

Sample Pages from
Exploring Math: An Intervention &
Reinforcement Resource
Level C

- Teacher Resource Guide Introduction
- Unit 1: Reading and writing numbers
- Problem Solving Strategy Card: Looking for a Pattern
- Real Life Problem Solving Card: The Tallest Trees in the World

Introduction

Exploring Math: An Intervention and Reinforcement Resource is a mathematics program that offers intervention and reinforcement opportunities in key areas of the math curriculum. This program can be used for summer school, after school and tutoring programs, or to support a year-long mathematics program.

Each kit includes:

- Teacher Resource Guide
- 7 units of lessons, with each unit focused on a specific set of content and process skills
- 7 Problem-Solving Strategy Cards, to be used with problem-solving lessons in the units
- 14 Real-Life Problem-Solving Cards, to be used with problem-solving lessons in the units
- 14 Skill Application Games to reinforce skills introduced in unit lessons
- CD-ROM with downloadable practice pages, tests, problem-solving and strategy cards, reproducibles, and *PowerPoint*® Lessons
- 42 transparencies of problem-solving and strategy cards, for use with problem-solving lessons

Teacher Resource Guide

The guide provides the teacher with a variety of tools and information to use with the materials in this kit. It is divided into these sections:

- ✓ Introduction
- ✓ Management (includes standards correlations and a listing of objectives for each unit)
- ✓ Placement Test
- ✓ Problem-Solving Strategies
- ✓ Skill Application Games
- ✓ Glossary (a teacher/student guide to terms commonly used in the units)

The units in this kit contain specific, sequential lessons by topic, and are divided into units that target the following content goals and processes:

Numbers & Numeration
Operations & Computation
Fractions
Geometry
Measurement
Data Analysis
Problem Solving
Algebraic Thinking
Mathematical Reasoning

Introduction

About the Units

Each unit is organized as follows:

Table of Contents and Introductory Pages

Lessons

- Teacher Lesson
- Student Page(s)
- Pre-Test/Post-Test Page

Answer Keys

- Keys for Student Pages
- Keys for Pre-Tests/Post-Tests

Reproducible Pages

- commonly-used reference pages

Every unit in the *Exploring Math* kit contains the lessons, student activity pages, pre-tests and post-tests, answer keys, and reproducibles for the unit. Since the units are self-contained and topic-specific, they are also ideal for use as replacement units in the classroom.

Note: With each lesson, the teacher has the option of choosing from two forms of presentations. The first method is to use the lessons as written in the unit. For those who wish to use an alternative method, we have provided PowerPoint® slide shows that meet the same lesson objectives, and include warm-up activities and the main lesson as well. A thumbnail copy of the PowerPoint® slides is included in the lessons, and each PowerPoint® lesson presentation can be found on the CD-ROM.

The administration of Pre-Tests and Post-Tests provides a method of assessing student achievement. Pre-Tests should be given prior to each lesson, to assist the teacher in determining classroom needs. Forms for recording test scores for each student can be found at the beginning section of each unit.

Answer keys for both the student pages and the Pre-Tests and Post-Tests are located within each unit. The student page answer keys are presented first, followed by the test answer keys.

The last section of each unit contains reproducible pages that may be commonly used throughout the unit. Material on some of the pages are used as manipulatives. Other pages provide reference information for the students.

The following pages provide additional details of the lesson content and organization.

The World's Longest Rivers

River	Length in miles	Rounded to the nearest 10 miles	Rounded to the nearest 100 miles	Rounded to the nearest 1,000 miles
Nile	4,144			
Amazon	4,011			
Yangtze-Riang	3,963			
Mississippi-Missouri	3,741			
Yanisey-Angara	3,442			
Huang He	3,394			
Ob-Irtys	3,361			
Zaire-Congo	2,903			
Mekong	2,792			
Amur	2,721			

Number Cards 0-9

0	1	2	3
4	5	6	7
8	9	0	1
2	3	4	5
6	7	8	9

Page 95

1	2	3	4	5	6	7	8	9	0
1	2	3	4	5	6	7	8	9	0
1	2	3	4	5	6	7	8	9	0
1	2	3	4	5	6	7	8	9	0

Page 101

21 = 10 + 11
22 = 4 + 5 + 6 + 7
23 = 11 + 12
24 = 7 + 8 + 9
25 = 12 + 13
26 = 5 + 6 + 7 + 8

Page 114

100	100	100	100	100	100	100	100	100	100
100	100	100	100	100	100	100	100	100	100
100	100	100	100	100	100	100	100	100	100
100	100	100	100	100	100	100	100	100	100

Page 121

- 5, 7, 9
- Place the first house (2) with the last house (15) to total 154. Then place the second house (4) with the second-to-last house (15) to total 154, and so on.
- Multiply the median number in the series (either the middle number, or the midpoint between two middle numbers) by how many numbers are in the series. Other strategies are possible.

Page 127

- | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 |
|---|---|---|---|---|---|---|---|---|---|
- always a difference of 3
- | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 0 |
|---|---|---|---|---|---|---|---|---|---|
- multiple of 3
- Answers will vary.

Challenge: 30

Introduction

About the Units: Lesson Organization

The lesson is identified by number. The first number is the unit, the second number represents the lesson.

Each lesson identifies the topic area or skill to be covered in the lesson.

A visual representation of the lesson tests, student pages, and reproducibles is provided.

Focused learning objectives are identified. A standards correlations chart, located in the Teacher Resource Guide, matches lesson objectives to national standards.

The clock indicates approximate time for the activity. Times are provided for the warm up, the skills lesson, and the group work activities.

Lesson 1.3 **Place Value and Ordering Numbers** **Unit 1**

Learning Objectives

- ✓ Use place value to sort numbers into ascending order.
- ✓ Read and write numbers with seven digits or less.

Resources

- Number Cards 0–9 (page 136)
- calculators
- “Raffle Tickets” (page 31)
- Pre-Test/Post-Test (page 32)

Number Cards 0–9

0	1	2	3
4	5	6	7
8	9	0	1

Raffle Tickets

154,097	13,942	180,723	58,282
480,725	34,321	81,349	12,431
15,591	41,281	41,281	

Pre-Test/Post-Test

5 **Mental Math and Number Sense Skills**

Warm-Up Activity

1. With the class, practice counting forward and backward by thousands from three-, four-, and five-digit numbers.
2. Provide an example number, such as 9,310, and ask students to count forward together, by thousands, to 19,310.
3. Provide an example number, such as 56,224, and ask students to count backward together, by thousands, to 42,224.
4. Continue assigning starting numbers and ask students to count forward or backward in thousands. In each case, give the class an appropriate ending number.

©Teacher Created Materials, Inc. 27 #8774 (iu37) Exploring Math—Unit 1

Lessons identify specific resources, including any related practice pages from the CD-ROM, reproducible pages, game-board activities, or suggested classroom manipulatives.

Note: For PowerPoint® lesson options, arrange for the necessary equipment in advance.

The Warm-Up Activity reinforces mental math and number skills and actively engages students prior to the lesson. Activities help develop students’ abilities to think mathematically. Content may or may not link directly to the main body of the lesson.

Note: As with the main lesson and group work, the alternative PowerPoint® warm-up lesson can replace this written lesson.

Introduction

About the Units: Lesson Organization

This is the whole-class or whole-group section of the lesson. The interactive lesson focuses on the skills listed in the learning objectives. The text includes questions to ask the students and examples that reinforce the skills being taught. The Whole-Class Skills Lesson is a suggested plan for teaching the objectives. You can adapt the contents to meet the needs of your students.

