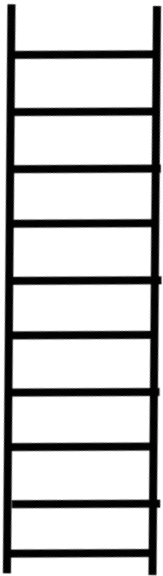# Key to Five

Unit 10: Transformations

The PiXL Ladder to Success

- Exam style question
- Combined transformations
- Congruency
- Scale factors
- Vector translations
- Reflections in the lines x= A, y= B
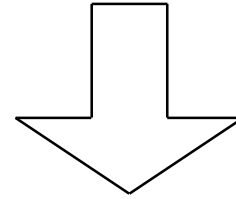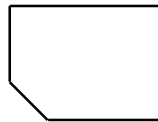- Rotational symmetry/ Lines of symmetry

Section A

Question 1.

Which of these shapes have rotational symmetry?
Write YES or NO under each shape.

……………………

……………………

……………………

……………………
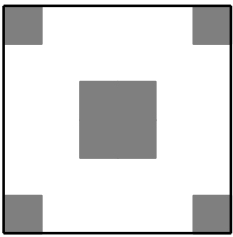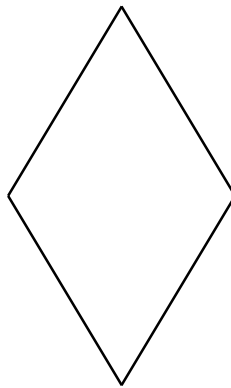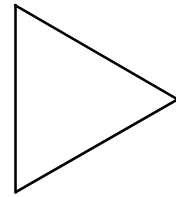
……………………
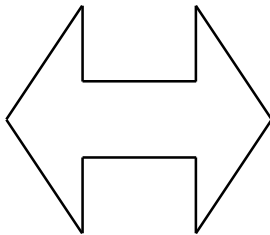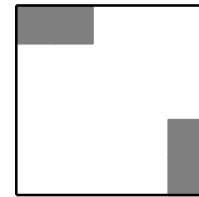
(5)

Question 2.

What is the order of rotational symmetry for each of these shapes?

Rotational symmetry order
…………...

Rotational symmetry order
…………...

Rotational symmetry order
…………...

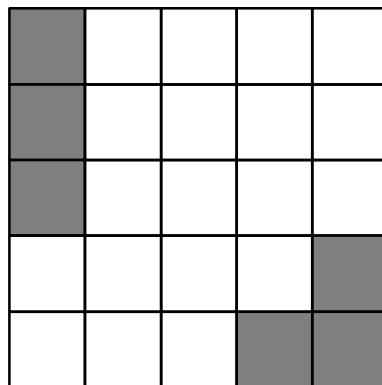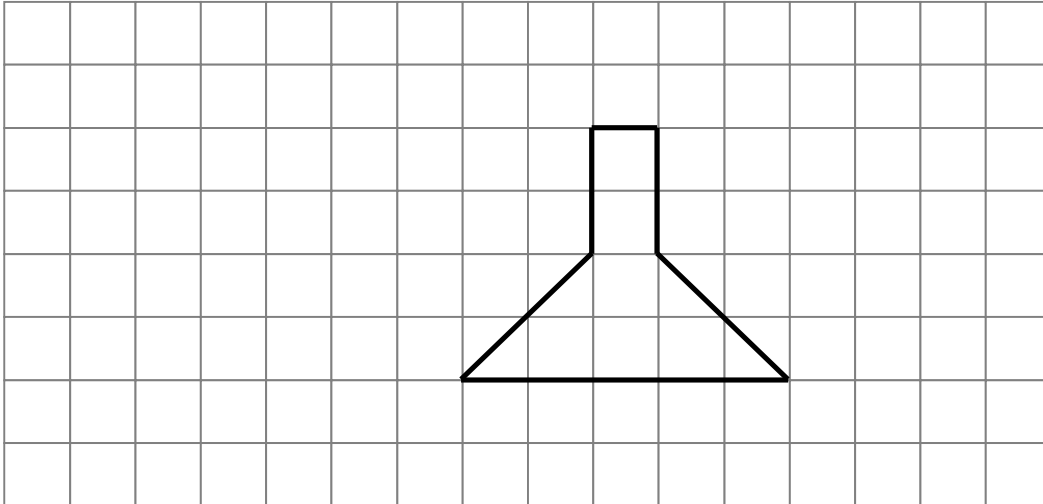(3)

Question 3.

Complete this pattern so that it has rotational symmetry order 2 by shading in 2 more squares.

(2)

Section B

Question 4.

Translate the following shape with the vector $\begin{pmatrix} 4 \\ -1 \end{pmatrix}$.

(Total 2 marks)

Question 5.

Rotate the shape through 180º anticlockwise, using **X** as the centre of rotation.

(Total 2 marks)

Key to Five

Question 6.

Enlarge the following shape, using B as the centre of enlargement, by a scale factor of 3.

(Total 2 marks)

Question 7.

Reflect triangle A in the line $x = 4$

(Total 2 marks)

Question 8.

Use the shapes on the grid to answer the questions below

a) Find all the shapes on the grid that are translations of shape A

b) Find all the shapes on the grid that are congruent to shape H

c) Find all the shapes on the grid that are rotations of shape L

d) Find all the shapes on the grid that are reflections of J
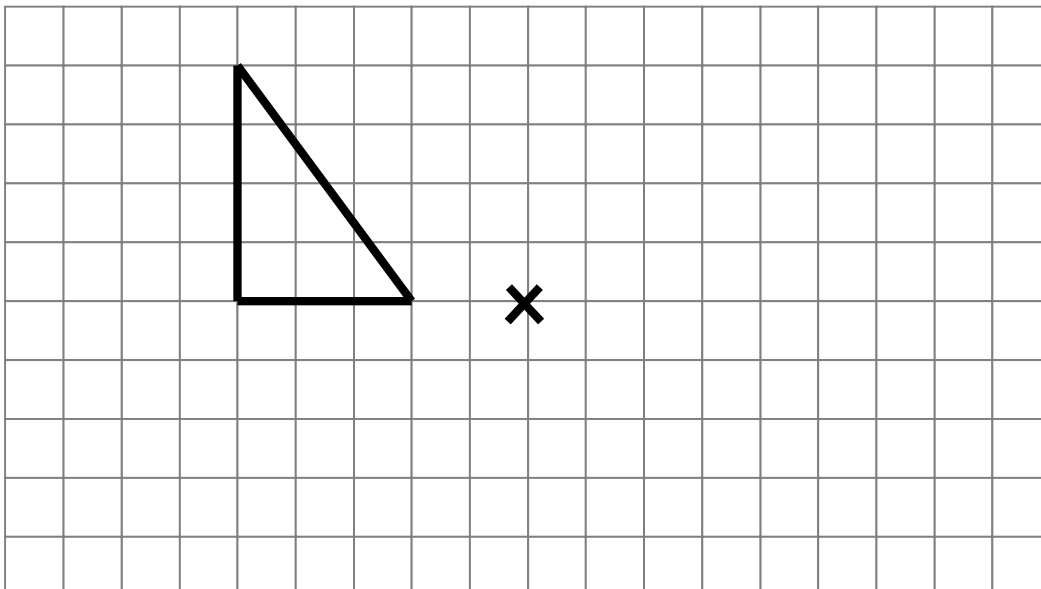
Question 9.

