



St. Patrick's High School, Keady

Mathematics Department

GCSE Mathematics Practice Booklet

M6

Topic 3 – Geometry and Measure I

Reflections

Enlargements

Translations

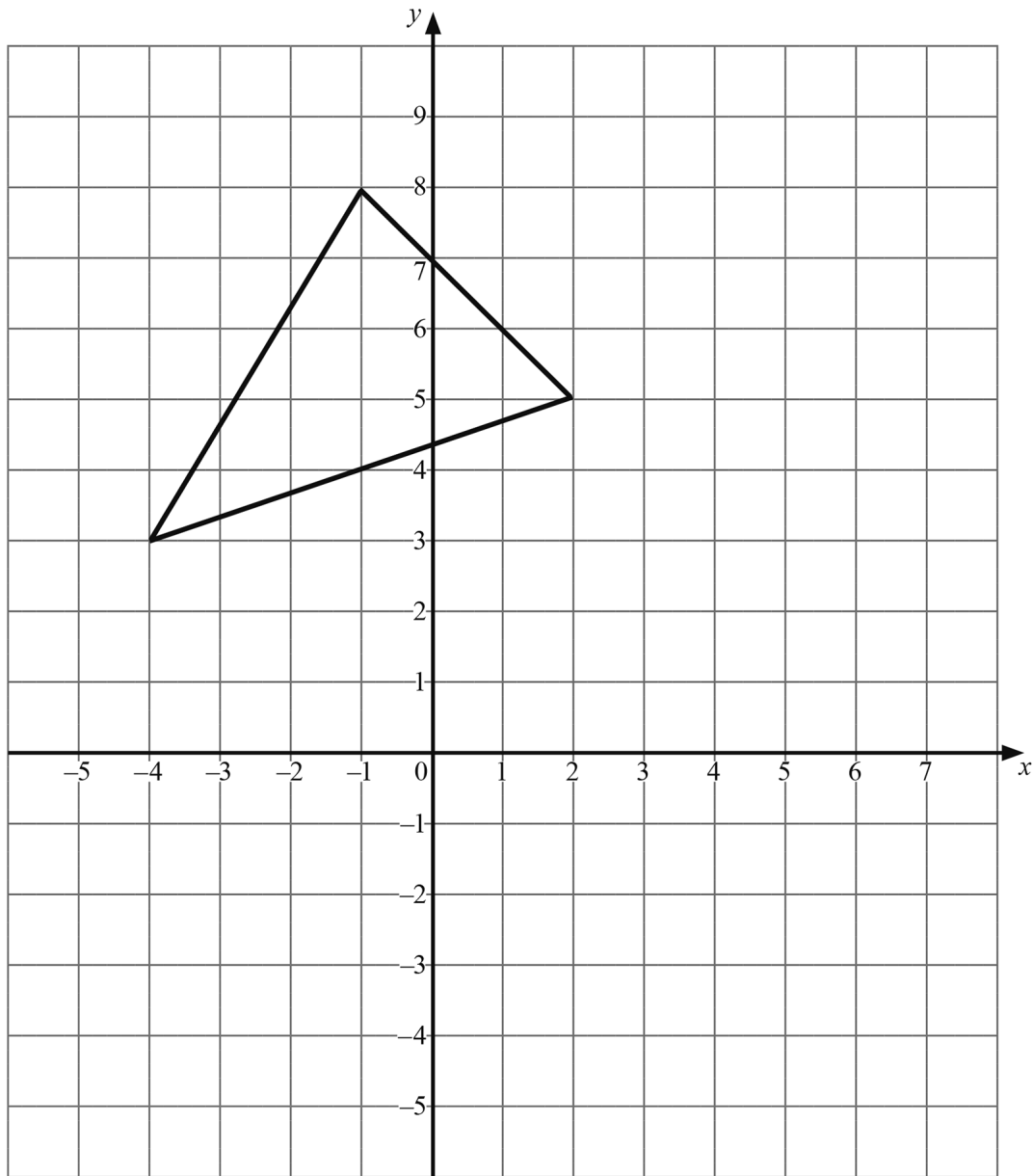
Rotations

Congruence and Similarity

All questions in this booklet are taken from non-calculator past papers

Questions taken from CCEA Past Papers

Q1



(a) On the diagram above, reflect the given triangle in the line $y = 2$

Label your answer A.

[2]

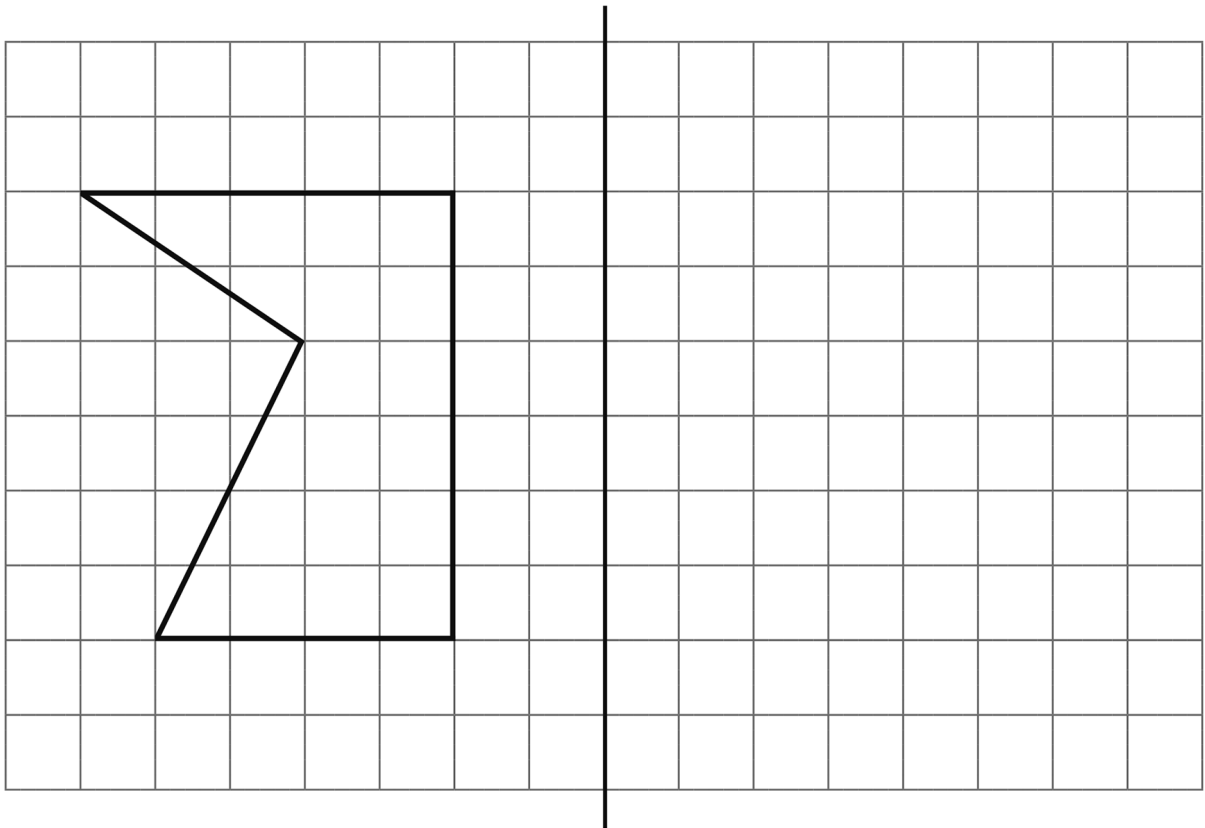
(b) On the same diagram, translate the given triangle by $\begin{pmatrix} 4 \\ -2 \end{pmatrix}$

Label your answer B.

[2]

Q2

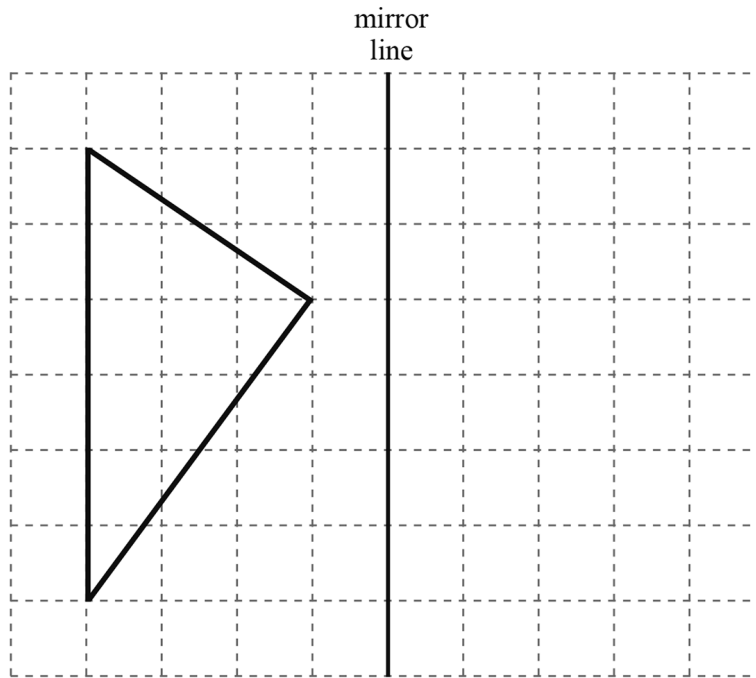
On the grid below draw the reflection of the shape in the given line.



[2]

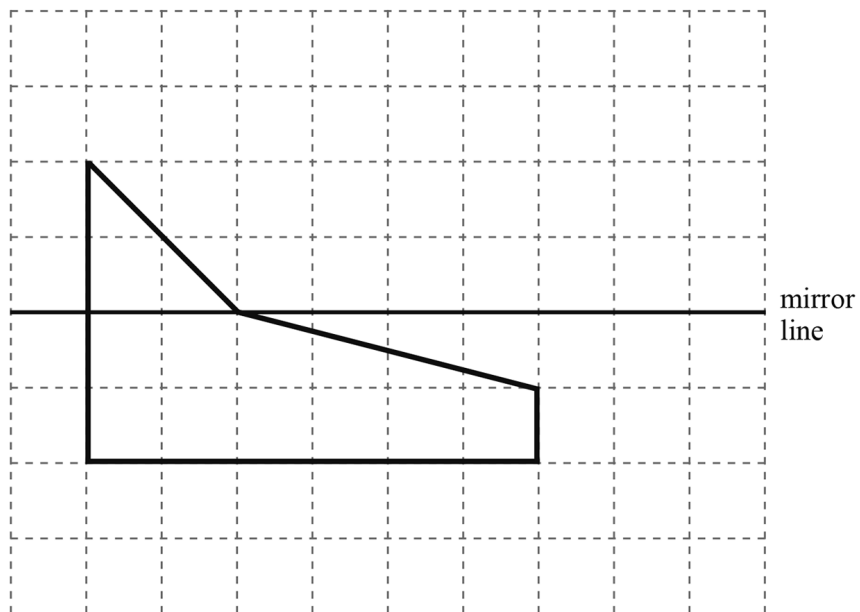
Q3 Draw the reflection in the mirror line of each of these shapes.

(a)



[2]

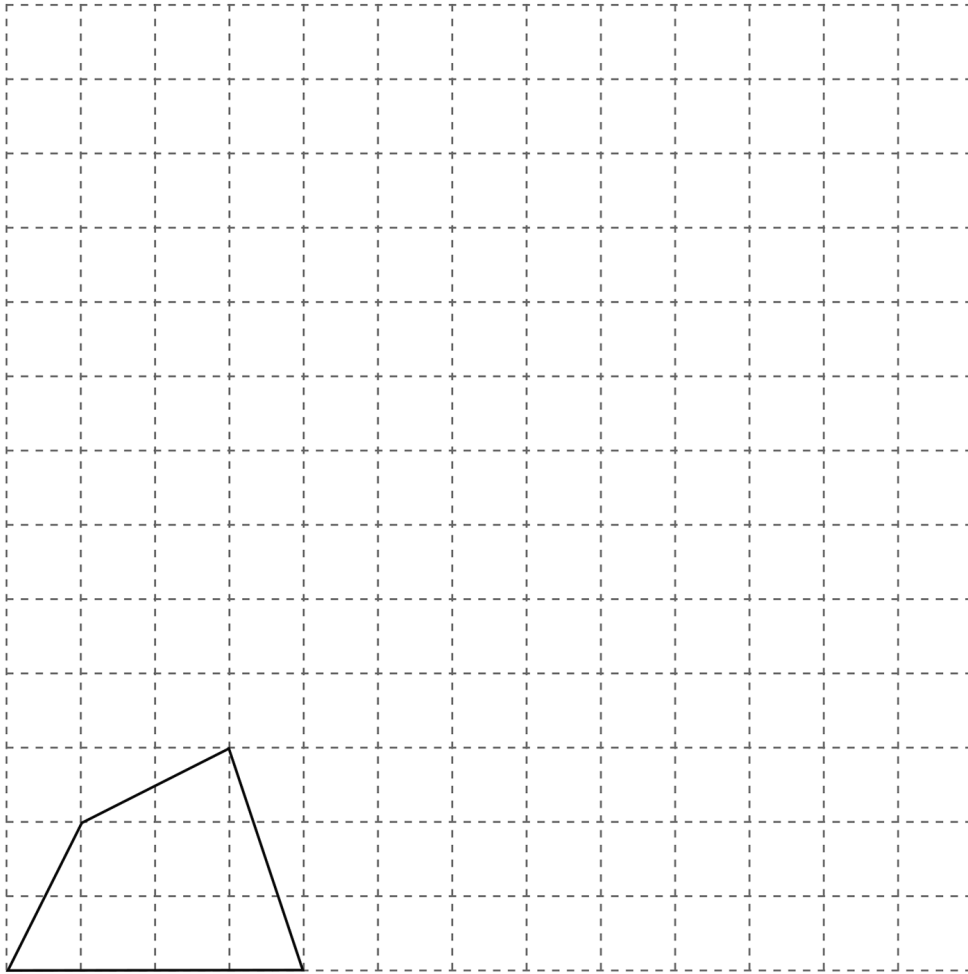
(b)



[2]

Q4

(a) Enlarge the shape below by scale factor 3

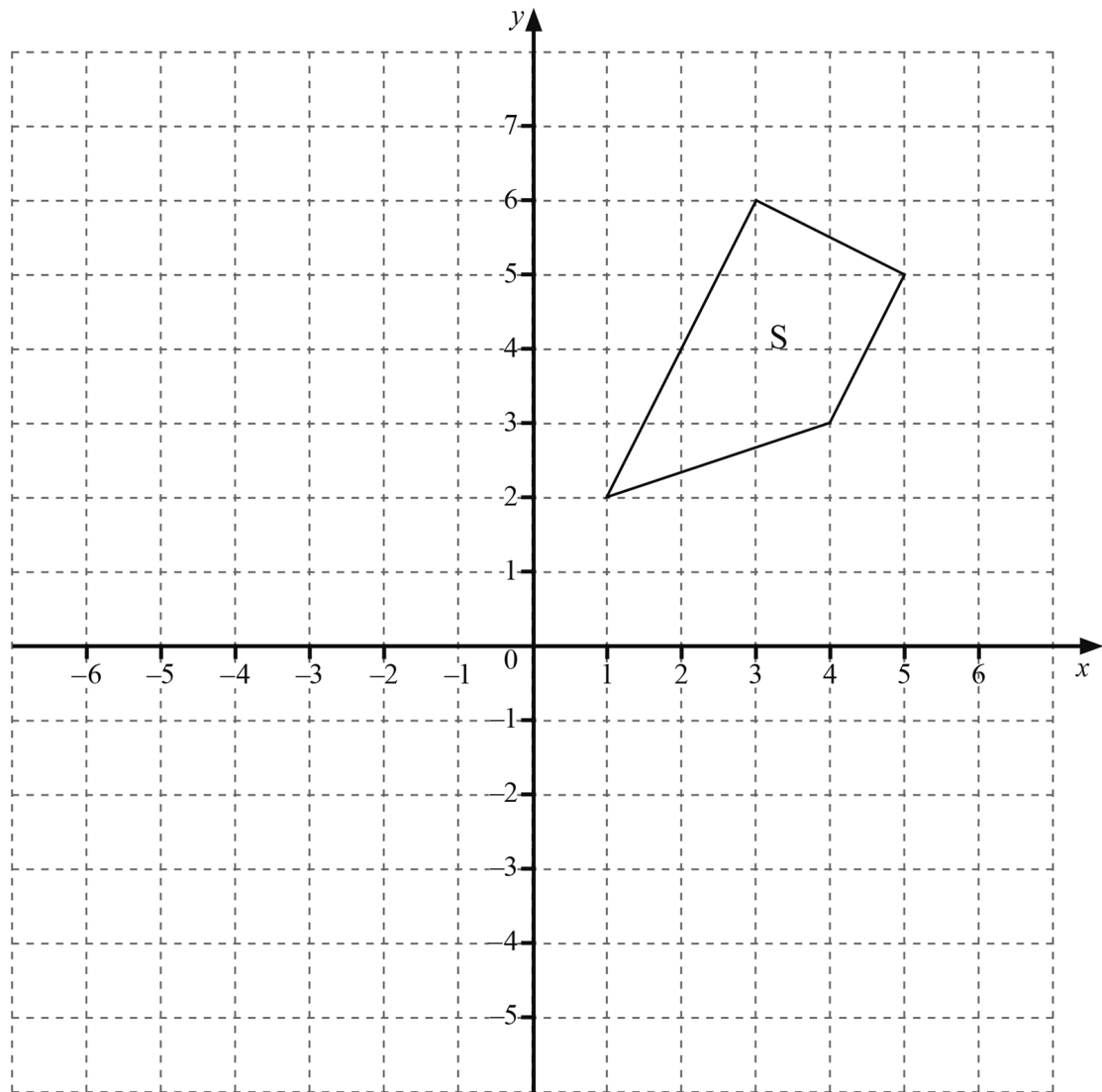


[2]

(b) How many times larger is the area of the larger shape than the smaller shape?

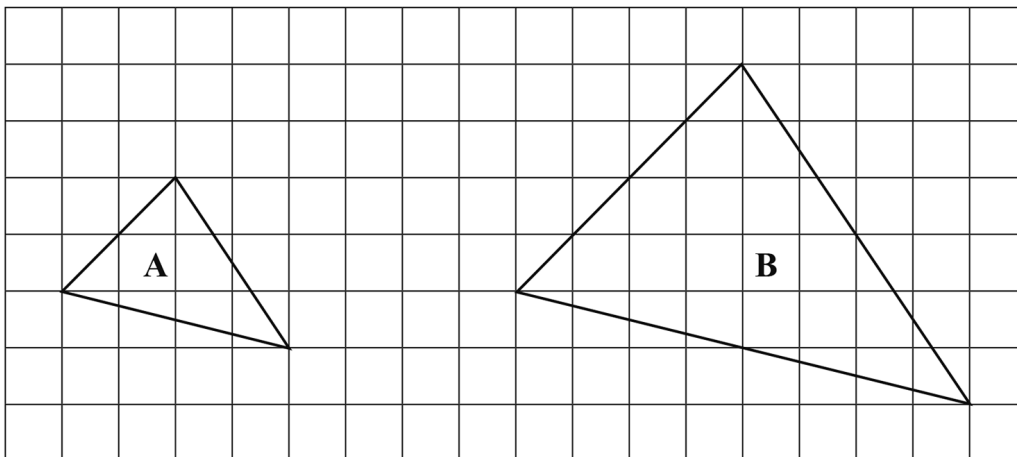
Answer _____ times [2]

Q5



- (a) Reflect the shape S in the line $y = 1$ [2]
- (b) Draw the image of shape S after a translation 6 left and 3 down. [1]
-

Q6 Triangle A is enlarged to give triangle B.



(a) What is the scale factor of the enlargement?

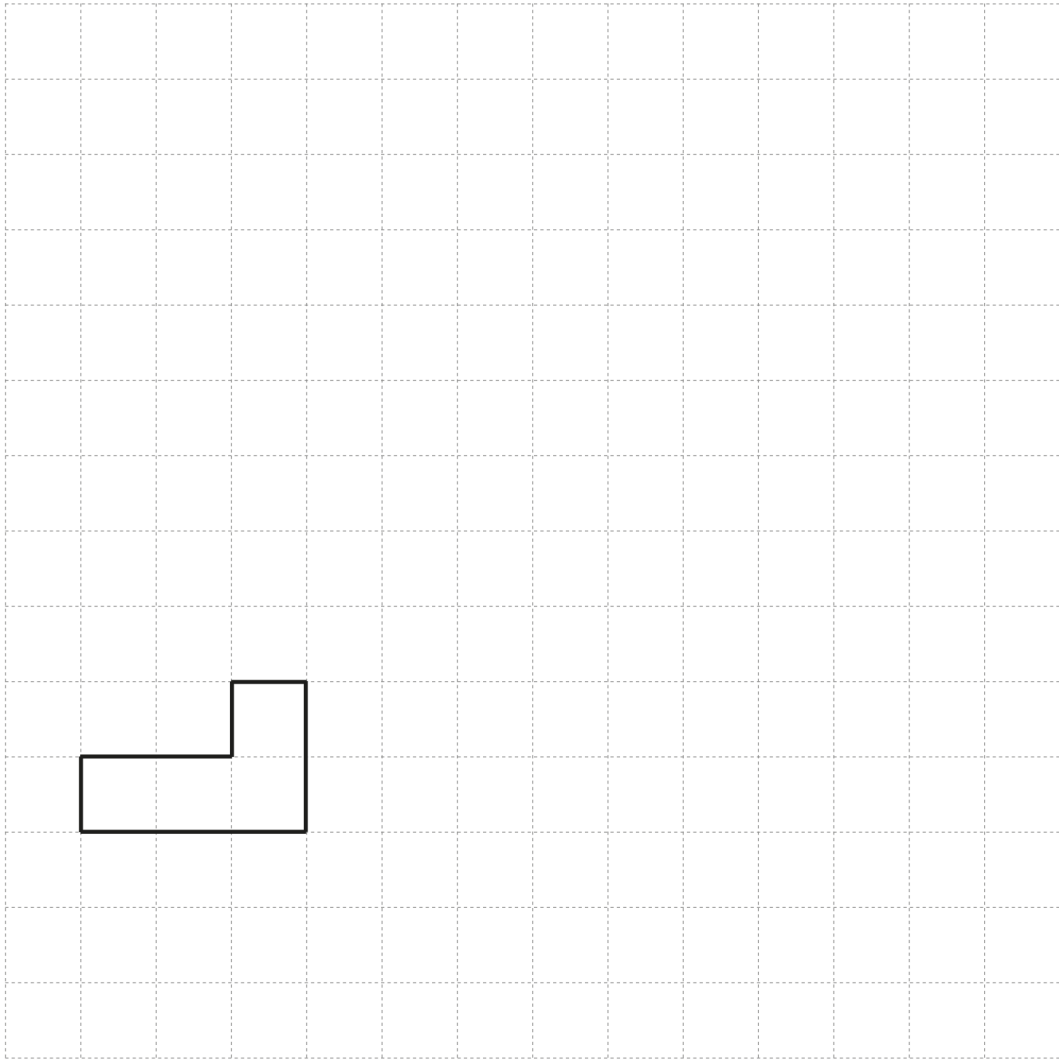
Answer _____ [1]

(b) How many times bigger is the area of triangle B than the area of triangle A?

