Name Date Time

LESSON 3•1

U.S. Census Questions

Here are some of the questions from both the short and long forms of the U.S. Census. Answer the questions *for yourself.* Mark and fill in the boxes with your answers. Then put this sheet in the collection box.

1. What is this person's sex?
Mark one box.

☐ Male ☐ Female

2. a. What is this person's date of birth?
Print numbers in boxes.

Month ☐☐ Day ☐☐

Year of birth ☐☐☐☐

b. What was this person's age on April 1 of this year?

☐☐☐

3. Where was this person born?

☐ In the United States—*Print name of state.*

☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

☐ Outside the United States—*Print name of foreign country, or Puerto Rico, Guam, etc.*

☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

4. a. Does this person speak a language other than English at home?

☐ Yes ☐ No → *Skip to 5.*

b. What is this language?

☐☐☐☐☐☐☐☐☐☐☐☐☐☐☐

(For example: Korean, Italian, Spanish, Vietnamese)

5. Is there telephone service available in this house, apartment, or mobile home from which you can both make and receive calls?

☐ Yes ☐ No

Name Date Time

STUDY LINK 3•1

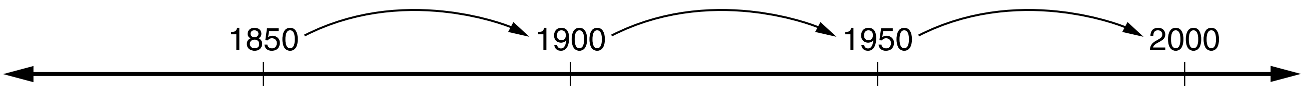
Population Data

SRB 369–375

State	1850	1900	1950	2000
Ohio	1,980,000	4,158,000	7,947,000	11,319,000
Indiana	988,000	2,516,000	3,934,000	6,045,000
Illinois	851,000	4,822,000	8,712,000	12,051,000
Michigan	398,000	2,421,000	6,372,000	9,679,000
Wisconsin	305,000	2,069,000	3,435,000	5,326,000
Minnesota	6,000	1,751,000	2,982,000	4,830,000
Iowa	192,000	2,232,000	2,621,000	2,900,000
Missouri	682,000	3,107,000	3,955,000	5,540,000

1. Which state had the largest population growth from 1850 to 2000? ____________________

2. Record the population figures for this state below the timeline.



_______________ _______________ _______________ _______________

Find the increases for this state for each of the following time spans:

3. 1850–1900 ____________________

4. 1900–1950 ____________________

5. 1950–2000 ____________________

6. Are these increases similar or different? Explain.

____

____

Estimate the state's population:

7. In 2050 ____________________

8. In 2025 ____________________

Practice

9. 69,452 + 15,679

10. 178 − 139

11. 43 ∗ 14

12. 58 ÷ 7 → __________

Name Date Time

LESSON 3•1

Reading for Information

1. Turn to page 361 in your *Student Reference Book.*

   What is the title of this page?

   ____

   ____

2. Take a minute to look at this page. Based on the title, the tables, and the graphs, describe the information you expect to find on this page.

   ____

   ____

   ____

3. Look at the tables and graphs on the page. Which table or graph would you use to find the mean number of days in school per student, by region?

   ____

   Explain why.

   ____

   ____

4. Look at the tables and graphs on the page. What graph would you use to find the median days in school for all states?

   ____

5. Write three questions that you could answer by reading this page, or by using the tables and charts on this page.

   ____

   ____

   ____

   ____

Name Date Time

LESSON 3•1

Education and Earnings

The table below contains information from surveys by the U.S. Census Bureau. The information describes householders who were at least 25 years old. A *householder* is the person in whose name a home is owned or rented. If a house is owned jointly by a husband and wife, the householder could be either the husband or the wife.

Education and Earnings

	1980			1990		
Years of School Completed	**Number of House-holders (thousands)**	**Percent of House-holders**	**Median Income**	**Number of House-holders (thousands)**	**Percent of House-holders**	**Median Income**
Elementary (less than 9 years)	14,012	18%	\$8,875	10,146	11%	\$13,523
High School (1–3 years)	10,547	14%	\$13,213	10,007	11%	\$18,191
High School (4 years)	25,454	34%	\$19,638	32,043	36%	\$28,744
College (1–3 years)	11,480	15%	\$21,740	16,451	19%	\$35,724
College (4 years)	7,862	10%	\$27,339	11,443	13%	\$47,083
College (5 or more years)	6,661	9%	\$30,684	9,269	10%	\$54,636
Total	76,016	100%	\$18,383	89,359	100%	\$30,757

Source: *March Current Population Survey,* prepared by Income Statistics Branch/HHES Division U.S. Bureau of the Census

LESSON 3•1

Education and Earnings *continued*

Use the Education and Earnings table to answer the following questions.

1. Describe the relationship between number of years of education and income.

2. Compare the number of householders who did not graduate from high school in 1980 with the number in 1990. Describe any changes that occurred.

3. What would you expect to be the number of householders who do not graduate from high school in 2010?

4. How does the number of householders who did not graduate from high school in 1990 compare to the number of householders who graduated from college?

Name Date Time

STUDY LINK 3•2

An Unofficial Census

SRB 369

In 1991, author Tom Heymann took an unofficial U.S. census. The table shows how many people believed various common sayings, based on the sample of the population that he surveyed.

	Saying	Number Who Believe Saying Is True
A	Look before you leap.	175,104,000
B	The grass is always greener on the other side of the fence.	69,312,000
C	Haste makes waste.	153,216,000
D	Beauty is only skin deep.	149,568,000
E	Don't cry over spilled milk.	160,512,000
F	The early bird catches the worm.	136,800,000
G	A penny saved is a penny earned.	155,040,000
H	Don't count your chickens before they hatch.	169,632,000

Source: *The Unofficial U.S. Census,* by Tom Heymann. Ballantine Books, 1991

1. Which saying had the largest number of believers? _______

2. How many more people believed saying E than saying G? ___________________

3. Which saying had about 100 million more believers than saying B? _______

4. a. About $\frac{7}{10}$ of the U.S. population in 1991 believed saying A to be true. What was the total population? ___________________________

b. About what percent of the total population believed saying F to be true? ___________________________

Practice

5. $\begin{array}{r} 256 \\ -\ 148 \\ \hline \end{array}$

6. $\begin{array}{r} 26{,}551 \\ +\ 2{,}558 \\ \hline \end{array}$

7. $\begin{array}{r} 36 \\ *\ 27 \\ \hline \end{array}$

8. $54 \div 3 =$ _______

9. $74 \div 8 \rightarrow$ _________

Name Date Time

LESSON **3•2**

Solving Place-Value Puzzles

Hundred (100) Billions	Ten (10) Billions	One (1) Billions	Hundred (100) Millions	Ten (10) Millions	One (1) Millions	Hundred (100) Thousands	Ten (10) Thousands	One (1) Thousands	Hundred (100) Units	Ten (10) Units	One (1) Units
BILLIONS			**MILLIONS**			**THOUSANDS**			**UNITS**		
4	2	3	9	8	5	1	0	3	2	6	7

1. Color each section label with a different color.

2. For each puzzle below:

- Read the clues to write the digits in the chart.
- Write each number in **number-and-word notation** and **standard notation.**

Puzzle 1

- Write 4s in the 100-billions and 100-millions place.
- Write 5s in the 100s place and 100-thousands place.
- Write 6 in the 1-millions place and half of 6 in the 10-millions place.
- Write 0s where you need them to complete the number.

Number-and-word notation:

____

____

Standard notation:

____

Puzzle 2

- Write 3 in the 10-thousands place and double it in the 10-millions place.
- Write 8 in the 100-millions place and half of 8 in the 10s place.
- Write 9 in the 1-thousands place.
- Write 2s where you need them to complete the number.

Number-and-word notation:

____

____

Standard notation:

____

Name Date Time

LESSON 3•2

Interpreting Patterns from Data

Use the map on page 349 of the *Student Reference Book.*

1. Choose a region and record the region name. ______________________

The dates for exploration, settlement, and statehood can be thought of as three data sets. Identify and record the minimum, maximum, median, and range for each data set.

