



GCSE Foundation 18

Shape, space and measure



54 minutes



53 marks

Transformations

Q1. In each part, decide whether the diagram shows a reflection, a rotation or a translation.
Circle your answer.

(a)



Reflection

Rotation

Translation

(1)

(b)



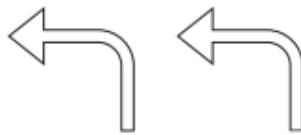
Reflection

Rotation

Translation

(1)

(c)



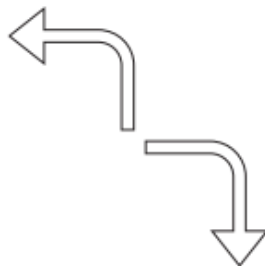
Reflection

Rotation

Translation

(1)

(d)



Reflection

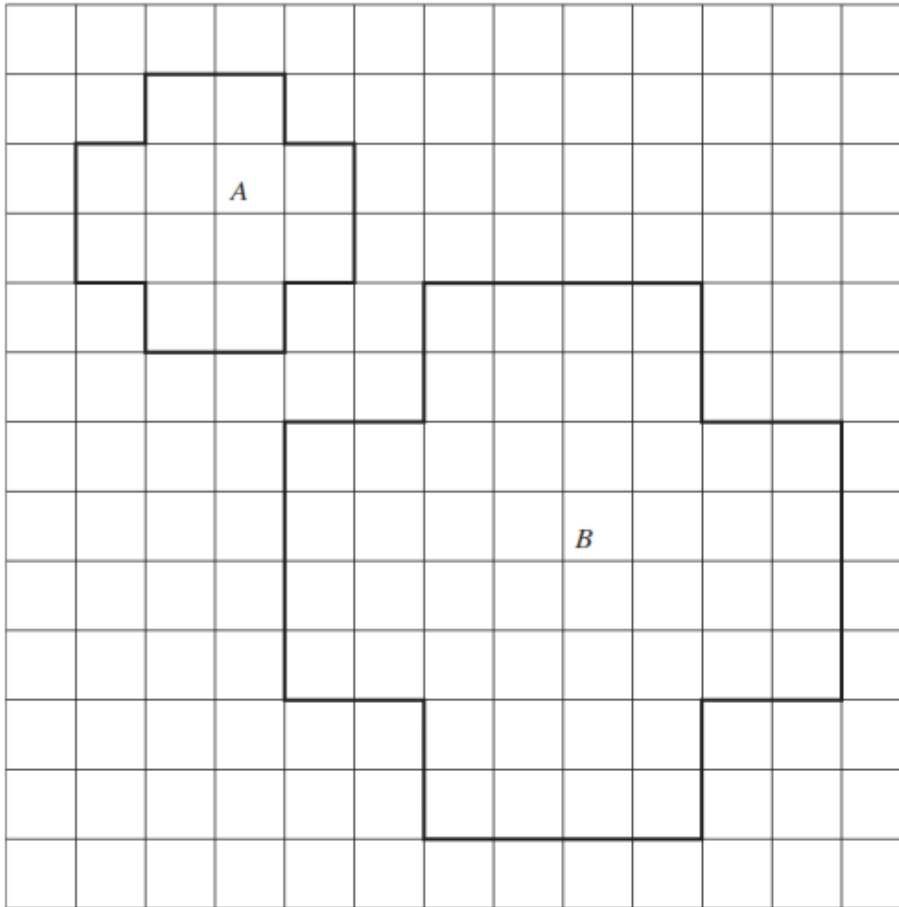
Rotation

Translation

(1)

(Total 4 marks)

Q2. Shape *A* and shape *B* are drawn on a centimetre grid.



- (a) Work out the area of shape *A*.
State the units of your answer.

.....

Answer

(2)

- (b) Shape *B* is an enlargement of shape *A*.

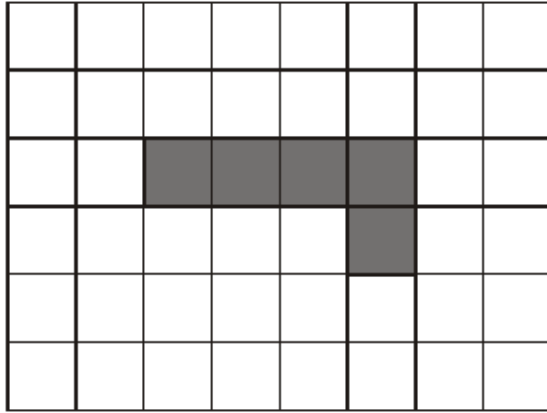
Write down the scale factor of the enlargement.

Answer

(1)

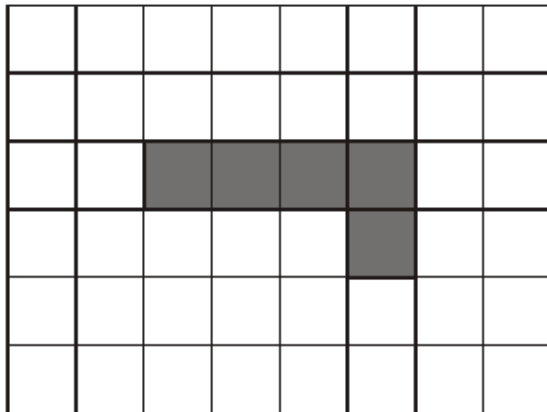
(Total 3 marks)

- Q3.** (a) Shade **one** more square to make a shape with one line of symmetry.



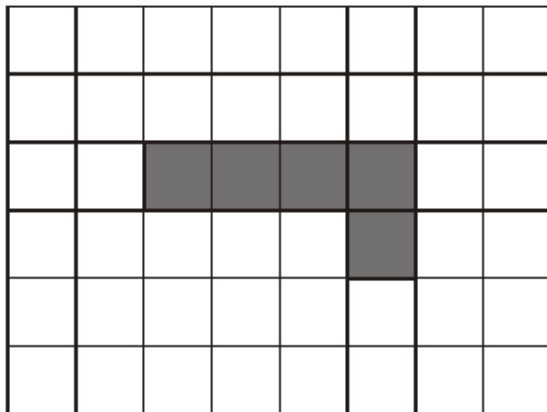
(1)

- (b) Shade **one** more square to make a different shape with one line of symmetry.



(1)

- (c) Shade **one** more square to make a shape with rotational symmetry of order 2.

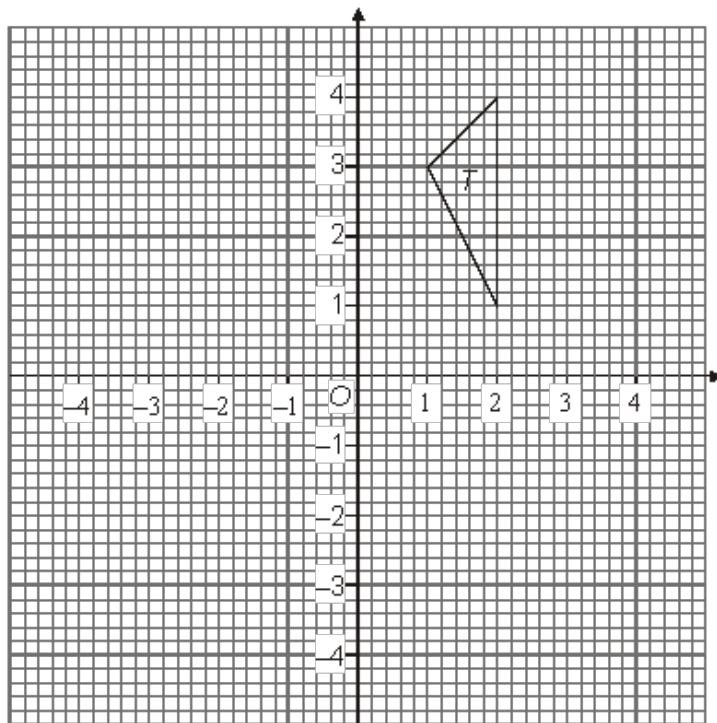


(1)