Answer _____ [2]

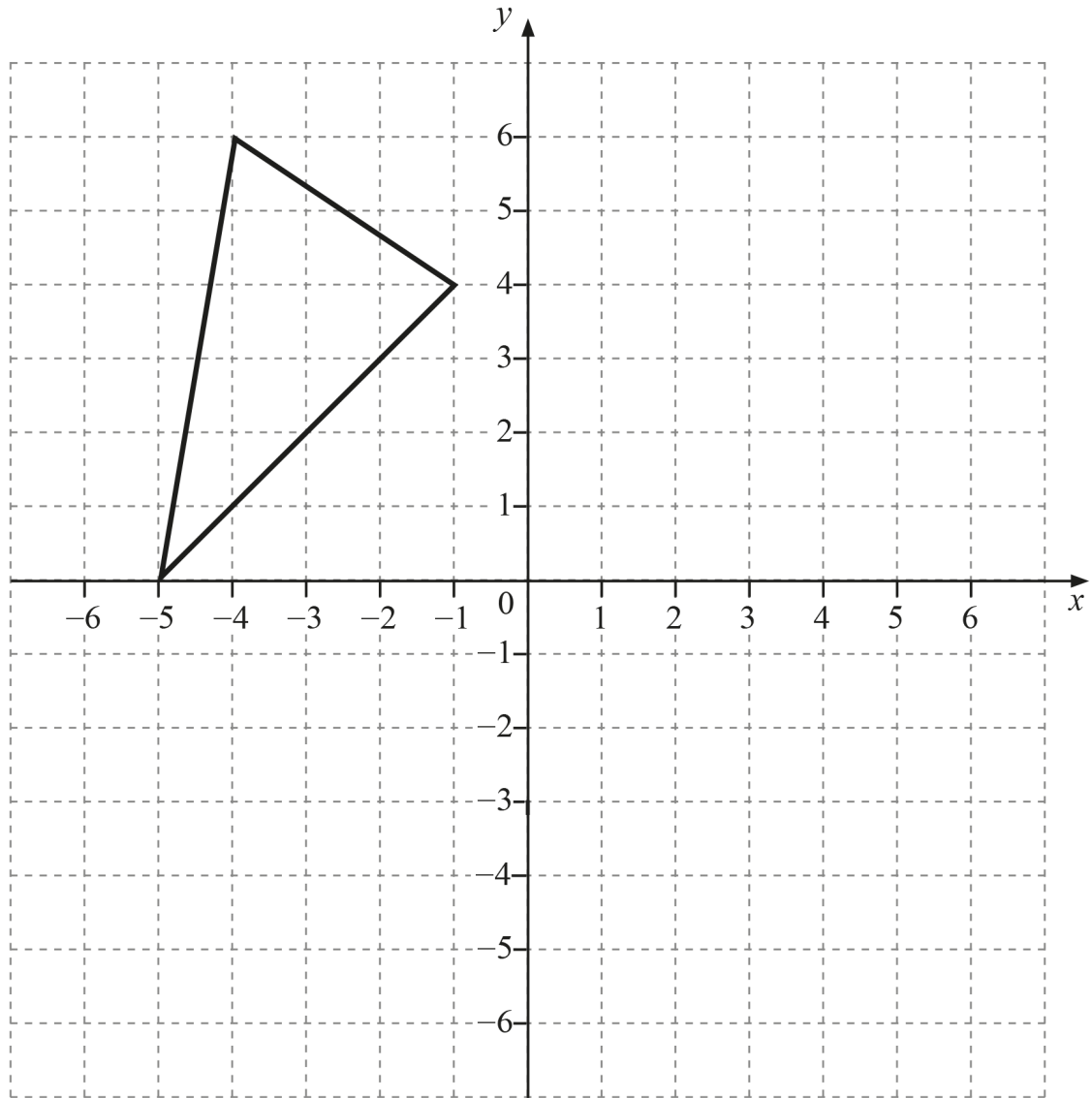
Q7

Enlarge the shape by scale factor 3



[2]

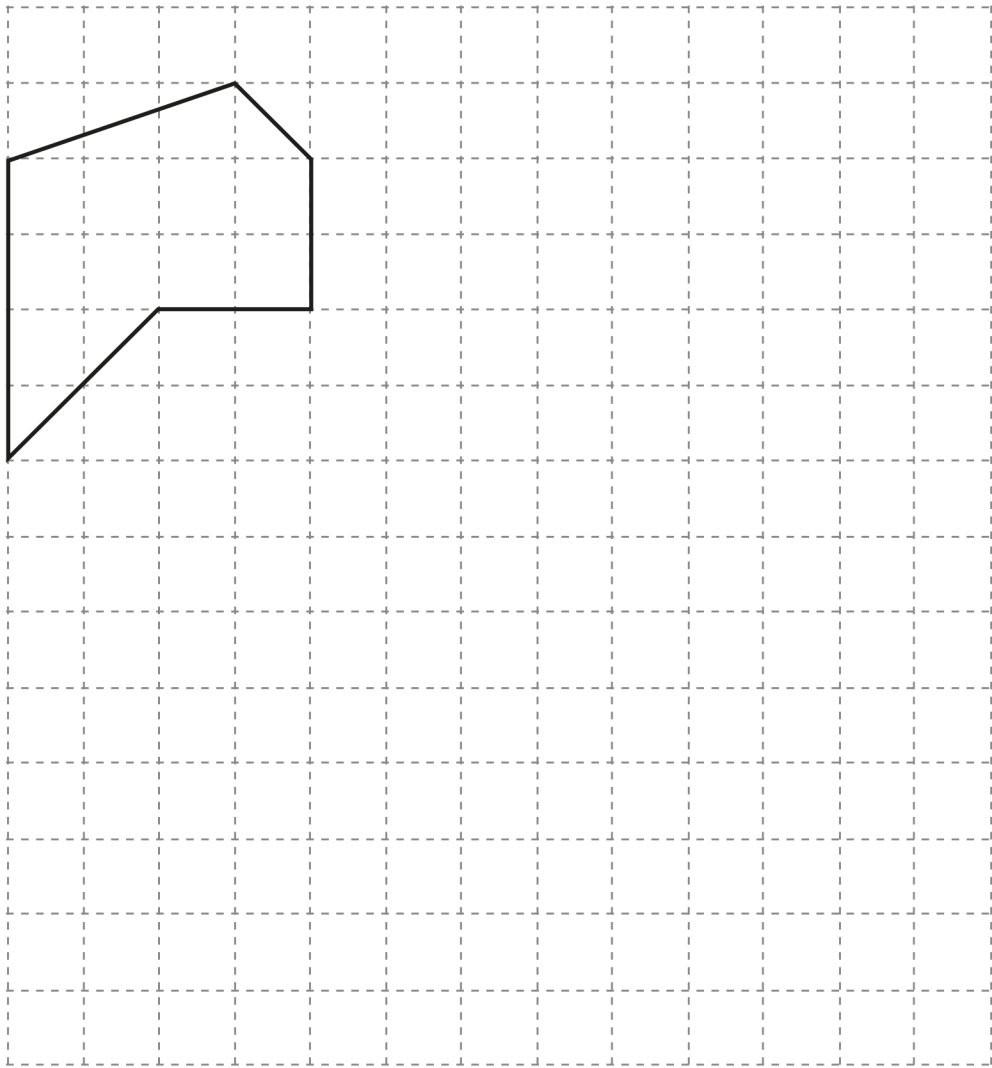
Q8

Reflect the triangle shown in the **y-axis**.

[1]

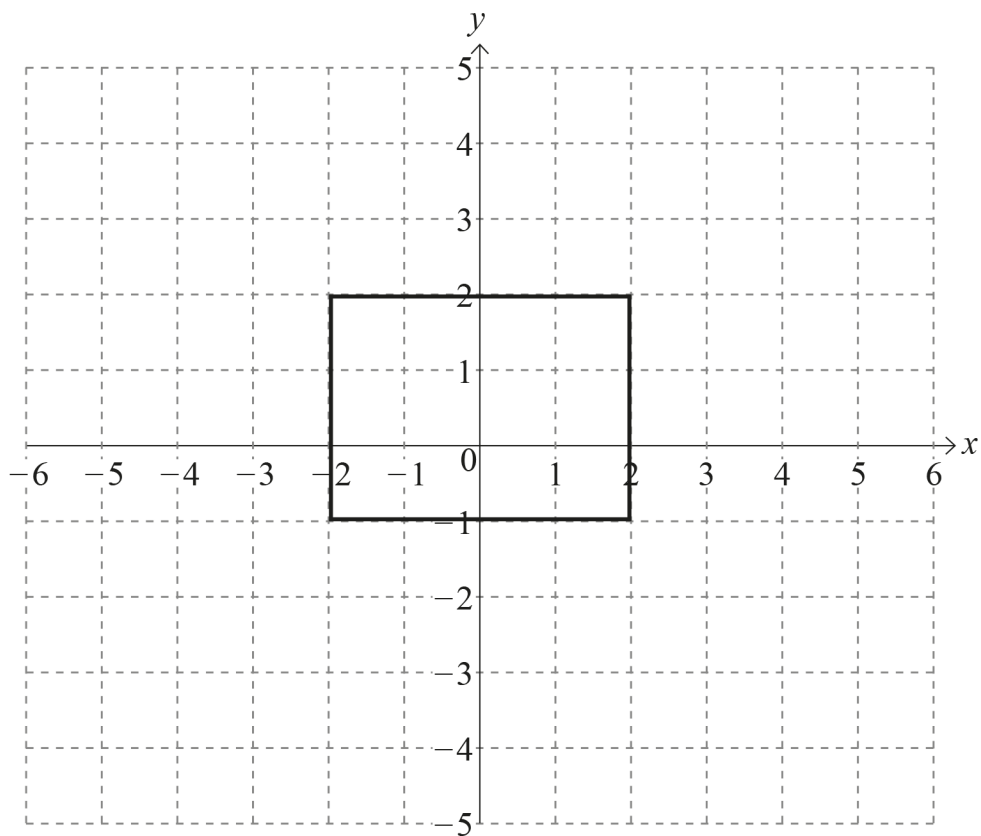
Q9

On the grid, enlarge the shape with a scale factor of 2



[2]

Q10



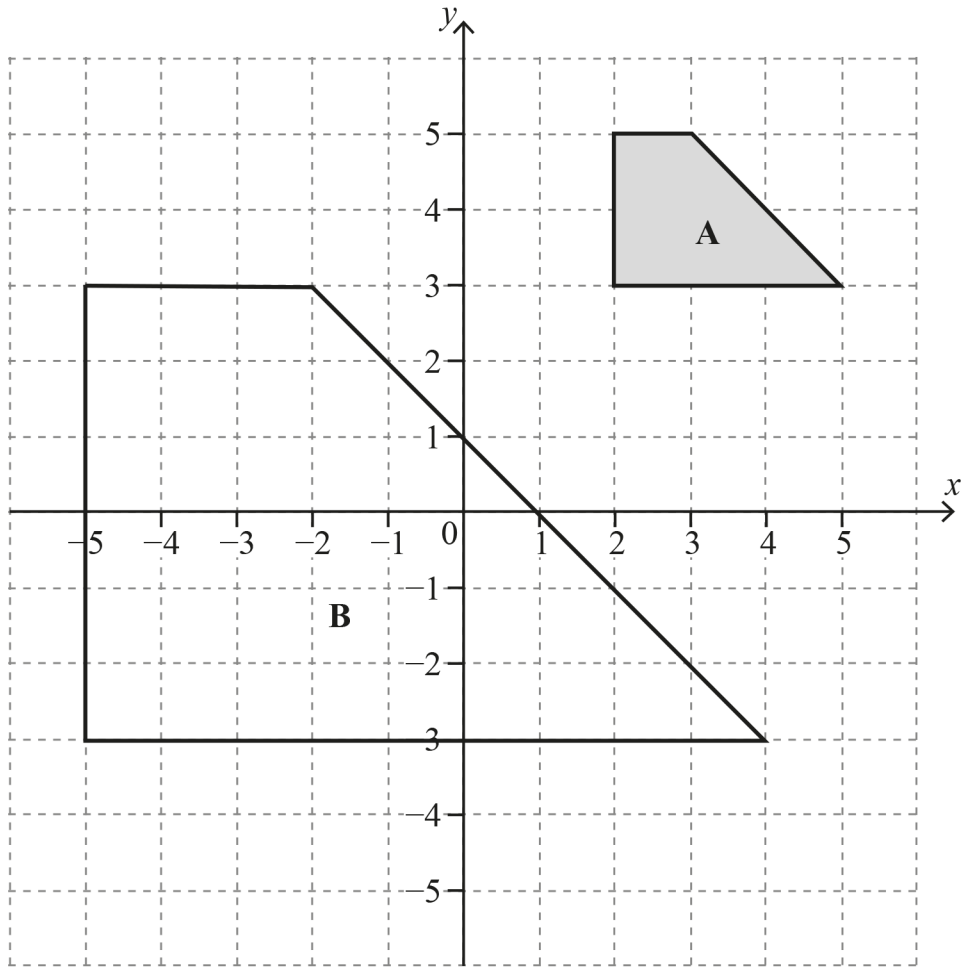
Enlarge the rectangle shown using a scale factor of 2 and centre of enlargement (0,0)

