

MYSTERY PICTURE

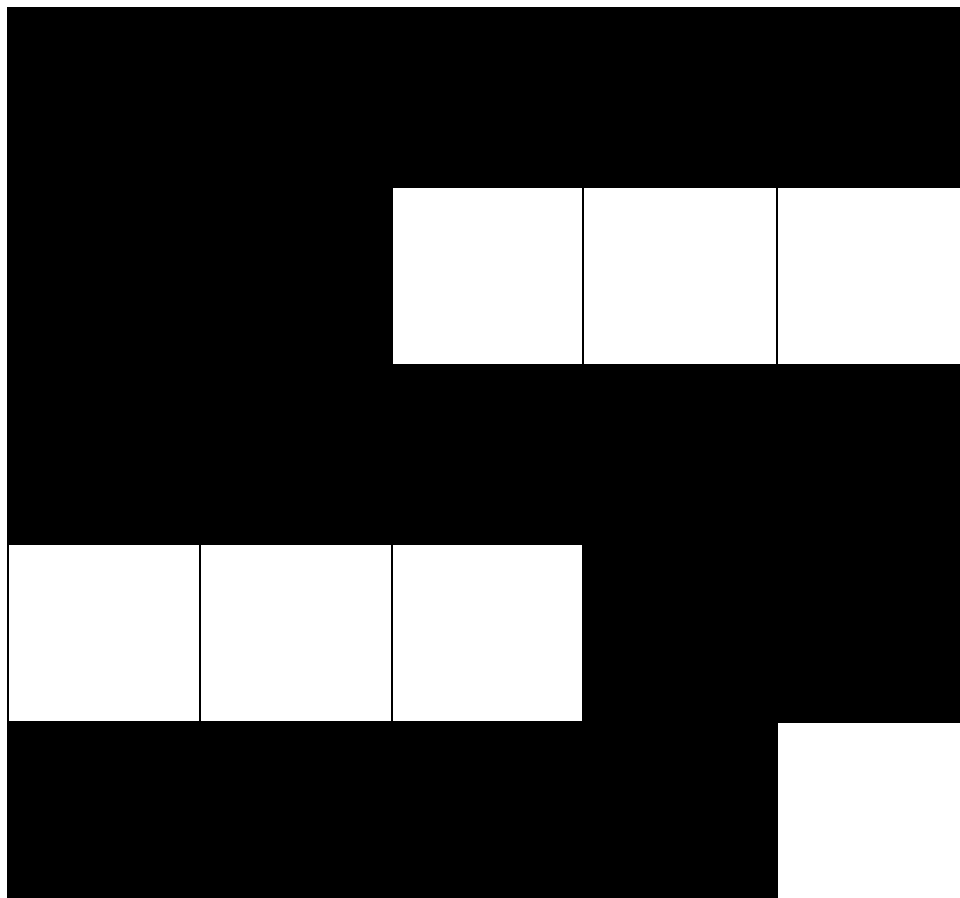


SYMMETRY: CARRYING A FIGURE ONTO ITSELF

Symmetry: Is It a Line of Symmetry?

25 shapes, 25 lines · matching pieces are not enough · wrong answers
show in the picture

FREE



1. **Hand out page 3**, one per student, and a small piece of tracing paper or thin paper each.
2. **Say this once:** *“Two matching pieces are not enough. Reflect the shape in the line. If it lands exactly on itself, fill the square with slanted lines. If not, leave it white.”*
3. **When the picture appears, students check it themselves.** If part of it is missing, or one square does not fit, they check that square again.

Student sheet page 3, one per student, with tracing paper if you have it.

Answers page 4 — the finished picture and the reason for every square.

18 squares are filled and seven are white, and the finished picture is the letter S. In every square the student decides one thing: is this line a line of symmetry? The shapes are turned on the page, so a line of symmetry is not always upright or level.

Five of the white squares test the most common mistake. Many students think that a line which cuts a shape into two matching pieces is a line of symmetry. That is not always true. In these squares the line cuts two matching pieces, but reflecting the shape in it does not put the shape on itself: a diagonal of the parallelogram (square 8), a diagonal of the rectangle (square 10), the line joining the middles of two opposite sides of the rhombus (square 16), the line joining the middles of two opposite sides of the parallelogram (square 17) and the other diagonal of the rectangle (square 18). The parallelogram is in two squares and is white in both. The other two white squares have lines whose pieces do not match at all.

