Name _____   Date _____


Definitions

Point--an exact location in geometry. Named by a letter.   **C** is read as "point C"

Line--is straight and extends in both directions without end. Named by at least 2 points and line symbol. $\overleftrightarrow{JK}$ is read as "line JK"

Line Segment--The part of a line that connects two points. It has definite end points. Named by at least 2 points and line segment symbol.

$\overline{PQ}$ is read as "line segment PQ"

1. Use the following directions to draw a figure in the box to the right.

   a. Draw two points: A and B.

   b. Use a straightedge to draw $\overleftrightarrow{AB}$.

   c. Draw a new point that is **not** on $\overleftrightarrow{AB}$.

      Label it C.

   d. Draw $\overline{AC}$.

   e. Draw a point not on $\overleftrightarrow{AB}$ or $\overline{AC}$. Call it D.

   f. Construct $\overleftrightarrow{CD}$.
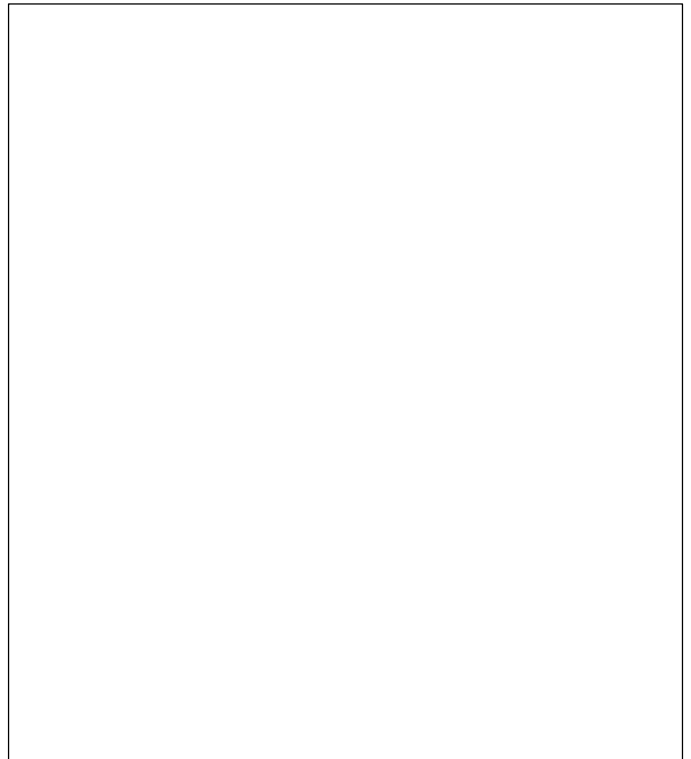
2. Use the following directions to draw a figure in the box to the right.

   a. Draw two points: A and B.

   b. Use a straightedge to draw $\overline{AB}$.

   c. Draw a new point that is not on $\overline{AB}$.
      Label it C.

   d. Draw $\overleftrightarrow{BC}$.

   e. Draw a new point that is not on $\overline{AB}$ or
      $\overrightarrow{BC}$. Label it D.

   f. Construct $\overleftrightarrow{AD}$.
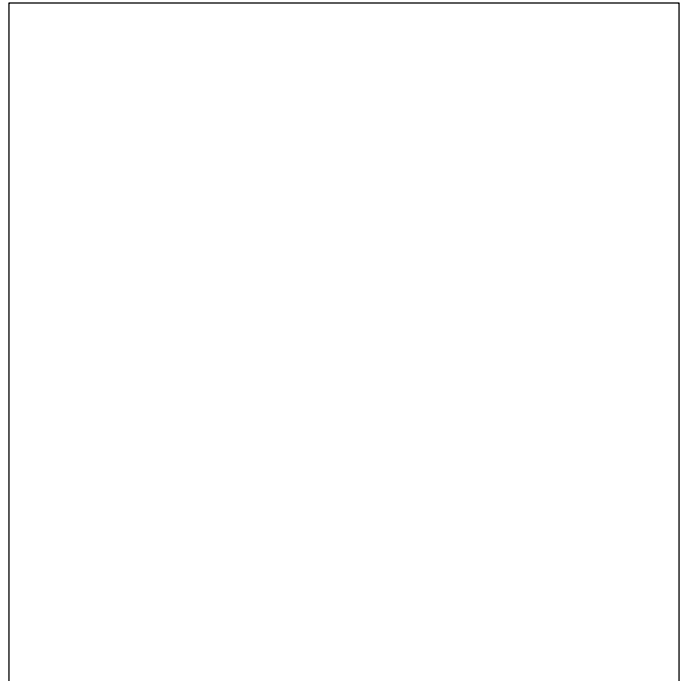
3. a. Label some points on each figure below. Extend a line segment in each picture to make a line.
   b. Use those points to label and name representations of each of the following in the table.
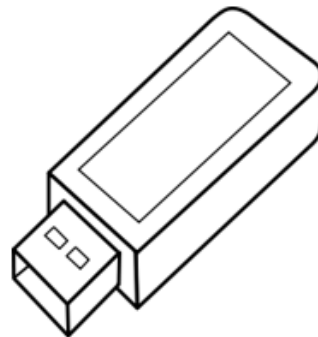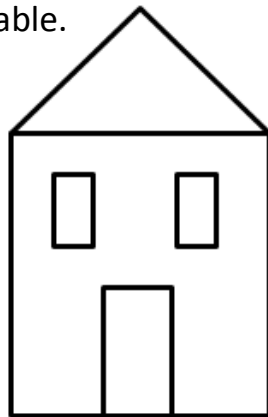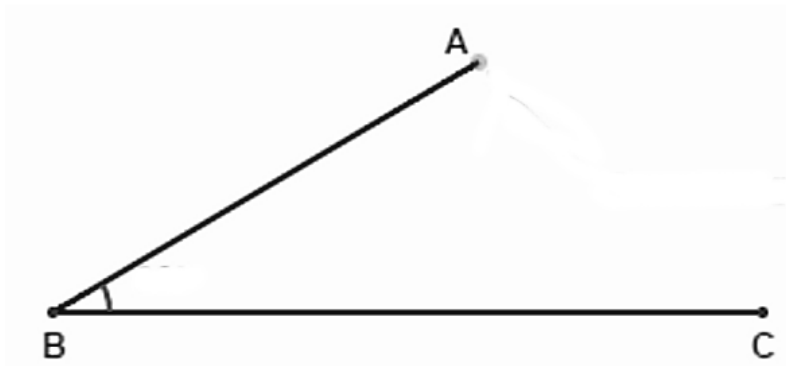
	House	Flash drive
Line		
Line segment		

Name _____   Date _____

Definitions

B

A _____→

Ray--A portion of a line which starts at a point and goes off in a particular direction to infinity. Named by at least 2 points and a ray symbol. $\overrightarrow{AB}$


Angle—any two rays or line segments sharing the same point (vertex) create an angle. Named in two ways:

∠**ABC** The angle symbol, followed by three points that define the angle.
As long as the *vertex is the middle letter*, the order is not important.

∠**B** Just by the vertex.

Use the following directions to draw figures in the boxes.

1. a. Draw two points: A and B.

   b. Use a straightedge to draw ray $\overrightarrow{AB}$.

   c. Draw a new point that is not on ray $\overrightarrow{AB}$. Label it C.

   d. Draw line segment $\overline{AC}$.

   e. Draw a point not on ray $\overrightarrow{AB}$ or line segment $\overline{AC}$.

   f. Call it D.

   g. Construct line $\overleftrightarrow{CD}$.

   h. Use the points you've already labeled to

      name one angle. _____
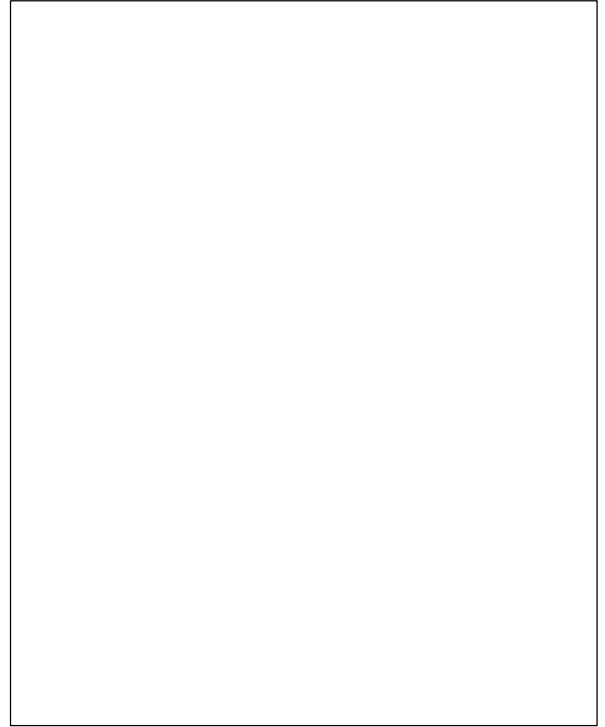
2 a. Draw two points: A and B.

   b. Use a straightedge to draw line segment $\overline{AB}$.

   c. Draw a new point that is not on line segment $\overline{AB}$.

      Label it C.

   d. Draw ray $\overrightarrow{BC}$.

   e. Draw a new point that is not on line

      segment $\overline{AB}$ or ray $\overrightarrow{BC}$. Label it D.

   f. Construct line $\overleftrightarrow{AD}$.

   g. Identify $\angle DAB$ by drawing an arc to indicate

      the position of the angle.

   h. Identify another angle by using points that you

      have already drawn. _____
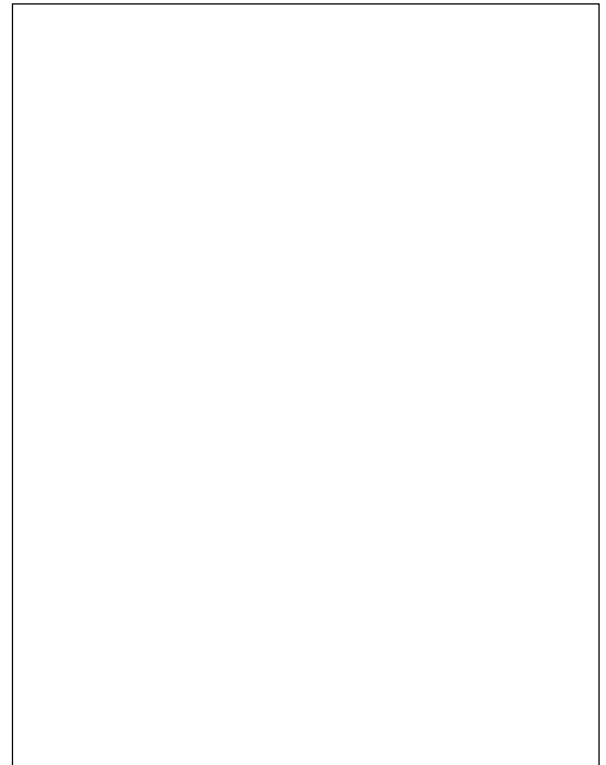
3.   a. Extend the line segments in this diamond to make rays.

   b. Assign letters to the points.

   c. Use those points to label and name two of each shape in
       the following in the table.
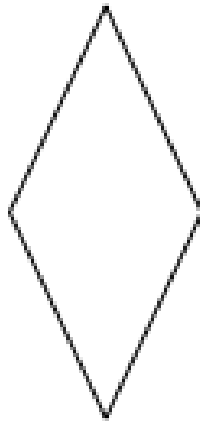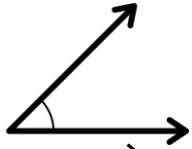
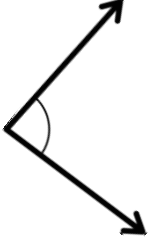|	**Diamond**
Rays	
Line segments	
Angles	
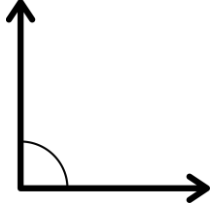
Name _____   Date _____

1. Use the right angle template that you made in class to determine if each of the
    following angles is greater than, less than, or equal to a right angle. Label each as
    greater than, *less than*, or *equal to*, and then connect each angle to the correct
    label of acute, right, or obtuse.

Less than
_____

a. _____

● **Acute** ●

b.
_____

c.
_____

● **Right** ●

d.
_____

e.
_____

f.
_____

● **Obtuse** ●

g.
_____

h.
_____
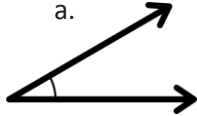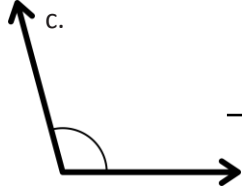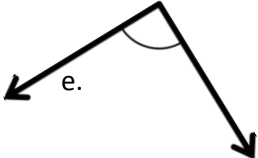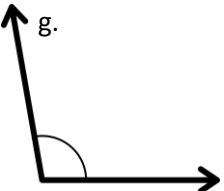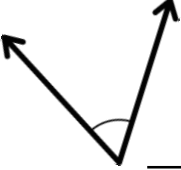
i.
_____

2. Use your right angle template to identify acute, obtuse, and right angles within Picasso's painting *Factory, Horta de Ebbo*. Trace at least two of each, label with points, and then name them in the table below the painting.

© 2013 Estate of Pablo Picasso / Artists Rights Society (ARS), New York
Photo: Erich Lessing / Art Resource, NY.

Acute angle		
Obtuse angle		
Right angle		

3. Construct each of the following using a straightedge and the right angle template that you created. Explain the characteristics of each by comparing the angle to a right angle. Use the words *greater than*, *less than,* or *equal to* in your explanations.

   a. **Acute angle**

   An acute angle is _____ a right angle.

   b. **Right angle**

   A right angle is _____ a right angle.

   c. **Obtuse angle**

   An obtuse angle is _____ a right angle.

Name _____   Date _____

1. On each object, trace a pair of lines that appear to be perpendicular.
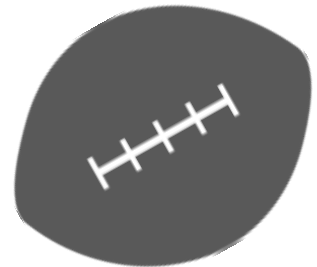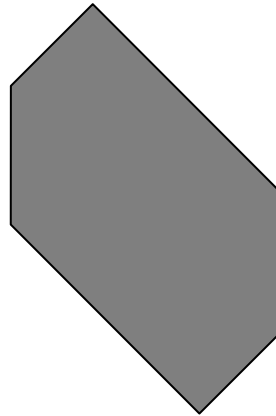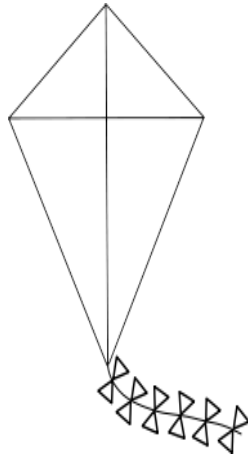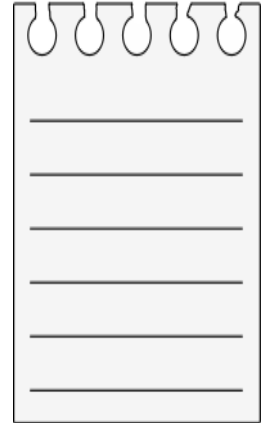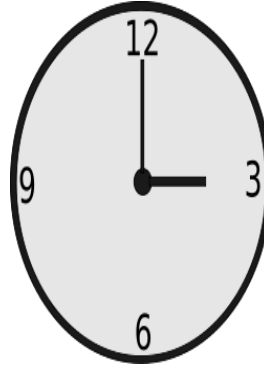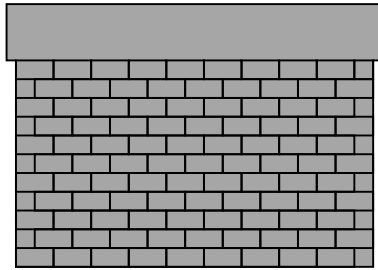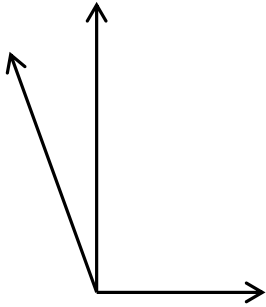
2. How do you know if two lines are perpendicular?

