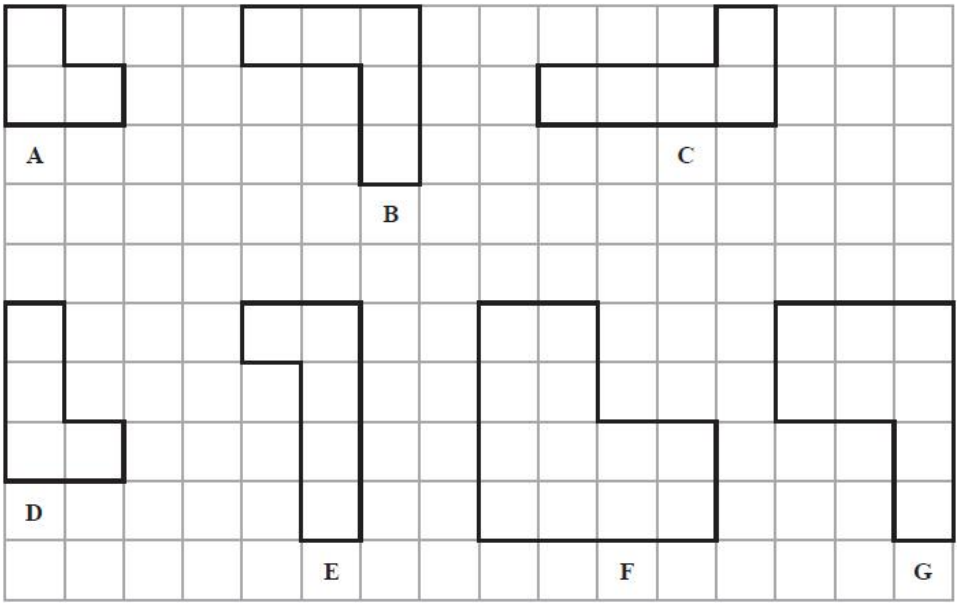
Unit 2 Revision Sheet G Transformations Foundation & Higher

Questions

Q1.

Here are seven shapes on a centimetre grid.



(a) Write down the letters of the two shapes that are congruent.

(1)

Two of the seven shapes are similar but are not congruent.

(b) Write down the letters of these two shapes.

(1)

Shape **F** has exactly one line of symmetry.

(c) On shape **F** on the grid, draw this line of symmetry.

(1)

(d) Work out the perimeter of shape **B**.

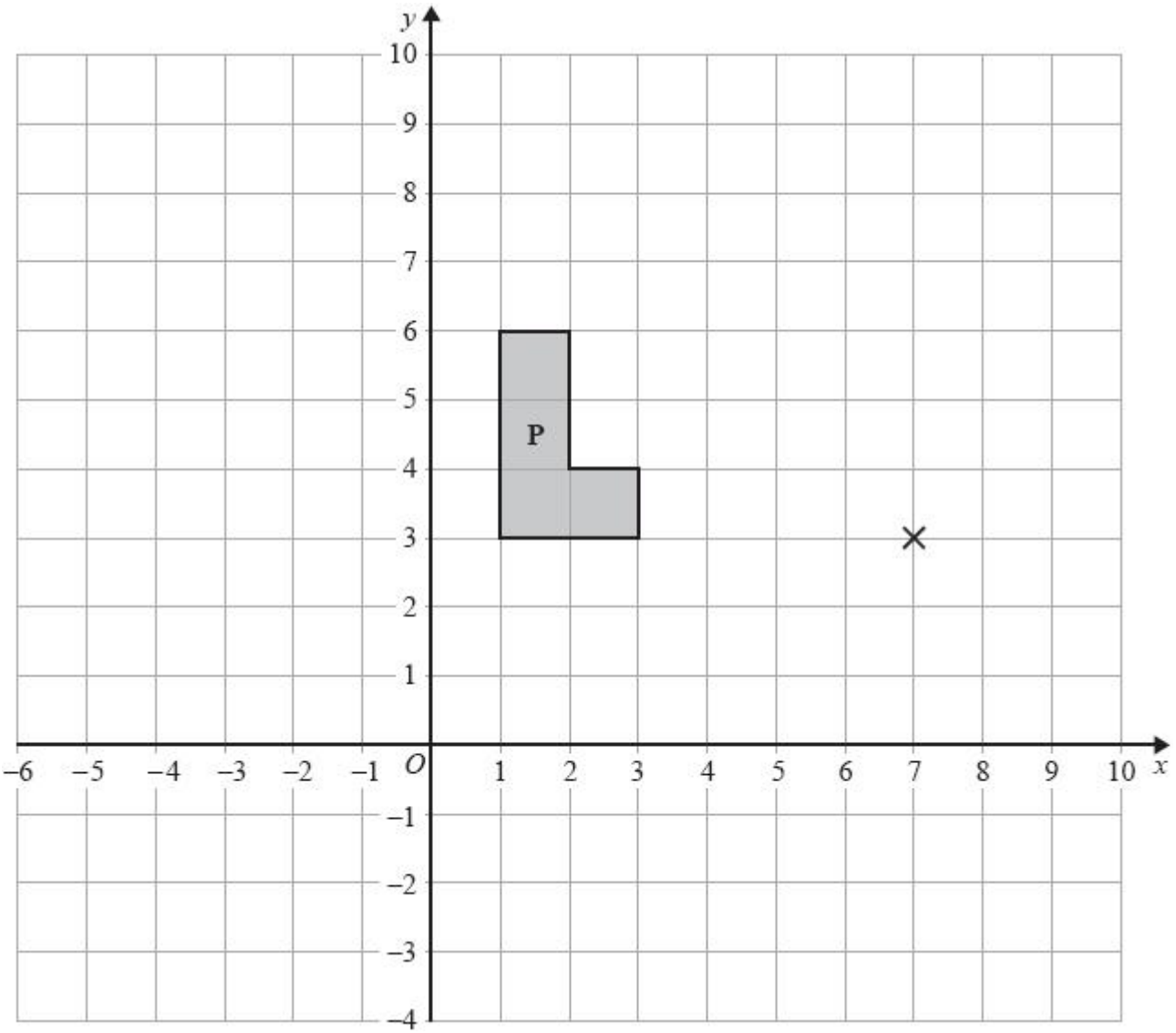
(1)

(e) Work out the area of shape **G**.

(1)

(Total for question = 5 marks)

Q2.



(a) On the grid, enlarge shape **P** with scale factor 2 and centre (7, 3)
Label the new shape **Q**.

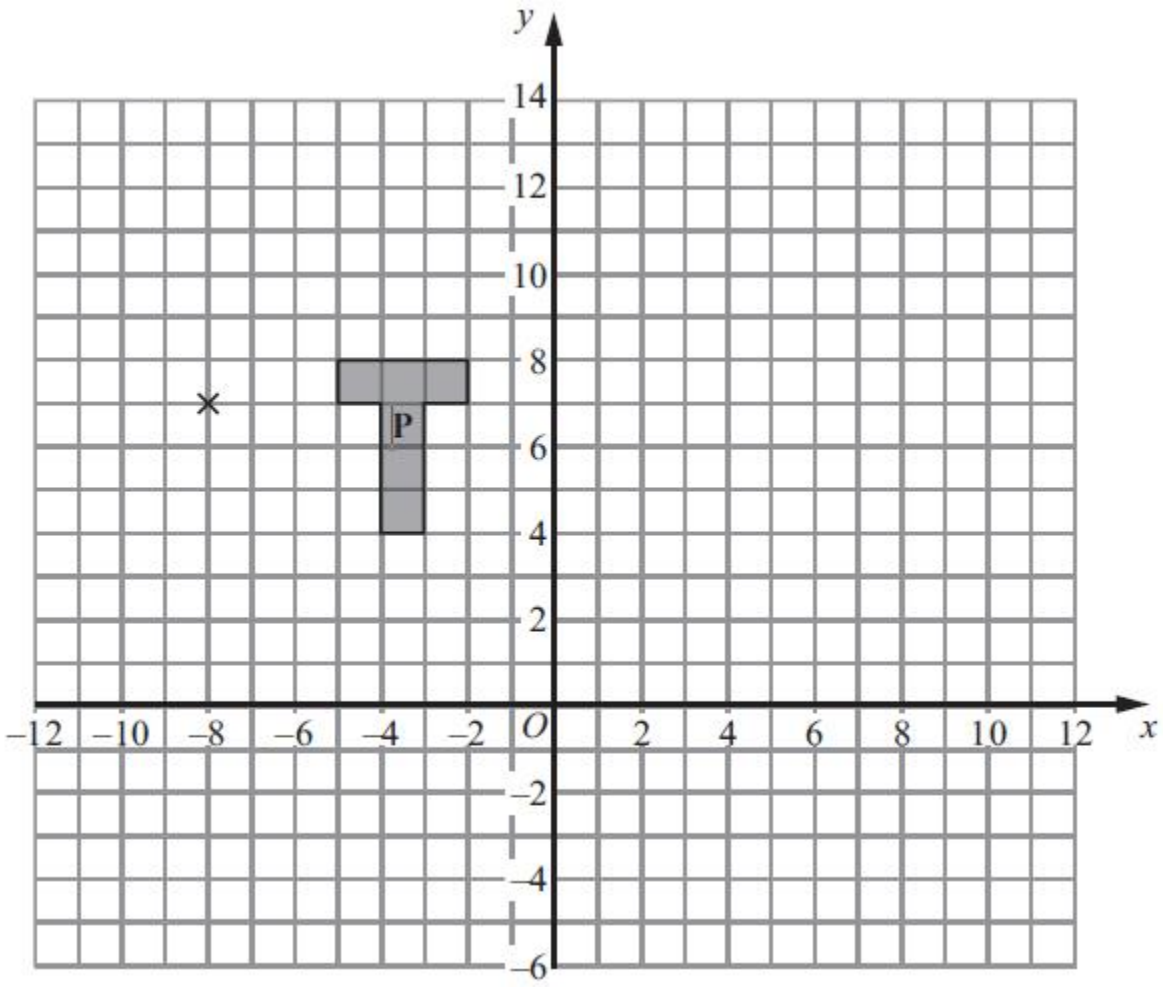
(2)

(b) On the grid, rotate shape **P** through 90° anticlockwise about the point (7, 3)
Label the new shape **R**.

(2)

(Total for question = 4 marks)

Q3.



(a) On the grid, enlarge shape **P** with scale factor 3 and centre (−8, 7).
Label the new shape **Q**.

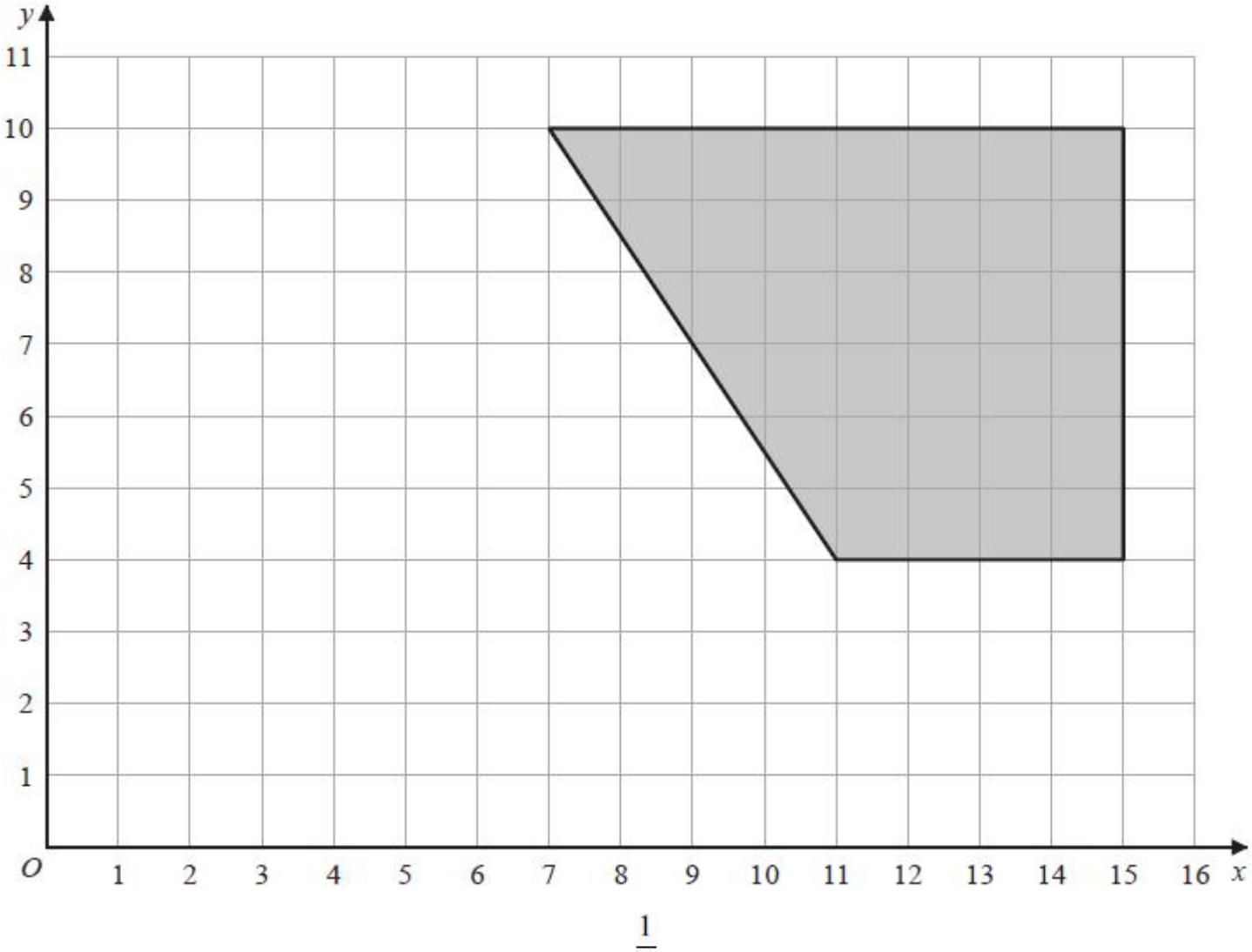
(3)

(b) On the grid, rotate shape P through 90° clockwise about the point (−8, 7).
Label the new shape **R**.

(2)

(Total for question = 5 marks)

Q4.