How a student checks without you is printed on the sheet. Trace the shape and the line, turn the tracing paper over, and put the traced line exactly on the gray line. If the shape lands exactly on itself, the line is a line of symmetry.

Guessing does not work. Every simple guessing rule, such as filling a square whenever the two pieces match, gets at least five squares wrong.



This is the free lesson this activity came from. The worksheet, the full answers and the lesson plan are on it, at three levels of difficulty.

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Mystery Picture

Is it a line of symmetry?

Name _____

Period _____

Date _____

Each square shows a shape with a gray line across it. Is the gray line a line of symmetry of the shape? If yes, fill the square with slanted lines. If no, leave it white.

Reflect the shape in a line of symmetry, and the shape lands exactly on itself. Two matching pieces are not enough. To test a line: trace the shape and the line. Turn the tracing paper over. Put the traced line exactly on the gray line. If the shape lands exactly on itself, it is a line of symmetry. **When you finish, look at the picture. If part of it is missing, or one square does not fit, check that square again.**

1 	2 	3 	4 	5
6 	7 	8 	9 	10
11 	12 	13 	14 	15
16 	17 	18 	19 	20
21 	22 	23 	24 	25

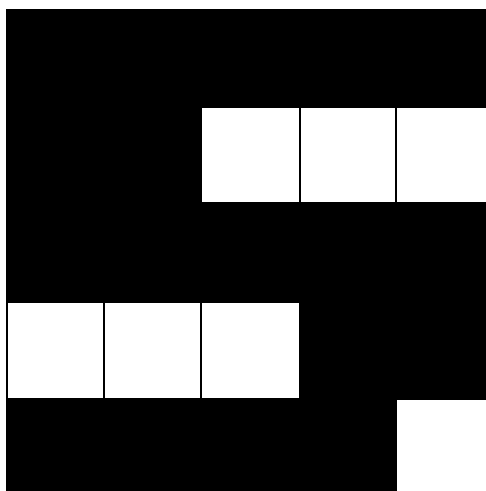


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Mystery Picture — answers

For the teacher

The finished picture is **the letter S**. The table reads left to right, the same way as the sheet.



1–5	FILL. Reflected in the line through two opposite corners, the regular hexagon lands on itself.	FILL. Reflected in the line joining the middles of two opposite sides, the rectangle lands on itself.	FILL. Reflected in the line from a corner to the middle of the side across, the equilateral triangle lands on itself.	FILL. Reflected in a diagonal, the square lands on itself.	FILL. Reflected in the line from a corner to the middle of the side across, the isosceles triangle lands on itself.
6–10	FILL. Reflected in the longer diagonal, the kite lands on itself.	FILL. Reflected in the line joining the middles of two opposite sides, the regular hexagon lands on itself.	White. A diagonal cuts two matching pieces, but the reflected parallelogram does not land on itself.	White. The shorter diagonal cuts the kite into two pieces of different shapes.	White. A diagonal cuts two matching pieces, but the reflected rectangle does not land on itself.
11–15	FILL. Reflected in the line from a corner to the middle of the side across, the house shape lands on itself.	FILL. Reflected in the line joining the middles of the two parallel sides, the isosceles trapezoid lands on itself.	FILL. Reflected in the line from a corner to the middle of the side across, the regular pentagon lands on itself.	FILL. Reflected in a diagonal, the rhombus lands on itself.	FILL. Reflected in the line joining the middles of two opposite sides, the square lands on itself.
16–20	White. The line joining the middles of two opposite sides cuts two matching pieces, but the reflected rhombus does not land on itself.	White. The line joining the middles of two opposite sides cuts two matching pieces, but the reflected parallelogram does not land on itself.	White. The other diagonal cuts two matching pieces, but the reflected rectangle does not land on itself.	FILL. Reflected in the line from the tip to the notch, the arrowhead lands on itself.	FILL. Reflected in the line joining the middles of two opposite sides, the rectangle lands on itself.
21–25	FILL. Reflected in the line through two opposite corners, the regular octagon lands on itself.	FILL. Reflected in the line from a corner to the middle of the side across, the regular pentagon lands on itself.	FILL. Reflected in a diagonal, the rhombus lands on itself.	FILL. Reflected in the line joining the middles of two opposite sides, the regular octagon lands on itself.	White. The line from a base corner to the middle of a leg cuts the isosceles triangle into two pieces of different shapes.