[3]

Q11

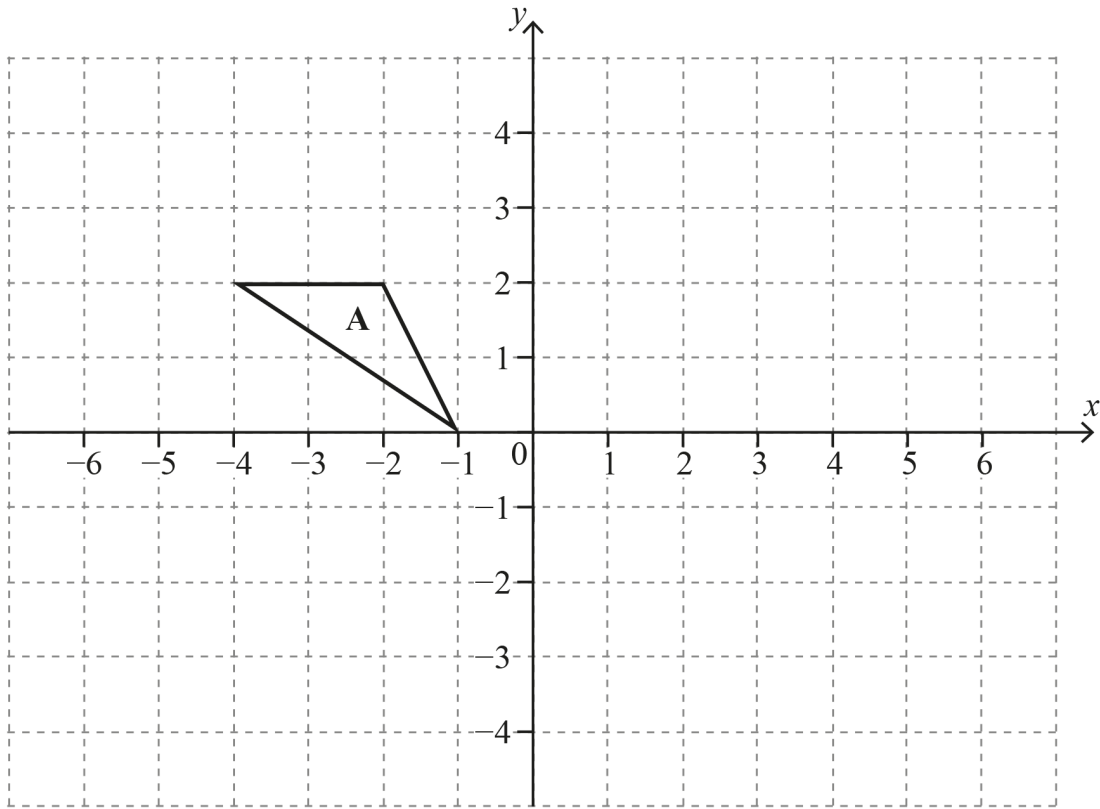
Complete the following:

Shape **A** has been _____ to make Shape **B**, using
 a scale factor of _____



[2]

Q12



(a) (i) Translate triangle **A** 7 right and 4 down. Label your answer **B**. [2]

(ii) Describe the translation which maps **B** to **A**.

Answer _____ [1]

(b) Reflect triangle **A** in the line $x = 1$ [2]

Q13

A shape has a perimeter of 16 cm and an area of 10 cm^2

It is enlarged using a scale factor of 2

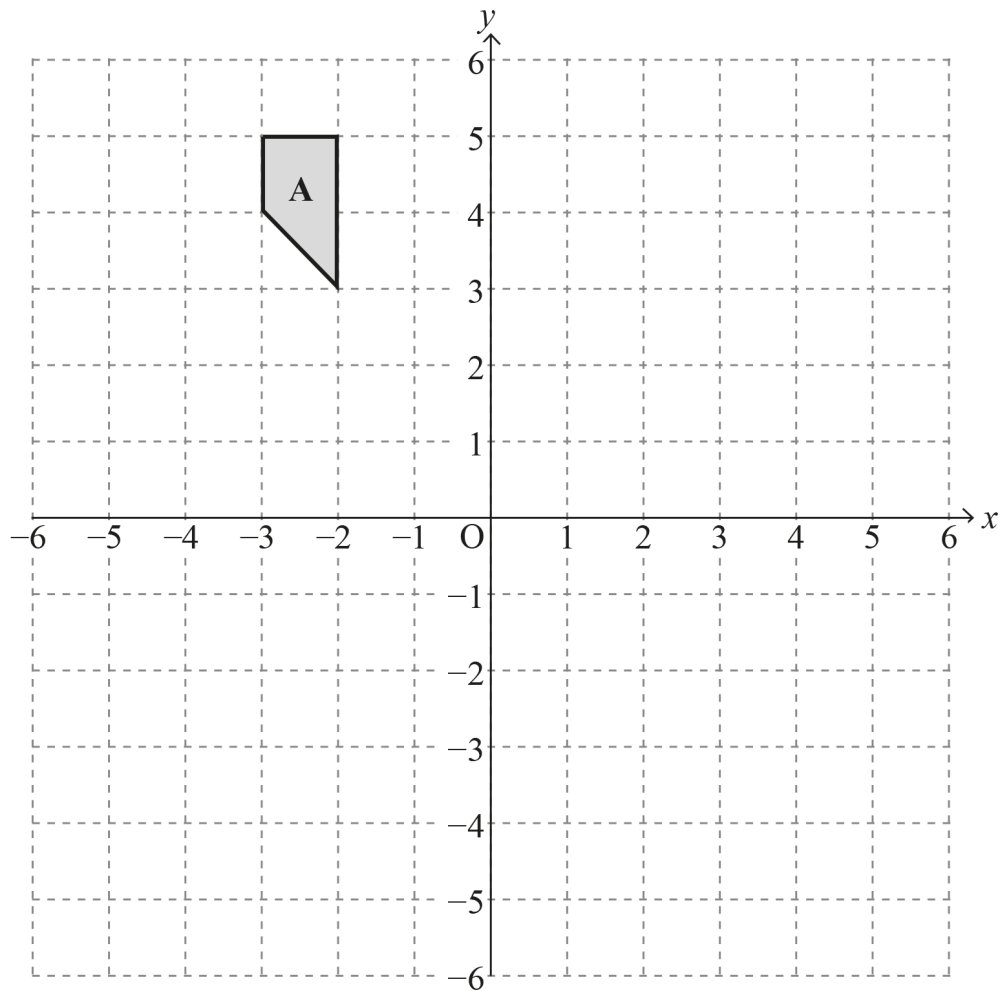
(a) What is the perimeter of the enlarged shape?

Answer _____ cm [1]

(b) How many times bigger is the area of the enlarged shape than the area of the original shape?

Answer _____ [1]

Q14



(a) Draw the image of shape A after a translation, 7 right and 4 down.

Label it T.

[1]

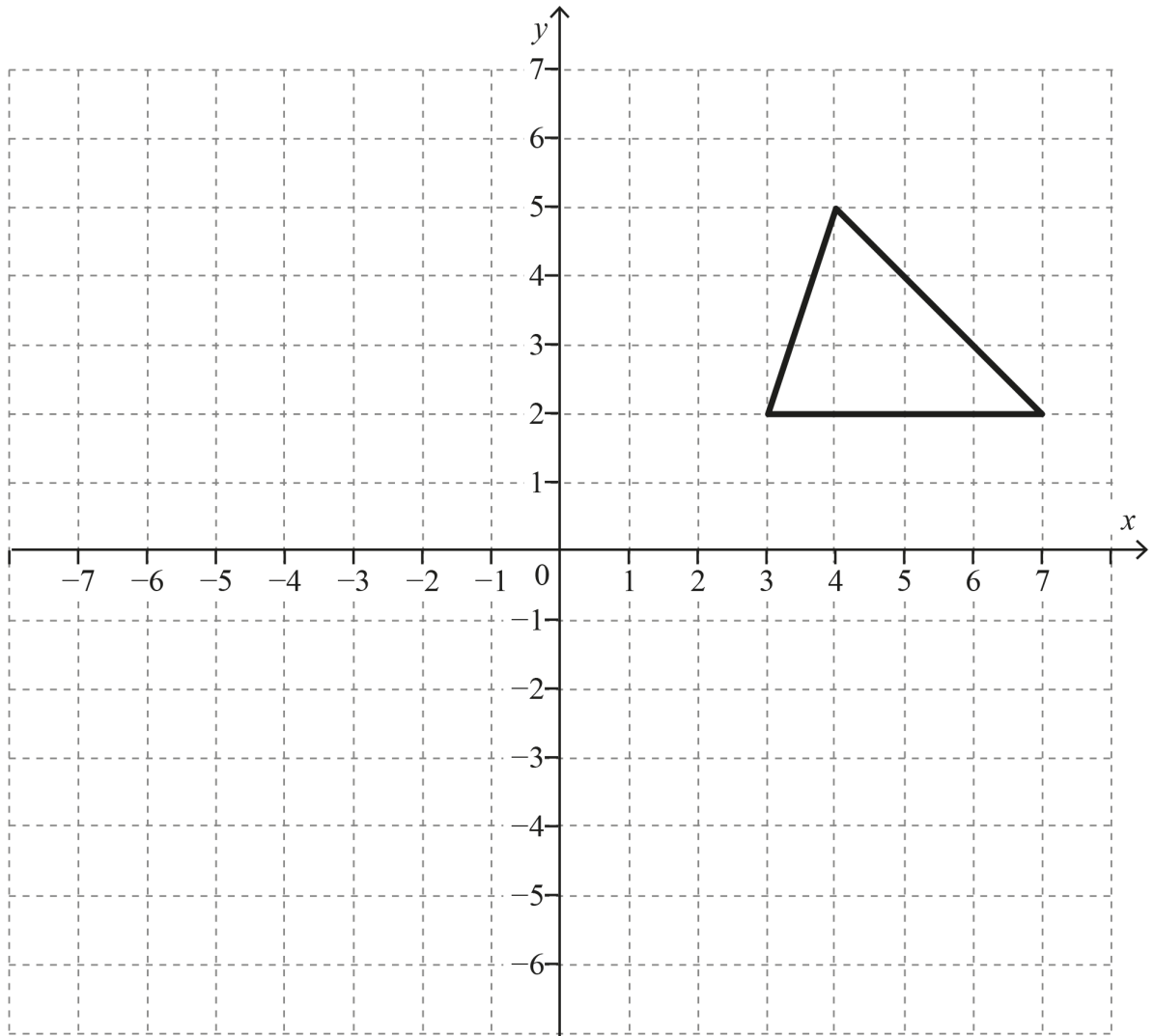
(b) Draw the image of shape A after a rotation, 90° anticlockwise, about the origin.

Label it R.