Unit 1 **Place Value and Ordering Numbers** **Lesson 1.3**

Whole-Class Skills Lesson

If the Pre-Test (page 32) has not yet been given, administer it at this time. (See pages 8–11 for testing information.)

Prepare to group students for the Differentiated-Group Skills Practice which follows the Whole-Class Lesson.

Use the directions below, or the *PowerPoint®* presentation (see *PowerPoint®* Lesson Option preview, page 30), to teach this lesson.

1. Tell students, "Today we will be arranging numbers in sequential order by looking at the place value of the digits."
2. Write three, three-digit numbers on the board, and demonstrate how to write them in ascending order looking at the number in the hundreds place first, then the tens, and finally the ones. (Discuss the term *ascending*, using examples from real life, such as ascending a mountain or staircase.)
3. Show students how to use the method described in step 2 to order four- and five-digit numbers.
4. Give students some examples of ordering numbers where one or more of the digits are the same and require them to look further at the place value.
Examples: $7\textcircled{2}1$ $7\textcircled{4}2$ $7\textcircled{1}5$
ascending order: 715; 721; 742
 $4, \textcircled{6}\textcircled{5}2$ $4, \textcircled{7}91$ $4, \textcircled{6}\textcircled{3}8$
ascending order: 4,638; 4,652; 4,791
5. Continue practicing this method with additional examples like the ones above.

#8774 (iu37) Exploring Math—Unit 1 28 © Teacher Created Materials, Inc.

Reminders about Pre-Test administration and preparation for Differentiated-Group Skill Practice activities are provided.

PowerPoint® Lesson option information is listed here.

The text is numbered, providing easy-to-follow steps as the lesson is presented.

Introduction

About the Units: Lesson Organization

Use the differentiated-group practice suggestions to reinforce the skills taught in the lesson. Groups can be determined by pre-test results and/or general understanding of the concepts and skills introduced in the lesson. The Differentiated-Group Skills Practice portion of the lesson provides an opportunity for more focused learning and addresses the various ability levels within the class.

The symbols indicate levels of difficulty (On Level, Below Level, Above Level).

Suggestions for the Lesson Review are included. They provide an opportunity for group discussion and reflection.

A Post-Test reminder is included. Use test results to assess students' understanding of the skills and concepts introduced in the lesson.

Some group activities are facilitated by the teacher, while other group practice is assigned as small group or independent work. The method of presentation is noted within the text.

These optional activities may include a homework assignment or activity that challenges students to extend their thinking.

Check here for any related practice pages from the CD-ROM and/or Skill Application Game cards that reinforce some of the skills taught in the lesson.

Introduction

About the Units: Lesson Organization

With the exception of the two strategy-based problem-solving lessons, the teacher has the option of choosing from two forms of presentation. The first method is to use the lesson as written in the unit. For those who wish to use an alternative method, we have provided *PowerPoint*® slide shows that meet the same lesson objectives. If you decide to use the *PowerPoint*® lesson option, keep in mind that you will need the same resources and general preparation as in the written lesson.

PowerPoint® Lesson Option

Lesson 1.3

Today's Lesson Place Value and Ordering Numbers	Warm-Up Activity We will warm up today by counting forward and backward in thousands.	Remember to count in thousands together. Here are the starting numbers. 5,625 9,214 63,425 96,342	Whole-Class Skills Lesson Today we will be arranging numbers in sequential order by looking at place value.
438 421 426 Order these numbers. Look first at the hundreds digit. Each number has a 4 in this column.	438 421 426 Now, look at the tens digit. We can start to order the numbers. 426 421 438	Finally, use the ones column to order your numbers. 426 421 438 421 426 438	Top Tip Remember to order three-digit numbers by looking at the hundreds column, then the tens column, then the ones column.
256 272 252 Order these numbers. Smallest Largest 252 256 272	356 472 372 Order these numbers. Smallest Largest 356 372 472	5,791 5,652 5,638 Order these numbers. Smallest Largest 5,638 5,652 5,791	3,791 3,692 3,638 Order these numbers. Smallest Largest 3,638 3,692 3,791
9,791 9,971 9,719 Order these numbers. Smallest Largest 9,719 9,791 9,971	78,719 74,971 79,971 Order these numbers. Smallest Largest 74,971 78,719 79,971	62,418 62,148 62,841 Order these numbers. Smallest Largest 62,148 62,418 62,841	Group Practice ▲ Identify each digit in a seven-digit number. ● Practice ordering three-digit numbers. ■ Practice writing four- and five-digit numbers in words.

#8774 (iu37) Exploring Math—Unit 1 30 © Teacher Created Materials, Inc.

The slides present only the Warm-Up Activity and Whole-Class Skills Lesson components.

The slide presentation meets the common objective(s) of the lesson, but the content and examples are not exact duplicates of the written lesson. It is an alternative plan for teaching the warm ups and main lessons.

Suggestion: If the written lesson has been given, and students need further review, consider using the *PowerPoint*® Lesson Option as additional reinforcement.

Once you have completed the Warm-Up Activity and the Whole-Class Skills Lesson slides, you are directed to the group practice activities. The last slide indicates what each group will focus on as they practice and reinforce the skills learned in the main lesson. This is only an introduction to the activities. For group details, see the information provided in the Differentiated-Group Skills Practice section of the written lesson.

Following the group practice activities, continue as you would with the written lesson by completing the Lesson Review, administering the Post-Test, and introducing the optional Extension Activities.

Management

Exploring Math: Intervention and Reinforcement Resource allows the teacher to focus on math topics in which students need additional reinforcement. It is especially important in intervention and other support programs to determine areas of greatest need as soon as possible.

⇒ Getting Started: Placement Tests

The first step in using the materials in this kit is to administer the Placement Test. The results will help you evaluate your students' skill levels in each of the units in the kit. We have provided a placement test in this guide (pages 47–67) that should be administered prior to formal instruction. The placement test consists of 15 items for each unit in the kit. Test items are representative of the units' content, and have been named Unit 1, Unit 2, Unit 3, and so on, to correlate with the unit guides.

Reproduce a copy of the test for each student. Students can write on the copy (circling the appropriate answer choices), or the test copy can be used for reading only, and students can use the bubble-in test

answer sheets found on pages 68 and 69. In either case, students should show their work on the test, or on separate paper. An Answer Key is provided on page 70.

You may wish to administer the test in two or three sessions. This allows time for scoring between test-taking sessions. A Placement Test Class Record is available on pages 71 and 72. Record student names and test results on this form for an overview of class test results. After a test is scored, write in the number of correct responses for each student in the appropriate columns. For example, if Johanna scored 11 out of 15 correct on the Multiplication and Division test items, write in “11” in the top section of the scoring box for that unit.

When all sections of the test have been administered, and the students' scores are recorded, review the test score record

form. First, find the mean scores for each unit by averaging the columns and writing the average at the bottom of each column. The results will provide you with an overview of the students' overall performance and help you prioritize the unit(s) that need the most reinforcement. If mean scores are similar, and the overall results are fairly equal, plan to start with the math topic that is generally most essential to your math curriculum needs.

Evaluation of the placement test results will help you establish the unit(s) on which to focus attention. If, for example, students score lowest on a set of multiplication and division items in the placement test, you should consider the Multiplication and Division unit a priority. See pages 25–27 for pacing plans.

Placement Test Unit 1

Name: _____

Date: _____

The questions on the following pages will help you and your teacher find out which math skills you are already good at and which ones you need to work on.

To help you do your best, remember to do the following:

- Read the questions and answer choices carefully.
- Circle the letter that shows the answer you have chosen. (If your teacher provides you with an answer sheet, fill in the circle next to the correct answer on the answer sheet.)
- Show your work in the question box. Use another sheet of paper if you need more room.
- Try completing all questions.

15

©Teacher Created Materials, Inc. 47 #8774 (i44) Exploring Math—Teacher Resource Guide

1 Mount Everest is twenty-nine thousand, thirty-five feet tall. Which number shows this height?

A 2,935

B 29,350

C 29,035

D 290,035

2 What is the written expression for $16,342 + 127$?

F sixteen thousand, four hundred, sixty-nine

G sixteen thousand, four hundred, seventy-nine

H fifteen thousand, five hundred, sixty-nine

J fourteen thousand, four hundred, sixty-nine

3 Which number shows the numbers in order from least to greatest?

A 9,556 9,565 9,655 9,491

B 9,565 9,655 9,491 9,556

C 9,556 9,655 9,565 9,491

D 9,491 9,556 9,565 9,655

Management

⇒ Getting Started: Placement Tests *(cont.)*

It is recommended that you keep a file for each student, in which to store placement tests, pre-tests and post-tests, and other documentation of progress the student is making as he or she moves through the unit(s) in the kit.

⇒ Using the Lessons

After the placement test scores have been recorded and reviewed, select the unit(s) you feel need the most reinforcement. Look over the information in the written lessons or the *PowerPoint*® lesson presentations.

Tests

Before you start a lesson, give the students the pre-test for that lesson. The Pre-Test can be administered at the end of a previous lesson, at the beginning of the day, or at some other point in your schedule that will allow you time to score it. Because the test is short, scoring time is minimal. (Information on the tests, preparing individual student files, and record-keeping forms are provided on pages 8–11 of each unit.)

To prepare the tests, reproduce copies of each for the students. Cut the copies in half along the dashed line, separating the Pre-Tests from the Post-Tests. Store the tests until needed. (Copy all the unit tests at once in this way, or only prepare a few units at a time.)

Use Pre-Test results to evaluate students' needs as they relate to the content of the lesson, and to determine your student groups during the Differentiated-Group Skills Practice portion of the lesson. Since there will inevitably be variations in ability within each group, some flexibility is advised in assigning group work. However, the Pre-Tests can serve as a tool for determining initial grouping for the lesson.

Overall assessment of each student's progress can be checked with the Post-Test, administered at the end of the lesson. Record scores on the record-keeping form provided in each of the units.

Unit Organization and Resources

Student Test Record Name _____

Unit 1

Lesson	Learning Objectives	Test Scores		Group
		Pre	Post	
1.1	Read and write numbers with seven digits or less. Identify the place value of each digit.	3	3	■ ● ▲
1.2	Read and write numbers to the millions place. Identify the place value of each digit of a number to the millions place.	3	3	■ ● ▲
1.3	Use place value to sort numbers into ascending order. Read and write numbers with seven digits or less.	3	3	■ ● ▲
1.4	Recognize negative numbers. Order a set of positive and negative numbers.	3	3	■ ● ▲
1.5	Use a number line to add and subtract negative numbers. Order a set of integers from least to greatest. Generate numbers and arrange them in order from least to greatest.	3	3	■ ● ▲
1.6	Round a number to the nearest 10, 100, and 1,000. Estimate to find an approximate number.	3	3	■ ● ▲
1.7	Use rounding to calculate an estimation. Estimate to find an approximate answer. Recognize number sequences and extend them.	3	3	■ ● ▲
1.8	Round a number to the nearest 10, 100, or 1,000. Round measurements in miles to the nearest 10, 100, or 1,000.	3	3	■ ● ▲
1.9	Estimate to find an approximate number. Round a number to the nearest 10, 100, or 1,000.	3	3	■ ● ▲
1.10	Test positive numbers for divisibility. Identify prime numbers.	3	3	■ ● ▲

#8774 (ix37) Exploring Math—Unit 1 10 © Teacher Created Materials, Inc.

Unit Organization and Resources

Student Test Record Name _____

Unit 1

Lesson	Learning Objectives	Test Scores		Group
		Pre	Post	
	all methods to solve problems. Reasoning used to solve problems.	3	3	■ ● ▲
	is about odd and even numbers. Use numbers to make even or odd numbers.	3	3	■ ● ▲
	solve a number problem. Reasoning used to solve problems. Reasoned way. Read in writing.	3	3	■ ● ▲
	Reasoning about numbers, orally and in writing. Reasoned manner. Read in writing.	3	3	■ ● ▲
	Relationship among odd, even, and prime numbers, using a Reasoning about numbers, orally and in writing.	3	3	■ ● ▲
	ercises.	3	3	■ ● ▲

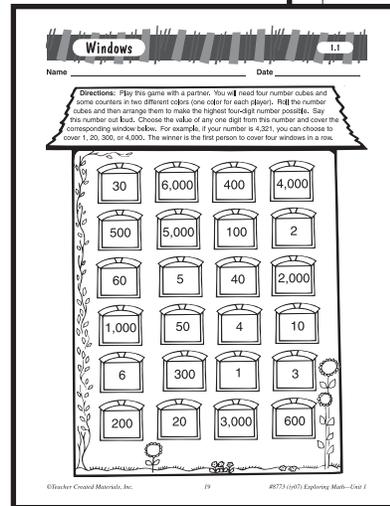
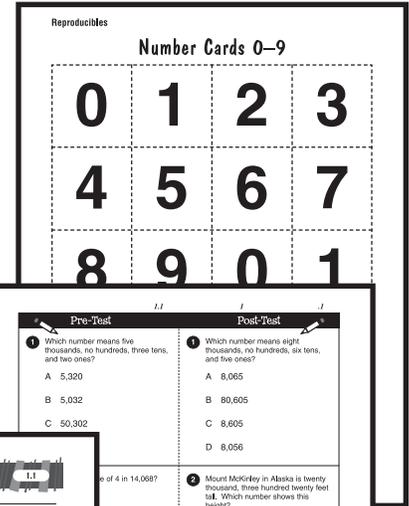
11 #8774 (ix37) Exploring Math—Unit 1

Learning Objectives

- ✓ Read and write whole numbers to 10,000.
- ✓ Know what each digit represents.
- ✓ Identify the place value for each digit to the thousands place.

Resources

- 10 cubes
- number cubes
- “Windows” (page 19)
- counters
- Number Cards 0–9 (page 142)
- calculators
- Pre-Test/Post-Test (page 20)



Mental Math and Number Sense Skills

Warm-Up Activity

1. Give each student a set of number cards 0–9.
2. Tell students, “Today we will be practicing number facts.”
3. Show students that you are holding 10 cubes.
4. Put the 10 cubes behind your back, then show six of them.
5. Ask, “How many cubes are still behind my back?” Students can hold up a number card to show their answer.
6. Repeat the steps above for other quantities of cubes.
7. Emphasize to students the need for speed of recall.



Whole-Class Skills Lesson

If the Pre-Test (page 20) has not yet been given, administer it at this time. (See pages 8–11 for information.)

Prepare to group students for the Differentiated-Group Skills Practice which follows the Whole-Class Skills Lesson.

Use the directions below, or the *PowerPoint*® presentation (see *PowerPoint*® Lesson Option preview, page 18), to teach this lesson.

1. Tell students, “Today we will be looking at large numbers up to 10,000 and seeing what each digit in the number represents.”
2. Write the number 4,238 on the board and ask what each digit represents
3. Write the value of each number on the board.
4. Ask the following questions:
 - “What other numbers can be made with these digits?”
 - “What number cards would you need to make those numbers?”
5. Write the headings Thousands, Hundreds, Tens, and Ones on the board or overhead projector.
6. Have students use their number cards 0–9 to make four-digit numbers. Tell them to make four numbers using the digit 7 in a different position each time. The students should write these down on some paper. Ask, “What is the value of the 7 in each number?”
7. Now have students make a four-digit number with no hundreds. Ask, “How do I say this number?”
8. Then tell students to make a number closest to 5,000. In each case have a volunteer read his or her number. Point to different digits and ask what each one represents.
9. Repeat step 8 making the number closest to 0.

4,238
4 = 4,000
2 = 200
3 = 30
8 = 8



Differentiated-Group Skills Practice

Below Level – Teacher Directed

- For each pair of students, you will need “Windows” (page 19), some counters in two different colors, a set of number cards 0–9, and four number cubes.
- Read the directions for “Windows” together.
- Each pair of students will roll four number cubes and arrange them to make the highest number possible.
- Demonstrate how this number is made using a set of number cards.
- Separate the cards to show how the number is made up before choosing one part to cover a window on the page.
- Students should play in pairs, making the numbers with their number cards first to determine the highest number possible.
- As students play, ask them to say the number out loud and discuss what each digit represents.
- If some students are not confident with numbers of this size, play a revised version of the game using only three number cubes.

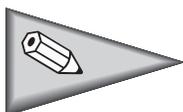
On Level/Above Level – Student Directed

- Have students play “Windows” with a partner, according to the directions on the activity sheet. (*Optional:* Play a variation of the game by making the smallest four-digit number possible after rolling the four number cubes.)

Lesson Review

Ask students to input 5,163 on their calculators. Ask them how they can reduce it to 5,063; to 5,003; to 3; and to 0. As students explain their subtraction methods, record the information on the board.

Emphasize place value, and try additional numbers. When each new number is formed, ask the class to say it aloud. This is especially helpful when the hundreds or tens digit is 0 since many students experience difficulty with these numbers.



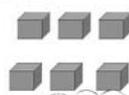
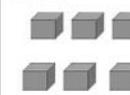
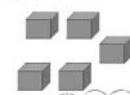
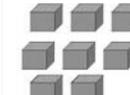
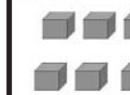
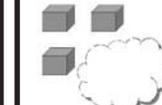
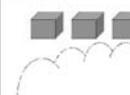
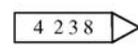
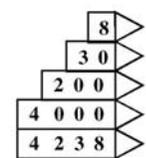
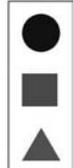
Administer the Post-Test (page 20) at this time.
(See pages 8–11 for information.)

Extension

Extend the lesson by asking students to make different four-digit numbers using only the digits 0, 1, 2, and 3. Students can practice with combinations of other four-digit, five-digit, and six-digit numbers as well.

Additional Extension Resources

- *CD-ROM Practice Pages: 1–3, 7–9*
- *Skill Application Game: Butterfly Count*

<p>PCMP 0773 Lesson 1.1</p> <p>Today's Lesson</p> <p>Reading and Writing Numbers</p> <p>MATH</p>	<p>PCMP 0773 Lesson 1.1</p> <p>Warm-Up Activity</p> <p>Today we will be practicing number facts. Be ready to answer questions about the following pictures.</p> <p>MATH</p>	<p>PCMP 0773 Lesson 1.1</p>  <p>There are ten cubes.</p>  <p>How many are hidden by the cloud?</p> <p>MATH</p>	<p>PCMP 0773 Lesson 1.1</p>  <p>There are ten cubes.</p>  <p>Now how many are hidden by the cloud?</p> <p>MATH</p>
<p>PCMP 0773 Lesson 1.1</p>  <p>There are ten cubes.</p>  <p>How many are hidden?</p> <p>MATH</p>	<p>PCMP 0773 Lesson 1.1</p>  <p>There are ten cubes.</p>  <p>How many are hidden this time?</p> <p>MATH</p>	<p>PCMP 0773 Lesson 1.1</p>  <p>There are ten cubes.</p>  <p>How many are hidden by the cloud?</p> <p>MATH</p>	<p>PCMP 0773 Lesson 1.1</p>  <p>There are ten cubes.</p>  <p>How many are hidden?</p> <p>MATH</p>
<p>PCMP 0773 Lesson 1.1</p>  <p>There are ten cubes.</p>  <p>Now how many are hidden?</p> <p>MATH</p>	<p>PCMP 0773 Lesson 1.1</p>  <p>There are ten cubes.</p>  <p>How many are hidden now?</p> <p>MATH</p>	<p>PCMP 0773 Lesson 1.1</p> <p>Whole-Class Skills Lesson</p> <p>Today we will work with large numbers up to 10,000 and decide what each digit in the number represents.</p> <p>MATH</p>	<p>PCMP 0773 Lesson 1.1</p>  <p>Say what each digit represents?</p> <p>MATH</p>
<p>PCMP 0773 Lesson 1.1</p> <p>What other numbers can be made from these digits?</p>  <p>MATH</p>	<p>PCMP 0773 Lesson 1.1</p> <p>Place Value Headings</p> <p>Thousands Hundreds Tens Ones</p> <p>What other place value headings do you know?</p> <p>MATH</p>	<p>PCMP 0773 Lesson 1.1</p> <p>Make a four-digit number with a 5 in it.</p> <p>How do you say your number?</p> <p>What is the value of the 5 in your number?</p> <p>MATH</p>	<p>PCMP 0773 Lesson 1.1</p> <p>Make another four-digit number with a 5 in it.</p> <p>How do you say this number?</p> <p>What is the value of the 5 this time?</p> <p>MATH</p>
<p>PCMP 0773 Lesson 1.1</p> <p>Make two more four-digit numbers with a 5 in them.</p> <p>Say the numbers.</p> <p>Say what the value of the 5 is each time.</p> <p>MATH</p>	<p>PCMP 0773 Lesson 1.1</p> <p>Make a four-digit number with a 5 in it but no hundreds.</p> <p>How do you say this number?</p> <p>MATH</p>	<p>PCMP 0773 Lesson 1.1</p> <p>Make a four-digit number with a 5 in it. The number has to be the closest it can be to 5,000.</p> <p>MATH</p>	<p>PCMP 0773 Lesson 1.1</p> <p>Group Work</p>  <p>Play "Windows" dice game.</p> <p>MATH</p>

Windows

1.1

Name _____

Date _____

Directions: Play this game with a partner. You will need four number cubes and some counters in two different colors (one color for each player). Roll the number cubes and then arrange them to make the highest four-digit number possible. Say this number out loud. Choose the value of any one digit from this number and cover the corresponding window below. For example, if your number is 4,321, you can choose to cover 1, 20, 300, or 4,000. The winner is the first person to cover four windows in a row.

30	6,000	400	4,000
500	5,000	100	2
60	5	40	2,000
1,000	50	4	10
6	300	1	3
200	20	3,000	600


Pre-Test
Post-Test


1 Which number means five thousands, no hundreds, three tens, and two ones?

- A 5,320
- B 5,032
- C 50,302
- D 5,203

1 Which number means eight thousands, no hundreds, six tens, and five ones?

- A 8,065
- B 80,605
- C 8,605
- D 8,056

2 What is the value of 4 in 14,068?

- F 4 ones
- G 4 tens
- H 4 hundreds
- J 4 thousands

2 Mount McKinley in Alaska is twenty thousand, three hundred twenty feet tall. Which number shows this height?

- F 2,302
- G 20,320
- H 2,032
- J 20,203

3 In the auditorium at Juan's school, there are 805 seats. This number is read

- A eighty-five
- B eight thousand five
- C eight hundred five
- D eight hundred fifty

3 What is the value of 3 in 18,372?

- A 3 thousands
- B 3 hundreds
- C 3 tens
- D 3 ones

Name

3

Name

3

Problem-Solving Strategies

Open-Ended Problem Solving

Open-ended problems challenge a learner's thinking. In looking at open-ended problems, students explore problems that may be answered in a number of ways. However, these problems should always be accurately computed.

These problem-solving activities are vitally important, and assist teachers to gauge the level at which their students are achieving, because students respond to challenges at their own level of development. The process that is used is more important than simply achieving the answer. When structuring problems, words such as create, make, design, investigate, and explore should be used.

Ask students to develop their own open-ended problems. It is important that students develop their own open-ended problems and solutions as this involves them in developing their thinking and phrasing. If you are helping students solve problems they have set up, model your work as you solve them, as students will learn from your approach to their problems.

There are some specific skills and strategies that are useful when working with this approach.

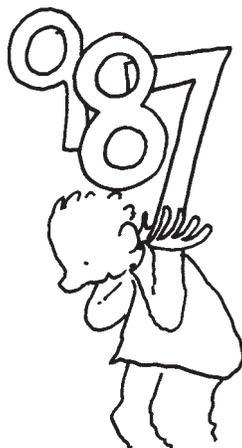
Using Numbered or Labeled Counters

When problems become involved, using numbered or labeled counters can help students visualize a problem and its solutions. The counters can be easily manipulated and altered and other combinations found. Changes can easily be made if work is incorrect. When the correct solution is found, it can be written down.

Trying Different Combinations of Numbers

For example, if attempting to solve a problem in which you are to determine the largest product possible using five different numbers, start by using the largest three-digit number and then the largest two-digit number to see the different answers.

(See also Example 1.)



Using the largest three-digit number:

$$\begin{array}{r} 987 \\ \times 65 \\ \hline 64,155 \end{array}$$

Using the largest two-digit number:

$$\begin{array}{r} 642 \\ \times 98 \\ \hline 62,916 \end{array}$$

Continue Working to Find as Many Solutions as Possible

This involves students in working to find more than one answer, and manipulating figures in order to look at them differently. Students are thereby encouraged to become involved with genuine mathematical solutions.

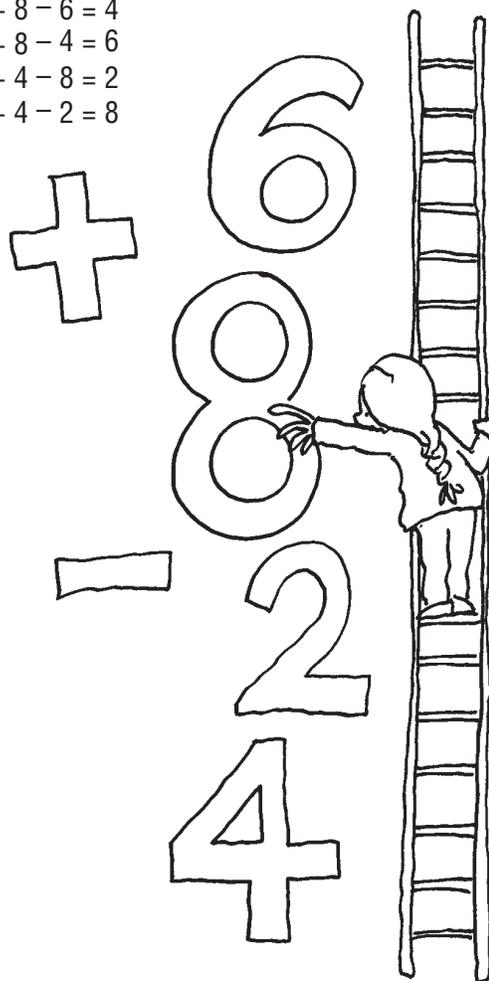
Example: What can we do with 2, 4, 6, 8, =, +, and -?

$$2 + 8 - 6 = 4$$

$$2 + 8 - 4 = 6$$

$$6 + 4 - 8 = 2$$

$$6 + 4 - 2 = 8$$



Problem-Solving Lesson

Using Strategies to Solve Real-Life Problems

Resources

- ✓ Problem-Solving Strategy Card and transparencies: “Looking for a Pattern”
- ✓ Real-Life Problem-Solving Card and transparencies: “How Do People Grow?”
- ✓ Optional: copies of strategy and problem-solving cards (see Teacher Resource Guide CD-ROM). If an overhead projector is unavailable, use the problem-solving card provided (or download from the CD-ROM) to prepare copies of the cards for students to use during the lesson.

Introducing the Strategy

Problem-Solving Strategy Card: Looking for a Pattern

Introduce the Strategy

Introduce or review the strategy using the following steps.

1. On the overhead, place Side A of Problem-Solving Strategy Card transparency titled “Looking for a Pattern.” Discuss how looking for a pattern connects to drawing a table and creating organized lists. Review any information necessary for clarifying those steps.
2. Work through the problem on the bottom of the page. Ask students to explain how drawing a table helped organize the information and determine the answer. Point out how the table helped the pattern become more obvious.
3. Place the transparency for Side B of the strategy card, “Using the Strategy,” on the overhead projector. Read and discuss the Sample Problem.
4. Read and discuss each of the four steps shown (Understanding the Problem, Planning and Communicating a Solution, Reflecting and Generalizing, and Extension) as it applies to the Sample Problem. Reinforce with students the importance of reflecting on how the solution was reached. Have them think of other problems that could be created as an extension of the original one.

Review the Strategy

1. Reread the strategy card with the students and review key information. Remind students that when using this strategy, they are organizing information in a table in order to help them find a pattern that will lead them to a solution.
2. Review with students how to create a table. They should understand that they will need to determine the number of rows and columns a table will need. Point out that the rows and columns should be related to the pattern they are looking to find.
3. To use patterns and tables to find a solution, students will need to understand the question being asked. Reinforce that they must determine what information they will need to solve the problem.
4. Read the problem to determine the information already known. Suggest that underlining, highlighting, or making a quick list of the information from the problem may be useful. Then, transfer to the table the information given in the problem.

Problem-Solving Lesson

Using Strategies to Solve Real-Life Problems

Applying the Strategy

Real-Life Problem-Solving Card: “How Do People Grow?”

○ UNDERSTANDING THE PROBLEM

Getting Ready

- Place the transparency for Side A of “How Do People Grow?” on an overhead projector.
- Together, read and discuss the information on Side A of the problem-solving card. Discuss the differences in height in the classroom. Ask questions such as, “Is everyone who’s the same age the same height?”
- Explain to students that they will be assigned to a group and given a specific problem to solve based on the information on Side A of the card. They will use the strategy of drawing a table to solve the problem.
- Divide the class into groups based on ability levels indicated on Side B of the card (Problem A: Below Level, Problem B: On Level, Problem C: Above Level).

What do I know?

- Help students identify information that will be needed to solve the problem. Provide any measurement tools students will need to find information necessary for solving the problem.

Problem A

Some students may know how tall they are. One foot equals twelve inches.

Problem B

Some students may know how tall they are. The problem assumes you grow two inches per year.

Problem C

Some students may know how tall they are. Some people grow faster than others. The problem assumes that an individual person grows the same amount each year.

