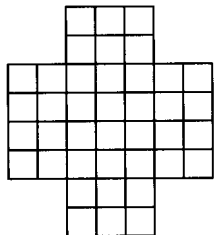
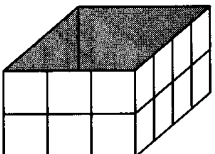
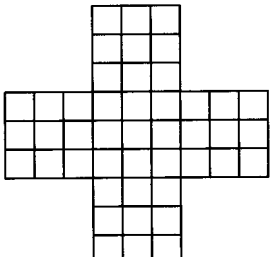
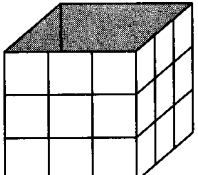
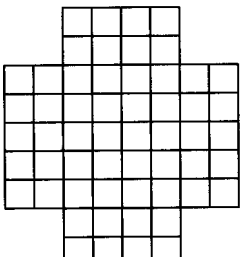
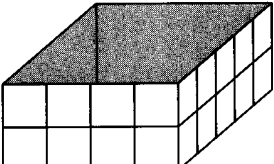


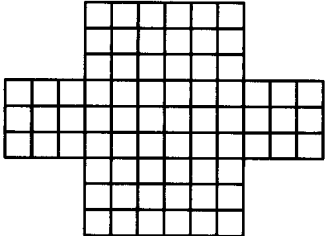
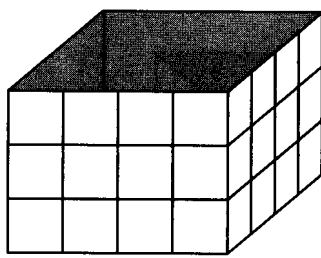
How Many Cubes? (page 1 of 2)

How many cubes fit in each box? First, determine the number of cubes without building the box. Then build a box and use cubes to check. Check your first answer with your actual answer before going on to the next box.

Think about a way you could find the number of cubes that would fit in any box without building it.

	Pattern	Box	First Answer	Actual Answer
1. Box 1			_____	_____
2. Box 2			_____	_____
3. Box 3			_____	_____

How Many Cubes? (page 2 of 2)

	Pattern	Box	First Answer	Actual Answer
4.			_____	_____
5.			_____	_____
6.	<p>The bottom of the box is 4 units by 5 units. The box is 3 units high.</p>		_____	_____

A Strategy for Finding Volume

Describe a way to find how many cubes will fit in a rectangular box without building the box and filling it with cubes. Your method should work for any box, whether you start with a box pattern, a picture of the box, or a description of the box in words.

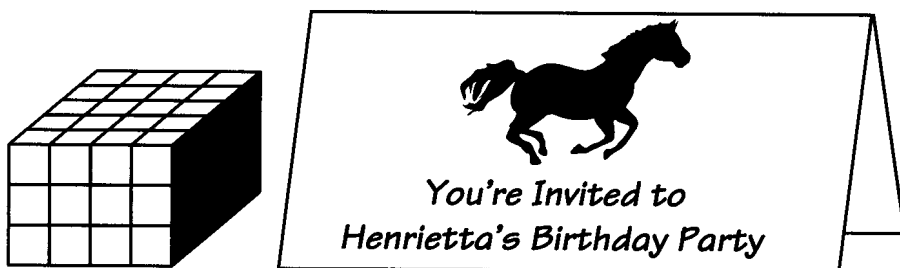


Will They Fit?

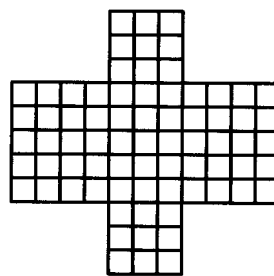
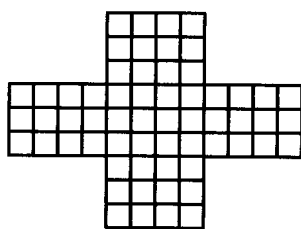
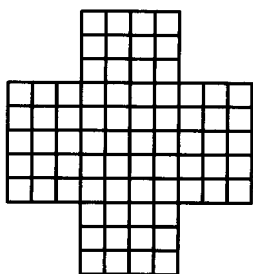
These sugar cubes are Amy's birthday gift to her horse, Henrietta.

NOTE Students figure out which of three box patterns to use for packaging some sugar cubes. Students should show the sugar cubes with blocks or other cubes if they have difficulty answering the questions.

SMH 106-107



1. How many sugar cubes are in the top layer? _____
2. How many layers of sugar cubes are there? _____
3. How many sugar cubes are there in all? _____
4. Which of these patterns should Amy use to make a box for the sugar cubes?



Ongoing Review

5. My number is less than 32. My number is a multiple of 3. The digits of my number add up to 6. What is my number?
A. 150 **B.** 42 **C.** 24 **D.** 18



Multiplication Practice

Solve each problem in two different ways.
Show your work clearly.

NOTE Students develop flexibility while solving multiplication problems.

