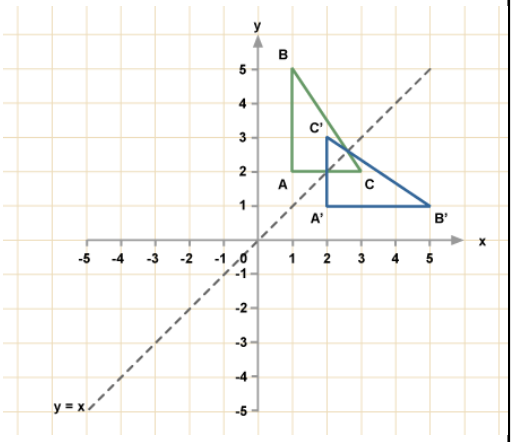
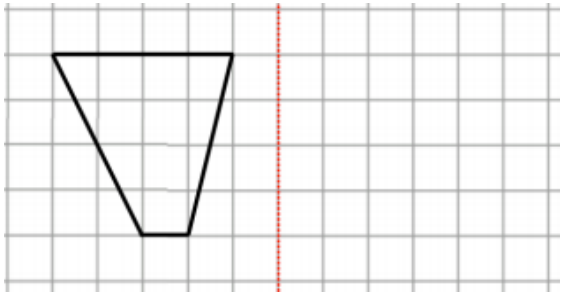
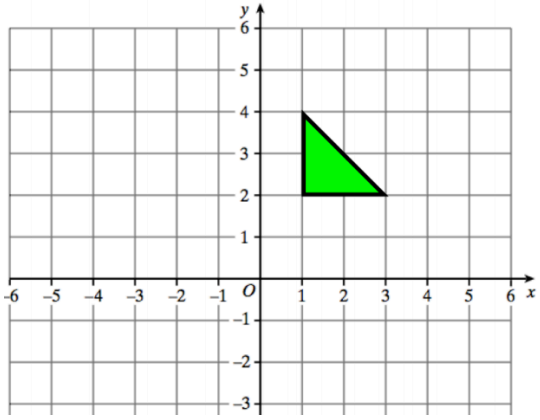
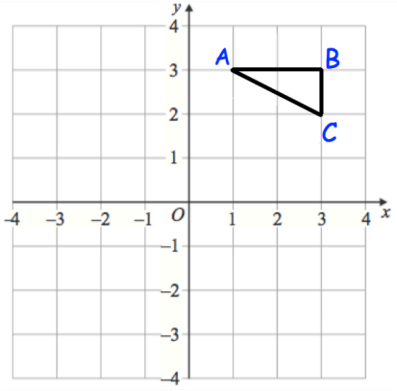
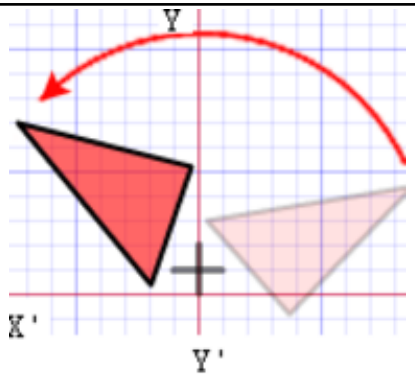
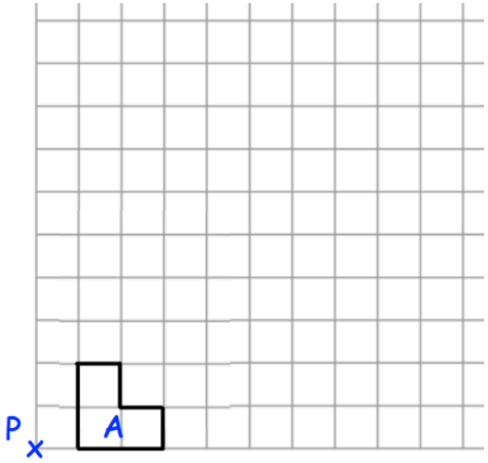
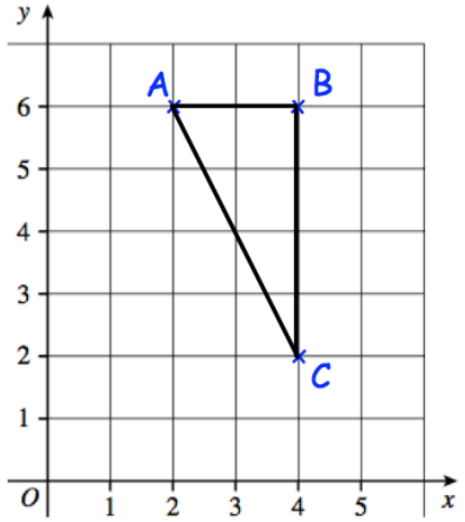
