Name _____

Lines, Rays, and Angles

Essential Question How can you identify and draw points, lines, line segments, rays, and angles?

Common Core **Geometry—4.G.A.1**

MATHEMATICAL PRACTICES
MP4, MP5, MP6

Unlock the Problem

Real World

Everyday things can model geometric figures. For example, the period at the end of this sentence models a point. A solid painted stripe in the middle of a straight road models a line.

Term and Definition	Draw It	Read It	Write It	Example
A **point** is an exact location in space.	A •	point A	point A	
A **line** is a straight path of points that continues without end in both directions.		line BC line CB	$\overleftrightarrow{BC}$ $\overleftrightarrow{CB}$	
A **line segment** is part of a line between two endpoints.		line segment DE line segment ED	$\overline{DE}$ $\overline{ED}$	
A **ray** is a part of a line that has one endpoint and continues without end in one direction.		ray FG	$\overrightarrow{FG}$	

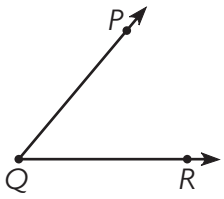
Activity 1 Draw and label $\overline{JK}$.

Math Talk **MATHEMATICAL PRACTICES 6**

Compare Explain how lines, line segments, and rays are related.

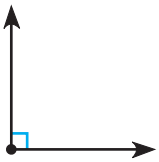
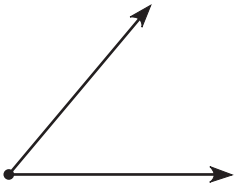
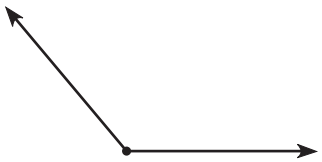
- Is there another way to name $\overline{JK}$? Explain.

Angles

Term and Definition	Draw It	Read It	Write It	Example
An **angle** is formed by two rays or line segments that have the same endpoint. The shared endpoint is called the vertex.		angle *PQR* angle *RQP* angle *Q*	$\angle PQR$ $\angle RQP$ $\angle Q$	

You can name an angle by the vertex. When you name an angle using 3 points, the vertex is always the point in the middle.

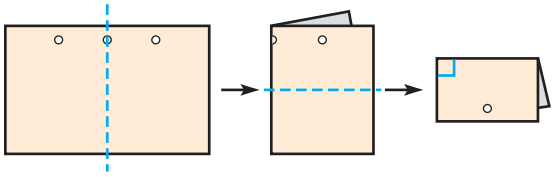
Angles are classified by the size of the opening between the rays.

A **right angle** forms a square corner.	A **straight angle** forms a line.	An **acute angle** is less than a right angle.	An **obtuse angle** is greater than a right angle and less than a straight angle.
			

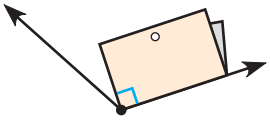
Activity 2 Classify an angle.

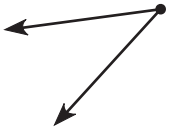
Materials ■ paper

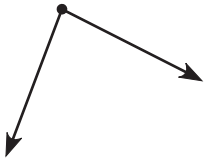
To classify an angle, you can compare it to a right angle.

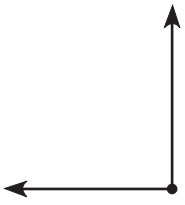


Make a right angle by using a sheet of paper. Fold the paper twice evenly to model a right angle. Use the right angle to classify the angles below. Write *acute*, *obtuse*, *right*, or *straight*.

a. 

b. 

c. 

d. 

Name _____

Share and Show

MATH BOARD

1. Draw and label $\overline{AB}$ in the space at the right.

$\overline{AB}$ is a _____.

Draw and label an example of the figure.

2. $\overleftrightarrow{XY}$

3. obtuse $\angle K$

4. right $\angle CDE$

Use Figure *M* for 5 and 6.

5. Name a line segment.

_____

6. Name a right angle.

_____

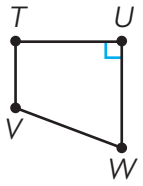


Figure *M*

On Your Own

Draw and label an example of the figure.

7. $\overrightarrow{PQ}$

8. acute $\angle RST$

9. straight $\angle WXZ$

Use Figure *F* for 10–15.

10. Name a ray.

_____

11. Name an obtuse angle.

_____

12. Name a line.

_____

13. Name a line segment.

_____

14. Name a right angle.

_____

15. Name an acute angle.

_____

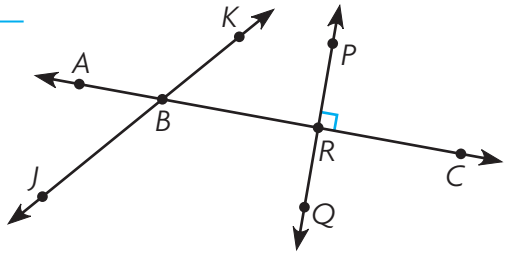
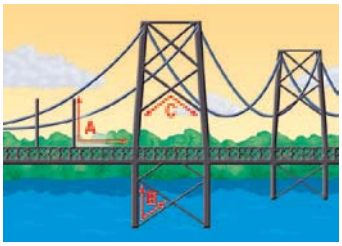


Figure *F*

Problem Solving • Applications Real World

Use the picture of the bridge for 16 and 17.