2.

Region: ____________		**Data Set: Exploration Dates**	
Data:			
Minimum		Median	
Maximum		Range	

3.

Region: ____________		**Data Set: Settlement Dates**	
Data:			
Minimum		Median	
Maximum		Range	

4.

Region: ____________		**Data Set: Statehood Dates**	
Data:			
Minimum		Median	
Maximum		Range	

On the back of this page, use the information represented by the landmarks to write one true statement about each data set.

Name Date Time

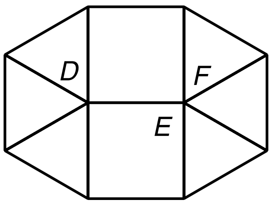
STUDY LINK 3·3

Finding Angle Measures

SRB 207

Figure out the angle measures for the labeled angles in the patterns below. Remember that there are 360° in a circle and 180° in a straight line. Use the Geometry Template, or cut out the shapes at the bottom of this page to help you. Do not use a protractor.

1.

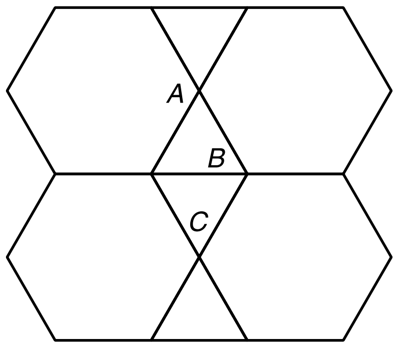


m∠D = ________

m∠E = ________

m∠F = ________

2.

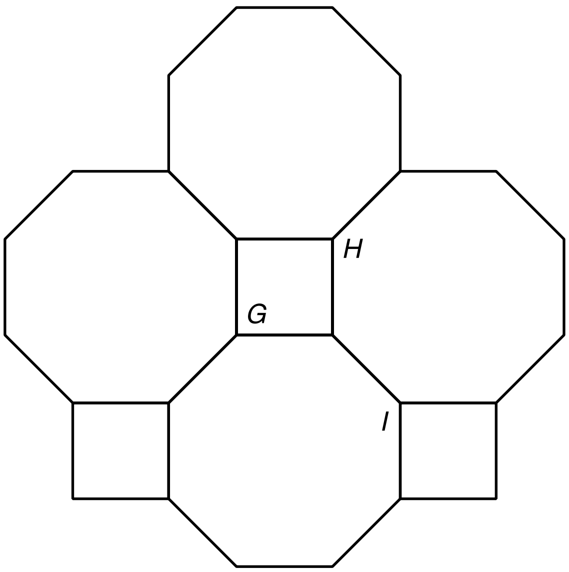


m∠A = ________

m∠B = ________

m∠C = ________

3.

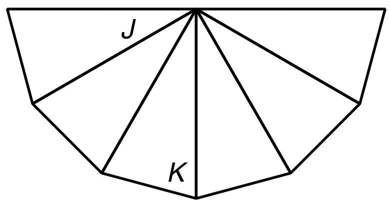


m∠G = ________

m∠H = ________

m∠I = ________

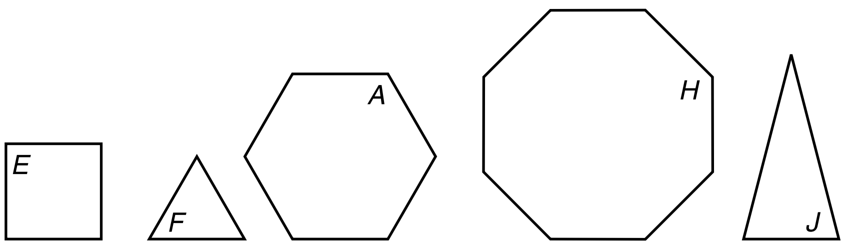
4.



m∠J = ________

m∠K = ________

5. On the back of this page, explain how you found the measure of ∠I.



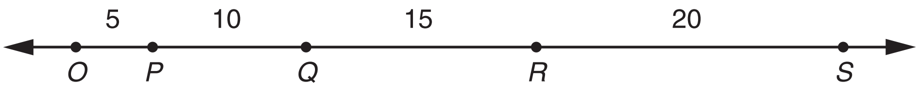
Name Date Time

LESSON 3•3 Segments, Lengths, and Collinear Points

SRB 141

In geometry, there are conventions used to name a figure and to name the measure of that figure. For example, $\angle N$ names an angle with the vertex N, while the notation $m\angle N$ represents the measure of that angle. For line segments, the notation $\overline{NM}$ names the line segment with the endpoints N and M, and the notation NM represents the length of that line segment.

The notation $NM = 4$ inches means *line segment* $\overline{NM}$ *is 4 inches long.*
Use the points and measures shown on the line below to answer Problems 1 and 2.



1. Which of the following statements show the correct use of these naming conventions for line segments and the measures of line segments? Circle your answer.

a. $PQ + QR + RS = PS$ **b.** $\overline{OP} + \overline{PQ} = OQ$

c. $OP * 2 = \overline{PQ}$ **d.** $\overline{OP} + \overline{QR} + \overline{RS} = 35$

2. For each statement with errors, write the corrections.

____

____

3. Points that lie on the same line are called **collinear points.** The points H, S, D, K, L, and B are collinear. Use the following information to locate them on the line and label the points accordingly.

$KS + SB = KB$

$DH + HS = DS$

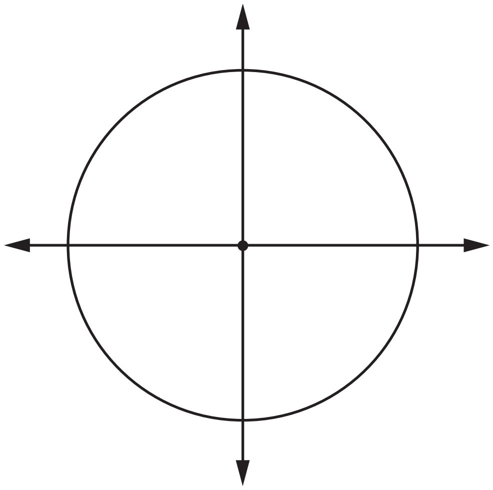
$DH + HK = DK$

Points L and B are not between any other labeled points on the line.

LESSON 3•3

Measuring the Parts

Use the figure at the right to help you think about the total number of degrees in a circle.



Then use what you know about angles and the total number of degrees in a circle to answer the following questions.

1. How many degrees are in a circle? ________

2. What is the degree measure for each of the 4 angles in the circle above? ________

3. If a circle is divided into 8 equal parts, what is the degree measure for each of the 8 angles formed? ________

4. If a circle is divided into 12 equal parts, what is the degree measure for each of the 12 angles formed? ________

5. If a circle is divided into 6 equal parts, what is the degree measure of each of the 6 angles formed? ________

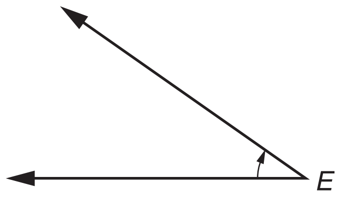
6. If a circle is divided into equal parts so that the angles have a degree measure of 120°, how many angles would be formed? ________________

7. If a circle is divided into 360 equal parts, what is the degree measure of each of the 360 angles? ________

Name Date Time

LESSON 3•4

Measuring and Drawing Angles



Sarah used her half-circle protractor to measure the angle at the right. She said it measures about 35°. Theresa measured it with her half-circle protractor. Theresa said it measures about 145°. Devon measured it with his full-circle protractor. Devon said it measures about 325°.

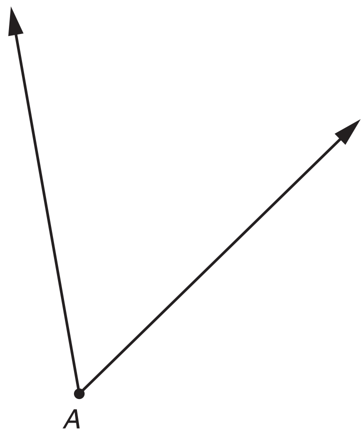
3. a. Use both your template protractors to measure the angle. Do you agree with Sarah, Theresa, or Devon?

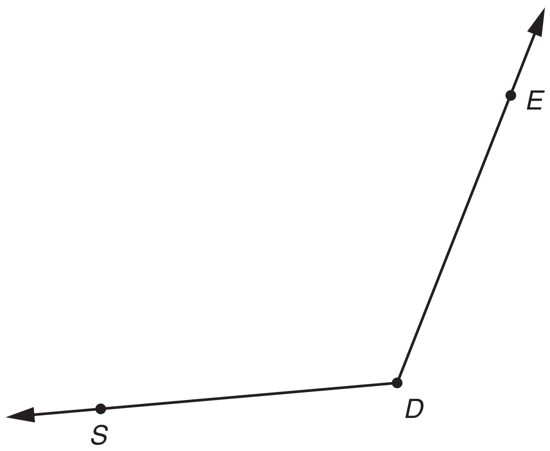
____

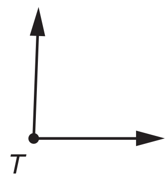
b. Why? ______________________________

____

Use your half-circle protractor. Measure each angle as accurately as you can.







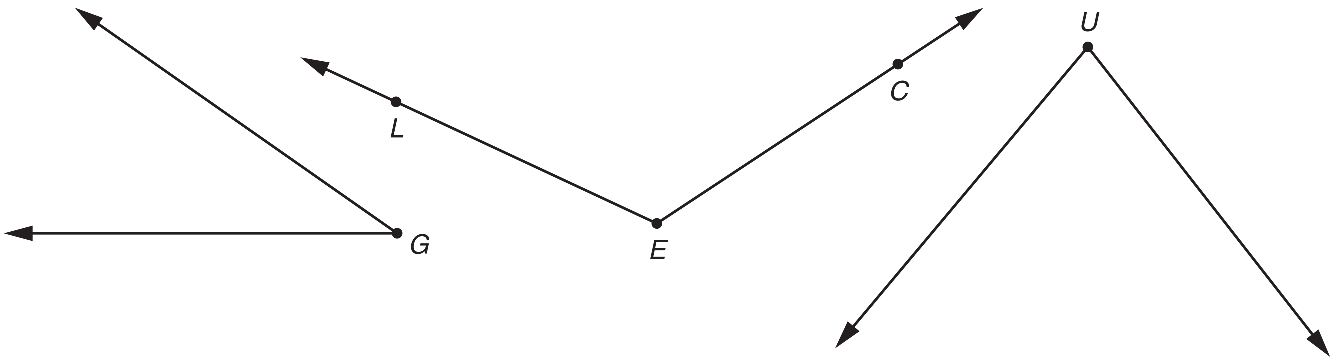
4. a. m∠*A* is about ________. **b.** m∠*EDS* is about ________. **c.** m∠*T* is about ________.

Name Date Time

LESSON 3•4

Measuring and Drawing Angles *continued*

Use your full-circle protractor to measure each angle.



5. a. m∠*G* is about _______. **b.** m∠*LEC* is about _________. **c.** m∠*U* is about _______.

Draw and label the following angles. Use your half-circle protractor.

6. a. ∠*CAT:* 62° **b.** ∠*DOG:* 135°

Name Date Time

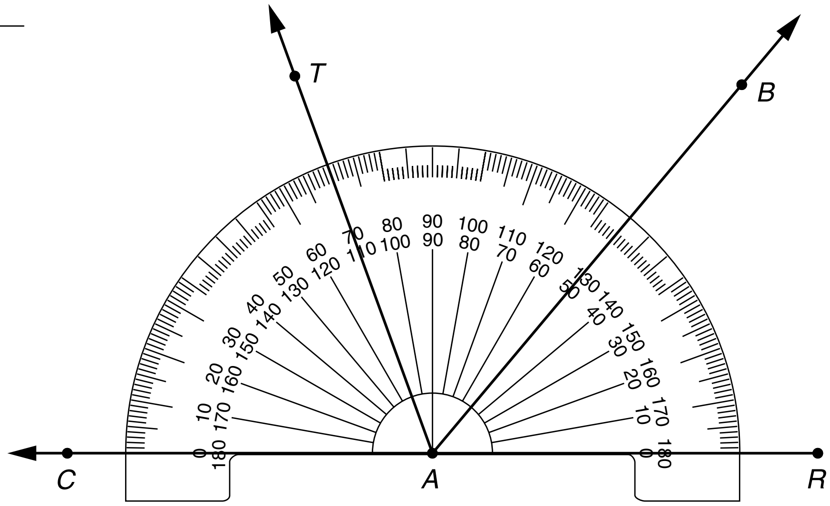
STUDY LINK 3•4

Angle Measures

SRB 204–205

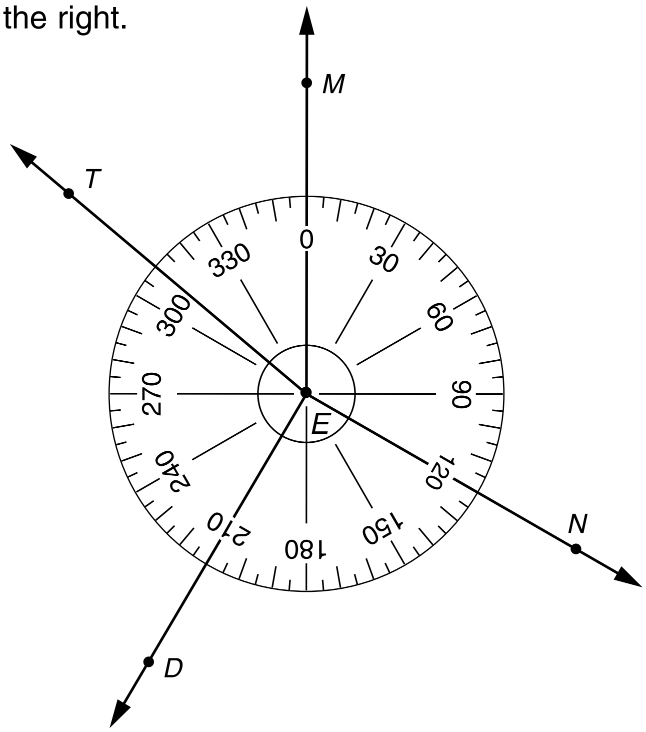
Find the approximate measure of each angle at the right.

1. measure of $\angle CAT$ = ________
2. m$\angle BAR$ = ________
3. m$\angle RAT$ = ________
4. m$\angle CAB$ = ________
5. m$\angle BAT$ = ________
6. m$\angle CAR$ = ________



Find the approximate measure of each angle at the right.

7. m$\angle MEN$ = ________
8. m$\angle DEN$ = ________
9. m$\angle MET$ = ________
10. m$\angle MED$ = ________
11. m$\angle TEN$ = ________



Practice

12. $5{,}844 + 2{,}399$

13. $238 - 129$

14. $234 * 22$

15. $60 \div 5 =$ ______

16. $50 \div 6 \rightarrow$ ________

Measurement and Geometry 2.1; Number Sense 1.0

Name Date Time

LESSON 3•4

Points, Lines, and Angles

SRB 141

Identify the terms and objects in the riddles below. Use the words and phrases from the Word Bank to complete the table.

