

Transformations

ANSWERS

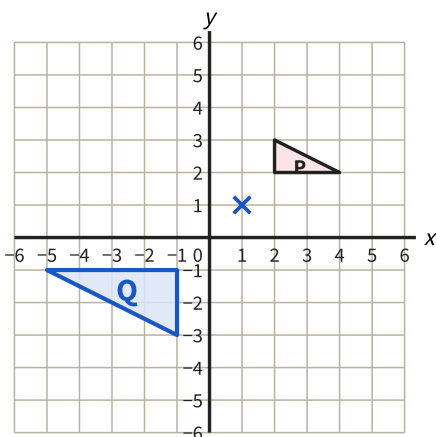
Ruler and tracing paper | 30 minutes | Total marks: 29

Name

Class

1

(a)

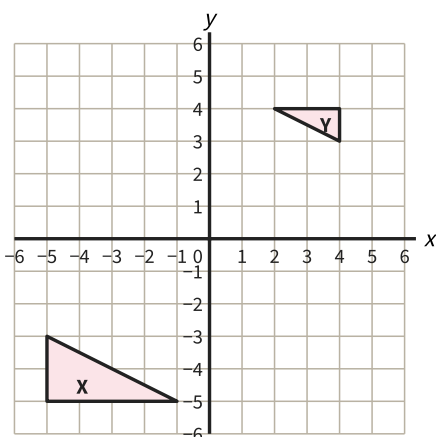


Enlarge triangle P by scale factor -2 , centre $(1, 1)$
Label the new triangle Q.

[3 marks]

Sides twice as long (1) On the opposite side of the centre (1)
Correct position (1)

(b)



Describe fully the single transformation that maps triangle X onto triangle Y.

Enlargement (1)

scale factor $-\frac{1}{2}$ (1)

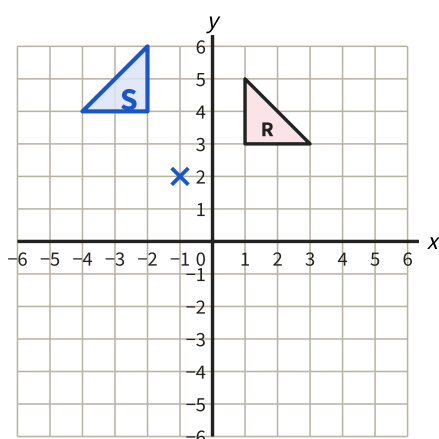
centre $(1, 1)$ (1)

[3 marks]

2

You may use tracing paper.

(a)



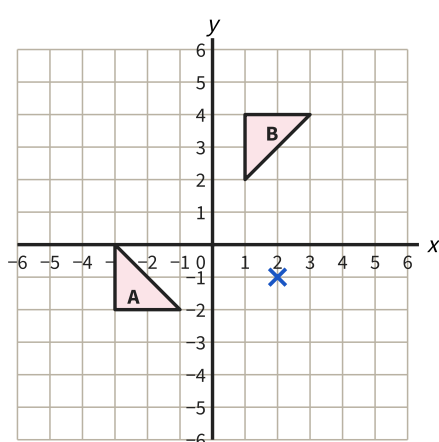
Rotate triangle R 90° anticlockwise about the point $(-1, 2)$

Label the new triangle S.

[3 marks]

Turned 90° anticlockwise (1) 1 corner correct (1) All correct (1)

(b)



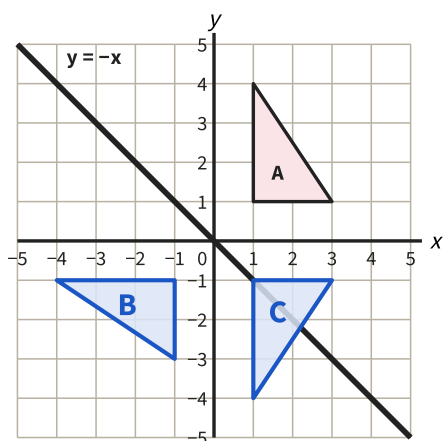
Describe fully the single transformation that maps triangle A onto triangle B.

Rotation (1)

90° clockwise (1)

about the point $(2, -1)$ (1)

[3 marks]



The line $y = -x$ is drawn on the grid. You may use tracing paper.

- (a) Reflect triangle A in the line $y = -x$
Label the new triangle B.

2 corners correct (1) All correct (1)

[2 marks]

- (b) Rotate triangle B 90° anticlockwise about (0, 0)
Label the new triangle C.

Quarter turn anticlockwise (1) Correct position (1)

[2 marks]

- (c) Describe fully the single transformation that maps triangle A onto triangle C.

Reflection (1)

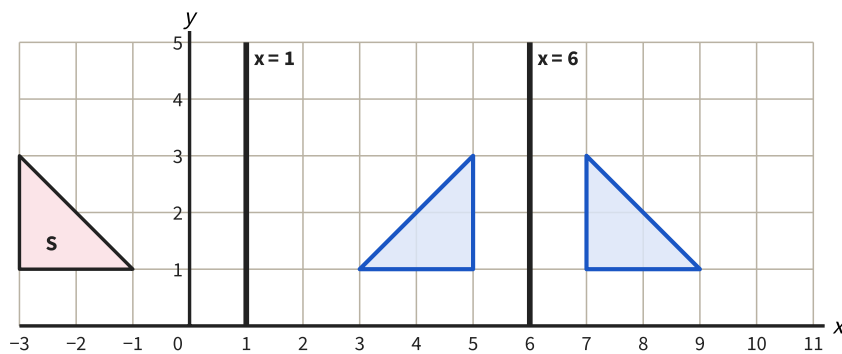
in the x -axis (1)

[2 marks]

4

Shape S is reflected in the line $x = 1$

The new shape is then reflected in the line $x = 6$



- (a) Describe fully the single transformation that maps shape S onto the final shape.

Translation (1)

by the vector $\begin{pmatrix} 10 \\ 0 \end{pmatrix}$ *(1)*

[2 marks]

- (b) The two reflections are carried out the other way round: first in $x = 6$, then in $x = 1$
Describe fully the single transformation now.

Translation (1)

by the vector $\begin{pmatrix} -10 \\ 0 \end{pmatrix}$ *(1)*

[2 marks]

5

- (a) A shape is enlarged by scale factor -1 , centre $(2, 1)$
Describe fully a single transformation that has the same effect.

Rotation (1)

180° (1)

about the point $(2, 1)$ (1)

[3 marks]

- (b) A shape is rotated 90° clockwise about the point $(3, -1)$
Write down the coordinates of the one point that is invariant.

Answer *$(3, -1)$ (1)*

[1 mark]

- (c) A point is reflected in the line $y = x$
The new point is then translated by the vector $\begin{pmatrix} 2 \\ -3 \end{pmatrix}$
It ends at $(5, 1)$
Work out the coordinates of the point it started at.

$(3, 4)$ before the translation (1)

Answer *$(4, 3)$ (1)*

[2 marks]

6

- A triangle has a perimeter of 14 cm.
It is enlarged by scale factor -3
Work out the perimeter of the enlarged triangle.

Answer *42 (1)* cm

[1 mark]

Question	Topic	RAG
1	I can enlarge by a negative scale factor and describe one	
2	I can rotate about any point and find the centre of a rotation	
3	I can describe a reflection followed by a rotation as one transformation	
4	I can combine two reflections in parallel lines	
5	I can use invariance and work backwards from a transformation	
6	I know how an enlargement changes a perimeter	