Translate the following shape with the vector $\begin{pmatrix} 8 \\ 4 \end{pmatrix}$.
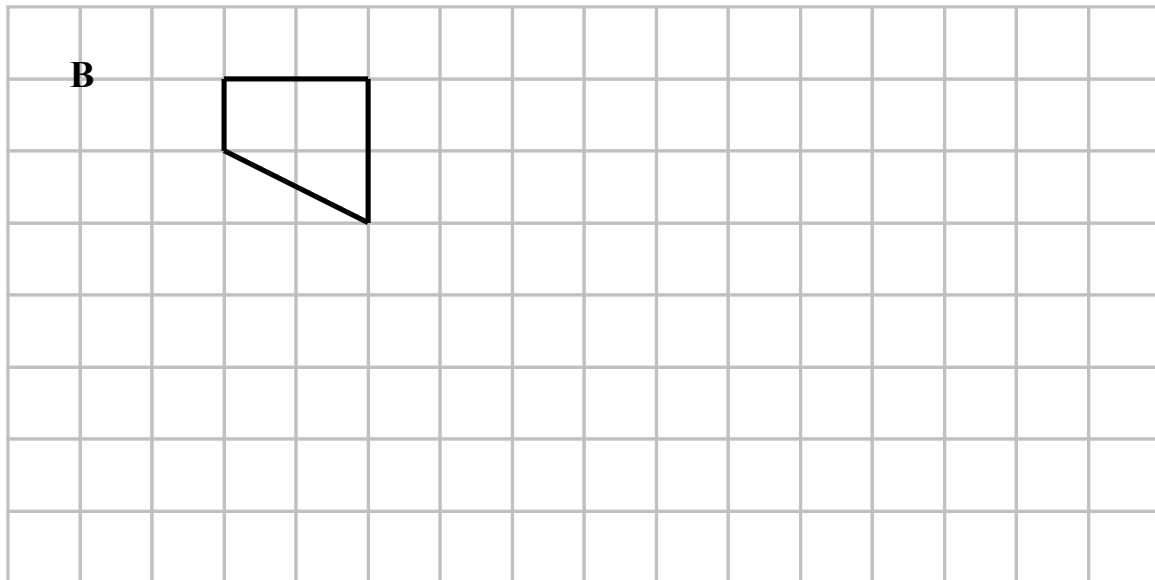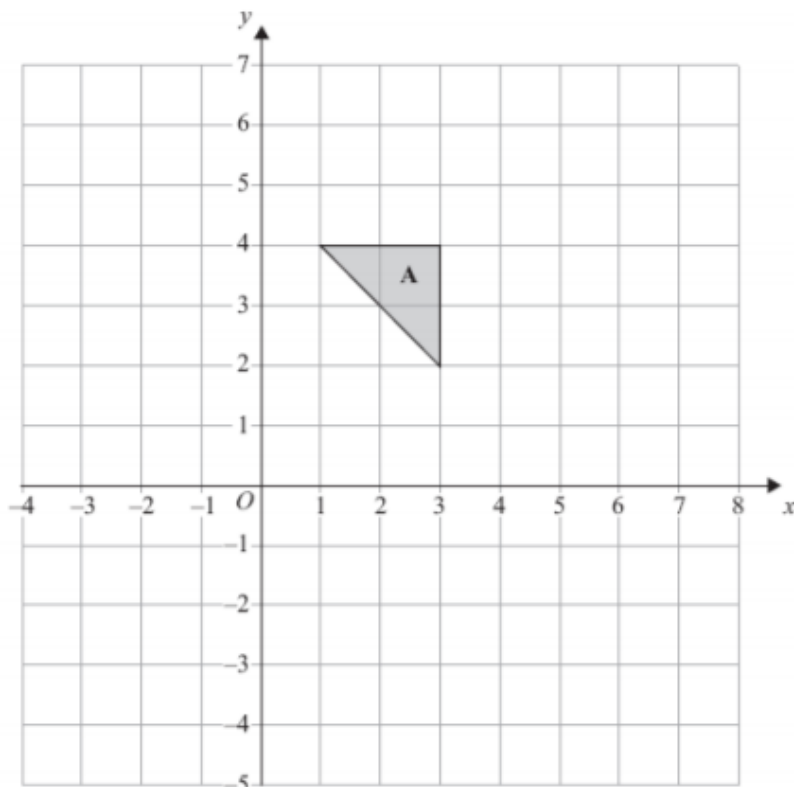