Word Bank

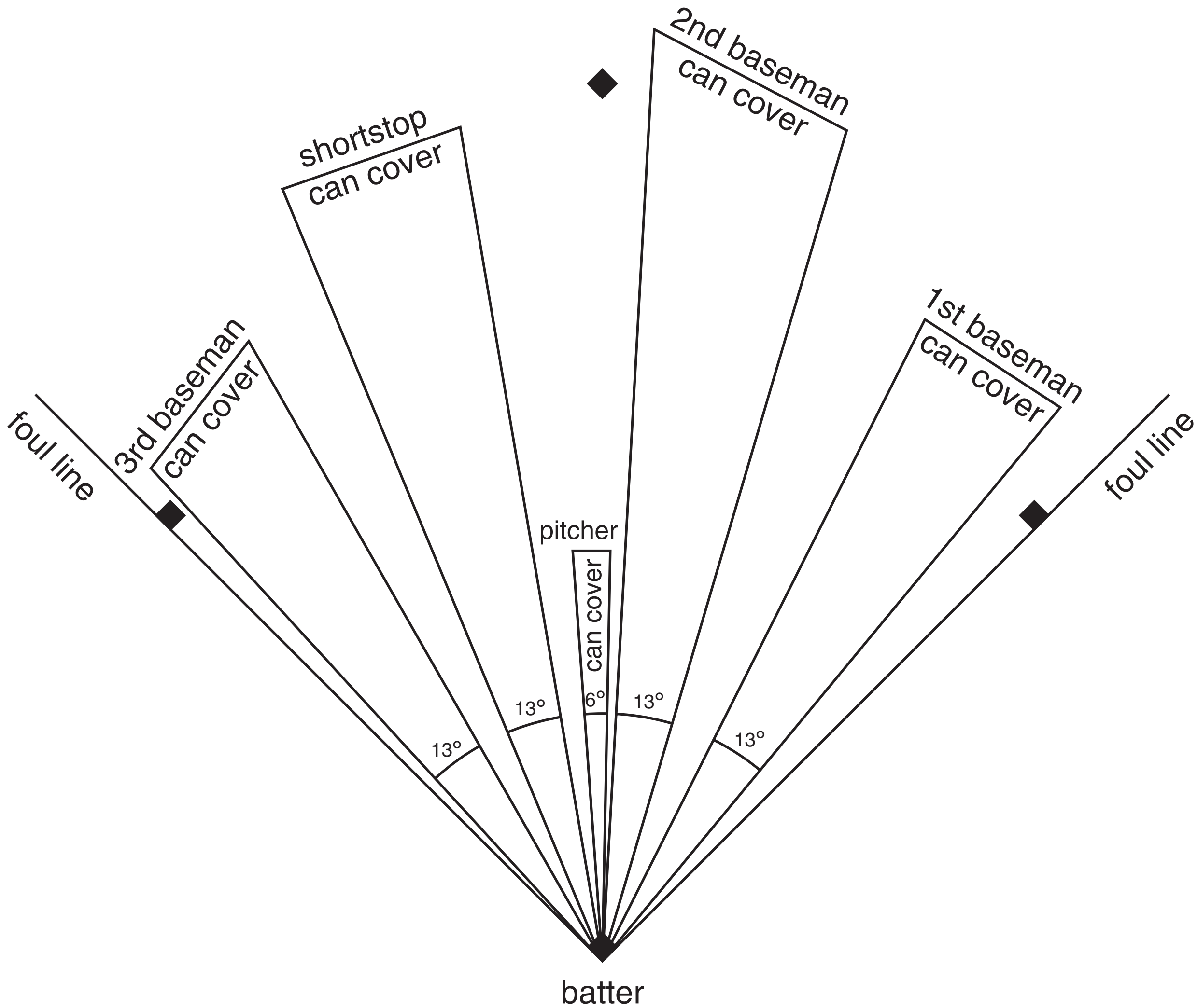
point	line segment	ray	line
angle	parallel lines	parallel line segments	intersecting lines
vertices	perpendicular lines	perpendicular line segments	vertex

	Clues	What Am I?
1	I am a location in space. It takes only one letter to name me.	
2	My length cannot be measured, but I am named by two of my points.	
3	I do not curve. I have only one end point.	
4	I am measured in degrees. I have a vertex. My sides are two rays.	
5	We have endpoints. When two of us meet, we form one or more right angles.	
6	There are always at least two of us. We have endpoints. We always stay the same distance apart.	
7	I am the point where two rays meet to form an angle.	
8	Two of us meet.	
9	Our lengths cannot be measured. When two of us meet, we form right angles.	
10	I am the endpoint where two sides of a polygon meet.	
11	My length can be measured. I have two endpoints.	
12	Our lengths cannot be measured. There are always at least two of us. We always stay the same distance apart.	

Name Date Time

LESSON 3•4

Baseball Angles



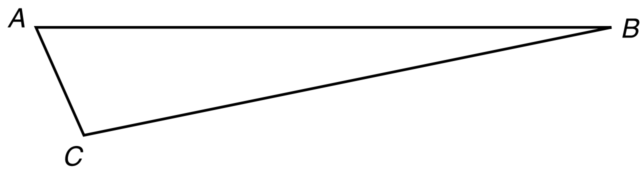
The playing field for baseball lies between the foul lines, which form a 90° angle. Suppose that each of the four infielders can cover an angle of about 13° on a hard-hit ground ball, and that the pitcher can cover about 6°. (See the diagram above.)

Source: *Applying Arithmetic,* Usiskin, Z. and Bell, M. © 1983 University of Chicago

1. How many degrees are left for the batter to hit through? _______

STUDY LINK **3•5**

Angles in Figures



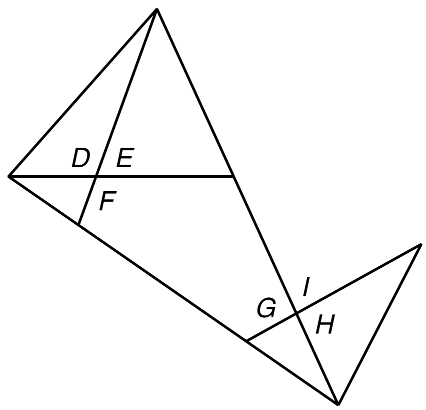
Circle *acute, right,* or *obtuse* for each angle in triangle *ABC.*
Then measure each angle.

1. $\angle ABC$ acute right obtuse $m\angle ABC =$ ______

2. $\angle CAB$ acute right obtuse $m\angle CAB =$ ______

3. $\angle BCA$ acute right obtuse $m\angle BCA =$ ______

Use the figure at the right to do Problems 4–6.



4. Name a pair of adjacent angles.

______ and ______

5. Name a pair of vertical angles.

______ and ______

6. Name a pair of opposite angles.

______ and ______

Practice

7. $\begin{array}{r} 7{,}568 \\ +\ 9{,}217 \\ \hline \end{array}$

8. $\begin{array}{r} 415 \\ -\ 207 \\ \hline \end{array}$

9. $\begin{array}{r} 326 \\ *\ \ 45 \\ \hline \end{array}$

10. $68 \div 4 =$ ______

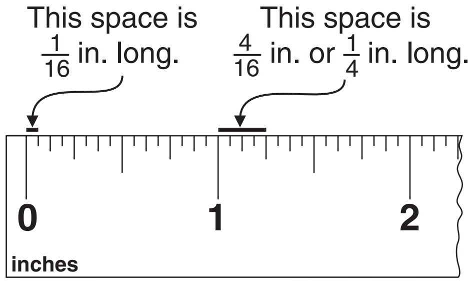
11. $78 \div 7 \rightarrow$ ______

Name Date Time

LESSON 3•5

Reading a Ruler

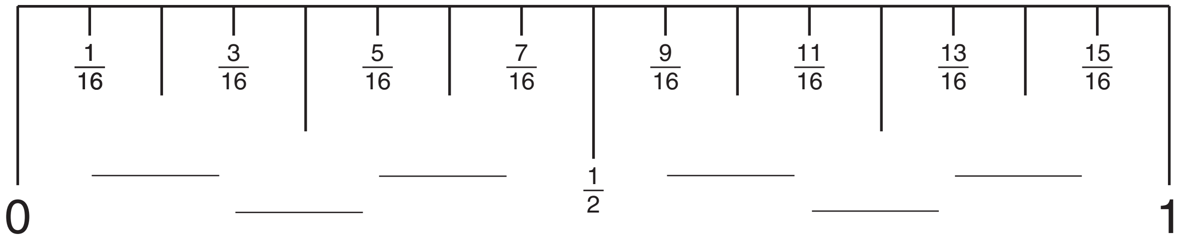
On rulers, inches are usually divided into halves, quarters, eighths, and sixteenths with marks that are different sizes. There are different ways to name a length. Look at the ruler to the right and give two other names for $\frac{1}{2}$ inch.



