students to stand next to a desk, a door, another student, etc. Teacher directs students to place an item next to something. Direct students to place an object between two objects.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Student Learning Objective(s)
A. The student knows a line segment is part of a line and has two endpoints.
B. The student knows a line segment is named by its endpoints.
C. The student is able to name a line segment by its endpoints.

Related Area(s)

Suggested Activities: Grade(s) 2-3

After students have developed the concept that a line segment is named by its endpoints, have them do the following activity.

Title: Name the Segments
Group Size: individuals
Materials: a worksheet with lines and labeled points (see diagram)

Procedure:
- Each student is asked to match figures and names.

Note: Be sure it is clear the figure is facing you.

Possible Resources
L.A.P. L-00051-P (from ESD 109 Instructional Materials Center)
### Suggested Activities: Grade(s) 2-3

<table>
<thead>
<tr>
<th>Procedure:</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Have students answer the following questions about the line segment drawing of the man.</td>
<td></td>
</tr>
<tr>
<td>1. What line segment names his left shoulder? (KH)</td>
<td></td>
</tr>
<tr>
<td>2. What line segment names his right shoulder? (NL)</td>
<td></td>
</tr>
<tr>
<td>3. What line segment names his left foot? (MC)</td>
<td></td>
</tr>
<tr>
<td>4. What line segment names his right arm? (GE)</td>
<td></td>
</tr>
<tr>
<td>5. What line segment names his neck? (JK)</td>
<td></td>
</tr>
<tr>
<td>6. What line segments name his head? (PQ, QR, RJ, JP)</td>
<td></td>
</tr>
</tbody>
</table>

**Variation:**

Have the points labeled and have students connect the endpoints.
**Student Learning Objective(s)**

A. The student knows a pentagon is a closed shape with five sides.

B. The student knows a hexagon is a closed shape with six sides.

C. The student knows an octagon is a closed shape with eight sides.

**Suggested Objective Placement**

State Goal 1, 10

District Goal

Program Goal

**Related Area(s)**

**Suggested Activities: Grade(s) 3**

<table>
<thead>
<tr>
<th>Title</th>
<th>Group Size</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shapo</td>
<td>entire class</td>
<td>two dittos similar to those illustrated below, markers (beans, etc.), teacher-made set of small calling cards (2 of each) for game. On each card write a label for one of the figures shown. Need a master list for all combinations listed.</td>
</tr>
</tbody>
</table>

**Suggested Monitoring Procedures**

Hold up shapes and ask students to name them orally.

**Mini-Test: "Matching Shapes With Word Names"**

**Group Size:** entire class

**Materials:** "shapes and names" picture

**Procedure:** Each student is asked to match word name with shape

**Possible Resources**

## Suggested Activities: Grade(s) 3

### Suggested Monitoring Procedures

### Possible Resources

**Procedure:**
1. Students cut apart the squares on sheet A and paste them on sheet B in any arrangement.
2. Each student will need to cut small pieces of paper for markers (or use beans, marbles).
3. Each student uses the SHAPO card he/she has made and plays the game.
4. Teacher or student reads out the name of the shape. Student covers the shape with marker.
5. The first player to get four down, or five across or diagonally, or four corners, wins. Player must yell out "SHAPO!"
6. **Note:** Make the game easier or more difficult by varying figures used.
Suggested Objective Placement 3-4

Student Learning Objective(s) A. The student knows the radius is a line segment from the center of a circle to a point on the circle. B. The student knows that the diameter is a line segment that goes from one side of a circle to the other and through the center. C. The student is able to place a radius or diameter on a circle.

Related Area(s)

Suggested Activities: Grade(s) 3-4

<table>
<thead>
<tr>
<th>Title:</th>
<th>Radius and Diameter</th>
<th>Group Size: large group</th>
<th>Materials: worksheets with circles in which the radius and diameter are shown, pencils</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procedure:</td>
<td>Distribute worksheets to the students. Have students point out the radii and diameters as they are marked on the circles.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mini-Test: "Circle Names" Group Size: entire class Materials: circle exercise (as below) Procedure: Match the picture with the words.

Possible Resources

Title: More Circles  
Group Size: large group  
Materials: worksheets with circles on the and with the centers of the circles marked, pencils  

Procedure:  
1. Teacher distributes worksheets to students.  
2. Have students draw the diameter and radii on the circles, starting at the center mark.
Student Learning Objective(s) The student is able to identify geometric shapes: square, circle, triangle and rectangle.

Related Area(s) Environmental Education, Reading

Suggested Activities: Grade(s) K

<table>
<thead>
<tr>
<th>Title:</th>
<th>Shape Walk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>entire class</td>
</tr>
<tr>
<td>Materials:</td>
<td>various materials (see below) experience chart</td>
</tr>
</tbody>
</table>

Procedure:
1. Take students on a "shape walk". Encourage them to notice the different kinds of shapes of things in their environment.
2. Have students list on experience chart the objects and their shapes seen on the walk.
3. Have students draw pictures of things seen on the walk.
4. Teacher passes out various materials to students and asks them to see how many different ways they can make shapes.

<table>
<thead>
<tr>
<th>Title:</th>
<th>Shapes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>entire class</td>
</tr>
<tr>
<td>Materials:</td>
<td>various materials</td>
</tr>
</tbody>
</table>

Procedure:
1. Teacher passes out various materials and lets students make as many shapes as possible from them.

Suggested Monitoring Procedures
Teacher has a model of the four shapes. Teacher points to each one as the student identifies it by name.

Mini-Test: "Match Geometric Shapes and Word Names:

- Group Size: entire class
- Materials: shape exercise as below

Procedure:
1. Ask each student to match geometric shapes and word names.

Possible Resources
L.A.P. L-02012-P from ESD 109 IMC

District Resources
<table>
<thead>
<tr>
<th>Suggested Activities:</th>
<th>Grade(s)</th>
<th>K</th>
</tr>
</thead>
</table>

| Title: | Shape Lunch |
| Group Size: | small or large groups |
| Materials: | luncheon food (cottage cheese, lunch meats, cheese, bread or biscuit dough, cookie cutters, knives, rolling pin, paper plates, popsicle sticks, ice cube trays, fruit juice |

**Procedure:**

1. Have a small group of students roll out biscuit dough and use the flat shapes to cut the dough.
2. Give another group dull knives and suggest they cut cheese and luncheon meat into circles, squares, triangles and rectangles.
3. Teacher places a scoop of cottage cheese on each plate, noting that the scoop is in the shape of a circle.
4. Have part of the class prepare popsicles in ice cube trays for dessert.
Student Learning Objective(s) The student is able to identify congruent shapes: circles, squares, rectangles, triangles.

State Goal 1, 10

District Goal

Program Goal

Related Area(s)

Suggested Objectives Placement 1, 10

Suggested Activities: Grade(s) 1

Title: Match the Shapes
Group Size: individuals
Materials: 15"x15" playing board divided into 25 squares, shapes to match those on the playing board

Procedure:
- Students match individual shapes to the board shapes.

Possible Resources

District Resources
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

District Resources
**Student Learning Objective(s)**

The student is able to use a straightedge to draw line segments to form recognizable shapes: square, rectangle, triangle.

---

**Related Area(s)**

- State Goal
- District Goal
- Program Goal

---

**Suggested Activities:**

| Grade(s) | 2-3 |

**Title:** Line Segments  
**Group Size:** large group  
**Materials:** ruler

**Procedure:**

1. Assuming students know what a line segment is and what a square, rectangle and triangle are, have them use the ruler to draw these geometric figures. Give them samples of each on a worksheet and have students trace the shapes with their rulers.
2. Students then draw their own geometric figures using graph paper and then later using plain paper.

---

**Suggested Monitoring Procedures**

- **Mini-Test:** "Drawing Shapes"  
- **Group Size:** entire class  
- **Materials:** paper and pencil, ruler

**Procedure:**

1. Ask students to draw line segments to form a square, rectangle and circle. Label figures.

---

**Possible Resources**

<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5-2</td>
<td></td>
<td>District Resources</td>
</tr>
</tbody>
</table>
The student knows:

- a picture graph (pictograph) is a visual representation of a set of data where each picture represents an object.
  - graphs which deal with whole numbers
  - graphs where picture represents other than whole numbers
- a bar graph is a visual representation of a set of data where one unit may represent 1, 2, 5 or 10 items.
- a line graph represents data by specific points on a grid, the points being joined by lines to form a visual representation (or pattern).
- an ordered pair of numbers identifies a point on a grid.
- a double bar graph compares two sets of data.
- a circle graph shows information in terms of percentage of a fraction of the whole.
- a table is a collection of data displayed in a specific order according to its variables.
- a vertical axis is the vertical line along which a coordinate is measured.
- a horizontal axis is the horizontal line along which a coordinate is measured.
- coordinates are sets of numbers used to locate a point in space (4, 3), (2, 1).

The student is able to:

- read and construct a picture graph (pictograph) from given and/or collected data (whole numbers).
- read and construct a picture graph (pictograph) from given and/or collected data (whole numbers and fractional parts).
- collect data.
- order or rank collected data in the form of a table.
- plot data from tables.
- read and interpret data on a simple bar graph.
- read and interpret data on a multiple bar graph.
- construct a bar graph from given data or from collected data.
- construct a multiple bar graph from given data or from collected data.
- construct a single line graph from given data or from collected data.
- construct a multiple line graph from given data or from collected data.
- read and interpret data on a circle graph.
- construct a circle graph from given data or collected data.

The student values:
<table>
<thead>
<tr>
<th>PHYSICAL EDUCATION</th>
<th>MUSIC</th>
<th>SOCIAL STUDIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART</td>
<td>LANGUAGE ARTS</td>
<td>MATH</td>
</tr>
<tr>
<td>SCIENCE</td>
<td>HEALTH</td>
<td>READING</td>
</tr>
<tr>
<td>CAREER EDUCATION</td>
<td>ENVIRONMENTAL EDUCATION</td>
<td>OTHER</td>
</tr>
<tr>
<td>Suggested Activities: Grade(s)</td>
<td>K-1</td>
<td></td>
</tr>
<tr>
<td>------------------------------</td>
<td>-----</td>
<td></td>
</tr>
<tr>
<td><strong>Title:</strong> Birthdays</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Group Size:</strong> entire class</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Materials:</strong> graph paper, crayons</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Procedure:**

- Teacher and students develop the birthday graph (see back page).
- Teacher asks:
  1. In what months were there no birthdays?
  2. In what months were there only one birthday?
  3. In what months were there three birthdays?
  4. In what month were the most birthdays?
  5. In what month did only one girl have a birthday?
  6. In what month did only one girl and one boy have a birthday?
  7. In what month did only boys have birthdays?
  8. And so on...