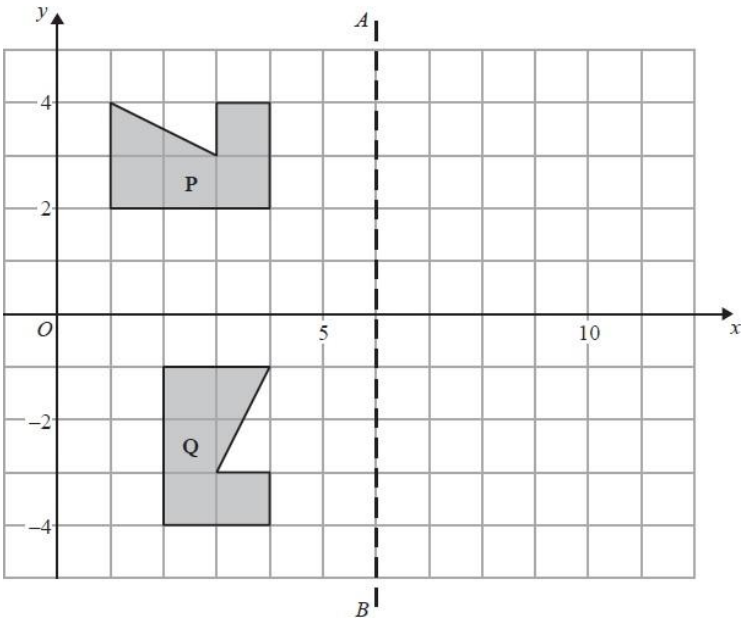


On the grid, enlarge the shaded shape with scale factor $\frac{1}{2}$ and centre (1, 2)

(Total for question = 2 marks)

Q5.

The diagram shows a shape **P**, a shape **Q** and a line *AB*.



(a) Write down an equation of the line *AB*.

(1)

(b) Reflect shape **P** in the line *AB*.

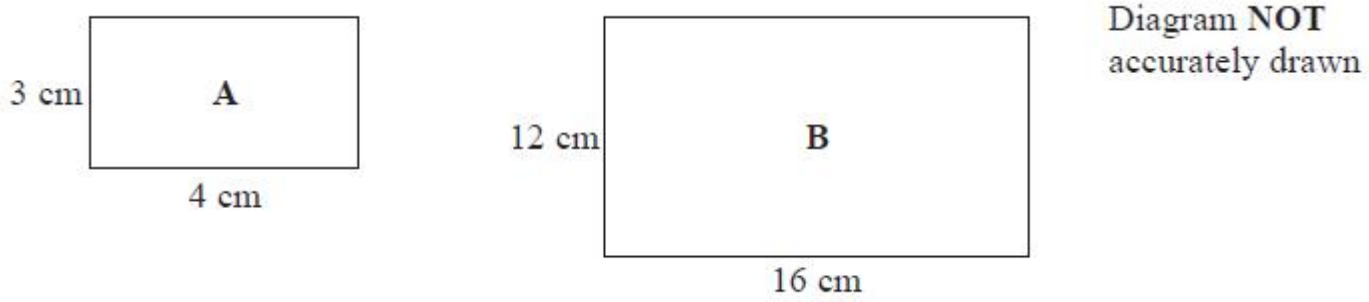
(2)

(c) Describe fully the single transformation which maps shape **P** onto shape **Q**.

(3)

(Total for question = 6 marks)

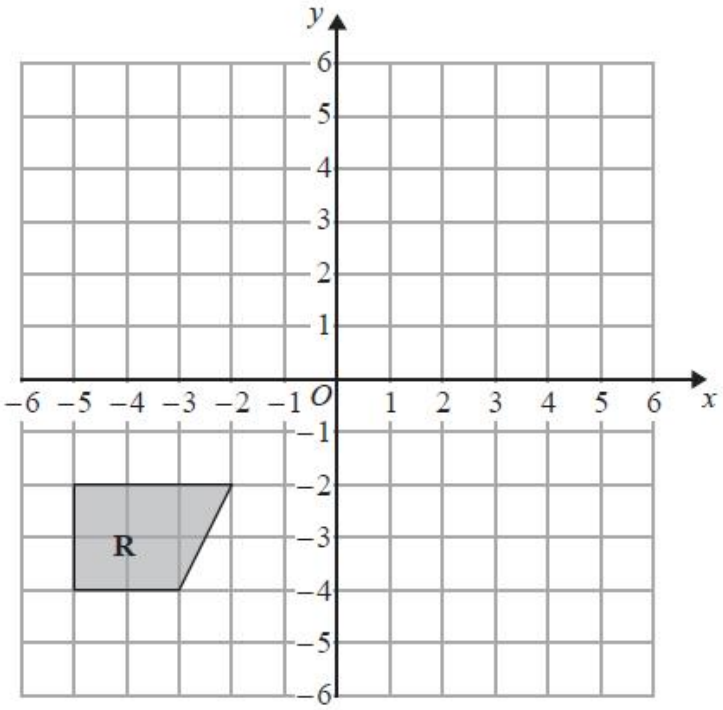
Q6.



Rectangle **B** is an enlargement of rectangle **A**.

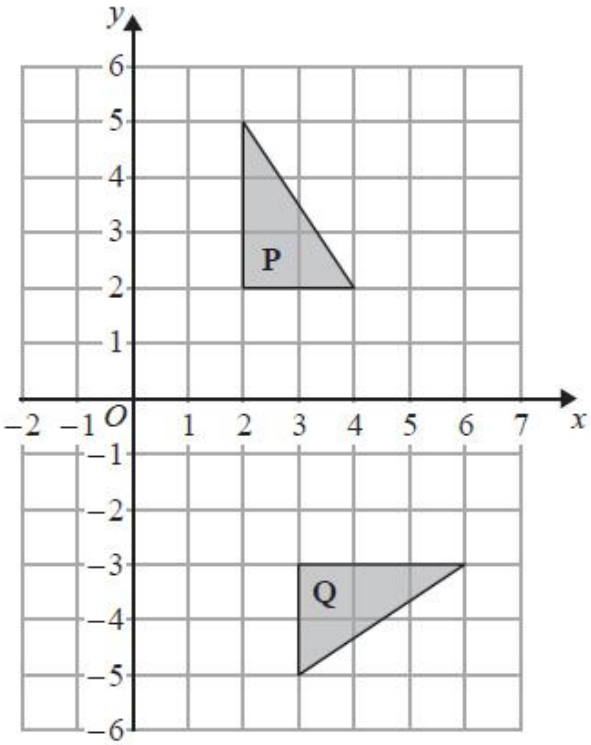
(a) Write down the scale factor of this enlargement.

(1)



(b) On the grid above, reflect shape **R** in the line $y = -x$

(2)

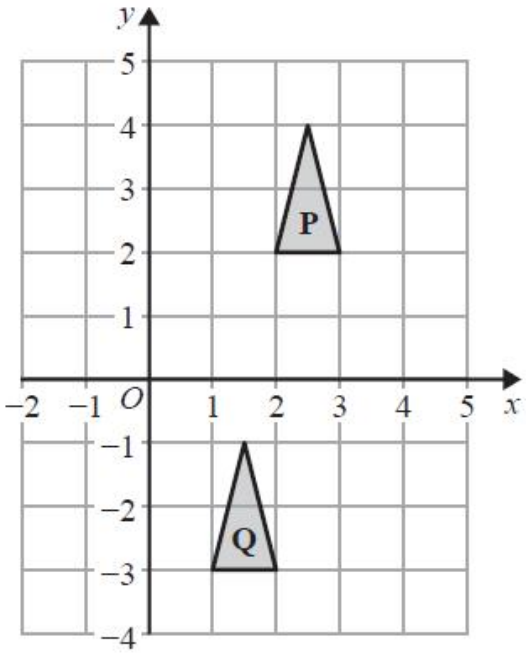


(c) Describe fully the single transformation that maps triangle **P** onto triangle **Q**.

(3)

(Total for question = 6 marks)

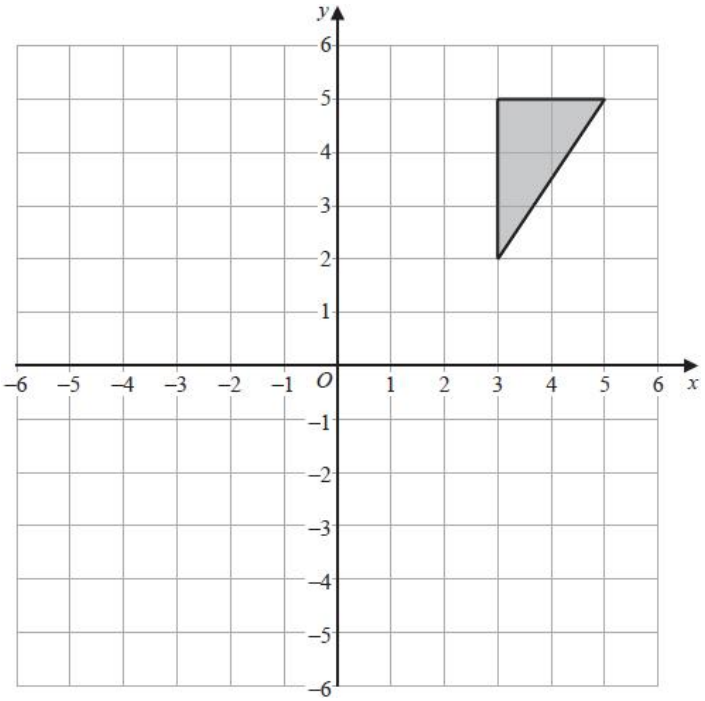
Q7.



Describe fully the single transformation that maps triangle **P** onto triangle **Q**.

(Total for question = 2 marks)

Q8.

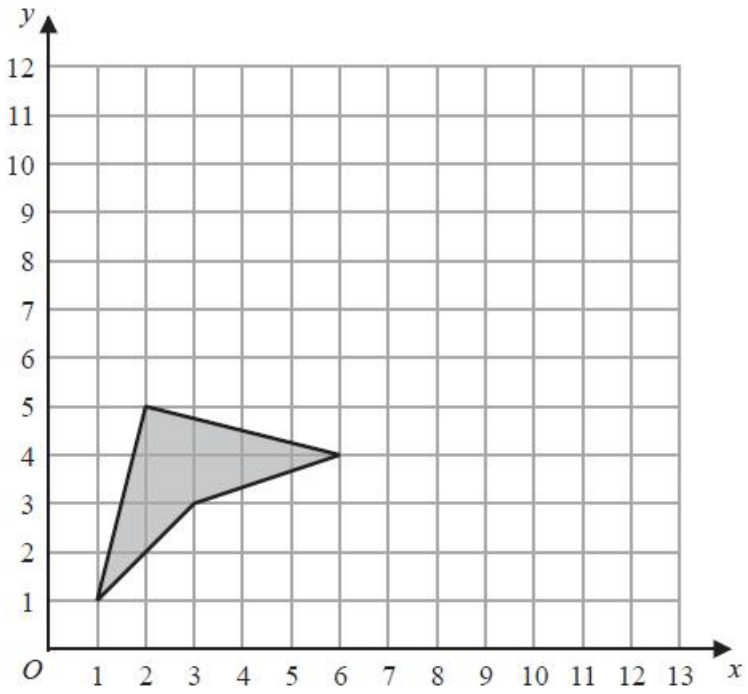


Reflect the shaded triangle in the line $y = 1$

(Total for question = 2 marks)

Q9.

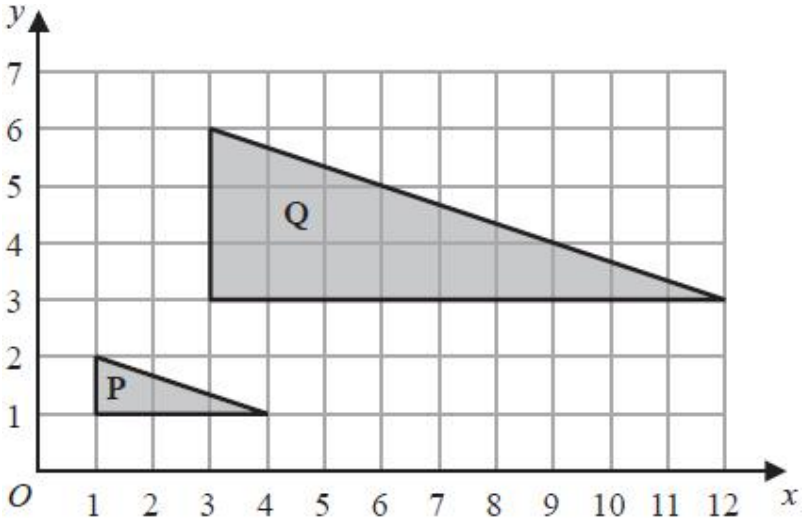
The diagram shows a shaded shape on a grid.



(a) On the grid, reflect the shape in the line with equation $x = 6$

(2)

The diagram below shows triangle **P** and triangle **Q** drawn on a grid.

