

Vectors – GCSE Mathematics Paper 3

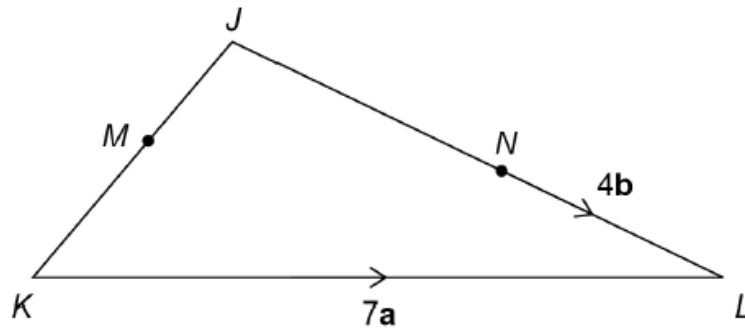
1. No.31

$$\mathbf{c} = \begin{pmatrix} 4 \\ 9 \end{pmatrix} \quad \mathbf{d} = \begin{pmatrix} 2 \\ -5 \end{pmatrix}$$

Work out $4\mathbf{c} + 3\mathbf{d}$ **[2 marks]**

Answer $\left(\begin{array}{c} \\ \end{array} \right)$

2. No.23

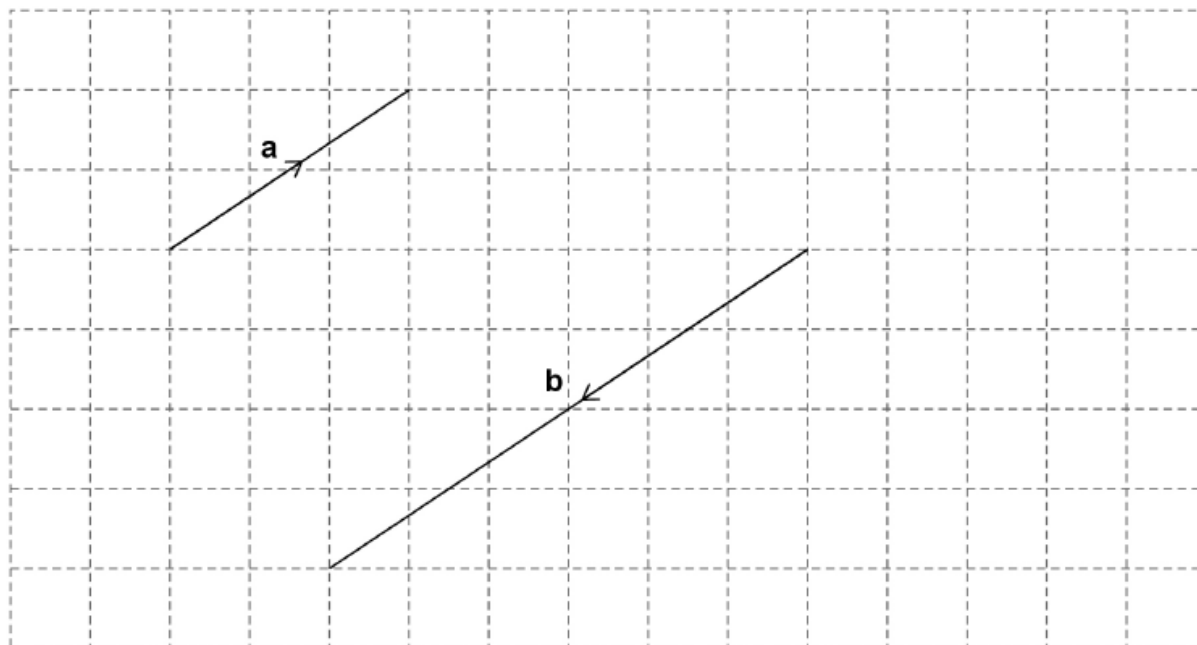
In triangle JKL M is the midpoint of JK $JN : NL = 3 : 2$ $\overrightarrow{KL} = 7\mathbf{a}$ $\overrightarrow{NL} = 4\mathbf{b}$ Not drawn
accuratelyWork out $\overrightarrow{JM}$ in terms of $\mathbf{a}$ and $\mathbf{b}$.

Give your answer in its simplest form.

[3 marks]

Answer

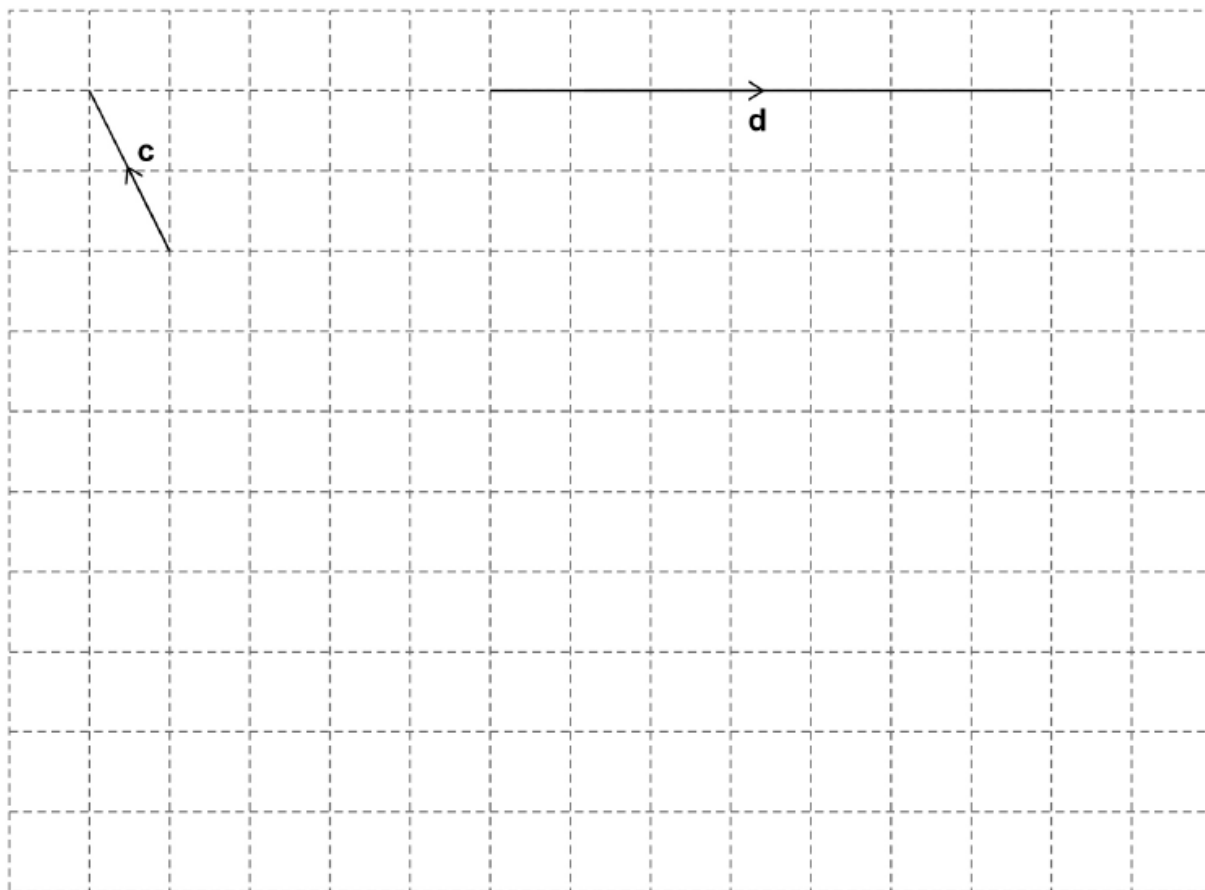
3. No.13

(a) Vectors **a** and **b** are drawn on a grid.Write **b** in terms of **a**.

