

MSP

Grade 4 Module 4

Lesson Refreshers

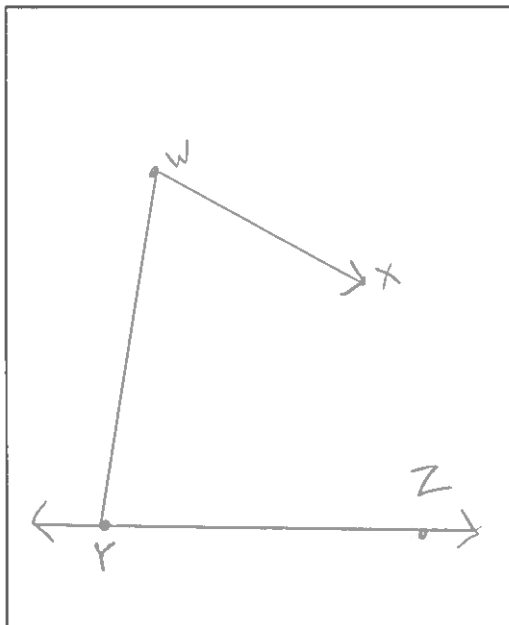
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Homework Starters

Name _____

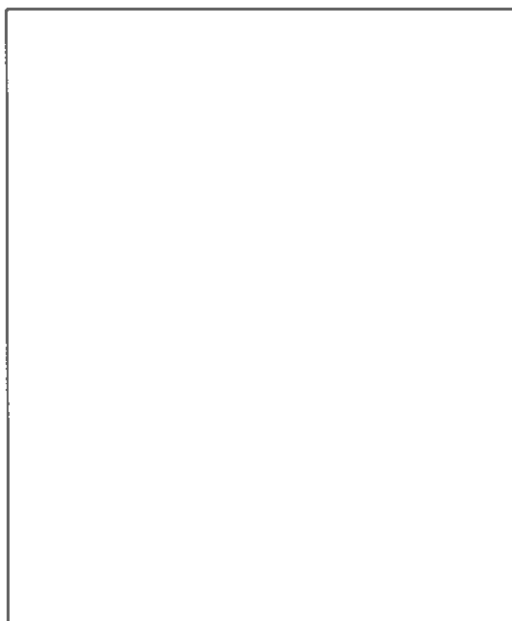
Date _____

1. Use the following directions to draw a figure in the box to the right.
 - a. Draw two points: W and X .
 - b. Use a straightedge to draw \overline{WX} .
 - c. Draw a new point that is not on \overline{WX} . Label it Y .
 - d. Draw \overline{WY} .
 - e. Draw a point not on \overline{WX} or \overline{WY} . Call it Z .
 - f. Construct \overleftrightarrow{YZ} .
 - g. Use the points you've already labeled to name one angle. _____



- ① Pick any 2 places in the box for points W and X
- ② Connect the points with a straight edge. At point X , draw an arrow to show its a ray.
- ③ Pick another stop in the box for point Y .
- ④ Connect w and Y

2. Use the following directions to draw a figure in the box to the right.
 - a. Draw two points: W and X .
 - b. Use a straightedge to draw \overline{WX} .
 - c. Draw a new point that is not on \overline{WX} . Label it Y .
 - d. Draw \overline{WY} .
 - e. Draw a new point that is not on \overline{WY} or on the line containing \overline{WX} . Label it Z .
 - f. Construct \overleftrightarrow{WZ} .
 - g. Identify $\angle ZWX$ by drawing an arc to indicate the position of the angle.
 - h. Identify another angle by referencing points that you have already drawn. _____



- ⑤ Find another spot in the box for Z .
- ⑥ Connect Y and Z with extra length after each point.
- ⑦ Put arrows after the points.
- ⑧ Choose any 3 points

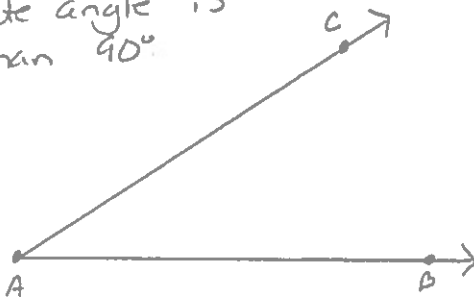
that are connected for the angle, ie $\angle ZYW$

The right angle template is the square corner of a paper.

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

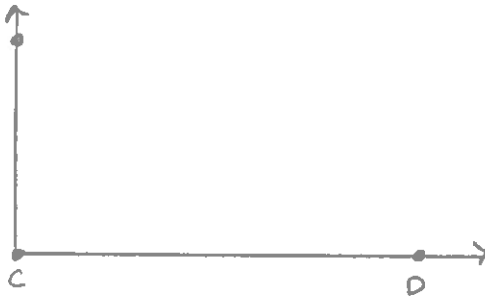
An acute angle is less than 90° .



- Draw ray \overrightarrow{AB}
- Draw ray \overrightarrow{AC}
- Use your right angle template to make sure you have drawn an angle less than 90°

b. Right angle

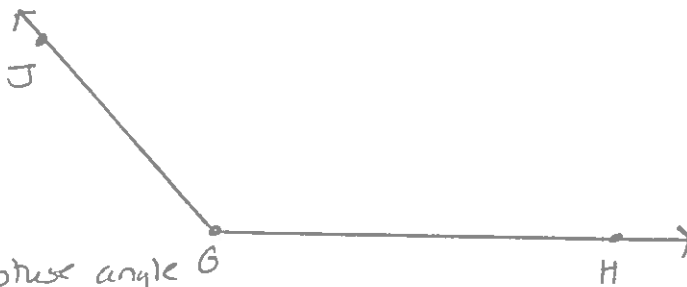
A right angle is equal to 90° .



- Draw ray \overrightarrow{CD}
- Draw ray \overrightarrow{CF}
- Use your right angle template to make sure the angle you have drawn is a right angle.
- The template should fit exactly into angle C.

c. Obtuse angle

An obtuse angle is greater than 90° .



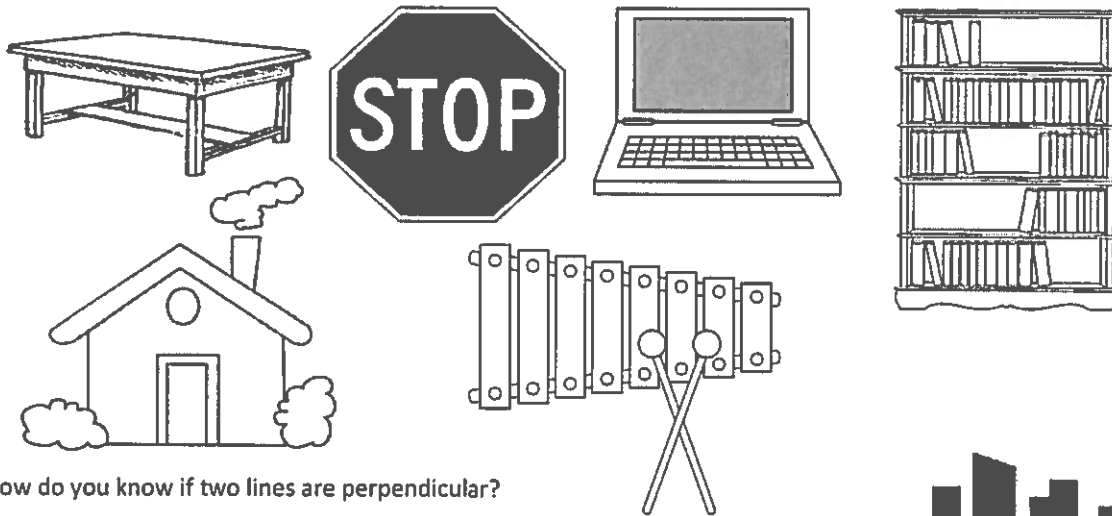
- Draw ray \overrightarrow{GH}
- Draw ray \overrightarrow{GJ}
- Use your right angle template to make sure you have drawn an angle greater than 90° .

J. Benton

Name _____

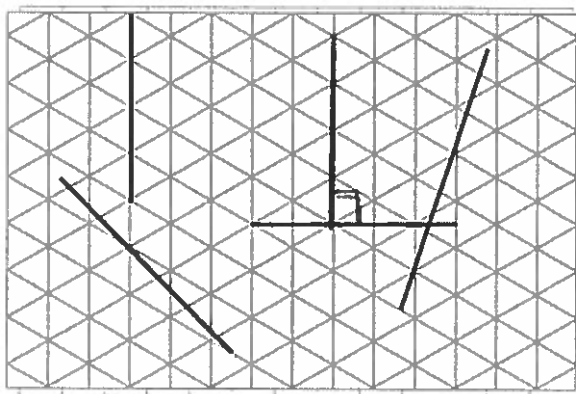
Date _____

1. On each object, trace at least one pair of lines that appear to be perpendicular.



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

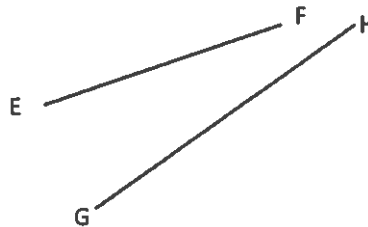
3. In the square and triangular grids below, use the given segments in each grid to draw a segment that is perpendicular. Use a straightedge.



- ① I found a horizontal line.
- ② Using the grid and a straight edge, I drew a horizontal line.
- ③ I drew the box to show that the lines are perpendicular.

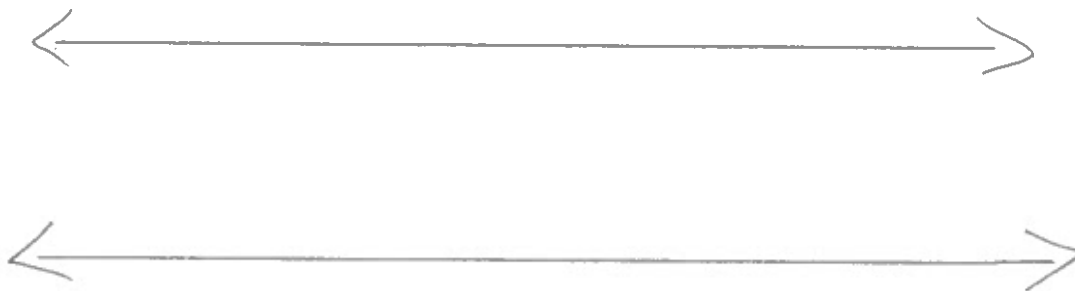
5. True or false? All shapes with a right angle have sides that are parallel. Explain your thinking.

6. Explain why \overline{AB} and \overline{CD} are parallel, but \overline{EF} and \overline{GH} are not.



\overline{AB} and \overline{CD} are two lines that run in the same direction and same distance apart and never intersect. \overline{EF} and \overline{GH} will intersect which means they are not parallel.

7. Draw a line using your straightedge. Now, use your right angle template and straightedge to construct a line parallel to the first line you drew.



Objective: To use a circular protractor to understand a 1-degree angle as $\frac{1}{360}$ of a turn. Explore benchmark angles using the protractor.

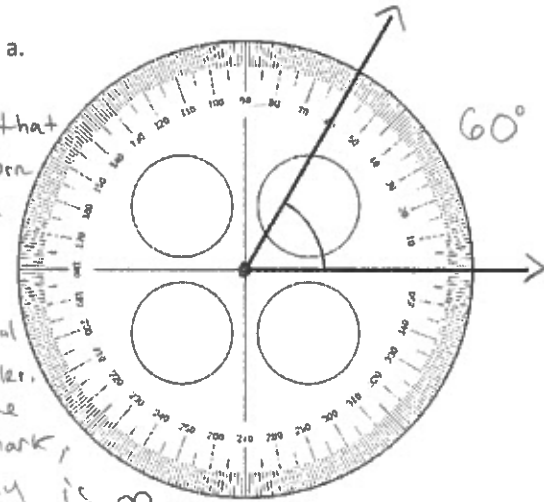
4.NBT.6: To divide using the Standard Algorithm

4.G.1 - Physiometry and identify two-dimensional figures.

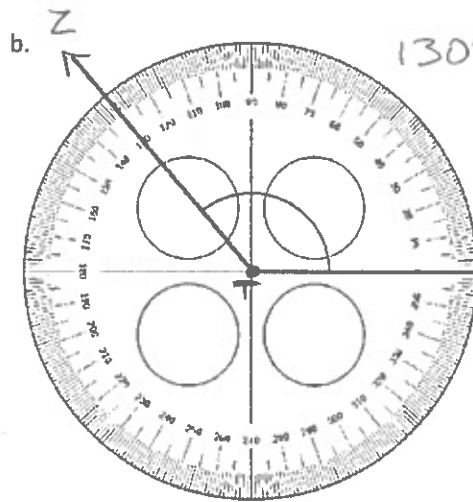
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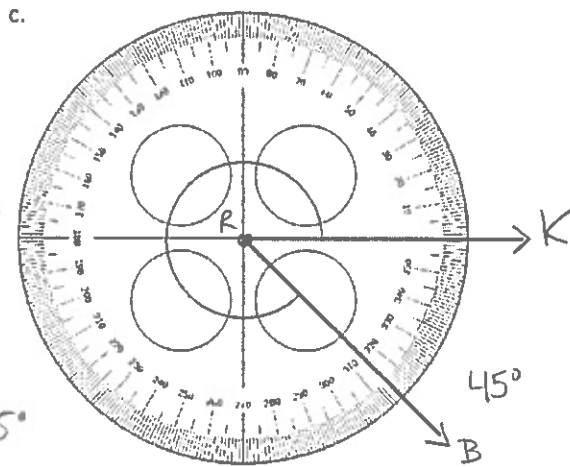
1. Identify the measures of the following angles.



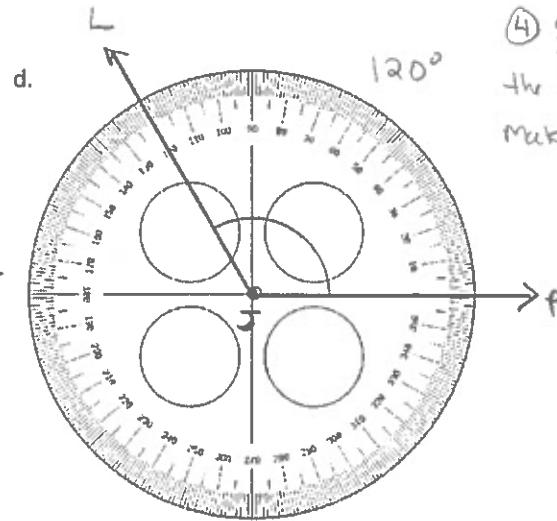
① I know that one quarter turn ($\frac{1}{4}$) of a circle is 90° . I counted 30° from the vertical line in the center. This puts me on the 60° mark, since my ray is on the 180° or straight angle line.