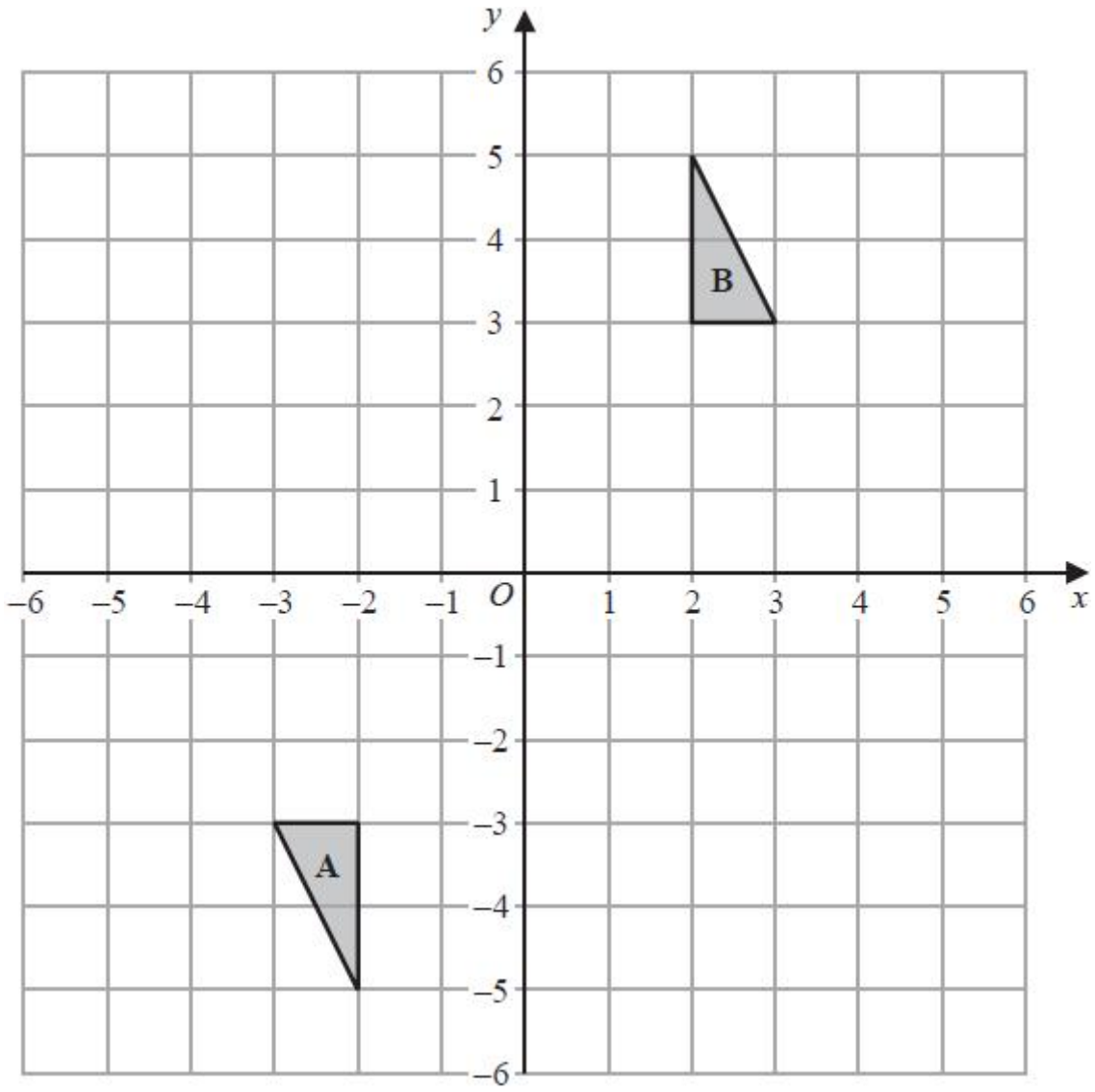


(b) Describe fully the single transformation that maps triangle **P** onto triangle **Q**.

(3)

(Total for question = 5 marks)

Q10.



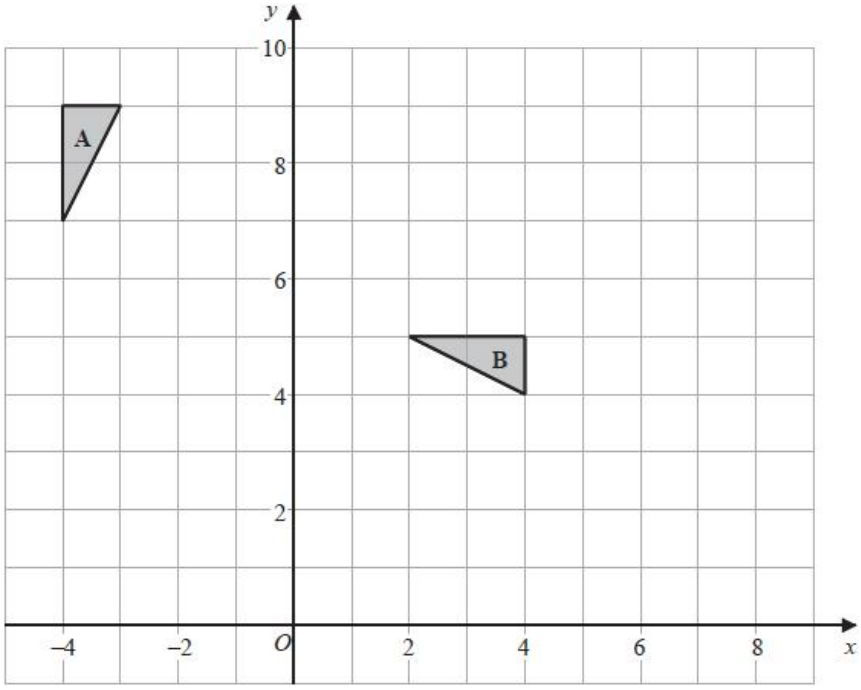
Describe fully the single transformation that maps triangle **A** onto triangle **B**.

(Total for question = 2 marks)

Q11.

Write your answers in the spaces provided.

You must write down all the stages in your working.



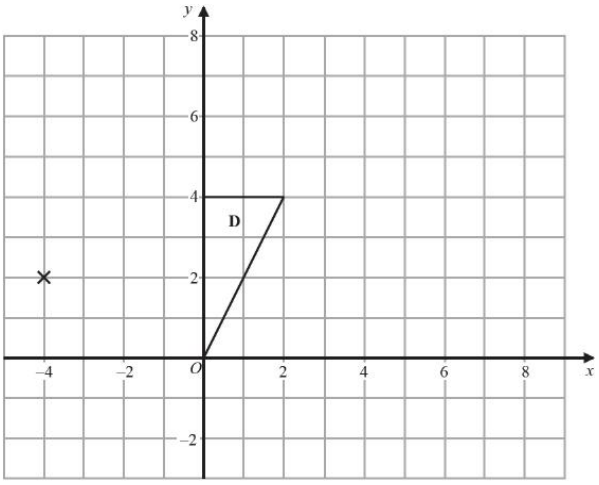
(a) Describe fully the single transformation that maps triangle **A** onto triangle **B**.

(3)

(b) On the grid, translate triangle **A** by the vector $\begin{pmatrix} 2 \\ -5 \end{pmatrix}$

Label the new triangle **C**.

(1)



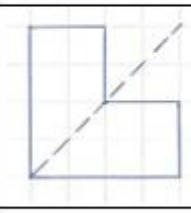
(c) On the grid, enlarge triangle **D** with scale factor $\frac{1}{2}$ and centre (−4, 2)

(2)

(Total for question = 6 marks)

Mark Scheme

Q1.

Q	Working	Answer	Mark	Notes
(a)		**C**, **E**	1	B1 accept **E** and **C** as order does not matter
(b)		**A**, **F**	1	B1 accept **F** and **A** as order does not matter
(c)		Correct line	1	B1 correct line with no other lines
(d)		12	1	B1
(e)		8	1	B1
				Total 5 marks

Q2.

