

Equal Parts

**Family Note**

Help your child collect things that can be easily folded into equal parts. As your child works with fractions, remind him or her that the number under the fraction bar, the *denominator*, gives the total number of equal parts into which the whole is divided. The number over the fraction bar, the *numerator*, tells the number of equal parts that are being considered. Don't expect your child to use these words. They will be learned over time with repeated exposure.

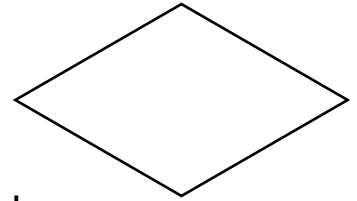
Please return this Home Link to school tomorrow.



Use a straightedge.

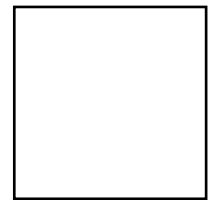
1. Divide the shape into 2 equal parts. Color 1 part.

$$\text{Part colored} = \frac{\square}{\square} \quad \text{Part not colored} = \frac{\square}{\square}$$



2. Divide the shape into 4 equal parts. Color 3 parts.

$$\text{Part colored} = \frac{\square}{\square} \quad \text{Part not colored} = \frac{\square}{\square}$$



3. Fold some things into equal parts.

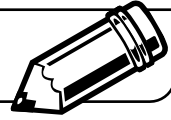
Examples: paper napkin, paper plate, magazine picture

Label each part with a fraction. Show your folded things to someone at home. Talk about what the fractions mean.

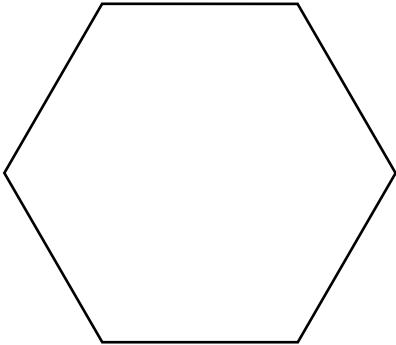
Bring the things you folded to school for the Fractions Museum.

I folded a _____ into _____ equal parts.

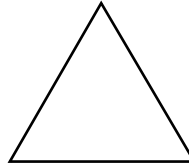
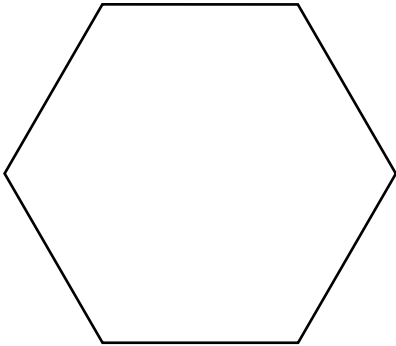
Each part shows _____.

LESSON
8•1**Pattern-Block Equal Parts**

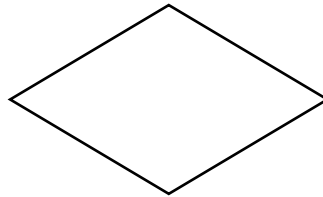
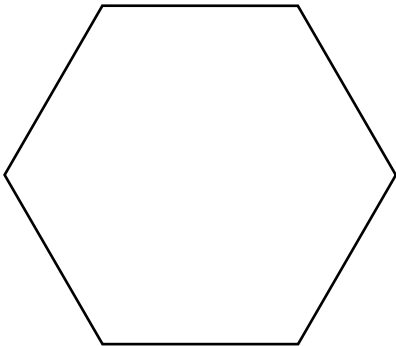
Cover the larger block with smaller blocks. Use your template to show what you did.

1.

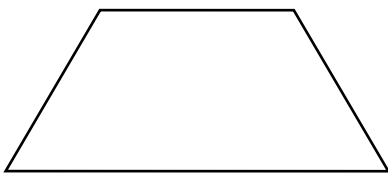
= _____

**2.**

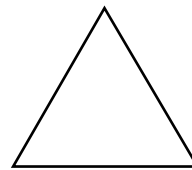
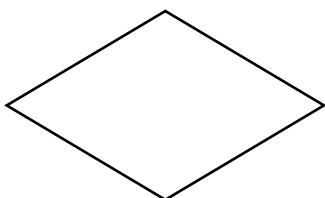
= _____

**3.**

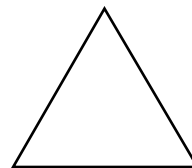
= _____

**4.**

= _____

**5.**

= _____



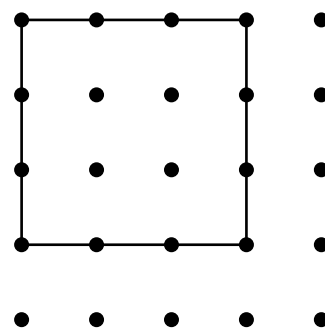
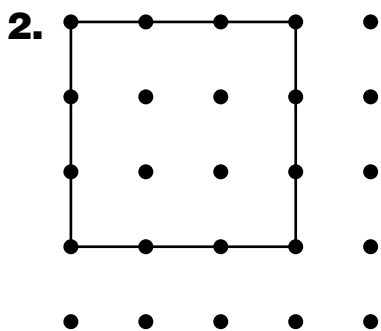
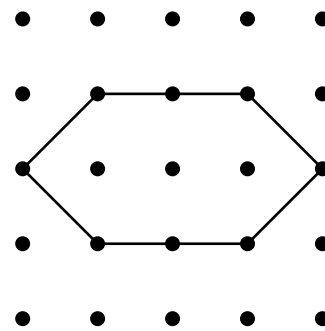
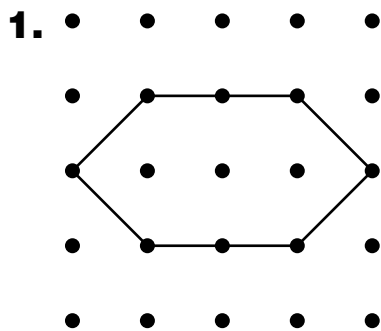
LESSON
8•1

Equal Parts



Do the following for each problem:



- ◆ Use 1 rubber band to make the shape on a geoboard.
- ◆ Use rubber bands to divide the shape into 6 equal parts.
- ◆ Record how you divided the shape.
- ◆ Repeat for the same shape. Divide it a different way into 6 equal parts.
- ◆ Record how you divided the shape the second way.





