

Year 8 - Unit 10: Transformations

Learning Journey:

Prior Learning

- Plot and read coordinates in all four quadrants.
- Recognise and describe 2D shapes and their properties.



Next Steps

- Perform rotations and enlargements using coordinates.
- Describe and combine transformations to solve GCSE geometry problems.

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

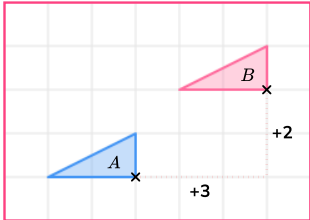
- Translate shapes using vectors and describe translations accurately.
- Reflect shapes in horizontal, vertical and diagonal mirror lines.

Keywords:

- Translation** – A transformation that slides a shape without turning or resizing.
- Reflection** – A transformation that flips a shape in a mirror line.
- Vector** – A movement described by direction and distance.
- Mirror line** – The line a shape is reflected in.
- Congruent** – Shapes that are the same size and shape.
- Transformation** – A change to a shape's position, size or orientation.

Translation

Translation is a type of transformation that moves a shape in a horizontal direction (left and right) and in a vertical direction (up and down).



Shape A has been translated to shape B by the column vector

$$\begin{pmatrix} 3 \\ 2 \end{pmatrix}$$

The column vector gives instructions how to move each point of the original shape.

$$\begin{pmatrix} 3 \\ 2 \end{pmatrix} \text{ is } \begin{pmatrix} 3 \text{ right} \\ 2 \text{ up} \end{pmatrix}$$

The inverse transformation would translate shape B back to shape A using the column vector:

$$\begin{pmatrix} -3 \\ -2 \end{pmatrix} \text{ is } \begin{pmatrix} 3 \text{ left} \\ 2 \text{ down} \end{pmatrix}$$

Reflection

Reflection is a type of transformation that flips a shape in a mirror line (also called a line of reflection) so that each point is the same distance from the mirror line as its reflected point.

E.g. Triangle P has been reflected in the line $x = 4$ to give Triangle Q.