_____

_____

_____

3. In the grids below, use the given segments in each grid to draw a line that is perpendicular using a straightedge.
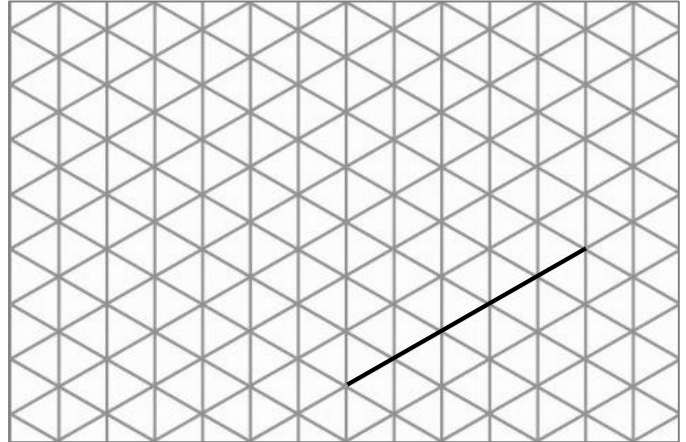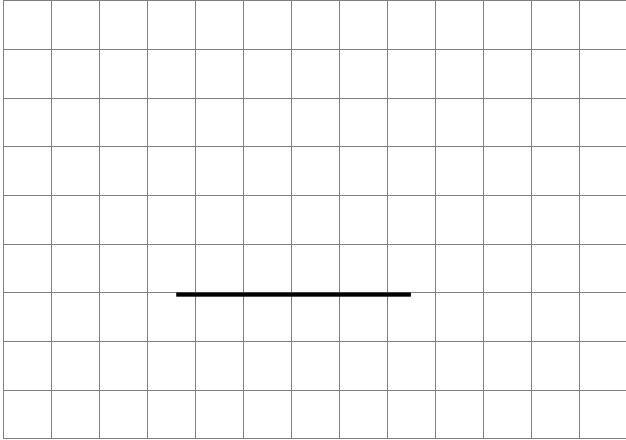
4. Use the right angle template that you created in class to determine which of the following figures have a right angle. Mark a right angle with a small square. Name a pair of perpendicular lines if the shape has right angles. Cross out shapes with no perpendicular lines.

a.
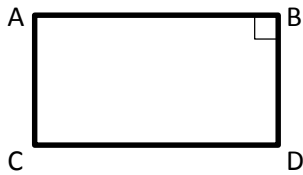
$\overline{AB} \perp \overline{BD}$

b.
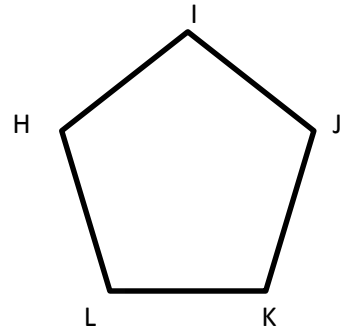
c.
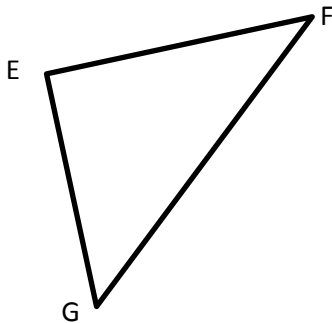
d.
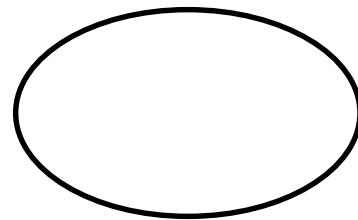
e.
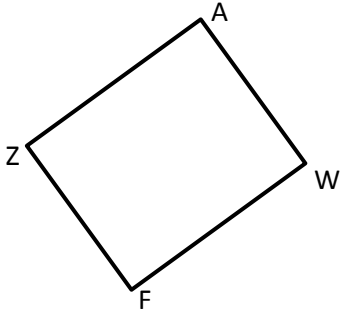
f.
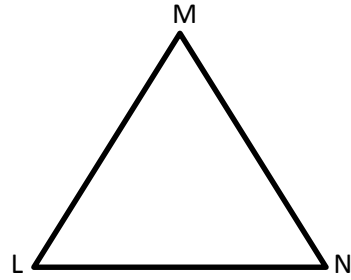
g.
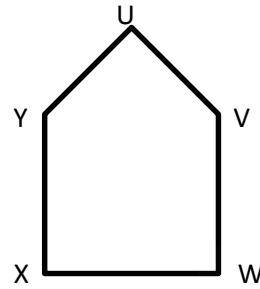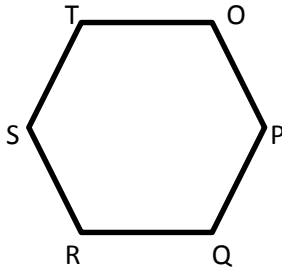
5. Mark each right angle on the following figure with a small square. (Note: A right angle does not have to be inside the figure.)
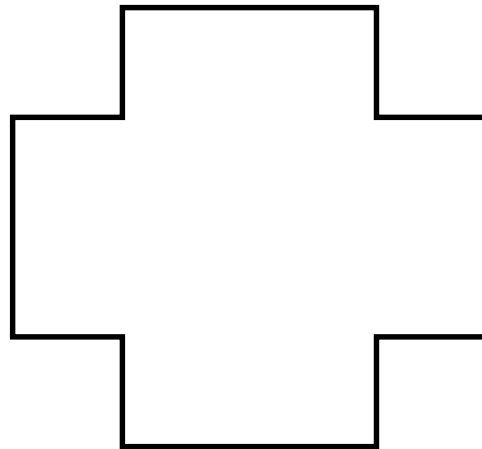
6. True or false? Shapes that have at least one right angle also have at least one pair of perpendicular sides. Explain your thinking.
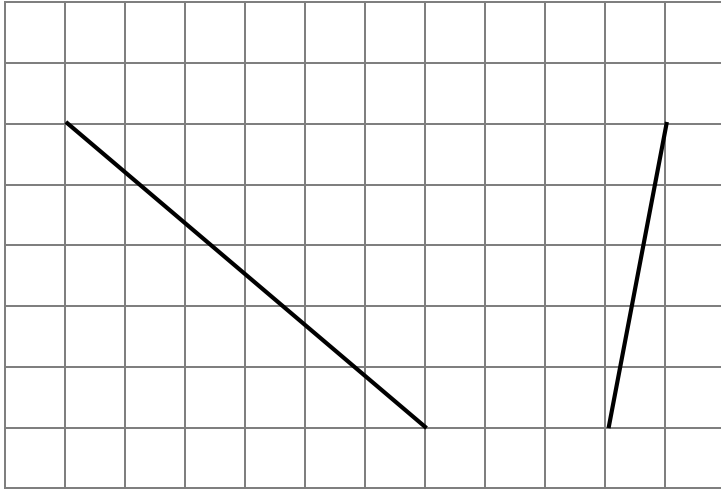
Name _____ Date _____

