

Grade 4 - Lines of Symmetry - Lesson

Common Core 4.G.A.3 · maths-pdf.fr/en/

A figure has line symmetry when you can fold it along a line so the two halves match exactly. That fold line is called a line of symmetry. A square has 4 lines of symmetry, a rectangle that is not a square has 2, and a slanted parallelogram has none. Many letters and animals are symmetric too.

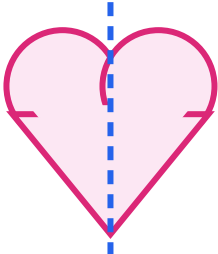
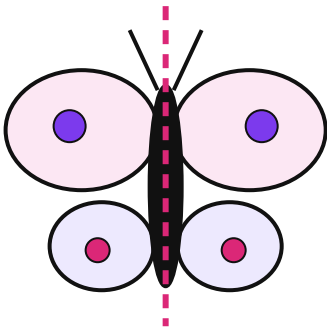
Grade 4 · Common Core State Standards: **4.G.A.3**

Key facts

- A line of symmetry splits a figure into two matching halves.
- A square has 4 lines of symmetry, a rectangle has 2, and an equilateral triangle has 3.
- A regular polygon with n sides has n lines of symmetry.
- Some figures, like a slanted parallelogram, have no lines of symmetry.
- Check by folding: the edges and corners must line up exactly.

What is a line of symmetry?

Fold a piece of paper with a heart cut out of it. If the two halves of the heart land exactly on top of each other, the fold is a **line of symmetry**. A figure with at least one such line is **line-symmetric**. Look at the heart and the butterfly: the dashed line cuts each one into two mirror images.

Heart	Butterfly
 Heart.	 Butterfly.

Line symmetry

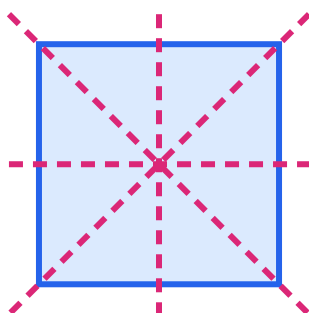
A figure is line-symmetric if it can be folded along a line into two parts that match exactly.

The fold line is its **line of symmetry**. A figure can have one line, several lines, or none.

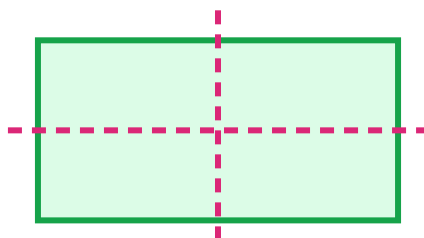
How many lines of symmetry do shapes have?

Count the fold lines that make the halves match. A square can be folded in half across, up and down, or along either diagonal, so it has 4 lines. A rectangle that is not a square has only 2, because its diagonals do not work.

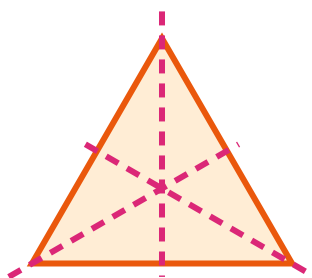
Square	Rectangle	Equilateral triangle
4 lines	2 lines	3 lines
Fold up, across, and along each diagonal.	Fold up and across only.	One fold from each corner.



A square.



A rectangle that is not a square.



An equilateral triangle.

Do letters and everyday things have symmetry?

Yes. The letters A, H, M, T, and X can be cut by a vertical line into matching halves. The letters B, E, and G can be cut by a horizontal line. The letters F, L, and S have no line of symmetry.



Lines of symmetry in letters.

Example. How many lines of symmetry does a regular pentagon have?

1. A regular pentagon has 5 equal sides and 5 equal angles.
2. Each fold runs from a corner to the middle of the opposite side.
3. There are 5 corners, so there are **5 lines of symmetry**.

Questions about lines of symmetry

What is a line of symmetry?

A line of symmetry is a fold line that cuts a figure into two halves that match exactly, like a mirror image. If the halves do not match, the line is not a line of symmetry.

How many lines of symmetry does a rectangle have?

A rectangle that is not a square has 2 lines of symmetry: one up and down, and one across. The diagonals are not lines of symmetry for a rectangle.

Can a shape have no lines of symmetry?

Yes. A slanted parallelogram and a triangle with three different side lengths have no lines of symmetry. No fold makes the two halves match.

How many lines of symmetry does a regular polygon have?

A regular polygon has as many lines of symmetry as it has sides. A regular pentagon has 5, a regular hexagon has 6, and a regular octagon has 8.

Which letters have a vertical line of symmetry?

The capital letters A, H, M, T, U, V, W, X, and Y have a vertical line of symmetry. The letters F, G, J, L, P, R, and S have none.