LESSON
8•2**Pattern-Block Fractions**

Work with a partner.

- Materials**
- Math Journal 2*, pp. 187 and 188
 - pattern blocks
 - Pattern-Block Template

Study the example at the top of journal page 187. Cover the  with s.

You need 3 triangles, so a  is $\frac{1}{3}$ of a .

1. Do Problem 1 on journal page 187.

Cover the larger shape with hexagon blocks.

The number of hexagons helps you find the fraction to write as the answer.

Use your Pattern-Block Template to divide the larger shape into hexagons.

2. Do the rest of the problems on journal pages 187 and 188 in the same way.
3. Get together with other partners in the class. Check one another's work.

Each smaller shape on page 187 is $\frac{1}{3}$ of the larger shape.

Are all the smaller shapes the same size? _____

Each smaller shape on page 188 is $\frac{1}{4}$ of the larger shape.

Are all the smaller shapes the same size? _____

LESSON
8•2

Geoboard Fences

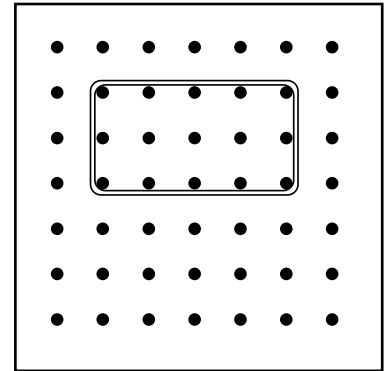


Work in a small group.

- Materials**
- Math Journal 2*, p. 189
 - geoboard
 - 4 rubber bands
 - straightedge

Each group member does Steps 1–6:

1. Make a rectangle on a geoboard. Use 1 rubber band. Think of the rubber band as a fence.
2. Draw your rectangle (fence) on the first geoboard on journal page 189.
3. Count the number of pegs inside your rectangle (fence). Include the pegs that touch the rubber band.
4. Fill in the table at the bottom of the journal page. Include
 - ◆ the number of pegs inside the fence.
 - ◆ the number of rows of pegs inside the fence.
 - ◆ the number of pegs in each row.
5. Make 3 more rectangles (fences) on your geoboard. Draw each rectangle (fence) on the journal page.
6. Fill in the table for your other three fences.



Follow-Up

Compare your table to those of the other members of your group.

Do any members of your group have the same total number of pegs inside a fence (but with a different number of rows)? What else is different? Can you tell why this happened?

LESSON
8•2

Volumes of Base-10 Structures



Work in a group.

Materials base-10 blocks: cubes, longs, flats; a big cube (thousands), if available

slate for each person

1. Two group members use the blocks to build a structure. They should work quickly so others can have a turn later.

2. Each small cube has a volume of 1 cubic centimeter.

Each group member writes an estimate of the total number of cubes (cubic centimeters) in the structure on her or his slate.

3. Together, count the cubes as the builders take the structure apart.

The total number of cubes equals the **volume** of the structure in **cubic centimeters**.

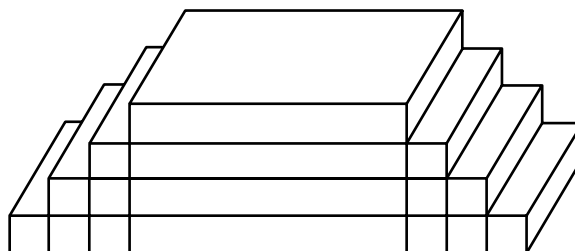
Record the result like this:

“This structure has a volume of _____ cubic centimeters.”

4. Compare the actual number of cubes to the estimates of the group members.

5. Change builders. Repeat Steps 1–4. Continue until everyone has had a turn. As you build the structures, think of ways to improve your estimates.

6. Write a group report about your estimates and the actual volumes of the structures.



This structure has a volume of 520 cubic centimeters.

HOME LINK
8•2

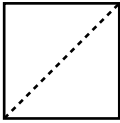
Fractions of Shapes

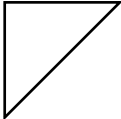

Family Note

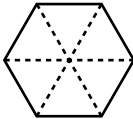
In today's lesson, your child compared pattern blocks, one of which represents ONE whole. As you work on this activity with your child, keep in mind that the shape below the ONE is a fractional part of the whole shape. Remind your child that the size of a fractional part of a whole depends on the size of the whole.

Please return this Home Link to school tomorrow.




1. If this shape is ONE, 


then  is what fraction of the shape? _____

2. If this shape is ONE, 

then  is what fraction of the shape? _____

Try This

3. If this shape is ONE, 

then  is what fraction of the whole shape? _____

Practice

Solve.