1. On each object, trace one pair of lines that appear to be parallel.
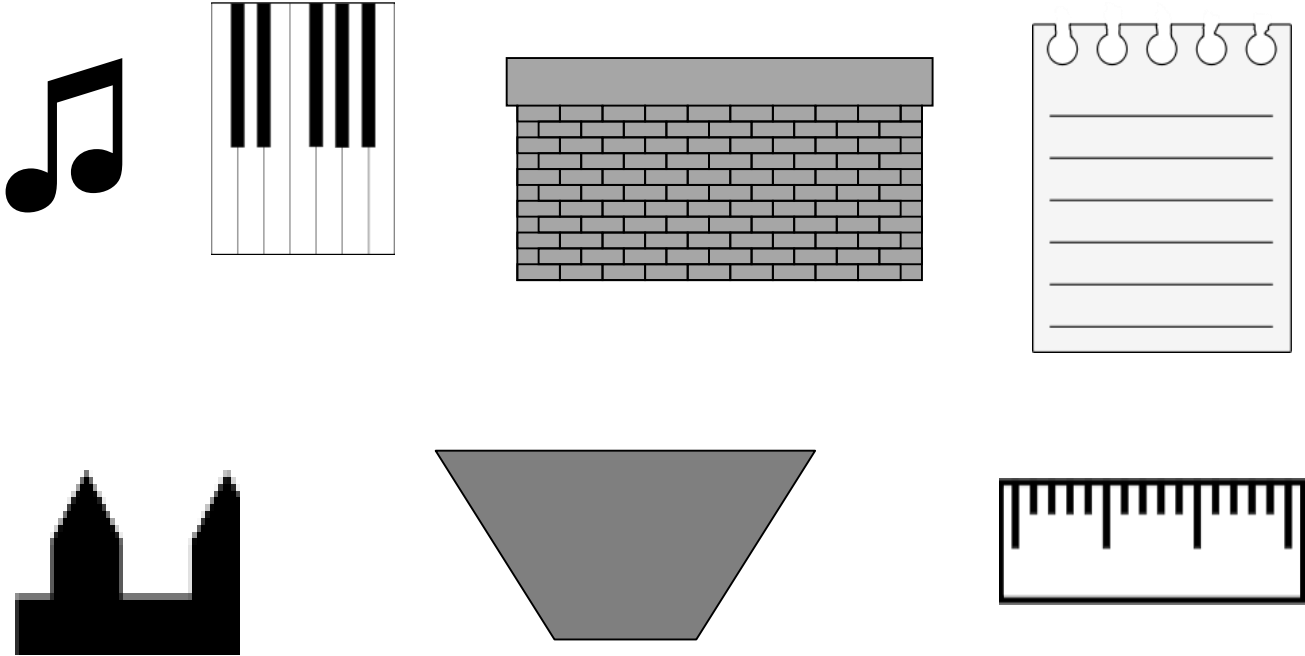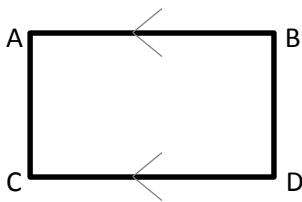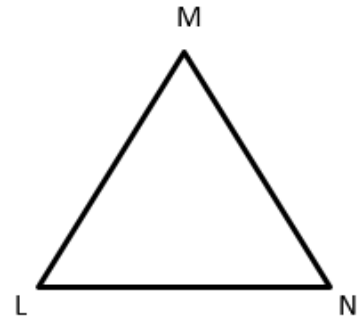

2. How do you know if two lines are parallel?

_____

_____

_____

3. In the grids below, draw a line that is parallel to each segment using a straightedge.
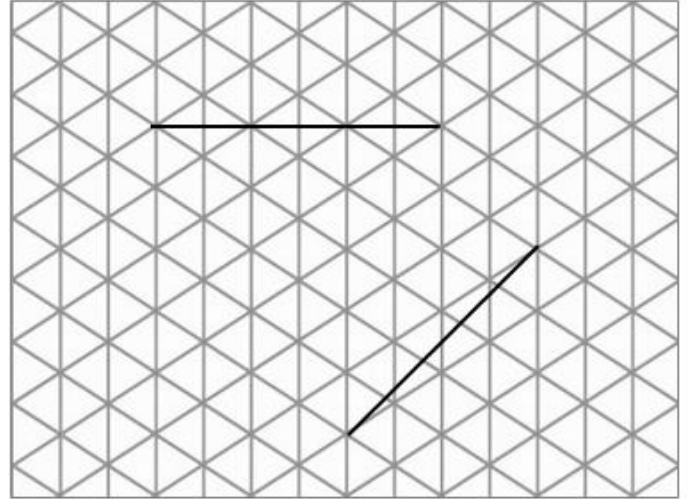
4. Determine which of the following figures have lines that are parallel. Mark a pair of parallel lines with arrowheads, and then identify the parallel lines with a statement. Cross off shapes that do not have parallel lines.
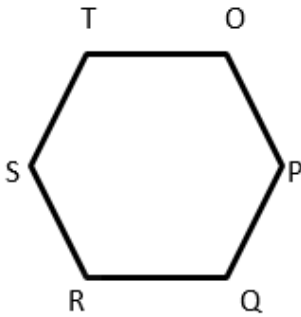
a.

$$\overline{AB} \parallel \overline{CD}$$

b.
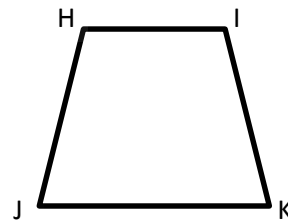
c.
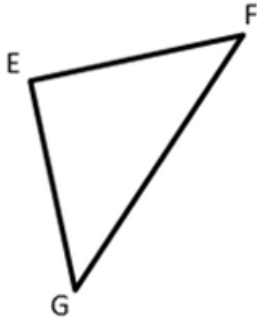
d.
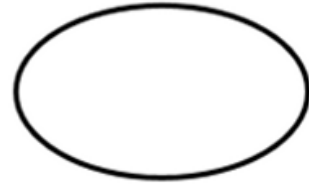
e.
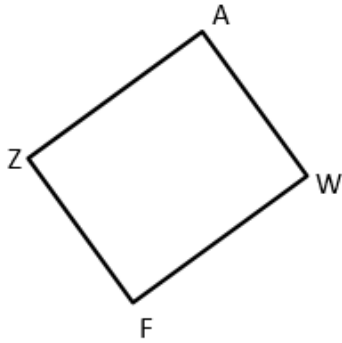
f.

g.

h.
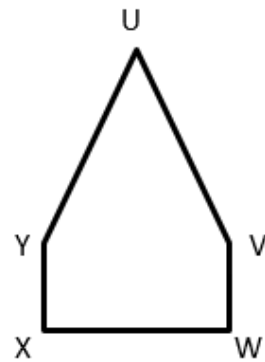
5. Circle the pair of parallel lines.

A ———————————— B

C —————————— D

E ——————————— F

G ——————————— H

Name _____   Date _____

1. Make a list of the measures of the benchmark angles you drew, starting with Set A. Both sets have been started for you.

    a. Set A: 45°, 90°, _____

    b. Set B: 30°, 60°, _____

    _____

2. Circle any angle measures that appear on both lists. What do you notice about them?

    _____

3. List the angle measures from Problem 1 that are acute. Trace each angle with your finger as you say its measurement.

    _____

4. List the angle measures from Problem 1 that are obtuse. Trace each angle with your finger as you say its measurement.

    _____

5. We found out today that $1°$ is $\frac{1}{360}$ of a whole turn. It is 1 out of $360°$. That means a $2°$ angle is $\frac{2}{360}$ of a whole turn. What fraction of a whole turn is each of the benchmark angles you listed in Problem 1?