What do I need to find out?

- Identify what question needs to be answered when solving the problem.
- Have students write the question(s) that needs to be answered at the top of their work papers.

Problem A

How tall am I? What is my height in inches?
How many feet does that equal?

Problem B

How tall am I? What is my height in inches?
What pattern can I find in my growth?

Problem C

How tall am I? How can I find two different patterns in my growth? How many years do I need to show of my growth to solve the problem?

Problem-Solving Lesson

Using Strategies to Solve Real-Life Problems

Applying the Strategy (cont.)

Real-Life Problem-Solving Card: “How Do People Grow?” (cont.)

○ PLANNING AND COMMUNICATING A SOLUTION

Solving the Problem

Use the following information to guide students’ thinking as they plan and solve the specific problem to which they are assigned.

For all three of these problems, have students start by determining their height. Some students may know how tall they are. Have them recheck their height. Working with a partner may also make it easier for students to complete the measuring.

Problem A

Students will benefit from using a measuring tool that shows both inches and feet. Examination of the tool should reveal the pattern that twelve inches equals one foot. Students can then make a table showing the number of inches in one foot, two feet, three feet, four feet, and five feet. They should see that they could fill in the table by using repeated addition.

Problem B

Students should look for a pattern in the problem and recognize that the pattern is their height will go up by 2 inches per year. Students could create a table or use repeated addition or multiplication to solve this problem. They should recognize that repeated addition and multiplication are patterns.

Problem C

Students should recognize that this problem has two patterns. One pattern is their height will increase by two inches every year. Another is

they will grow by 3.5 inches per year. They should also notice there is a pattern in the years the problem is asking for heights in. Students may wish to create a table to solve this problem or use multiplication to solve.

Solutions

Answers will vary depending on students’ heights. Sample answers for the problems follow.

Problem A

Repeated addition could be used to solve this problem.

$$4 \text{ feet } 2 \text{ inches} = 12 + 12 + 12 + 12 + 2 = 50 \text{ inches}$$

If students make a table of feet to inches, it should be similar to the following:

Feet	Inches
1	12
2	24
3	36
4	48
5	60

Problem B

Since the problem states the student will grow 2 inches per year they can just count up by twos from their current height to solve the problem.

4 feet 2 inches = 50 inches now. 50, 52, 54, 56, 58. I will be 52 inches in one year, 54 inches in two years, 56 inches in three years, and 58 inches in four years.

Students could also use repeated addition or multiplication to solve. For example, $50 + 2 = 52$, $52 + 2 = 54$, $54 + 2 = 56$, $56 + 2 = 58$.

Problem-Solving Lesson

Using Strategies to Solve Real-Life Problems

Applying the Strategy (cont.)

Real-Life Problem-Solving Card: “How Do People Grow?” (cont.)

Problem C

Students should recognize the pattern of 2 inches growth per year and 3.5 inches growth per year. They should also see the pattern of three years between 3, 6, and 9 years. They can use this information to solve the problem with multiplication. 4 feet 2 inches = 50 inches now. $3 \text{ years} \times 2 \text{ inches/year} = 6 \text{ inches growth every 3 years}$. $50 + 6 = 56 \text{ inches}$. $3 \text{ years} \times 3.5 \text{ inches/year} = 10.5 \text{ inches growth every 3 years}$. $50 + 10.5 = 60.5 \text{ inches}$.

Students could also find this pattern by creating a table that starts with their current height and adds 2 inches to it every year. Students could create another row or column, or another table to show the pattern of 3.5 inches per year. An example is in the table below:

	2 Inches per Year	3.5 Inches per Year
Height Now	50 inches	50 inches
3 Years	56	60.5
6 years	62	71
9 years	68	81.5

REFLECTING AND GENERALIZING

For all problems, group students of similar heights together to check answers. Alternately, compare answers to those of the teacher. Do students’ answers make sense? What sorts of information did they see repeated in their patterns?

Problem A

Have students explain how they solved their problems. How did you know 12 inches were in one foot? What was the pattern you found in your problem? What if there were only ten inches in a foot? What pattern would you have used to solve your problem? How is the measuring tool you used like a number line? Did you use it to help you find how many inches tall you were?

Problem B

What pattern did you use to help you find the correct answer to this problem? How is repeated addition like a pattern? How is multiplication like a pattern? How would you have solved this problem if you didn’t have a pattern to use?

Problem C

Have students reflect on the three different patterns they found in Problem C. How did each of these patterns help you solve the problem faster? Look at the problem again and try adding 3.5 inches each year up to nine years from your original height. Why was multiplication easier to do in this problem?

Help students recognize that they were able to solve the problem faster, because they found a pattern. They were also able to solve the problem using a pattern, because the problem said they grew the same amount every year. If the problem said you didn’t grow the same amount every year, could you have solved it by looking for a pattern?

EXTENSIONS

Have students do additional research to see if the patterns of 2 or 3.5 inches of growth a year would be probable for actual student growth.

Use the Class Challenge to solve an additional problem related to the topic. Answers will vary.

Challenge students to create additional problems with the data provided in the article on Side A of “How Do People Grow?” You may also have students take measurements in your classroom or hallway of tiles on the floor and solve problems similar to the ones they have completed.

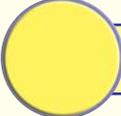
How Do People Grow?



People are all different heights. Some people are very tall. Robert Wadlow was the tallest person who ever lived. He was 8 feet 11 inches tall. Robert Wadlow was six feet tall by the time he was eight years old! When he died he weighed 490 pounds. Some people are short. The shortest person was 1 foot 10.5 inches tall.

Most women are shorter than men. The average American woman is 5 feet four inches tall. The average American man is 5 feet nine inches tall. Most babies are between 18 and 24 inches long when they are born. They grow taller until they are about 18 years old. Most people stop growing taller after age 18. Interestingly, Robert Wadlow was an average size when he was born. How tall will you grow?

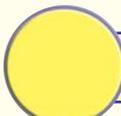
How Do People Grow?


WHAT IS THE PROBLEM?

Many doctors can tell how tall a child will be. They know many things about how people grow. Use information about your height to answer the following questions.

Use the information on both sides of the card to answer the questions. You will be asked to work on one of the problems below. Before you begin solving the problem, be sure to locate the information you will need.

Remember: If you have trouble planning ways to solve the problem, reread it and rethink your strategy. When you have a solution, think about whether or not your answer makes sense.


PROBLEM-SOLVING STRATEGY: LOOKING FOR A PATTERN

Problem A

Measure your height in feet and inches. How many inches are you in total? Change the height to just inches.

Hint: Create a table to show your height in inches. Don't forget to show how many inches are equal to each foot as you notice a pattern in your table.


Problem B

Measure your height in feet and inches. How many inches are you in total? If you grow an average of 2 inches every year, how tall will you be in 4 years?

Hint: Multiply to solve.


Problem C

Some people grow faster than others. If you grow 2 inches every year, how tall will you be in 3 years? If you grow 3.5 inches every year, how tall will you be in 3 years?

Class Challenge

Measure each student's height. Make a chart or graph of the heights. Find out the average, or mean, height. Is anyone actually that height? Find the mode of heights. What is the median height?

The Tallest Trees in the World



The sequoia tree is one of the world's tallest trees. Its trunk can be up to 300 feet tall. That is as tall as a 30-story building. Sequoias grow very tall when they are young. Then they grow more slowly.