$$\begin{array}{r} 4. \quad 75 \\ + 26 \\ \hline \end{array}$$

$$\begin{array}{r} 5. \quad 56 \\ + 45 \\ \hline \end{array}$$

$$\begin{array}{r} 6. \quad 84 \\ + 48 \\ \hline \end{array}$$

$$\begin{array}{r} 7. \quad 91 \\ + 67 \\ \hline \end{array}$$

Unit

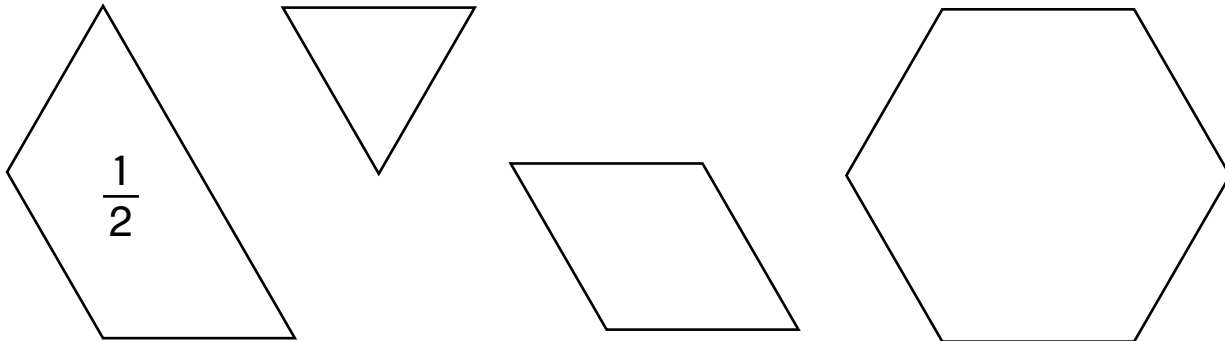
--

LESSON
8•2

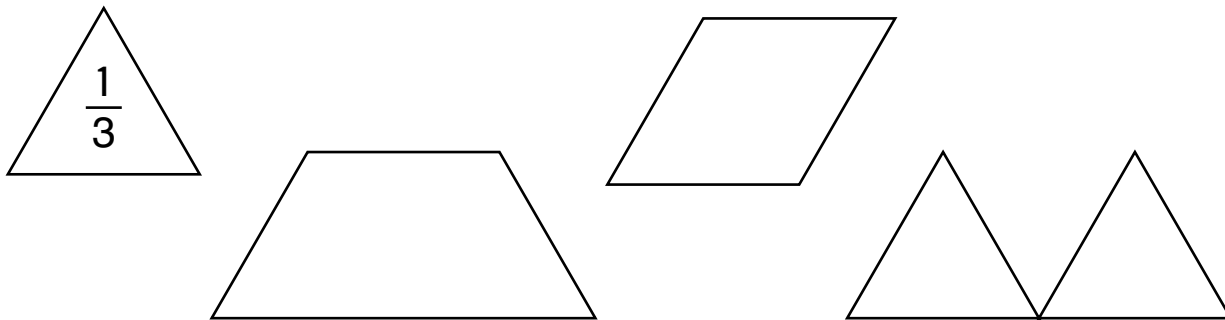
Fraction Puzzles



1. The first figure is $\frac{1}{2}$ of the whole. What fraction of the *same* whole is each of the other figures? Write the fraction inside the figure.

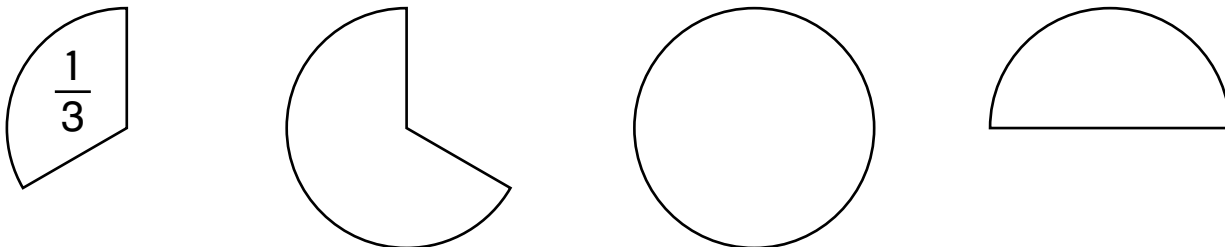


2. The first figure is $\frac{1}{3}$ of the whole. What fraction of the *same* whole is each of the other figures? Write the fraction inside the figure.



Try This

3. The first figure is $\frac{1}{3}$ of the whole. What fraction of the *same* whole is each of the other figures? Write the fraction inside the figure.



4. Create your own fraction puzzle.

Fractions of Collections


Family Note

In this lesson, your child learned to use fractions to name part of a collection of objects. For example, your child could identify 2 out of 4 objects as $\frac{2}{4}$ or $\frac{1}{2}$. Show your child how to use pennies to act out Problem 1. Help your child collect household items that can be separated into fractional parts—or any other items that have fractions written on them. Encourage your child to bring these items to school for the class's Fractions Museum.

Please return this Home Link to school tomorrow.


1.


Three people share 12 pennies. Circle each person's share.

How many pennies does each person get? _____ pennies

$\frac{1}{3}$ of 12 pennies = _____ pennies.

$\frac{2}{3}$ of 12 pennies = _____ pennies.

Practice

Solve.

2. $68 - 24 = \underline{\hspace{2cm}}$

4. $\begin{array}{r} 65 \\ - 27 \\ \hline \end{array}$

5. $\begin{array}{r} 64 \\ + 26 \\ \hline \end{array}$

3. $53 + 45 = \underline{\hspace{2cm}}$

Unit

Cars

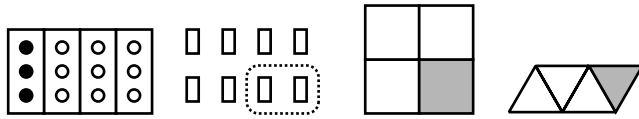
Ask someone at home to help you find more things to bring to school for the Fractions Museum.

LESSON
8•3

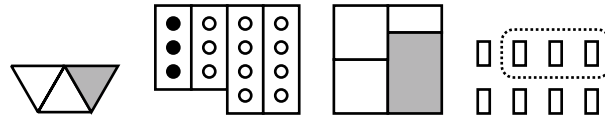
Exploring Fractions



These show $\frac{1}{4}$.



These do **NOT** show $\frac{1}{4}$.



1. Explain how you can tell if something shows $\frac{1}{4}$.

For each problem—

- ◆ Take the number of counters.
- ◆ Figure out how to show $\frac{1}{4}$ of the counters.
- ◆ Use the rectangles to the right to make four equal piles of counters.
- ◆ Record your answer in the rectangles below each problem.

--	--	--	--

2. Take 4 counters.

Show $\frac{1}{4}$ of
4 counters.

--	--	--	--

3. Take 8 counters.

Show $\frac{1}{4}$ of
8 counters.

--	--	--	--

4. Take 12 counters.

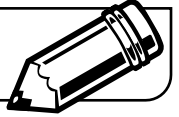
Show $\frac{1}{4}$ of
12 counters.

--	--	--	--

5. Take _____ counters.

Show $\frac{1}{4}$ of
_____ counters.

--	--	--	--

LESSON
8•3**A Fraction Puzzle**

Use counters or draw pictures to solve the fraction puzzle. Show all of your work. If you have time, write a fraction puzzle of your own on the back of this page.

José was playing a game with marbles.

In the first round of the game, he lost $\frac{1}{4}$ of his marbles.

In the second round of the game, he lost $\frac{1}{3}$ of his remaining marbles.

In the third round of the game, he lost $\frac{1}{2}$ of his remaining marbles.

He gave 1 marble to his friend Shavana.

He had 1 marble left.