Set A: _____

_____

Set B: _____

_____

6. How many $45°$ angles does it take to make a full turn? _____

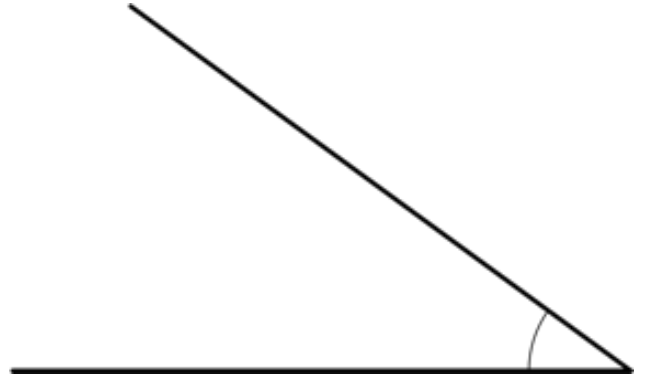7. How many $30°$ angles does it take to make a full turn? _____
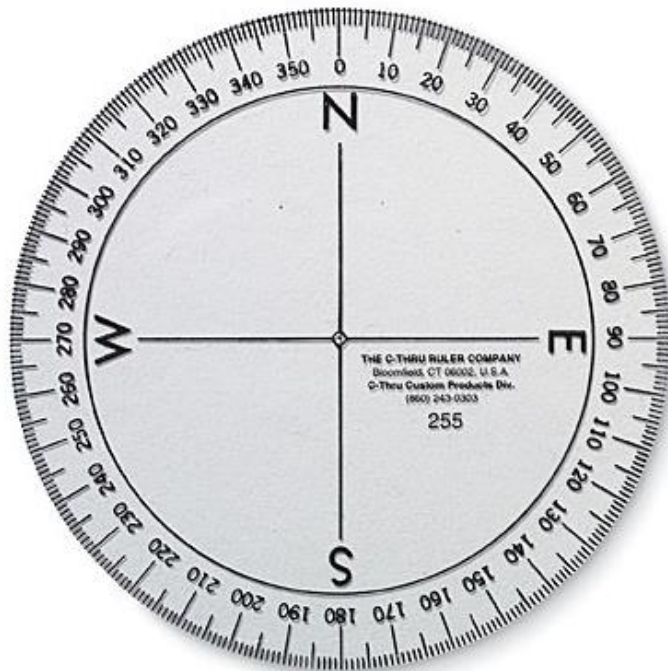
Name _____   Date _____

1. Use a protractor to measure the angles. Record the measurements in degrees.
    Round to the nearest 5 degrees.
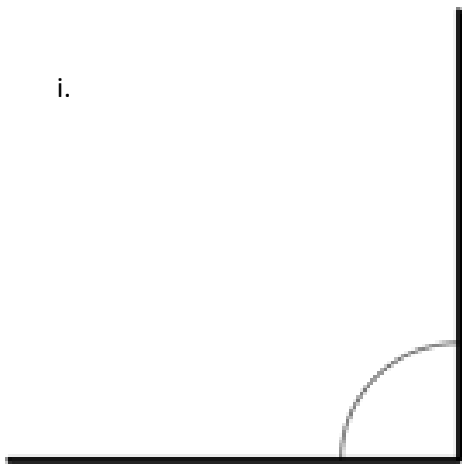
    a.
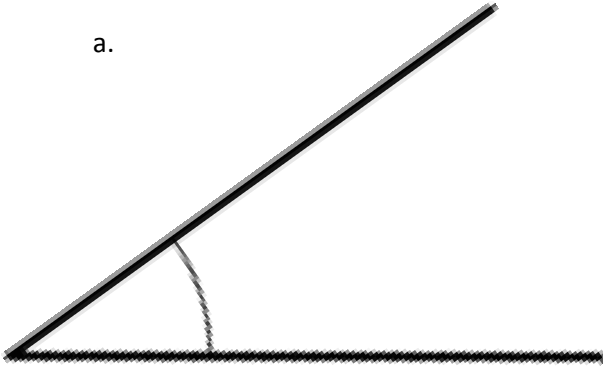
    b.

    c.
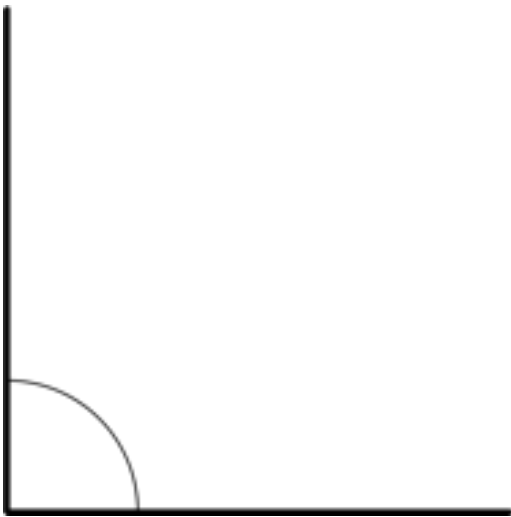
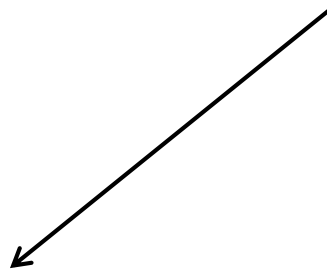   d.
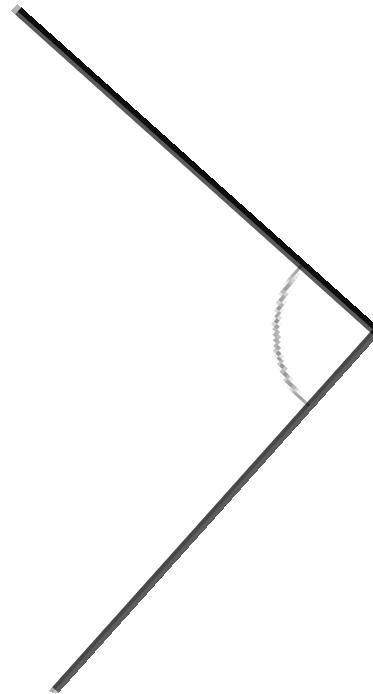
e.
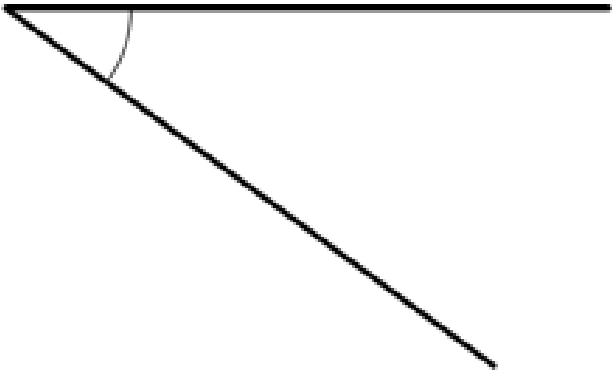
f.
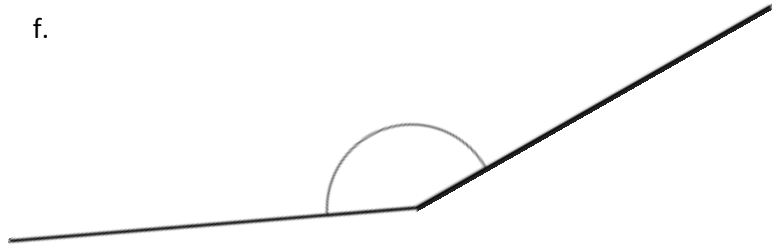
g.
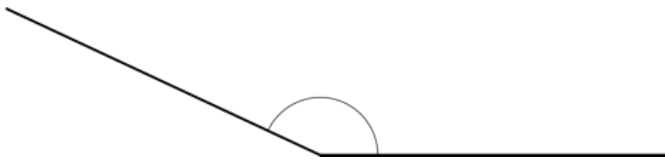
h.
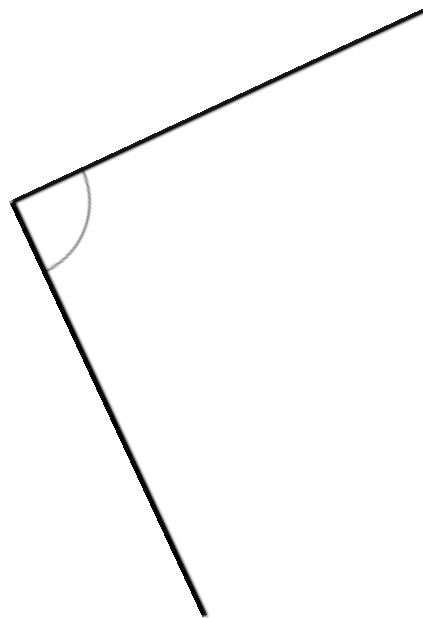
i.

j.

Name _____   Date _____

Construct angles that measure the given number of degrees. Draw an arc to indicate the angle that was measured.