[2]

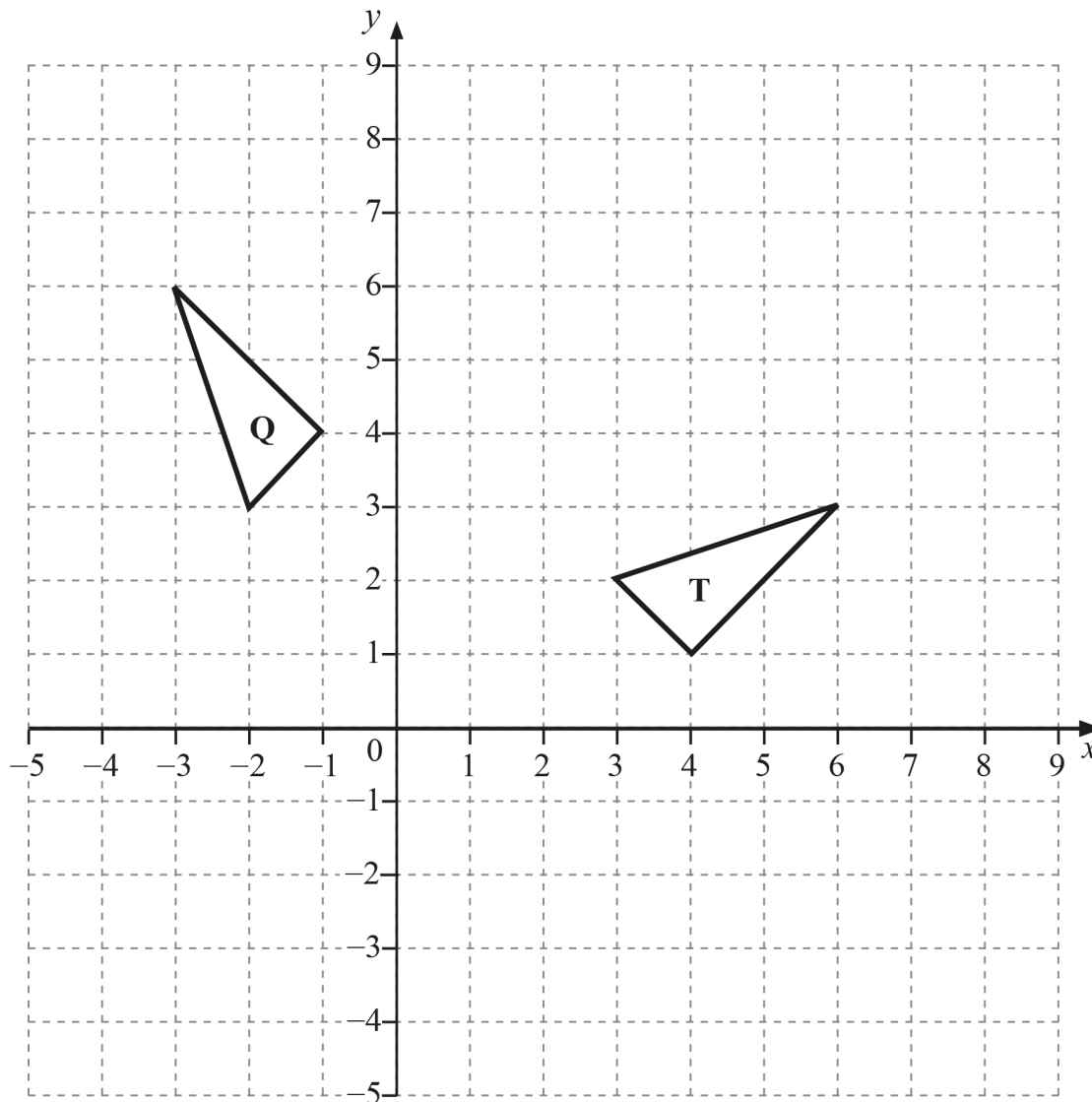
Q15

Rotate the triangle 90° anticlockwise about the origin $(0, 0)$



[3]

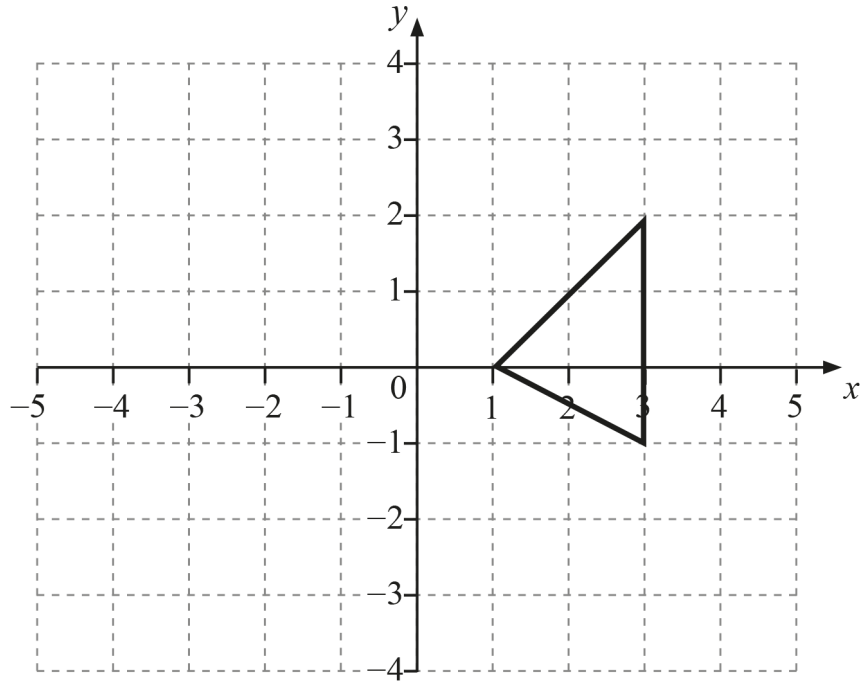
Q16



(a) Describe fully the **single** transformation which maps triangle **T** onto triangle **Q**.

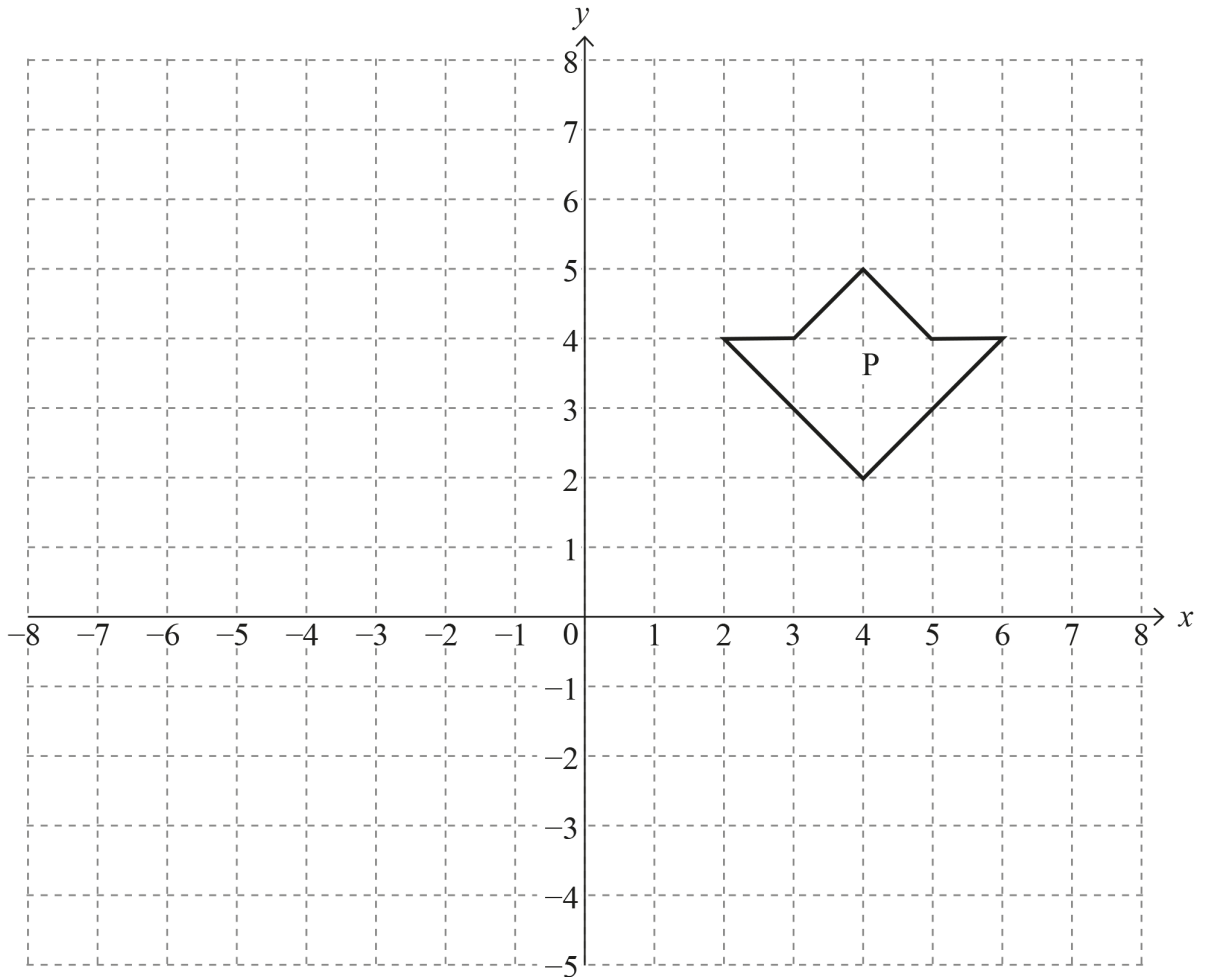
Answer _____ [3]

(b) On the grid, draw the image of triangle **T** after a translation $\begin{pmatrix} 2 \\ -5 \end{pmatrix}$. [2]

Q17Rotate the triangle 90° clockwise about the origin.

[3]

Q18



- (a)** On the grid above translate the shape P
6 units left and 5 units down.

Label the new shape Q.

[1]

- (b)** On the same grid, rotate the shape P
 90° anticlockwise about the origin.

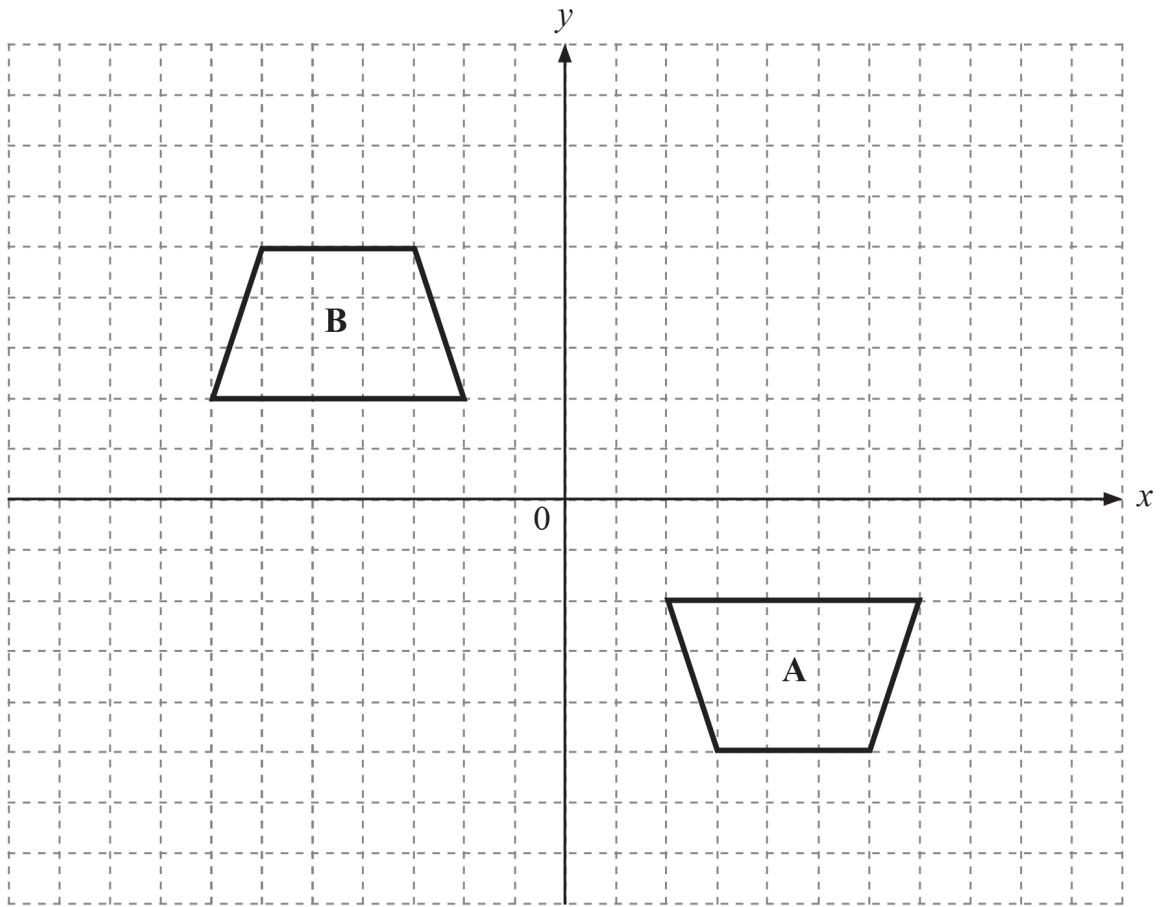
Label the new shape R.

[3]

Q19

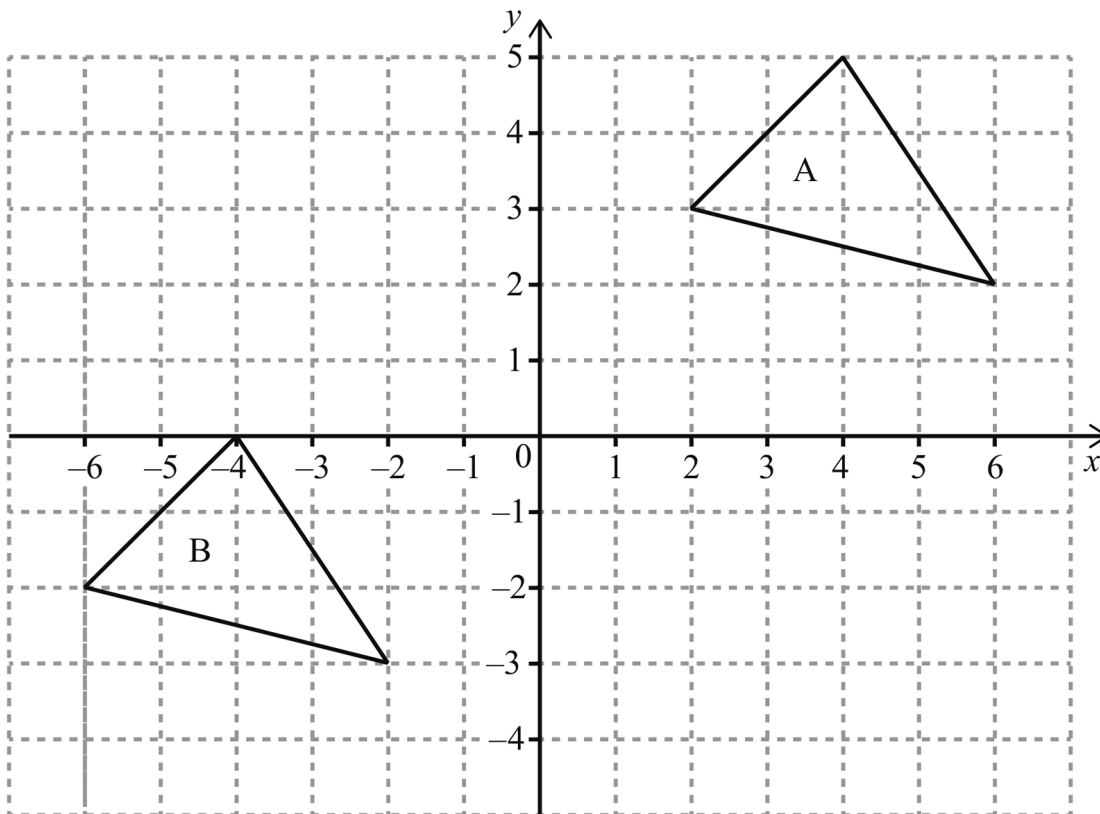
The diagram shows two identical shapes, A and B.

Describe fully the single transformation which takes shape A to shape B.



Answer _____ [3]

Q20 (a) Reflect triangle A in the line $y = 1$



[2]

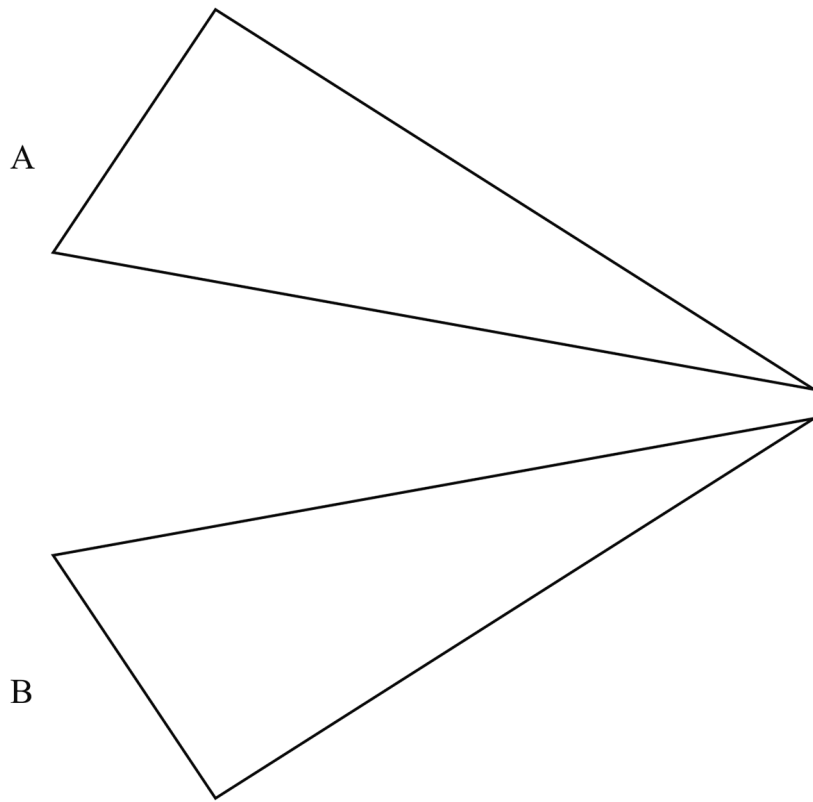
(b) Describe fully the single transformation that moves triangle A to triangle B.

[2]

Q21

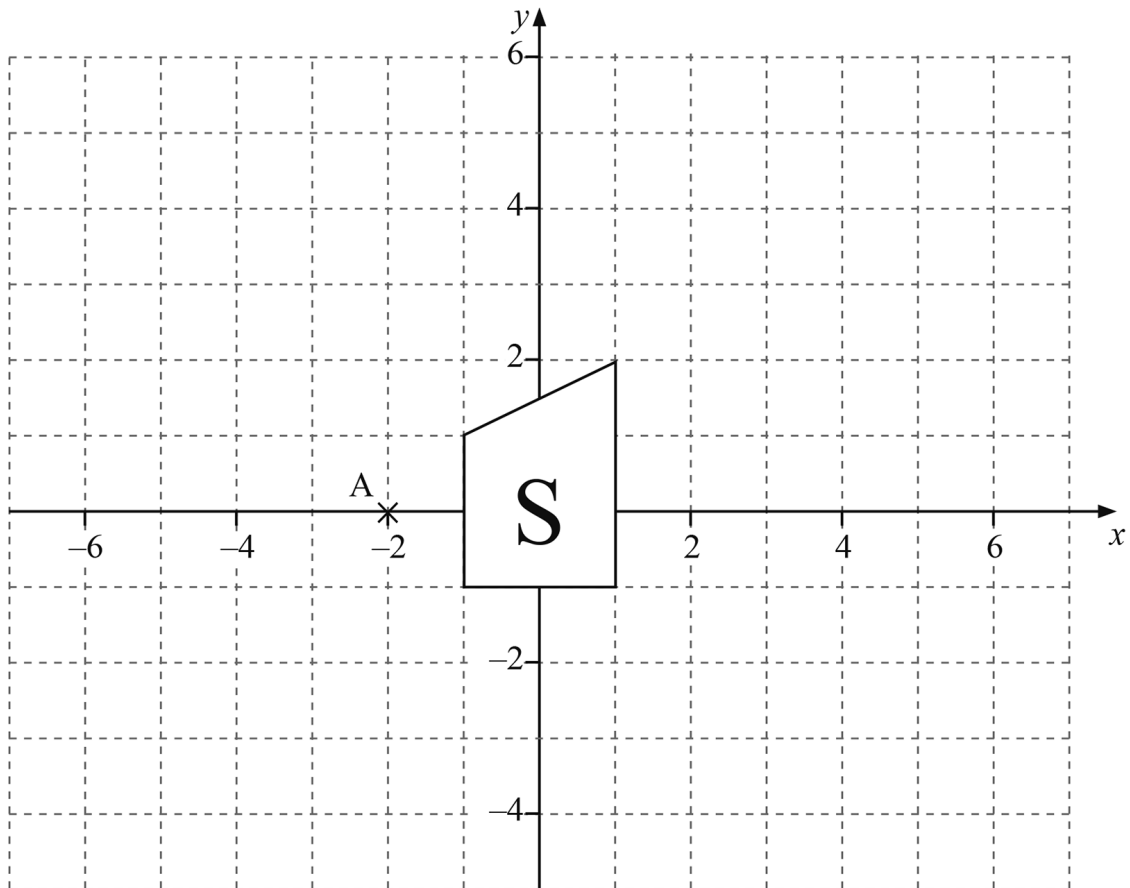
Triangle A is reflected in a line to give its image Triangle B.

Draw the line of reflection.