② I labeled the rays to make it more specific and easier to explain: \vec{TV} is on the 180° line, \vec{TZ} goes passed the 90° mark by 40° making $\angle ZTV = 130^\circ$.



③ $\angle KRP$ is exactly $\frac{1}{2}$ of a $\frac{1}{4}$ turn or 90° . This means $90 \div 2$ or 45° . $\angle KRP = 45^\circ$



④ \vec{JP} goes passed the 90° mark by 30° making $\angle PJL = 120^\circ$

2. If you didn't have a protractor, how could you construct one? Use words, pictures, or numbers to explain in the space below.

Name _____

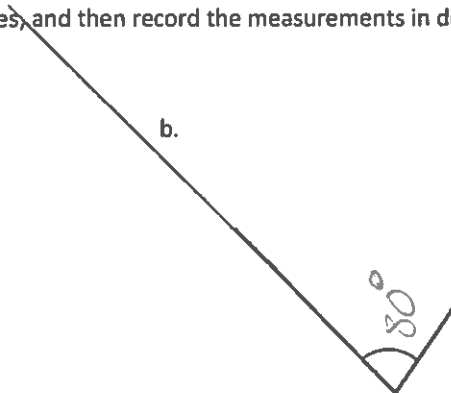
Date _____

1. Use a protractor to measure the angles, and then record the measurements in degrees.

a.



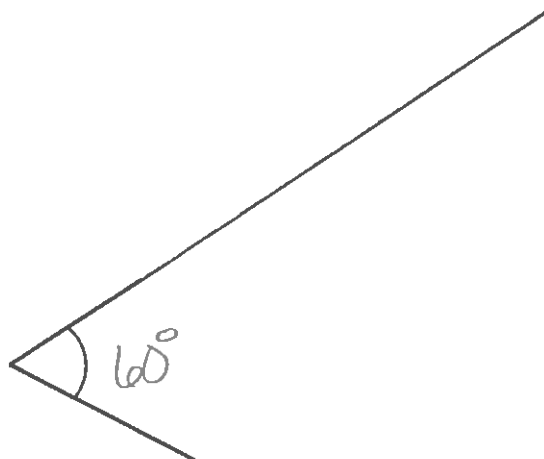
b.



c.



d.



1) make sure your 0 mark is right on the vertex and be sure the zero line is perfectly lined up with one of the line segments.
(The opposite of the 90° line)

2) with a straight edge extend the 2nd line segment. Then measure the angle by where the 2nd line segment ends up on the protractor.

3) Be sure to look at numbers less than 90° before the 90° line and the numbers greater than 90° after the 90° line.

D. Calabrese

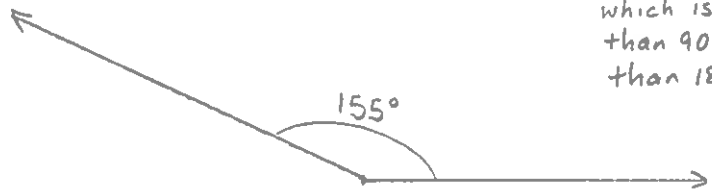
5. 108°

6. 72°

7. 25°

8. 155°

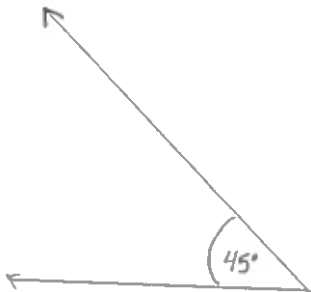
* Begin by drawing a ray \rightarrow
 * Remember 155° is an obtuse angle which is greater than 90° but less than 180°



* Find 155° , and make a dot at the angle
 * Connect the endpoint of the ray and the dot that was made.
 * This will form the angle

9. 45°

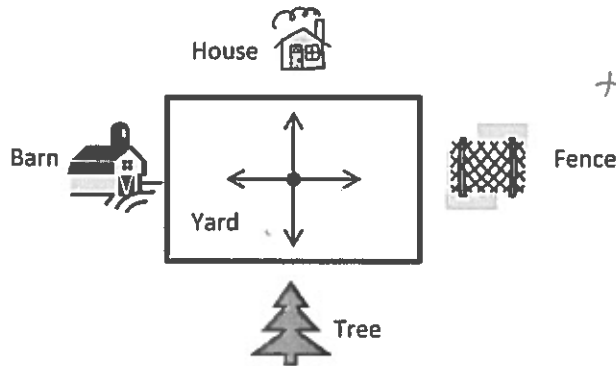
10. 135°



Name _____ Date _____

1. Jill, Shyan, and Barb stood in the middle of the yard and faced the barn. Jill turned 90° to the right. Shyan turned 180° to the left. Barb turned 270° to the left. Name the object that each girl is now facing.

Jill house
 Shyan fence
 Barb house



① There are four quarter turns to make a circle.
 first quarter turn is 90°
 second quarter turn (also a straight line) is 180°
 third quarter turn is 270°
 and the fourth quarter turn completes 360° circle.

