

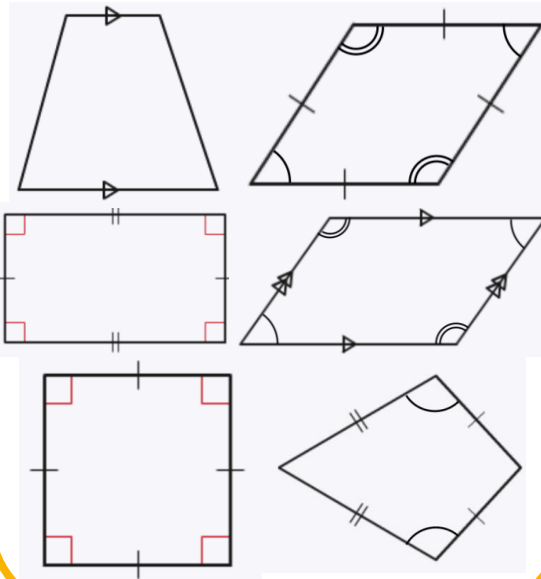


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PROPERTIES OF SHAPES



Key Concept Quadrilaterals



Key Words

Angle: This is formed by two lines, joined by a common endpoint.

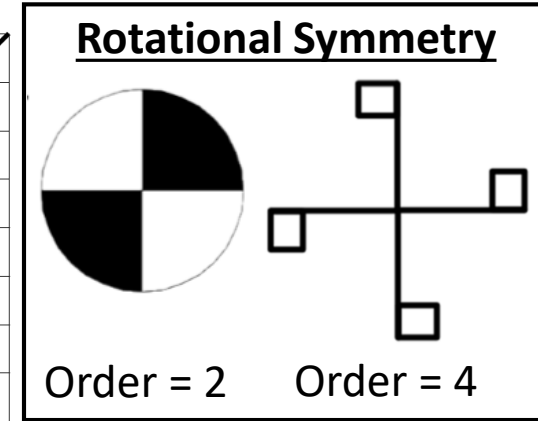
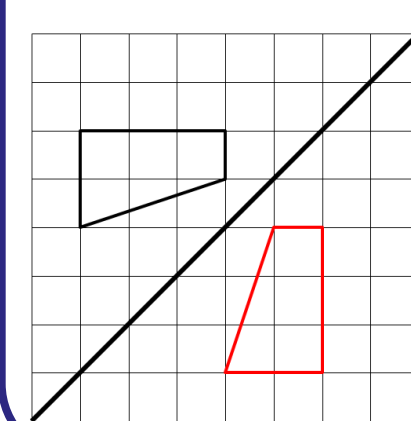
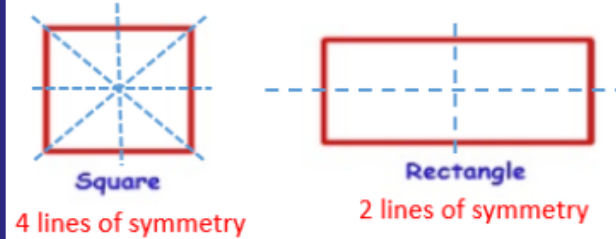
Symmetry: A shape has symmetry if there is a line which forms two equal parts which are a mirror image of each other.

Reflection: This is where a shape is flipped.

Rotation: This is where a shape is turned.

Examples

Lines of symmetry and reflection



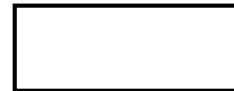
 **hegartymaths**
Clip Numbers
457-460, 639-649,
822-828

Tip

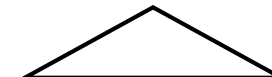
- The smallest the order of rotational symmetry can be, is 1.
- To see if a line of symmetry works fold along the line and see if the both halves lie exactly on top of each other.

Questions - For the shapes below draw on their lines of symmetry and state their order of rotational symmetry.

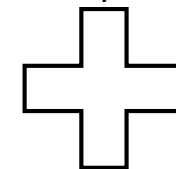
1)



2)



3)



ANSWERS: 1) 2 lines of symmetry, order = 2 2) 1 line of symmetry, order = 1 3) 4 lines of symmetry, order = 4.



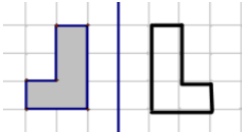
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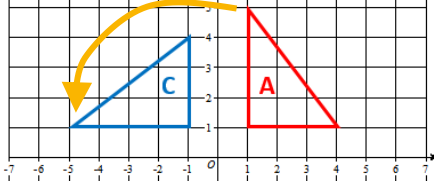
CO-ORDINATES AND TRANSFORMATIONS

Key Concept

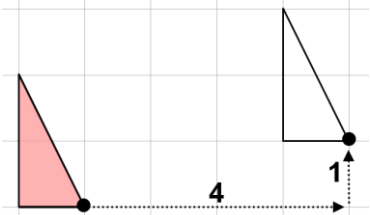
Reflection



Rotation



Translation



Key Words

Co-ordinate: A pair of numbers which describe the position on a grid.

Transformation: This means the shape has 'changed'.

Reflection: This means a shape has been flipped.

Rotation: This means a shape has been turned.

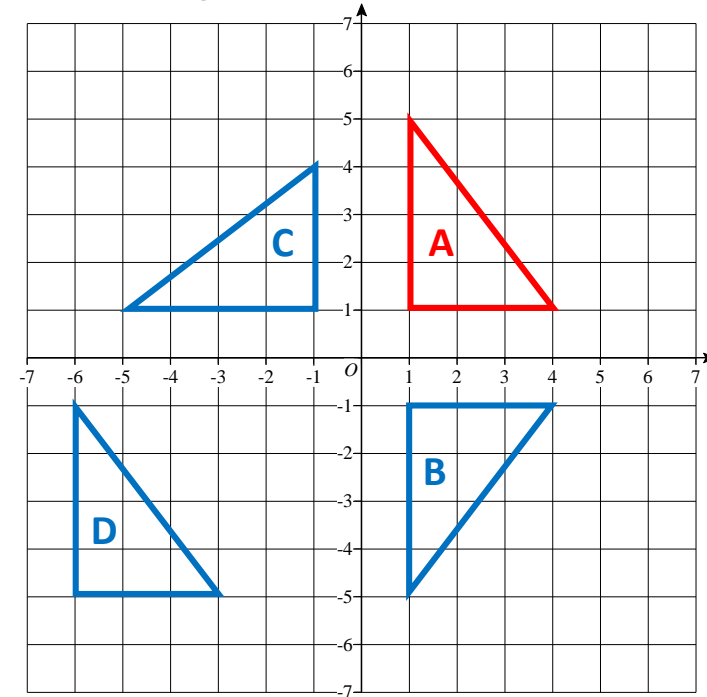
Translation: This means a *movement* of the shape.

Examples

a) Reflect A in the x-axis, label it B.

b) Rotate A 90°, anti-clockwise about (0,0), label it C.

c) Translate A in the vector $\begin{pmatrix} -7 \\ -6 \end{pmatrix}$, label it D.



Clip Numbers

199, 205, 637-657

Tip

- Use **tracing paper** to avoid mistakes.
- When describing transformations, look at how many marks are available and see if you have put enough to get the marks.

Questions

Draw a grid like the one above.

Plot a triangle with vertices (6,2), (3, 2) and (4, 5).

a) Reflect the triangle in the y-axis. b) Translate the triangle $\begin{pmatrix} -3 \\ -4 \end{pmatrix}$

ANSWERS: a) (-6,2), (-3,2) and (-4,5) b) (1,1), (0,-2) and (3,-2)