SMH 30–32

1. $27 \times 62 = \underline{\hspace{2cm}}$

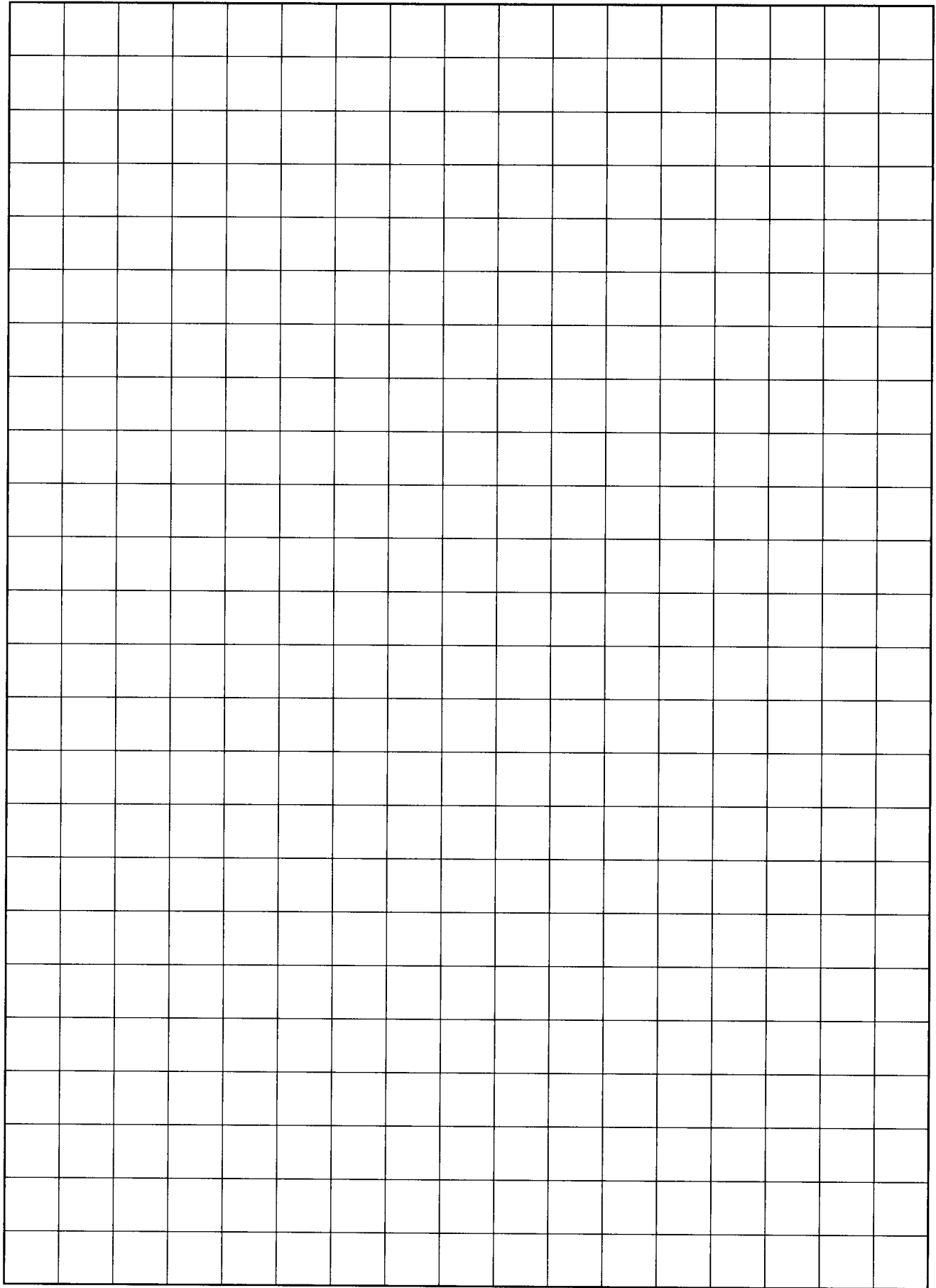
First way:

Second way:

2. $54 \times 48 = \underline{\hspace{2cm}}$

First way:

Second way:



Volume of Boxes (page 1 of 2)

What is the volume (the number of cubes that fit) of each box? Determine the number of cubes first, and then build the box and use cubes to check.

	Pattern	Picture	First Answer	Actual Answer
1.			_____	_____
2.			_____	_____

Volume of Boxes (page 2 of 2)

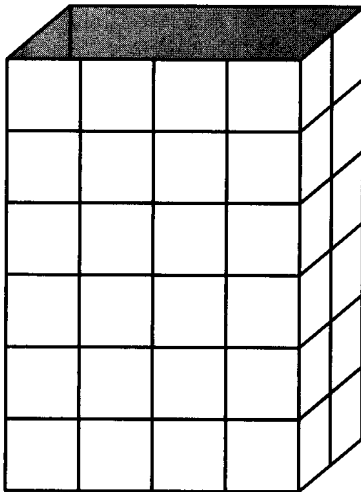
For Problems 3–5, draw the pattern of the box on three-quarter-inch grid paper.

3. 3 by 4 by 3

**First
Answer**

**Actual
Answer**

4.



5. The bottom of the box is 5 units by 6 units. The box is 2 units high.



What Should We Do with the Extras?

NOTE Students practice solving division problems and interpreting remainders in story contexts.

SMH 37

Solve each of the following problems. Show your work clearly. Be sure to answer the question posed by the story context.

1. Alicia and her father went food shopping. Oranges were priced at \$0.27 each. Alicia and her father have \$5.00. How many oranges can they buy?

Division Equation: _____ \div _____ = _____

Answer: _____

2. Milk cartons come in crates of 24. How many crates does a school need to order to serve milk to 400 students?

Division Equation: _____ \div _____ = _____

Answer: _____

3. Sixteen people are going to share 200 crackers evenly. How many crackers does each person get?

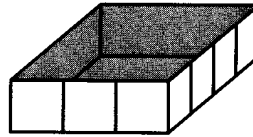
Division Equation: _____ \div _____ = _____

Answer: _____



More Boxes

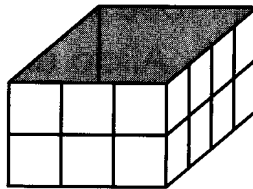
1. How many cubes will fit?



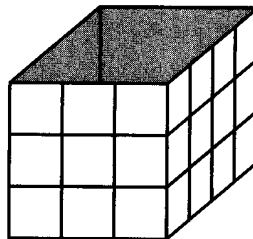
NOTE Students determine how many cubes fit in each of the pictured boxes.