2. Allison 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

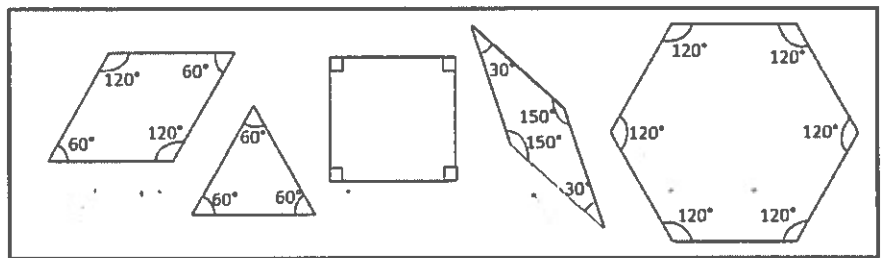
3. The snowboarder went off a jump and did a 180° . In which direction was the snowboarder facing when he landed? How do you know?

4. As she drove down the icy road, Mrs. Campbell slammed on her brakes. Her car did a 360° . Explain what happened to Mrs. Campbell's car.

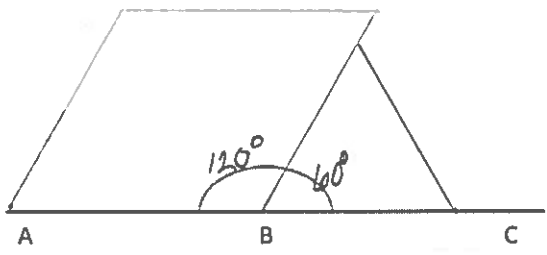
Name _____

Date _____

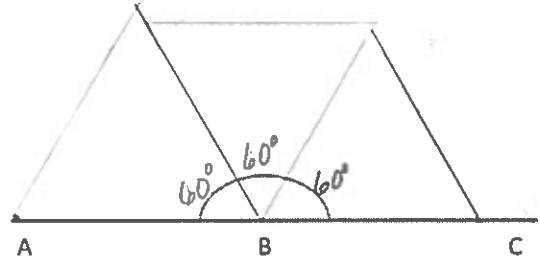
Sketch two different ways to compose the given angles using two or more pattern blocks. Write an addition sentence to show how you composed the given angle.



1. Points A, B, and C form a straight line.

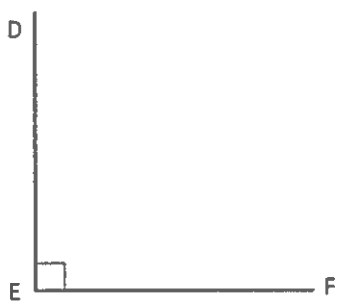


$180^\circ = 120^\circ + 60^\circ$

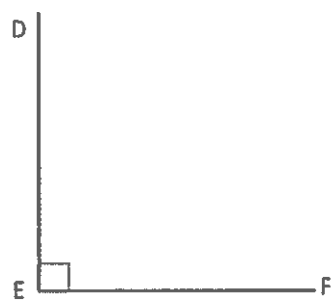


$180^\circ = 60^\circ + 60^\circ + 60^\circ$

2. $\angle DEF = 90^\circ$



$90^\circ =$ _____

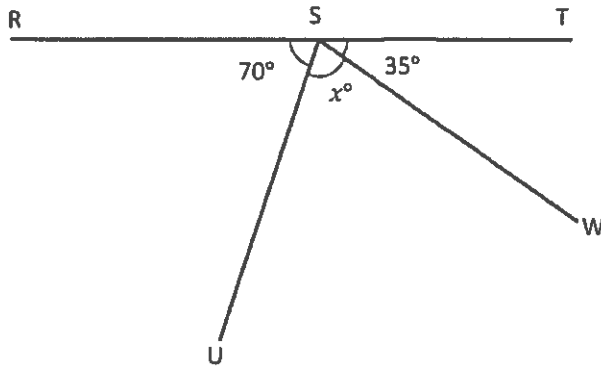


$90^\circ =$ _____

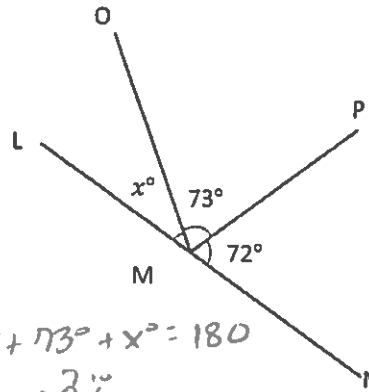
Barnes

Write an equation, and solve for the unknown angle measurements.