See illustration on Page 274.
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Birthdays</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>January</td>
<td></td>
<td></td>
</tr>
<tr>
<td>February</td>
<td>♀ ♂ ♂ ♂ ♂ ♂</td>
<td></td>
</tr>
<tr>
<td>March</td>
<td>♀ ♂</td>
<td></td>
</tr>
<tr>
<td>April</td>
<td>♀ ♀ ♂</td>
<td></td>
</tr>
<tr>
<td>May</td>
<td>♀ ♀ ♂ ♂</td>
<td></td>
</tr>
<tr>
<td>June</td>
<td>♀ ♂</td>
<td></td>
</tr>
<tr>
<td>July</td>
<td>♀ ♀ ♂ ♂</td>
<td></td>
</tr>
<tr>
<td>August</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sept.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oct.</td>
<td>♀ ♀ ♂ ♂ ♂</td>
<td></td>
</tr>
<tr>
<td>Nov.</td>
<td>♀ ♀</td>
<td></td>
</tr>
<tr>
<td>Dec.</td>
<td>♀ ♀ ♂ ♂ ♂ ♂ ♂ ♂ ♂ ♂ ♂ ♂ ♂ ♂</td>
<td></td>
</tr>
</tbody>
</table>

Students draw themselves opposite the correct months.
Student Learning Objective(s): The student knows a picture graph (pictograph) is a visual representation where each picture represents an object.

Related Area(s): Graphs which deal with whole numbers

Suggested Activities: Grade(s):

<table>
<thead>
<tr>
<th>Title:</th>
<th>Brothers and Sisters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>entire class</td>
</tr>
<tr>
<td>Materials:</td>
<td>graphing paper, children, crayons</td>
</tr>
</tbody>
</table>

Procedure:
1. Discuss members of the family, especially brothers and sisters.
2. When everyone seems certain of the correct number, then they can indicate the number of each on the graph by coloring one square for each brother and sister.
3. An extension of the above is to have the class determine how many brothers or sisters are older or younger.

Suggested Monitoring Procedures:

<table>
<thead>
<tr>
<th>Mini-Test:</th>
<th>&quot;Pictograph&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>entire class</td>
</tr>
<tr>
<td>Materials:</td>
<td>pictograph as shown below for each student</td>
</tr>
</tbody>
</table>

Procedure:
1. Teacher reads all word names and questions to the class.
2. Each student records his/her answers to the questions.

Who had the most turtles?
Who had no turtle?
Who had the same number of turtles? and

Who he he most turtles?
Who had no turtle?
Who had the same number of turtles? and

Possible Resources:

- Pagne, Joseph N. (editor), Mathematics Learning in Early Childhood, National Council of Teachers of Mathematics, 1976, p. 268
- Baratta-Lorton, Mary, Workjobs, Addison-Wesley, 1922, pp. 222-223
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>District Resources</td>
</tr>
</tbody>
</table>

512

513
Student Learning Objective(s)

A. The student is able to read and interpret data on a simple bar graph.
B. The student is able to construct a bar graph from given data or from collected data.

Related Area(s)  

Suggested Activities: Grade(s)  

Title: Pets in the Family  
Group Size: entire class  
Materials: large prepared graph as below:

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>John</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Claire</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Tilly</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Melba</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tony</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Procedure:

Teacher asks:
1. How many pets in Tilly's family?
2. What families have three pets?
3. Whose family has the most pets?
4. How many families have one pet?

Suggested Monitoring Procedures

Mini-Test: "Bar Graph"
Group Size: entire class  
Materials: bar graph as shown below
Procedure:

Teacher reads all the word names and questions to the class. Each student records his/her answers to the questions.

Possible Resources

<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>District Resources</td>
</tr>
</tbody>
</table>
Student Learning Objective(s)
A. The student is able to read and interpret simple data on a simple bar graph.
B. The student is able to construct a bar graph from given data or from collected data.

Related Area(s)  Science, Social Studies

Suggested Objective Placement  2-4

State Goal

District Goal

Program Goal

Suggested Activities:  Grade(s)  2-4

<table>
<thead>
<tr>
<th>Title:</th>
<th>Birthday Graph</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>entire class</td>
</tr>
<tr>
<td>Materials:</td>
<td>record sheet, graph paper with 1/2&quot; squares, crayons, colored pencils or felt tip pens, student folders or other record of student's birthday</td>
</tr>
</tbody>
</table>

Procedure:
1. Teacher lists the 12 months on the record sheet.
2. Teacher asks students their birthday month.
3. Teacher records by grouping students' names according to their birthday months.
4. Constructing the graph: Using the long side as the bottom of the graph paper, put the scale for the number of students having a birthday per month on the left side; put the months of the year across the bottom, spacing evenly across the page.

Possible Resources

District Resources
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s) 2-4</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
</table>

Construct the bars for the graph either by:
(a) Writing the name in squares above the month (1 square per name), lightly coloring those squares with name in them, or,
(b) Coloring one square for each student who has a birthday in a given month.

Variation:
For additional practice, students can construct another graph, ordering the months from the most number of birthdays to the least number of birthdays or vice-versa.

Other ideas for graphing:
- Number of students having different hair color.
- Number of students having different color eyes.
- Number of cars of different make or color in teachers' parking lot.
- Number of books read by students in a month.
- Number of one-syllable, two-syllable or three-syllable words on a page.
- Pets.
- Game scores.
- Time spent during silent reading, etc.

**Title:** Pet Graph

**Group Size:** large group

**Materials:** flannel board, small colored flannel-board squares, animal cutouts, yarn

**Procedure:**
- Teacher makes four columns on a flannel board using yarn (one column may represent each pet).
- Place one animal cutout at the top of each column.
- Teacher has available a supply of flannel squares of different colors. Teacher directs students to put a square in the column of the pet they have.

Students make a picture graph of the days they are present in school.
Student Learning Objective(s) The student knows a bar graph is a visual representation of a set of data where one unit may represent 1, 2, 5 or 10 items.

<table>
<thead>
<tr>
<th>Grade(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small group</td>
</tr>
</tbody>
</table>

Suggested Activities: C-grade(s)

Title: Children in the Family
Group Size: small group
Materials: large graph, crayons

Procedure:
1. Teacher constructs graphs and writes in names of student.
2. Record on graph by crayoning one box for each brother and sister.
3. Students then fill in bars on the graph.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teresa</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chico</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tom</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yint</td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mary</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>

Suggested Monitoring Procedures

Mini-Test: "Circulation"
Group Size: entire class
Materials: bar graph as shown below

Procedure:
1. Teacher reads all the word names and questions to the class.
2. Each student records her answers.
3. Most books were checked out on?
4. Fewest books were checked out on?
5. 20 books were checked out on?
6. 44 books were checked out on?

Possible Resources

- Pagne, Joseph N. (editor), Mathematics Learning in Early Childhood, National Council of Teachers of Mathematics, 1976, p. 268

District Resources
<table>
<thead>
<tr>
<th>Suggested Activities</th>
<th>Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>District Resources</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

555

555
Suggested Objective Placement: 2-4

Student Learning Objective(s)

The student knows a line graph represents data by specific points on a grid, the points being joined by lines to form a visual representation (or pattern).

State Goal

District Goal

Program Goal

Related Area(s)

Suggested Activities: Grade(s) 2-4

<table>
<thead>
<tr>
<th>Title</th>
<th>Temperature May 2-6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size</td>
<td>entire class</td>
</tr>
<tr>
<td>Materials</td>
<td>large graph paper</td>
</tr>
</tbody>
</table>

Procedure:

- Teacher and students construct a line graph recording the temperature at 10:00 a.m. each day for a week in May.

### MINI-TEST

**Mini-Test: "Line Graph"**

- Group Size: entire class
- Materials: line graph as below

**Procedure:**

- Teacher reads all the word names and questions to the class.
- Each student records his/her answers.

Possible Resources


**District Resources**

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**Diagram:**

- Temperature graph showing temperature changes from May 2 to May 6.

**Questions:**

- What week did John do best in spelling?
- How many words did John get right in week #5?
- In what week did John go down in spelling?
Temperature is represented by a dot each day.
Join all dots with lines on May 6.
Ask students: (May 6)
1. On what day was it the coolest?
2. On what day was it the warmest?
3. On what day was the temperature at 54°F?
4. and so on
SUBJECT: Mathematics

SPECIFIC AREA: Measurement: Time

The student knows:

- the names of the days of the week.
- the names of the months.
- the names of the months in sequence.
- the short hand of the clock is the hour hand.
- the long hand of the clock is the minute hand.
- the term "minute" refers to a unit of time measurement.
- the term "hour" refers to a unit of time equal to 60 minutes.

The student is able to:

* tell time to the hour.
* tell time to the half hour.
* tell time to the quarter hour.
* tell time by 5-minute intervals.
* write time in notation, i.e., 12:00, 12:30, 12:15, 12:55.

The student values:

- estimation as a useful skill in time measurement.
## Optional Goals and Activities

<table>
<thead>
<tr>
<th>Physical Education</th>
<th>Music</th>
<th>Social Studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Art</td>
<td>Language Arts</td>
<td>Math</td>
</tr>
<tr>
<td>Science</td>
<td>Health</td>
<td>Reading</td>
</tr>
<tr>
<td>Career Education</td>
<td>Environmental Education</td>
<td>Other</td>
</tr>
</tbody>
</table>

5.1

5.2
**Student Learning Objective(s)**
The student knows the names of the days of the week.

**Related Area(s)**
Language Arts

**Suggested Activities: Grade(s) K-1**

<table>
<thead>
<tr>
<th>Title:</th>
<th>My Week Booklet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>entire class</td>
</tr>
<tr>
<td>Materials:</td>
<td>dittoed 9&quot;x12&quot; construction paper</td>
</tr>
<tr>
<td></td>
<td>with names of the week printed on</td>
</tr>
<tr>
<td></td>
<td>the top, paint or crayons</td>
</tr>
</tbody>
</table>

**Procedure:**
- Students make a "My Week" booklet by illustrating what they did on each day of the week. (Or student can write simple sentences describing what they did.)

**Suggested Monitoring Procedures**
- Teacher observation: Observe student participation.
- Mini-Test: "Days of the Week"
  - Group Size: one student
  - Procedure: Student names days of the week from Sunday through Saturday.

**Possible Resources**
- Thyer, Dennis, Teaching Mathematics to Young Children, Holt, Rinehart and Winston, 1971, pp. 166-167

---

**District Resources**

---
### Suggested Activities: Grade(s) K-1

**Title:** Days of the Week  
**Group Size:** entire class  
**Materials:** 9"x12" construction paper, one for each day of the week (day printed on the top)

**Procedure:**
- Display on bulletin board the days of the week cards in a circle to illustrate the repeating cycle of the days. Label each day with pictures illustrating what happens in the classroom on that day.  
  **Example:** Monday--P.E.; Tuesday--music; Wednesday--library, etc.  
**Variation:**  
- Assign students' names on a week wheel for classroom jobs.

### Suggested Monitoring Procedures
- Teacher observation of student participation.

### Possible Resources

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**District Resources**
**Student Learning Objective(s):** The student knows the names of the months.

**Related Area(s):** Language Arts, Social Studies

---

**Suggested Activities:** Grade(s) K-1

**Title:** Calendar  
**Group Size:** large group  
**Materials:** one blank dittoed calendar for each student, black crayons, one large calendar

**Procedure:**
- Teacher places a large monthly calendar in view.
- Teacher directs students to fill in the blank ditto.
- Students circle special days such as holidays, birthdays, etc., and indicate on the right hand side of the calendar what the special day is, e.g., field trip, music concert, birthday, etc.

**Possible Resources**

---

**NAME OF THE MONTH**

<table>
<thead>
<tr>
<th>SUN.</th>
<th>MON.</th>
<th>TUES.</th>
<th>WED.</th>
<th>THURS.</th>
<th>FRI.</th>
<th>SAT.</th>
<th>SPECIAL DAYS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>8 - BIRTHDAY</td>
</tr>
<tr>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>20 - FATHER'S DAY</td>
</tr>
<tr>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td>17</td>
<td>18</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>20</td>
<td>21</td>
<td>22</td>
<td>23</td>
<td>24</td>
<td>25 - 26</td>
</tr>
<tr>
<td>8</td>
<td>29</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Suggested Monitoring Procedures:**
- Students can orally name the months of the year.

---

**District Resources**
### Suggested Activities:  Grade(s) K-1

<table>
<thead>
<tr>
<th>Title: Birthday Balloons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size: entire class</td>
</tr>
<tr>
<td>Materials: construction paper cut into 9&quot; circles, magic marker pen, yarn</td>
</tr>
</tbody>
</table>

#### Procedure:
- Teacher directs each student to cut a 9" circle and write his/her name in the circle (teacher may have to write the names for some students).
- Teacher attaches yarn to each circle and places the circles on the bulletin board to represent the birthdays for that month. Don't forget the summer birthdays.

### JUNE BIRTHDAYS

- John 12
- Mark 21
- Mary 1

---

**District Resources**
**Student Learning Objective(s)**
The student knows the names of the months in sequence.

**Related Area(s)**
Language Arts, Math - Graphs, Social Studies

<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s) 2</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title:</strong> Calendars</td>
<td><strong>Mini-Test:</strong> &quot;Months&quot;</td>
<td>Thyer, Dennis, Teaching Mathematics to Young Children, Holt, Rinehart and Winston, 1971, pp. 168-169</td>
</tr>
<tr>
<td><strong>Group Size:</strong> entire class</td>
<td><strong>Group Size:</strong> one student</td>
<td></td>
</tr>
<tr>
<td><strong>Materials:</strong> 12&quot;x18&quot; sheets of colored construction paper, ditto master of calendar outline, variety of art materials dependent upon selected art motif for each month</td>
<td><strong>Procedure:</strong> Student recites names of months from January to December to teacher.</td>
<td></td>
</tr>
<tr>
<td><strong>Procedure:</strong> (this is a continuing project)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher directs students to fill in the calendar outline with month, year and days of week. Students fill in numerals. (Check to see that students begin the month on the correct day.)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teacher attaches calendar form to lower part of 12&quot;x18&quot; colored paper. Use the remaining area for design representing specific month.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Examples:</strong> Art Motifs:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sept.: sponge paint autumn tree</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oct.: torn paper (black) Halloween shapes on orange and black</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nov.: trace hand for body of turkey on yellow</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

-291-
<table>
<thead>
<tr>
<th>Title:</th>
<th>Month Riddles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>small group</td>
</tr>
<tr>
<td>Materials:</td>
<td>paper, pencil</td>
</tr>
</tbody>
</table>

**Procedure:**
- Teacher directs groups to write riddles for each month of the year, using representative holidays as clues (weather or special events are also good clues).
- Exchange riddles among groups.

<table>
<thead>
<tr>
<th>Title:</th>
<th>Birthday Graph</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>individual</td>
</tr>
<tr>
<td>Materials:</td>
<td>graph paper (1/2&quot;) for each student, pencil, crayon</td>
</tr>
</tbody>
</table>

**Procedure:**
- Teacher surveys class to determine how many birthdays are in each month.
- Teacher organizes data and makes a bar graph showing number of birthdays per month.
- Teacher directs students to copy the bar graph on their sheets.
Student Learning Objective(s)

A. The student knows that the short hand of the clock is the hour hand.
B. The student knows that the long hand of the clock is the minute hand.

Related Area(s)

Suggested Activities: Grade(s) 1-2

<table>
<thead>
<tr>
<th>Title</th>
<th>Model Clocks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size</td>
<td>entire class</td>
</tr>
<tr>
<td>Materials</td>
<td>paper plate for each student, blue paper strips, red paper strips, 1 brad for each student, crayons or pencils</td>
</tr>
</tbody>
</table>

Procedure:
1. Teacher cuts red strips to represent hour hand on clock, or directs students to cut the strips a certain length (short).
2. Teacher directs students to mark numerals on the paper plate (demonstrating to students how to do it).
3. Teacher directs students to attach red strip to paper plate.
4. Students practice telling time by hour, moving hour hand to the different positions.
5. Teacher then directs students to place blue strips on clock (representing minute hand).
6. Proceed to practice with minute hand; then with both hour and minute hands.

Suggested Monitoring Procedures

<table>
<thead>
<tr>
<th>Mini-Test:</th>
<th>&quot;Clock Cards&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>one student</td>
</tr>
<tr>
<td>Materials:</td>
<td>clock</td>
</tr>
<tr>
<td>Procedure:</td>
<td>The student orally explains that the short hand is the hour hand and the long hand is the minute hand.</td>
</tr>
</tbody>
</table>

Possible Resources


District Resources

ERI
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>District Resources</td>
</tr>
</tbody>
</table>

537

593
Student Learning Objective(s)

A. The student knows that the term "minute" refers to a unit of time measurement. B. The student knows that the term "hour" refers to a unit of time equal to 60 minutes.

Related Area(s)

Suggested Activities: Grade(s) 1-3

Title: Measuring Time
Group Size: small group
Materials: paint, paper (or cardboard or paper plate, cardboard strips, brad)

Procedure:
1. Teacher prepares a clock, either by painting a grandfather clock (see diagram) or making a paper plate clock.
2. Teacher asks students to show various times on the clock. Example: 3:00, 4:30
3. Teacher asks such questions as:
   "Show 12:00 on the clock. What time will it be in fifteen minutes?"
   "It is now 3:00 p.m. What time will it be in two hours?"
   "It is now 9:00 a.m. How long will you have to wait for morning recess?"
   "Set the clock for 10:30 a.m. How long will you have to wait for a movie that begins at 11:00 a.m.?

Suggested Monitoring Procedures

Mini-Test: "Time to the Minute"
Group Size: one student
Materials: clock
Procedure:
1. Teacher asks individual students to indicate specific times on the clock. Teacher observes student responses and records the responses.

Possible Resources

LAP
L-00367 (from ESD 109 collection)


District Resources
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Diagram of a clock]</td>
<td></td>
<td>District Resources</td>
</tr>
</tbody>
</table>

*Note: The table suggests a structure for organizing activities, monitoring procedures, and potential resources. The diagram of a clock may represent an example of a suggested activity.*
Suggested Objective Placement 1-2

Student Learning Objective(s) A. The student is able to tell time to the hour. B. The student is able to tell time to the half hour. C. The student values estimation as a useful skill in time assessment.

Related Area(s) 

Suggested Activities: Grade(s) 1-2

Title: Clock Puzzle Strips

Group Size: pairs or small groups

Materials: 3"x12" tagboard strips

Procedure:
1. Teacher prepares tagboard strips showing clock face on the right and written time on the left. Each clock should represent a specific hour. Cut a zigzag line to separate clock from written time. Each zigzag line should be different (to form puzzle).

Example:

```
3 o'clock
```

Teacher directs students to fit the puzzle pieces together.

Teacher observation of student attitudes and behavior regarding punctuality, changing activities, etc. (Does student appear to value time and know how to tell time?)

Possible Resources

Mini-Test: "Hour and Half Hour"

Group Size: one student

Materials: clock

Procedure:
1. Student gives correct response to teacher when asked time and shown model clock (hour and half hour).

Judy Clock

District Resources
### Suggested Activities: Grade(s) 1-2

<table>
<thead>
<tr>
<th>Title:</th>
<th>Telling Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>any number of players</td>
</tr>
<tr>
<td>Materials:</td>
<td>one large model clock (Judy Clock), small clock faces for each player</td>
</tr>
</tbody>
</table>

### Procedure:
- Teacher divides the group into two teams. A leader is selected who sets the clock.
- The leader asks each player to set their clock to match the leader's clock. The leader checks each player's clock.
- The team with the most correct answers scores a point.
- The leader then resets the clock and the game proceeds.

### Variation:
- Leader may write the time on the board and the players set their clocks accordingly.

### District Resources
Student Learning Objective(s)

A. The student is able to tell time to the hour.
B. The student is able to tell time to the half hour.
C. The student values estimation as a useful skill in time assessment.

Suggested Objective Placement 1-2

Suggested Activities: Grade(s) 1-2

Title: Time Is Alive (suggested for K-1)
Group Size: entire class, large group
Materials: 12 large numerals

Procedure:
1. Teacher takes group to gym.
2. Pin numerals 1 to 12 on each of 12 students.
3. Ask students to place themselves around a circle (on the gym floor) to represent a clock.
4. Teacher selects two students to be the hands. Ask these students to lie on the floor with their feet at the center to represent the hands of a clock. The student representing the minute hand may extend his/her arms to indicate the longer hand.
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>District Resources</td>
</tr>
</tbody>
</table>


Student Learning Objective(s)  
A. The student is able to tell time to the hour.  
B. The student is able to tell time to the half hour.  
C. The student values estimation as a useful skill in measurement.

Related Area(s)

Suggested Activities: Grade(s) 1-2

| Title: | Midnight |
| Group Size: | two to twelve |
| Materials: | two packs of cards (On each card is a clock face with a certain time on it. Below the clock face the time is written. No two cards are alike. On the second pack there is a clock face but the time is not written on the card.) Prepare enough markers for each player to cover playing cards. |

Procedure:
- Teacher (or selected student) deals eight cards (from the deck without the time written on the card) to each player.
- Teacher (or selected student designated "caller") holds the cards with the time written on them. He reads them one at a time. If a player holds the appropriate clock, he puts a marker on the clock showing the time called.
- The first player to cover all his cards calls out "Midnight!"
<table>
<thead>
<tr>
<th>Resource</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1233-P</td>
<td>from ESD 109 collection</td>
</tr>
<tr>
<td>341-P</td>
<td>from ESD 109 collection</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

District Resources
### Student Learning Objective(s)

A. The student is able to tell time to the hour.  
B. The student is able to tell time to the half hour.  
C. The student values estimation as a useful skill in time measurement.

### Related Area(s)

-  

### Suggested Activities: Grade(s)

<table>
<thead>
<tr>
<th>Title:</th>
<th>A Time Diary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>entire class</td>
</tr>
<tr>
<td>Materials:</td>
<td>two large circles (9&quot; diameter), yarn</td>
</tr>
</tbody>
</table>

### Procedure:

1. Teacher puts a clock face on one circle and an appropriate illustration on another circle. Attach with yarn.
2. Teacher places clocks around the room to expose students to time.

### Variation:

Illustrate lunch time, recess, daily activities, release time.

---

Thyer, Dennis, Teaching Mathematics to Young Children, Holt, Rinehart and Winston, 1971, pp. 159-160

### District Resources
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title:</strong></td>
<td>Judy Clock</td>
</tr>
<tr>
<td><strong>Group Size:</strong></td>
<td>individual</td>
</tr>
<tr>
<td><strong>Materials:</strong></td>
<td>Judy Clock, 3&quot;x5&quot; time cards</td>
</tr>
</tbody>
</table>

**Procedure:**

1. Teacher paints clock face on back side of a 3"x5" card and the appropriate time on the front side.
2. Give the student a Judy Clock and several prepared cards. After the student reads the time on the card and sets the time on the Judy Clock, he/she turns over the card and checks the time with the picture.

![Image of a clock with 3 o'clock displayed]
Student Learning Objective(s) The student is able to tell time to the quarter hour.

Related Area(s)

Suggested Objective Placement

State Goal

District Goal

Program Goal

Suggested Activities: Grade(s)

<table>
<thead>
<tr>
<th>Title:</th>
<th>The Quarter Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>small group/entire class</td>
</tr>
<tr>
<td>Materials:</td>
<td>circular regions, clock stamp and pad, pencil</td>
</tr>
</tbody>
</table>

Procedure:
1. Teacher directs class to fold circular region into two parts of the same size.
2. Shade each half.
3. Teacher directs class to fold circular region twice in order to obtain four parts of the same size.
4. Shade each quarter.
5. Fold a clock face into four equal parts and shade one-fourth.
6. Compare:

and thus relate one-fourth of the circular region to a clock face showing quarter past 12.

Suggested Monitoring Procedures

<table>
<thead>
<tr>
<th>Mini-Test:</th>
<th>&quot;Hands&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>entire class</td>
</tr>
<tr>
<td>Materials:</td>
<td>clock faces</td>
</tr>
<tr>
<td>Procedure:</td>
<td>Show these times:</td>
</tr>
</tbody>
</table>

Thyer, Dennis, Teaching Mathematics to Young Children, Holt, Rinehart and Winston, 1971, pp. 160-161


Clock Stamp - Developmental Learning Materials, 7440 Natchex Avenue, Niles, Illinois 60648 Price: $2.90

Possible Resources

District Resources
### Suggested Activities: Grade(s)

<table>
<thead>
<tr>
<th>Grade(s)</th>
</tr>
</thead>
</table>

- Demonstrate how and when a minute hand moves from one hour to the next it has covered one-fourth of the face of the clock when it gets to 3.
- Use a series of similar activities to illustrate the concept of quarter to.

### Suggested Monitoring Procedures

<table>
<thead>
<tr>
<th>Procedures</th>
</tr>
</thead>
</table>

### Possible Resources

<table>
<thead>
<tr>
<th>Possible Resources</th>
</tr>
</thead>
</table>

### District Resources

<table>
<thead>
<tr>
<th>District Resources</th>
</tr>
</thead>
</table>
Student Learning Objective(s) The student is able to tell time by five-minute intervals.

Suggested Objective Placement 3-4

State Goal 1, 2, 7

District Goal

Program Goal

Related Area(s)

Suggested Activities: Grade(s) 3-4

Title: Midnight

Group Size: two to twelve

Materials: Two decks of cards. One deck has clock faces and the time written on the cards; the second deck has the clock face only. No two cards are alike. Prepare enough markers for each player to cover cards.

Procedure:

1. Teacher selects a student to be "caller." Caller holds the cards with the written notations.
2. Teacher selects student to deal the cards (about 8 to a player—just so each player has an equal number of cards).
3. The caller reads his/her cards one at a time. If a player has the appropriate clock, he/she puts a marker on the clock.
4. The first player to cover all his/her cards calls out "Midnight!"

Suggested Monitoring Procedures

Mini-Test: "Five-Minute Intervals:

Group Size: entire class

Materials: clock faces

Procedure: Tell these times.

Possible Resources


L-01119-P

LAP from ESD 109 collection

District Resources
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

District Resources

615
Student Learning Objective(s): The student is able to write time in notation, i.e., 12:00, 12:30, 12:15, 12:55

Related Area(s):

Suggested Activities: Grade(s) 3

Title: Clock Puzzle Strips
Group Size: individual or partners
Materials: 3"x12" tagboard strips

Procedure:
1. Teacher prepares tagboard strips showing clock face on right and written time on the left. Cut the strip along a zig-zag line, separating the clock face from the written notation. Each zig-zag should be different (to make puzzle pieces).

   12:55

   Teacher directs students to fit the puzzle pieces together.

   5:42

   6:15

   District Resources

   Digital Clock

   Paper and pencil test—teacher dictates and student writes the time.

   Teacher gives students clock faces on paper. Students write the correct time below the face.

   Mini-Test: "Time in Notation"
   Group Size: entire class
   Materials: clock faces (see below)

   Procedure:
   1. Write time in notation.
   
      Examples:
Suggested Activities: Grade(s) 3

Title: Paper Plate Clocks
Group Size: individual
Materials: paper plates, strips for hands, brads, crayon or pencil

Procedure:
1. Teacher directs students to make paper plate clocks (teacher demonstrates how).
2. Teacher gives a time and directs students to set their clocks appropriately.

Variation:
Select students who are quicker than the others to act as "expert watchmakers". These students may check other students' clocks and help adjust them. Older students may also be helpful.

Extension:
Some students may make up problems for each other to solve, such as: "I usually wake up at 7:45 a.m. Today I woke up ten minutes early. What time was it?"
Student Learning Objective(s): The student values estimation as a useful skill in time measurement.

Related Area(s):

Suggested Activities: Grade(s) K-3

<table>
<thead>
<tr>
<th>Title:</th>
<th>Hour Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>two students</td>
</tr>
<tr>
<td>Materials:</td>
<td>pencils and paper</td>
</tr>
<tr>
<td></td>
<td>picture of transportation vehicles with the time</td>
</tr>
<tr>
<td></td>
<td>in hours and minutes that various members of a</td>
</tr>
<tr>
<td></td>
<td>family spent on each in the summer (see picture on</td>
</tr>
<tr>
<td></td>
<td>back)</td>
</tr>
</tbody>
</table>

Procedure:
- Each student chooses one of the elapsed times in the picture.
- Each then estimates the total hours for the elapsed time for both pictures and writes the estimate on a piece of paper.
- The players work together to find the exact number of hours and minutes.
- A point is scored for each student whose hour estimate was correct.
- Play again, choosing two elapsed times each. Score 2 points for each correct estimate.
- Play again, choosing three elapsed times each. Score 3 points for each correct estimate.
- Start over again with 1 elapsed time each. Continue until one student is ahead by 4 or more points.
- This student is the winner.

See page 312 for illustration.
<table>
<thead>
<tr>
<th>Suggested Activities:</th>
<th>Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fun Time</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>55 minutes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Car" /></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 hours 17 minutes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Airplane" /></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 hours 30 minutes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Car" /></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 hours 59 minutes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Airplane" /></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 hours 29 minutes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Ship" /></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 hour 22 minutes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Airplane" /></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 hours 36 minutes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Ship" /></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 minutes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Car" /></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 hours 45 minutes</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Ship" /></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Car" /></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><img src="image" alt="Bus" /></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SMALL SCHOOLS PROJECT

SUBJECT: Mathematics

SPECIFIC AREA: Measurement: Money

The student knows:

. the term "penny", "nickle", and "dime" are monetary units.
. that five pennies have the same value as one nickel.
. that ten pennies have the same value as one dime or two nickels.
. the equivalent change of coins equal to or less than 10 cents.
. 25 pennies have the same value as a quarter.
. a quarter is one-fourth of a dollar.
. the combination of coins which have the same value as a quarter.
. the combination of coins which have the same value as one dollar.

The student is able to:

*. combine coins equal to or less than 10 cents.
*. combine coins that have the same value as a quarter.
*. combine coins that have the same value as a dollar.

The student values:

. estimation as a useful skill in money measurement.
<table>
<thead>
<tr>
<th>PHYSICAL EDUCATION</th>
<th>MUSIC</th>
<th>SOCIAL STUDIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART</td>
<td>LANGUAGE ARTS</td>
<td>MATH</td>
</tr>
<tr>
<td>SCIENCE</td>
<td>HEALTH</td>
<td>READING</td>
</tr>
<tr>
<td>CAREER EDUCATION</td>
<td>ENVIRONMENTAL EDUCATION</td>
<td>OTHER</td>
</tr>
</tbody>
</table>

6:30
**Student Learning Objective(s)**

A. The student knows the terms "penny", "nickel" and "dime" are monetary units.

B. The student knows that five pennies have the same value as one nickel.

C. The student knows that ten pennies have the same value as one dime or two nickels.

D. The student knows the equivalent change of coins equal to or less than ten cents.

**Related Area(s)**

**Suggested Objective Placement**

<table>
<thead>
<tr>
<th>State Goal</th>
<th>District Goal</th>
<th>Program Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.7.8.9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Suggested Activities: Grade(s)** K-1

<table>
<thead>
<tr>
<th>Title:</th>
<th>Cards' and Money</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>small groups</td>
</tr>
<tr>
<td>Materials:</td>
<td>18 3&quot;x5&quot; tagboard cards, 10 pennies, 4 nickels, 4 dimes</td>
</tr>
</tbody>
</table>

**Procedure:**

1. Teacher provides a stack of cards (or circles), each of which has a value of 1c, 5c or 10c written on it, and places them in a pile face down.
2. Teacher provides each of two students a supply of an equal number of pennies, nickels and dimes.
3. Teacher directs first student to take the top card and turn it over to show the value written on the other side. The student must give the other student that amount of money.
4. The second student takes his/her turn.
5. When one student runs out of coins, the student with all the coins is the winner.

**Variations:**

1. Make cards from 1c to 5c and play the same game.
2. Make cards from 5c to 10c and play the same game.

**Title:** Ring-A-Coin

| Group Size: | small groups |
| Materials: | 1 2"x4" wood block 20" long, 5-1/4" dowel pegs, 6 1" wide rings from oatmeal cereal boxes, pennies |

**Mini-Test:** "Small Change:

| Group Size: | entire class |
| Materials: | pictures of coins |

**Procedure:**

- Tell how much money:


**Possible Resources**

Coin Stamps and Pad from Developmental Learning Materials

**District Resources**
Suggested Activities: Grade(s) K-1

Title: Pick A Penny

Group Size: small groups

Materials: small box with 50 pennies, stack of 3x5 cards or construction paper in rectangles or circles

Procedure:

. Students stand behind a given line and toss the rings onto the peg board. When a ring lands on a peg, the student receives the number of pennies marked on that peg.
. Student adds total number of pennies and tells the equivalent of that amount in nickels, dimes and pennies.

Teacher observes student to assure that he/she is removing the proper amount of money.

Variation: Add nickels and dimes and increase the number on the cards to 10.
**Suggested Objective Placement**

**State Goal**

**District Goal**

**Program Goal**

---

**Student Learning Objective(s)**

A. The student is able to combine coins equal to or less than 10 cents.

B. The student is able to combine coins that have the same value as a quarter.

---

**Related Area(s)**

---

**Suggested Activities: Grade(s)**

---

<table>
<thead>
<tr>
<th>Title: Pennies, Nickels, Dimes</th>
<th>Group Size: individuals, small group, entire class</th>
<th>Materials: coin stamp and pad to develop play money in the form of pennies, nickels, and dimes</th>
</tr>
</thead>
</table>

**Money Chart (see below)**

**Procedure:**

- Use pennies, nickels, or dimes to show the amount of money in as many different ways as possible.

<table>
<thead>
<tr>
<th>1 nickel</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 dime</td>
</tr>
<tr>
<td>1 quarter</td>
</tr>
</tbody>
</table>

---

**Possible Resources**

**Coin Stamps**

- **From:** Developmental Learning Materials, 7440 Matchex Avenue, Niles, Illinois 60648
- **Price:** $5.50 U.S. heads
- **Price:** $5.50 U.S. tails

---

**District Resources**
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>District Resources</td>
</tr>
</tbody>
</table>
Student Learning Objective(s)  
A. The student knows the terms "penny", "nickel" and "dime" are monetary units.  
B. The student knows that five pennies have the same value as one nickel.  
C. The student knows that ten pennies have the same value as one dime or two nickels.  
D. The student knows the equivalent change of coins equal to or less than ten cents.  

Related Area(s)  

<table>
<thead>
<tr>
<th>Suggested Activities</th>
<th>Grade(s)</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title:</td>
<td>How Many Ways Can You Make 10?</td>
<td></td>
</tr>
<tr>
<td>Group Size:</td>
<td>small group or individual</td>
<td></td>
</tr>
<tr>
<td>Materials:</td>
<td>1 dime, 3 nickels, 15 pennies, chart (see below)</td>
<td></td>
</tr>
</tbody>
</table>

Procedure:  
Students are to find as many different ways as possible to find the amount of money to 10¢. (See diagram.)

<table>
<thead>
<tr>
<th>Dime</th>
<th>Nickel</th>
<th>Penny</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>10</td>
</tr>
</tbody>
</table>

Mini-Test: "Cents"  
Group Size: entire class  
Materials: coin picture  
Procedure:  
Tell how much money:

Possible Resources:  
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>District Resources</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Student Learning Objective(s)  
A. The student knows that 25 pennies have the same value as a quarter. State Goal 1, 7, 8, 9  
B. The student knows that a quarter is one-fourth of a dollar. C. The student knows the combination of coins which have the same value as a quarter. D. The student is able to combine coins that have the same value as one dollar.  

Suggested Activities: Grade(s) 2-3  

<table>
<thead>
<tr>
<th>Title: How Many Ways To Make A Quarter?</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size: entire class</td>
<td>Place a number of coins on a table. Have each student select a group of coins that have the same value as a quarter, if necessary. Observe if students can do this successfully.</td>
<td>Henderson, George L., Let's Play Games in Mathematics, Vol. 2, National Textbook Co., 1970, p. 48</td>
</tr>
<tr>
<td>Materials: sets of play coins or paper &quot;coins&quot; labeled according to value (these can be dittoed and cut out by students -- pennies can be dittoed on tan or rust-colored paper, other coins on gray), record sheets</td>
<td>Mini-Test: &quot;Less Than A Dollar&quot;</td>
<td></td>
</tr>
</tbody>
</table>

Procedure:  
- Teacher instructs the students to make as many different combinations of coins that have the same value as a quarter.  
- Student records the kinds and number of coins needed to make up 25 cents, e.g., 5 pennies, 2 nickels, 1 dime.
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>2-3</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Title:</td>
<td>Exchange</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group Size:</td>
<td>2-4 or more</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Materials:</td>
<td>sets of imitation &quot;coins&quot;, either purchased or teacher-made, have about 100 pennies, 25 nickels, 25 dimes and 10-20 quarters; a spinner marked as follows:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Procedure:

- Teacher places coins in a "bank".
- Each student, in turn, spins the spinner.
- The number the spinner points to indicates the amount of money a player can withdraw from the bank.
- When players have accumulated 25 cents, in any combination, they may exchange them for a quarter.
- Player with the most quarters at the end of play wins.
Student Learning Objective(s) A. The student knows the combination of coins which have the same value as one dollar. B. The student is able to combine coins that have the same value as a dollar. C. The student values estimation as a useful skill in money measurement.

Related Area(s)

Suggested Activities: Grade(s) 2-3

<table>
<thead>
<tr>
<th>Title: Dollars</th>
<th>Group Size: individual (or 1 student per set of cards)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials: a set (or sets) of numbered cards (15 to 20) that show sets of coins—some equaling a dollar, some not—each card should be numbered: a record sheet with numbers on corresponding to the numbers on the cards</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Record Sheet Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
</tr>
<tr>
<td>3.</td>
</tr>
<tr>
<td>4.</td>
</tr>
<tr>
<td>5.</td>
</tr>
</tbody>
</table>

Procedure:
- Teacher instructs students to count money shown on a card.
- The student records whether the money shown on the card has the same value as a dollar or not, with a yes or no on the appropriate line. If the answer is no, the student puts down the value of the money on the card.

Mini-Test: "Loose Change"

<table>
<thead>
<tr>
<th>Group Size: entire class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials: coins or coin picture</td>
</tr>
</tbody>
</table>

Procedure:
- Tell how much money:

Possible Resources
- Silvey, Linda, Money Matters, Creative Publications, 1973, pp. 7-9
- Coin stamps and stamp pad
<table>
<thead>
<tr>
<th>Title:</th>
<th>Dollar Exchange</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>2-4 or more</td>
</tr>
<tr>
<td>Materials:</td>
<td>play &quot;coins&quot;, enough to include 100 pennies, 50 dimes, 50 nickels, 25 quarters, 24 half-dollars, 25 dollar bills; a box (for bank); a spinner marked as follows:</td>
</tr>
</tbody>
</table>

**Procedure:**
1. Teacher places coins in a bank.
2. Students take turns spinning the spinner.
3. The number a spinner points to indicates the amount of money a player can withdraw from the bank.
4. When players have accumulated a dollar in change, they may exchange the coins for a dollar bill.
5. The player with the greatest number of dollar bills at the end of the game wins.
Student Learning Objective(s): The student values estimation as a useful skill in money measurement.

Suggested Objective Placement: 2-3

Student Learning Objective(s): The student values estimation as a useful skill in money measurement.

State Goal

District Goal

Program Goal

Related Area(s)

Suggested Activities: Grade(s) 2-3

Title: Best Estimator

Group Size: 2 students

Materials: Items of items to purchase that have been priced

Procedure:

- Each student chooses one of the priced items in the picture (see other side).
- Each then estimates the total cost of the items that were chosen and writes the estimate on a piece of paper. The estimate is to the nearer dollar.
- The two students work together to find the exact total. A point is scored for each player whose dollar estimate was correct.
- Play again, choosing two items each. Score 2 points for each correct estimate.
- Play again, choosing three items each. Score three points for each correct estimate.
- Start over with one item each.
- The student who is first ahead by four points is the winner.
Suggested Activities: Grade(s) ______

<table>
<thead>
<tr>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
</table>

**Model Sale**

- $1.99
- $2.49
- $3.75
- $1.85
- $2.25
- $50¢
- $3.35

District Resources
The student knows:

- The term "centimeter" refers to a metric unit of linear measurement. 329-1
- The term "inch" refers to a customary unit of linear measurement. 333-1
- The term "meter" refers to a metric unit of linear measurement equal to 100 centimeters or 10 decimeters. 335-2
- The term "foot" refers to a unit of linear measurement equal to 12 inches. 337-2
- The term "yard" refers to a unit of linear measurement equal to 3 feet or 36 inches. 339-2
- The term "half-inch" is a unit of linear measurement. 341-3
- The term "quarter-inch" is a unit of linear measurement. 343-3
- Two quarter inches equal one-half inch. 343-3-4
- Four quarter inches equal one inch. 343-3-4
- Four quarter inches equal two half inches. 343-3-4
- The term "kilo" refers to a metric unit of linear measurement. 345-3-4
- The term "perimeter" refers to the linear measurement around a given space. (geometry) 347-3-4
- The term "mile" is a customary unit of linear measurement used to indicate distance. 355-3-4

The student is able to:

- Compare size using the following terms: longer, shorter, largest, smallest, taller, tallest, longest, shortest, same. 349-K-1
- Measure an object(s) using centimeters. 329-1
- Measure the length of an object(s) using inches. 333-1
- Measure length using a meter stick. 335-2
- Measure length using a foot ruler. 337-2
- Measure length using a yardstick. 339-2
- Estimate lengths. 351-2-3
- Measure a specific length to the nearest half-inch. 343-3-4
- Measure a specific length to the nearest quarter-inch. 343-3-4
- Measure the perimeter of a simple geometric figure. 347-3-4
- Compute distance in miles. 355-3-4

The student values:
<table>
<thead>
<tr>
<th>PHYSICAL EDUCATION</th>
<th>MUSIC</th>
<th>SOCIAL STUDIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART</td>
<td>LANGUAGE ARTS</td>
<td>MATH</td>
</tr>
<tr>
<td>SCIENCE</td>
<td>HEALTH</td>
<td>READING</td>
</tr>
<tr>
<td>CAREER EDUCATION</td>
<td>ENVIRONMENTAL EDUCATION</td>
<td>OTHER</td>
</tr>
</tbody>
</table>
**Student Learning Objective(s)**

1. The student knows the term "centimeter" refers to a metric unit of linear measurement.
2. The student is able to measure an object(s) using centimeters.

**Related Area(s)**

**Suggested Activities:**

<table>
<thead>
<tr>
<th>Title</th>
<th>Group Size</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mystery Message</td>
<td>any number can play</td>
<td>centimeter ruler, ditto puzzle, answer sheet</td>
</tr>
</tbody>
</table>

**Procedure:**

1. Duplicate copies of a puzzle with the letters for a message placed at specific distances (in centimeters) from a center point.
2. Teacher tells students that something has disappeared in the classroom and that they can find a clue hidden in a mystery measuring maze.

**Mini-Test:** "Centimeter Measure"

<table>
<thead>
<tr>
<th>Group Size</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>entire class</td>
<td>centimeter ruler</td>
</tr>
</tbody>
</table>

**Procedure:**

1. Find the length of your mathematics textbook in centimeters.
**Suggested Activities:**

<table>
<thead>
<tr>
<th>Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
</table>

- Teacher gives students a list of measurements to find and asks them to find which letters have lines with those lengths.
- Students then unscramble the letters and combine them into words to discover the message.
- For this puzzle, you might hide one surprise coupon with the name of each student. The prize might be a treat or special privilege.

**Example Answer Sheet**

Fill in blanks with the letter of the line that measures each length.

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>3</td>
<td>12</td>
<td>10</td>
<td>16</td>
<td>8</td>
</tr>
</tbody>
</table>

(Numbers refer to centimeter measurements.)
Student Learning Objective(s)  A. The student knows the term "centimeter" refers to a metric unit of linear measurement.  B. The student is able to measure an object(s) using centimeters.

Related Area(s) ____________________________________________________________

Suggested Activities: Grade(s)  1  

<table>
<thead>
<tr>
<th>Title:</th>
<th>Measure Up!</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>pairs of students</td>
</tr>
<tr>
<td>Materials:</td>
<td>game board as follows: game cards 3&quot;x8&quot; with pictures of objects to be measured in centimeters, 2 rulers (actual rulers or drawn at bottom of game board)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Can You Measure Up?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yours</td>
</tr>
<tr>
<td>---</td>
</tr>
<tr>
<td>4 Centimeters</td>
</tr>
<tr>
<td>5 cm</td>
</tr>
<tr>
<td>1 cm</td>
</tr>
<tr>
<td>3 cm</td>
</tr>
</tbody>
</table>

18" X 24"

Arrow indicates length to measure

Suggested Monitoring Procedures  
Given a paper with objects drawn on it, students will measure in centimeters and record their answers.

Possible Resources  
Film: F-1946, Metric Measures Made Easy (ESD 109 collection)
L-00016-P LAP from ESD 109 collection

District Resources
### Suggested Activities: Grade(s) 1

<table>
<thead>
<tr>
<th>Procedure:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Student selects a side of the board. Cards are placed face down in a pile.</td>
</tr>
<tr>
<td>2. Student draws a card and measures, using a ruler between the arrows shown on the card. If it matches a measurement on their side of the board, the card is placed next to that measurement. If it does not match, the card is put at the bottom of the pile.</td>
</tr>
<tr>
<td>3. The first student to complete his/her side of the board wins.</td>
</tr>
</tbody>
</table>

### Suggested Monitoring Procedures

### Possible Resources

### District Resources

6.3.1
Student Learning Objective(s)  
A. The student knows the term "inch" refers to a customary unit of linear measurement.  
B. The student is able to measure an object(s) to the nearest inch.

Related Area(s)  

Suggested Activities:  
Grade(s)  1  

Title: Shadow Measure  
Group Size: pairs of students  
Materials: chalk, ruler, record sheet  

Procedure:  
. Teacher picks a sunny day to take students to a spot where they can see their shadows.  
. Students will mark their partner's shadow. Each student then measures his/her own shadow with the ruler, to the nearest inch.  
. The students can measure their shadow five times during the day, e.g., 9:30, 10:30, 12:30, 1:30 and 2:30 and compare the differing lengths.  

Variations:  
. Students can make graphs to show the different lengths.  
. Questions teacher can ask: "How much taller is the tallest shadow?" "How much shorter is the shortest shadow?"

Suggested Monitoring Procedures:  
Given a paper with objects drawn in inches, the students measure with rulers and record answers next to object.  

Mini-Test:  "Inch Measure"  
Group Size: entire class  
Materials: inch ruler, pencils (new)  

Procedure:  
. Find the length of a new No. 2 pencil in inches.

Possible Resources:  
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>District Resources</td>
</tr>
</tbody>
</table>
### Student Learning Objective(s)

A. The student knows the term "meter" refers to a metric unit of linear measurement equal to 100 centimeters or 10 decimeters.

B. The student is able to measure using a meter stick.

### Related Area(s)

### Suggested Activities: Grade(s) 2

<table>
<thead>
<tr>
<th>Title:</th>
<th>Measuring With Meter Stick</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>small group</td>
</tr>
<tr>
<td>Materials:</td>
<td>meter stick</td>
</tr>
</tbody>
</table>

**Procedure:**

1. Give the students each a meter stick. Ask them first to find the number of centimeters and then the number of decimeters.

<table>
<thead>
<tr>
<th>Title:</th>
<th>Measuring The Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size:</td>
<td>individual</td>
</tr>
<tr>
<td>Materials:</td>
<td>meter stick, record sheet</td>
</tr>
</tbody>
</table>

**Procedure:**

1. The students are to measure the room dimensions, sidewalk, wall, etc., with the meter stick and record the measurements.

### Suggested Monitoring Procedures

<table>
<thead>
<tr>
<th>Mini-Test: &quot;Meter Measure&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size: small group</td>
</tr>
<tr>
<td>Materials: meter sticks</td>
</tr>
</tbody>
</table>

**Procedure:**

1. Each student measures one of the following using a meter stick:
   - length of hallway
   - width of hallway
   - your height
   - the length of five of your paces (strides)

### Possible Resources

**District Resources**
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Grade(s) 2</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
</table>

**Title:** Metric Train  
**Group Size:** small groups  
**Materials:** tagboard 2 cm wide and 10 cm long, pencil, meter stick for each student

**Procedure:**
1. The teacher measures and marks the centimeters on 20 tagboard rulers.
2. The students count the centimeters in each tagboard ruler (which is a decimeter long). The student then makes a train next to the meter stick of the decimeter rulers to equal a meter.
3. The student then counts the decimeters and can now count the centimeters 1 to 100, or he/she can add ten 10 times.
Student Learning Objective(s)

A. The student knows the term "foot" refers to a unit of linear measurement equal to 12 inches.  
B. The student is able to measure using a foot ruler.

Suggested Objective Placement

<table>
<thead>
<tr>
<th>State Goal</th>
<th>District Goal</th>
<th>Program Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 7, 9, 10</td>
<td></td>
<td>1, 3, 4</td>
</tr>
</tbody>
</table>

Related Area(s)

Suggested Activities: Grade(s) 2

<table>
<thead>
<tr>
<th>Title:</th>
<th>Group Size:</th>
<th>Materials:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inches</td>
<td>individual, small or large group</td>
<td>ruler marked only in inches</td>
</tr>
</tbody>
</table>

Procedure:

1. Give a ruler to each student and ask students to count the inches.

<table>
<thead>
<tr>
<th>Title:</th>
<th>Group Size:</th>
<th>Materials:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foot/Inches</td>
<td>individual, small or large group</td>
<td>tagboard strips an inch in length, tagboard strips a foot in length</td>
</tr>
</tbody>
</table>

Procedure:

1. Teacher lays out twelve inch-long strips and compares them with a one-foot strip.

<table>
<thead>
<tr>
<th>Title:</th>
<th>Group Size:</th>
<th>Materials:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room Measure</td>
<td>individual</td>
<td>1-foot rulers, worksheets</td>
</tr>
</tbody>
</table>

Procedure:

1. Teacher directs student to measure various objects in the room, e.g., window width, student height, etc.

Possible Resources

<table>
<thead>
<tr>
<th>Suggested Activities</th>
<th>Grade(s) 2</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
</table>

**Title:** Shadow Measure  
**Group Size:** pairs of students  
**Materials:** foot ruler, pencil, record sheet, sunny day

**Procedure:**  
. Teacher takes students outside on a sunny day and has them measure shadows of various objects to the nearest foot, e.g., trees, playground equipment, principal, etc. These can be measured at different times of the day by the same students or different students.  
. Record the findings on the bulletin board or chalkboard. These answers can be used for discussion in related area of science.

**Title:** Tree Shadows  
**Group Size:** entire class  
**Materials:** rulers, tree (must be short enough so that students can reach the top using stools or kitchen step ladder)

**Procedure:**  
. Teacher and students select a suitable tree and measure its height. Students then measure the tree's shadow.  
. Measure students’ heights and have them lie down head to head, or feet to feet, to determine the height of the tree.
Student Learning Objective(s) A. The student knows the term "yard" refers to a unit of linear measurement equal to 3 feet or 36 inches. B. The student is able to measure using a yardstick.

Suggested Objective Placement

State Goal 1, 7, 9, 10
District Goal
Program Goal 1, 3, 4

Related Area(s)

Suggested Activities: Grade(s) 2

Title: Mini-Test: "Yard Measure"
Group Size: small group
Materials: yardsticks
Procedure:
. Each student measures one of the following using a yardstick:
. width of classroom
. length of chalkboard
. height of doorway
. width of window
. length of bulletin board

Possible Resources

District Resources

Materials:
. yardstick

Procedure:
. Give each student a yardstick and have them count the inches. Ask: "How many inches in a yard? How many feet in a yard?"
. Measure objects in room. Write equivalent measurements. Desk is 1 yard 6 inches, or 42 inches, or 3 feet 6 inches.

Title: Group Size: individual, small group, entire class
Materials: yardstick

Procedure:
. Lay out foot strips and compare to length of yardstick.

Title: Group Size: any number
Materials: tagboard strips 1-foot long

Procedure:
. Lay out foot strips and compare to length of yardstick.
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>District Resources</td>
</tr>
</tbody>
</table>

6

6.3
Suggested Objective Placement 3

Student Learning Objective(s)
A. The student knows the term "half-inch" is a unit of linear measurement.
B. The student is able to measure a specific length to the nearest half-inch.

Related Area(s)

Suggested Activities: Grade(s) 3

Title: Mystery Message
Group Size: entire class
Materials: worksheets with a puzzle like the example below:

Procedure:
1. Tell the students that something has disappeared in the classroom and they can find a clue hidden in a mysterious maze.
2. Duplicate copies of a puzzle with the letter for a message placed at specific distances from a center point.
3. Give students a list of measurements to find and ask them to find which letters have lines with those lengths.
4. Students then unscramble the letters and combine them into words to discover the message.

Suggested Monitoring Procedures
The student will measure drawings to the nearest half-inch, using a ruler.
Teacher observes the student using the ruler.

Mini-Test: "Nearest Half-Inch"
Group Size: entire class
Materials: inch rulers with one-half unit marks
Procedure:
1. Draw a line 5 1/2 inches long.

Possible Resources
Suggested Activities: Grade(s) 3

- Doing this puzzle, you might hide one surprise coupon with the name of each student. The prize might be a treat or a special privilege for each individual.

**Direction and Answer Sheet**

Fill in blanks with the letter of the line that measures each length:

| 6½" | 2½" | 5½" | 3½" | 4½" |

Possible Resources
Student Learning Objective(s) A. The student knows the term "quarter-inch" is a unit of linear measurement. B. The student knows that two quarter-inches equal one-half inch. C. The student knows that four quarter-inches equal one inch. D. The student knows that four quarter-inches equal two half-inches. E. The student is able to measure a specific length to the nearest half-inch. F. The student is able to measure a specific length to the nearest quarter inch.

Suggested Activities: Grade(s) 3

Title: Mystery Message
Group Size: small group
Materials: yardstick with quarter-inch divisions

Procedure:
. Tell the students that something has disappeared in the classroom and they can find a clue hidden in a mysterious measuring maze.
. Duplicate copies of a puzzle with the letters for a message placed at specific distances from a center point.
. Give each student a list of measurements to find and ask him/her to find which letters have lines those lengths.
. Students unscramble the letters and combine them into words to discover the message.
. For this puzzle, you might hide one surprise coupon with the name of each student. The prize might be a treat or a special privilege for each individual.
. Clue might be bookcase (word 7). When the students have unscrambled the letters they will look in the bookcase for a surprise coupon.
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

District Resources
**Student Learning Objective(s)**
The student knows the term "kilometer" is a metric unit of linear measurement.

**Related Area(s)**

**Suggested Activities: Grade(s)** 3

<table>
<thead>
<tr>
<th>Title:</th>
<th>Group Size: small group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials: meter stick</td>
<td></td>
</tr>
</tbody>
</table>

**Procedure:**

- Before introducing kilometer, you may ask different students to use meter sticks to mark off distances of 2, 3 and 4 meters. Develop the idea of how long these distances are.
- Using their meter sticks, the student may measure off 100 meters and get some idea that 10 times that distance is quite a large unit. It is a kilometer. At this point measure in meters, or kilometers.

<table>
<thead>
<tr>
<th>Meters</th>
<th>Kilometers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distance in playground:</td>
<td>Distance from town to town:</td>
</tr>
<tr>
<td>Distance of room:</td>
<td>Distance across countries:</td>
</tr>
</tbody>
</table>

- Some hints: Kilometers are used to measure large distances. "Kilo" means 1000. One kilometer is the same length as 1000 meters.

**Suggested Monitoring Procedures**

- Ask the student when would he/she use the kilometer to measure distance.

**Possible Resources**

Mini-Test: "Long Distances"

- If centimeter is used to measure common lengths, for example body measurements, and the meter is used to measure intermediate lengths, for example room dimensions, what is used to measure long distances, for example, from one city to another?

**District Resources**
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
</table>

District Resources
SMALL SCHOOLS PROJECT

Student Learning Objective(s) A. The student knows the term "perimeter measurement around a given space (geometry). B. The student is at a given figure.

Related Area(s)

Suggested Activities: Grade(s) ___

<table>
<thead>
<tr>
<th>Title:</th>
<th>Group Size: small group or entire class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials:</td>
<td>transparencies, overhead projector, ruler</td>
</tr>
</tbody>
</table>

Procedure:
1. Make a grid on transparency. Show it, using an overhead projector. Example:

   ![Grid Diagram]

2. Students may come up and show how to measure the perimeter.

   -347-
Suggested Objective Placement

"r" refers to the linear

o measure the perimeter of

State Goal 1, 7, 10

District Goal

Program Goal 1, 2, 3, 4

Possible Resources


District Resources
Suggested Activities: Grade(s) 3

. Students who have difficulty with the perimeter may work with cut-outs which have the measures written on each side, or blank on each side, or blank on one side. These could be laminated so they would last.

. Students will enjoy measuring the distances around various objects in the room: for example, a small window, the teacher's desk, their own desk or some books. This can be done in inches or centimeters.

. Students may be challenged to find the pattern in the following: Give them a triangle, square, pentagon and a hexagon. The sides of each shape are either 3 inches or 8 centimeters in length.

. Chart to record:

<table>
<thead>
<tr>
<th>No. of Sides</th>
<th>Length of Each Side</th>
<th>Distance Around</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>8 cm</td>
<td>24 cm</td>
</tr>
<tr>
<td>4</td>
<td>8 cm</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>8 cm</td>
<td></td>
</tr>
</tbody>
</table>
Objective(s) The student is able to compare size using the following terms: largest--smallest; taller--longer--shorter; tallest--longest--shortest; same.

Grade(s) K-1

Suggested Monitoring Procedures

Teacher works individually with students. From a collection of objects varying in length, the student selects object in response to teacher questions or directions. Sample questions or directions:

"Which pencil is shorter, the red one or the blue one?"

"Which pencil is the longest?"

"Pick up the shortest crayon."

"Put the smallest bead in the box."

Mini-Test: "Comparing"

Group Size: entire class

Materials: figures on paper to compare

Procedure:

1. Mark with an X the largest and with a ✓ the smallest.

2. Mark with an X the longest and with a ✓ the shortest.

Possible Resources

### Suggested Activities

| Grade(s) | K-1 |

#### Cylinders

**Group Size:** individual  
**Materials:** cardboard tubing cut into graduated sizes

**Procedure:**
- Teacher gives following directions: "Students arrange tubing from tallest to shortest."
- Teacher discusses with students the tubes that are short, tall, shorter, taller, shortest, tallest.

#### Straw Comparisons

**Group Size:** individual, small group, entire class  
**Materials:** cards labeled as follows—Same, Longest, Shortest, Longer, Shorter, Taller, Smaller; 7 drinking straws, (some of which are the same length)

**Procedure:**
- Teacher gives the following directions to students:
  1. Find two straws of the same length.  
  2. Find the longest straw—label it.  
  3. Find the shortest straw—label it.  
  4. Find two straws of different lengths. Label the shorter straw.
  5. Prop two straws on end against the side of your desk. If they are of different lengths, label one "taller" and the other "shorter".  

#### Suggested Monitoring Procedures

- Mark with an X the shapes that are the same.
- Teacher elicits verbal response.
- Teacher observation.
## Suggested Objective Placement

**Learning Objective(s)**

The student is able to estimate lengths.

<table>
<thead>
<tr>
<th>State Goal</th>
<th>District Goal</th>
<th>Program Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>

### Possible Resources

- ESD 109 films
- F - 1670 A Changing Size

### Suggested Monitoring Procedures

- Teacher observes success during the listed activity.
- Keep a record of success in doing the activity on several different occasions.

### Mini-Test: "Estimating Lengths"

**Group Size:** one student

**Procedure:**

1. Ask student to find objects that he/she estimates to be the same or different in length.
2. Ask student to estimate distances between two places in the room, and tell why he/she estimates a difference.
3. Determine whether estimates and reasoning are logical.

### Possible Resources

- ESD 109 films
- F - 1670 A Changing Size

### Teacher Observations

- Keep a record of success in doing the activity on several different occasions.

### District Resources

- ESD 109 films
- F - 1670 A Changing Size
Title: Centimeter Measure

Group Size: individual, small group or whole class

Materials: 10 objects commonly found in any classroom

Procedure:

1. Draw a table, such as:

<table>
<thead>
<tr>
<th>Object</th>
<th>Guess in Centimeters</th>
<th>The Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pencil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crayon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chalk</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eraser</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Etc.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Guess the length of each object in centimeters. Record in guess column.
3. Measure the length of each object in centimeters. Record the answers in the table.
Student Learning Objective(s): The student is able to estimate lengths.

Suggested Objective Placement: 2-3

Related Area(s):

Suggested Activities: Grade(s) 2-3

<table>
<thead>
<tr>
<th>Title: Thumb Measures</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size: partners</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Materials: book</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Procedure:
1. Guess how many thumbs wide your book is.
2. Count the number of thumbs needed.
3. Compare your answer with your partner's answer.

Title: Span Measures

Group Size: partners

Materials: paper and pencil to record answers

A span is the distance from your thumb to your little finger when you spread your fingers out as wide as possible.

Procedure:
1. Guess the length of your desk in spans.
2. Measure the length of your desk in spans. Start with your thumb on the left side of your desk.
3. Use one hand only, opening it to its fullest.
4. Then close it by moving the thumb to the littlest finger each time.
5. Count the spans needed and record your answer.
6. Get your partner to measure desk with his/her span.
7. Compare your answers.
Suggested Activities: Grade(s) 2-3

Title: Discover My Pattern

A cubit is the distance from the tip of your middle finger to your elbow when your fingers are spread out as far as possible.

Group Size: one, small group or class

Materials: paper, pencil

Procedure:

1. Choose 10 objects to measure and record your answers on a chart like this:

<table>
<thead>
<tr>
<th>Object</th>
<th>Number of Spans</th>
<th>Number of Cubits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Door</td>
<td></td>
<td></td>
</tr>
<tr>
<td>My Desk</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Etc.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Find a pattern in your chart.
3. If you can find a pattern, what does it mean?

Possible Resources

**Student Learning Objective(s)**

A. The student knows the term "mile" is a customary unit of linear measurement used to indicate distance. B. The student is able to compute distance in miles.

**Related Area(s)**

**Suggested Objective Placement**

**State Goal**

**District Goal**

**Program Goal**

**Suggested Activities:**

<table>
<thead>
<tr>
<th>Grade(s)</th>
</tr>
</thead>
</table>

**Title:** The Estimate A Mile Contest

**Group Size:** small group

**Materials:** chalk, yardstick, odometer, pedometer, or cyclometer

**Procedure:**

1. Teacher marks off a mile by use of odometer, pedometer, or cyclometer.
2. Students are organized in pairs.
3. The problem is to determine a mile given:
   1. a yardstick and chalk,
   2. the starting point from which to measure,
   3. the direction in which to measure.
4. Students are allowed to measure the first ten yards only with the yardstick.
5. Each pair marks with chalk the point at which they estimate to be the "end".
6. Each pair determines their own strategy to "solve" the problem.

**Suggested Monitoring Procedures**

**Mini-Test:** "A Long Distance"

**Group Size:** one student

**Procedure:**

- Ask each student what customary unit of measure is used to measure long distances, e.g., distance between two cities.

**Possible Resources**


**District Resources**
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
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<tr>
<td>District Resources</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7.1.3
SMALL SCHOOLS PROJECT

SUBJECT: Mathematics

SPECIFIC AREA: Measurement: Capacity (Volume)

The student knows:

1. the term "liter" refers to a metric unit of volume measurement.
2. the terms "cup", "pint", "quart" and "gallon" refer to units of capacity measurement.
3. two cups equal one pint.
4. four cups or two pints equal one quart.

The student is able to:

1. measure capacity using the liter as the unit of measurement.
2. measure capacity using a "cup", "pint", "quart" or "gallon" as the unit of measure.

The student values:
<table>
<thead>
<tr>
<th>Optional Goals and Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical Education</td>
</tr>
<tr>
<td>Music</td>
</tr>
<tr>
<td>Social Studies</td>
</tr>
<tr>
<td>Art</td>
</tr>
<tr>
<td>Language Arts</td>
</tr>
<tr>
<td>Math</td>
</tr>
<tr>
<td>Science</td>
</tr>
<tr>
<td>Health</td>
</tr>
<tr>
<td>Reading</td>
</tr>
<tr>
<td>Career Education</td>
</tr>
<tr>
<td>Environmental Education</td>
</tr>
<tr>
<td>Other</td>
</tr>
</tbody>
</table>
**Student Learning Objective(s)**

A. The student knows that the terms "cup", "pint", "quart" and "gallon" refer to units of capacity measurement.

B. The student is able to measure capacity using a cup, pint, quart or gallon as the unit of measurement.

C. The student knows that two cups equal one pint.

D. The student knows that four cups or two pints equal one quart.

**State Goal**

**District Goal**

**Program Goal**

**Related Area(s)**

**Suggested Activities:**

<table>
<thead>
<tr>
<th>Title</th>
<th>Group Size</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fill 'Em Up!</td>
<td>small group</td>
<td>old suitcase or box, beans, rice, unpopped popcorn, buttons, beads,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>containers of these sizes -- cup, pint, quart, gallon (label each</td>
</tr>
<tr>
<td></td>
<td></td>
<td>container appropriately)</td>
</tr>
</tbody>
</table>

**Suggested Monitoring Procedures**

**Mini-Test:** "Liquid Measure"

<table>
<thead>
<tr>
<th>Group Size</th>
<th>Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>one student</td>
<td>cup, pint, and quart containers, a large jar to hold water, water supply</td>
</tr>
</tbody>
</table>

**Procedure:**

- Ask each student to find the capacity of the large jar in cups, pints and quarts and to record each answer.

**Possible Resources**


**District Resources**
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>1-3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title:</strong></td>
<td>Cups and Quarts</td>
</tr>
<tr>
<td><strong>Group Size:</strong></td>
<td>individual, small groups</td>
</tr>
<tr>
<td><strong>Materials:</strong></td>
<td>cup and quart measures, beans, rice, etc.</td>
</tr>
</tbody>
</table>

**Procedure:**

- Teacher instructs students to fill the cup with beans, then pour them into the quart measure. Students continue to do this, counting the number of cups used to fill the quart measure.
- Use the same procedure for above questions.

**Note:** Students need time by themselves, filling and refilling containers of many sizes, when developing concept of capacity. It is recommended that several jars or bottles and materials like beans, rice, etc., be available to students for practice in comparing and predicting capacity of containers.