[1]

Q22



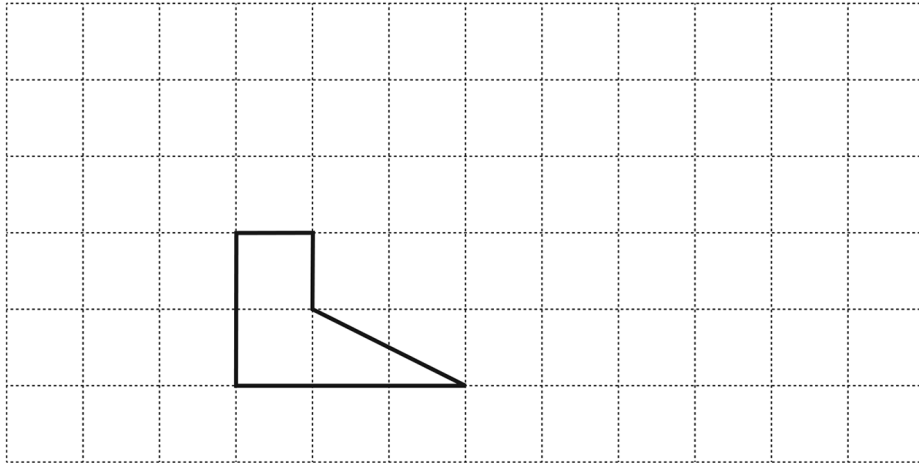
On the grid above,

- (a) Draw the image of shape S after a translation of 3 left and 2 up. [1]
- (b) Draw the image of shape S after an enlargement by scale factor 3 using the point A as the centre of enlargement. [3]

Q23

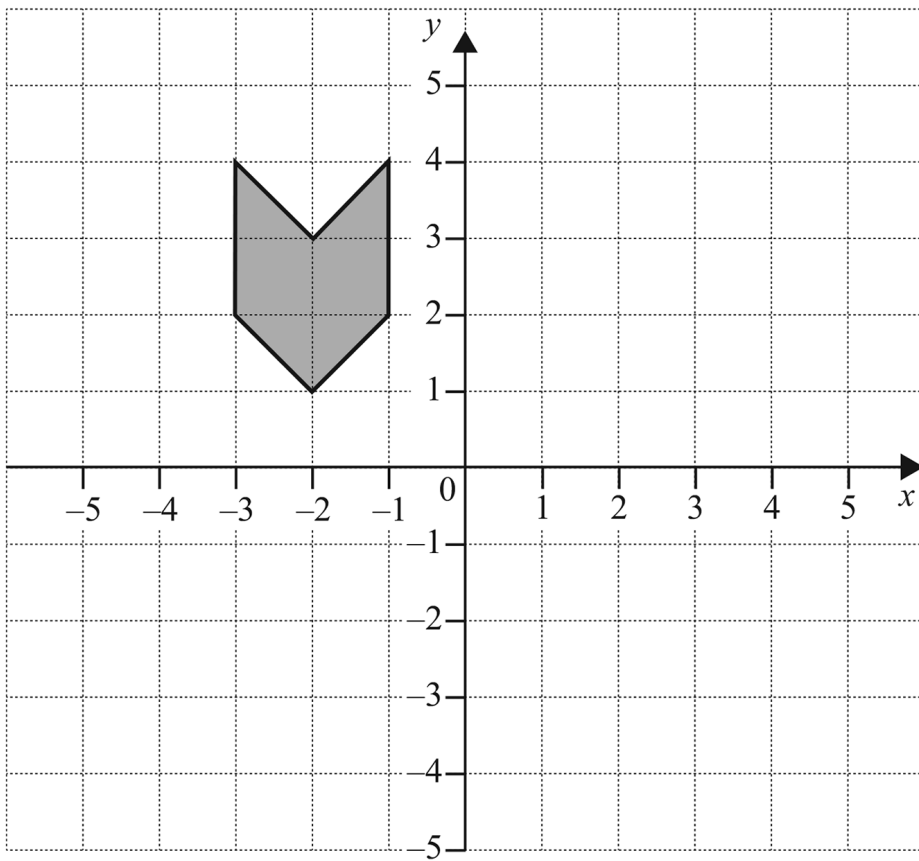
(a) Enlarge the shape by scale factor 2

[2]



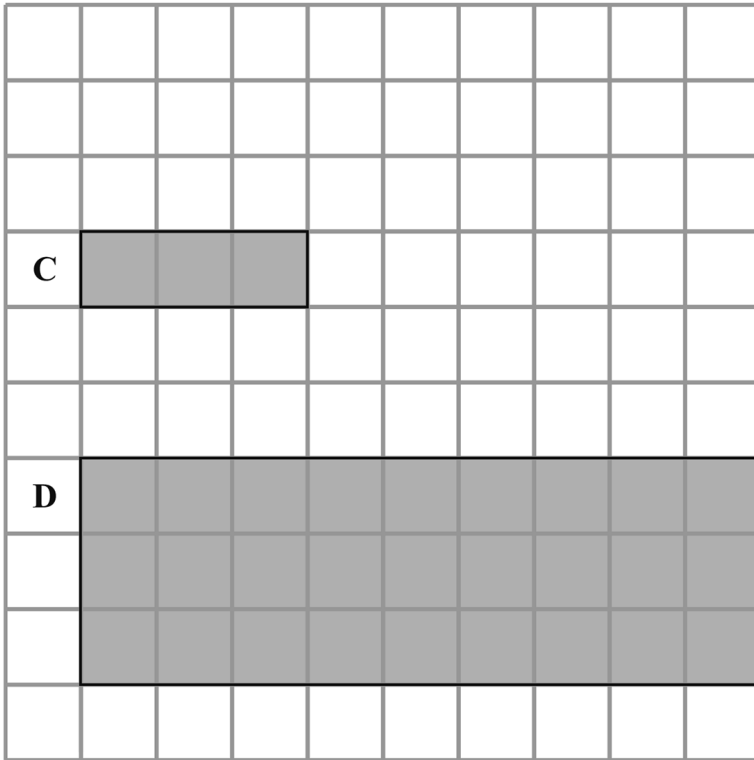
(b) Reflect the shaded shape in the y axis.

[1]



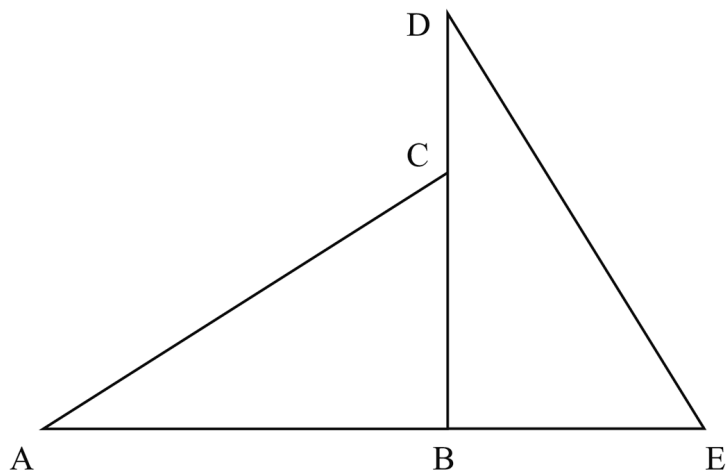
Q24

Rectangle C is enlarged to give rectangle D.
What is the scale factor of enlargement?



Answer _____ [1]

Q25



Triangle ABC is rotated 90° clockwise about B.

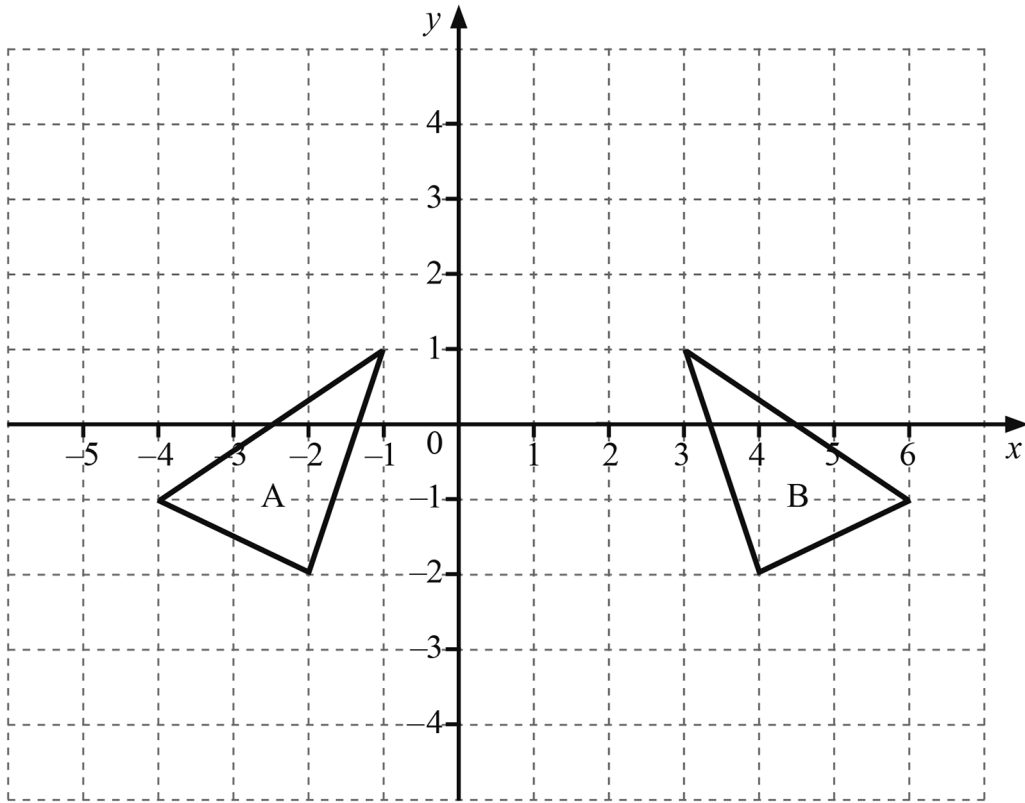
(a) Name a side equal in length to BC.

Answer _____ [1]

(b) Name an angle equal in size to angle BAC.

Answer _____ [1]

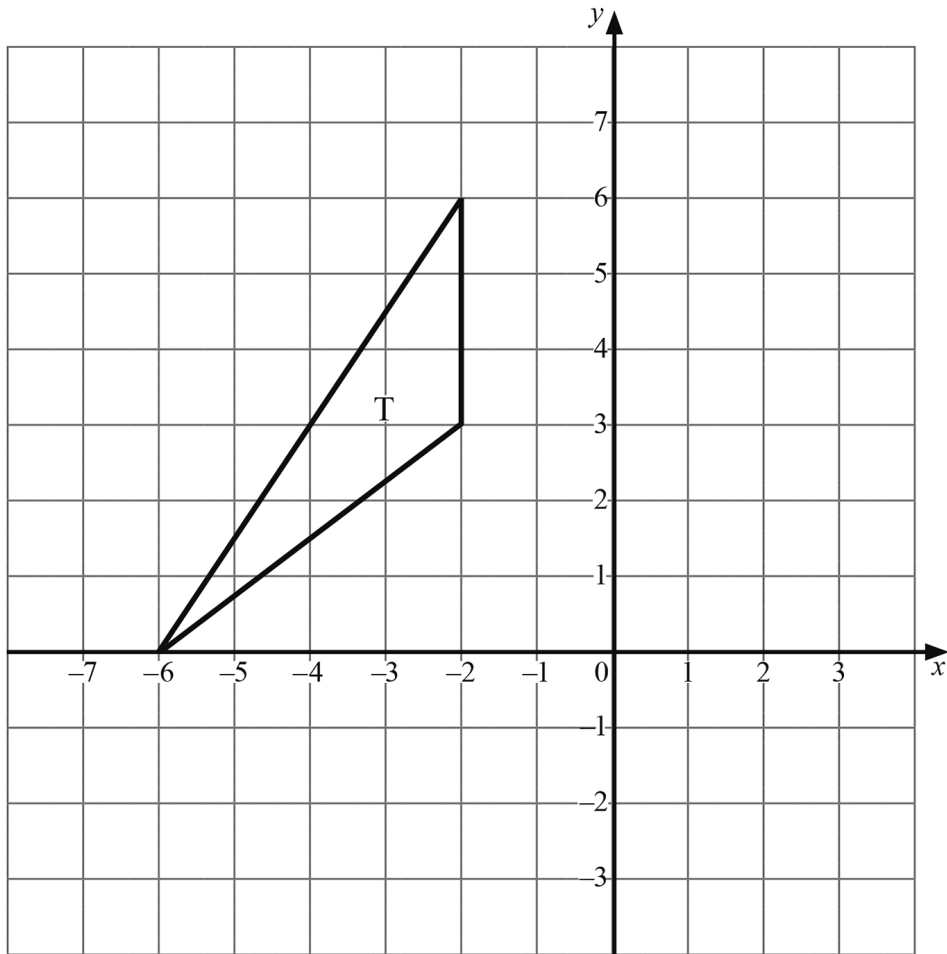
Q26



(a) Describe fully the single transformation which maps triangle A to triangle B.