____

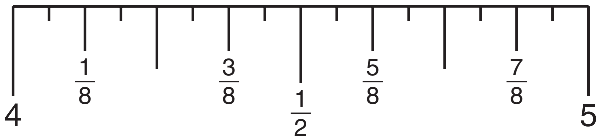
Fill in the blank spaces on each ruler. Identify these marks on your ruler.

1.



Scale: 6 inches represents 1 inch

2.



Scale: 3 inches represents 1 inch

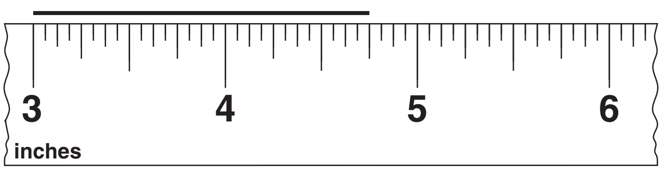
Use your ruler to measure the line segments. Give two names for each line segment.

3. ________ ________

4. ________ ________

Use the ruler pictured to determine the length of the line segment. Give two names for the length of the line segment.

5. ________ ________

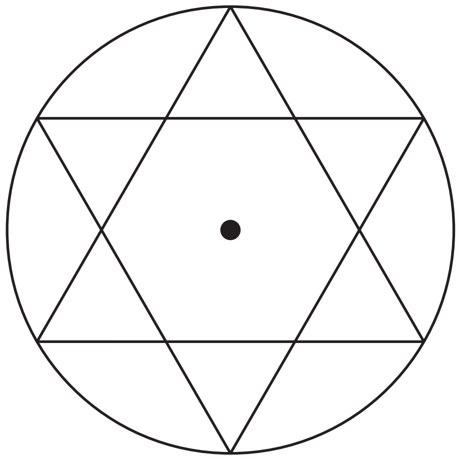


Name Date Time

LESSON 3•5

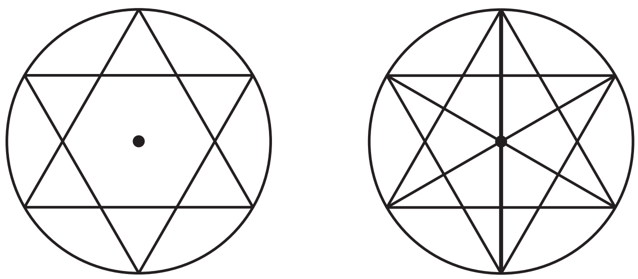
Designs with a Compass and a Straightedge

If you know how to inscribe a hexagon in a circle, you can make a 6-pointed star, or **hexagram,** inside a circle.



1. On a separate piece of paper, make a 6-pointed star. (*Hint:* Mark the circle as you do for a hexagon. Connect every other mark.)

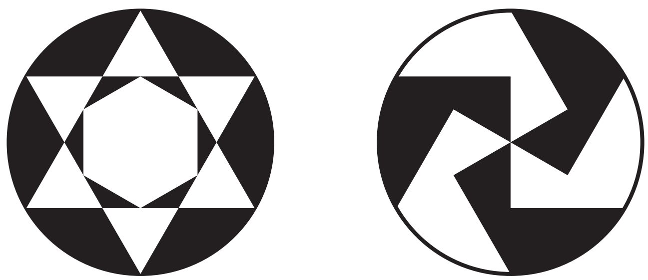
2. Divide the angles of your star in half as shown below.



1 2

3. Color your design in some pattern.

4. Reproduce the following designs, using a compass and a straightedge to draw hexagons and hexagrams. Then find patterns and color them. (*Hint:* Use a pencil and draw lightly so you can erase unwanted lines.)



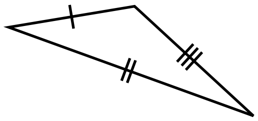
Name Date Time

STUDY LINK 3•6

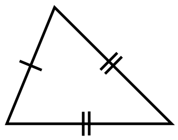
Triangle and Angle Review

For each triangle below, fill in the ovals for all the names that apply.

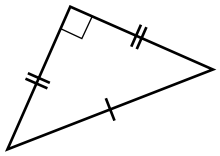
SRB 144

1. 

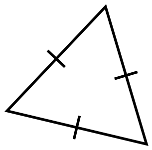
- O equilateral
- O isosceles
- O right
- O scalene

2. 

- O equilateral
- O isosceles
- O right
- O scalene

3. 

- O equilateral
- O isosceles
- O right
- O scalene

4. 

- O equilateral
- O isosceles
- O right
- O scalene

On the back of this page, draw three angles of different sizes that you find at home. (For example, you could trace one corner of a book.) For each angle, name the object that has the angle. Then use words from the Word Bank to name each angle.

5. a. Object ______________________

Type of angle ______________________

b. Object ______________________

Type of angle ______________________

c. Object ______________________

Type of angle ______________________

Word Bank

acute	obtuse	right
adjacent	reflex	straight

Practice

6. 4,117 + 3,682 + 3,962 = __________

7. 8,036 − 2,286 = __________

8. 8,481 ∗ 5 = __________

9. 99 ÷ 9 = __________

Name Date Time

STUDY LINK 3•7

Odd Shape Out

In each set of shapes, there is one shape that doesn't belong. Cross out that shape and tell why it doesn't belong. (There may be more than one possible reason. What's important is having a good reason for crossing out a shape.)

SRB 142 143 146

1.

Reason: ______________________________

____

2.

Reason: ______________________________

____

3.

Reason: ______________________________

____

4.

Reason: ______________________________

____

5. Make up your own "Odd Shape Out" problem on the back of this page.

Practice

6. 1,042 + 2,834 + 4,096 = ____________ **7.** 9,062 − 3,718 = ____________

8. 9,109 ∗ 9 = ____________ **9.** 58 ÷ 6 → ____________

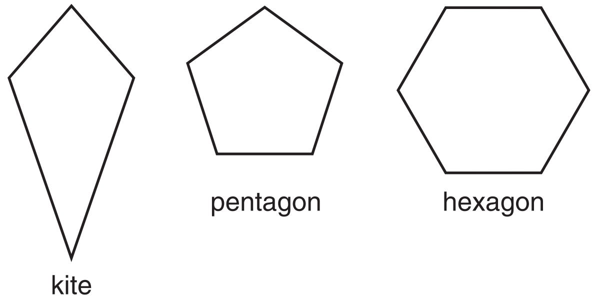
Name Date Time

LESSON 3•7

Vertex Connection

If you draw a line segment from one vertex of a polygon to any other vertex that does not share a common side, new shapes will be formed inside the polygon. Connect pairs of vertices in these polygons. Name the new shapes as they are formed.

Write the name of each new polygon and as many true statements as you can about the polygons. Be sure to use what you know about the definitions of angles and lines.