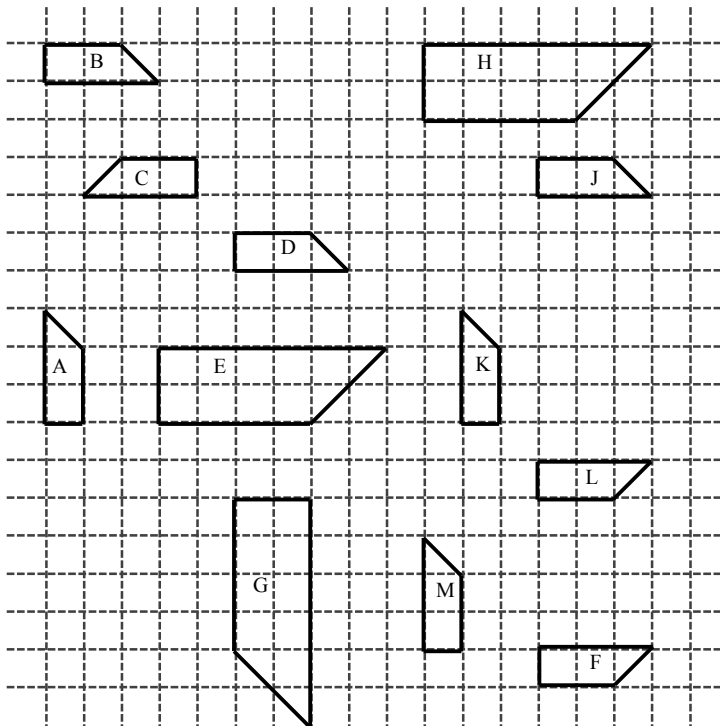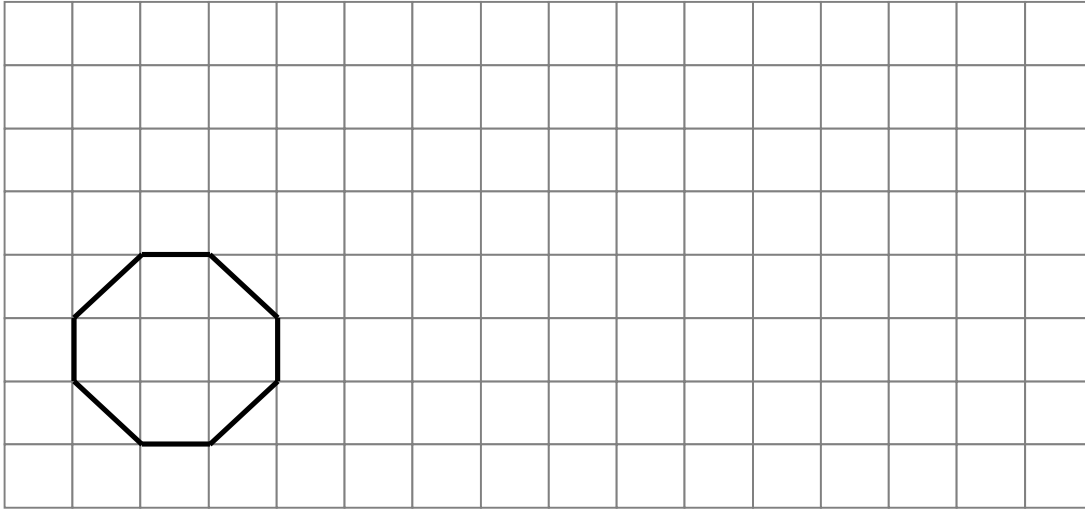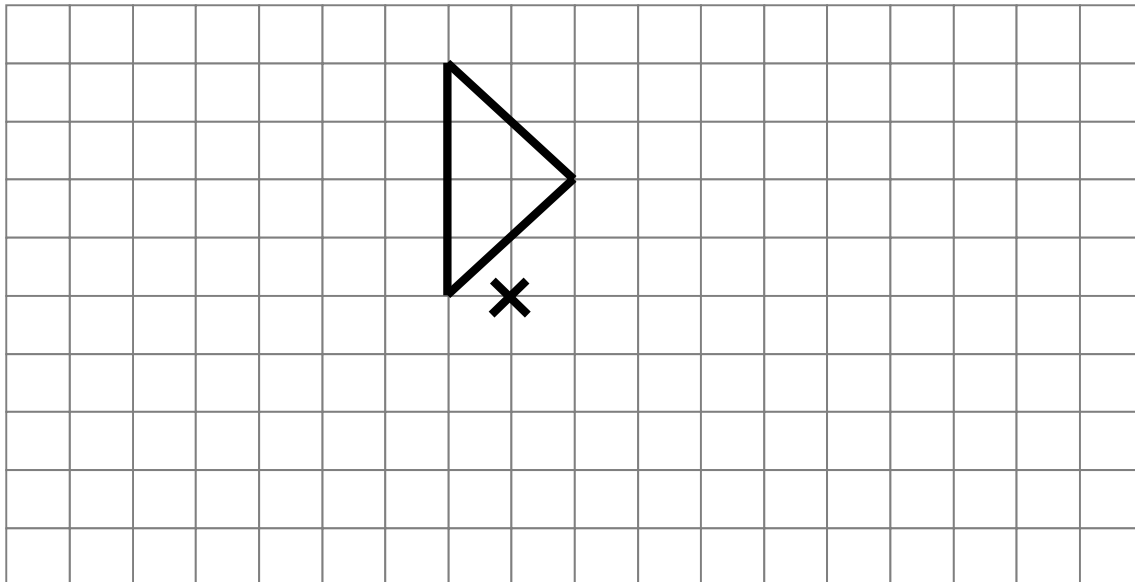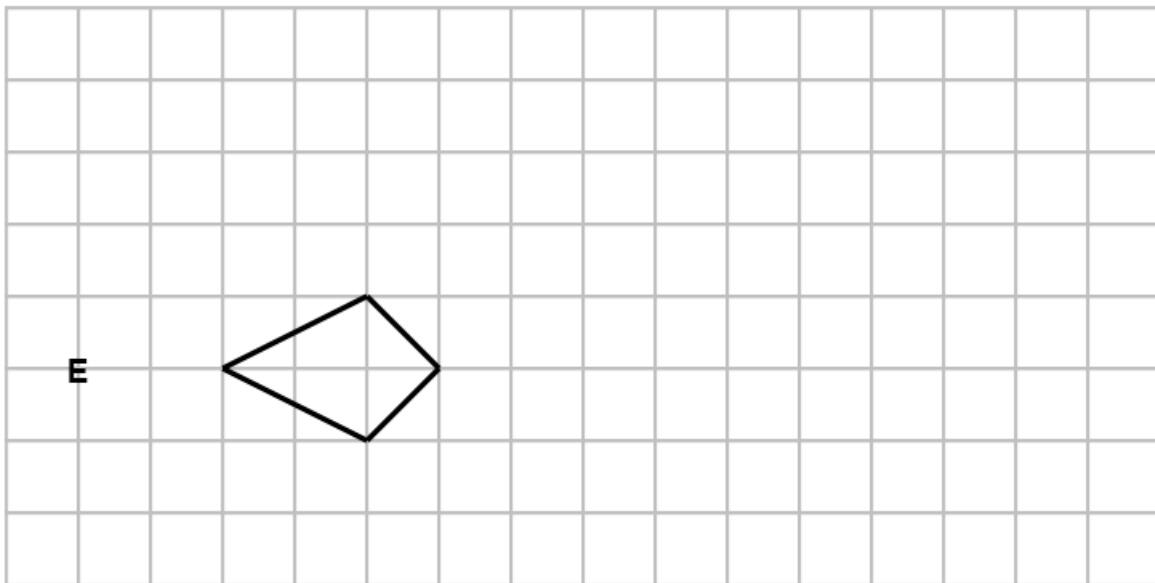
(Total 2 marks)

Question 10.

Rotate this shape through 90º clockwise, using X as the centre of rotation.

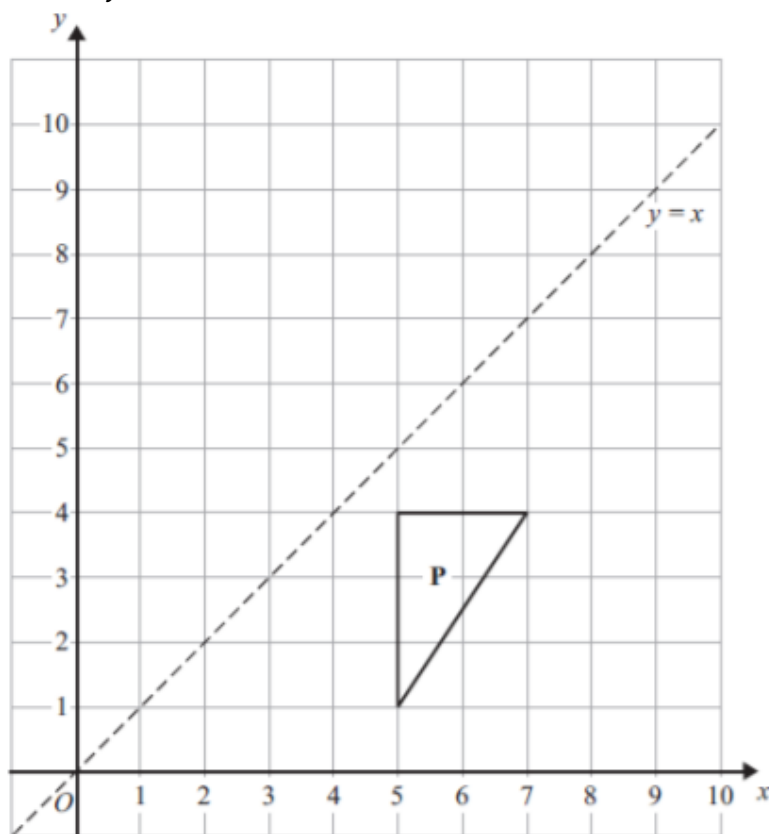**(Total 2 marks)**

Question 11.

Enlarge the following shape, using E as the centre of enlargement, with scale factor 2.

(Total 2 marks)
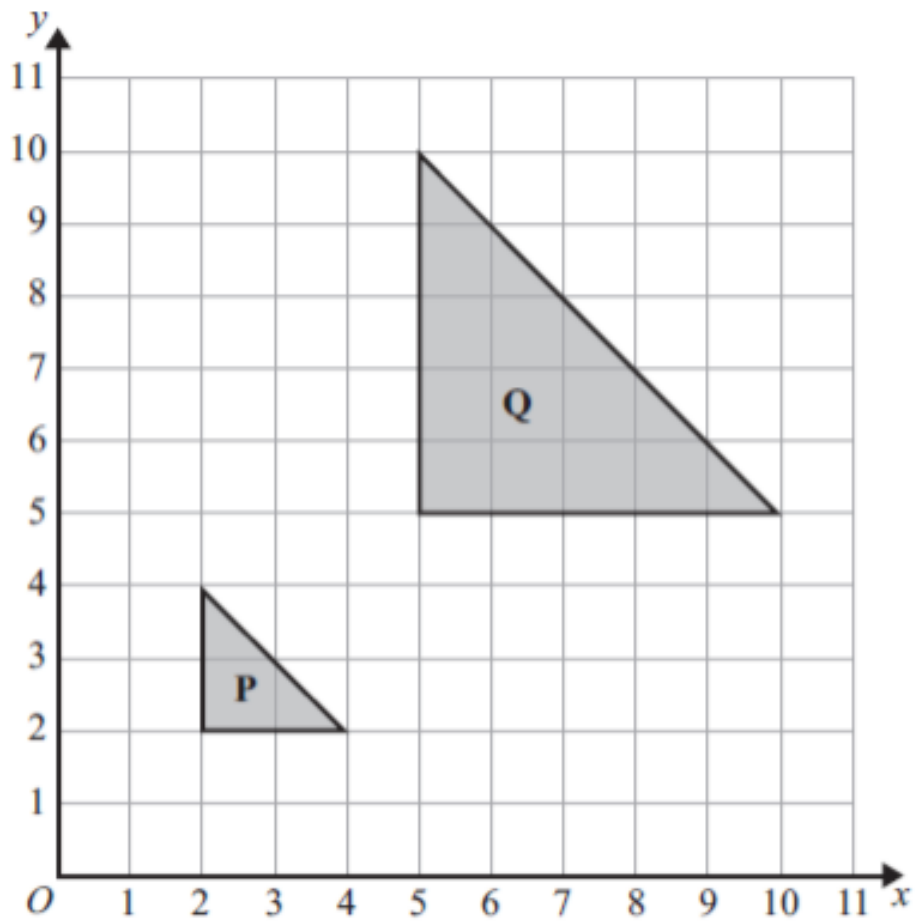
Question 12.

Reflect triangle A in the line $y = x$

(Total 2 marks)

Key to Five

Question 13.

Describe fully the single transformation that maps shape P onto shape Q

(Total 2 marks)

Key to Five

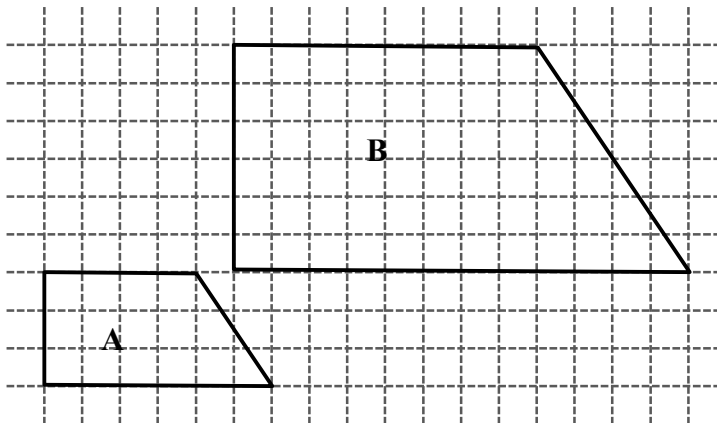**Section C**

Question 14.

The shows a shape and its enlargement

(a) Write down the scale factor that transforms shape A onto shape B.

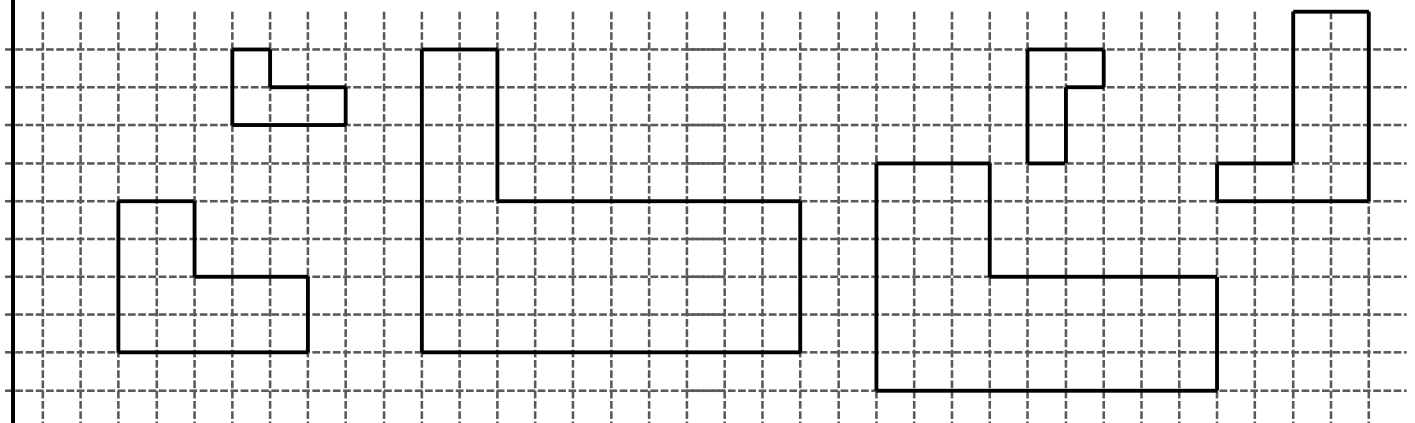...(1)

(b) Write down the enlargement that transforms shape B onto shape A.

....(1)

(Total 2 marks)

Question 15.

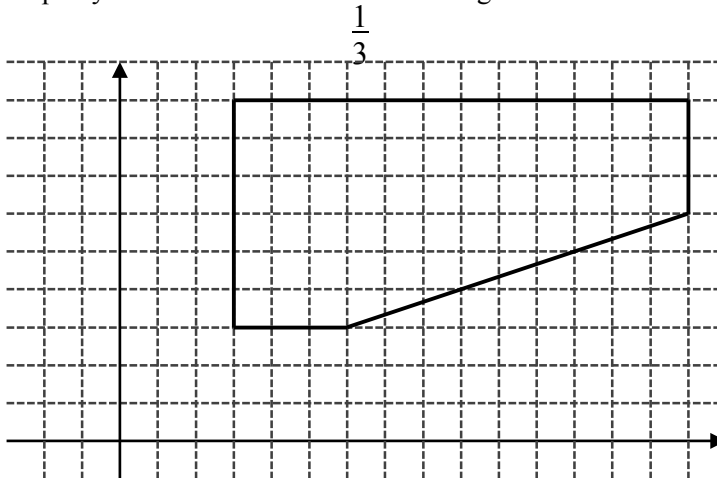The diagram shows some shapes, one shape has been enlarged to make one of the other shapes.

Draw a circle round these two shapes.

(Total 2 marks)

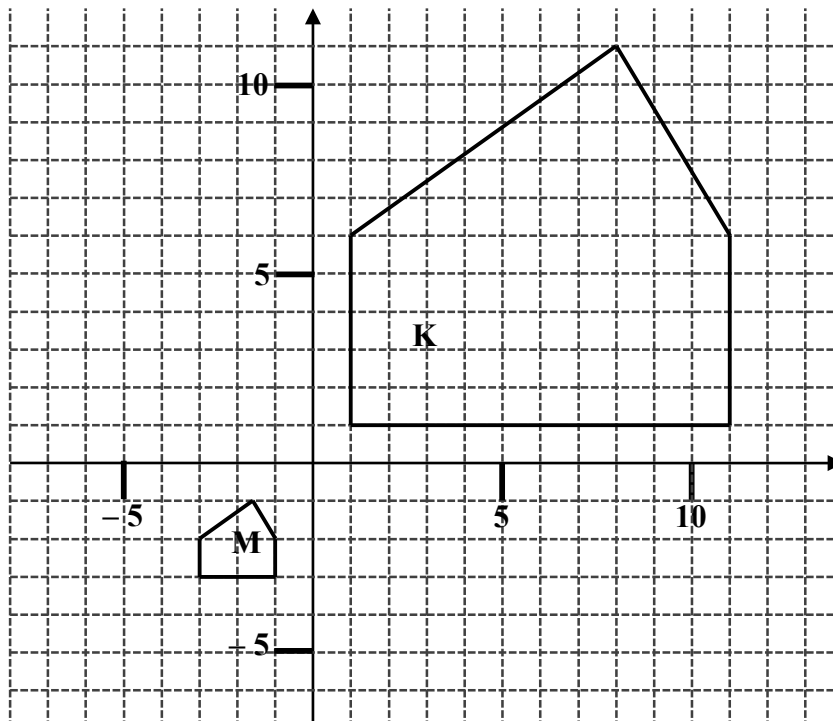Key to Five

Question 16.

Enlarge this shape by a scale factor of $\frac{1}{3}$ from the origin.

<div align="right">

(Total 3 marks)

</div>

Question 17.

