

# Geometric Figures

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**Reporting Category** Geometry

**Topic** Investigating polygons

**Primary SOL** 4.12 The student will  
a) define *polygon*; and  
b) identify polygons with 10 or fewer sides.

## Materials

- Set of plane geometric figures
- Small bags
- Plane Geometric Figures handout (attached)
- Plane Geometric Figures Sort handout (attached)
- Properties of Plane Geometric Figures handout (attached)

## Vocabulary

*plane figure, two-dimensional, properties, square, circle, triangle, rectangle, rhombus, parallelogram, quadrilateral, polygon*

## Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

1. Initiate the activity by displaying plane (two-dimensional) geometric figures and asking students to describe them. Then, ask students to share ways that two selected figures are alike and ways they are different. Have students work with partners or in small groups to discuss this. Give each group a bag containing a set of plane geometric figures and a Plane Geometric Figures handout. Give each student a Plane Geometric Figures Sort handout. Instruct students to complete their charts individually, using the figures in the bag and conferring with group members.
2. After the charts have been completed, have groups answer the questions on the Plane Geometric Figures Sort handout. Prompt group discussion with questions such as the following:
  - What do you notice about figures H and E? Answer question 1.
  - What are figures G, C, and L called? Answer question 2.
  - Do any of the three-sided figures have a right angle? Answer question 3. Can a three-sided figure have more than one right angle?
  - What do you notice about figures B and J? Answer question 4.Have the students individually complete the remaining questions.
3. Distribute the Properties of Plane Geometric Figures handout, and have the students name each figure. Encourage students to list properties that describe that figure specifically. Some ideas are listed on the answer key.

## Assessment

- **Questions**

- Where would you find polygons at home? Where would you find them at the grocery store? Where would you find them at the mall?
- What are the similarities and differences among the polygons?

- **Journal/Writing Prompts**

- Look around the classroom or the school and identify polygons that you see. Record these in your journal, and list the properties of each.
- Compare and contrast the attributes of the polygons. Choose your favorite polygon, and explain your choice.

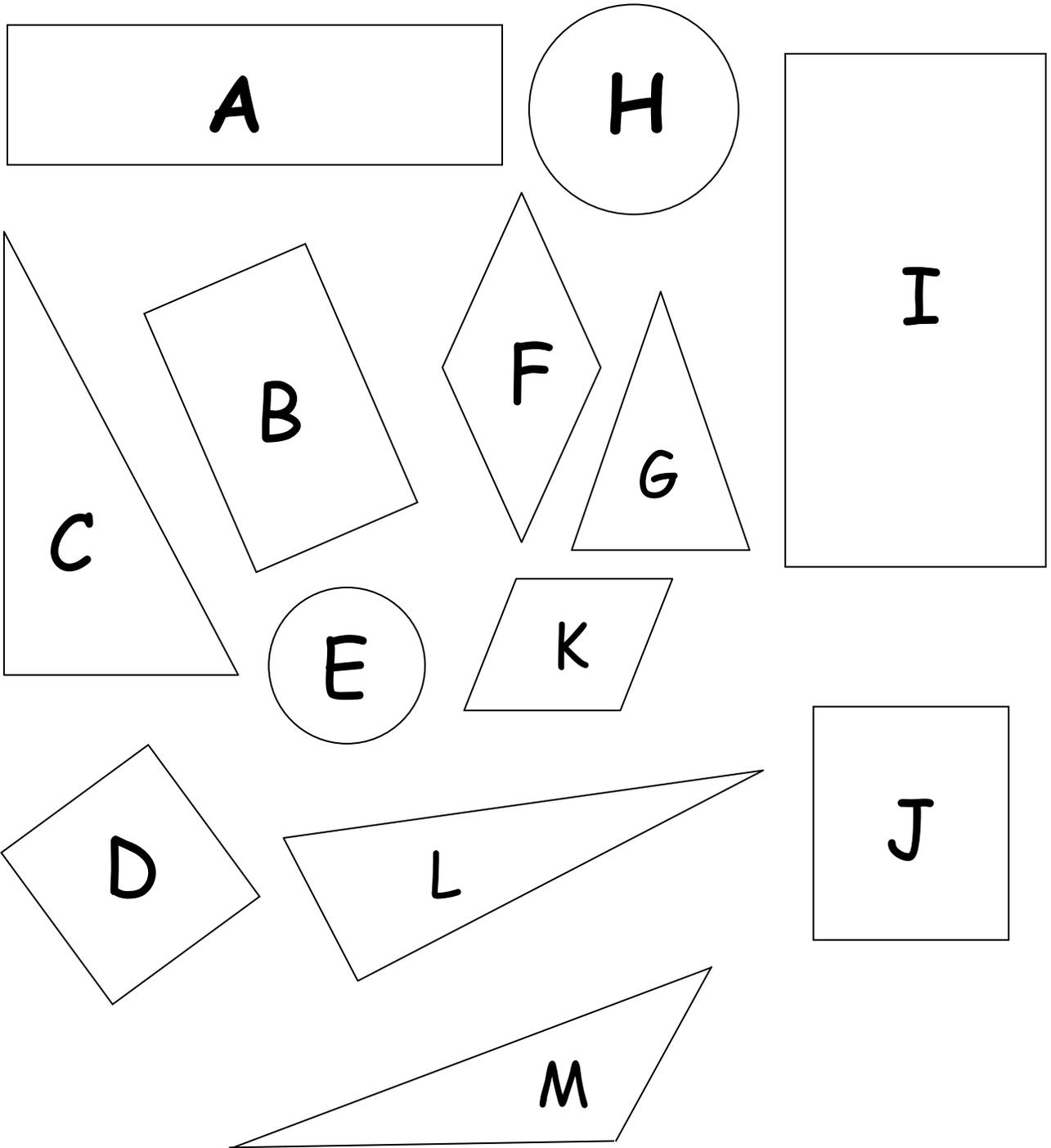
## Extensions and Connections (for all students)

- Use a digital camera to take pictures of two- and three-dimensional shapes and figures seen in and around the school. These pictures can be imported into a electronic presentation for students to manipulate. Have students put two or more related pictures on a page, list the properties of each figure, and describe how the figures relate to each other. Print the pages in booklet form so that students can have their own “Shapes and Figures” booklets.

## Strategies for Differentiation

- Limit the size of and/or enlarge the Plane Geometric Figures Sort handout.
- Cut out the figures on the Plane Geometric Figures handout so students can examine one figure at a time.

# Plane Geometric Figures



# Plane Geometric Figures Sort

Name \_\_\_\_\_ Date \_\_\_\_\_

Directions: Look carefully at each figure on the Plane Geometric Figures sheet. Check all the columns that apply to each figure. Based on the chart, answer the questions that follow.

Figure	No sides	Three sides	Four sides	At least one right angle	All sides of equal length	Opposite sides of equal length	Opposite sides parallel
A							
B							
C							
D							
E							
F							
G							
H							
I							
J							
K							
L							
M							

## Questions

1. A figure with no sides or line segments and with all points on the figure the same distance from a center point is called a \_\_\_\_\_.
2. A figure with three sides is called a \_\_\_\_\_.
3. Can a figure with three sides have a right angle? \_\_\_\_\_
4. A quadrilateral with opposite sides of equal length and four right angles is called a \_\_\_\_\_.
5. A quadrilateral with all four sides of equal length and four right angles is called a \_\_\_\_\_.
6. A quadrilateral with all four sides of equal length and any kinds of angles is called a \_\_\_\_\_.
7. A quadrilateral with two pairs of parallel sides is called a \_\_\_\_\_.

