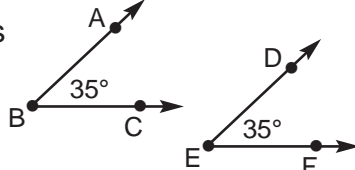
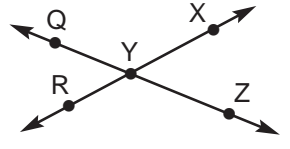


# Special Pairs

Two angles with the same measure are **congruent**.  $\angle ABC$  and  $\angle DEF$  are congruent

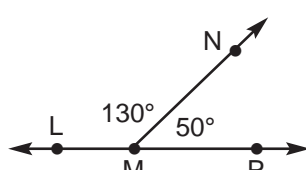



Two opposite angles formed by two intersecting lines are called **vertical angles**. Vertical angles are always congruent.

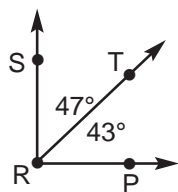


$\angle QYR$  and  $\angle XYZ$  are vertical angles

If two angles form a line, the sum of their measures is  $180^\circ$ . These angles are **supplementary**.  $\angle LMN$  and  $\angle PMN$  are supplementary

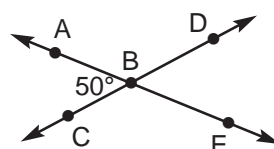


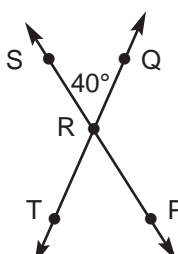

If the sum of the measures of two angles is  $90^\circ$ , the angles are **complementary**. These angles form a right angle.

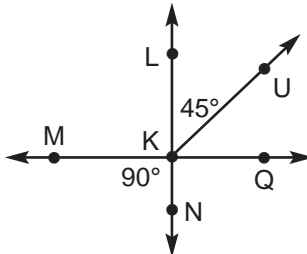


$\angle SRT$  and  $\angle TRP$  are complementary

Write the missing angle measures. Write **congruent**, **vertical**, **supplementary**, or **complementary** to describe the angle pairs. You may use more than one term to describe a pair.

1.   $\angle ABC = 50^\circ$   $\angle EBC = \underline{\hspace{2cm}}$   $\angle DBE = \underline{\hspace{2cm}}$   $\angle ABD = \underline{\hspace{2cm}}$   
 $\angle ABC$  and  $\angle DBE$  \_\_\_\_\_  
 $\angle ABD$  and  $\angle DBE$  \_\_\_\_\_