Describe fully the enlargement that transforms shape K onto shape M.
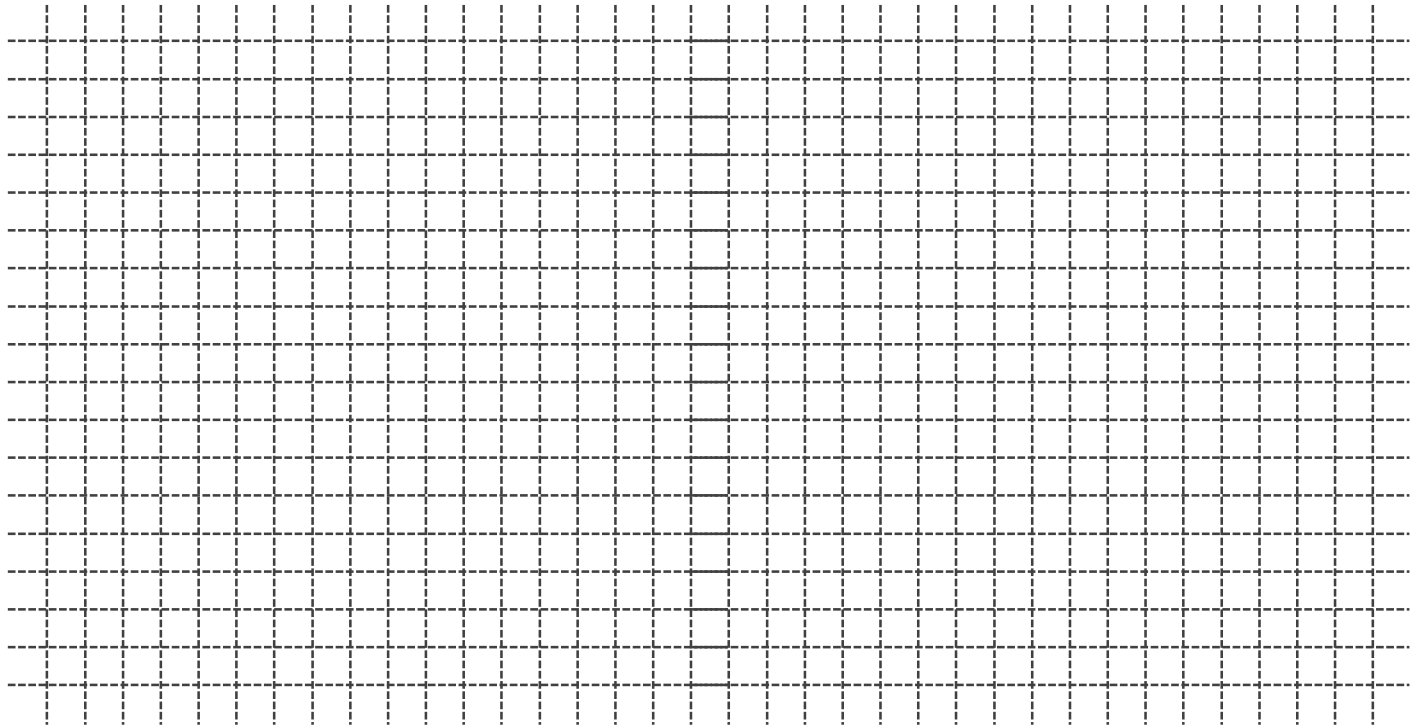

<div align="right">

(Total 3 marks)

</div>

Key to Five

Question 17.

A shape is enlarged by a scale factor of ¼ from the origin
and then the image is enlarged by a scale factor of 4 from the point (– 1 , 2).

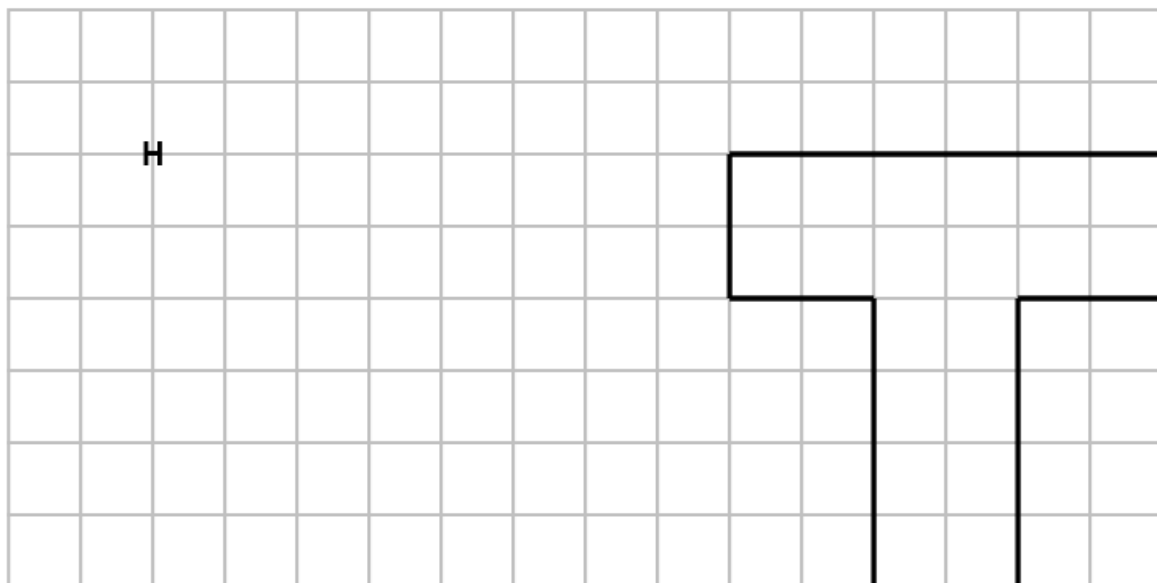Jim says you would get the same result if you did the enlargements the other way round.
Is Jim right?
Explain your answer, you may find the grid below helpful.

Question 18.

Enlarge the following shape, using H as the centre of enlargement, with scale factor $\frac{1}{2}$

(Total 2 marks)

Key to Five