SMH 106-107

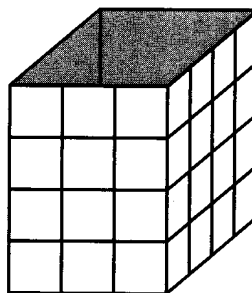
2. How many cubes will fit?



3. How many cubes will fit?



4. How many cubes will fit?



Doubling the Number of Cubes

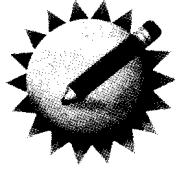
Answer these questions. Use grid paper, cubes, and anything else that helps you solve the problem.

1. You have a box that is 2 by 3 by 5. How many cubes does it hold? How do you know?

2. The factory wants you to build a box that will hold twice as many cubes. What are the dimensions of a box that contains two times as many cubes as a box that is 2 by 3 by 5? Write the dimensions and explain how you found the answer.

3. Draw the design for the new box below or on graph paper.

Challenge: See how many boxes you can find that will hold two times as many cubes as a 2 by 3 by 5 box. Record each of the dimensions.



Multiplication Practice: Solve Two Ways

NOTE Students develop flexibility while solving multiplication problems.

SMH 30–32

Solve each problem in two different ways.
Show your work clearly.

1. $42 \times 88 =$ _____

First way:

Second way:

2. $57 \times 38 =$ _____

First way:

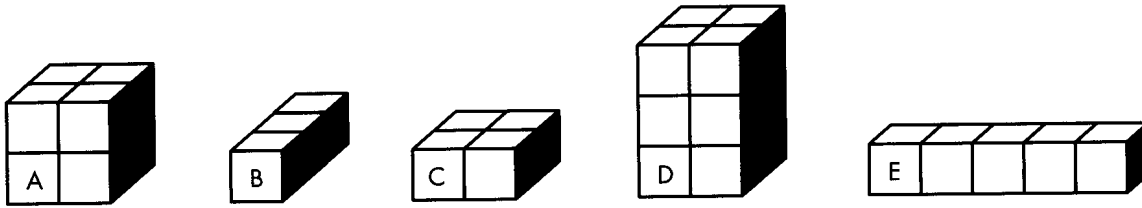
Second way:



The Symphony (page 2 of 2)

3. The Springfield School District sent 14 buses. There were 55 students on each bus. How many fifth graders came from the Springfield schools?
4. The Springfield fifth graders sat on the first floor at Symphony Hall. 35 students sat in each row. How many rows did they fill?

How Many Packages in Box 1?



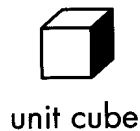
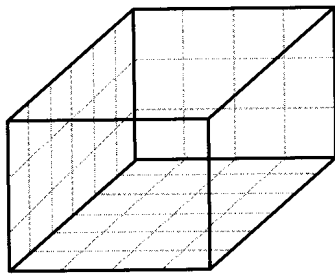
These five packages will be shipped in Box 1. The box is packed with only one type of package at a time. How many of Package A will fit in Box 1? (You may not break apart packages.) How many of Package B will fit in Box 1? Package C? D? E?

First, determine how many packages will fit in the box. Then make the box and check your first answer. Use the pattern on "How Many Packages? Pattern for Box 1" (two pages). Record your answer both before and after filling the box.

Box 1

4 by 6 cubes on the bottom and 3 cubes high

How many of each package will fit in Box 1?



	First Answer	Actual Answer
A	_____	_____
B	_____	_____
C	_____	_____
D	_____	_____
E	_____	_____



Closest Estimate (page 1 of 2)

NOTE Students practice strategies for estimating products.

SMH 30–32

Each problem below has a choice of three estimates. Which one do you think is closest? Choose the closest estimate *without* solving the problem. Circle the closest estimate. Then write about why you think this estimate is the closest.

1. The closest estimate for 84×19 is _____.

1,600

1,800

2,000

I think this is the closest because:

2. The closest estimate for 49×28 is _____.

1,400

1,500

1,600

I think this is the closest because:



Closest Estimate (page 2 of 2)

3. The closest estimate for 16×128 is _____.

1,500

2,000

2,500

I think this is the closest because:

4. The closest estimate for 207×46 is _____.

6,000

8,000

10,000

I think this is the closest because:

5. Choose one or more of the problems above and, on a separate sheet of paper, solve it to get an exact answer. Show your solution with equations. Did you choose the closest estimate?



Factors of 160 and 240

Using whole numbers, find all the ways to multiply to make each product. First, find the ways with two numbers, and then find ways to multiply with more than two numbers.

NOTE Students practice finding multiplication expressions with two numbers and with more than two numbers for 160 and 240.

SMH 23–24

1. Multiplying to make 160

Ways to multiply with two numbers: Example: 16×10	Ways to multiply with more than two numbers: Example: $2 \times 8 \times 10$
--	--

2. Multiplying to make 240

Ways to multiply with two numbers:	Ways to multiply with more than two numbers:
------------------------------------	--

Finding Volume

Find the volume of each rectangular prism described below. Show how you found the answer. Pick two of the prisms, and draw the design for the box on centimeter grid paper.

1. The prism is 6 units by 4 units by 5 units.
2. The prism is 3 units by 10 units by 3 units.
3. The prism is 5 units by 7 units by 4 units.
4. The prism is 10 units by 4 units by 6 units.
5. The prism is 8 units by 9 units by 4 units.

Changing Dimensions (page 1 of 2)



Solve the following problems using any material that will help you find the answer.

1. Find the dimensions of a box that will hold **twice** as many cubes as a box that is 2 by 6 by 4.

Volume of original box: _____

Volume of new box: _____

Dimensions of new box: _____

Explain how you found the dimensions of the new box.

2. Find the dimensions of a box that will hold **twice** as many cubes as a box that is 4 by 2 by 9.

Volume of original box: _____

Volume of new box: _____

Dimensions of new box: _____

Explain how you found the dimensions of the new box.