1. 30°

2. 65°

3. 115°

4. 135°

5. **5°**

6. **175°**

7. **25°**
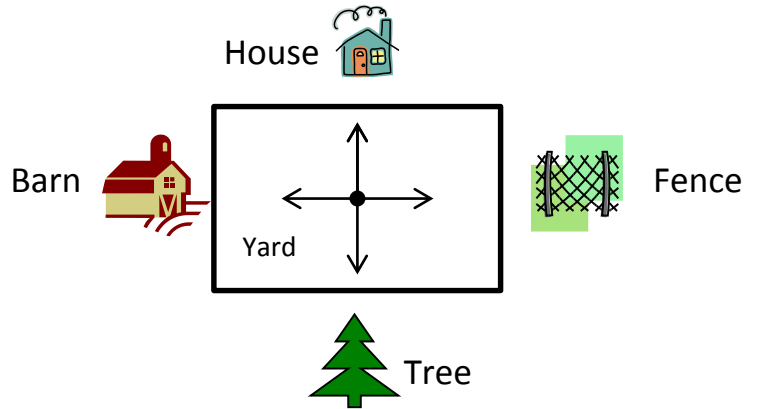
8. **115°**

Name _____   Date _____

1. Joe, Steve, and Bob stood in the middle of the yard and faced the house. Joe turned 90° to the right. Steve turned 180° to the right. Bob turned 270° to the right. Name the object that each boy is now facing.
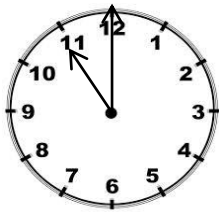
   Joe _____

   Steve _____

   Bob _____

   House

   Barn   Fence

   Yard

   Tree

2. Monica looked at the clock at the beginning of class and at the end of class. How many degrees did the minute hand turn from the beginning of class until the end?
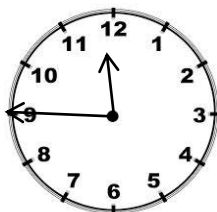
   Beginning   End   _____

3. The skater jumped into the air and did a 360. What does that mean?

   _____

   _____

4. Mr. Martin started to drive from his house to the store without his wallet. He did a 180. Where is he heading now?_____

House   Store
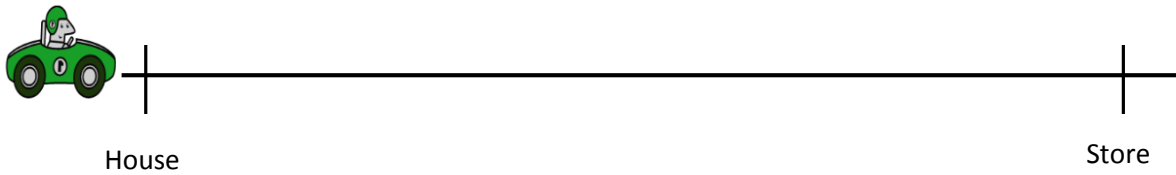
5. John turned the knob of the shower 270° to the right. Draw a picture showing the position of the knob after he turned it.

Before   After
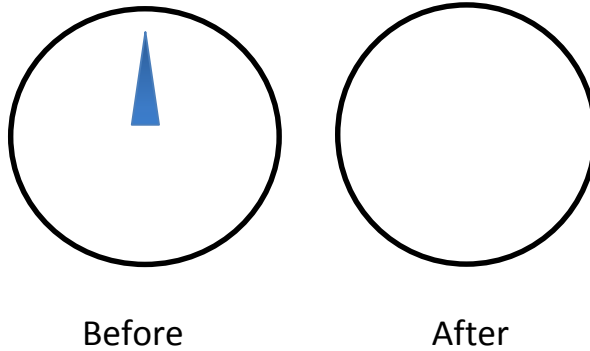
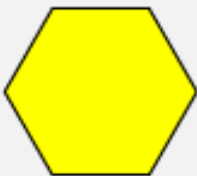6. Barb used her scissors to cut out a coupon from the newspaper. How many quarter-turns does she need to turn the paper in order to stay on the lines?
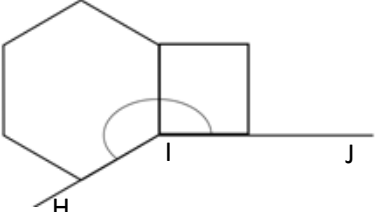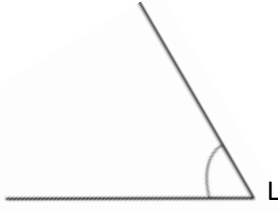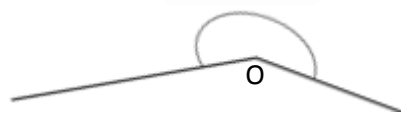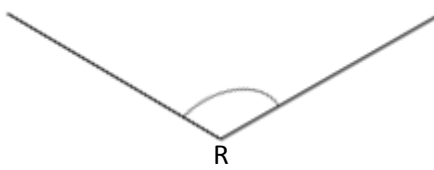

SAVE

$1.00
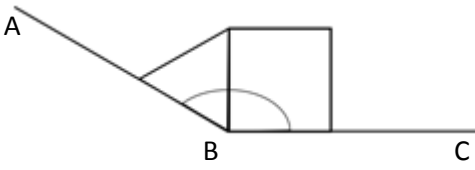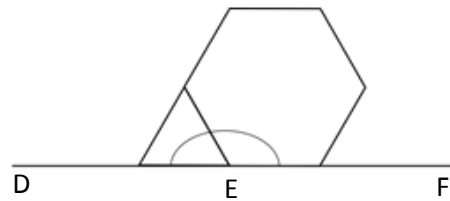
Name _____   Date _____

1. Complete the table.

Pattern block	Total number that fit around 1 vertex	One interior angle measures…	Sum of the angles around a vertex
a.		$360° ÷$ ____ = ____	____ + ____ + ____ + ____ = 360°
b.			
c.			____ + ____ + ____ = 360°
d. (Acute angle)			
e. (Obtuse angle)			
f. (Acute angle)			

2. Find the measurements of the angles indicated by the arcs.

Pattern blocks	Angle measure	Addition sentence
a.		
b.		
c.		

3. Use two or more pattern blocks to figure out the measurements of the angles indicated by the arcs.
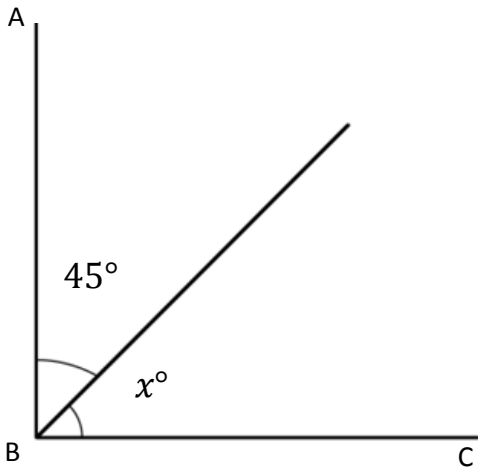
	Angle measure	Addition sentence
a.		
b.		
c.		

Name _____   Date _____

Write an equation and solve for the measure of $\angle x$.

1. $\angle CBA$ is a right angle.

A

45°

$x°$

B   C

$45° +$ _____ $= 90$

$x° =$ _____

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

E

$x°$

20°

F   G

_____ $+$ _____ $=$ _____

$x° =$ _____
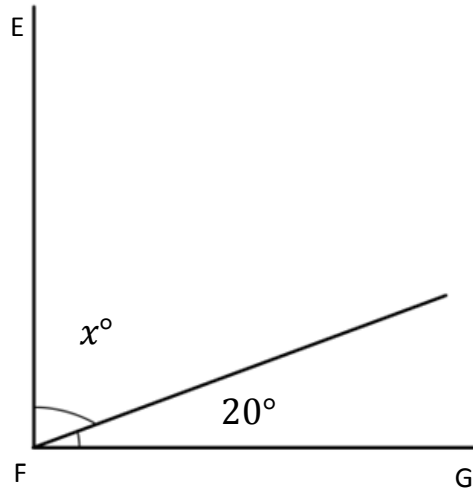
3. $\angle IJK$ is a straight angle.