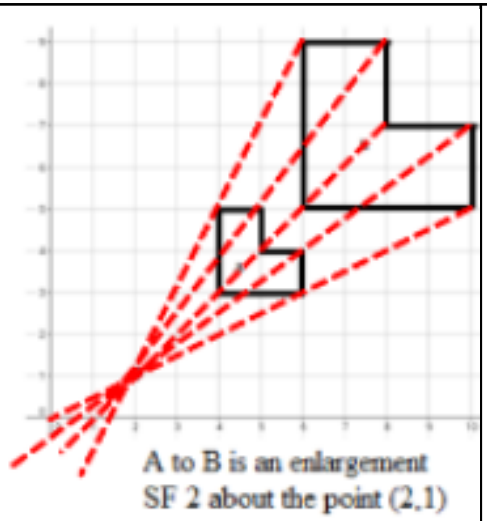
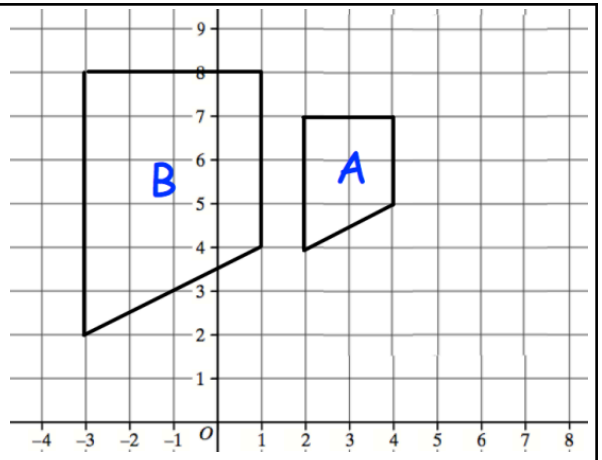
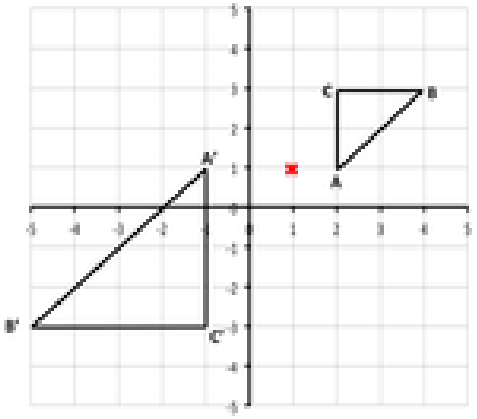
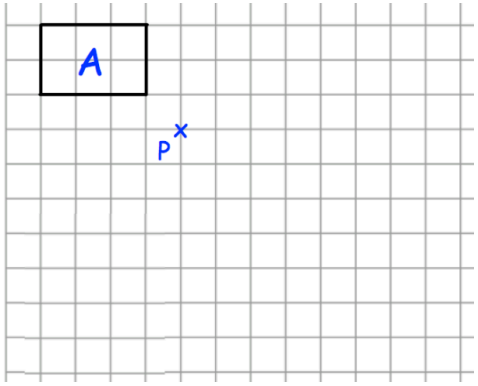
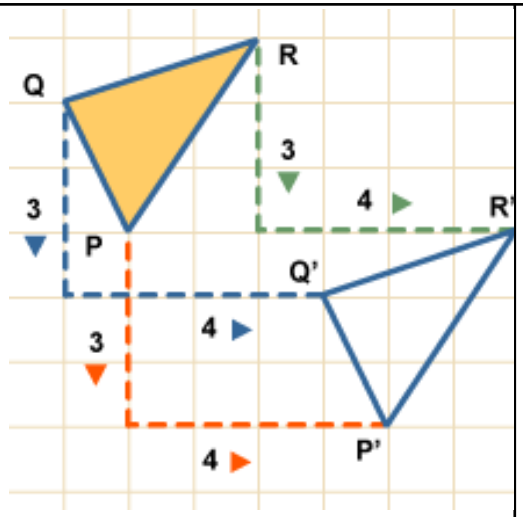
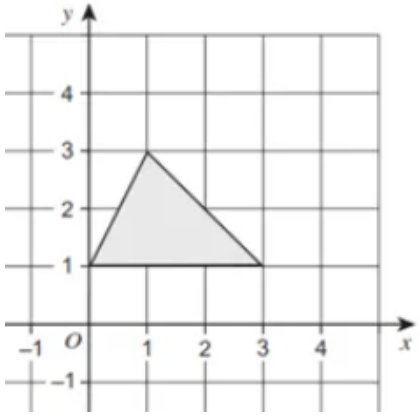
GCSE Mathematics – Unit 10: Transformations **Name:……**