3. Find the dimensions of a box that will hold **twice** as many cubes as a box that is 4 by 5 by 6.

Volume of original box: _____

Volume of new box: _____

Dimensions of new box: _____

Explain how you found the dimensions of the new box.

Changing Dimensions (page 2 of 2)

Now, the packaging factory wants you to find boxes that hold **half** as many cubes.

4. Find the dimensions of a box that will hold **half** as many cubes as a box that is 2 by 8 by 10.

Volume of original box: _____

Volume of new box: _____

Dimensions of new box: _____

Explain how you found the dimensions of the new box.

5. Find the dimensions of a box that will hold **half** as many cubes as a box that is 6 by 5 by 6.

Volume of original box: _____

Volume of new box: _____

Dimensions of new box: _____

Explain how you found the dimensions of the new box.

6. Describe a general strategy to find dimensions for any rectangular box whose volume is **doubled**.
Your strategy should work for any box.



Solving Division Problems

NOTE Students practice solving division problems.

SMH 38–39

1. **a.** Write a story problem that represents $252 \div 14$.

b. Solve $252 \div 14$. Show your solution clearly.

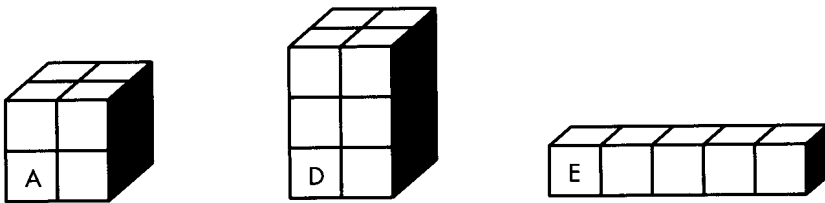
2. **a.** Write a story problem that represents $23 \overline{)575}$.

b. Solve $23 \overline{)575}$. Show your solution clearly.

Prisms and Pyramids

How Many Packages in Box 2?

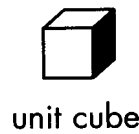
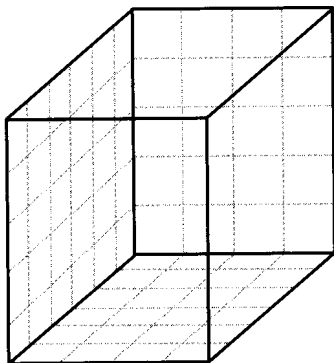
Now work with Packages A, D, and E and Box 2. How many of each package will fit in this box? Determine the answer before building, and then make the box and check. Record your first answer and the actual answer below.



Box 2

4 by 6 cubes on the bottom and 5 cubes high

How many of each package will fit in Box 2?



	First Answer	Actual Answer
A	_____	_____
D	_____	_____
E	_____	_____



Multiplication Clusters

Use the cluster problems to help you solve each problem. Circle the problems in the cluster you use.

NOTE Students have been breaking larger products into smaller parts. For example, 48×24 can be broken into 40×24 and 8×24 . There are many different ways to combine the smaller products. Ask students to show you more than one way for one or two problems.

SMH 35

1. $48 \times 24 =$ _____

2×24	5×24	10×24	20×24
4×24	8×24	40×24	50×24

2. $73 \times 31 =$ _____

2×31	3×31	10×31	20×31
7×31	8×31	70×31	80×31

3. $58 \times 17 =$ _____

2×17	10×17	5×17	50×17
4×17	8×17	20×17	60×17

Ongoing Review

4. Solve 42×8 .

A. 3,216

B. 1,632

C. 336

D. 316



Double the Number of Cubes

(page 1 of 2)

Solve the following problems.

NOTE Students find the volume of a box (how many cubes fit inside) and create another box to hold twice as many cubes.

SMH 108

1. You have a box that is 2 by 3 by 4.
How many cubes does it hold?
How do you know?

2. The factory wants you to build a box that will hold twice as many cubes. What are the dimensions of a box that contains two times as many cubes as a box that is 2 by 3 by 4? Write the dimensions and explain how you found the answer.



Double the Number of Cubes

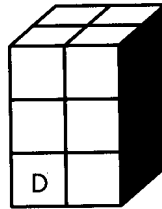
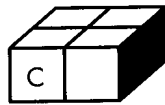
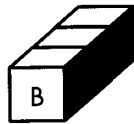
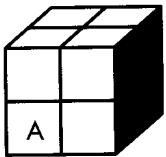
(page 2 of 2)

3. Draw the design for the new box below or on graph paper.

Challenge: See how many boxes you can find that will hold two times as many cubes as a 2 by 3 by 4 box. Record each of the dimensions.

Design a Box

Design a single open box so that packages of size A completely fill your box, packages of size B completely fill your box, packages of size C completely fill your box, and packages of size D completely fill your box. Be prepared to convince the class that your solution is correct.



When you have made a box and tested that it works, record its dimensions.

Dimensions: _____

Challenge: Design a single open box that can be completely filled with Package A, B, C, or D, and also with Package E. What are the dimensions of this box? Can you find other boxes that will work?



Dimensions: _____



Multiplication Starter Problems

NOTE Students practice flexibility with solving multiplication problems.

SMH 30–32

Solve each problem two ways, using the first steps listed below. Show your work clearly.

1. $49 \times 25 =$ _____

Start by solving 50×25 .

Start by solving 40×25 .

2. $115 \times 28 =$ _____

Start by solving 100×28 .

Start by solving 115×10 .



Solving Division Problems

(page 1 of 2)

NOTE Students practice solving division problems.

SMH 38–39

Write a story problem that represents each division expression. Then solve the problem.

1. **a.** Write a story problem that represents $528 \div 24$.

- b.** Solve $528 \div 24$. Show your solution clearly.



Solving Division Problems

(page 2 of 2)

2. **a.** Write a story problem that represents $16\overline{)368}$.

b. Solve $16\overline{)368}$. Show your solution clearly.



