

National 5 Maths Vector Pathways

SQA past paper and specimen paper
questions and answers by topic

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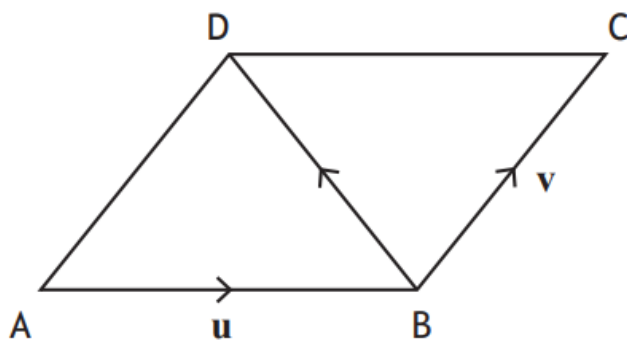
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National 5 Maths
SQA 2016 Paper 2
Question 3

The diagram below shows parallelogram ABCD.



\vec{AB} represents vector u and \vec{BC} represents vector v .

Express \vec{BD} in terms of u and v .

1

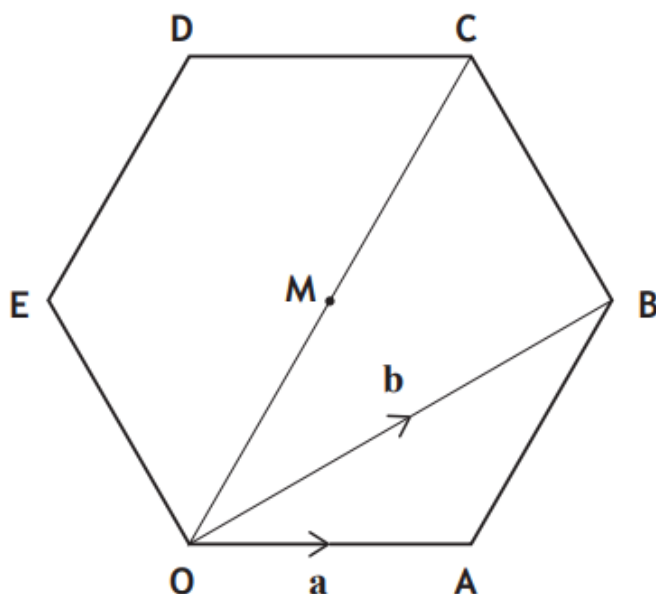
Answer:

$\underline{v - u}$



In the diagram, OABCDE is a regular hexagon with centre M.

Vectors \mathbf{a} and \mathbf{b} are represented by \overrightarrow{OA} and \overrightarrow{OB} respectively.



(a) Express \overrightarrow{AB} in terms of \mathbf{a} and \mathbf{b} . 1

(b) