

## Unit 3 Study Guide

- 1) Can you round numbers to the nearest place value? (ex: ten, whole number, tenth...)
  - a. Math journal pages
    - p. 74
    - p. 81
  - b. SRB pages
    - p. 4
  
- 2) Can you write a number as it is read to you and identify a specific place value?
  - a. Have a parent read a large number to you and ask you to circle a specific place value. (ex: Write 542,176 and circle the thousands place. Don't forget about the tenths and thousandths places)
  
- 3) Can you extend basic multiplication facts?

ex: 3 [20's] = ?  
30 [20's] = ?  
30 [200's] = ?
  
- 4) Can you measure angles using a protractor?
  - a. Math Journal
    - p. 69
    - p. 73
    - p. 74
    - p. 81
    - p. 91
  - b. Study Link
    - 3.3
    - 3.4
    - 3.5
  - c. SRB
    - p. 138
    - p. 162
    - p. 204
  
- 5) Can you identify different types of angles?
  - a. SRB
    - p. 139
    - p. 141
  - b. Math journal pages
    - p. 68
  - c. Study Link
    - 3.5
  
- 6) Can you draw identify types of triangles?
  - a. Math Journal
    - p. 75 - 77
  - b. Study Link
    - 3.6

- 7) Can you identify different types and properties of polygons?
- a. Math Journal Pages
    - p. 80
  - b. Study Link
    - 3.7
  - c. Games
    - *Polygon Capture* (SRB p. 328)

\* Don't forget to use your in-class notes and the charts on our website.

# Congruent Figures

Look at the pairs of figures and decide whether they are **congruent** or **not congruent**.

1.



2.



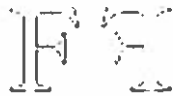
3.



4.



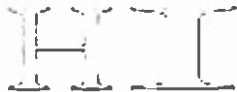
5.



6.



7.



8.



9. Draw a pair of congruent figures.

## Understanding Place Value through 1,000,000

Complete

1. In 307,584,

3 is worth 300,000

7 is worth \_\_\_\_\_

4 is worth \_\_\_\_\_

2. In 7,209,

7 is worth \_\_\_\_\_

0 is worth \_\_\_\_\_

2 is worth \_\_\_\_\_

3. In 280,743,

8 is worth \_\_\_\_\_

2 is worth \_\_\_\_\_

4 is worth \_\_\_\_\_

4. In 10,837,

8 is worth \_\_\_\_\_

1 is worth \_\_\_\_\_

0 is worth \_\_\_\_\_

5. In 207,653,

5 is worth \_\_\_\_\_

6 is worth \_\_\_\_\_

7 is worth \_\_\_\_\_

6. In 456,789,

4 is worth \_\_\_\_\_

9 is worth \_\_\_\_\_

5 is worth \_\_\_\_\_

7. In 381,062,

1 is worth \_\_\_\_\_

6 is worth \_\_\_\_\_

3 is worth \_\_\_\_\_

8. In 903,578,

5 is worth \_\_\_\_\_

0 is worth \_\_\_\_\_

3 is worth \_\_\_\_\_

# Understanding Place Values through 1,000,000

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<p>1. In the number 1,596,</p> <p>the 9 means _____</p> <p>the 6 means _____</p> <p>the 1 means _____</p> <p>the 5 means _____</p>	<p>2. Write the number that has</p> <p>4 in the hundreds place</p> <p>6 in the thousands place</p> <p>1 in the ones place</p> <p>5 in the tens place</p> <p>_____</p>
<p>3. In 489,103,</p> <p>9 is worth _____</p> <p>3 is worth _____</p> <p>4 is worth _____</p>	<p>4. In 134,785,</p> <p>3 is worth _____</p> <p>8 is worth _____</p> <p>7 is worth _____</p>
<p>5. In 980,167,</p> <p>6 is worth _____</p> <p>1 is worth _____</p> <p>9 is worth _____</p>	<p>6. Make up and solve your own Review Box.</p>

## Ways to Write Large Numbers

1. Write the number 618,403,792 in the blank squares of the place-value chart.

millions			,	thousands			,	ones		
100,000,000	10,000,000	1,000,000		100,000	10,000	1,000		100	10	1
			,				,			

Write each of the following numbers in number-and-word notation.

**Example:** 618,403,792 618 million, 403 thousand, 7 hundred ninety-two

2. 36,825
3. 2,367,432
4. 62,420,904
5. 510,004,067

Write the following numbers in expanded notation.

**Example:** 618,403,792  $(6 * 100,000,000) + (1 * 10,000,000) +$   
 $(8 * 1,000,000) + (4 * 100,000) +$   
 $(3 * 1,000) + (7 * 100) + (9 * 10) + (2 * 1)$

6. 34,921
7. 42,301,082
8. 845,310,060

# Ways to Write Large Numbers

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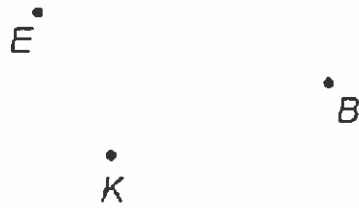
<p>1. In the number 874,808,912,</p> <p>the 7 means _____</p> <p>the 9 means _____</p> <p>the 2 means _____</p>	<p>2. In the number 800,753,290,</p> <p>the 8 is worth _____</p> <p>the 9 is worth _____</p> <p>the 3 is worth _____</p>
<p>3. Write the number 421,387,902 in number-and-word notation.</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>4. Write the number 14,098,736 in number-and-word notation.</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>
<p>5. Write the number 858,035 in expanded notation.</p> <p>858,035 = _____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>	<p>6. Write the number 148,723,956 in expanded notation.</p> <p>148,723,956 = _____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>

# Introduction to Angles

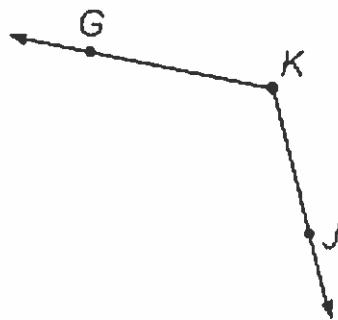
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1. Draw ray  $\overrightarrow{JK}$

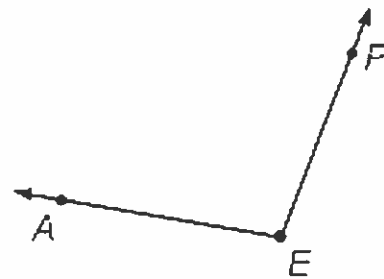
2. Draw  $\overrightarrow{KE}$  and  $\overrightarrow{KB}$ .



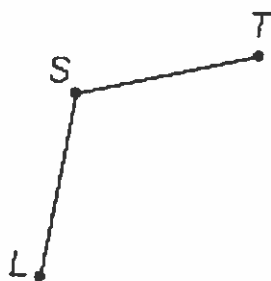
3. What is the vertex of the angle?  
 -----  
 What are the sides of the angle?  
 -----



4. What is the vertex of the angle?  
 -----  
 What are the sides of the angle?  
 -----



5. What is the vertex of the angle?  
 -----  
 What are the sides of the angle?  
 -----



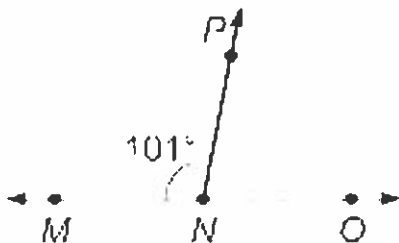
6. Make up and solve your own Review Box.



## Adding and Subtracting to Find Angle Measures

1.  $\angle MNO$  is a straight angle.

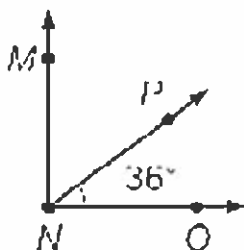
Find the measure of  $\angle PNO$ . Do not use a protractor.



measure of  $\angle PNO =$  \_\_\_\_\_

2.  $\angle MNO$  is a right angle.

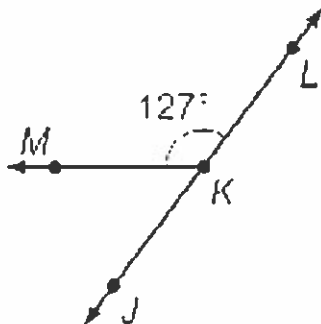
Find the measure of  $\angle MNP$ . Do not use a protractor.



measure of  $\angle MNP =$  \_\_\_\_\_

3.  $\angle JKL$  is a straight angle.

Find the measure of  $\angle MKJ$ . Do not use a protractor.



measure of  $\angle MKJ =$  \_\_\_\_\_

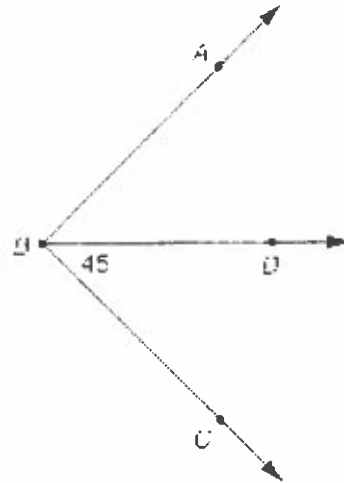
## Adding and Subtracting to Find Angle Measures

Find the following angle measures. Do not use a protractor.

1.



measure of  $\angle c$  \_\_\_\_\_

2.  $\angle ABC$  is a right angle.

measure of  $\angle ABD$  \_\_\_\_\_

3.

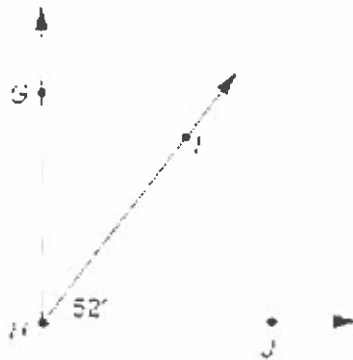


measure of  $\angle c$  \_\_\_\_\_

4.



measure of  $\angle x$  \_\_\_\_\_

5.  $\angle GHJ$  is a right angle.

measure of  $\angle FHG$  \_\_\_\_\_

6.  $\angle JKL$  is a straight angle.

measure of  $\angle JKO$  \_\_\_\_\_

# Adding and Subtracting to Find Angle Measures

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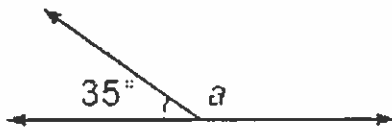
1. Draw right angle  $ABC$ .

measure of  $\angle ABC =$  \_\_\_\_\_

2. Draw straight angle  $DEF$ .

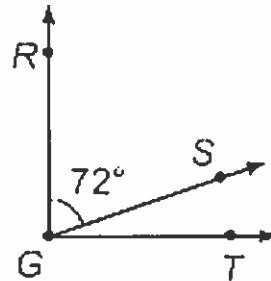
measure of  $\angle DEF =$  \_\_\_\_\_

3. Find the missing angle measure.  
Do not use a protractor.



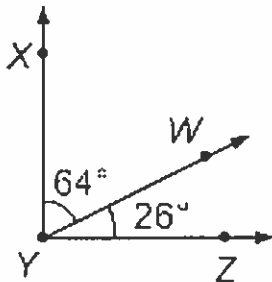
$a =$  \_\_\_\_\_

4.  $\angle RGT$  is a right angle.  
Find the missing angle measure.  
Do not use a protractor.



measure of  $\angle SGT =$  \_\_\_\_\_

5.



Is  $\angle XYZ$  a right angle? \_\_\_\_\_ Explain.

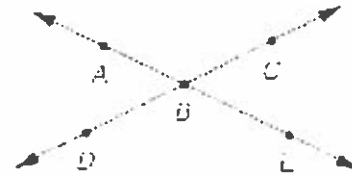
## Measuring Angles Formed by Intersecting Lines

Angles that are "next to" each other are called **adjacent angles**. Adjacent angles have the same vertex and a common side.

When two lines intersect, four angles are formed. The angles opposite each other are called **vertical angles** or **opposite angles**.

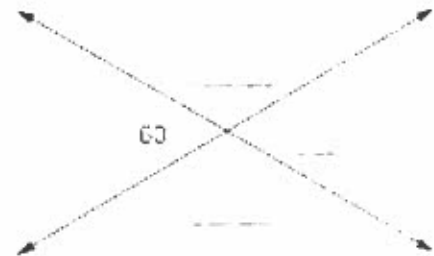
1. a. Angles  $ABD$  and  $CBE$  are vertical angles. Name another pair of vertical angles.

\_\_\_\_\_



- b. Angles  $ABC$  and  $CBE$  are adjacent angles. Name two other pairs of adjacent angles.

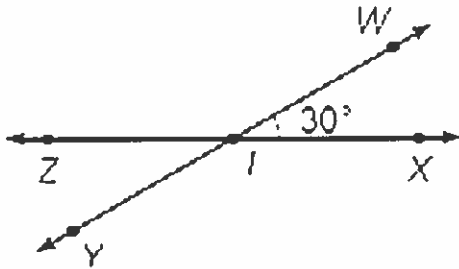
2. The two lines at the right intersect to form four angles. One angle has been measured. Use your full-circle protractor to measure the other three angles. Record your measurements on the drawing.



3. On a blank sheet of paper, draw two lines that intersect. Measure the four angles. Record the measures on your drawing.
4. What do you notice about the measures of pairs of vertical angles?
5. What do you notice about the measures of pairs of adjacent angles?
6. For any pair of adjacent angles formed by two intersecting lines, the sum of the measures is always  $180^\circ$ . Explain why.

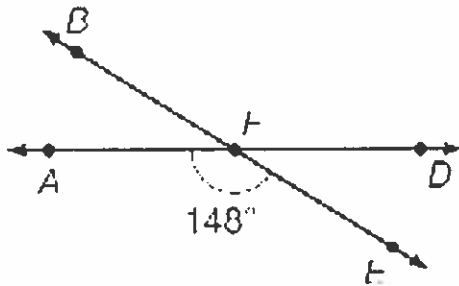
## Measuring Angles Formed by Intersecting Lines

1. Line  $WY$  intersects line  $ZX$ . Find the measure of  $\angle ZTW$ .  
Do not use a protractor.



$\angle ZTW$  measures \_\_\_\_\_

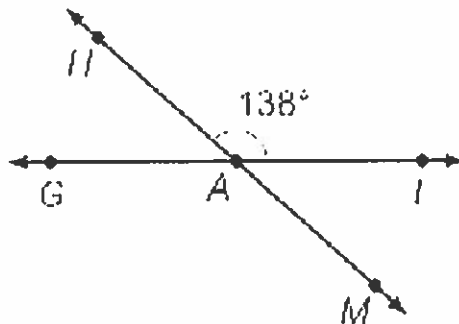
2. Line  $AD$  intersects line  $BE$ . Find the measure of each angle.  
Do not use a protractor.



$\angle BFA$  measures \_\_\_\_\_

$\angle DFE$  measures \_\_\_\_\_

3. Line  $GL$  intersects line  $HM$ . Find the measure of each angle.  
Do not use a protractor.



$\angle GAH$  measures \_\_\_\_\_

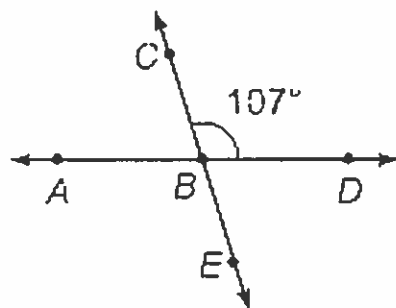
$\angle LAM$  measures \_\_\_\_\_

$\angle GAM$  measures \_\_\_\_\_

## Measuring Angles Formed by Intersecting Lines

1. Lines  $CE$  and  $AD$  intersect. Find the measure of  $\angle DBE$ .

Do not use a protractor.

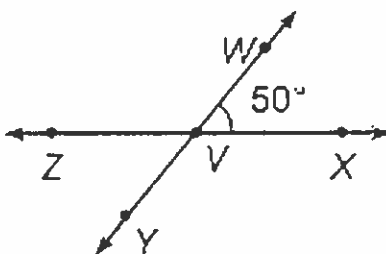


$\angle DBE$  measures \_\_\_\_\_

2. Line  $WY$  intersects line  $ZX$ . The measure of  $\angle WVX$  is  $50^\circ$ .

Find the measure of  $\angle WVZ$ ,  $\angle ZVY$ , and  $\angle YVX$ .

Do not use a protractor.



$\angle WVZ$  measures \_\_\_\_\_

$\angle ZVY$  measures \_\_\_\_\_

$\angle YVX$  measures \_\_\_\_\_

3. Name a pair of adjacent angles in Problem 2.

-----

What is the sum of the measures of these angles? Explain.

-----

-----

-----

## Adjacent Angles and Vertical Angles

Angles are sometimes named with lowercase letters. Find the measures of the angles indicated in Problems 1–6. Do not use a protractor.

(Note:  $m\angle a$  is short for *the measure of angle a*.)

1.



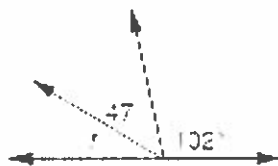
$$m\angle b =$$

2.



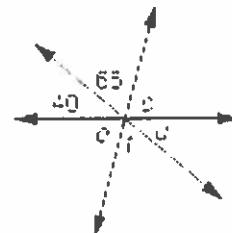
$$m\angle a =$$

3.



$$m\angle f =$$

4.



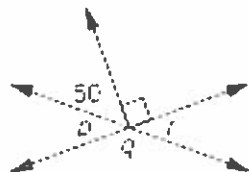
$$m\angle c =$$

$$m\angle u =$$

$$m\angle t =$$

$$m\angle e =$$

5.

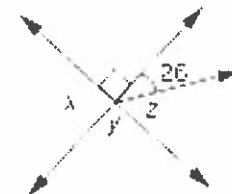


$$m\angle p =$$

$$m\angle q =$$

$$m\angle r =$$

6.



$$m\angle x =$$

$$m\angle y =$$

$$m\angle z =$$

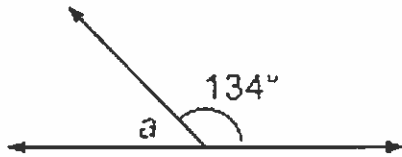
# Finding Sums of Angle Measures in Triangles

Find each missing angle measure. Do not use a protractor.

(Note:  $m\angle a$  is short for *the measure of angle a*.)

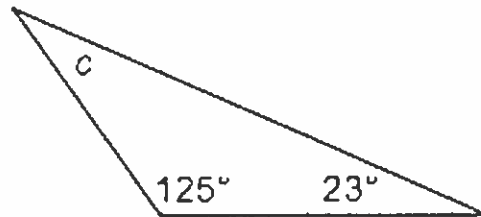
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1.



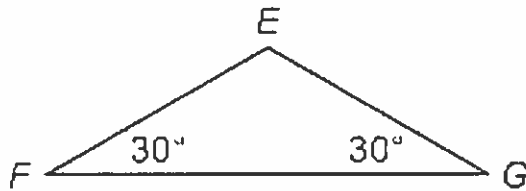
$m\angle a = \underline{\hspace{2cm}}$

2.



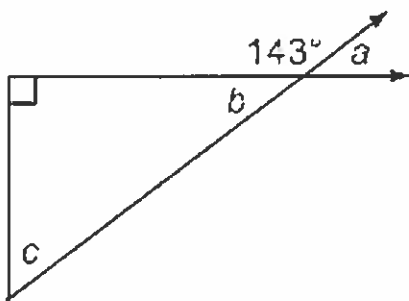
$m\angle c = \underline{\hspace{2cm}}$

3.



$m\angle E = \underline{\hspace{2cm}}$

4.



$m\angle a = \underline{\hspace{2cm}}$

$m\angle b = \underline{\hspace{2cm}}$

$m\angle c = \underline{\hspace{2cm}}$

5. Explain how you found the measure of  $\angle c$  in Problem 4.



# Finding Sums of Angle Measures in Quadrangles

Find each missing angle measure. Do not use a protractor.  
 (Note:  $m\angle a$  is short for *the measure of angle a.*)

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1.

$m\angle a =$  \_\_\_\_\_  
 $m\angle b =$  \_\_\_\_\_  
 $m\angle c =$  \_\_\_\_\_

2.

$m\angle d =$  \_\_\_\_\_

3.

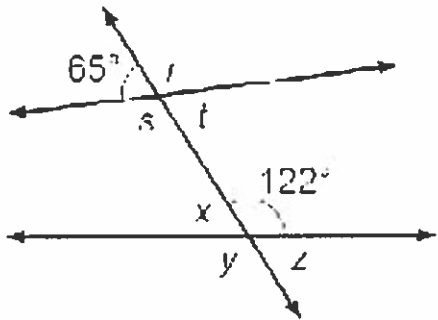
$m\angle c = 112^\circ$   
 $m\angle f =$  \_\_\_\_\_

4.

$m\angle x =$  \_\_\_\_\_

# Exploring Angle Relationships

1. Find each missing angle measure. Do not use a protractor.

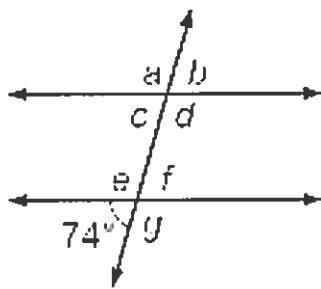


$m\angle r =$  \_\_\_\_\_  $m\angle x =$  \_\_\_\_\_

$m\angle s =$  \_\_\_\_\_  $m\angle y =$  \_\_\_\_\_

$m\angle t =$  \_\_\_\_\_  $m\angle z =$  \_\_\_\_\_

2. A transversal intersects two parallel lines. Find each missing angle measure. Do not use a protractor.



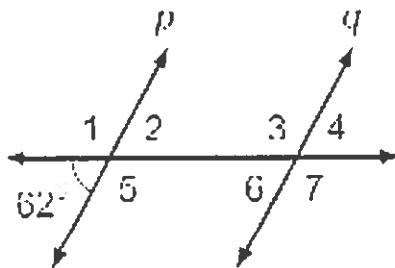
$m\angle a =$  \_\_\_\_\_  $m\angle b =$  \_\_\_\_\_

$m\angle c =$  \_\_\_\_\_  $m\angle d =$  \_\_\_\_\_

$m\angle e =$  \_\_\_\_\_  $m\angle f =$  \_\_\_\_\_

$m\angle g =$  \_\_\_\_\_

3. Lines  $p$  and  $q$  are parallel. Find each missing angle measure. Do not use a protractor.



$m\angle 1 =$  \_\_\_\_\_  $m\angle 2 =$  \_\_\_\_\_

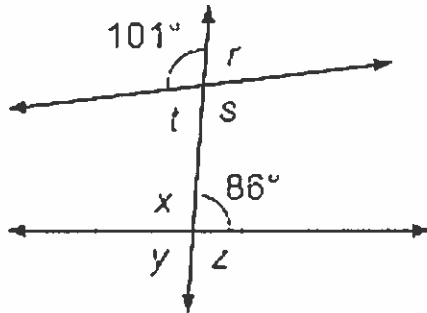
$m\angle 3 =$  \_\_\_\_\_  $m\angle 4 =$  \_\_\_\_\_

$m\angle 5 =$  \_\_\_\_\_

$m\angle 6 =$  \_\_\_\_\_  $m\angle 7 =$  \_\_\_\_\_

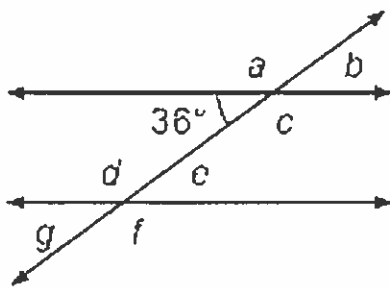
# Exploring Angle Relationships

1. Find each missing angle measure. Do not use a protractor



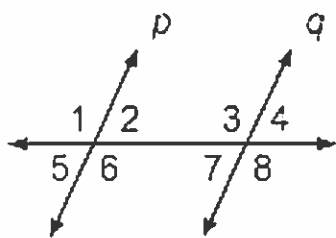
$m\angle r =$  \_\_\_\_\_       $m\angle x =$  \_\_\_\_\_  
 $m\angle s =$  \_\_\_\_\_       $m\angle y =$  \_\_\_\_\_  
 $m\angle t =$  \_\_\_\_\_       $m\angle z =$  \_\_\_\_\_

2. Two parallel lines are intersected by a transversal. Find each missing angle measure. Do not use a protractor.



$m\angle d =$  \_\_\_\_\_  
 $m\angle a =$  \_\_\_\_\_       $m\angle e =$  \_\_\_\_\_  
 $m\angle b =$  \_\_\_\_\_       $m\angle f =$  \_\_\_\_\_  
 $m\angle c =$  \_\_\_\_\_       $m\angle g =$  \_\_\_\_\_

3. Lines  $p$  and  $q$  are parallel.



a. Which angles have the same measure as  $\angle 1$ ?

\_\_\_\_\_

b. Which angles are supplementary to  $\angle 1$ ?

\_\_\_\_\_

c. If  $m\angle 1 = 115^\circ$ , find the measure of each angle.

$m\angle 1 =$  115°       $m\angle 2 =$  \_\_\_\_\_       $m\angle 3 =$  \_\_\_\_\_  
 $m\angle 4 =$  \_\_\_\_\_       $m\angle 5 =$  \_\_\_\_\_       $m\angle 6 =$  \_\_\_\_\_  
 $m\angle 7 =$  \_\_\_\_\_       $m\angle 8 =$  \_\_\_\_\_

Name \_\_\_\_\_

Date \_\_\_\_\_

Time \_\_\_\_\_

# Angle Tangle Record Sheet



Round	Angle	Estimated measure	Actual measure	Score
1		○	○	
2		○	○	
3		○	○	
4		○	○	
5		○	○	
<b>Total Score</b>				

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Name \_\_\_\_\_

Date \_\_\_\_\_

Time \_\_\_\_\_

# Angle Tangle Record Sheet



Round	Angle	Estimated measure	Actual measure	Score
1		○	○	
2		○	○	
3		○	○	
4		○	○	
5		○	○	
<b>Total Score</b>				

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