How many marbles did José start with? _____

--	--	--	--

--	--	--	--

--	--	--	--

--	--	--	--

--	--	--	--

--	--	--	--

LESSON
8•3**Fractions of Sets**

Use 25 pennies or other counters to help you solve these problems. Share solution strategies with others in your group.

Make a set of 8 pennies to use with Problems 1–3.

Unit

pennies

1. Show $\frac{1}{4}$ of a set of 8 pennies.

How many pennies is that? _____

2. Put the pennies back.

Show $\frac{2}{4}$ of the set.

How many pennies is that? _____

3. Put the pennies back.

Show $\frac{3}{4}$ of the set.

How many pennies is that? _____

4. Show $\frac{4}{5}$ of a set of 15 pennies.

How many pennies is that? _____

5. Show $\frac{3}{4}$ of a set of 20 pennies.

How many pennies is that? _____

Try This

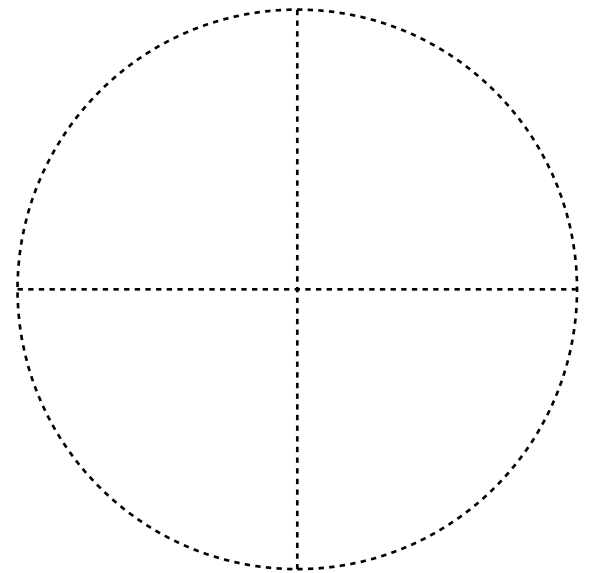
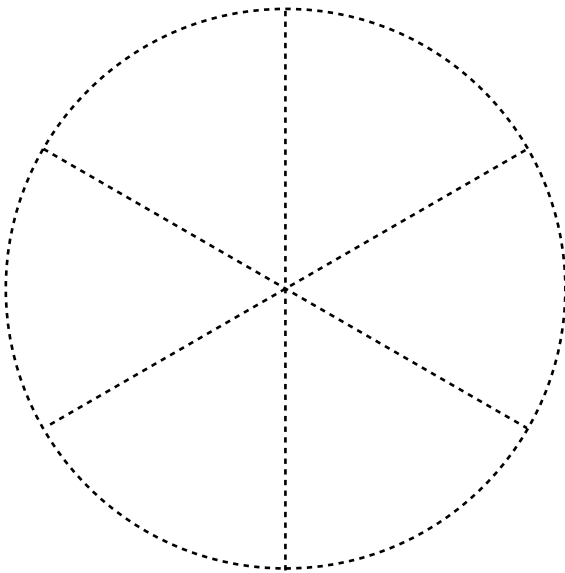
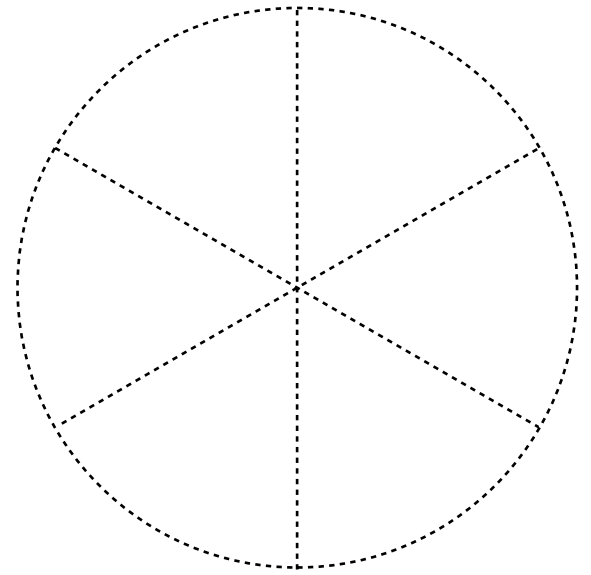
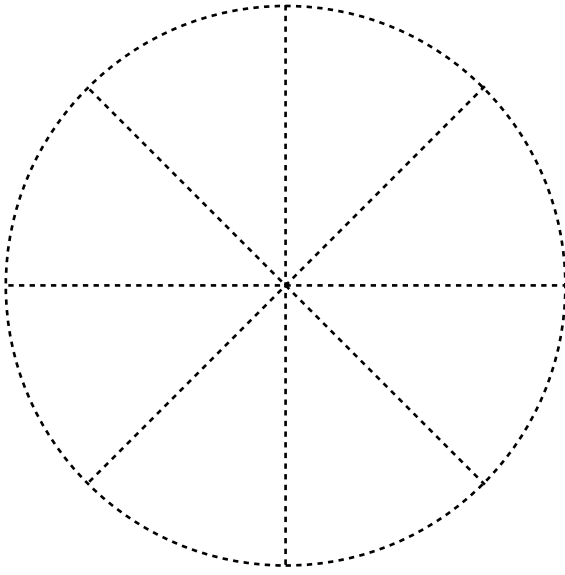
6. Five pennies is $\frac{1}{5}$ of a set.

How many are in the whole set? _____

Make up your own problem.

LESSON
8•4

Fraction Circles



Shading Fractional Parts

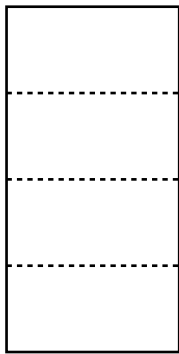
**Family Note**

In this lesson, your child learned that a fractional part of a whole can be named in many different ways with *equivalent* fractions. For example, $\frac{2}{4}$, $\frac{4}{8}$, and $\frac{3}{6}$ are names for $\frac{1}{2}$, while $\frac{2}{8}$ and $\frac{4}{16}$ are names for $\frac{1}{4}$. Help your child shade each of the shapes below to show the appropriate fraction. Make sure your child understands that the fractions are equivalent because they name the same part of the shape.

Please return this Home Link to school tomorrow.