kite	
New Polygon	**Properties**

pentagon	
New Polygon	**Properties**

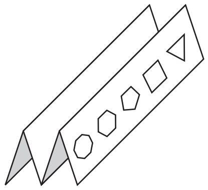
hexagon	
New Polygon	**Properties**

Name Date Time

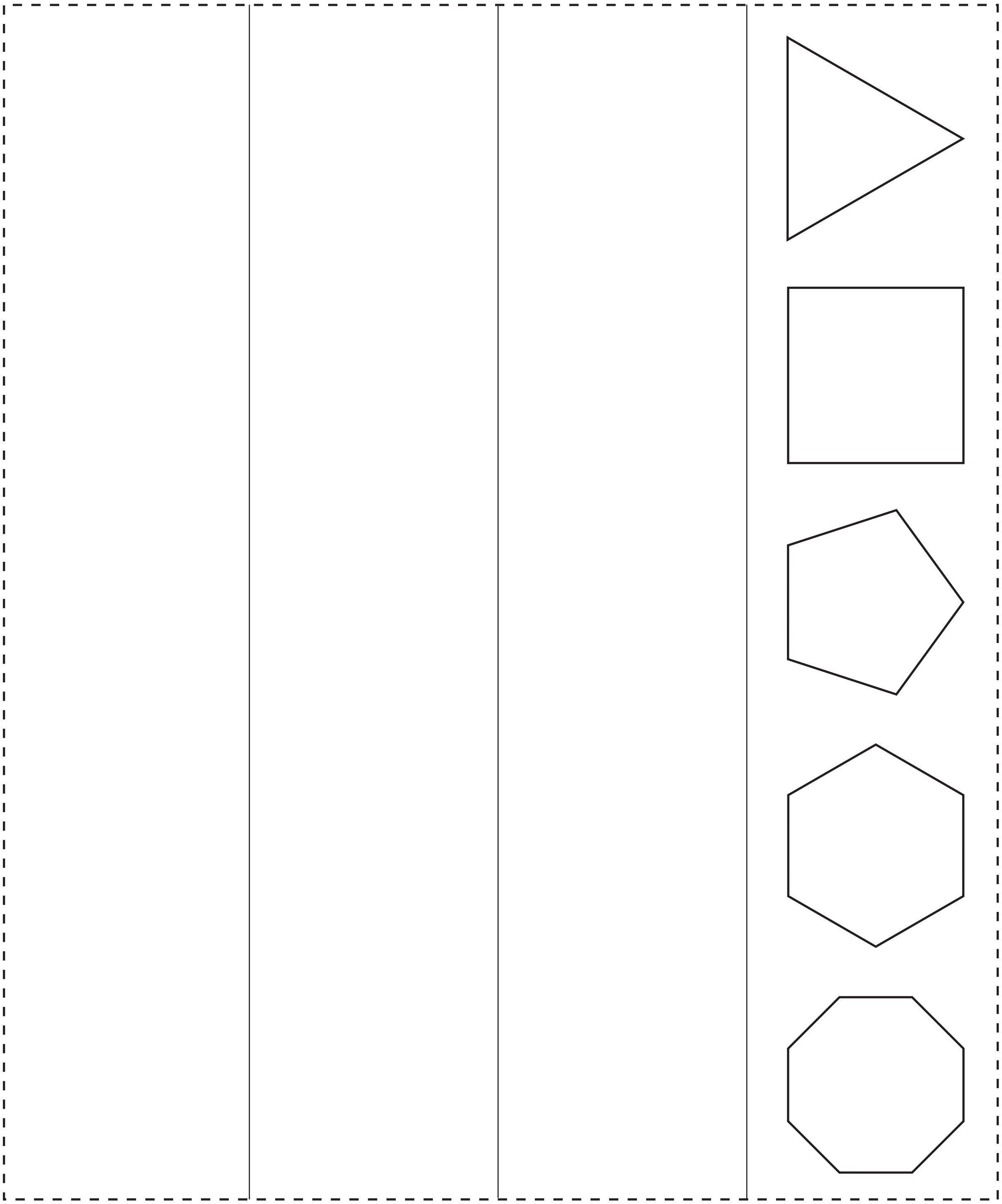
LESSON 3·8

Regular Polygons

Cut along the dashed lines. Fold the page like this along the solid lines.



Cut out the polygons. You will be cutting out four of each shape at once.



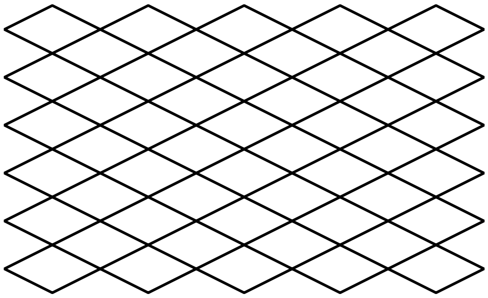
Name Date Time

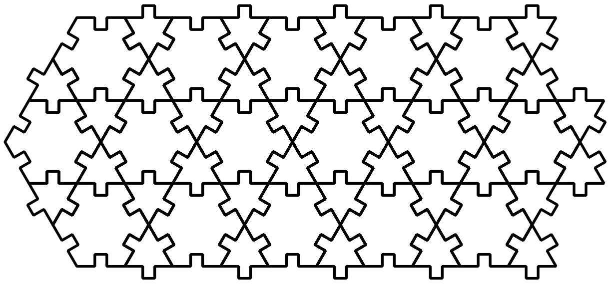
STUDY LINK 3•8

Tessellation Museum

A **tessellation** is an arrangement of repeated, closed shapes that completely covers a surface, without overlaps or gaps. Sometimes only one shape is used in a tessellation. Sometimes two or more shapes are used.

SRB 160 161





1. Collect tessellations. Look in newspapers and magazines. Ask people at home to help you find examples.
2. Ask an adult whether you may cut out the tessellations. Tape your tessellations onto this page in the space below.
3. If you can't find tessellations in newspapers or magazines, look around your home at furniture, wallpaper, tablecloths, or clothing. In the space below, sketch the tessellations you find.

Practice

4. 1,987 + 6,213 + 2,046 = ____________
5. 4,615 − 3,148 = ____________
6. 3,714 ∗ 8 = ____________
7. 39 / 7 → ____________

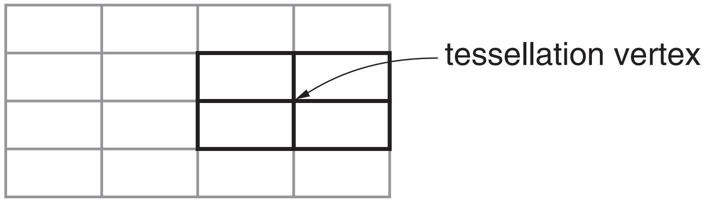
Name Date Time

LESSON 3·8

Naming Tessellations

SRB 160

Regular tessellations are named by giving the number of sides in each polygon around a vertex point. A vertex point of a tessellation is a point where vertices of the shapes meet.

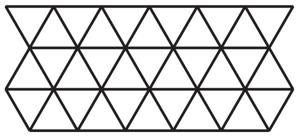


4.4.4.4

For example, the name of the rectangular tessellation above is 4.4.4.4. There are four numbers in the name, so there are four polygons around each vertex. Each of those numbers tells the number of sides in each of the polygons around a vertex point. The numbers are separated by periods. There are four 4-sided polygons around each vertex point.

Look at the tessellation below.

Choose a vertex.



1. How many shapes meet at the vertex point? _________

2. How many sides does each polygon have? _________

3. a. What is the name of this regular tessellation? ____________________

b. Why? ____

____

4. Make a tessellation for each regular polygon on your geometry template. Use the back of this page if necessary. Name each regular tessellation.

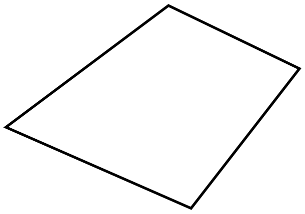
Name Date Time

STUDY LINK 3•9

Sums of Angle Measures

SRB 207

1. Describe one way to find the sum of the angles in a quadrangle without using a protractor. You might want to use the quadrangle at the right to illustrate your explanation.



____

____

____

____

____

2. The sum of the angles in a quadrangle is ________.

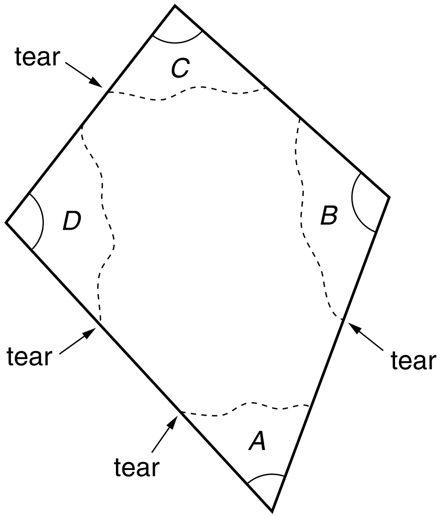
3. Follow these steps to check your answer to Problem 2.

