

# Y8 Line symmetry and reflection

## What do I need to be able to do?

By the end of this unit you should be able to:

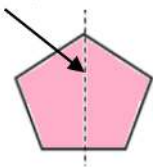
- Recognise line symmetry
- Reflect in a horizontal line
- Reflect in a vertical line
- Reflect in a diagonal line

## Keywords

**Mirror line:** a line that passes through the center of a shape with a mirror image on either side of the line  
**Line of symmetry:** same definition as the mirror line  
**Reflect:** mapping of one object from one position to another of equal distance from a given line  
**Vertex:** a point where two or more line segments meet  
**Perpendicular:** lines that cross at  $90^\circ$   
**Horizontal:** a straight line from left to right (parallel to the x axis)  
**Vertical:** a straight line from top to bottom (parallel to the y axis)

## Lines of symmetry

Mirror line (line of reflection)



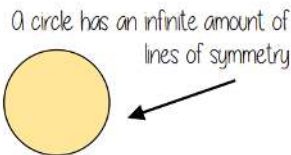
Shapes can have more than one line of symmetry...  
 This regular polygon (a regular pentagon has 5 lines of symmetry)



**Rhombus**  
two lines of symmetry

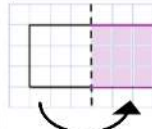
**Parallelogram**

No lines of symmetry



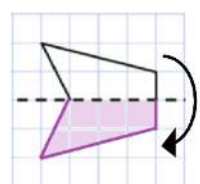
A circle has an infinite amount of lines of symmetry

## Reflect horizontally/ vertically (1)



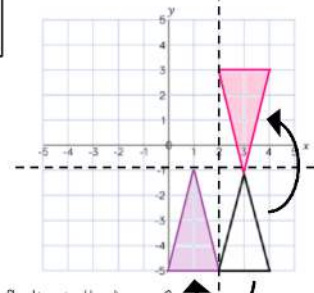
Reflection in a vertical line

Note: a reflection doubles the area of the original shape



Reflection in a horizontal line

Reflection on an axis grid

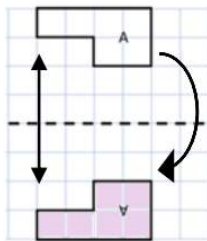


Reflection in the line  $x=2$

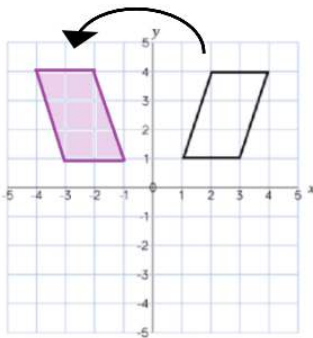
Reflection in the line  $y=2$

## Reflect horizontally/ vertically (2)

All points need to be the same distance away from the line of reflection



Reflection in the line y axis – this is also a reflection in the line  $x=0$



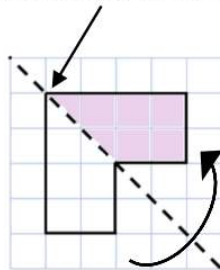
**Lines parallel to the x and y axis**

REMEMBER

Lines parallel to the x-axis are  $y = \dots$   
 Lines parallel to the y-axis are  $x = \dots$

## Reflect Diagonally (1)

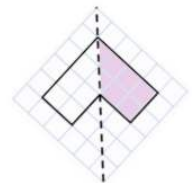
Points on the mirror line don't change position



Fold along the line of symmetry to check the direction of the reflection

**Turn your image**

If you turn your image it becomes a vertical/ horizontal reflection (also good to check your answer this way)

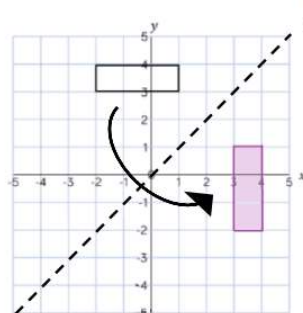


**Drawing perpendicular lines**

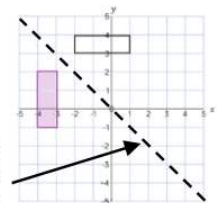
Perpendicular lines to and from the mirror line can help you to plot diagonal reflections

## Reflect Diagonally (2)

This is the line  $y = x$  (every y coordinate is the same as the x coordinate along this line)



This is the line  $y = -x$   
 The x and y coordinate have the same value but opposite sign



**Turn your image**

If you turn your image it becomes a vertical/ horizontal reflection (also good to check your answer this way)