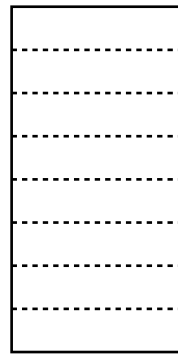


1. Shade $\frac{1}{2}$ of the rectangle.



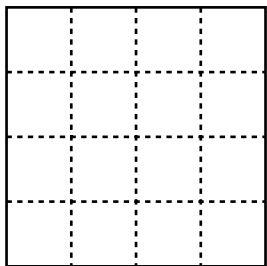
$$\frac{1}{2} = \frac{\square}{4}$$

2. Shade $\frac{1}{2}$ of the rectangle.



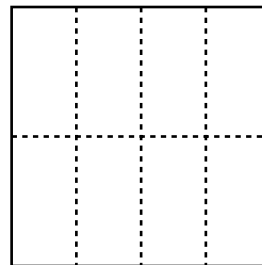
$$\frac{1}{2} = \frac{\square}{8}$$

3. Shade $\frac{1}{4}$ of the square.



$$\frac{1}{4} = \frac{\square}{16}$$

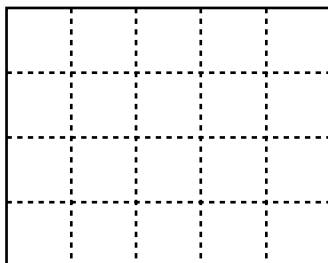
4. Shade $\frac{1}{4}$ of the square.



$$\frac{1}{4} = \frac{\square}{8}$$

Try This

5. Shade $\frac{1}{5}$ of the rectangle.



$$\frac{1}{5} = \frac{\square}{20}$$

Practice

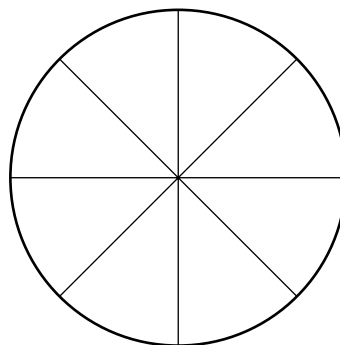
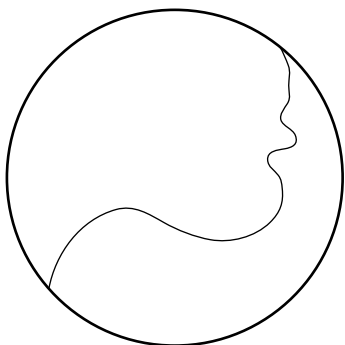
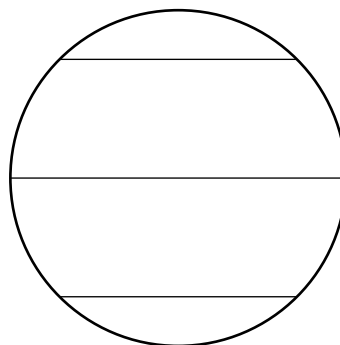
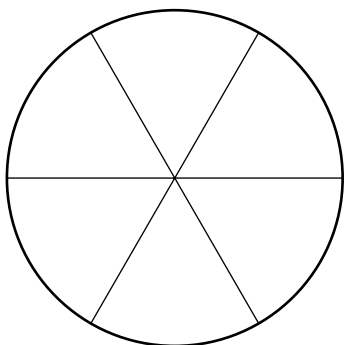
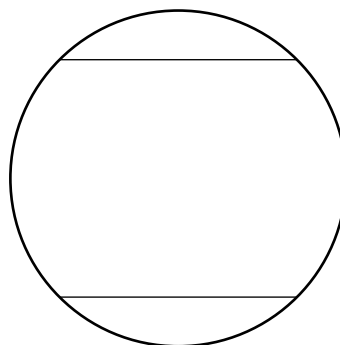
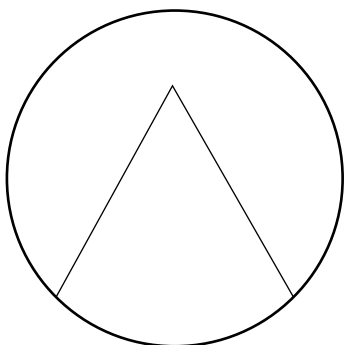
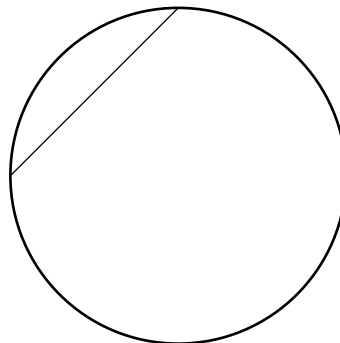
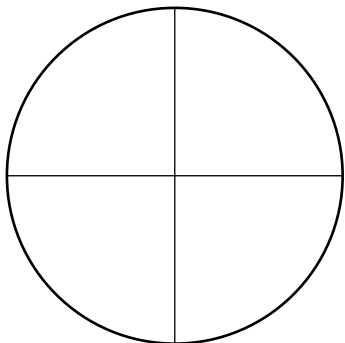
Solve.

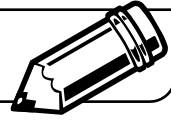
6. $130 - 30 = \underline{\hspace{2cm}}$