Topic/Skill	Definition/Tips	Example	Your Turn
Reflection	The size does not change, but the shape is '**flipped**' like in a **mirror**. To describe a reflection you need to give the **equation** of the **mirror line** Line x =? is a **vertical line**. Line y =? is a **horizontal line**. Line $y = x$ is a **diagonal line**.	Reflect shape C in the line $y = x$ 	  Reflect the triangle in the line $x = -1$
Rotation	The size does not change, but the **shape is turned around a point**. Use tracing paper. To describe a rotation you need to give: the direction (clockwise or anti-clockwise) the angle the centre of rotation (coordinate)	Rotate shape A 90° anti-clockwise about (0,1)	

			Rotate triangle ABC 90° clockwise about centre (0, 0)
Enlargement	The shape will get **bigger or smaller**. Multiply each side by the **scale factor**. Sometimes you need to enlarge from a specific **point** or **centre.** Scale factor 3 means '3 times larger = **multiply all the lengths by 3'** Scale factor **½ means 'half the size = divide all lengths by 2'**	Enlarge Shape A by scale factor 3, from point P. 	Enlarge triangle ABC with scale factor ½ and centre (0,0) 

Finding the Centre of Enlargement	Draw **straight lines** through **corresponding corners** of the two shapes. The centre of enlargement is the point **where all the lines cross over**. Be careful with negative enlargements as the corresponding corners will be the other way around.	 	 Describe fully the single transformation that maps shape A onto shape B.
Negative Scale Factor Enlargements	Negative enlargements will **look like they have been rotated** Scale Factor -2 will be rotated, and also twice as big.	Enlarge ABC by scale factor -2, centre (1,1) 	Enlarge shape A by scale factor −2, using the point P as centre of enlargement. 

Translation Column Vector	**Translate** means to **move a shape**. The shape does not change **size** or **orientation**. In a column vector, the **top** number moves **left (-) or right (+)** and the **bottom** number moves **up (+) or down (-)** (2 3) means '2 right, 3 up' (− 1 − 5) means '1 left, 5 down'	 This shape has been translated by vector(4 − 3)	 Translate by $\binom{2}{1}$

Describing
Transformations

Give the following information when describing each transformation:

Look at the number of marks in the question for a hint of how many pieces of information are needed.

If you are asked to describe a 'transformation', you need to say the **name of the type of transformation** as well as the other details.