$x°$ 70°

I   J   K

_____ $+ 70° = 180°$

$x° =$ _____
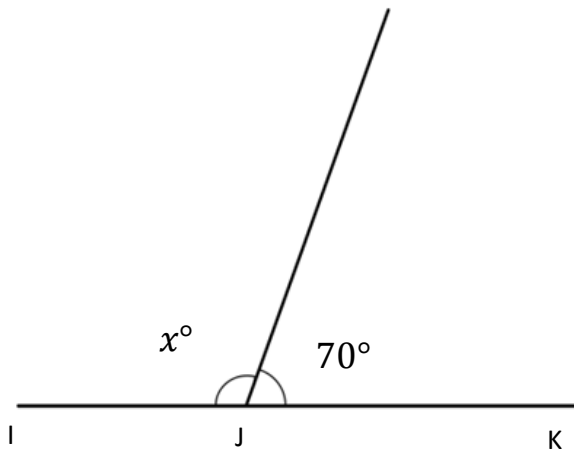
4. $\angle MNO$ is a straight angle.

$x°$
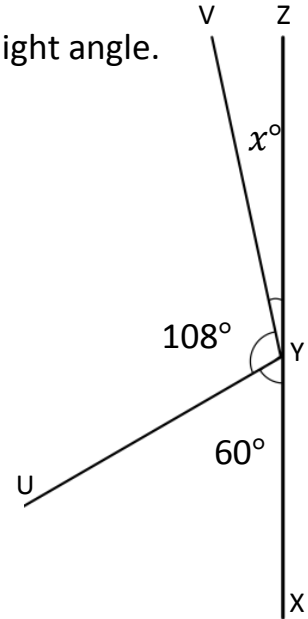
O

83°

N

M

_____ $+$ _____ $= 180°$

$x° =$ _____
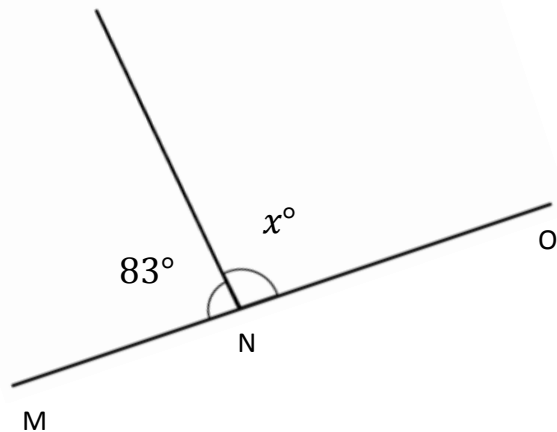
Solve for the unknown angle measurements. Write an equation to solve.

1. Solve for the measurement of ∠TRU.   6. Solve for the measurement of ∠ZYV.

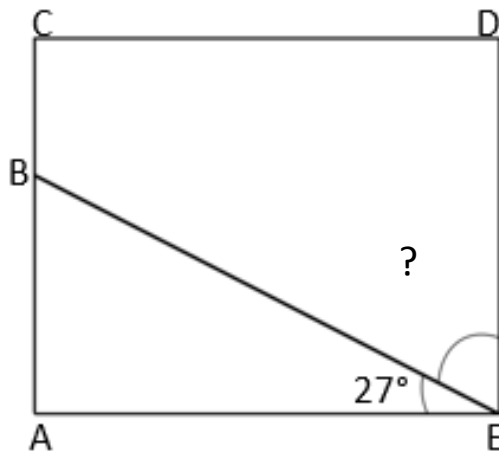∠QRS is a straight angle.   ∠XYZ is a straight angle.
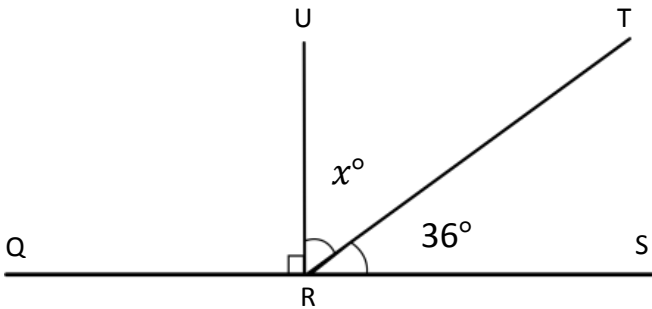
7. In the following figure, $ACDE$ is a rectangle. Without using a protractor,
    determine the measurement of ∠DEB. Write an equation that could be used to
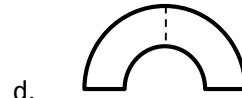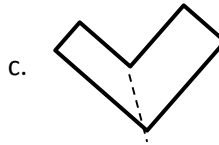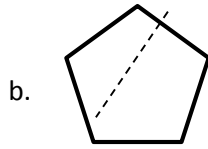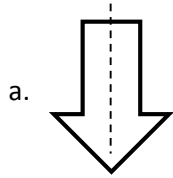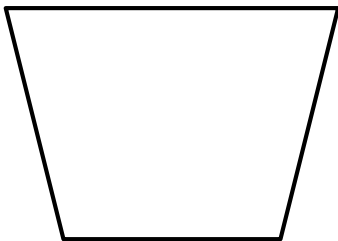   solve the problem.

Name _____   Date _____
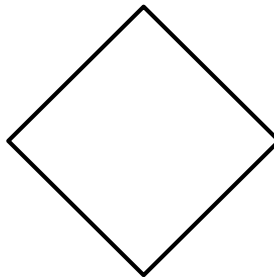
1. Circle the figures that have a correct line of symmetry drawn.

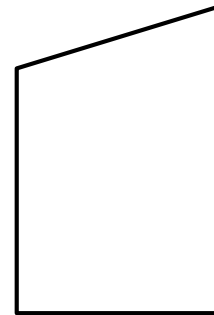   a.   b.   c.   d.

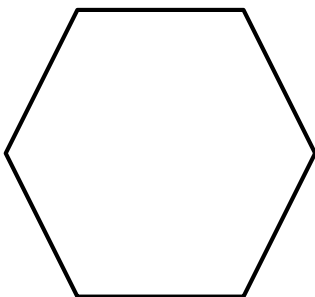2. Draw all lines of symmetry for the following figures. Write the number of lines of symmetry for each figure.
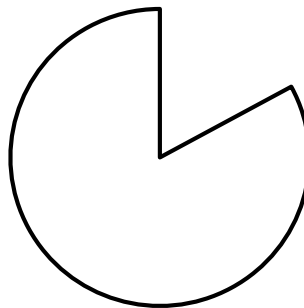
    a. _____   b. _____   c. _____
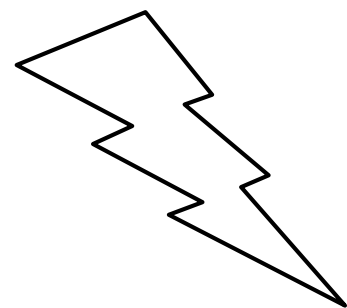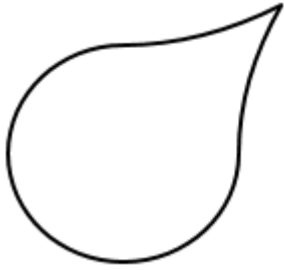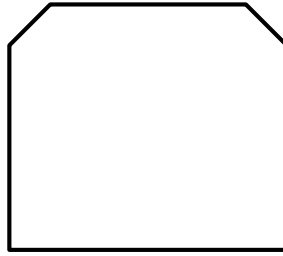
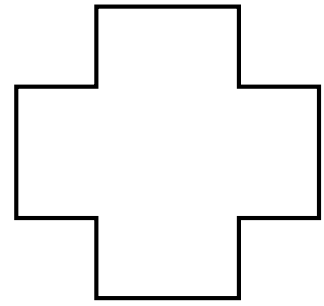   d. _____   e. _____   f. _____
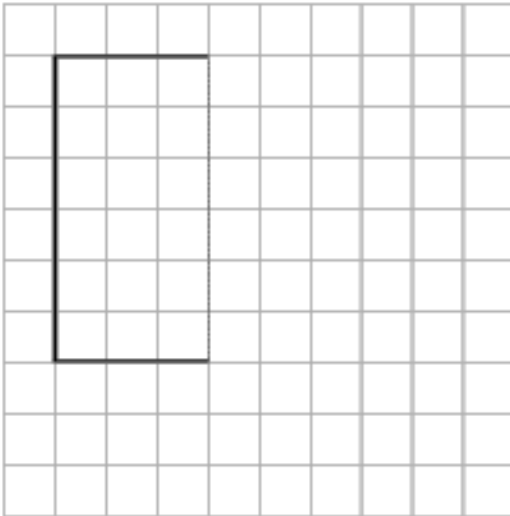
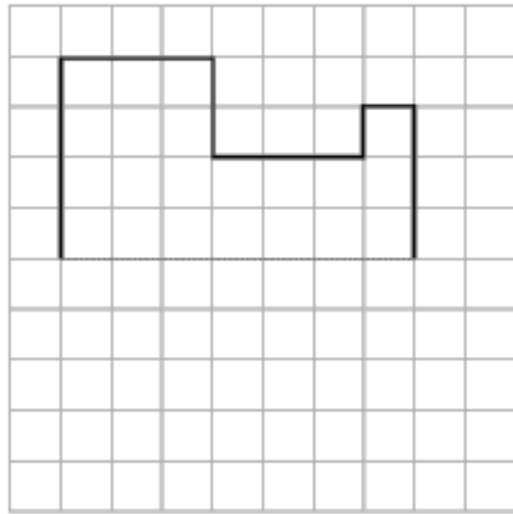g. _____   h. _____   i. _____

