

# Geometric Figures

## What's My Name?

### Lesson 1-1 Basic Geometric Figures

#### Learning Targets:

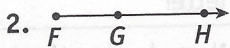
- Identify, describe, and name points, lines, line segments, rays, and planes using correct notation.
- Identify and name angles.

**SUGGESTED LEARNING STRATEGIES:** Activating Prior Knowledge, Think-Pair-Share, Group Presentation, Interactive Word Wall, Think Aloud, Debriefing, Self Revision/Peer Revision

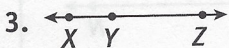
Below are some types of figures you have seen in earlier mathematics courses. Describe each figure using your own words. If you can recall the mathematical terms that identify the figures, you can use them in your descriptions.

1. Q

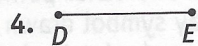
A **point** or dot labeled as Q



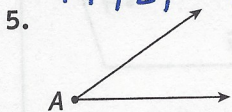
A **ray** with three letters, F, G, and H.  
 $\overrightarrow{FG}$ ,  $\overrightarrow{FH}$



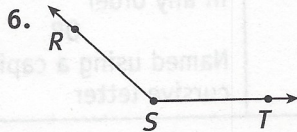
A **line** with three letters X, Y, Z.  
 $\overleftrightarrow{XY}$ ,  $\overleftrightarrow{YZ}$ ,  $\overleftrightarrow{XZ}$ ,  $\overleftrightarrow{YX}$ ,  $\overleftrightarrow{ZY}$ ,  $\overleftrightarrow{ZX}$



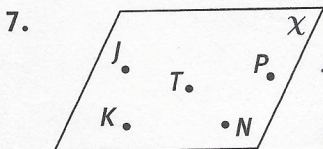
A **segment** with two letters D and E.  
 $\overline{DE}$ ,  $\overline{ED}$



An **angle** with vertex A.  
 $\angle A$



An **angle** with vertex S and two other points R and T.



A **plane** labeled as X with points J, T, P, N, and K.

X, JTK, JTP, JTN, JKT, JKP, JKN, JPT, JPN, JPK, JNT, JNP, JNK, (many more...)

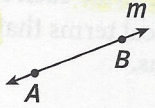


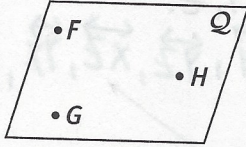
My Notes

My Notes

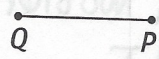
**READING MATH**


$\overline{AB}$  is read, "line  $AB$ ."  $\overline{ST}$  is read, "line segment  $ST$ " or "segment  $ST$ ."  $\overrightarrow{MN}$  is read, "ray  $MN$ ."

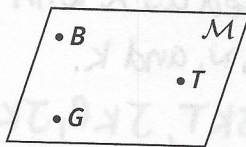
**Naming Geometric Figures**

Geometric Figure	Naming	Example
point	Named with a capital letter	point $P$ $P^\circ$
line	Named using any two points on the line, in any order, with a line symbol drawn above OR Named using a lowercase letter	$\overline{AB}$ , $\overline{BA}$ , or line $m$ 
line segment	Named using the two endpoints, in any order, with a segment symbol drawn above	$\overline{ST}$ or $\overline{TS}$ 
ray	Named using the endpoint and one other point, with a ray symbol drawn above; the endpoint is always listed first	$\overrightarrow{MN}$ 
plane	Named using any three points in the plane that are not on the same line, in any order OR Named using a capital cursive letter	plane $FGH$ or plane $Q$ 

8. Identify each geometric figure. Then give all possible names for the figure.

a.   
line segment  
 $\overline{QP}$  or  $\overline{PQ}$

b.   
 $\overleftrightarrow{NC}$  or  $\overleftrightarrow{CN}$  line

c.   
plane  
 $M, BGT, GBT, TGB, BTG, GTB, TGB$

d.  $D^\circ$   
point  
 $D$

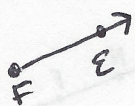
# Lesson 1-1

## Basic Geometric Figures

### ACTIVITY 1

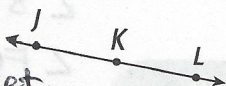
continued

9. Draw  $\overrightarrow{FE}$ . Explain where the points  $F$  and  $E$  lie on the ray.



$F$  is the endpoint since this is where the ray begins and  $E$  is between  $F$  and the arrow.