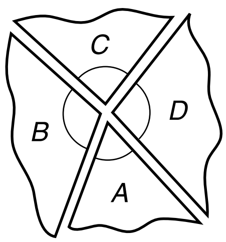
   a. With a straightedge, draw a large quadrangle on a separate sheet of paper.

   b. Draw an arc in each angle.

   c. Cut out the quadrangle and tear off part of each angle.

   d. Tape or glue the angles onto the back of this page so that the angles touch but do not overlap.





Practice

4. 3,007 + 1,251 + 980 = ____________

5. 4,310 − 1,290 = ____________

6. 3,692 * 6 = ____________

7. 67 ÷ 8 → ____________

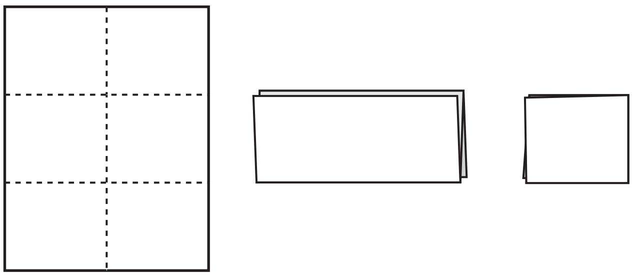
Name Date Time

LESSON 3•9

A Quadrangle Investigation

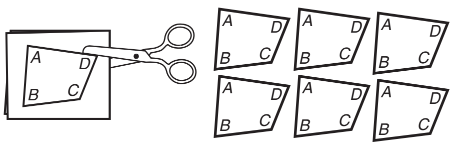
The sum of the angles in a quadrangle is equal to 360°. Since there are 360° in a circle, you might predict that every quadrangle will tessellate. Follow the procedure below to investigate this prediction.

1. Fold a piece of paper ($8\frac{1}{2}$" by 11") into six parts by first folding it into thirds and then into halves.



2. Using a straightedge, draw a quadrangle on the top layer of the folded paper. Label each of the four vertices with a letter *inside the figure*—for example, *A, B, C,* and *D.*

3. Cut through all six layers so that you have six identical quadrangles. Label the vertices of each quadrangle in the same manner as the quadrangle on top.



4. Arrange the quadrangles so that they tessellate.

5. When you have a tessellating pattern, tape the final pattern onto a separate piece of paper. Color it if you want to.

6. Talk with other students who did this investigation. Were their quadrangles a different shape than yours? Do you think that any quadrangle will tessellate?

Option To make a pattern that has more than six quadrangles, draw your original quadrangle on a piece of cardstock, cut it out, and use it as a stencil. By tracing around your quadrangle, you can easily cover a half-sheet of paper with your pattern. Label the angles on your stencil so you can be sure you are placing all four angles around points in the tessellation. Color your finished pattern.

Name Date Time

LESSON 3•9

Angle Measures in Polygons

The measure of the interior angles of a triangle is 180°. The number of triangles within a polygon is 2 less than the number of sides of the polygon.

1. Fill in the chart below using this pattern.

Polygons

Number of Sides	Number of Triangles	Sum of Angles
4	2	2 ∗ 180° = 360°
5	3	3 ∗ 180° = __________
6	4	4 ∗ 180° = __________
7	5	___ ∗ 180° = __________
13		___ ∗ 180° = __________
26		___ ∗ ______ = __________
51		___ ∗ ______ = __________
63		___ ∗ ______ = __________
85		___ ∗ ______ = __________

2. Use expressions to complete the statement.

If *n* equals the number of sides in a polygon, ________ equals the number of triangles within the polygon, and ____________________ equals the sum of the angles in the polygon.

Name Date Time

STUDY LINK 3•10

Polygons and Their Measures

SRB 142 143

1. Draw each of the following figures.

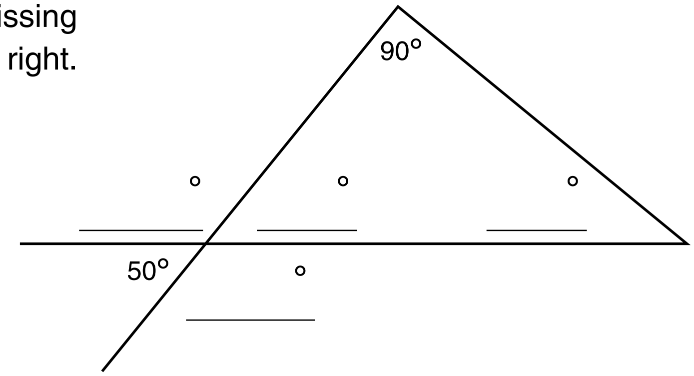
a. a polygon

b. a triangle with no equal sides

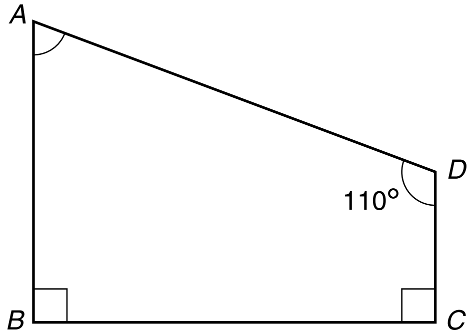
c. a quadrangle with one right angle

d. a quadrangle with no pairs of parallel sides

2. Without using a protractor, record the missing angle measurements in the figure to the right.



3. Use the figure to the right to answer the questions.



a. How long is line segment *CD*? _____ cm

b. What is the measure of angle *A*? _______

c. What is the sum of the measures of all the angles? ___________

d. What is a geometric name for the figure? __________________

Practice

4. 1,476 + 2,724 + 3,241 = _____________

5. 4,002 − 1,361 = _____________

6. 5,031 ∗ 4 = _____________

7. 27 ÷ 9 = _____________

Name Date Time

LESSON 3·10

Geometry Template Problems

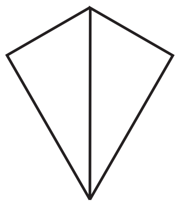
Record your solutions on *Math Masters,* page 97. Include the problem numbers.

Challenging

Examples:

1. Without using a ruler to measure, enlarge the octagon on the Geometry Template to approximately 2 times its size and 3 times its size. (6 points for the double-size octagon and 9 points for the triple-size octagon)

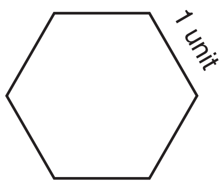
2. Using the triangles on the template, draw three different **kites.** Describe your procedure. Remember, a kite has two pairs of equal sides, but not four equal sides. The equal sides must share an endpoint. (3 points each)

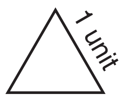


3. Describe how you would draw the largest circle possible with the Geometry Template, without tracing any of the circles on the template. Draw this circle if you have a sheet of paper that is large enough. (15 points)

4. Use your template to draw at least four **parallel lines.** Describe your procedure. (10 points)

5. Each side of the hexagon is 1 unit long. Each side of the equilateral triangle is 1 unit long. Use at least one hexagon and at least one equilateral triangle to make each of the following:





- ◆ An equilateral triangle with sides 3 units long
- ◆ An equilateral triangle with sides 4 units long
- ◆ An equilateral triangle with sides 5 units long (10 points each)

6. Draw as many polygons as you can inside each box on *Math Masters,* page 97. The polygons must not overlap. None of the polygons may be used more than once. (1 point for each polygon used)

LESSON 3•10

Geometry Template Problems *continued*

Solutions

6.

Name Date Time

STUDY LINK **3•11**

Unit 4: Family Letter

Division

Unit 4 begins with a review of division facts and the relationship between division and multiplication. Emphasis is on fact families. A person who knows that $4 * 5 = 20$ also knows the related facts $5 * 4 = 20$, $20 \div 4 = 5$, and $20 \div 5 = 4$.

These notations for division are equivalent:	
$12\overline{)246}$	$246 \div 12$
$246 / 12$	$\frac{246}{12}$

We will develop strategies for dividing mentally. Challenge your child to a game of *Division Dash* to help him or her practice. You'll find the rules in the *Student Reference Book,* page 303.