# Plane Geometric Figures Sort Answer Key

Figure	No sides	Three sides	Four sides	At least one right angle	All sides of equal length	Opposite sides of equal length	Opposite sides parallel
A			X	X		X	X
B			X	X		X	X
C		X		X			
D			X	X	X	X	X
E	X						
F			X		X	X	X
G		X					
H	X						
I			X	X		X	X
J			X	X	X	X	X
K			X			X	X
L		X		X			
M		X					

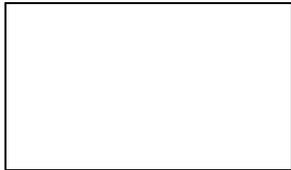
## Questions

1. A figure with no sides or line segments and with all points on the figure the same distance from a center point is called a circle.
2. A figure with three sides is called a triangle.
3. Can a figure with three sides have a right angle? Yes
4. A quadrilateral with opposite sides of equal length and four right angles is called a rectangle.
5. A quadrilateral with all four sides of equal length and four right angles is called a square.
6. A quadrilateral with all four sides of equal length and any kinds of angles is called a rhombus.
7. A quadrilateral with two pairs of parallel sides is called a parallelogram.

# Properties of Plane Geometric Figures

Name \_\_\_\_\_ Date \_\_\_\_\_

Directions: Look carefully at each figure. Name each figure, and list at least three properties that describe that figure.

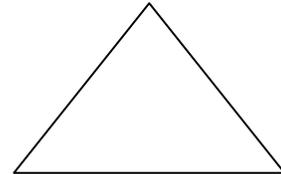


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(Can also be named a *quadrilateral* or *parallelogram*.)



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(Can have no, two, or three sides of equal length.)

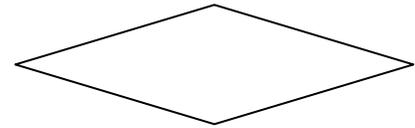


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(Can also be named a *quadrilateral*, *parallelogram*, *rectangle*, or *rhombus*.)

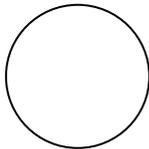


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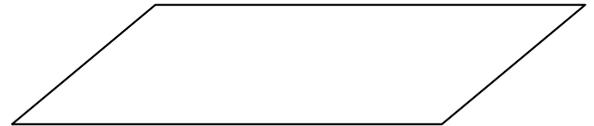
(Can also be named a *quadrilateral* or *parallelogram*.)



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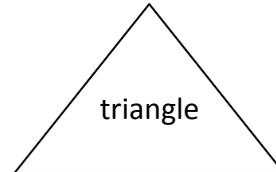
(Can also be named a *quadrilateral* or *rhombus*.)

# Properties of Plane Geometric Figures

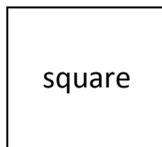
## Answer Key



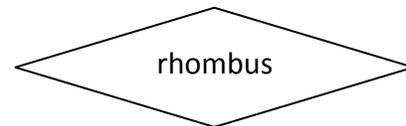
Four right angles  
Opposite sides of equal length  
Opposite sides parallel  
(Can also be named a *quadrilateral* or *parallelogram*.)



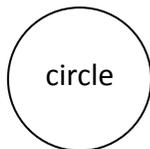
Three sides  
Three angles  
Can have one right angle  
(Can have no, two, or three sides of equal length.)



Four right angles  
All four sides of equal length  
Opposite sides parallel  
(Can also be named a *quadrilateral*, *parallelogram*, *rectangle*, or *rhombus*.)



All four sides of equal length  
Opposite sides parallel  
Can have any kinds of angles  
(Can also be named a *quadrilateral* or *parallelogram*.)



No sides or line segments  
All points on the figure the same distance from a center point  
Diameter goes through the center point to connect two points on the figure (5th grade)



Two pairs of parallel sides  
Opposite sides of equal length  
Opposite sides parallel  
(Can also be named a *quadrilateral* or *rhombus*.)