5. Solve for the measurement of $\angle USW$.
 $\angle RST$ is a straight angle.



6. Solve for the measurement of $\angle OML$.
 $\angle LMN$ is a straight angle.

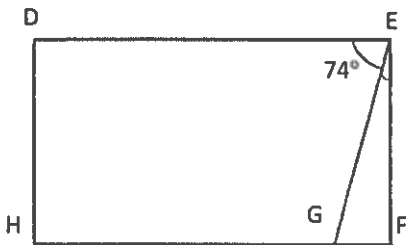


$$72^\circ + 73^\circ + x^\circ = 180$$

$$\begin{array}{r} 72 \\ +73 \\ \hline 155 \end{array} \quad \begin{array}{r} 180 \\ -155 \\ \hline 25 \end{array} \quad \angle x^\circ = 25^\circ$$

• $\angle x^\circ$ is what to solve for
 • Line LMN makes a straight angle which is 180°
 • So:
 $72^\circ + 73^\circ + x^\circ$ must equal 180°
 • Use addition or subtraction to solve for x°

7. In the following figure, $DEFH$ is a rectangle. Without using a protractor, determine the measurement of $\angle GEF$. Write an equation that could be used to solve the problem.

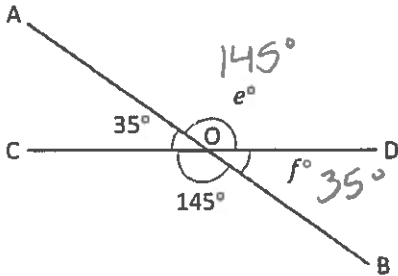


8. Complete the following directions in the space to the right.
- Draw 2 points: Q and R . Using a straightedge, draw \overline{QR} .
 - Plot a point S somewhere between points Q and R .
 - Plot a point T , which is not on \overline{QR} .
 - Draw \overline{TS} .
 - Find the measure of $\angle QST$ and $\angle RST$.
 - Write an equation to show that the angles add to the measure of a straight angle.

J. Benton

Write an equation, and solve for the unknown angles numerically.

5. O is the intersection of \overline{AB} and \overline{CD} .
 $\angle COB$ is 145° , and $\angle AOC$ is 35° .



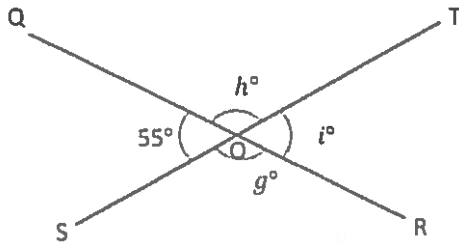
$e^\circ = 145^\circ$ $f^\circ = 35^\circ$

① $35^\circ + e^\circ = 180^\circ$
 $\begin{array}{r} 180^\circ \\ - 35^\circ \\ \hline 145 \end{array}$ $\angle e = 145^\circ$

② $145^\circ + f^\circ = 180^\circ$
 $\begin{array}{r} 180^\circ \\ - 145^\circ \\ \hline 35 \end{array}$ $\angle f = 35^\circ$

⊙ Line CD forms a 180° straight angle
 ⊙ So $35^\circ + \angle e^\circ = 180^\circ$
 AND
 ⊙ $145^\circ + f^\circ = 180^\circ$
 ⊙ solve for e° and f°

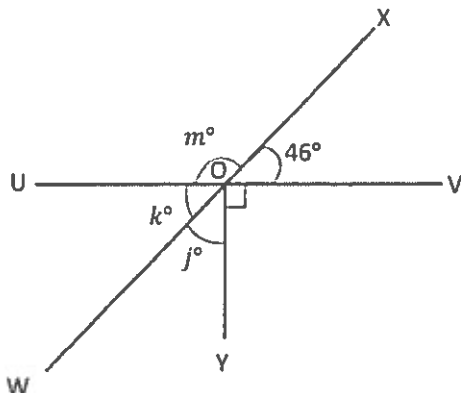
6. O is the intersection of \overline{QR} and \overline{ST} .
 $\angle QOS$ is 55° .



$g^\circ = \underline{\hspace{2cm}}$ $h^\circ = \underline{\hspace{2cm}}$ $i^\circ = \underline{\hspace{2cm}}$

7. O is the intersection of \overline{UV} , \overline{WX} , and \overline{YO} .
 $\angle VOX$ is 46° .

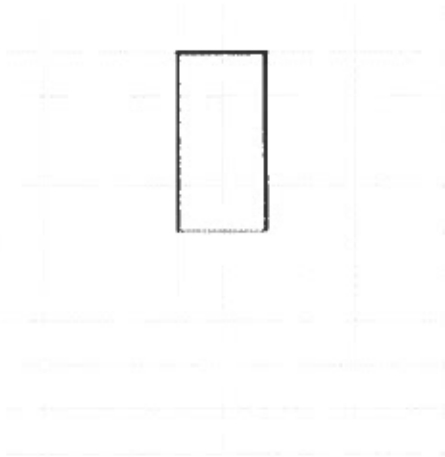
$j^\circ = \underline{\hspace{2cm}}$ $k^\circ = \underline{\hspace{2cm}}$ $m^\circ = \underline{\hspace{2cm}}$



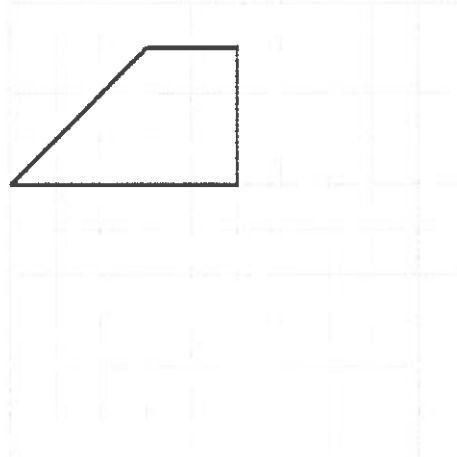
J. Benton

3. Half of each figure below has been drawn. Use the line of symmetry, represented by the dashed line, to complete each figure.