7. $37 + 45 = \underline{\hspace{2cm}}$

LESSON
8•4

Circle Parts

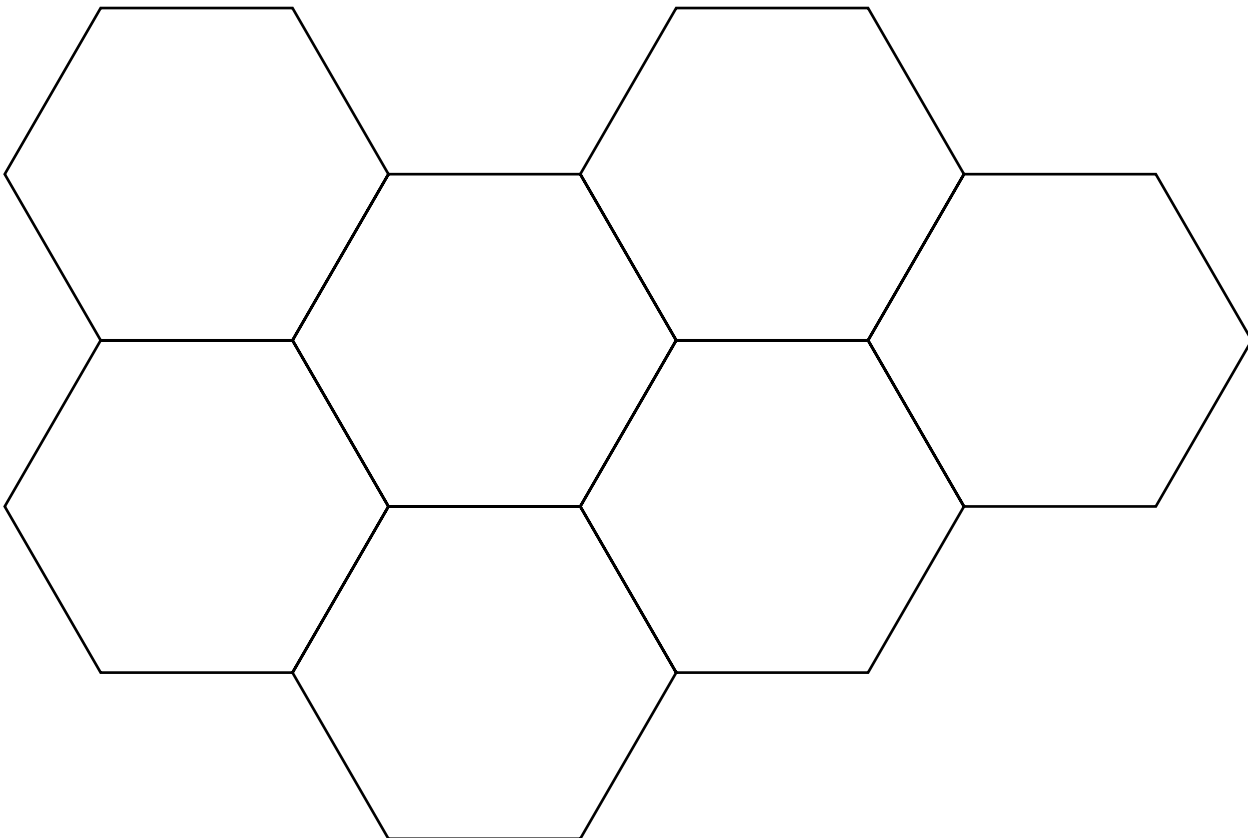


LESSON
8•4**Covering Hexagons**

Materials: pattern blocks *Math Masters*, p. 242
 1 crayon per child (different colors)

Directions Take turns doing the following:

1. Choose pattern blocks that are worth exactly one trapezoid. Decide where to place your block(s) on the board below. (If you are using more than 1 block, you can place them in different hexagons.) Your blocks must fit in the outlines. You can place your blocks in any hexagon that is not completely covered.
2. When you finish covering a hexagon, you “win” the hexagon. Remove the blocks and use your crayon to put your initials on the hexagon. This hexagon cannot be covered again. When all hexagons have been “won,” count to find out who has won the most.



HOME LINK
8•5

Fractions of Regions

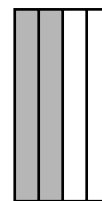
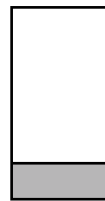
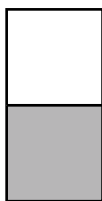
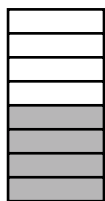


Family Note In today's lesson, your child played a game in which he or she matched pictures of equivalent fractions. Stress the idea to your child that equivalent fractions show different ways to name a fractional part of a whole.

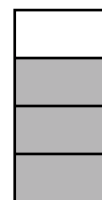
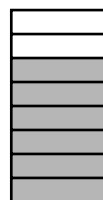
Please return this Home Link to school tomorrow.



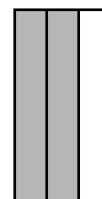
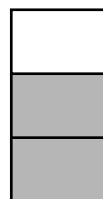
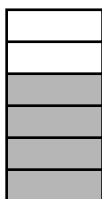
1. Circle the pictures that show $\frac{1}{2}$ of the rectangle shaded.



2. Circle the pictures that show $\frac{3}{4}$ of the rectangle shaded.



3. Circle the pictures that show $\frac{2}{3}$ of the rectangle shaded.



Practice

Add.

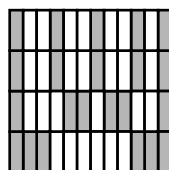
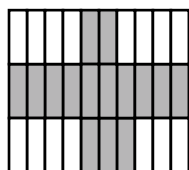
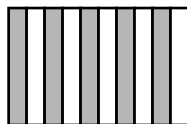
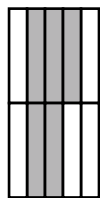
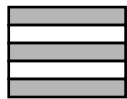
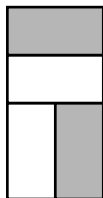
4.
$$\begin{array}{r} 36 \\ + 48 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 76 \\ + 57 \\ \hline \end{array}$$

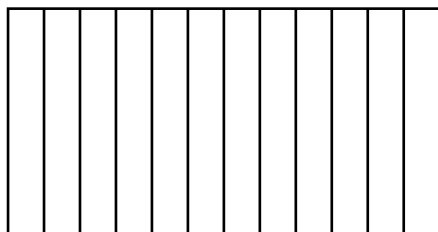
Unit

LESSON
8•5**Fractions Worth One-Half**

1. Circle the pictures below that have $\frac{1}{2}$ shaded.



2. Shade $\frac{1}{2}$ of the figure.



3. Draw a figure and shade $\frac{1}{2}$.

HOME LINK
8•6

More or Less Than $\frac{1}{2}$?


Family Note

The class has begun to compare fractions by identifying fractions that are less than, more than, or equivalent to $\frac{1}{2}$. One way that children can compare fractions is if the numerator is less than half of the denominator, then the fraction is less than $\frac{1}{2}$; if the numerator is more than half of the denominator, then the fraction is greater than $\frac{1}{2}$; if the numerator is exactly half of the denominator, then the fraction is the same as, or equivalent to, $\frac{1}{2}$. To do the activity below, ask your child to draw a fraction bar on a sheet of paper. Your child might want to use the bar to create fractions by positioning the number tiles above and below the bar.

Please return this Home Link to school tomorrow.

