



ACHIEVE ACADEMY

GCSE Maths — Foundation Tier

Transformations & Vectors · Practice Booklet

NAME: _____

CLASS: _____

DATE: _____

☐ Developing

☒ Secure

☐ Greater Depth

Answer every question in the working space provided. Method marks are available for correct working even if the final answer is wrong. Check the time allowed with your tutor before you start.

Transformations & Vectors

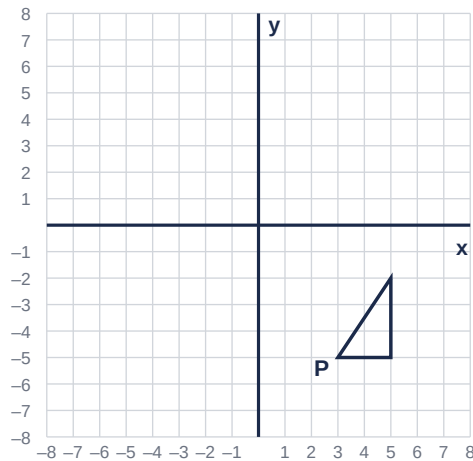
Total marks available: 74

● Transformations & Vectors

Q1

[2 marks]

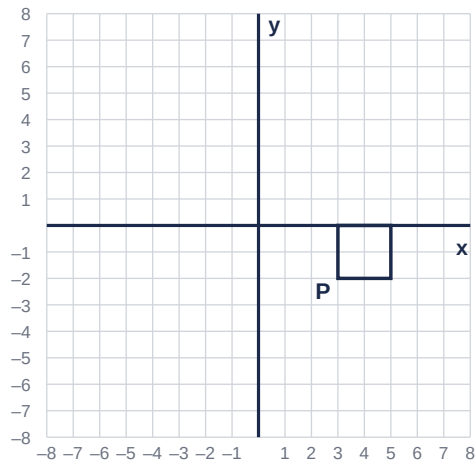
The triangle P has vertices at $(3, -5)$, $(5, -5)$, $(5, -2)$, as shown on the grid below. Reflect P in the y-axis. Write down the coordinates of the vertices of the image.



Q2

[2 marks]

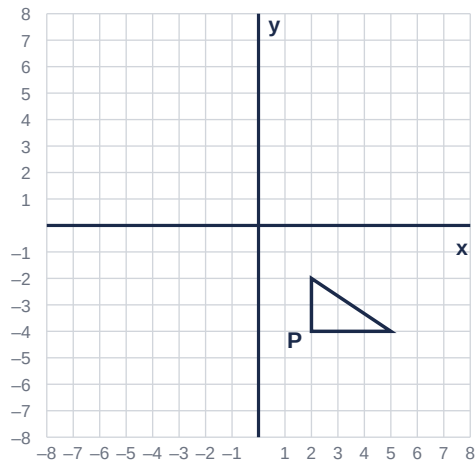
The rectangle P has vertices at $(3, -2)$, $(5, -2)$, $(5, 0)$, $(3, 0)$, as shown on the grid below. Reflect P in the y-axis. Write down the coordinates of the vertices of the image.



Q3

[2 marks]

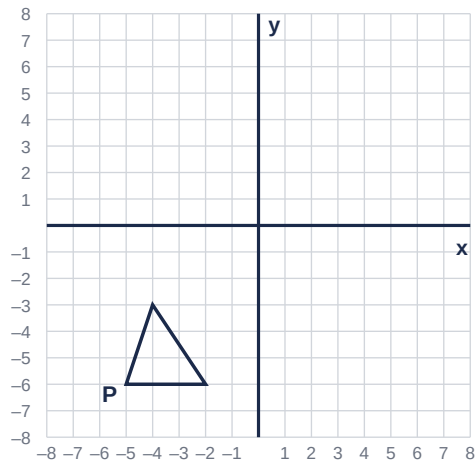
The triangle P has vertices at $(2, -4)$, $(5, -4)$, $(2, -2)$, as shown on the grid below. Reflect P in the x-axis. Write down the coordinates of the vertices of the image.



Q4

[2 marks]

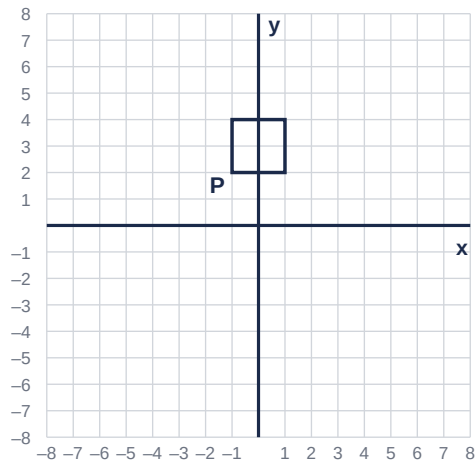
The triangle P has vertices at $(-5, -6)$, $(-2, -6)$, $(-4, -3)$, as shown on the grid below. Reflect P in the y-axis. Write down the coordinates of the vertices of the image.



Q5

[2 marks]

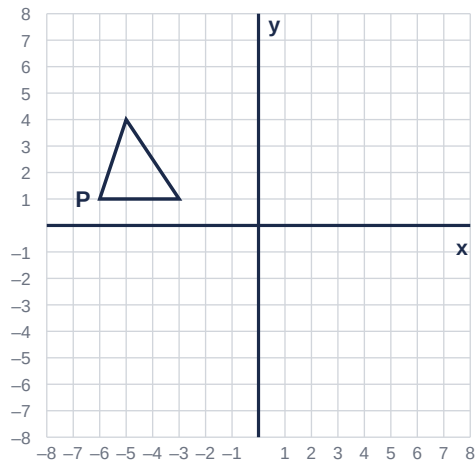
The rectangle P has vertices at $(-1, 2)$, $(1, 2)$, $(1, 4)$, $(-1, 4)$, as shown on the grid below. Translate P by the vector $(2, -4)$. Write down the coordinates of the vertices of the image.



Q6

[2 marks]

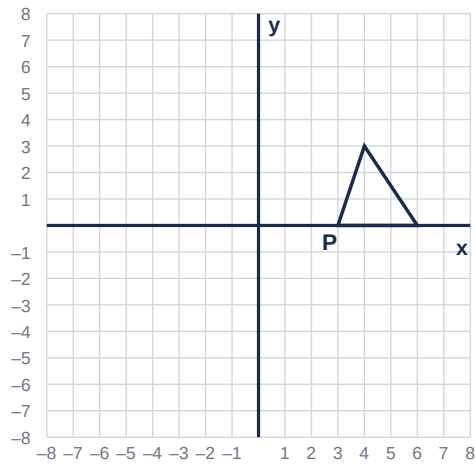
The triangle P has vertices at $(-6, 1)$, $(-3, 1)$, $(-5, 4)$, as shown on the grid below. Reflect P in the x-axis. Write down the coordinates of the vertices of the image.



Q7

[2 marks]

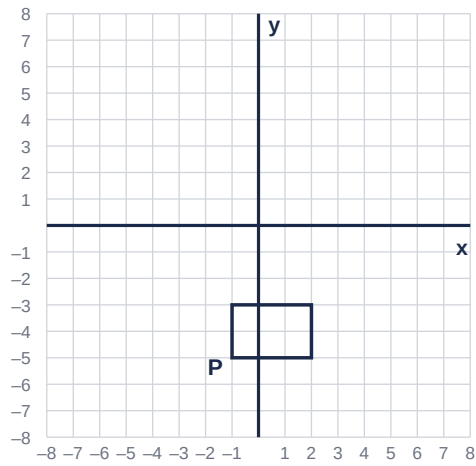
The triangle P has vertices at $(3, 0)$, $(6, 0)$, $(4, 3)$, as shown on the grid below. Reflect P in the y-axis. Write down the coordinates of the vertices of the image.