In *Fourth Grade Everyday Mathematics,* students were introduced to a method of long division called the partial-quotients division algorithm. This algorithm is easier to learn and apply than the traditional long-division method. It relies on "easy" multiplication, and it can be quickly employed by students who struggle with traditional computation.

In this method, a series of partial answers (partial quotients) are obtained, and then added to get the final answer (the quotient). After your child has worked with this method, you might ask him or her to explain the example below:

$$\begin{array}{r|r} 12\overline{)158} & \\ -\ 120 & 10 \\ \hline 38 & \\ -\ 36 & 3 \\ \hline 2 & 13 \end{array}$$

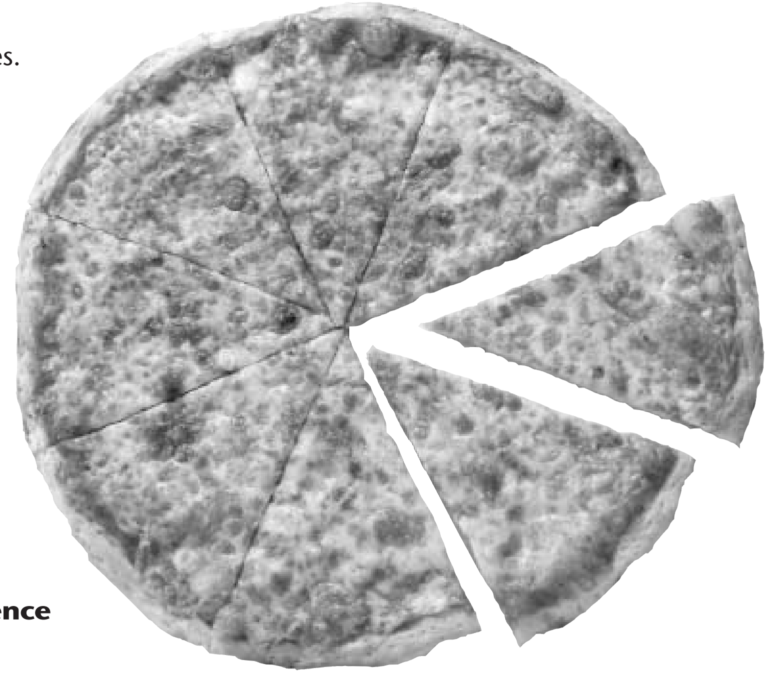
Remainder **Quotient**

In the coming unit, we will review the partial-quotients algorithm and extend it to decimals.

Your child will practice using this division algorithm, as well as others, if he or she chooses. The partial-quotients division algorithm and another method called column division are described in the *Student Reference Book.*

When we solve division number stories, special attention will be placed on interpreting the remainder in division.

The American Tour will continue as the class measures distances on maps and uses map scales to convert the map distances to real-world distances between cities, lengths of rivers, and so on.



Please keep this Family Letter for reference as your child works through Unit 4.

Vocabulary

Important terms in Unit 4:

dividend In division, the number that is being divided. For example, in $35 \div 5 = 7$, the dividend is 35.

divisor In division, the number that divides another number. For example, in $35 \div 5 = 7$, the divisor is 5.

map legend (map key) A diagram that explains the symbols, markings, and colors on a map.

map scale The ratio of a distance on a map, globe, or drawing to an actual distance.

number sentence Two expressions with a relation symbol ($=$, $<$, $>$, $\neq$, $\leq$, or $\geq$). For example, $5 + 5 = 10$ and $6 * (43 + 7) = 300$ are number sentences. Compare to *open sentence.*

open sentence A *number sentence* with one or more *variables*. For example, $x + 3 = 5$ is an open sentence.

quotient The result of dividing one number by another number. For example, in $35 \div 5 = 7$, the quotient is 7.

remainder The amount left over when one number is divided by another number. For example, if 38 books are divided into 5 equal piles, there are 7 books per pile, with 3 books remaining. In symbols, $38 \div 5 \rightarrow 7$ R3.

variable A letter or other symbol that represents a number. A variable can represent one specific number. For example, in the number sentence $5 + n = 9$, only $n = 4$ makes the sentence true. A variable may also stand for many different numbers. For example, $x + 2 < 10$ is true if x is any number less than 8.

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. Provide your child with opportunities to look at maps from various parts of the country. Ask him or her to explain the map legend and map scale, and to find the distances between two cities or places of interest.
2. Read the book *A Remainder of One,* by Elinor J. Pinczes.
3. Play *Division Dash, First to 100, Divisibility Dash*, *Division Top-It* or *Name that Number* as described in the *Student Reference Book.*
4. Ask your child to write number stories that can be solved using division. Help your child solve those problems, and then identify how the quotient and remainder are used to answer the question in the number story.

Building Skills through Games

In Unit 4, your child will practice division as well as other skills by playing these and other games. For detailed instructions, see the *Student Reference Book.*

Divisibility Dash See *Student Reference Book,* page 302
This is a game for two to three players and requires a set of number cards. Playing *Divisibility Dash* provides practice recognizing multiples and using divisibility rules in a context that also develops speed.

Division Dash See *Student Reference Book,* page 303
This is a game for one or two players. Each player will need a calculator. Playing *Division Dash* helps students practice division and mental calculation.

Division Top-It See *Student Reference Book,* page 334
This is a game for two to four players and requires number cards. Playing Division Top-It provides practice recognizing multiples and applying division facts and extended facts.

First to 100 See *Student Reference Book,* page 308
This is a game for two to four players and requires 32 Problem Cards and a pair of six-sided dice. Players answer questions after substituting numbers for the variable on Problem Cards. The questions offer practice on a variety of mathematical topics.

Name That Number See *Student Reference Book,* page 325
This is a game for two or three players using the Everything Math Deck or a complete deck of number cards. This game provides a review of operations with whole numbers.

As You Help Your Child with Homework

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

Study Link 4•1

1. 19; Sample answer: 30 and 27

2. 12; Sample answer: 80 and 16

3. 2,000 mi **4.** 5 lb

5. 878; 1,803 − 878 = 925; 925 + 878 = 1,803; 878 + 925 = 1,803

6. 875; 377 + 498 = 875; 875 − 377 = 67; 875 − 498 = 67

Study Link 4•2

1. 10, 10, 10, and 3 **2.** 27 R4 **3.** 42 R4

4. 32 R5 **5.** 24

6. 3,985; 3,985 − 168, or 3,817 = 3,817, or 168

7. 52,236; 281, or 52,236 + 52,236 or 281 = 52,517

Study Link 4•3

1. a. About 1 mi **b.** About $1\frac{1}{2}$ mi

2. a. About $3\frac{3}{4}$ in. **b.** About $1\frac{7}{8}$ mi

3. 188; 188 + 188 = 376

4. 4,148; 4,148 − 3,997, or 151 = 151, or 3,997

Study Link 4•4

1. 71 **2.** 53 **3.** 82 R22

4. 26 R10 **5.** 83 pages

6. 2,814; 2,814 − 814, or 68 = 68, or 814

7. 3,296; 165; 3,296 + 3,296; 165 = 3,461

Study Link 4•5

Estimates vary. Sample estimates are given for Problems 1–6.

1. The 10s box should be circled; 60 ÷ 6 = 10; 13.1

2. The 100s box should be circled; 300 ÷ 3 = 100; 129

3. The 1s box should be circled; 30 ÷ 10 = 3; $3.69

4. The 10s box should be circled; 800 ÷ 40 = 20; 23

5. The 100s box should be circled; 1,000 ÷ 5 = 200; 169

6. The 1s box should be circled; 18 ÷ 9 = 2; 1.76

7. 14.544; 14.544 − 8.54, or 6.004 = 6.004, or 8.54

Study Link 4•6

1. $6.25; Reported it as a fraction or decimal; Sample answer: The cost per game is exact, so the answer needs to be exact.

2. 7; Ignored it; Sample answer: The remaining $4.00 is not enough to buy another pizza, and is ignored.

3. 15 R1 **4.** 52,836

Study Link 4•7

1. 49 **2.** 780 **3.** 610

Answers vary for Problems 4–11.

12. 3,985 **13.** 52,236