(Total 3 marks)

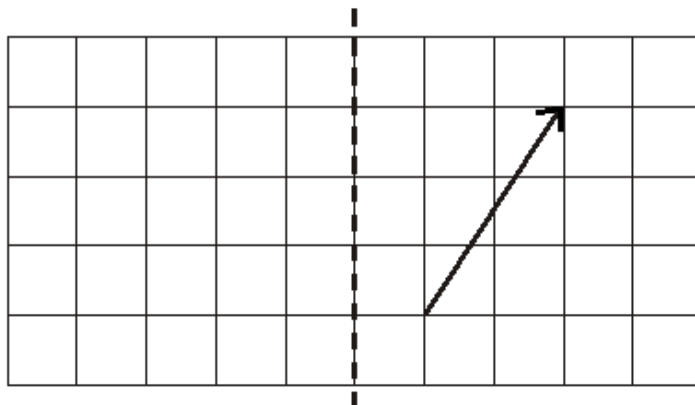
Q4. Triangle T is drawn on this grid.

Draw the image of triangle T after a 90° anticlockwise rotation about O .



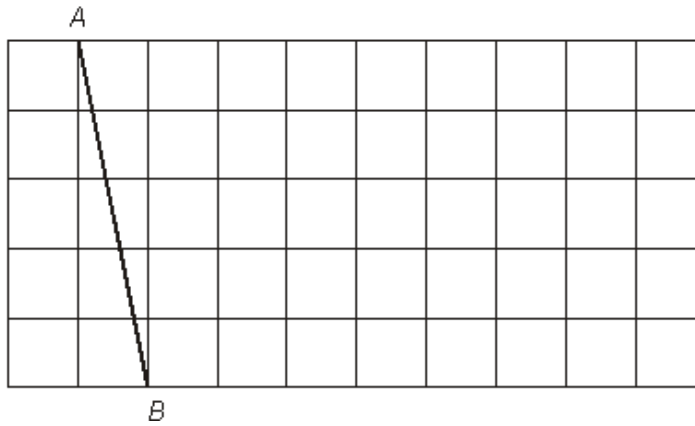
(Total 3 marks)

Q5. (a) Draw the reflection of the arrow in the dotted line.



(1)

- (b) On the grid, draw a line at right angles to the line AB .



(1)

- (c) (i) Measure the length of this line.
Give your answer in millimetres.



Answer mm

(1)

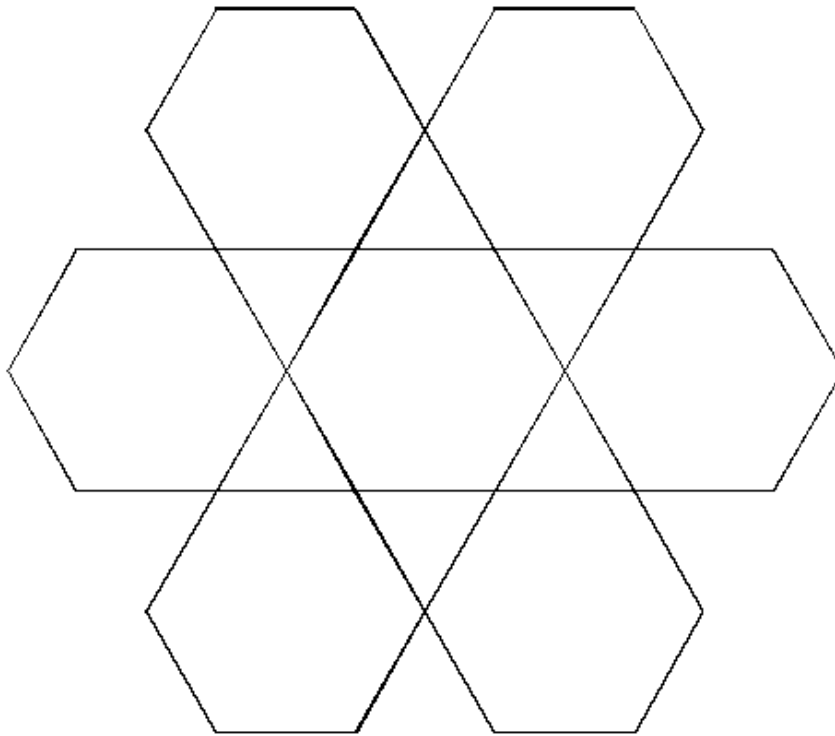
- (ii) Mark the midpoint of the line with a cross.