Q8

[2 marks]

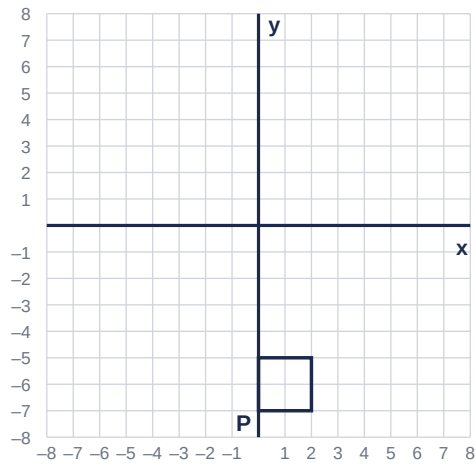
The rectangle P has vertices at $(-1, -5)$, $(2, -5)$, $(2, -3)$, $(-1, -3)$, as shown on the grid below. Reflect P in the x-axis. Write down the coordinates of the vertices of the image.



Q9

[2 marks]

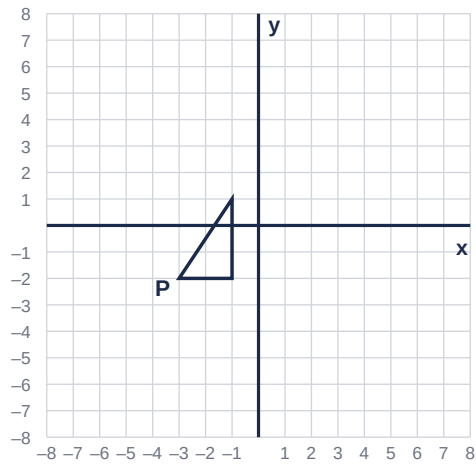
The rectangle P has vertices at $(0, -7)$, $(2, -7)$, $(2, -5)$, $(0, -5)$, as shown on the grid below. Translate P by the vector $(-5, 0)$. Write down the coordinates of the vertices of the image.



Q10

[2 marks]

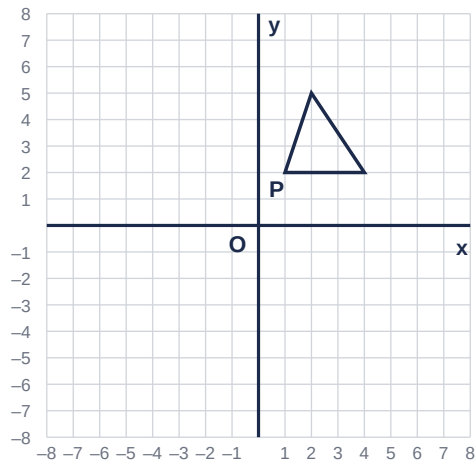
The triangle P has vertices at $(-3, -2)$, $(-1, -2)$, $(-1, 1)$, as shown on the grid below. Reflect P in the y-axis. Write down the coordinates of the vertices of the image.



Q11

[3 marks]

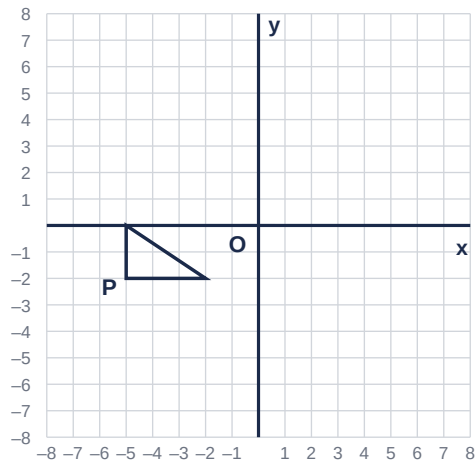
The triangle P has vertices at (1, 2), (4, 2), (2, 5), as shown on the grid below. Rotate P by 90° anticlockwise about the origin, O. Write down the coordinates of the vertices of the image.



Q12

[3 marks]

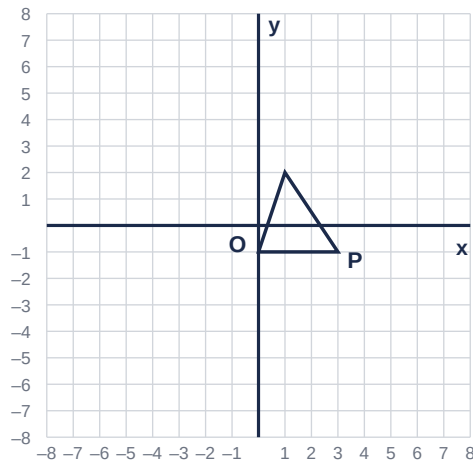
The triangle P has vertices at $(-5, -2)$, $(-2, -2)$, $(-5, 0)$, as shown on the grid below. Rotate P by 180° about the origin, O. Write down the coordinates of the vertices of the image.



Q13

[3 marks]

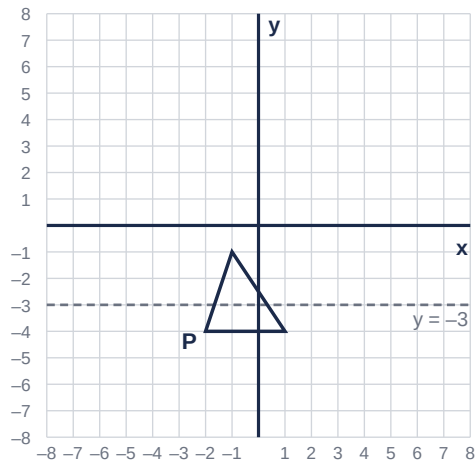
The triangle P has vertices at $(0, -1)$, $(3, -1)$, $(1, 2)$, as shown on the grid below. Rotate P by 180° about the origin, O. Write down the coordinates of the vertices of the image.



Q14

[3 marks]

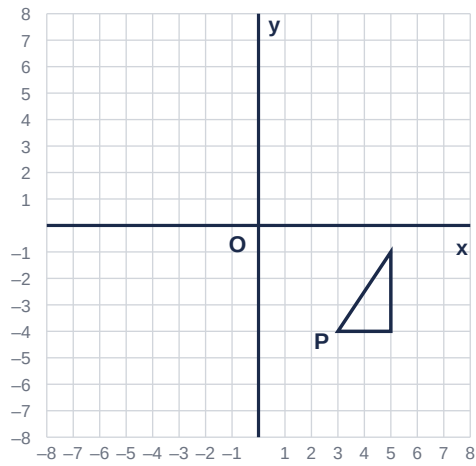
The triangle P has vertices at $(-2, -4)$, $(1, -4)$, $(-1, -1)$, as shown on the grid below. Reflect P in the line $y = -3$. Write down the coordinates of the vertices of the image.



Q15

[3 marks]

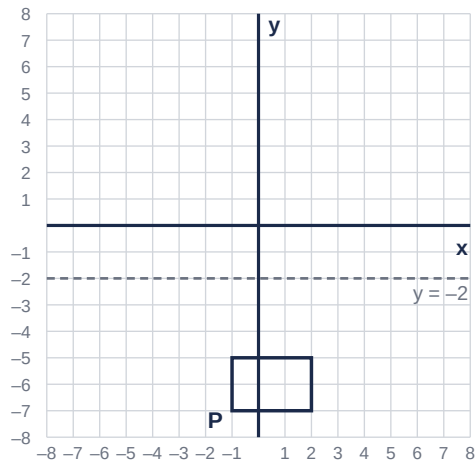
The triangle P has vertices at $(3, -4)$, $(5, -4)$, $(5, -1)$, as shown on the grid below. Rotate P by 90° anticlockwise about the origin, O. Write down the coordinates of the vertices of the image.



Q16

[3 marks]

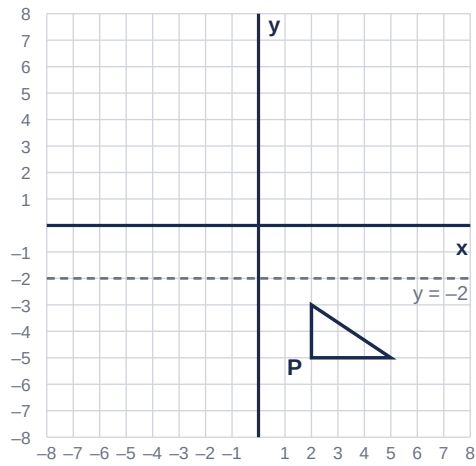
The rectangle P has vertices at $(-1, -7)$, $(2, -7)$, $(2, -5)$, $(-1, -5)$, as shown on the grid below. Reflect P in the line $y = -2$. Write down the coordinates of the vertices of the image.



Q17

[3 marks]

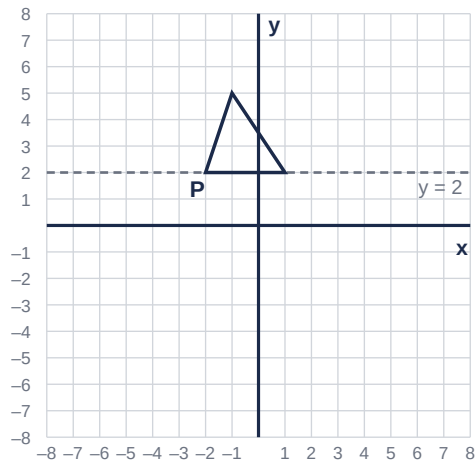
The triangle P has vertices at $(2, -5)$, $(5, -5)$, $(2, -3)$, as shown on the grid below. Reflect P in the line $y = -2$. Write down the coordinates of the vertices of the image.



Q18

[3 marks]

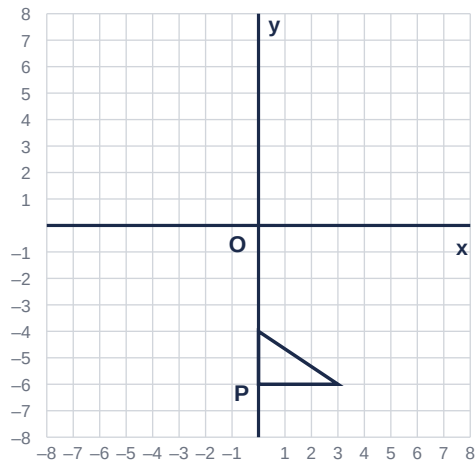
The triangle P has vertices at $(-2, 2)$, $(1, 2)$, $(-1, 5)$, as shown on the grid below. Reflect P in the line $y = 2$. Write down the coordinates of the vertices of the image.



Q19

[3 marks]

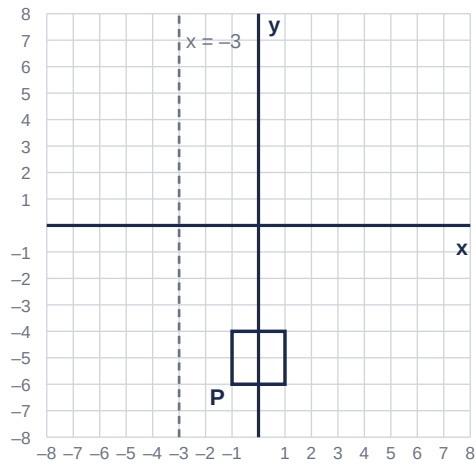
The triangle P has vertices at $(0, -6)$, $(3, -6)$, $(0, -4)$, as shown on the grid below. Rotate P by 90° clockwise about the origin, O. Write down the coordinates of the vertices of the image.



Q20

[3 marks]

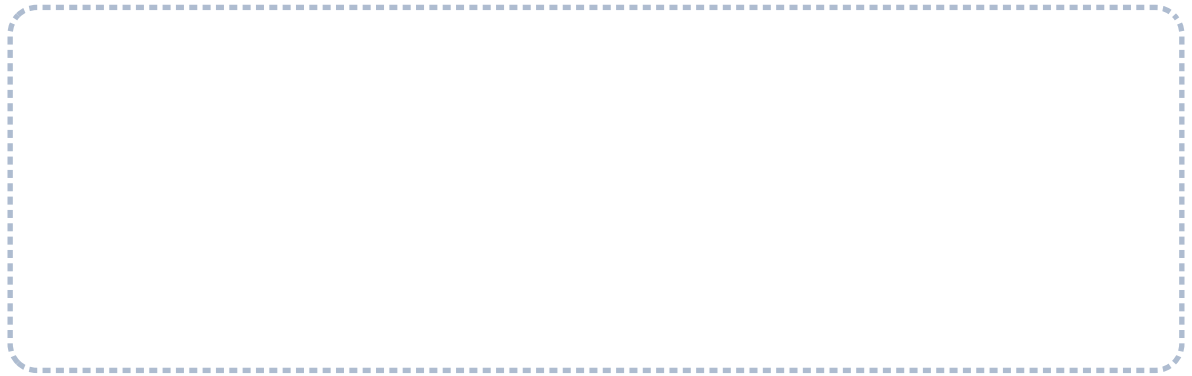
The rectangle P has vertices at $(-1, -6)$, $(1, -6)$, $(1, -4)$, $(-1, -4)$, as shown on the grid below. Reflect P in the line $x = -3$. Write down the coordinates of the vertices of the image.