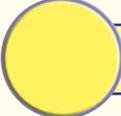
The giant sequoia tree is one of the largest living things on earth. One of the tallest sequoias is named General Sherman. It is 275 feet tall. It has a diameter of over 14 feet. General Sherman is over 100 feet around its base. Some sequoia trees are believed to be over 4,000 years old. Most sequoias living in the United States are believed to be about 650 years old. Many of these are already over 200 feet tall.

You can visit the giant sequoia trees in national parks in California. At Sequoia and Kings Canyon National Park you can visit the trees and learn more about them from park rangers. The park is home to many of the tallest sequoias in the world. These trees have been given names, just like the General Sherman Tree. One group of trees has been named "The Three Sisters" because they are so tall and stand right next to each other.

Giant Sequoias of Sequoia and Kings Canyon National Park in California

Tree Name	Height (in Feet)	Circumference (in Feet)	Location
Hazelwood	282	104	Giant Forest Grove
General Sherman	276	103	Giant Forest Grove
King Arthur	270	104	Garfield Grove
Nelder	264	90	Nelder Grove
Genesis	258	85	Mountain Home Grove
Washington	252	101	Giant Forest Grove
Pershing	246	91	Giant Forest Grove
President	240	93	Giant Forest Grove
Washington	234	95	Mariposa Grove
Chief Sequoyah	228	90	Giant Forest Grove
Franklin	222	95	Giant Forest Grove

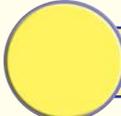
The Tallest Trees in the World


WHAT IS THE PROBLEM?

You have just learned your family is going to go on a vacation to Sequoia and Kings Canyon National Park! You have received an information packet in the mail from the National Park Service that tells you all about the tours you can take and the trees you can see. Now your job is to help plan the trip to see these giants!

Use the information on both sides of the card to answer the questions. You will be asked to work on one of the problems below. Before you begin solving the problem, be sure to locate the information you will need.

Remember: If you have trouble planning ways to solve the problem, reread it and rethink your strategy. When you have a solution, think about whether or not your answer makes sense.


PROBLEM-SOLVING STRATEGY: LOOKING FOR A PATTERN

Problem A

The first tour you read about is called the “Mini Tour” and takes you to the following trees in the order listed: Genesis, Nelder, King Arthur, General Sherman, and Hazelwood

What is the pattern in the order of stops they are taking you to?

Hint: Compare the heights in the chart and write them down in order to see the pattern.

If the National Park Service wanted to add two more trees to the beginning of this tour, what would those trees be? Why?


Problem B

The “Ultimate Tour” takes you to all eleven trees listed in the chart. The first stop on the tour is Franklin. You continue in order and end at Hazelwood. What is the pattern in the order of the trees you will visit? As you study the chart more closely you’ll see a pattern in the heights of the trees along your tour. What do you notice about the difference in the heights of the trees along your journey? If a 12th tree

was added to the beginning of the tour, how tall would it be?

Hint: Use subtraction to find a pattern.


Problem C

The “Gentle Giants Tour” takes you to the following trees in the order listed: Franklin, Chief Sequoyah, President, Pershing, Washington, General Sherman, and Hazelwood

There are two patterns in this list of stops on the tour. What are the patterns? Why do you think the tour ends at Hazelwood instead of starting there? If you were on the tour, how would your experience be different if you toured the trees starting at stop 7 and ending at stop 1?

Class Challenge

Look at the chart and see if you can find other patterns. As a class, use the Internet or your library to research the names of the trees to try to find a pattern in their names.

Management

⇒ About the Skill Application Games (cont.)

In general, the games provided for a given unit can be used as your students work on the lessons and activities for that unit. However, for a more specific connection between the objectives of a game card and a set of lessons within a unit, refer to the Extension section of the lessons. If the objective(s) and activities on the Skill Application Game card reinforce a particular lesson, the card title will be noted among the suggested extensions.

Preparing the Cards

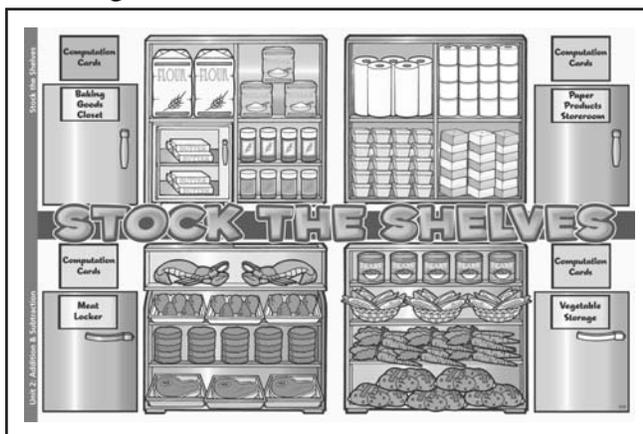
Read the information provided in the Skill Application Games section of this book. Reproduce the materials and prepare the game as directed. You may wish to copy and store the materials in resealable plastic bags or in envelopes and place them inside the folded game cards. Cards can be stored in boxes in a math center. Copy the student directions, and place a copy inside the game card as well. If you choose this method, students will have a copy of the directions in front of them as they play the game.

For students who need additional support with math calculations, keep calculators, number lines, addition/multiplication charts, base-10 blocks, and other manipulatives on hand as they play the games. For additional materials, see the reproducibles sections of each of the units.

Using the Skill Application Games

Since the games are organized by unit, you can choose the appropriate cards to have ready at a center. You could include game boards from other units, provided students are able to perform the math calculations required to complete the activities. Make a schedule indicating when students can use the center and the cards. Be sure to discuss with students the classroom rules for using the center and appropriate student behavior while working on the game cards.

The games can be used over and over again to reinforce the skills and concepts students have learned. As you and your students become more familiar with the activities, you may wish to change the rules of play or the objectives of the game by adding more complex math calculations or a different way to win the game.



Stock the Shelves

An Activity for 2 to 4 Restaurant Owners

Addition and Subtraction Skills
Add and subtract by 10 and 100, and a series of two-digit numbers.

Materials
Dust the Shelves board copy of the Computation Card, Inventory Sheet for each player, game marker for each player, pencil

Background
Many restaurant owners make their stock orders each week and just make orders when it comes to stock what was left. In this game, students are restaurant owners. As they move from stock items to stock items, their supplies will either decrease or increase (add or subtract).

Preparation

1. Copy the Computation Card onto heavy stock paper and cut them apart.
2. Place one set of cards with each child and add markers for the Computation Cards box of each stock item on the board. Be sure to mix up the stock items card set.
3. Copy one Inventory Sheet and make one game marker for each player.
4. Copy the Instructions for the Students and place it with the board.

Instructions for the Students

Objective
Your objective is to be the restaurant owner at the end of the game with the most inventory.

Directions

1. The first player will decide which stock items to change (over, under, none, etc.) and place a game marker on the bag. He or she then selects a card from the pile in the stock items and shows the card to the computer to find out if inventory. There is no receipt at the end of your business, show for your inventory.
2. The other players go to this same stock item and complete the same steps as above. After everyone has completed the card, set the card up and return them to the stock items.
3. Next, the second player chooses a different stock item to start and follows the same steps as above. The other players complete the same by entering the same stock item and showing computation card for one inventory item in that row.
4. Continue playing until every player has entered and adjusted his or her inventory in each of the four stock items.
5. This is a round round to finding each stock item a second time, showing a second computation card, and applying the computation to a different stock item. This time, the second computer player chooses the order of the cards.
6. Play a total of four rounds with different students going first in each round. By the end the winner for each of your store should have changed.
7. At the end of four rounds, add all your stock items.
8. The winner is the player with the greatest total inventory.

