Line Symmetry

Essential Question How can you check if a shape has line symmetry?

Common Core — Geometry—
4.G.A.3

MATHEMATICAL PRACTICES
MP2, MP3, MP5

🔑 Unlock the Problem (Real World)

One type of symmetry found in geometric shapes is line symmetry. This sign is in the hills above Hollywood, California. Do any of the letters in the Hollywood sign show line symmetry?

A shape has **line symmetry** if it can be folded about a line so that its two parts match exactly.
A fold line, or a **line of symmetry**, divides a shape into two parts that are the same size and shape.

🔑 **Activity** Explore line symmetry.

Materials ■ pattern blocks ■ scissors

A **Does the letter W have line symmetry?**

STEP 1 Use pattern blocks to make the letter W.

STEP 2 Trace the letter.

Math Idea

A vertical line goes up and down. ↕

A horizontal line goes left and right. ↔

A diagonal line goes through vertices of a polygon that are not next to each other. It can go up and down and left and right. ↗ ↙

STEP 3 Cut out the tracing.

STEP 4 Fold the tracing over a vertical line.

Think: The two parts of the folded W match exactly. The fold line is a line of symmetry.

Math Talk

MATHEMATICAL PRACTICES ③

Apply How can you check to see if a shape has line symmetry?

So, the letter W _____ line symmetry.

B Does the letter L have line symmetry?

STEP 1

Use pattern blocks or grid paper to make the letter L.

STEP 2

Trace the letter.

STEP 3

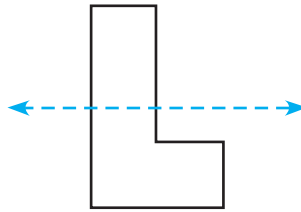Cut out the tracing.

STEP 4

Fold the tracing over a vertical line.

Do the two parts match exactly?
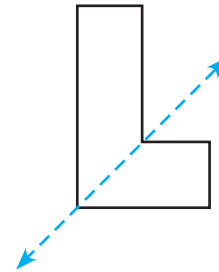
_____

STEP 5

Then open it and fold it horizontally.

Do the two parts match exactly?

_____

STEP 6

Then open it and fold it diagonally.

Do the two parts match exactly?

_____

So, the letter L _____ line symmetry.

1. Repeat Steps 1–6 for the remaining letters in HOLLYWOOD. Which letters have line symmetry?

   _____

2. Do any of the letters have more than one line of symmetry? Explain.

   _____

   _____

Remember
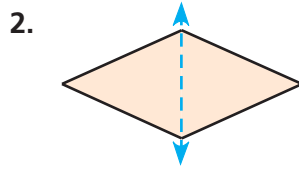You can fold horizontally, vertically, or diagonally to determine if the parts match exactly.
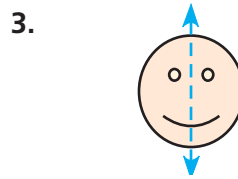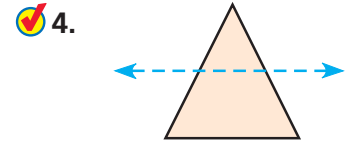
Share and Show MATH BOARD

Tell whether the parts on each side of the line match.
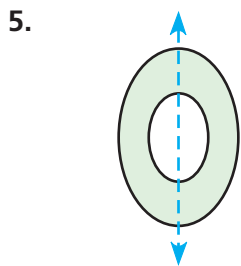**Is the line a line of symmetry? Write *yes* or *no*.**
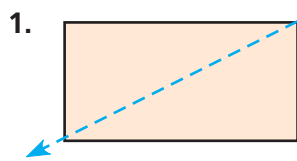
1. _____
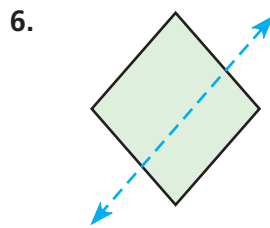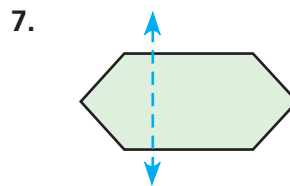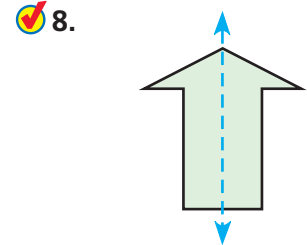
2. _____

3. _____

✓ 4. _____

Tell if the blue line appears to be a line of symmetry.
Write *yes* or *no*.
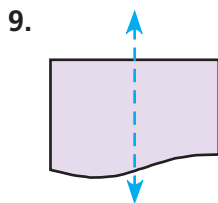
5. _____

6. _____
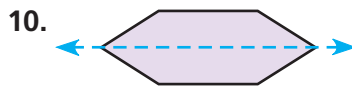
7. _____

✓ 8. _____

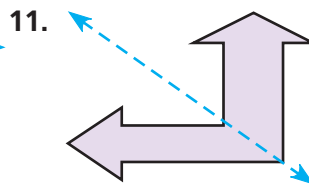**Math Talk**

MATHEMATICAL PRACTICES ②

Use Reasoning How can you use paper folding to check if a shape has line symmetry?
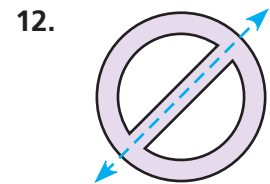
On Your Own

