Lines of Symmetry

Name: _____	Date: _____	Score: _____ / 24

Quick Review

A **line of symmetry** is a line you could fold a shape along so that the two halves match up perfectly, like a mirror image. Some shapes have one line of symmetry, some have many, and some have none at all. A **square** has 4 lines of symmetry, a **rectangle** has 2, and an **equilateral triangle** has 3. A **circle** has *too many to count* — any line through its center works. To test for a line of symmetry, imagine folding the shape: if both halves land exactly on top of each other, that fold line is a line of symmetry.

◇ **Example:** How many lines of symmetry does a rectangle that is *not* a square have?

⇒ Picture a rectangle, like a door. Fold it so the left half lands on the right half — that vertical fold works, so it is one line of symmetry. Now fold the top half onto the bottom half — that horizontal fold works too, so that is a second line. What about folding along a diagonal? The halves would not match, so diagonals do not count. A rectangle has 2 lines of symmetry.

Answer: 2

PRACTICE

Find the number of lines of symmetry, or answer the symmetry question.

1. How many lines of symmetry does a square have? _____
2. How many lines of symmetry does a rectangle have? _____
3. How many lines of symmetry does an equilateral triangle have? _____
4. How many lines of symmetry does a circle have? _____
5. How many lines of symmetry does the letter A have? _____
6. How many lines of symmetry does the letter H have? _____
7. How many lines of symmetry does a regular hexagon have? _____
8. How many lines of symmetry does the letter F have? _____
9. How many lines of symmetry does an isosceles triangle have? _____
10. How many lines of symmetry does the letter X have? _____
11. How many lines of symmetry does a regular pentagon have? _____
12. How many lines of symmetry does the letter S have? _____
13. How many lines of symmetry does a scalene triangle have? _____
14. How many lines of symmetry does the letter T have? _____
15. How many lines of symmetry does a rhombus have? _____
16. How many lines of symmetry does the letter O have? _____
17. How many lines of symmetry does a regular octagon have? _____
18. How many lines of symmetry does the letter B have? _____
19. Does the letter R have any lines of symmetry? _____
20. How many lines of symmetry does a regular 4-sided shape have? _____

Word Problems

21. Olivia folds a square piece of paper in half so the two sides match perfectly. She wants to know every way she could fold it so the halves match. How many lines of symmetry does the square have? _____

22. Ethan is designing a flag shaped like an equilateral triangle. He wants to fold it along every line of symmetry to plan his design. How many lines of symmetry does the flag have? _____

23. Grace draws the capital letter M for a poster and folds the paper down the middle to check if both halves match. How many lines of symmetry does the letter M have? _____

24. At the craft table, Daniel looks at a round paper plate and wonders how many ways he could fold it so the halves match exactly. How many lines of symmetry does a circle have? _____

Answer Keys

1. 4
2. 2
3. 3
4. too many to count
5. 1
6. 2
7. 6
8. 0
9. 1
10. 2
11. 5
12. 0
13. 0
14. 1
15. 2
16. 2
17. 8
18. 1
19. no
20. 4
21. 4
22. 3
23. 1
24. too many to count

Step-by-Step Explanations

1. A square folds in half 4 ways: vertical, horizontal, and both diagonals.
2. A non-square rectangle folds in half 2 ways: vertical and horizontal.
3. An equilateral triangle has 3 lines of symmetry, one from each corner.
4. Any line through the center of a circle is a line of symmetry, so there are countless lines.
5. The capital letter A folds in half down the middle just once.
6. The capital letter H folds both up-and-down and side-to-side, so it has 2.
7. A regular hexagon has 6 equal sides, giving it 6 lines of symmetry.
8. The capital letter F cannot be folded into matching halves, so it has 0.
9. An isosceles triangle folds in half just once, down from its top vertex.
10. The capital letter X folds both vertically and horizontally, so it has 2.
11. A regular pentagon has 5 equal sides, so it has 5 lines of symmetry.
12. The capital letter S has no fold that makes matching halves, so it has 0.
13. A scalene triangle has all sides different, so no fold matches — it has 0.
14. The capital letter T folds in half down the middle once.
15. A rhombus folds along both of its diagonals, giving 2 lines of symmetry.
16. The capital letter O folds both vertically and horizontally, so it has 2.
17. A regular octagon has 8 equal sides, so it has 8 lines of symmetry.
18. The capital letter B folds in half side-to-side just once.
19. The capital letter R cannot be folded into matching halves, so it has none.
20. A regular 4-sided shape is a square, which has 4 lines of symmetry.
21. A square can be folded into matching halves 4 ways: down the middle vertically, across horizontally, and along each of the two diagonals.
22. An equilateral triangle has 3 lines of symmetry — one running from each corner to the middle of the opposite side.
23. The capital letter M folds in half down the middle once, and the two halves match, so it has 1 line of symmetry.
24. Every fold line that passes through the center of a circle splits it into matching halves, so a circle has countless lines of symmetry.

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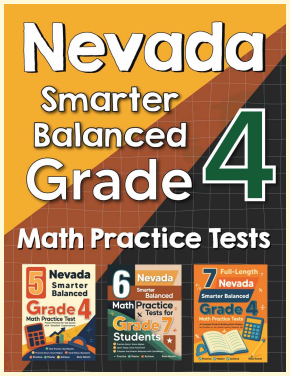

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