

Transformations

GCSE Mathematics • **Foundation Tier** • Grades 4–5 • Non-calculator

Name:

Class:

Total: / 52

Show all your working. Marks are given for correct method as well as the final answer.

1. Translate the point $(3, 2)$ by the vector $\begin{pmatrix} 4 \\ -1 \end{pmatrix}$. Write down the image. [2 marks]

Answer:

2. Translate the point $(-1, 5)$ by $\begin{pmatrix} -2 \\ 3 \end{pmatrix}$. [2 marks]

Answer:

3. Write down the vector that translates $(2, 3)$ to $(6, 1)$. [2 marks]

Answer:

4. Reflect the point $(4, 3)$ in the x -axis. [2 marks]

Answer:

5. Reflect the point $(4, 3)$ in the y -axis. [2 marks]

Answer:

6. Reflect the point $(2, 5)$ in the line $y = x$. [2 marks]

Answer:

7. Reflect the point $(3, 1)$ in the line $y = -x$. [3 marks]

Answer:

8. Rotate the point $(3, 0)$ by 90° anticlockwise about the origin. [2 marks]

Answer:

9. Rotate the point $(2, 5)$ by 180° about the origin. [2 marks]

Answer:

10. Rotate the point $(1, 4)$ by 90° clockwise about the origin. [3 marks]

Answer:

11. State the three things you must give to describe a rotation fully. [3 marks]

Answer:

12. Enlarge the point $(2, 3)$ by scale factor 3 about the origin. [2 marks]

Answer:

13. A shape of area 5 cm^2 is enlarged by scale factor 4. Work out the new area. [3 marks]

Answer: cm^2

14. Enlarge the point $(6, 4)$ by scale factor $\frac{1}{2}$ about the origin. [2 marks]

Answer:

15. Enlarge the point $(2, 1)$ by scale factor -2 about the origin. [3 marks]

Answer:

16. A shape is enlarged by scale factor 3. A side of 4 cm becomes how long? [1 mark]

Answer: cm

17. Shape A has sides 3 cm and 5 cm. Shape B is an enlargement with a corresponding side of 12 cm from the 3 cm side. Work out the scale factor and the other side. [3 marks]

Answer:

18. Describe fully the single transformation that maps $(1, 2)$ to $(1, -2)$.

[2 marks]

Answer:

19. A triangle has vertices $(1, 1)$, $(3, 1)$ and $(1, 4)$.

(a) Write the vertices after a translation by $\begin{pmatrix} 2 \\ -3 \end{pmatrix}$.

[3 marks]

(b) Write the vertices after reflecting the ORIGINAL triangle in the y -axis.

[3 marks]

Answer:

20. The point $P(4, 2)$ is reflected in the x -axis to give Q . Q is then rotated 180° about the origin to give R .

(a) Write down the coordinates of Q and R .

[3 marks]

(b) Describe the single transformation that maps P to R .

[2 marks]

Answer: