

CHAPTER

28

Symmetry

Vocabulary:

line symmetry
symmetrical
mirror symmetry
reflecting

Chapter Outcomes:

- Demonstrate an understanding of the concept of line symmetry.
- Solve problems involving line symmetry.



Symmetry is found everywhere in nature and is also one of the most common themes in art, architecture, and design. Most, if not all architectural traditions include symmetry. Symmetry is something that Islamic mosques, Chinese pagodas, Hindu temples, cathedrals and many other buildings have in common.

Getting Ready for Chapter 28

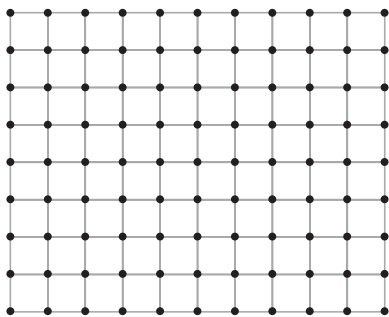
How many sides, vertices and angles does each shape have?

1. 
2. 

What plane shape will be formed when you combine each set of shapes.

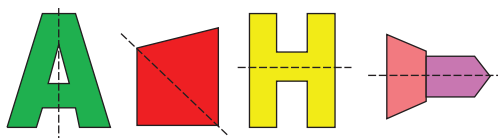
3. 
4. 

5. Draw a triangle on the grid paper.



6. How many of  will it take to make up  ?

7. Identify the symmetric figures.

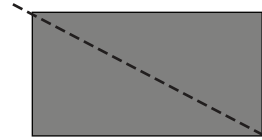


Line Symmetry

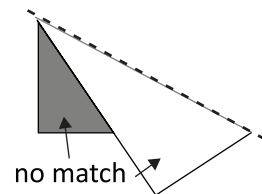
Teaching Point 1:

How can you check if a figure has line symmetry?

Is the line a line of symmetry?



Fold the shape along the dashed line.



The parts on each side do not match.
So, the line **is not** a line of symmetry.



After folding along the line, both parts fit exactly on top of each other.

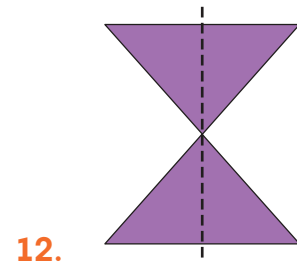
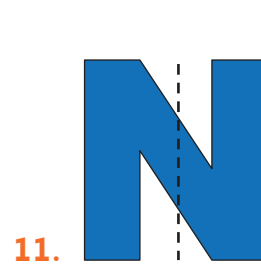
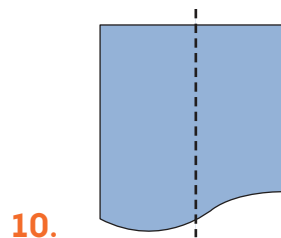
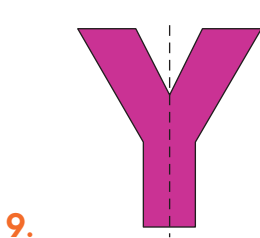
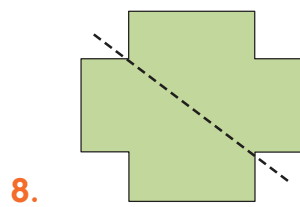
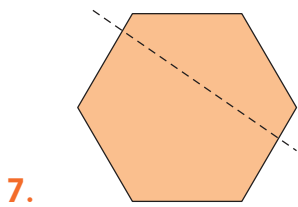
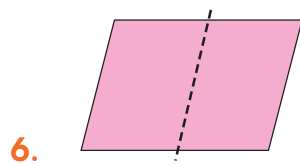
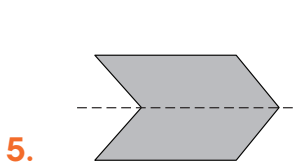
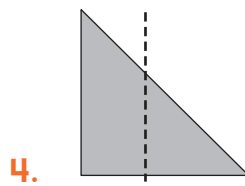
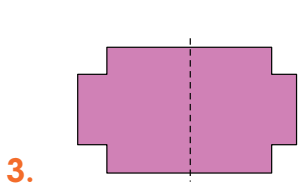
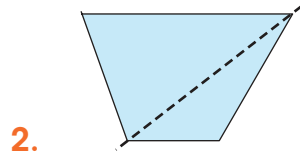
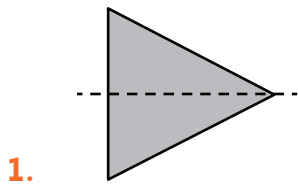
So the line is a line of symmetry.

A figure has **line symmetry** if it can be folded about a line so that its two parts **can fit exactly on top of each other**.