Q	Working	Answer	Mark	Notes
(a)		Vertices at (−5, 3) (−5, 9) (−3, 9) (−3, 5) (−1, 5) (−1, 3)	2	B2 If not B2 then award B1 for shape of correct size and orientation in incorrect position **or** 4 out of 6 vertices correct
(b)		Vertices at (7, −1) (7, −3) (4, −3) (4,−2) (6, −2) (6,−1)	2	B2 If not B2 then award B1 for correct orientation but incorrect position or B1 for rotation 90°clockwise about (7, 3)
				Total 4 marks

Q3.

Question	Working	Answer	Mark	Notes
(a)		**Q** correct	3	B3 Bottom LH corner goes to (4, −2) If not B3 then B2 for correct size T shape in wrong position but with correct orientation If not B2 then B1 for T shape with 2 or more sides of correct length and correct orientation
(b)		**R** correct	2	B2 Bottom LH corner goes to (− 11,3) If not B2 then B1 for rotation of ± 90° (wrong position)
				Total 5 marks

Q4.

Question		Working	Answer	Mark	Notes
			Trapezium with vertices at (6, 3) (8, 3) (8, 6) (4, 6)	2	B2 If not B2 then award B1 for shape of correct size and orientation **or** 3 or 4 points plotted correctly
					Total 2 marks

Q5.

Question	Working	Answer	Mark	Notes
(a)		$x = 6$ oe	1	B1 Accept $x - 6 = 0$
(b)		Shape **P** in correct position	2	B2 Vertices at (8,2) (8,4) (9,4) (9,3) (11,4) & (11,2) If not B2 then: • B1 for correct reflection in line $x = k$ where $k \neq 6$ • or at least 2 vertices in correct position.
(c)		rotation 90° clockwise or −90° (centre) (0,0) or *O* or origin	3	B1 B1 accept 270° or 270° anticlockwise. B1 condone lack of brackets around 0,0 **Award no marks if multiple transformations.**
				Total 6 marks

Q6.

Question	Working	Answer	Mark	Notes	
(a)		4	1	B1	accept ×4
(b)	$y = -x$ drawn	(2,2) (2,5) (4,5) (4,3)	2	M1 A1	$y = -x$ drawn or a congruent shape with the correct orientation in the 1st quadrant or a correct reflection in $y=x$
(c)		Rotation about (0, −1) 90° clockwise	3	B1 B1 B1	Rotation (not turn) (centre) (0, −1) 90° clockwise or −90° or 270° anti-clockwise or +270° **NB. If more than one transformation given then no marks should be awarded**
					Total 6 marks

Q7.

Q	Working	Answer	Mark	Notes	
		Translation $\begin{pmatrix} -1 \\ -5 \end{pmatrix}$	2	B1 B1	 Description in words, 1 left & 5 down is B0
					Total 2 marks

Q8.

Question	Working	Answer	Mark	Notes	
		Triangle at (3, 0) (3, −3) (5, −3)	2	M1 A1	for line $y = 1$ drawn or correct reflection in any line parallel to the x-axis SCB1 for correct reflection in $x = 1$

Q9.

Q	Working	Answer	Mark	Notes
(a)		shape with vertices (6, 4) (10, 5) (11, 1) (9, 3)	2	B2 if not B2 then award B1 for a correct reflection in a vertical line **or** for 3 correct points of the correct shape **or** for a correct reflection $y = 6$
(b)		Enlargement	3	B1 Enlargement (with none of reflection, rotation, translation, mirrored, flipped or moved (up, right, left, down etc) stated)
		Scale factor 3		B1 Scale factor 3 or sf 3
		[Centre] (0, 0)		B1 [centre] (0, 0) **or** origin **or** O (with no column vector or equation of line)
				Total 5 marks

Q10.

Question	Working	Answer	Mark	Notes
		Rotation 180° and (0, 0)	2	B1 Rotation (with none of reflection, translation, enlargement, mirrored, flipped or moved stated)
				B1 180° centre (0, 0) or O (award if no vector or equation of line or SF mentioned) (B2 for enlargement SF −1 centre O)
				Total 2 marks

Q11.

Question	Working	Answer	Mark	Notes
(a)		Rotation, 90° clockwise, centre (−2,3)	3	B1 for rotation B1 90° clockwise or −90° (or 270° anticlockwise) B1 (centre) (−2,3) Note: Do not accept $\begin{pmatrix} -2 \\ 3 \end{pmatrix}$ for centre Award no marks if more than one transformation explicitly stated (the sight of a vector is **not** a second transformation) eg. moved and then rotated; rotation and translation
(b)		Triangle at (−2, 2), (−2, 4), (−1, 4)	1	B1 cao
(c)		Triangle at (−2, 1), (−2, 3), (−1, 3)	2	B2 If not B2 then award B1 for a triangle of the correct size and orientation **or** the wrong size but enlarged correctly from (-4, 2) with a sf other than 0.5 e.g. a triangle at (4, −2), (4, 6), (8, 6)