© Teacher Created Materials, Inc. #8773 Math Activity Cards 105

Computation Cards

+10	+10	+10	+10
-10	-10	-10	-10
+100	+100	+100	+100
-100	-100	-100	-100

Inventory Sheet

	Example: 12 packages	± 10	± 100
Vegetables	121 cases of beans		
	200 bags of corn		
	120 packages		
Meats	200 packages		
	120 packages		
	120 packages		
Baking Goods	120 bags of flour		
	120 bags of sugar		
	120 cases of yeast		
Paper Products	120 packages		
	120 cases of paper		
	200 cases of paper		
Total of all items:			

Introduction

About the Skill Application Games

Reinforcing Skills

A set of 14 game cards is provided. These full-color cards are ideal for centers and small-group interaction. The cards are coordinated with the lesson units. They reinforce several skills taught within each unit. Many cards are designed to make math content “real” to students by providing a real-life setting, or a content area connection. Each card includes student directions as well as reproducible page information. For information about the games, see the Management and Skill Application Games sections of this guide.

About the CD-ROM

A Source for Printable Materials

A CD-ROM is included in the back of this guide. It contains the following materials:

- **Placement Tests** from Units 1–7
- **Pre-Test and Post-Test** pages from Units 1–7
- **Student Activity Pages** from Units 1–7
- **Skill Application Games** (student directions and related reproducible information)
- **Problem-Solving Strategy Cards**
- **Real-Life Problem-Solving Cards**
- **PowerPoint® Lesson Options** (slide presentations) for all unit lessons (The *PowerPoint*® lesson offers an alternative method for teaching the Warm-Up Activity and the Whole-Class Skills Lesson, as well as a listing Differentiated-Group Skills Practice activities of the lesson.)
- **Reproducibles** from the last section of each unit
- **Additional Practice Pages** (Over 100 pages of student practice to reinforce basic skills are introduced in each of the units. Answer keys are included.)
- **Glossary** from Teacher Resource Guide

Note: The printable pages on this CD-ROM allow you to download and print copies of the materials listed above. Simple directions for using the CD-ROM are presented in the READ ME files.

Management

⇒ Pacing Plans

The *Exploring Math* kit is designed for flexibility, especially when used in summer intervention or after-school programs where sessions are limited.

Below are some suggestions for using the kit for different purposes and/or in different time frames.

Special Programs—Summer School/Limited Session

Daily Eight-Week Program (40 class sessions)

Over a period of two to three sessions, administer and score the Placement Test to determine which units to use throughout the eight-week session. Rank these units according to the overall class score for each (See Placement Test Class Record, pages 71 and 72.).

To plan the number of sessions per unit, divide the remaining sessions (about 37) by the number of units. You may wish to adjust this number so that more sessions are devoted to the unit on which the students scored the lowest.

Option A: Target Lessons for 2–4 Units

Sample Pacing Chart: Daily Eight-Week Program (3 Units)								
Week								
Day	1	2	3	4	5	6	7	8
Mon	Placement Test	Unit 2 L-2.4	Unit 2 L-2.12	Unit 2 L-2.20	Unit 4 L-4.4	Unit 4 L-4.11	Unit 5 L-5.2	Unit 5 L-5.9
Tues	Placement Test	Unit 2 L-2.6	Unit 2 L-2.13	Unit 2 L-2.21	Unit 4 L-4.6	Unit 4 L-4.13	Unit 5 L-5.3	Unit 5 L-5.11
Wed	Unit 2 L-2.1	Unit 2 L-2.8	Unit 2 L-2.15	Unit 4 L-4.1	Unit 4 L-4.7	Unit 4 L-4.14	Unit 5 L-5.5	Unit 5 L-5.12
Thurs	Unit 2 L-2.2	Unit 2 L-2.9	Unit 2 L-2.18	Unit 4 L-4.2	Unit 4 L-4.9	Unit 4 L-4.16	Unit 5 L-5.6	Unit 5 L-5.13
Fri	Unit 2 L-2.3	Unit 2 L-2.11	Unit 2 L-2.19	Unit 4 L-4.3	Unit 4 L-4.10	Unit 4 L-4.18	Unit 5 L-5.8	Unit 5 L-5.15

This sample pacing chart was developed after the Placement Test results indicated that units 2, 4, and 5 should be covered in the eight-week session. Since skills and concepts from Unit 2 need the most attention, more sessions were scheduled to teach lessons from this unit.

Management

⇒ Pacing Plans *(cont.)*

Daily Eight-Week Program (40 class sessions)

Option B: Teach One Unit

Administer the Placement Test as suggested in Option A. If only one unit is to be completed during this time, you will have an opportunity to cover some lessons over a two-day period. This gives you time to provide additional practice on difficult skills and to investigate the Extension activities more thoroughly. You should also plan more problem-solving practice time, using the strategies learned in the unit.

Option C: Choose Lessons from All Units

Administer the Placement Test as suggested in Option A. If the curriculum guidelines from your intervention program (and/or the Placement Test scores) indicate that all topics should be covered, it will be necessary to reduce the number of lessons offered for each unit. In an eight-week session, for example, you could teach four to five lessons per week, allowing five or six sessions for problem-solving practice. Since each unit contains an average of 20 lessons, you will need to decide which lessons to choose from each unit. (The unit pre-tests can serve as an indicator.)

Daily Six-Week and Four-Week Programs

In a six-week session, with 30 class periods, it is recommended that you select no more than three units on which to focus. This allows you to complete about eight lessons per unit, with remaining sessions devoted to the initial testing and the problem-solving lessons.

Four-week programs provide you with 20 class periods. Since time is limited, your students' needs would be best served if you plan to cover two units at the most.

Whether your program is four weeks or six weeks long, the pacing plan can be similar to the sample daily eight-week program, with adjustments made to cover three-fourths or one-half of the material scheduled for eight weeks.

Ongoing Regular and After-School Programs

Exploring Math was designed as an intervention and reinforcement program. The lessons in the kit cover essential topics that are taught throughout the regular school year. The lessons can support your existing core mathematics program (based on a 40-week time frame, with a minimum of 2.5 to 4 hours of mathematics instruction per week). As you develop a pacing plan for your existing program, include related lessons from this kit that can be used (during or after school) as reinforcement for specific groups of students with diagnosed needs.

Management

⇒ Pacing Plans *(cont.)*

Note: Depending on the length of each day's session, it is possible to complete two related lessons in one day. Most lessons take between 50 and 60 minutes to complete. If your summer school, or other limited-session program, has daily sessions of 2 to 2 1/2 hours, it is possible to double up on the lessons. (Adjust pre- and post-testing accordingly.)

Problem-Solving Practice: If possible, provide as much problem-solving practice as possible during the sessions. Since two Problem-Solving Lessons are provided in each unit, students will be exposed to at least two opportunities to use specific strategies and organized methods for solving problems. Once students learn how to apply a strategy, they should not be limited to the lessons in the unit. If possible, allow some time each week to solve a few problems using a particular strategy.

Additional Practice: Where appropriate, assign homework from the Extension activities in the lessons, or from selected practice pages located on the CD-ROM.

Summary

Whether you are planning an intervention program for the summer, or working within a regular or after-school program, use the following “3 D’s” to organize your daily schedule.

- **Diagnose** areas of greatest need by administering and scoring the Placement Test to determine your students' needs.
- **Decide** which units (and the number of lessons) to include within the specific time frame of your program.
- **Develop** a pacing chart to plan the specific lessons and suggested activities prescribed in this kit.