[1 mark]

b = _____

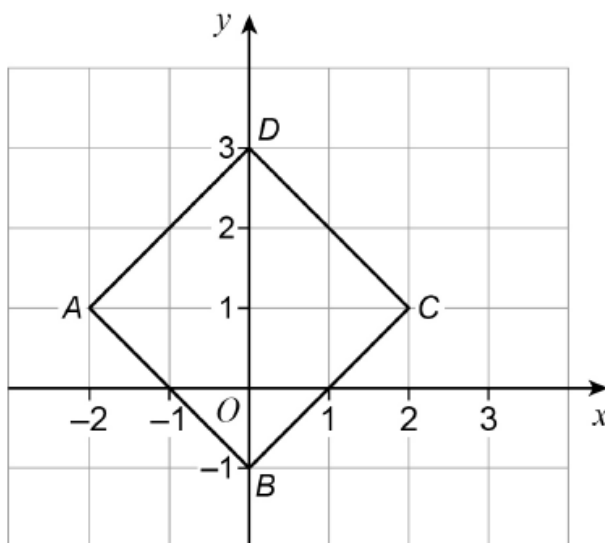
(b) Vectors **c** and **d** are drawn on a grid.



On the grid above, draw a vector representing $\mathbf{c} - \mathbf{d}$

[2 marks]

4. No.17

 $ABCD$ is a square. A is $(-2, 1)$ B is $(0, -1)$ C is $(2, 1)$ D is $(0, 3)$ 

(a) A single transformation of $ABCD$ is such that

B is mapped to D

D is mapped to B

A and C are invariant points.

Describe fully the transformation.

[2 marks]

(b) A different **single** transformation of $ABCD$ is such that

B is mapped to D

D is mapped to B

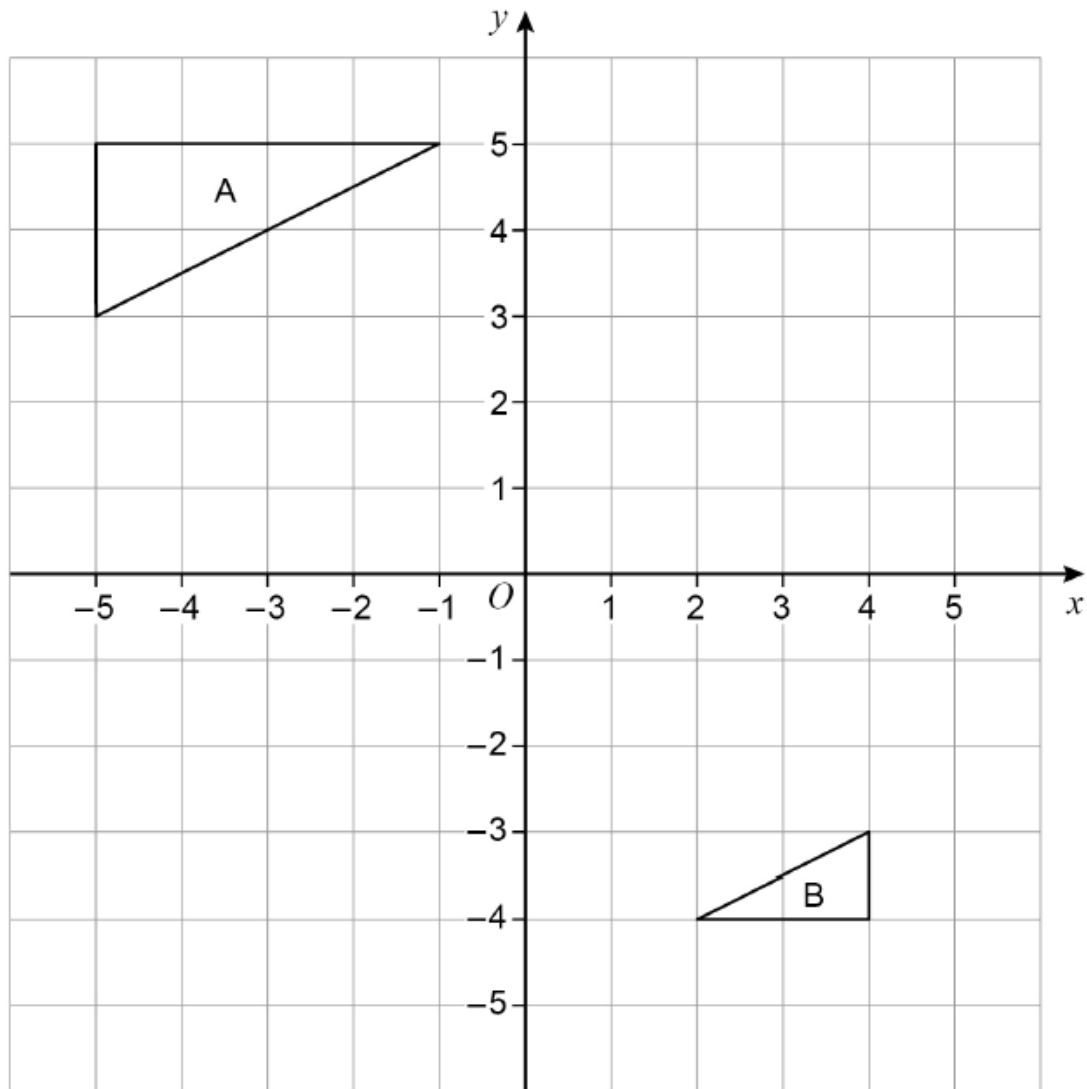
the only invariant point is $(0, 1)$

Describe fully the transformation.

[3 marks]

5. No.24

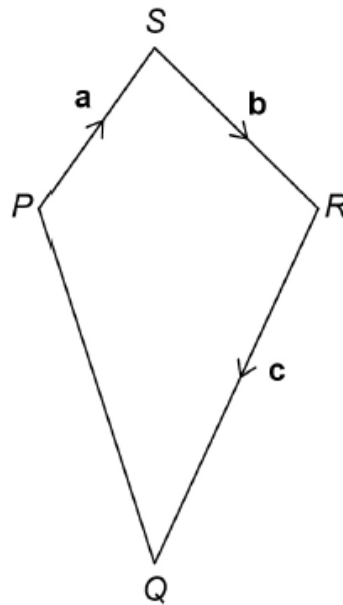
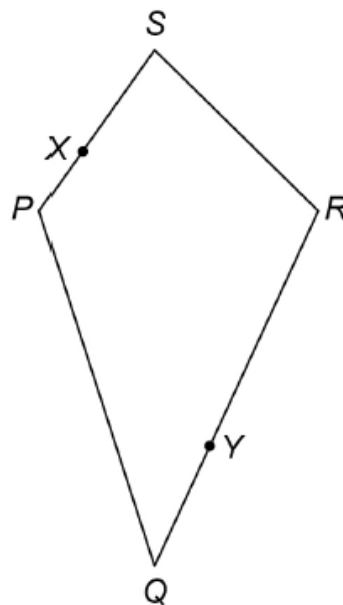
Shape A and shape B are shown on the grid.

Describe the **single** transformation that maps shape A to shape B.**[3 marks]**

6. No.27

Here is quadrilateral $PQRS$.

$$\overrightarrow{PS} = \mathbf{a} \quad \overrightarrow{SR} = \mathbf{b} \quad \overrightarrow{RQ} = \mathbf{c}$$

Not drawn
accuratelyX is a point on PS where $PX : XS = 1 : 2$ Y is a point on RQ where $RY : YQ = 2 : 1$ Not drawn
accurately

Is XY parallel to PQ ?

Show working to support your answer.

[3 marks]

[illegible]