10. Critique the reasoning of others. Caleb says that the figure below can be named  $\overline{KJ}$ . Jen says the figure can be named  $\overline{JL}$ . Who is correct? Explain.

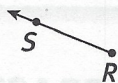


Both are correct.

You can name any line from any two points on the line.

### Check Your Understanding

11. Is  $\overline{SR}$  a possible name for the figure at the right? Explain.



12. Graham draws a point. Describe how he could label and name the point.

① No since a ray begins with its endpoint  $R$ .

② He should label the point with a capital letter.

There are three different ways to name an angle.

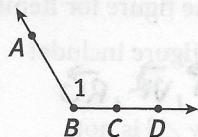
- Use the angle symbol and a number.
- Use the angle symbol and the vertex of the angle.
- Use the angle symbol and three points on the angle. The first point is on one side of the angle, the second point is the vertex, and the third point is on the other side of the angle.

### MATH TIP

The *vertex* of an angle is the point where the sides of the angle meet, or intersect.

### Example A

Give all possible names for the angle.



Use a number:  $\angle 1$ .

Use the vertex:  $\angle B$ .

Use three points. The second point should be the vertex. Be sure the first and third points are not on the same side.

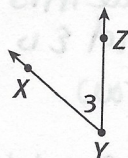
$\angle ABC, \angle ABD, \angle CBA, \angle DBA$

My Notes

Try These A

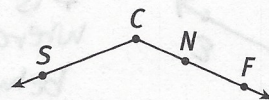
Give all possible names for each angle.

a.



$\angle 3$      $\angle XYZ$   
 $\angle Y$      $\angle ZYX$

b.



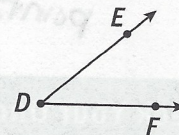
$\angle C$      $\angle NCS$   
 $\angle SCN$      $\angle SCF$   
 $\angle FCS$

TECHNOLOGY TIP

You can make your drawing for Item 13 by using a pencil and a straightedge or by using geometry software.

Check Your Understanding

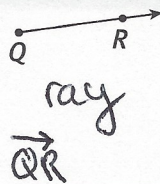
- Draw a figure that could be named  $\angle LMN$ .
- Is  $\angle FDE$  a possible name for the figure at the right? Explain.
- How many different line segments does the figure at the right include? Name them.



LESSON 1-1 PRACTICE

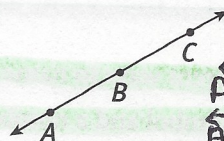
- Identify each geometric figure. Then give all possible names for the figure.

a.



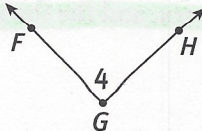
ray  
 $\overrightarrow{QR}$

b.



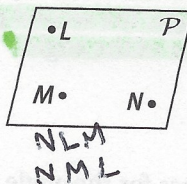
line  
 $\overleftrightarrow{AB}$      $\overleftrightarrow{BC}$   
 $\overleftrightarrow{AC}$      $\overleftrightarrow{CB}$   
 $\overleftrightarrow{BA}$      $\overleftrightarrow{CA}$

c.



$\angle 4$   
 $\angle G$   
 $\angle FGH$   
 $\angle HGF$

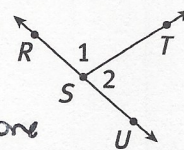
d.



$\square$   
 $LMN$      $MLN$   
 $LNM$      $MNL$

The diagram below includes  $\overline{RU}$ . Use the figure for Items 17-19.

- How many different rays does the figure include? Name them.  $\overrightarrow{SR}, \overrightarrow{SO}, \overrightarrow{ST}, \overrightarrow{UR}, \overrightarrow{RU}$



- Reason abstractly.** Explain why  $\angle S$  is not an appropriate name for  $\angle 1$ . *there is more than one angle at  $\angle S$ .*
- Give the other possible appropriate names for  $\angle 2$ .  $\angle TSU$  or  $\angle UST$
- Draw  $\overline{LM}$ . Then draw  $\overline{NP}$  so that point N lies on  $\overline{LM}$ .