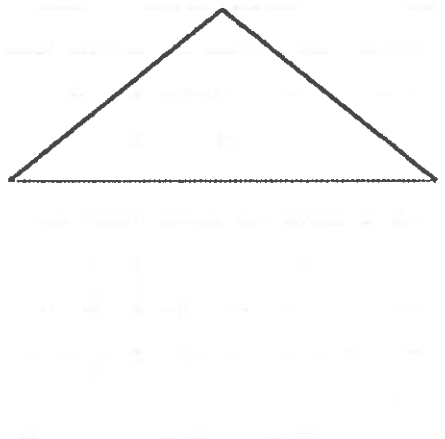
a.



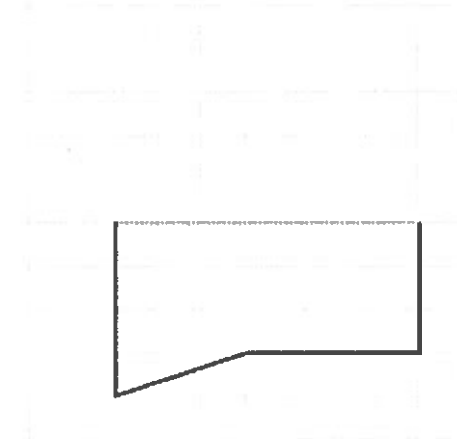
b.



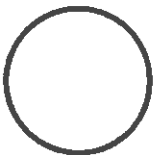
c.



d.



4. Is there another shape that has the same number of lines of symmetry as a circle? Explain.



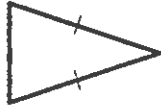
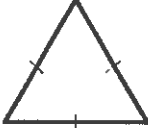


There is no other shape with the same number of lines of symmetry as a circle. A circle has an infinite number of lines of symmetry.

Name _____

Date _____

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

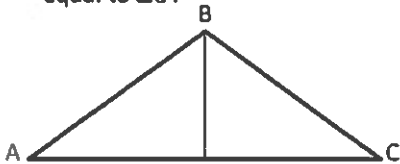
	Classify Using Side Lengths	Classify Using Angle Measurements
a. 	Equilateral Isosceles <u>Scalene</u>	Acute <u>Right</u> Obtuse
b. 	Equilateral Isosceles <u>Scalene</u>	Acute Right <u>Obtuse</u>
c. 	Equilateral <u>Isosceles</u> Scalene	<u>Acute</u> Right Obtuse
d. 	<u>Equilateral</u> Isosceles Scalene	<u>Acute</u> Right Obtuse

• Equilateral triangles have 3 equal sides and angles
 • Isosceles triangles have 2 equal sides.
 • Scalene triangle have "no" sides equal in length.
 • Acute triangles have angles less than 90°

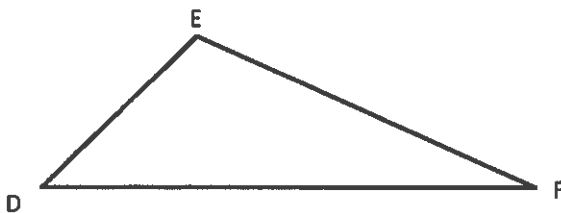
Right triangles have one angle of 90°

Obtuse triangles has an angle greater than 90°

2. a. $\triangle ABC$ has one line of symmetry as shown. Is the measure of $\angle A$ greater than, less than, or equal to $\angle C$?



b. $\triangle DEF$ is scalene. What do you observe about its angles? Explain.



Beginners

Objective: To define and construct triangles from given criteria. Explore Symmetry in triangles.