Factors of 120 and 210

Find all the ways to multiply to make each product, using whole numbers. First, find the ways with two numbers, and then find ways to multiply with more than two numbers.

NOTE Students practice finding multiplication expressions with two numbers and with more than two numbers for 120 and 210.

SMH 23–24

1. Multiplying to make 120

Ways to multiply with two numbers: Example: 12×10	Ways to multiply with more than two numbers: Example: $2 \times 6 \times 10$
--	--

2. Multiplying to make 210

Ways to multiply with two numbers:	Ways to multiply with more than two numbers:
------------------------------------	--



Division

Solve each division problem below. Then write the related multiplication combination.

NOTE Students review division problems that are related to the multiplication combinations they know.

SMH 14, 25–29

Division Problem	Multiplication Combination
1. $72 \div 8 =$ _____	_____ \times _____ = _____
2. $66 \div 6 =$ _____	_____ \times _____ = _____
3. $56 \div 7 =$ _____	_____ \times _____ = _____
4. $96 \div 12 =$ _____	_____ \times _____ = _____
5. $77 \div 11 =$ _____	_____ \times _____ = _____
6. $54 \div 9 =$ _____	_____ \times _____ = _____
7. $108 \div 12 =$ _____	_____ \times _____ = _____
8. $49 \div 7 =$ _____	_____ \times _____ = _____



Large and Small Hunt

In each row, circle the largest product or quotient.
Then underline the smallest.

NOTE Students estimate the answers to multiplication and division problems.

SMH 30–32, 38–39

1.	46×77	67×51	39×86
2.	23×97	36×58	69×33
3.	$468 \div 26$	$68 \div 34$	$114 \div 6$
4.	$225 \div 15$	$905 \div 5$	$224 \div 16$

Ongoing Review

5. Which multiplication fact is related to $72 \div 9 = 8$?
- A.** $8 \times 9 = 72$ **C.** $7 \times 10 = 70$
- B.** $72 \div 8 = 9$ **D.** $80 \div 8 = 10$



Measurements of Volume

Look in and around your home for any recorded measurements of volume. Look on household items (refrigerators and freezers), in manuals, on other written materials (a water bill), or on any item that might have a measurement of volume recorded on it (the trunk space of a car).

NOTE Students, with the aid of an adult/adults, find volumes for common household items.

SMH 109-110

Record any measurements that are given in **cubic** units. Write down both the **number** of cubic units and the **kind** of cubic units used.

This Is Where My Measurement Was Found	Number of Cubic Units	Kind of Cubic Units

Containers from Home

We will soon be comparing the volumes of different household containers. Please find 3 or 4 clean, empty containers at home to bring to school. The recycling bin is a good place to look.

The containers should have sealed edges with no small openings so that sand does not leak out. As a guideline for size, the containers should fit together comfortably in a paper lunch bag.



Volleyball

Solve each of the following problems. Show your work clearly. Be sure to answer the question posed by the story context.

NOTE Students practice solving multiplication problems in story contexts.

SMH 30–32

1. At a volleyball tournament, there are 23 teams and each team has 14 players. How many players are at the tournament?
2. There is seating at the tournament so that each of the 23 teams can invite 30 fans to cheer for them. How many seats are at the tournament?
3. Each team is allowed to spend \$55 on food and drinks for the tournament. How much money do the 23 teams spend altogether?
4. At next year's tournament, the number of teams will double to 46 teams with 14 players on each. How many players will attend that tournament?

Boxes for Centimeter Cubes (page 1 of 2)

You have a box that is 3 centimeters by 4 centimeters by 6 centimeters.

1. How many centimeter cubes does it hold? _____
How do you know?

Find two boxes that will hold **twice** as many centimeter cubes as the box above.

2. **a.** What are the dimensions of each new box?

Dimensions of first box: _____

Dimensions of second box: _____

- b.** Explain how you found the answers.

3. Draw the designs for the new boxes on centimeter grid paper.

Boxes for Centimeter Cubes (page 2 of 2)

Find two boxes that will hold **half** as many centimeter cubes as the 3 centimeters by 4 centimeters by 6 centimeters box.

4. a. What are the dimensions of each new box?

Dimensions of first box: _____

Dimensions of second box: _____

b. Explain how you found the answers.

5. Draw the designs for the new boxes on centimeter grid paper.

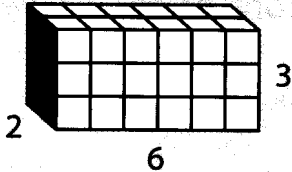
Challenge: Find a box that will hold **four** times as many centimeter cubes as the 3 centimeters by 4 centimeters by 6 centimeters box. Write the dimensions of the new box and explain how you found your answer.



Double Design

1. Who won the contest? Explain your answer.

Contest:
Design a box that will hold twice as many cubes as our current box.

Current Box → 

NOTE Students have been discussing ways to describe the dimensions of a box. Some ways are 6 wide, 2 long, 3 high; $6 \times 2 \times 3$; and 6 by 2 by 3. As your child judges the boxes in this contest, encourage him or her to compare the new dimensions with those of the current box to help judge how much each new box will hold.

SMH 108



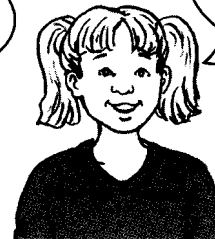
Victoria

My box is
 $6 \times 4 \times 3$.



Ralph

My box is
6 by 8 by 6.



Sandy

My box is
12 wide by
8 long by
6 high.

AND THE WINNER IS _____!

