

What do I need to be able to do?

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

- Identify the order of rotational symmetry
- Rotate a shape about a point on the shape
- Rotate a shape about a point not on a shape
- Translate by a given vector
- Compare rotations and reflections

Keywords

Rotate: a rotation is a circular movement

Symmetry: when two or more parts are identical after a transformation

Regular: a regular shape has angles and sides of equal lengths

Invariant: a point that does not move after a transformation

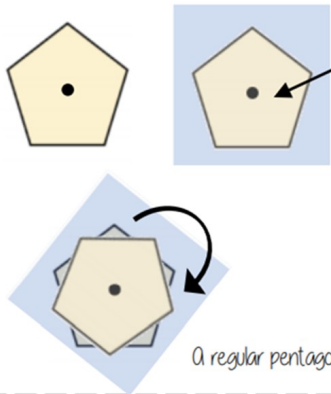
Vertex: a point two edges meet

Horizontal: from side to side

Vertical: from up to down

Rotational Symmetry

Tracing paper helps check rotational symmetry



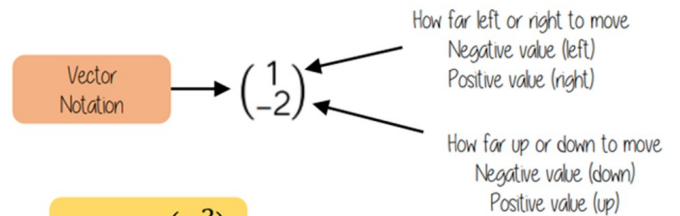
1 Trace your shape (mark the centre point)

2 Rotate your tracing paper on top of the original through 360°

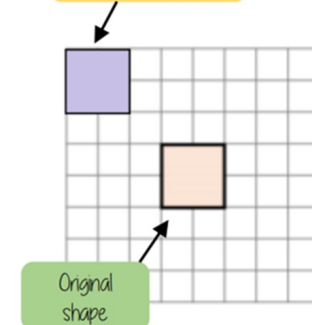
3 Count the times it fits back into itself

A regular pentagon has rotational symmetry of order 5

Translation and vector notation

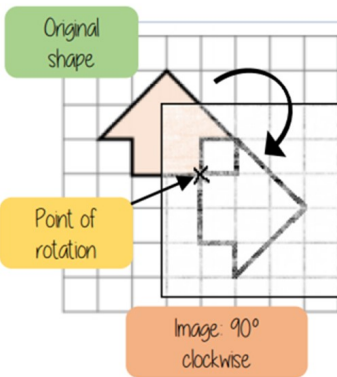


Translation $\begin{pmatrix} -3 \\ 3 \end{pmatrix}$



Every vertex has been translated by the same amount

Rotate from a point (in a shape)



1 Trace the original shape (mark the point of rotation)

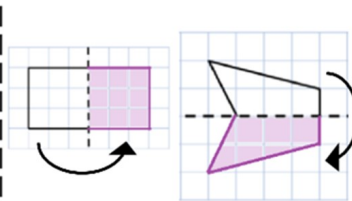
2 Keep the point in the same place and turn the tracing paper

3 Draw the new shape



Image 90° clockwise

Compare rotations and reflections



R Reflections are a mirror image of the original shape

Information needed to perform a reflection:

- Line of reflection (Mirror line)

Rotate from a point (outside a shape)

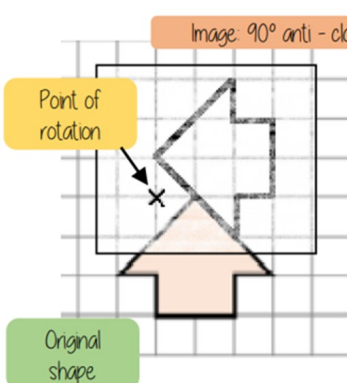


Image 90° anti-clockwise

1 Trace the original shape (mark the point of rotation)

2 Keep the point in the same place and turn the tracing paper

3 Draw the new shape

Rotations are the movement of a shape in a circular motion

Information needed to perform a rotation:

- Point of rotation
- Direction of rotation
- Degrees of rotation