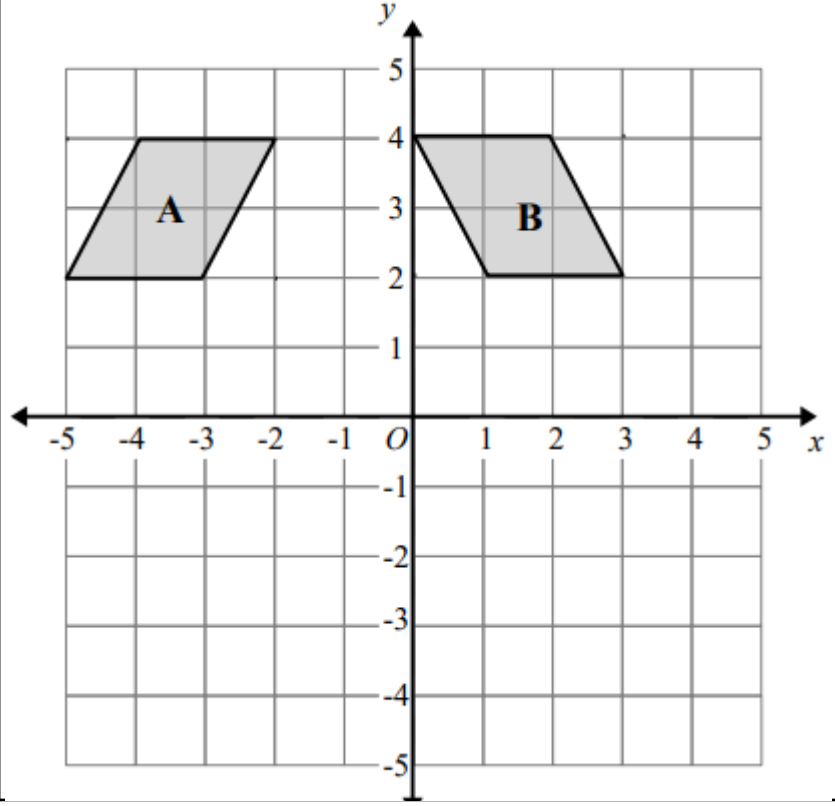
- Translation: Vector

- Rotation: Direction, Angle, Centre

- Reflection: Equation of mirror line

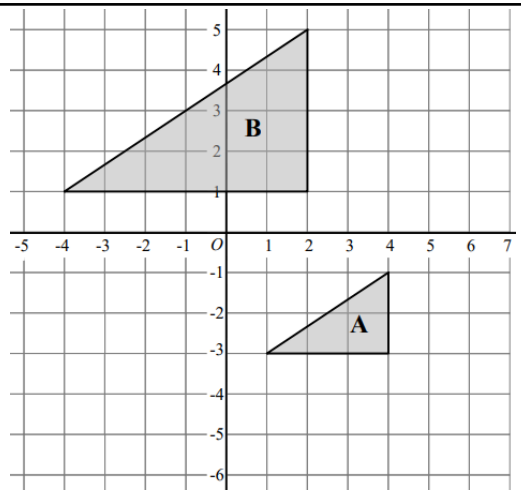
- Enlargement: Scale factor, Centre of enlargement

Describe fully the single transformation that maps shape **A** onto shape **B**.



Answer:

Reflection in the line $x = -1$



Describe fully the single transformation that maps triangle A on triangle B.

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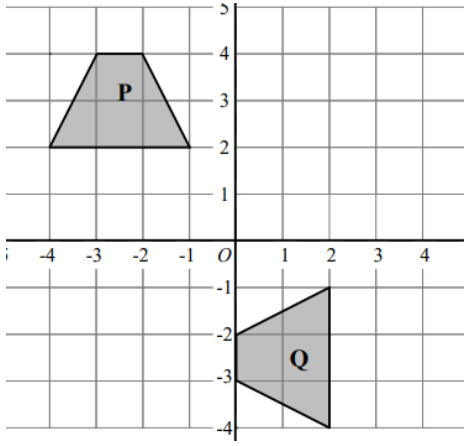

Describe fully the single transformation that maps triangle P on triangle Q.

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