4.G.3 - Physiology

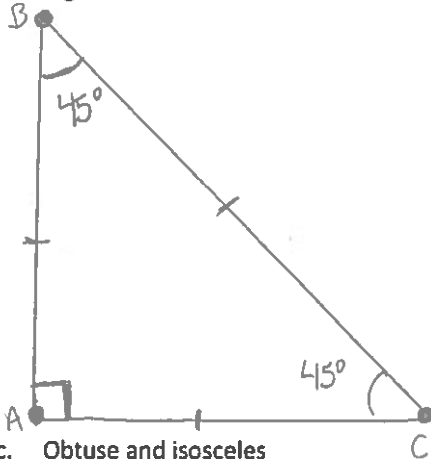
4.G.2 - Classify the triangle

Name _____

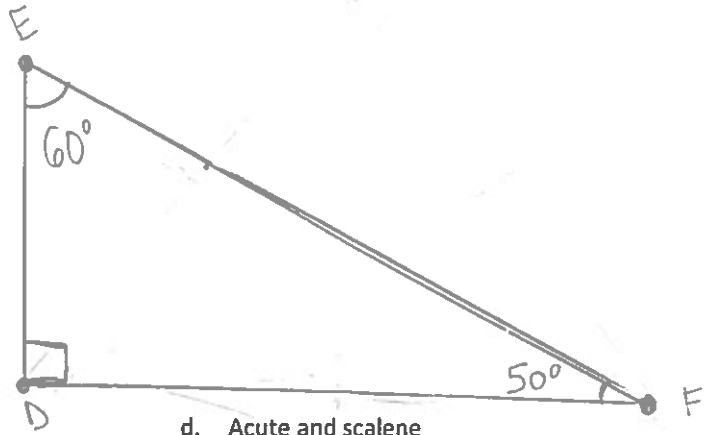
Date _____

1. Draw triangles that fit the following classifications. Use a ruler and protractor. Label the side lengths and angles.

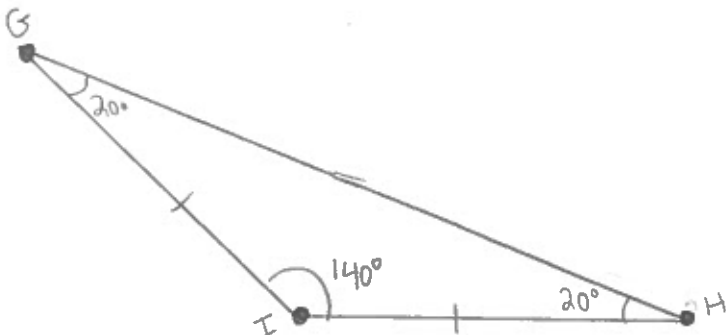
a. Right and isosceles



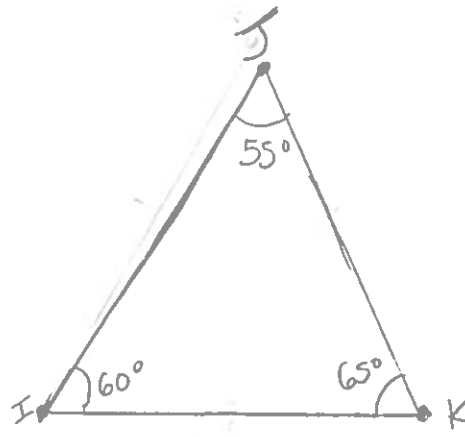
b. Right and scalene



c. Obtuse and isosceles



d. Acute and scalene



2. Draw all possible lines of symmetry in the triangles above. Explain why some of the triangles do not have lines of symmetry.

Scalene - triangle has three unequal sides (length).

Isosceles triangle - triangle has (at least) two equal sides. An isosceles triangle has two equal sides and two equal angles.

Equilateral triangle - All three sides are equal in length, all internal angles are congruent to each other and are 60° .

Nicholas Robson

5. Construct the following figures based on the given attributes. Give a name to each figure you construct. Be as specific as possible.
- a. A quadrilateral with four sides the same length and four right angles.
- b. A quadrilateral with two sets of parallel sides.
- c. A quadrilateral with only one set of parallel sides.
- d. A parallelogram with four right angles.



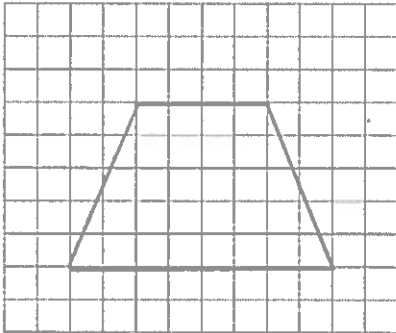
trapezoid which is
a quadrilateral with
only one pair of
parallel lines.

Name _____

Date _____

Use the grid to construct the following. Name the figure you drew using one of the terms in the word box.

- Construct a quadrilateral with only one set of parallel sides.
Which shape did you create?

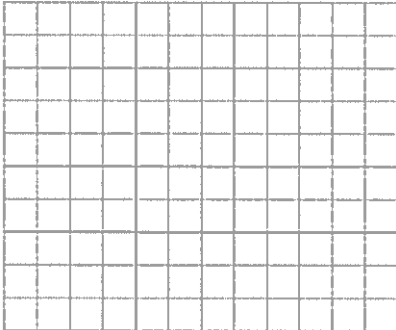


Trapezoid has only one set of parallel sides.

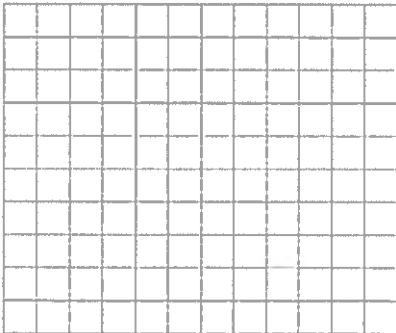
WORD BOX
Parallelogram
Trapezoid
Rectangle
Square
Rhombus

Review the definitions

- Construct a quadrilateral with one set of parallel sides and two right angles.
Which shape did you create?



- Construct a quadrilateral with two sets of parallel sides.
Which shape did you create?



J. Benton