3. Half of each figure below has been drawn. Complete each figure.

4.

a)

b)

c)
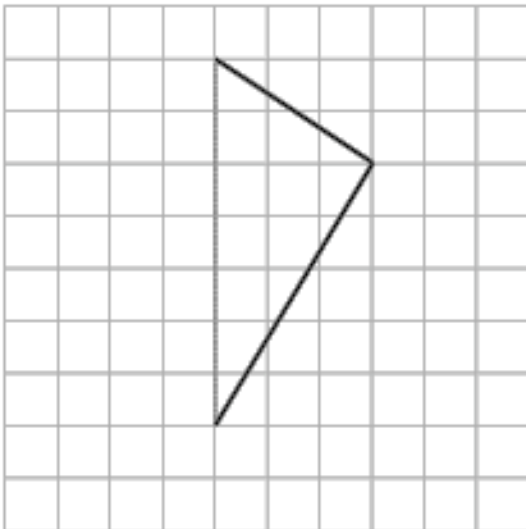
d)
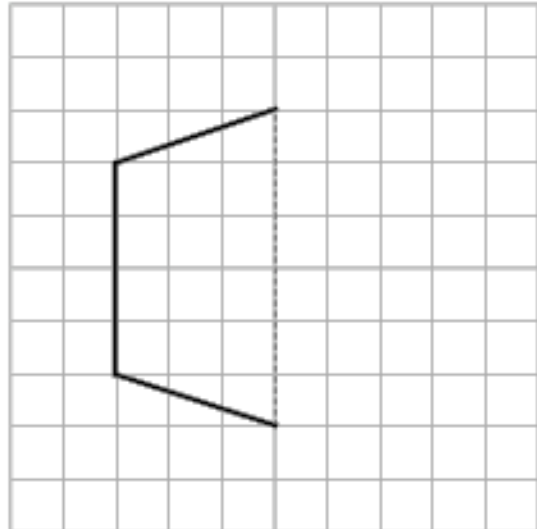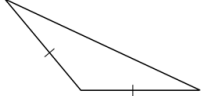
Name _____   Date _____

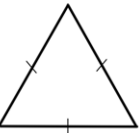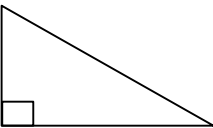1. Classify each triangle by its side lengths and angle measurements. Circle the correct names.

|	Classify Using Side Lengths	Classify Using Angle Measurements
a.	Equilateral Isosceles Scalene	Acute Right Obtuse
b.	Equilateral Isosceles Scalene	Acute Right Obtuse
c.	Equilateral Isosceles Scalene	Acute Right Obtuse
d.	Equilateral Isosceles Scalene	Acute Right Obtuse

2. ΔABC has one line of symmetry as shown. What does this tell you about the measures of $\angle A$ and $\angle C$?
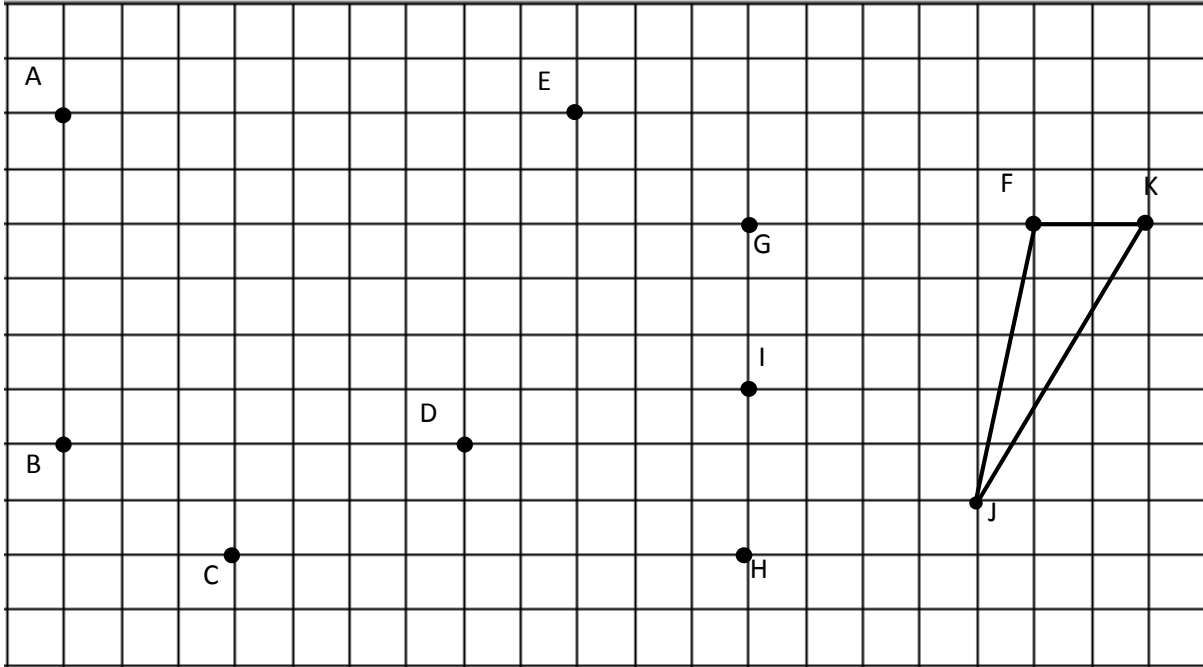
$$\angle A \ \rule{2cm}{0.4pt} \ \angle C$$
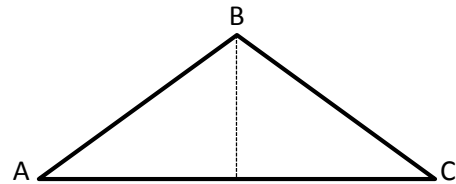
3. ΔDEF has three lines of symmetry as shown. ΔDEF has a perimeter of 30 cm. Label the side lengths.
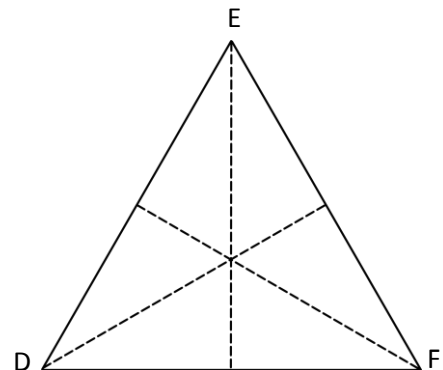
4. Use a ruler to connect points to form two other triangles. Use each point only once. None of the triangles may overlap. Some points will not be used. Name and classify the triangles below. The first one has been done for you.

Name the Triangles Using Vertices	Classify by Side Length	Classify by Angle Measurement
ΔFJK	Scalene	Obtuse

6. Can a triangle have two right angles? Use a drawing to explain.