Symmetry

Difficulty level: Easy

Mathematics: Kindergarten to Grade 3

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Overview of the concept

This is how you tell whether a shape folds exactly in half, like a butterfly, a leaf, or a logo, with both sides matching perfectly. If you fold a shape along its line of symmetry, the two halves land exactly on top of each other. Some shapes have one line like that, some have several, and some have none at all. That is how designers make a logo feel balanced, and how you spot the pattern in nature, from a leaf to a snowflake.



Rule

Symmetry: a shape is symmetrical when it folds along a line so the two halves match exactly.

That fold line is a line of symmetry, and a shape can have one, several, or none.

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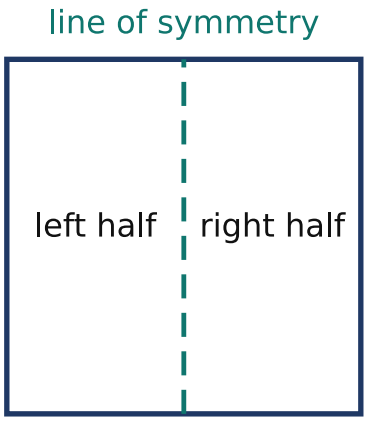
Worked examples

EXAMPLE 1

Q Is a square symmetrical?



SOLUTION

Draw a line down the middle of the square.

Fold along that line in your mind.

Both halves match exactly, so a square is symmetrical.

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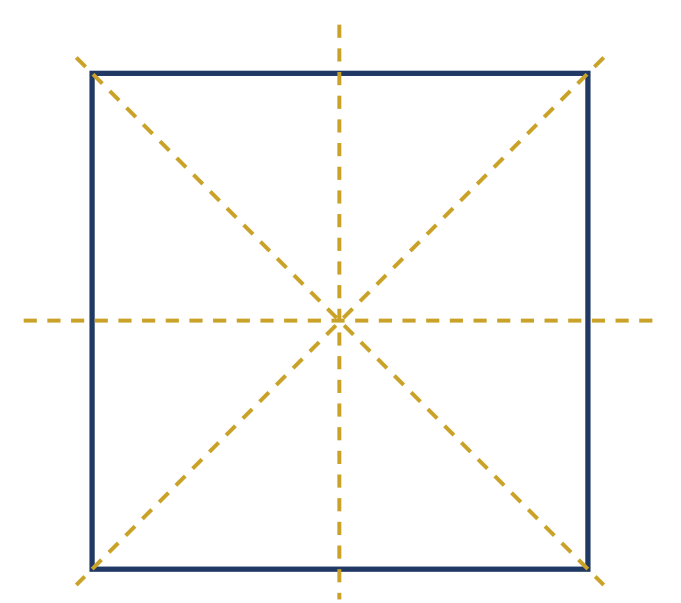
EXAMPLE 2

Q How many lines of symmetry does a square have?



vertical, horizontal, and 2 diagonal lines

SOLUTION

A vertical line down the middle matches both halves.

A horizontal line across the middle also matches.

The two diagonal lines also match, so a square has 4 lines of symmetry.

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Practice questions

1 Fold a circle in half down the middle. Is the fold a line of symmetry? Answer yes or no.

- **A** yes
- **B** no

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2 A square is folded in half along a diagonal, from one corner to the opposite corner. Is the fold a line of symmetry? Answer yes or no.

- **A** no
- **B** yes

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3 A rectangle has a vertical line and a horizontal line through the middle. Which lines are lines of symmetry?

- **A** The vertical line only
- **B** The horizontal line only
- **C** Both lines

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4 An equilateral triangle has one line of symmetry drawn from a corner to the middle of the opposite side. How many lines like this does it have in total?

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5 Draw a line across the middle of the letter A. Is it a line of symmetry from top to bottom? Answer yes or no.

- A yes
- B no

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6 Which of these shapes has a line of symmetry?

- A A heart
- B A scalene triangle
- C Both
- D Neither

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7 A regular pentagon has 5 sides. How many lines of symmetry does it have?

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8 Draw a line down the middle of a scalene triangle. Is it a line of symmetry? Answer yes or no.

A no

B yes

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9 Several lines are drawn through the centre of a circle. How many lines of symmetry does a circle have?

- A infinitely many
- B 2
- C 4
- D 1

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10 A rectangle is folded along a diagonal. Is the fold a line of symmetry? Answer yes or no.

- A no
- B yes

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ANSWER KEY

1. yes

2. yes

3. Both lines

4. 3

5. no

6. A heart

7. 5

8. no

9. infinitely many

10. no

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