The fold line is called a **line of symmetry**.

Activity 1:

Tell if the line appears to be a line of symmetry. Write yes or no.

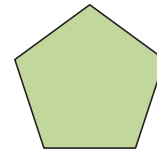


Draw Lines of Symmetry

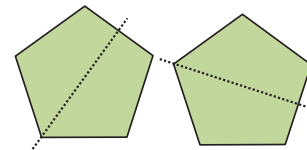
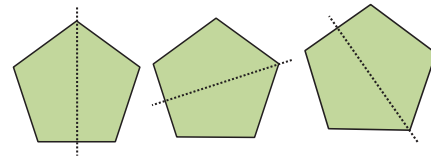
Teaching Point 1:

How do you find lines of symmetry?

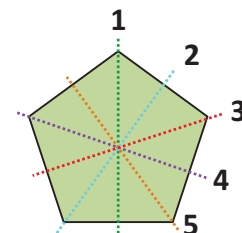
How many lines of symmetry does a regular pentagon have?



Fold the pentagon in different ways to test for line symmetry. Draw along the fold lines that are the lines of symmetry.

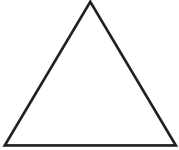
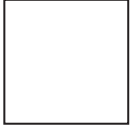
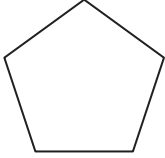
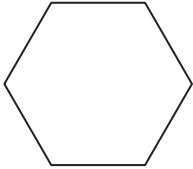
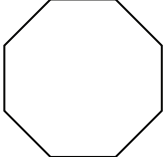


A regular pentagon with 5 equal sides and 5 equal angles has 5 lines of symmetry.



Activity 1:

Complete the table. Find the number of lines of symmetry for the regular polygons.

Regular Polygon	Number of Sides	Number of Lines of Symmetry
1. 		
2. 		
3. 	5	5
4. 		
5. 		

6. In a regular polygon, all sides are of equal length and all angles are equal. What do you notice about the number of lines of symmetry in regular polygons?

7. How many lines of symmetry does a scalene triangle have?
8. How many lines of symmetry does an isosceles triangle have?

Activity 2:

Each figure below has line symmetry. Draw and number the lines of symmetry in each figure.





Activity 3:

Some of these letters have line symmetry. Complete the table below to show the number of lines of symmetry.

Letter	Number of Lines of Symmetry
1. A	
2. H	
3. S	
4. B	

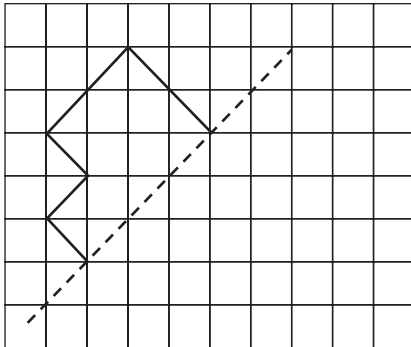
5. I	
6. T	
7. C	
8. J	
9. U	
10. D	
11. K	
12. V	

Complete Symmetrical Shapes

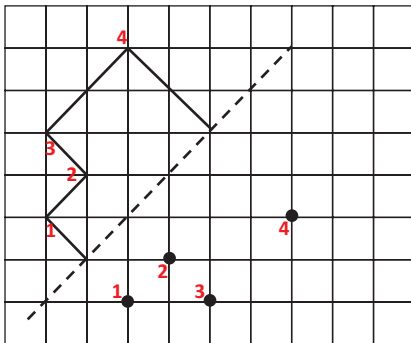
Teaching Point 2:

How do you complete symmetrical shapes?

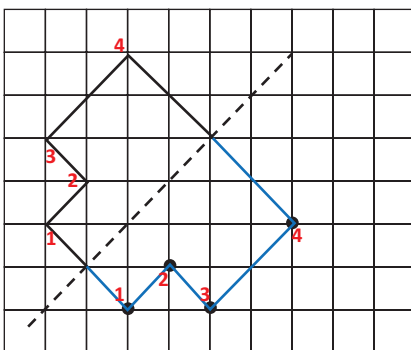
Draw the other half of the symmetrical shape.



Step 1: Count and mark off the corners of the grid lines to match half of the shape exactly.



Step 2: Join the dots to complete.



Activity 1:

Complete each shape below using the dotted line as the line of symmetry.

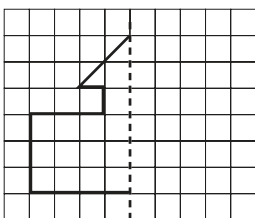
1.

2.