Ongoing Review

2. There are 56 notebooks being shared equally by a class of 28 students. Which division sentence shows this situation?

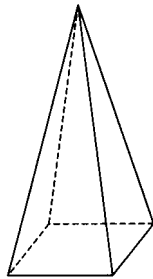
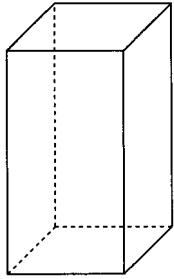
A. $56 \div 28 = 2$

C. $28 \div 56 = 2$

B. $56 - 28 = 28$

D. $28 \div 2 = 14$

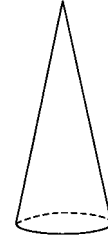
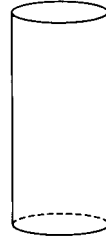
Pairs of Solids



Pair 1

rectangular
prism A

rectangular
pyramid B



Pair 2

cylinder C

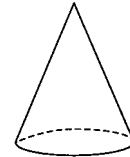
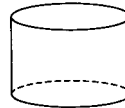
cone D



Pair 3

triangular
prism E

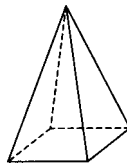
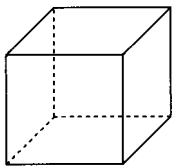
triangular
pyramid F



Pair 4

cylinder G

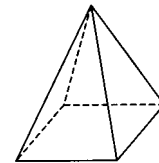
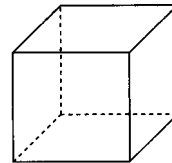
cone H



Pair 5

rectangular
prism I

rectangular
pyramid J



Pair 6

rectangular
prism I

rectangular
pyramid K



Coins

NOTE Students practice solving division problems in a money context.

Solve the following problems. Make sure that anyone looking at your work can tell how you solved the problem.

Alex, Nora, and Felix each won \$27.75 in a contest.

1. Alex decided to collect his money all in quarters. How many quarters did he get?

2. Nora chose to get her prize all in dimes and nickels. Show 2 different possible combinations of dimes and nickels that would total \$27.75.

First way:

Second way:

3. Felix wanted to collect his money in quarters, dimes, and nickels. Show 2 different possible combinations of quarters, dimes, and nickels that would total \$27.75.

First way:

Second way:



Guess My Number Puzzles

Solve the following problems. If you find only one number that fits, explain how you know that it is the only one. If you find more than one number that fits, explain how you know that you have found all of the possibilities.

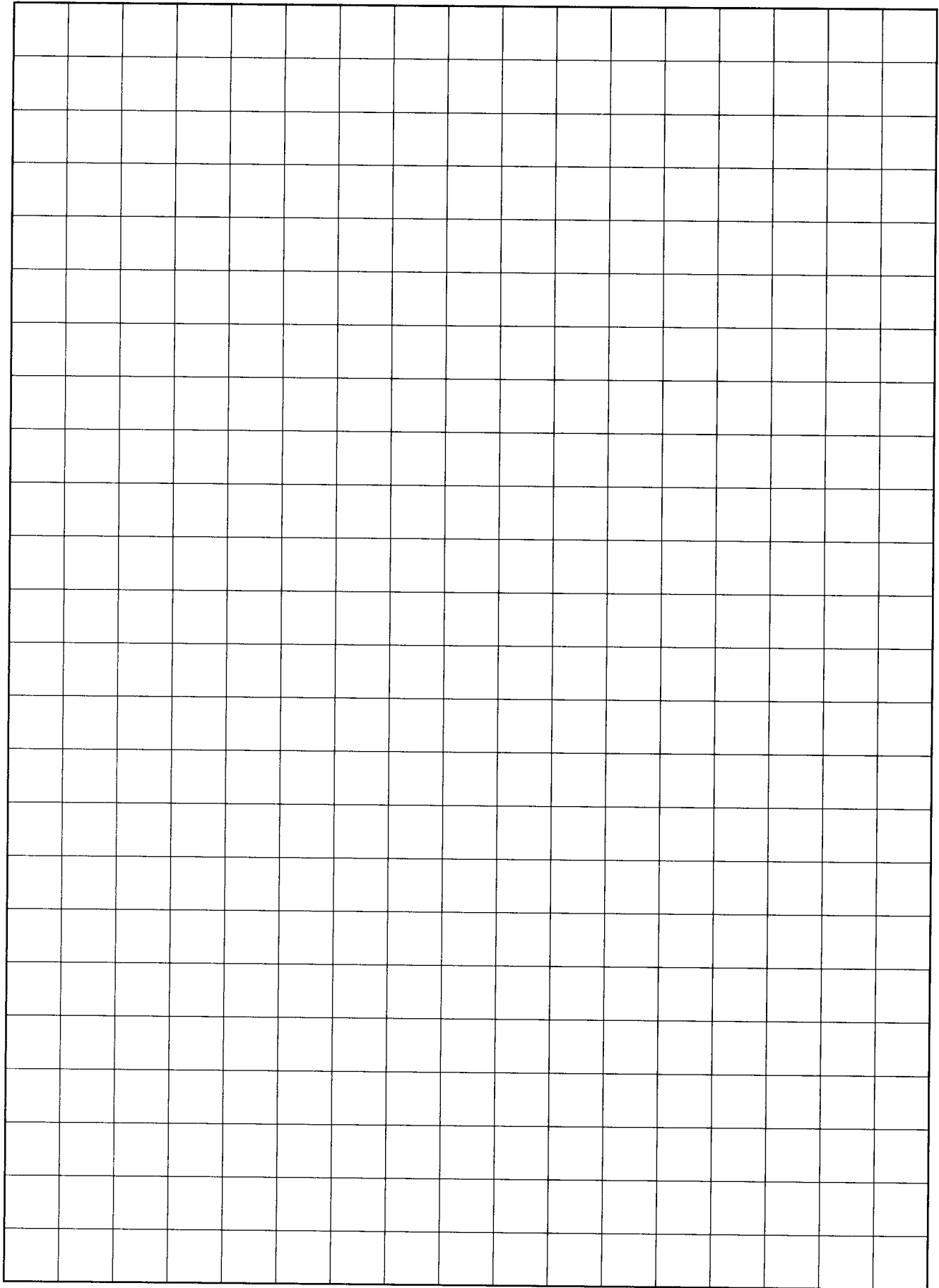
NOTE Students practice with factors and multiples of numbers.