Q21

[2 marks]

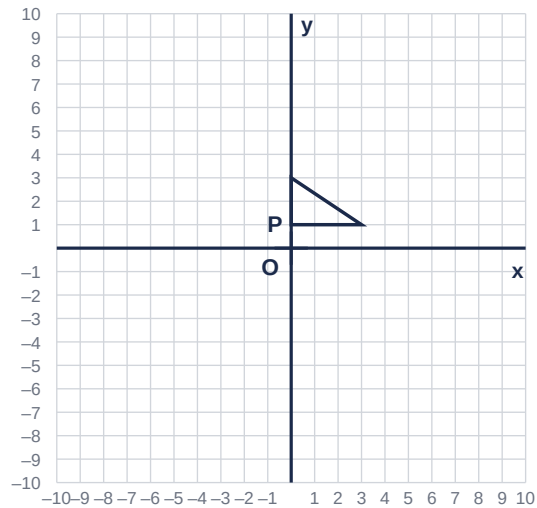
$a = (-1, 1)$ and $b = (-3, -6)$. Find $3a - 2b$, giving your answer as a column vector.



Q22

[3 marks]

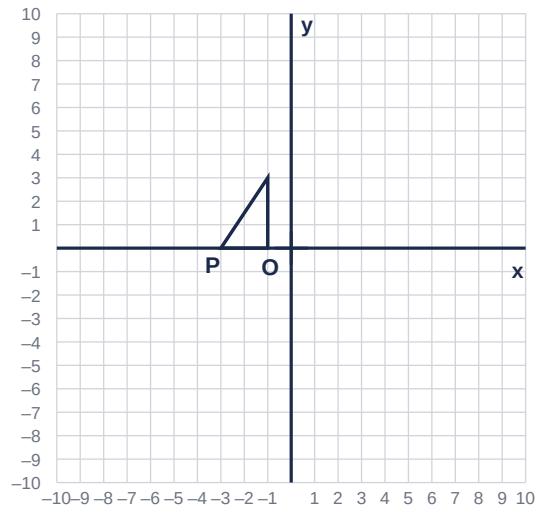
The triangle P has vertices at $(0, 1)$, $(3, 1)$, $(0, 3)$, as shown on the grid below. Enlarge P by scale factor 3, centre the origin, O. Write down the coordinates of the vertices of the image.



Q23

[3 marks]

The triangle P has vertices at $(-3, 0)$, $(-1, 0)$, $(-1, 3)$, as shown on the grid below. Enlarge P by scale factor 2, centre the origin, O. Write down the coordinates of the vertices of the image.



Q24

[2 marks]

$a = (5, -3)$ and $b = (-1, 6)$. Find $2a + 2b$, giving your answer as a column vector.

Q25

[2 marks]

$a = (3, 6)$ and $b = (4, -3)$. Find $3a - 2b$, giving your answer as a column vector.

Q26

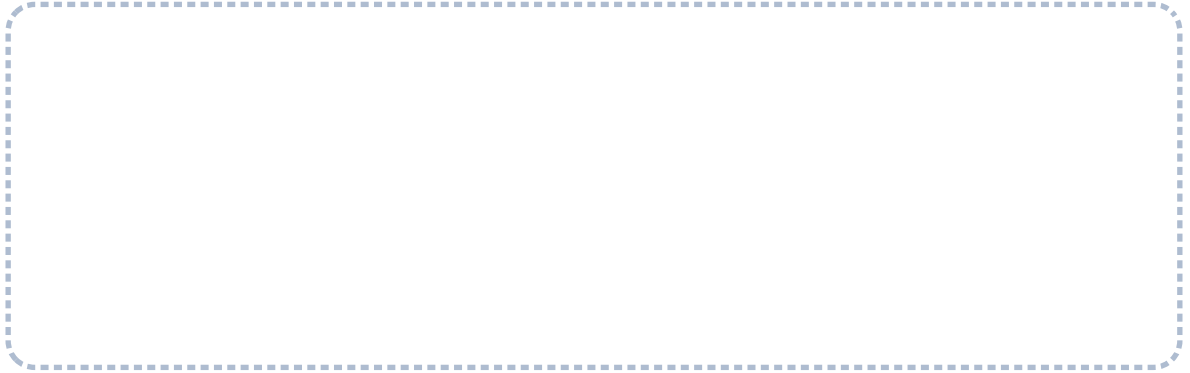
[2 marks]