Answer _____ [2]

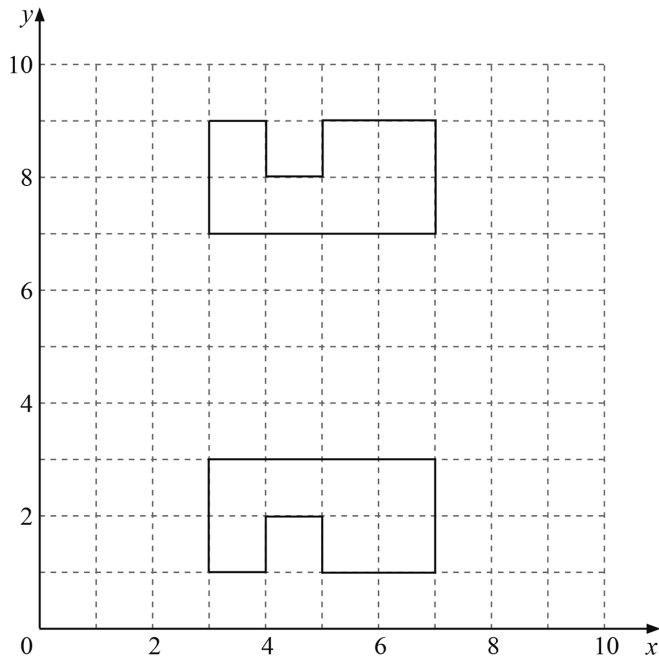
(b) Draw the image of triangle A after a rotation of 90° anticlockwise about the point $(-1, 3)$. [3]

Q27Rotate the triangle T through 90° clockwise about $(-3, -1)$.

[2]

Q28

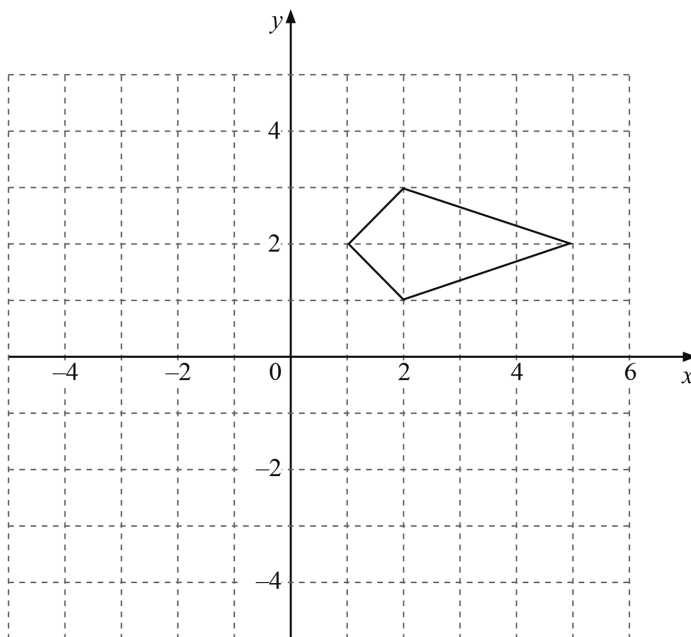
(a) The diagram shows two identical shapes.



Describe fully the single transformation which maps one shape onto the other.

Answer _____ [2]

(b)

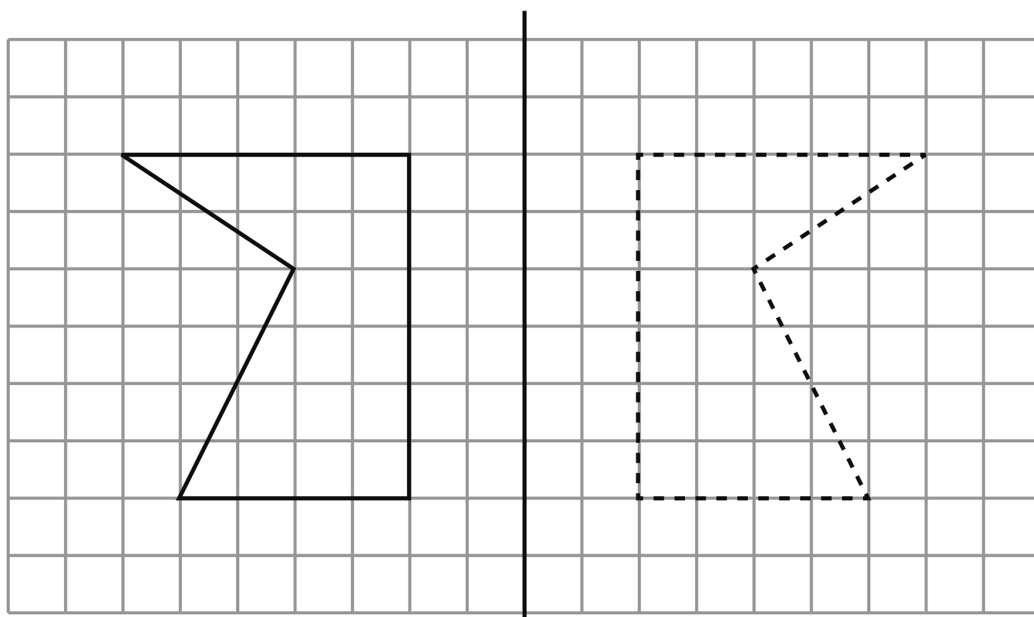


Rotate the shape 90° clockwise about the point (0, 4).

[2]

1. (a) Correct reflection drawn (A1 for 2 vertices correct) A2
 (b) 4 right A1
 2 down A1
-

2. 4 correct reflection (A1 for 4 correct vertices) A2 2



3. (a) correct reflection A2
 (b) correct reflection A2
-

4. (a) correct enlargement (allow A1 for 3 points correct) A2

(b) 9 times A2

5. (a) correct reflection A2

(b) correct translation A1

6. (a) 2 A1

(b) 4 (allow [1] for 2^2) A2

7.

Correct enlargement
(Allow 1 for 4 vertices correct)

M1 A1

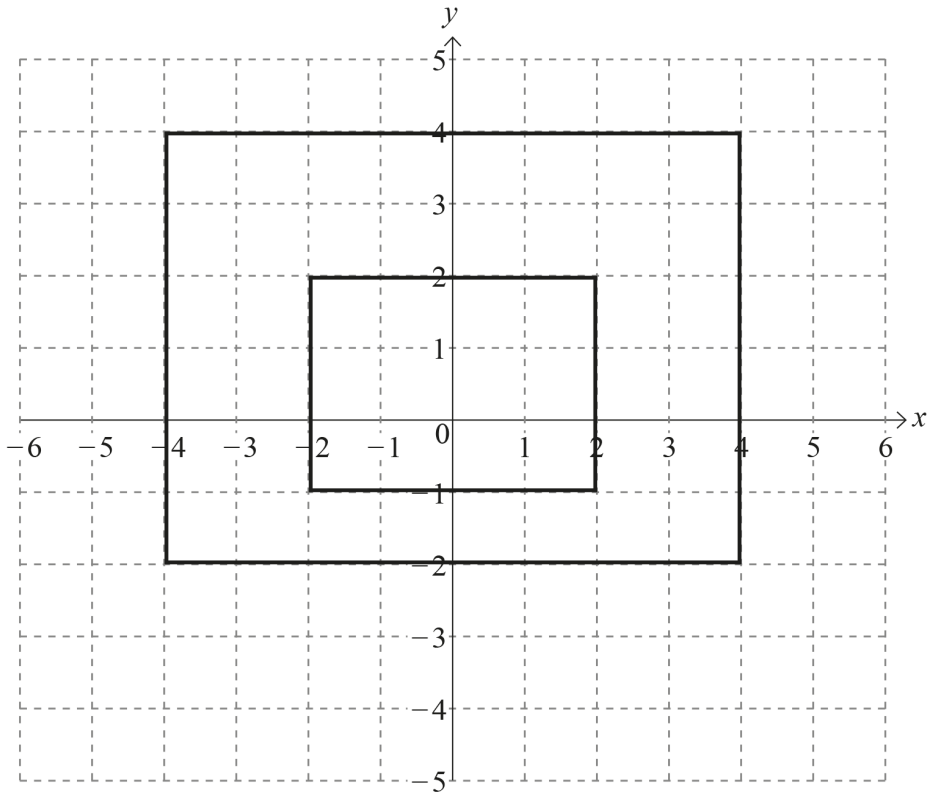
8. Correct shape has corner points (5, 0) (1, 4) and (4, 6)
-

MA1

9. Correct sized shape (anywhere on grid)
Allow A1 for 3 sides correct.
-

A2

10.



Allow MA1 for 2 corners correct
Or MA1 for correct size, wrong centre
Allow MA2 for 4 corners marked, no lines drawn.

MA3

11.

enlarged 3

A1 A1

12.

(a) (i) 3 vertices correctly plotted at $(3,-2)$, $(5,-2)$, $(6,-4)$, and triangle drawn

MA2

(2 vertices correctly plotted, and triangle drawn MA1)

(ii) 7 left and 4 up

A1

(b) Correct position of triangle – points $(3,0)$, $(4,2)$ and $(6,2)$

MA2

(2 corner points correctly plotted, and triangle drawn MA1)

13.

(a) 32

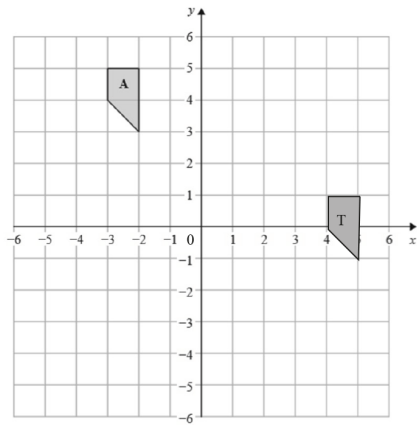
A1

(b) 4

A1

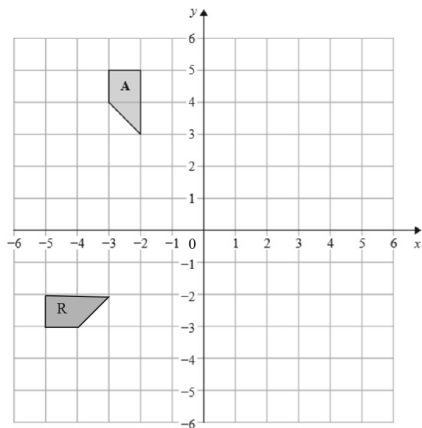
14.

(a)



A1

(b)



A2

15.

Correctly rotated triangle – vertices $(-2, 7)$, $(-2, 3)$ and $(-5, 4)$
 (2 points plotted correctly, and triangle drawn MA2)
 (Shape rotated correctly clockwise MA1)

MA3

16. (a) Rotation of 90° anticlockwise about $(0, 0)$ A1 A1 A1
- (b) 2 units to the right A1
- 5 units down A1
-

17. Correct rotation M1 A2
 (allow A2 for 2 corners correct, A1 for anticlockwise)
-

18. (a) Correct translation A1
- (b) Correct rotation A3
- (A2 for one vertex wrong, A1 for correct rotation about the wrong point or for clockwise rotation)
-

19. Rotation 180° about $0/\text{origin}/(0,0)$ A1 A1 A1
-

20. **(a)** Correct reflection MA2
- (b)** Translation $\begin{pmatrix} -8 \\ -5 \end{pmatrix}$ A1 A1
-
21. line A1
-
22. **(a)** correct translation A1
- (b)** Image completely correct A3
 (3 vertices correct gets A2)
 (2 vertices correct gets A1)
 (correct enlargement and orientation gets A1)
-
23. **(a)** 5 sides correct MA2
 (3 sides correct – A1)
- (b)** correct reflection A1
-

24.	3	A1
<hr/>		
25.	(a) BE	A1
	(b) BDE	A1
<hr/>		
26.	(a) Reflection	A1
	In the line $x = 1$	A1
	(b) Correct rotation	A3
	(A2 for two points correct)	
	(A1 for correct rotation using the wrong centre)	
<hr/>		
27.	Correct rotation	A2
	(A1 for 2 vertices correct)	
<hr/>		
28.	(a) A reflection in the line $y = 5$	A1 A1
	(b) Correct rotation	A2
	(A correct rotation about the wrong centre gets A1)	
<hr/>		