Cut out the number tiles.

1. Use the tiles to make fractions that are less than $\frac{1}{2}$.

Make as many fractions as you can. **Example:**

Record the fractions you make.

$$\frac{\boxed{1}}{\boxed{3}}$$

2. Use the tiles to make fractions that are more than $\frac{1}{2}$.

Make as many fractions as you can. **Example:**

Record the fractions you make.

$$\frac{\boxed{2}}{\boxed{3}}$$

Practice

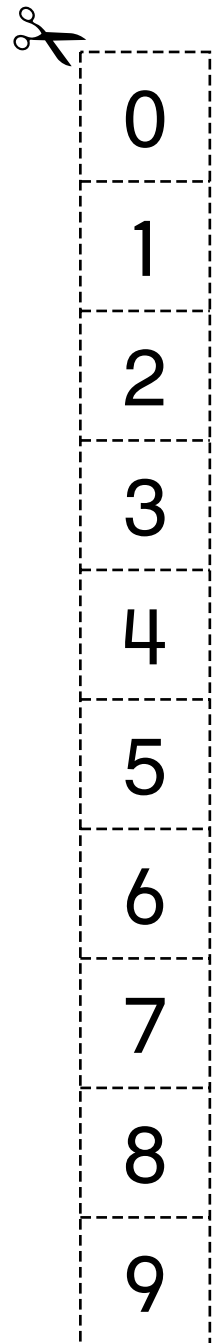
Solve.

3. $23 + 54 =$ _____

4. $73 - 36 =$ _____

5.
$$\begin{array}{r} 56 \\ + 38 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 42 \\ - 27 \\ \hline \end{array}$$

Unit


LESSON
8•6**Who Has More?**

Nick and Kyoko had the following set of coins—7 quarters, 5 dimes, 5 nickels, and 4 pennies. Their parents told them to share the money equally.

Kyoko said, “I will give you $\frac{1}{2}$ of the total amount, but you will have $\frac{1}{3}$ of the coins.”

Nick said, “I must have $\frac{1}{2}$ of the coins to have $\frac{1}{2}$ of the total amount.”

Use pictures and coins to help you figure out who is correct. Show your work.

Who do you agree with? Explain.

Use \textcircled{Q} \textcircled{D} \textcircled{N} \textcircled{P} to show the coins you think each child will have:

Kyoko will have:

Nick will have:

HOME LINK
8•7

Fractions



Family Note In this lesson, your child has been completing number stories about fractions. Encourage your child to draw pictures or use small objects, such as pennies, to help him or her complete fraction number stories.

Please return this Home Link to school tomorrow.



- 1.** 7 children are waiting for the school bus.

4 of them are girls.

What fraction of the children are girls? _____

- 2.** 12 dogs were in the park.

2 of them were dalmatians.

What fraction of the dogs were dalmatians? _____

- 3.** There are 15 cupcakes.

5 of the cupcakes are chocolate.

What fraction of the cupcakes are chocolate? _____

- 4.** There are 16 tulips in the garden.

$\frac{1}{4}$ of the tulips are red.

How many tulips are red? _____ tulips

Practice

Unit

Solve.

5.
$$\begin{array}{r} 23 \\ + 81 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 17 \\ + 36 \\ \hline \end{array}$$

7.
$$\begin{array}{r} 42 \\ - 21 \\ \hline \end{array}$$

8.
$$\begin{array}{r} 78 \\ - 39 \\ \hline \end{array}$$



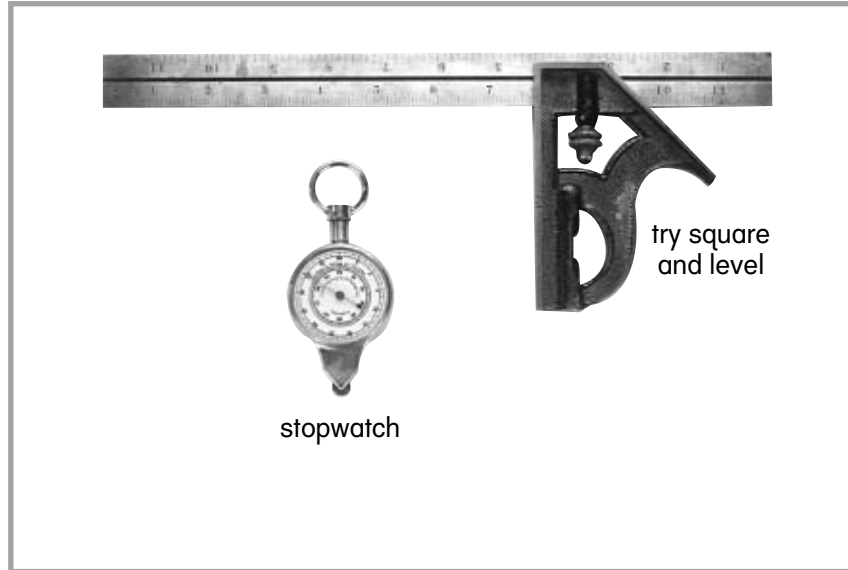
Measurement

In Unit 9, children will explore measurements of various types. Your child will be asked to look for examples of measurements and measuring tools to bring to school for the Measures All Around Museum. The examples will help children appreciate the important role that measurement plays in everyday life.

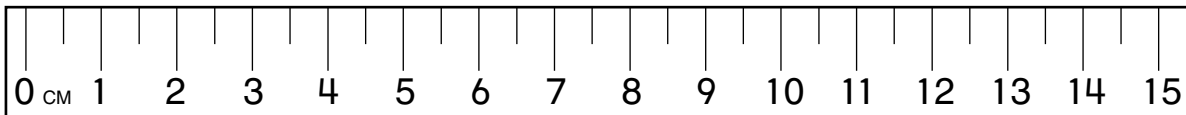
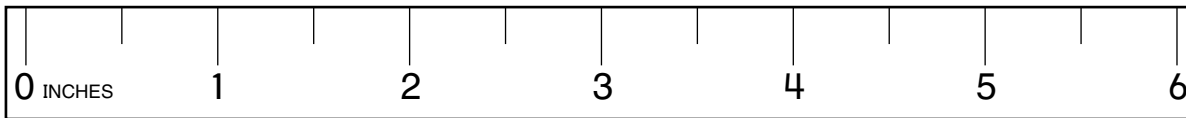
Children will estimate and measure distances by inch, foot, and yard, as well as centimeter, decimeter, and meter. Children will learn that measurements are not always exact; they will use terms such as *close to*, *between*, and *about* when describing measurements. For closer or more exact measurements, children will measure to the nearest half-inch and half-centimeter.