$a = (-4, -5)$ and $b = (2, 4)$. Find $a + b$, giving your answer as a column vector.

Q27

[2 marks]

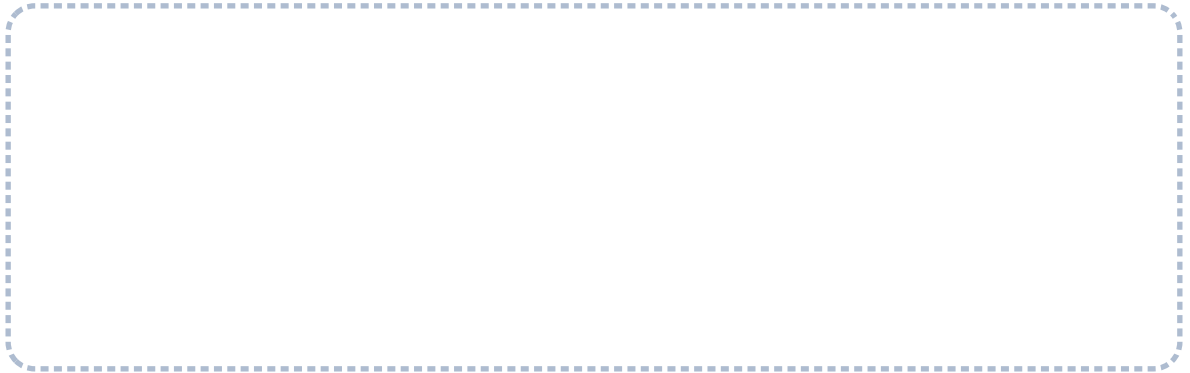
$a = (-4, -6)$ and $b = (3, 0)$. Find $2a - b$, giving your answer as a column vector.



Q28

[2 marks]

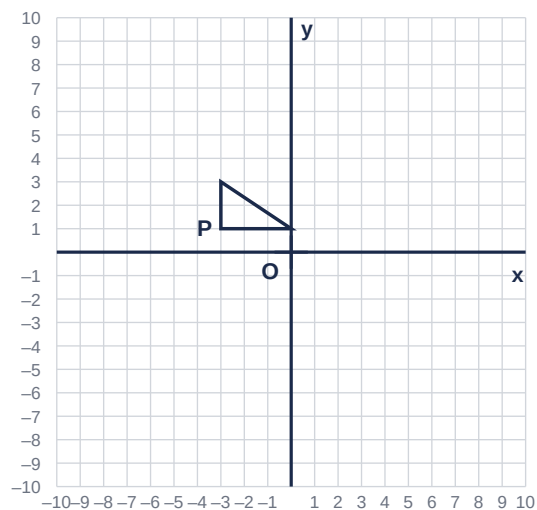
$a = (6, -6)$ and $b = (-1, 1)$. Find $a - 2b$, giving your answer as a column vector.



Q29

[3 marks]

The triangle P has vertices at $(-3, 1)$, $(0, 1)$, $(-3, 3)$, as shown on the grid below. Enlarge P by scale factor 2, centre the origin, O. Write down the coordinates of the vertices of the image.



A large dashed rectangular box for writing the answer.

Q30

[3 marks]

The rectangle P has vertices at $(-1, 0)$, $(1, 0)$, $(1, 2)$, $(-1, 2)$, as shown on the grid below. Enlarge P by scale factor 2, centre the origin, O. Write down the coordinates of the vertices of the image.