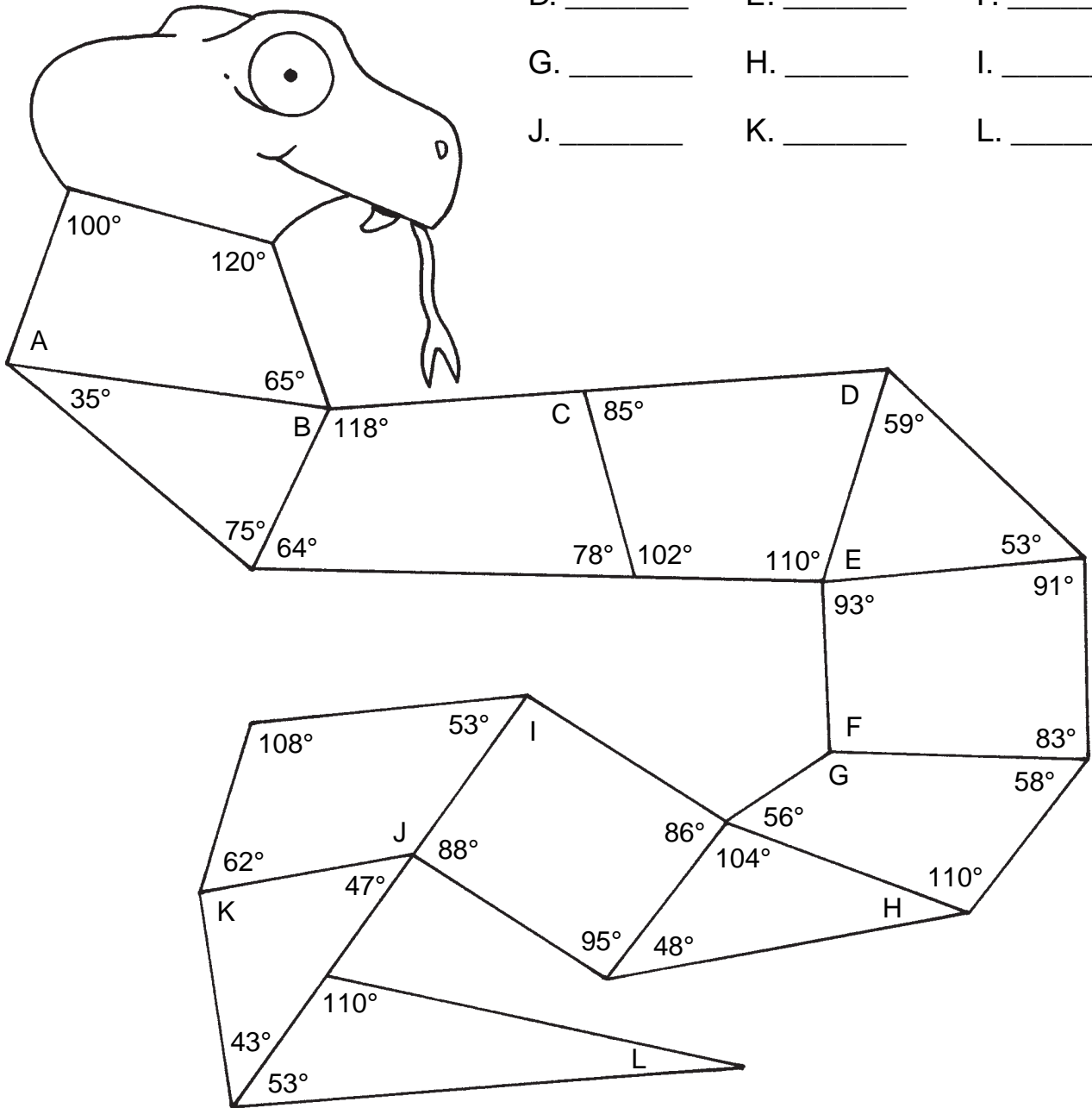
2.   $\angle SRQ = 40^\circ$   $\angle TRP = \underline{\hspace{2cm}}$   $\angle SRT = \underline{\hspace{2cm}}$   $\angle QRP = \underline{\hspace{2cm}}$   
 $\angle SRT$  and  $\angle TRP$  \_\_\_\_\_  
 $\angle SRT$  and  $\angle QRP$  \_\_\_\_\_

3.   $\angle MKN = 90^\circ$   $\angle QKN = \underline{\hspace{2cm}}$   $\angle MKL = \underline{\hspace{2cm}}$   
 $\angle LKU = 45^\circ$   $\angle LKQ = \underline{\hspace{2cm}}$   $\angle UKQ = \underline{\hspace{2cm}}$   
 $\angle MKN$  and  $\angle QKN$  \_\_\_\_\_  
 $\angle LKU$  and  $\angle UKQ$  \_\_\_\_\_  
 $\angle MKL$  and  $\angle QKN$  \_\_\_\_\_

# Geo Snake

Write the missing angle measures.

- |               |          |          |
|---------------|----------|----------|
| A. <u>75°</u> | B. _____ | C. _____ |
| D. <u>70°</u> | E. _____ | F. _____ |
| G. _____      | H. _____ | I. _____ |
| J. _____      | K. _____ | L. _____ |



