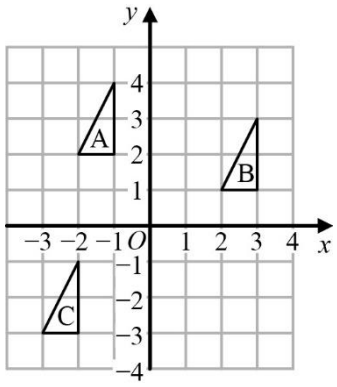
NAME

Time:

Non-Calculator Questions

7th

1 The diagram shows some translations of a triangle.



Write a column vector to show the translation of

a A to B

(1 mark)

b A to C

(1 mark)

8th

3 **p**, **q** and **r** are vectors where

$\mathbf{p} = \begin{pmatrix} 2 \\ 4 \end{pmatrix}$ $\mathbf{q} = \begin{pmatrix} 3 \\ -6 \end{pmatrix}$ $\mathbf{r} = \begin{pmatrix} -2 \\ 3 \end{pmatrix}$

Work out the vectors.

a $\mathbf{p} - \mathbf{q}$

(2 marks)

b $3\mathbf{p} + 2\mathbf{r}$

(2 marks)

c $\mathbf{t}$ where $2\mathbf{p} + \mathbf{t} = \mathbf{q}$

(2 marks)

10th

5 P is the point with coordinates $(-2, 4)$.

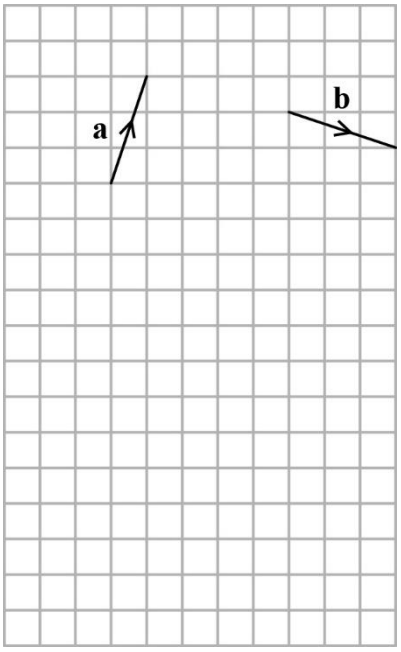
$\overrightarrow{PQ} = \begin{pmatrix} 4 \\ -3 \end{pmatrix}$

Find the coordinates of the point Q.

(2 marks)

8th

7 The diagram shows vectors **a** and **b**.



On the squared paper, show the vectors

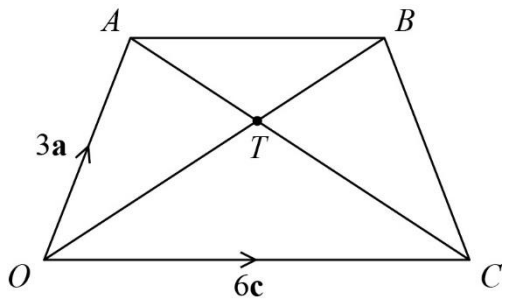
a 2**a**

(1 mark)

b **a** + **b**

(1 mark)

9



The diagram shows trapezium $OABC$ where $\overrightarrow{OA} = 3\mathbf{a}$ $\overrightarrow{OC} = 6\mathbf{c}$ $\overrightarrow{AB} = \frac{1}{2}\overrightarrow{OC}$

T is the point where the diagonals OB and AC cross and $OT : OB = CT : TA = 2 : 3$

Find in terms of **a** and **c** the vectors.

a $\overrightarrow{OB}$

(2 marks)

b $\overrightarrow{OT}$

(2 marks)

c $\overrightarrow{AT}$

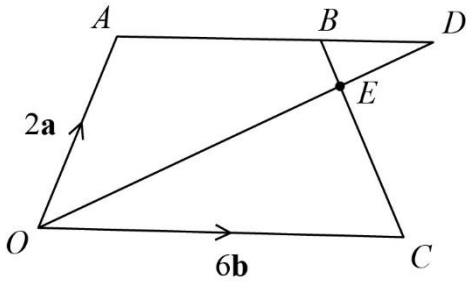
(2 marks)

Mark says that vector $\overrightarrow{CT}$ is the same as vector $\overrightarrow{OT}$

d Is Mark correct? Give a reason for your answer.

(1 mark)

11 The diagram shows trapezium *OABC*.



D is a point on *AB* extended.

E is a point on *CB* such that

$$CE = \frac{2}{3}CB$$

$$\overrightarrow{OA} = 2\mathbf{a}$$

$$\overrightarrow{OC} = 6\mathbf{b}$$

$$AB = \frac{2}{3}OC$$

a Work out the vector $\overrightarrow{OB}$.

(2 marks)

b Work out the vector $\overrightarrow{CB}$.

Write your answer in its simplest form.

(2 marks)

c Work out the vector $\overrightarrow{EB}$.

(2 marks)

OED is a straight line.

d Work out the vector $\overrightarrow{BD}$.

Write your answer in its simplest form.

(4 marks)

Overall mark /