16. Classify $\angle A$.

_____

17. MATHEMATICAL PRACTICE 4 **Use Diagrams** Which angle appears to be obtuse? _____

18. THINK SMARTER How many different angles are in Figure *X*? List them.

_____

_____

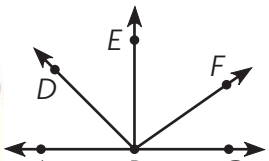
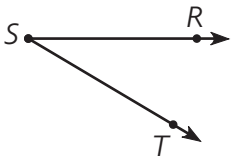


Figure *X*

19. GO DEEPER Vanessa drew the angle at the right and named it $\angle TRS$. Explain why Vanessa's name for the angle is incorrect. Write a correct name for the angle.



_____

_____

20. THINK SMARTER Write the word that describes the part of Figure *A*.

ray | line | line segment | acute angle | right angle

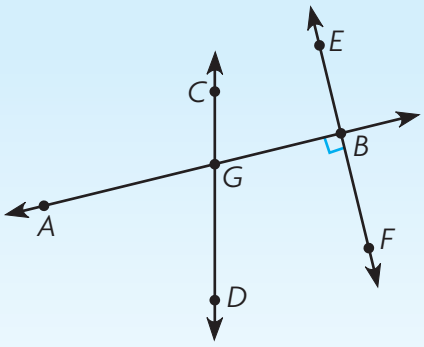


Figure *A*

$\overline{BG}$ _____

$\overleftrightarrow{CD}$ _____

$\angle FBG$ _____

$\overrightarrow{BE}$ _____

$\angle AGD$ _____

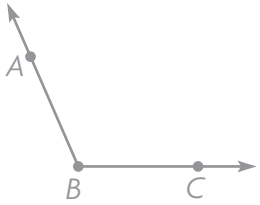
Name _____

Lines, Rays, and Angles

Common Core **COMMON CORE STANDARD—4.G.A.1**
Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

Draw and label an example of the figure.

1. obtuse $\angle ABC$



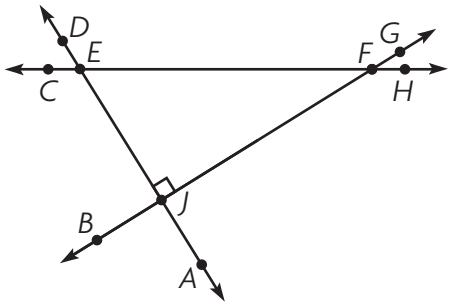
Think: An obtuse angle is greater than a right angle. The middle letter, B, names the vertex of the angle.

2. $\overrightarrow{GH}$

3. acute $\angle JKL$

4. $\overline{BC}$

Use the figure for 5–6.



5. Name a line segment.

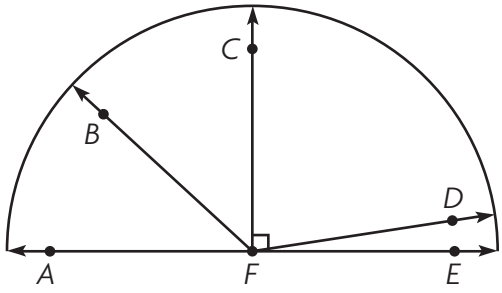
_____

6. Name a right angle.

_____

Problem Solving Real World

Use the figure at the right for 7–9.



7. Classify $\angle AFD$. _____

8. Classify $\angle CFE$. _____

9. Name two acute angles.

_____

10. WRITE Math Draw and label a figure that has 4 points, 2 rays, and 1 right angle.

Lesson Check (4.G.A.1)

1. The hands of a clock show the time 12:25.

What kind of angle exists between the hands of the clock?

2. Use letters and symbols to name the figure shown below.

Spiral Review (4.NF.B.3c, 4.NF.C.6, 4.NF.C.7, 4.MD.A.2)

3. Jan's pencil is 8.5 cm long. Ted's pencil is longer. Write a decimal that could represent the length of Ted's pencil?

4. Kayla buys a shirt for $8.19. She pays with a $10 bill. How much change should she receive?

5. Sasha donated $\frac{9}{100}$ of her class's entire can collection for the food drive. What decimal is equivalent to $\frac{9}{100}$?

6. Jose jumped $8\frac{1}{3}$ feet. This was $2\frac{2}{3}$ feet farther than Lila jumped. How far did Lila jump?

FOR MORE PRACTICE GO TO THE Personal Math Trainer