(1)

(Total 4 marks)

- Q6.** Shapes tessellate when they fit together with no gaps.
Here is a tessellating pattern made from equilateral triangles and regular hexagons.

Not drawn accurately



- (a) Write down the size of each interior angle in the equilateral triangle.

Answer degrees

(1)

- (b) Write down the size of each interior angle in the regular hexagon.

Answer degrees

(1)

- (c) Use your answers to parts (a) and (b) to explain why the two shapes form a tessellating pattern.

.....

.....

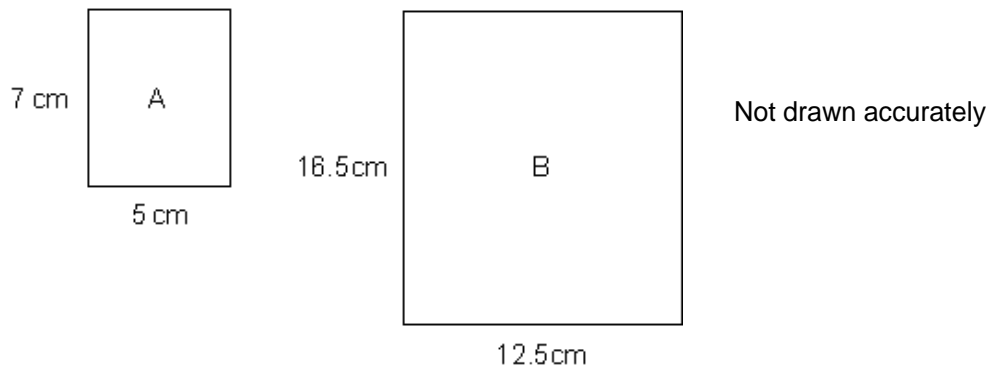
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(3)

(Total 5 marks)

Q7. Here are two rectangles, A and B.



Is rectangle B an enlargement of rectangle A?

Tick the correct box.



Yes



No

Explain your answer.

.....

.....

.....

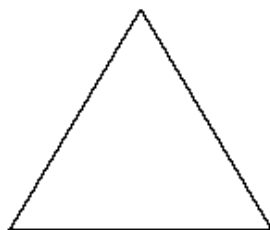
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(Total 3 marks)

Q8. The diagram shows a triangle.
All the sides are equal in length.

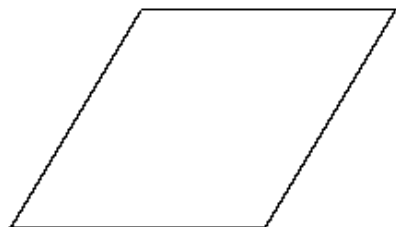


(a) What is the name given to this special type of triangle?

Answer

(1)

- (b) The diagram shows a shape made up of two of these triangles.



- (i) What is the mathematical name of this shape?

Answer

(1)

- (ii) Write down the order of rotational symmetry of this shape.

