D Reflect Shapes

What You Will Learn:
- Reflect shapes on a square grid.

Reflecting a shape simply means to flip it over a mirror line. Each point in the shape is moved to the other side of the mirror line but remains the same distance away from the line.
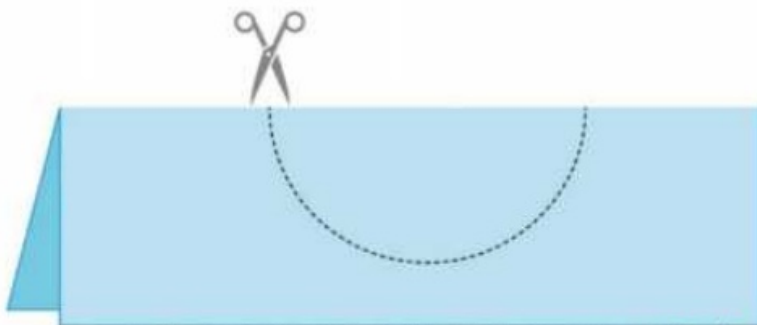
The reflected image will now be facing in the opposite direction to the original object.

Eddy folds a rectangular piece of paper in half. Then he cuts out the following shape.

What shape will he get when he unfolds the cut-out? **circle**

- What is the shape of paper that Eddy folded? **rectangle**

- What does the shape he draws look like?   **semi-circle**

- So, what shape he will get when he opens up the cut-out?   **circle**

Thinking Cap

How can you draw the shape above and its reflection on a paper with squares? What do you notice? Explain to your partner. Use a square paper to help you.

How can the squares help you?

Are all the squares the same or different?   same

Are they the same on both sides of the line?   yes

If one corner of the shape is two squares away from the line on one side

How many squares away from the line will it be on the other side?   two squares

What do you notice about the shape and its reflection?

same size just facing the opposite direction

Are the two shapes on both sides of the fold line mirror images of each other?
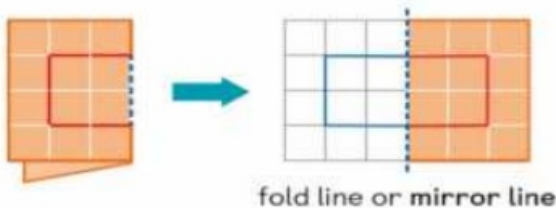
Yes

If one point of the shape is two squares away from the line on the left side,
how many squares away from the line will it be on the right side?

Two squares

Let's Learn

a   Alice folds a piece of paper in half. The picture below shows the paper when it is unfolded.

fold line or **mirror line**

The blue and red **squares** are **reflections** of each other.

What is the combined shape of the blue square and the red square?
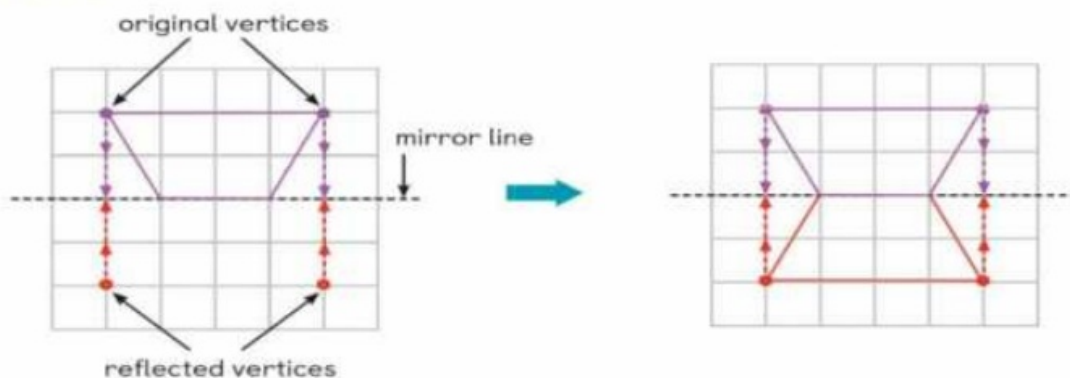
A rectangle

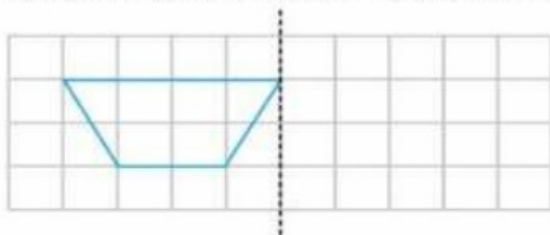The fold line is a line of symmetry of the rectangle. This is because the line cuts the rectangle in half.

b Caz draws the reflection of the shape on a square grid below.

Step 1: Count the squares from each vertex to the mirror line. Count the same distance past the mirror line. Mark this as the reflection.

Step 2: Join the original and reflected vertices.

original vertices

mirror line

reflected vertices

It's your turn now! Reflect the same shape along the mirror line.

A reflection has the same size and shape as the original shape.

Step 1: Count the squares from each vertex of the purple shape to the mirror line. Count the same number of squares below the mirror line. Mark the reflected vertices.

Step 2: Join the reflected vertices to form the red shape.

Two of the vertices of the shape are on the mirror line. They remain unchanged.

How many vertices does the shape have

4

How many vertices lie on the mirror line?

2

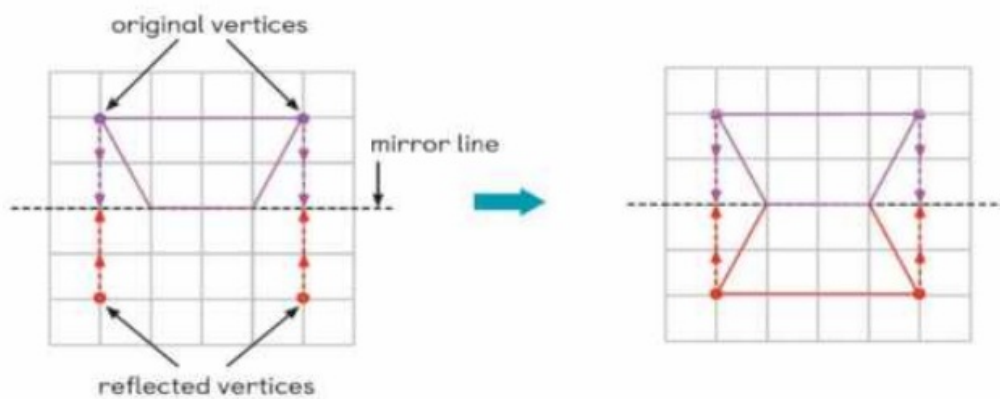How many squares are the other 2 vertices from the mirror line?
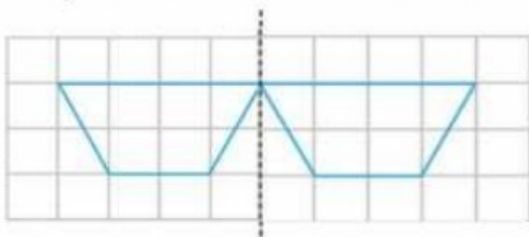
2 squares

b Caz draws the reflection of the shape on a square grid below.

Step 1: Count the squares from each vertex to the mirror line. Count the same distance past the mirror line. Mark this as the reflection.

Step 2: Join the original and reflected vertices.

original vertices

mirror line

reflected vertices

It's your turn now! Reflect the same shape along the mirror line.

A reflection has the same size and shape as the original shape.

(b) More Reflection

It's your turn now! Reflect the same shape along the mirror line.

mirror line

Step 1: Label the shape ABCD.

Step 2: The vertex D is on the mirror line, so there is no change after the reflection.

Step 3: From D, count 4 squares to the right, and mark the vertex A.

Step 4: From the mirror line, on the grid where B and C are, count 3 squares for B and 1 square for C,
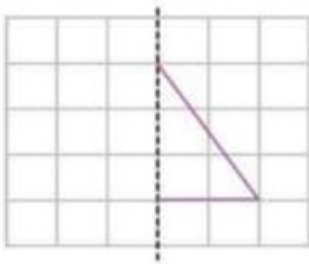
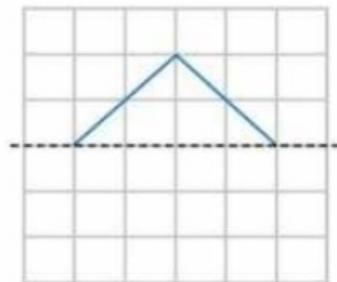**Step 5:** Join A, B, C and D that are in red text, to form the reflected shape in red.

Let's Practise

I   Reflect each shape along the dotted line on the square grid.
Draw the reflection on the square grid.

a

b

What shape do you get after reflecting each triangle?
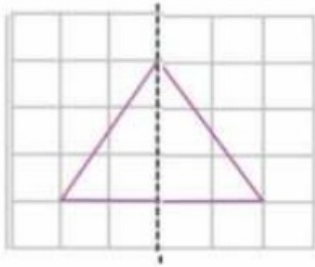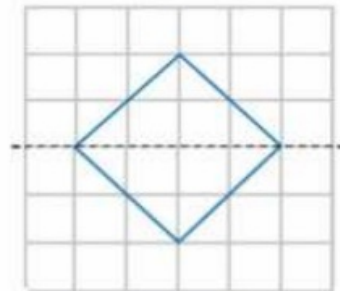Describe the characteristics.

1   Reflect each shape along the dotted line on the square grid.
Draw the reflection on the square grid.

a

b
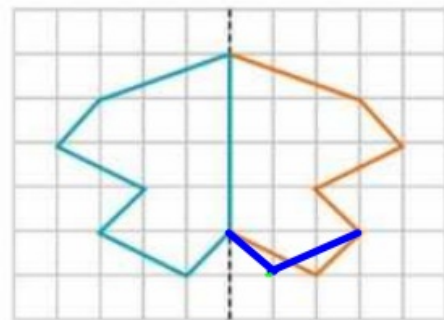

What shape do you get after reflecting each triangle?
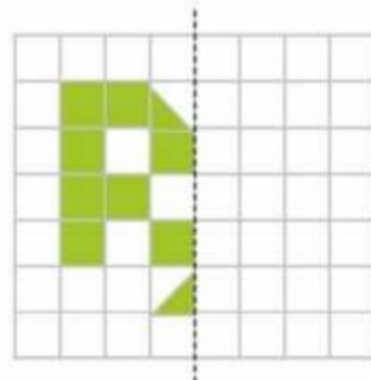Describe the characteristics.

2 Lina draws the reflection of the blue shape as shown. How will she know if she drew the reflection correctly?

3 Reflect the pattern along the dotted line. Colour on the grid to show your answer.

What do you observe from the pattern and its reflection?

Tick (✓) to show what you can do.

☐ I can reflect shapes on a square grid.