In addition to measures of length, children will explore the areas of shapes using square inches and square centimeters. Children will also begin to develop a sense of the size of units of capacity and weight, such as cups and liters and pounds and kilograms.

Everyday Mathematics uses U.S. customary and metric units of measure. Although children make conversions within each system (length, capacity, or weight), they will not make conversions from one system to the other at this time.



stopwatch

try square
and level

Please keep this Family Letter for reference as your child works through Unit 9.

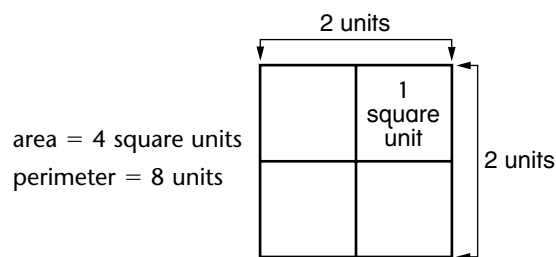
Vocabulary

Important terms in Unit 9:

capacity The amount a container can hold. The volume of a container. Capacity is usually measured in units such as gallons, pints, cups, fluid ounces, liters, and milliliters.

perimeter The distance around a 2-dimensional shape, along the boundary of the shape. (The perimeter measures the length of a shape's "rim.")

area The amount of surface inside a 2-dimensional figure. Area is measured in square units, such as square inches or square centimeters.



Metric System

Units of Length

1 meter (m)	= 10 decimeters (dm)
	= 100 centimeters (cm)
1 decimeter	= 10 centimeters
1 kilometer (km)	= 1,000 meters

Units of Weight

1 kilogram (kg)	= 1,000 grams (g)
-----------------	-------------------

Units of Capacity

1 liter (L)	= 1,000 milliliters (mL)
$\frac{1}{2}$ liter	= 500 milliliters

U.S. Customary System

Units of Length

1 yard (yd)	= 3 feet (ft)
	= 36 inches (in.)
1 foot	= 12 inches
1 mile (mi)	= 1,760 yards
	= 5,280 feet

Units of Weight

1 pound (lb)	= 16 ounces (oz)
2,000 pounds	= 1 ton (T)

Units of Capacity

1 cup (c)	= $\frac{1}{2}$ pint (pt)
1 pint	= 2 cups
1 quart (qt)	= 2 pints
1 half-gallon ($\frac{1}{2}$ gal)	= 2 quarts
1 gallon (gal)	= 4 quarts

Do-Anytime Activities

To work with your child on the concepts taught in this unit and in previous units, try these interesting and rewarding activities:

1. Gather a tape measure, a yardstick, a ruler, a cup, a gallon container, and a scale. Discuss the various things you and your child can measure—for example, the length of a room, how many cups are needed to fill a gallon container, and your child's weight alone and when he or she is holding objects such as books. Record the data and continue to measure and weigh different items periodically.
2. Mark certain routes on a road map and together figure the distance between two points in miles and kilometers.



Building Skills through Games

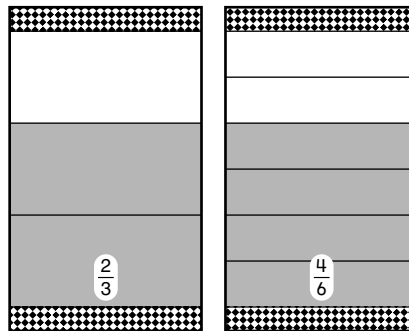
In Unit 9, your child will practice mathematical skills by playing the following games:

Equivalent Fractions Game

Players take turns turning over Fraction Cards and try to find matching cards that show equivalent fractions.

Fraction Top-It

Players turn over two Fraction Cards and compare the shaded parts of the cards. The player with the larger fraction keeps both cards. The player with more cards at the end wins!



Name That Number

Each player turns over a card to find a number that must be renamed using any combination of five faceup cards.

Number-Grid Difference Game

Players subtract 2-digit numbers using the number grid.

As You Help Your Child with Homework

As your child brings home assignments, you may want to go over the instructions together, clarifying them as necessary. The answers listed below will guide you through this unit's Home Links.

Home Link 9•1

- 5. 115 6. 791
- 7. 46 8. 325

Home Link 9•2

- 3. 12 inches 4. 3 feet
- 5. 10 centimeters 6. 100 centimeters
- 7. 24 inches 8. 9 feet
- 9. 40 centimeters 10. 700 centimeters
- 11. 69 12. 85
- 13. 48 14. 37

Home Link 9•3

- 1. $2\frac{1}{2}$ inches 2. 4 inches
- 3. 3 centimeters 4. 9 centimeters
- 10. 290 11. 397

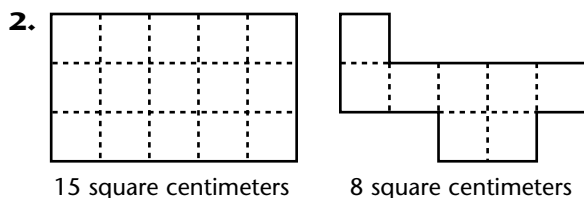
Home Link 9•4

- 1. Perimeter: 6 or 7 inches
- 2. Perimeter: $4\frac{1}{2}$ or 5 inches
- 3. Answer: 47 feet. Sample number models:
 $14 + 14 + 9\frac{1}{2} + 9\frac{1}{2} = 47$ or
 $2 \times 14 + 2 \times 9\frac{1}{2} = 47$

Home Link 9•5

- 1. 214 2. 113

Home Link 9•6



- 3. 359 4. 794
- 5. 400 6. 401

Home Link 9•7

- 1. 9 sq cm 2. 11 sq cm
- 3. 10 sq cm 4. l: 20 cm
U: 24 cm
j: 22 cm
- 5. 95 6. 92
- 7. 162 8. 103

Home Link 9•8

Rule
1 gal = 4 qt

gal	qt
2	8
4	16
6	24
10	40
Answers vary.	

- 1. 83 2. 34

Home Link 9•9

- 1. 159 2. 177