What is the sum of the measures of a triangle's angles? \_\_\_\_\_

What is the sum of the measures of a quadrilateral's angles? \_\_\_\_\_

Name \_\_\_\_\_

# Types of Angles

## Remember

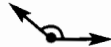
**Acute**—less than  $90^\circ$



**Right**—exactly  $90^\circ$



**Obtuse**—greater than  $90^\circ$   
and less than  $180^\circ$

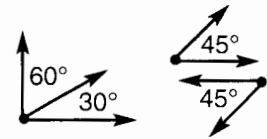


**Straight**—exactly  $180^\circ$



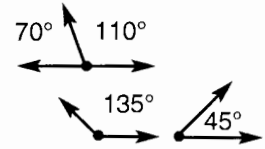
**Complementary**—

two angles whose measures add up to  $90^\circ$



**Supplementary**—

two angles whose measures add up to  $180^\circ$

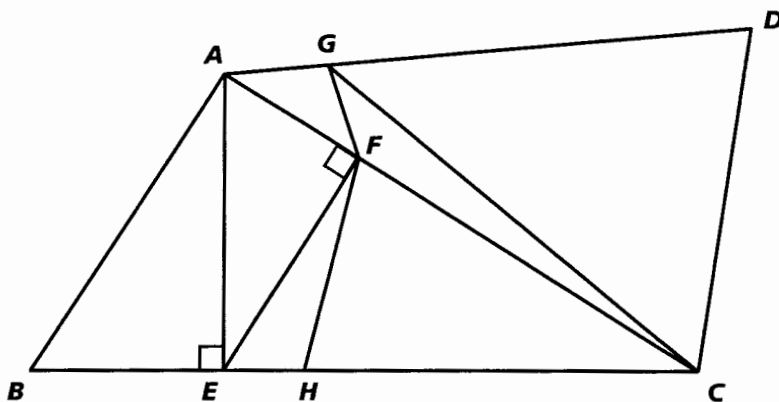


Refer to the diagram and classify the angles. For 1–8, determine whether each angle is acute, right, obtuse, or straight. For 9–16, determine whether the two angles are complementary, supplementary, or neither. Circle the corresponding column letter and copy it onto the matching blanks below to complete the sentence.

	Acute	Right	Obtuse	Straight
1. $\angle BEA$	s	m	e	g
2. $\angle EAF$	e	l	x	a
3. $\angle AGD$	p	n	o	a
4. $\angle GFC$	r	p	s	m
5. $\angle FHC$	u	e	g	s
6. $\angle EFC$	s	r	t	a
7. $\angle BHC$	r	i	y	e
8. $\angle ECD$	e	l	c	o

- $\angle AEF$  and  $\angle FEC$
- $\angle BEA$  and  $\angle AEC$
- $\angle EFH$  and  $\angle HFC$
- $\angle HFE$  and  $\angle EFA$
- $\angle FGC$  and  $\angle CGD$
- $\angle EHF$  and  $\angle FHC$
- $\angle GFA$  and  $\angle AFE$
- $\angle AFH$  and  $\angle HFC$

	Complementary	Supplementary	Neither
9.	o	t	n
10.	r	n	i
11.	g	o	n
12.	o	m	r
13.	e	t	u
14.	r	e	i
15.	c	a	n
16.	y	t	r



Angles that have the same

\_\_\_\_\_

1 2 3 4 5 6 7

are called

\_\_\_\_\_

8 9 10 11 12 13 14 15 16

angles.

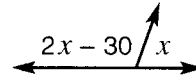
Name \_\_\_\_\_

# Algebra Angle Measures

## Example

The supplement of an angle is  $30^\circ$  less than twice the measure of the angle itself. Find the angle.

1. Make a sketch, using  $x$  to represent the angle. (Complementary angles add up to  $90^\circ$ ; supplementary angles add up to  $180^\circ$ .)



2. Write an equation.  $x + 2x - 30 = 180$

3. Solve for  $x$ .

$$x + 2x - 30 = 180$$

$$3x - 30 = 180$$

$$3x = 210$$

$$x = 70^\circ$$

4. Check your answer.

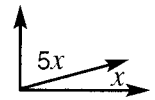
The measure of the angle is  $70^\circ$ .

The supplement is  $(2 \times 70) - 30 = 110^\circ$ .

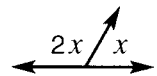
$$70^\circ + 110^\circ = 180^\circ$$

Read each problem and draw a line to its matching sketch. Write an equation for the problem, using  $x$  for the angle. Solve for  $x$ . When you finish, find and circle your answer in the box below.

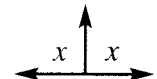
1. The supplement of an angle is twice the measure of the angle itself. Find the angle.



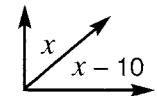
2. The complement of an angle is five times the measure of the angle itself. Find the angle.



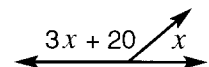
3. The complement of an angle is  $10^\circ$  less than the measure of the angle itself. Find the angle.



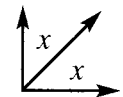
4. The supplement of an angle is  $20^\circ$  more than the measure of the angle itself. Find the angle.



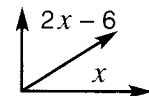
5. Two angles are congruent and complementary. Find their measures.



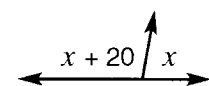
6. Two angles are congruent and supplementary. Find their measures.



7. The supplement of an angle is  $20^\circ$  more than three times the measure of the angle itself. Find the angle.



8. The complement of an angle is  $6^\circ$  less than twice the measure of the angle itself. Find the angle.



$15^\circ$

$32^\circ$

$40^\circ$

$45^\circ$

$50^\circ$

$60^\circ$

$70^\circ$

$80^\circ$

$90^\circ$