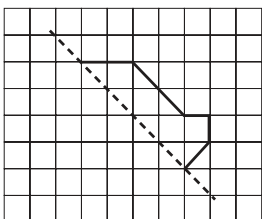
3.

4.

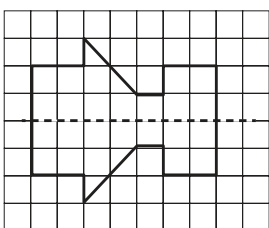
5.



6.

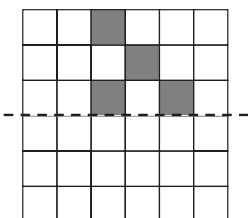


7.

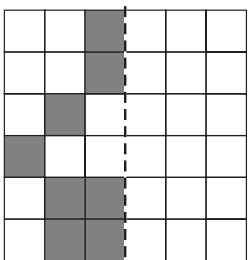


Shade the squares to make each pattern symmetrical about the dotted line.

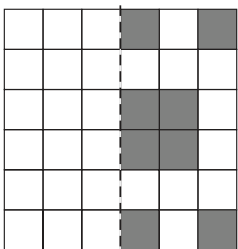
8.



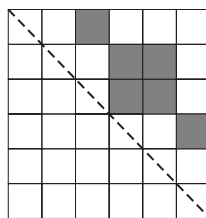
9.



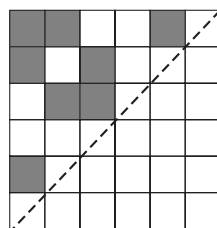
10.



11.

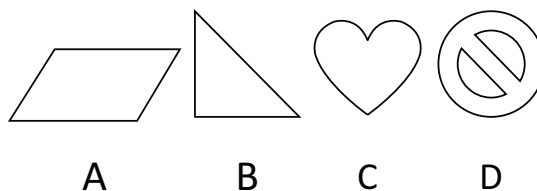


12.

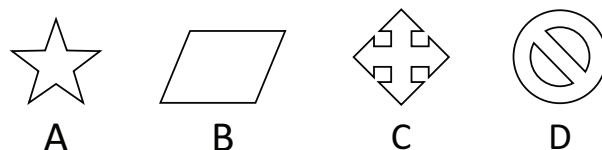


Solve Problems Involving Symmetry

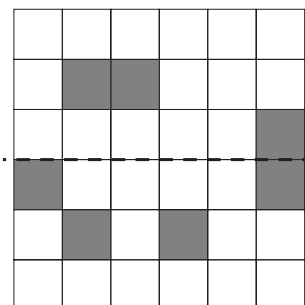
1. Which of the following figures does not have a line of symmetry?



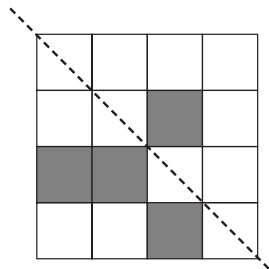
2. Write the letter(s) for the figure(s) below that are symmetrical?



3. The figure below is made up of identical squares. Shade three squares to make the resulting figure symmetrical.



4. Shade two more squares to make the dotted line the line of symmetry.



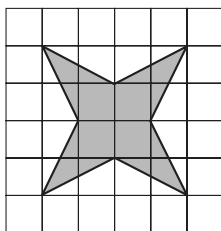
Chapter Review

Answer the questions.

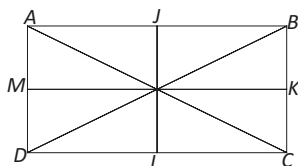
1. Which of the following figures does not have line symmetry?



2. How many lines of symmetry does a square have?
3. Draw a quadrilateral that does not have a line of symmetry.
4. How many lines of symmetry are there in the following shaded shape?

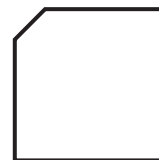


5. The diagram below is a rectangle. The points J, K, L and M are midpoints of its sides.

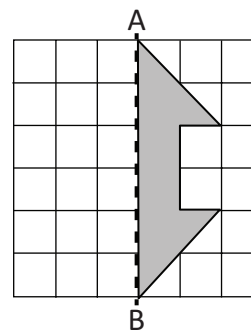


Name the two lines of symmetry of the rectangle.

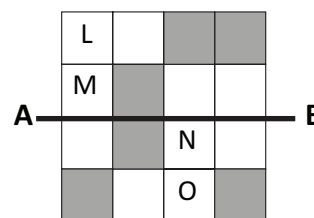
6. Draw a line of symmetry in the figure below.



7. Complete the shape below so that AB is a line of symmetry.



8. In the figure below, which two squares (L, M, N or O) must be shaded so that AB becomes the line of symmetry?



9. Shade two more squares so that the figure has the dotted line as a line of symmetry.