Answer

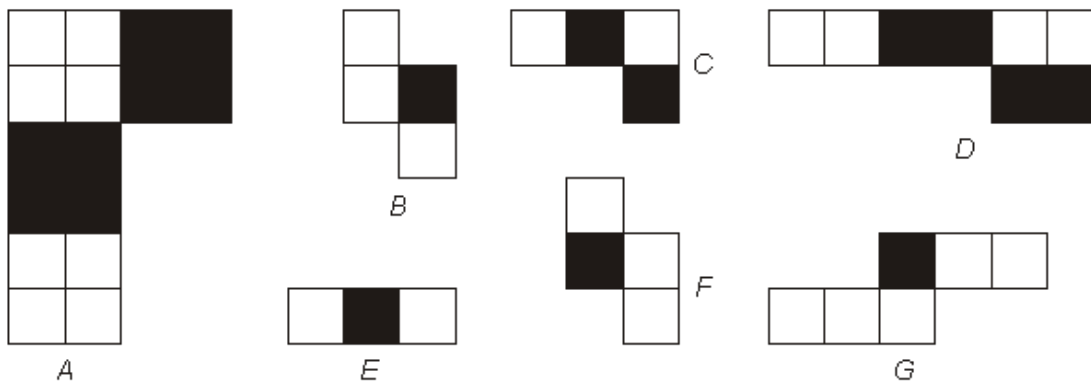
(1)

- (iii) Draw the lines of symmetry on the shape.

(2)

(Total 5 marks)

Q9. Here are seven shapes made from small squares.



- (a) Which **two** shapes are congruent?

Answer and

(1)

- (b) (i) Which shape is an enlargement of shape C?

Answer

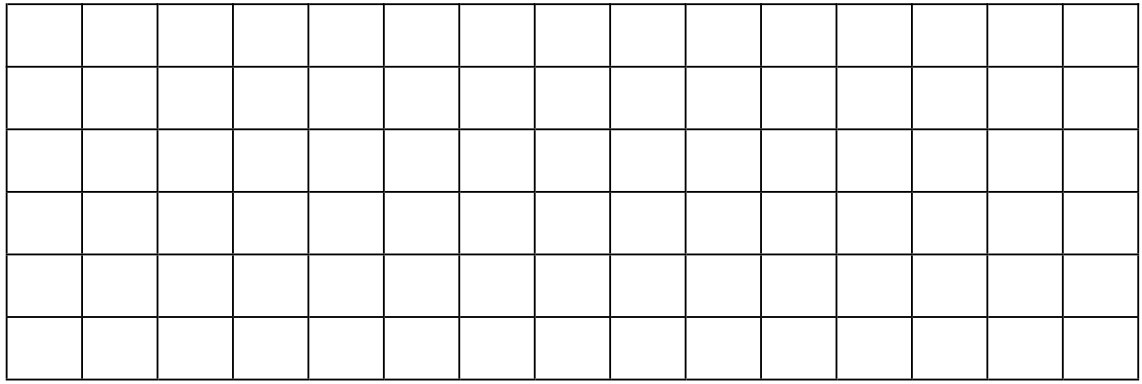
(1)

- (ii) What is the scale factor of the enlargement?

Answer

(1)

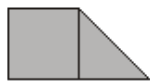
- (c) On the grid, draw an enlargement of shape E by scale factor 3.



(3)

(Total 6 marks)

- Q10.** This shape is used to draw patterns on centimetre squared paper.



- (a) Here is one pattern.



- (i) A student writes down some statements about the pattern.

Put a tick in the box next to each correct statement.

Put a cross in the box next to each incorrect statement.

There are congruent shapes in the pattern.

☐

The pattern has a line of symmetry.

☐

The pattern is made from parallelograms.

☐

The shaded shape is a trapezium.

☐

The shaded shape has two right angles.

☐

(3)

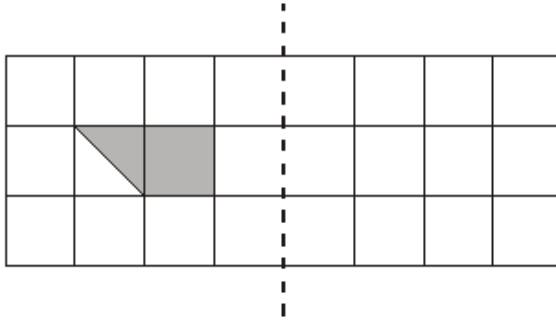
- (ii) Work out the total area of the four shaded shapes in the pattern.

.....

Answer cm^2

(2)

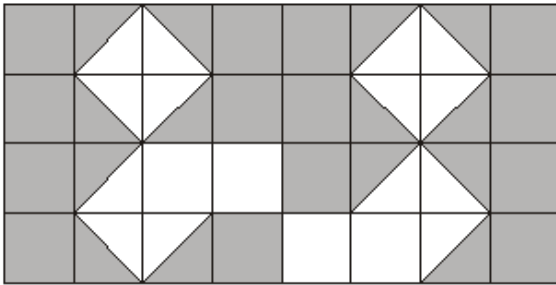
- (b) Reflect the shaded shape in the dotted line.



(1)

- (c) Sarah uses the shaded shape to draw a repeating pattern.

Two of the shaded shapes in her pattern are missing.

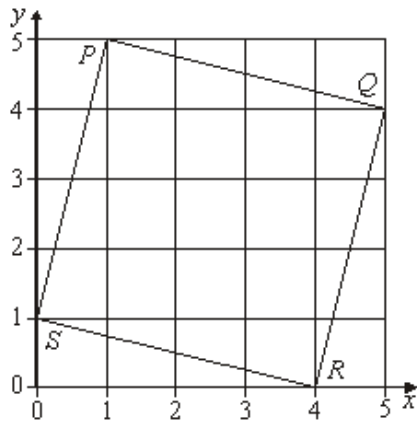


Complete Sarah's pattern.

(2)

(Total 8 marks)

Q11. The square $PQRS$ is drawn on a centimetre square grid.



- (a) The coordinates of P are $(1, 5)$.
Write down the coordinates of Q , R and S .

Answer Q (..... ,)

R (..... ,)

S (..... ,)

(2)

- (b) Calculate the area of square $PQRS$.
You **must** show your working.
State the units of your answer.

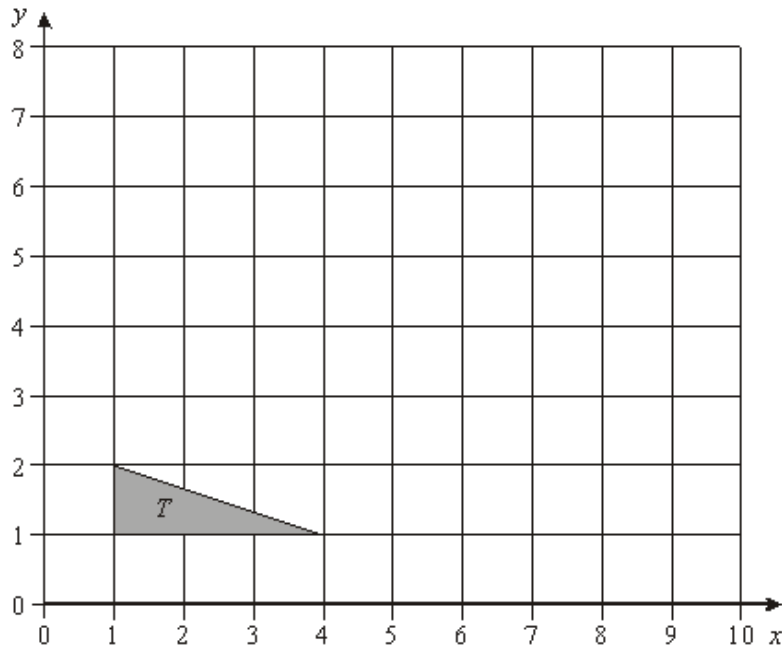
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.....
.....

Answer

(4)

(Total 6 marks)

Q12. The vertices of triangle T are $(1, 1)$, $(1, 2)$ and $(4, 1)$.



Enlarge triangle T by scale factor 2, with $(0, 0)$ as the centre of enlargement.

(Total 3 marks)