Tell if the blue line appears to be a line of symmetry.
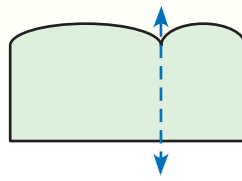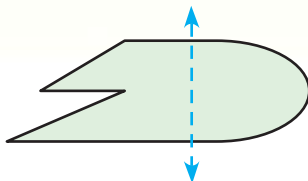**Write *yes* or *no*.**
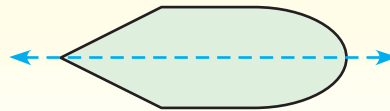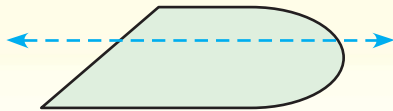
9. _____

10. _____

11. _____

12. _____

13. **GO DEEPER** Which best describes the symmetry in the letter I?

I

_____

Unlock the Problem
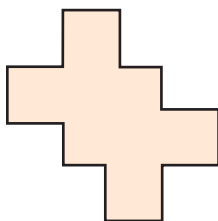
14. Which shape has a correctly drawn line of symmetry?

a. What do you need to find? _____

_____

b. How can you tell if the line of symmetry is correct?

_____

c. Tell how you solved the problem.

_____

_____

d. Circle the correct shape above.

15. **MATHEMATICAL PRACTICE ②** **Reason Abstractly** Draw a line of symmetry in the figure shown.

Personal Math Trainer

16. **THINK SMARTER ➕** Evie's birthday is on the 18th of May. Since May is the 5th month, Evie wrote the date as shown.

5/18

Evie says all the numbers she wrote have line symmetry. Is she correct? Explain.

_____

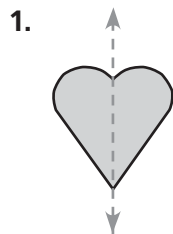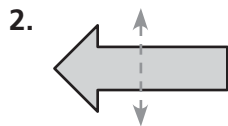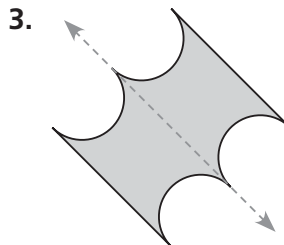_____

_____

Name _____

Line Symmetry

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

1.

yes

2.

3.

4.
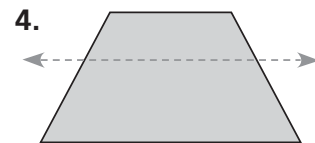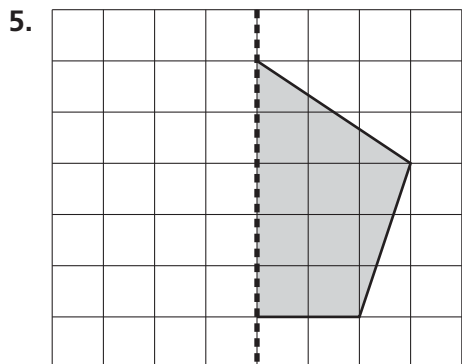
Complete the design by reflecting over the line of symmetry.

5.

6.

Problem Solving Real World
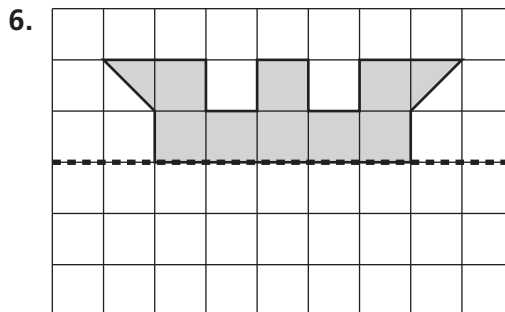
7. Kara uses the pattern at the right to make paper dolls. The dashed line represents a line of symmetry. A complete doll includes the reflection of the pattern over the line of symmetry. Complete the design to show what one of Kara's paper dolls looks like.
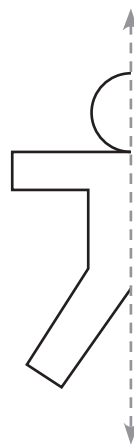
8. **WRITE** ▸*Math* Write a word that has line symmetry, like the word OHIO. Draw the line(s) of symmetry for each letter.

Lesson Check (4.G.A.3)

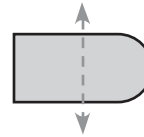**1.** What word best describes the line of symmetry in the letter D?

D

_____

_____

2. Does the shape below show a correct line of symmetry? Explain.

_____

_____

Spiral Review (4.NBT.B.5, 4.NBT.B.6, 4.NF.A.2, 4.NF.B.4c)

3. The class has 360 unit cubes in a bag. Johnnie divides the unit cubes equally among 8 groups. How many unit cubes will each group get?

_____

4. There are 5,280 feet in one mile. How many feet are there in 6 miles?

_____

5. Sue has 4 pieces of wood. The lengths of her pieces of wood are $\frac{1}{3}$ foot, $\frac{2}{5}$ foot, $\frac{3}{10}$ foot, and $\frac{1}{4}$ foot. Which piece of wood is the shortest?

_____

6. Alice has $\frac{1}{5}$ as many miniature cars as Sylvester has. Sylvester has 35 miniature cars. How many miniature cars does Alice have?

_____

FOR MORE PRACTICE GO TO THE
Personal Math Trainer