SMH 18, 19

1. My number is a multiple of 15.
My number is also a multiple of 10.
My number is greater than 100.
My number is less than 200.

2. My number is a multiple of 150.
9 is a factor of my number.
My number has 3 digits.
The sum of the digits in my number is 9.

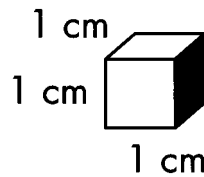
3. My number is square.
My number is even.
My number has 3 digits.
3 is a factor of my number.





Picture It

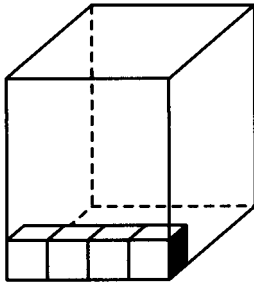
Picture 1-centimeter cubes along the width, length, and height of the box below. Write the dimensions of the box.



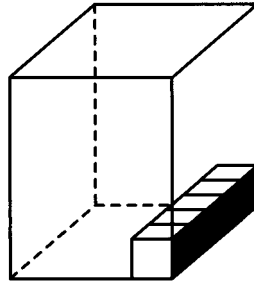
NOTE In class, students found the number of cubic centimeters needed to fill a box. A cube that is 1 centimeter on each edge holds a cubic centimeter.

SMH 106–107

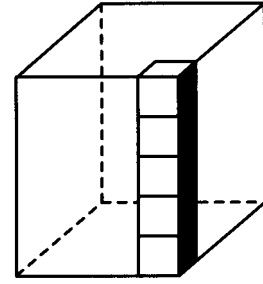
1.



_____ cm wide



_____ cm long



_____ cm high

Figure out how many cubic centimeters will fit in the box.
Tell how you did it.

Ongoing Review

2. Use the cluster problems to find 47×60 .

A. 2,240

B. 2,640

C. 2,820

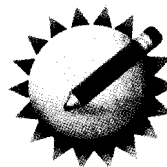
D. 3,060

$$7 \times 60 = 420$$

$$4 \times 60 = 240$$

$$40 \times 60 = 2,400$$

$$47 \times 60 = ?$$



Division Practice

Solve each division problem below.
Then write the related multiplication combination.

NOTE Students review division problems that are related to known multiplication combinations.

SMH 14, 25–29

Division Problem	Multiplication Combination
1. $54 \div 9 =$ _____	_____ \times _____ = _____
2. $55 \div 5 =$ _____	_____ \times _____ = _____
3. $56 \div 8 =$ _____	_____ \times _____ = _____
4. $84 \div 12 =$ _____	_____ \times _____ = _____
5. $63 \div 9 =$ _____	_____ \times _____ = _____
6. $96 \div 8 =$ _____	_____ \times _____ = _____
7. $72 \div 9 =$ _____	_____ \times _____ = _____
8. $64 \div 8 =$ _____	_____ \times _____ = _____
9. $81 \div 9 =$ _____	_____ \times _____ = _____
10. $108 \div 12 =$ _____	_____ \times _____ = _____



Which Holds More?



NOTE Students compare the volumes of containers with different shapes.

Find two containers at home that you think hold about the same amount. The containers should have different shapes.

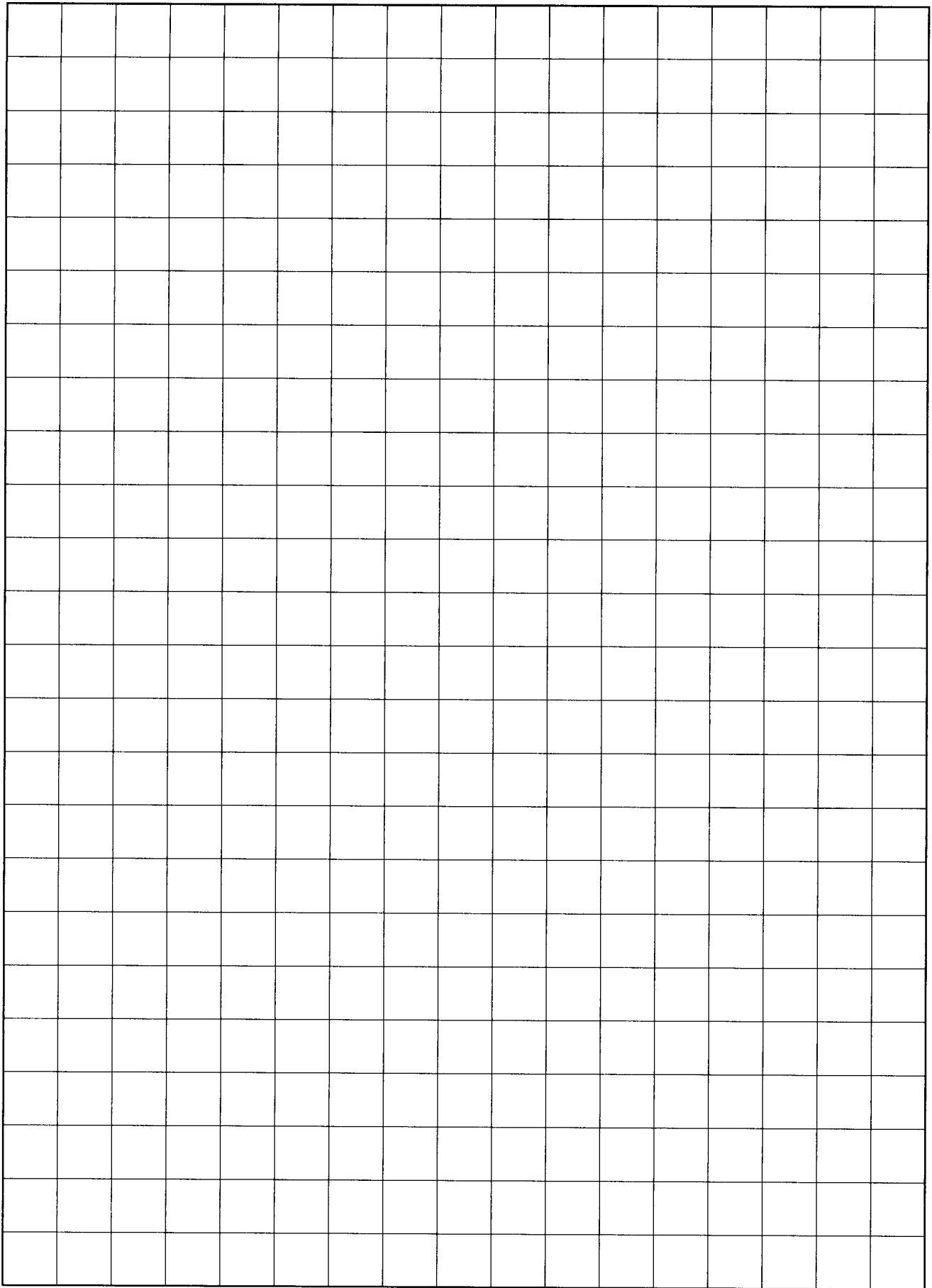
Describe your containers. You might sketch them, explain what they usually hold, or describe their shapes.