**Possible Resources**
**Student Learning Objective(s)**

A. The student knows that the terms "cup", "pint", "quart" and "gallon" refer to units of capacity measurement.  
B. The student is able to measure capacity using a cup, pint, quart, or gallon as the unit of measurement.  
C. The student knows that two cups equal one pint.  
D. The student knows that four cups or two pints equal one quart.

**Related Area(s)**

<table>
<thead>
<tr>
<th>Suggested Activities:</th>
<th>Grade(s) 1-3</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
</table>
| **Title:** Cups, Pints, Quarts, Gallons | | | L-00360-P LAP  
ESD 109 collection |
| **Group Size:** individual or small group | | | |
| **Materials:** paper, paste, magazines, label | | | |

**Procedure:**

1. Students make a chart with 4 columns labeled:

<table>
<thead>
<tr>
<th>Cup</th>
<th>Pint</th>
<th>Quart</th>
<th>Gallon</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coffee</td>
<td>Tea</td>
<td>Paint</td>
<td>Thinner</td>
</tr>
</tbody>
</table>

2. List things (words or pictures) that would usually be measured with the different measures.

**Note:** Before introducing this activity, ask students to check at home, in stores and neighbors' homes and with parents, etc., about liquids and container sizes. On the following day, have students make the charts, using knowledge gained out of school, along with labels or pictures of products which they were able to secure. Display charts around the room.
<table>
<thead>
<tr>
<th>Suggested Activities: Grade(s)</th>
<th>Suggested Monitoring Procedures</th>
<th>Possible Resources</th>
</tr>
</thead>
</table>

District Resources

753
### Student Learning Objective(s)

A. The student knows that the term "liter" refers to a metric unit of volume measurement.

B. The student is able to measure capacity using the liter as the unit of measurement.

### Related Area(s)

### Suggested Activities: Grade(s) 2-3

<table>
<thead>
<tr>
<th>Title:</th>
<th>Group Size:</th>
<th>Materials:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liter Measure</td>
<td>entire class in groups of 2, 3 or 4</td>
<td>Assemble the following material for each group:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>large pitchers of water</td>
</tr>
<tr>
<td></td>
<td></td>
<td>liter measure marked in milliliters</td>
</tr>
<tr>
<td></td>
<td></td>
<td>plastic funnel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>several empty containers such as:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>paper drinking cup</td>
</tr>
<tr>
<td></td>
<td></td>
<td>coffee can</td>
</tr>
<tr>
<td></td>
<td></td>
<td>cottage cheese carton</td>
</tr>
<tr>
<td></td>
<td></td>
<td>salad dressing jar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>soft drink can</td>
</tr>
<tr>
<td></td>
<td></td>
<td>catsup bottle</td>
</tr>
<tr>
<td></td>
<td></td>
<td>large bleach bottle</td>
</tr>
<tr>
<td></td>
<td></td>
<td>plastic mixing bowl</td>
</tr>
<tr>
<td></td>
<td></td>
<td>instant coffee jar</td>
</tr>
<tr>
<td></td>
<td></td>
<td>record sheets</td>
</tr>
<tr>
<td></td>
<td></td>
<td>plastic bucket or large pan</td>
</tr>
</tbody>
</table>

**Procedure:**
- Students take five of the containers and fill them with water. Then pour the water into the liter measure. Students record whether the container held less than a liter, more than a liter, or a liter.

<table>
<thead>
<tr>
<th>More</th>
<th>Less</th>
<th>One</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>X</td>
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</tbody>
</table>
Suggested Activities: Grade(s) 2-3

Using five other containers, have students first estimate whether each container will hold less or more than a liter, or a liter exactly. Record on the record sheet. Students then check the estimates by following directions in the first paragraph.

Using the plastic bucket or large pan and the liter measure, have students place a given number of liters of water in the large container, e.g., measure five liters of water into the bucket.

Title: Liter Measure

Group Size: entire class

Materials: 5 different containers (#10 can, dishpan, pail, large bowl, sink), one liter measure, water

Procedure:

1. Copy the following table:

<table>
<thead>
<tr>
<th>Container</th>
<th>Estimated Number of Liters</th>
<th>Actual No. of Liters</th>
</tr>
</thead>
<tbody>
<tr>
<td>#10 can</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dishpan</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2. Record your liter estimates.

3. Have five different students fill each container using the liter measure. Students record to the nearest liter the actual number of liters.

Teacher observes the student as the measurement is being done.

District Resources: Kids' Stuff Math
SMALL SCHOOLS PROJECT

SUBJECT: Mathematics
SPECIFIC AREA: Measurement: Weight

The student knows:

- the term "kilogram" refers to a metric unit of weight.
- the term "gram" refers to a metric unit of weight.
- the term "pound" refers to a unit of weight.

The student is able to:

- weigh objects to the nearest kilogram.
- weigh objects to the nearest gram.
- weigh objects to the nearest pound.
<table>
<thead>
<tr>
<th>Optional Goals and Activities</th>
<th>Physical Education</th>
<th>Music</th>
<th>Social Studies</th>
</tr>
</thead>
<tbody>
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</tbody>
</table>
### Student Learning Objective(s)

A. The student knows the term "kilogram" refers to a metric unit of weight.  
B. The student is able to weigh objects in the nearest kilogram.

### Related Area(s)

State Goal  1, 6, 7
District Goal
Program Goal

### Suggested Activities: Grade(s)  2-3

<table>
<thead>
<tr>
<th>Title</th>
<th>Measuring Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group Size</td>
<td>10 students at a time</td>
</tr>
<tr>
<td>Materials</td>
<td>1 metric bathroom scale (for entire group)</td>
</tr>
<tr>
<td></td>
<td>5 balance scales and metric weights</td>
</tr>
<tr>
<td></td>
<td>5 cans of soup, corn</td>
</tr>
<tr>
<td></td>
<td>5 tea bags</td>
</tr>
<tr>
<td></td>
<td>10 oranges</td>
</tr>
<tr>
<td></td>
<td>2 kg dried beans</td>
</tr>
<tr>
<td></td>
<td>5 cans of coffee</td>
</tr>
<tr>
<td></td>
<td>5 boxes of crackers</td>
</tr>
<tr>
<td></td>
<td>5 bars of soap</td>
</tr>
<tr>
<td></td>
<td>1 large box of laundry detergent</td>
</tr>
<tr>
<td></td>
<td>5 boxes of cereal</td>
</tr>
<tr>
<td></td>
<td>5 pennies</td>
</tr>
<tr>
<td></td>
<td>5 large books</td>
</tr>
</tbody>
</table>

### Suggested Monitoring Procedures

Teacher observation of individual student weighing objects  
In small groups, have the student demonstrate ability to weigh objects, e.g., marbles.  
Have students weigh several objects, recording the weights on a record sheet. Teacher checks sheet for accuracy.

### Mini-Test: "Nearest Kilogram"

<table>
<thead>
<tr>
<th>Group Size</th>
<th>one student</th>
</tr>
</thead>
<tbody>
<tr>
<td>Materials</td>
<td>empty 3 lb. coffee can, water supply, kilogram weights, simple balance</td>
</tr>
</tbody>
</table>

### Possible Resources

- Metric Bathroom Scale

### District Resources
### Suggested Activities: Grade(s) 2-3

#### Suggested Monitoring Procedures

<table>
<thead>
<tr>
<th>Possible Resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>District Resources</td>
</tr>
</tbody>
</table>

#### Teacher directs students to estimate the weight of the following objects, then weigh them:

<table>
<thead>
<tr>
<th>Est.</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can of corn</td>
<td>g</td>
</tr>
<tr>
<td>Crackers</td>
<td>g</td>
</tr>
<tr>
<td>10 pennies</td>
<td>g</td>
</tr>
<tr>
<td>1 orange</td>
<td>g</td>
</tr>
<tr>
<td>Can of coffee</td>
<td>g</td>
</tr>
<tr>
<td>1 large book</td>
<td>g</td>
</tr>
<tr>
<td>1 large book</td>
<td>kg</td>
</tr>
<tr>
<td>Student</td>
<td>kg</td>
</tr>
</tbody>
</table>

#### Teacher directs students to measure out the following portions, then check for accuracy:

(a) 1 kg of oranges  
(b) 500 g of laundry soap  
(c) 250 g of dried beans
**Title:** Grams  
**Group Size:** entire class in groups of 2 or 3  
**Materials:** Collect a set of the following for each group of 2 or 3 students:  
- 1 metric scale (a balance scale with weights, a kitchen scale or a combination of these scales as available)  
- a variety of items to weigh such as: can of soup, a book, several coins, a ruler, bags of dried beans or pebbles, or paper clips, an orange, a pencil, a tablet, a ball of clay.

**Introduction:**

Teacher directs students to:  
(a) Weigh 10 of the objects and record the weight in grams. Make a record of your observations.  
(b) Take several objects not weighed before and:  
1. estimate their weight  
2. measure their weight  
3. make a record of the estimate and actual weight

**Suggested Monitoring Procedures:**

Teacher observation of individual student weighing objects.  
In small groups, have the student demonstrate ability to weigh objects, e.g., marbles.

Have students weigh several objects, recording the weights on a record sheet. Teacher checks sheet for accuracy.

**Mini-Test:** "Gram Measures"  
**Group Size:** one student at a time  
**Materials:** 10 crayons, 10 pencils, chalkboard eraser, 5 pencils, simple balance, gram weights, chart to complete.

**Procedure:**

Ask student to estimate the weight of each in grams and then to find weight of each.

<table>
<thead>
<tr>
<th>Item</th>
<th>Guess</th>
<th>Actual Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>10 crayons</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 pennies</td>
<td></td>
<td></td>
</tr>
<tr>
<td>chalkboard eraser</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 pencils</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Possible Resources:**


Centicubes

**District Resources:**
### Suggested Activities: Grade(2)

<table>
<thead>
<tr>
<th>Est.</th>
<th>Actual</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 g</td>
<td>g paper clip</td>
</tr>
<tr>
<td></td>
<td>g pencil</td>
</tr>
</tbody>
</table>

(c) Using beans, coins, paper clips or something similar, students:

1. Select an amount equal to a given weight; then weigh to see how accurate the estimate was.

**Example:**

Find 500 g of paper clips:

**Centicubes:** Centicubes are a versatile and useful metric tool for primary students. Each edge is 1 cm, each surface 1 cm²; volume 1 cm³; weight 1 gram. The weight is surprisingly accurate. They come in 10 attractive colors, are durable, non-toxic, etc.

**Title:** Gram Measurements

**Group Size:** small group

**Materials:** various objects less than 50 g, 10 centicubes for each student

**Procedure:**

- Teacher directs students to:
  
  (a) Find 7 objects you estimate to be less than 50g

  (b) Students complete the chart:

<table>
<thead>
<tr>
<th>Object</th>
<th>Est. Wt.</th>
<th>Measured Wt.</th>
</tr>
</thead>
<tbody>
<tr>
<td>giant can</td>
<td></td>
<td></td>
</tr>
<tr>
<td>paper clip</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 washers</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

  (c) Put the objects in order, lightest first.

  (d) Try again with 7 other objects. Teacher asks: "Are your estimates improving?"