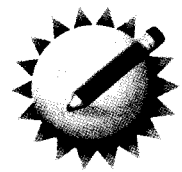
Container 1	Container 2

Find a way to compare the two containers to find out which holds more.

Which holds more?

Describe the method you used to compare the two containers.





Library Books

Solve each of the following problems. Show your work clearly. Be sure to answer the question posed by the story context.

NOTE Students practice solving division problems in story contexts.

SMH 38–39

1. There are 288 magazines in the library. The magazine display rack has 12 shelves. How many magazines does each shelf hold?

2. The school librarian chooses 384 books to put on display shelves. He needs to choose a bookcase for the display.
 - a. If he chooses a case with 8 shelves, how many books will go on each shelf?

 - b. If he chooses a case with 16 shelves, how many books will go on each shelf?

 - c. If he chooses a case with 13 shelves, how many books will go on each shelf, and how many will be left over?



NOTE Students practice flexibility with solving multiplication problems.

SMH 30–32

Multiplication Starter Problems

Solve each problem two ways, using the first steps listed below. Show your work clearly.

1. $39 \times 45 = \underline{\hspace{2cm}}$

Start by solving $40 \times 45 = \underline{\hspace{2cm}}$.

Start by solving $30 \times 45 = \underline{\hspace{2cm}}$.

2. $125 \times 32 = \underline{\hspace{2cm}}$

Start by solving $100 \times 32 = \underline{\hspace{2cm}}$.

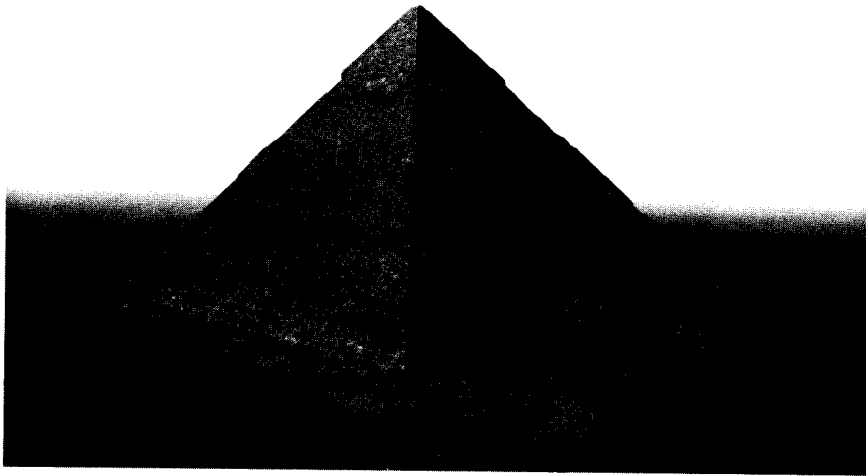
Start by solving $125 \times 10 = \underline{\hspace{2cm}}$.



The Pyramids at Giza (page 1 of 2)

NOTE Students calculate and compare the volume of Egyptian pyramids, calculate the perimeter of the bases, and demonstrate the 3:1 relationship between rectangular prisms and pyramids with the same base and height.

SMH 114



The Egyptian Pharaoh Khufu built what we know today as the Great Pyramid in the ancient city of Giza circa 2550 B.C. It stood 481 feet high and each side of its square base was 756 feet long. Years later (circa 2490 B.C.), Pharaoh Menkaure started constructing another pyramid nearby. At its completion, this pyramid had a height of 215 feet and a square base of 344 by 344 feet.

1. Compare the volume of the Great Pyramid to that of Pharaoh Menkaure's and find the difference in volume between the two. Show your work in the space provided.

The Great Pyramid: _____ cubic feet

Pharaoh Menkaure's Pyramid: _____ cubic feet

Difference in Volume: _____ cubic feet



The Pyramids at Giza (page 2 of 2)

2. Suppose you visit Giza and walk around the entire base of the Great Pyramid. The following day, you walk around the entire base of Pharaoh Menkaure's Pyramid. How much distance have you covered in these two walks?

3. Imagine you are designing a modern building that will be in the shape of a rectangular prism. You want the base and the height to be identical to that of the Great Pyramid. What will the volume (in cubic feet) of your building be? What if you chose to use the dimensions of Pharaoh Menkaure's pyramid?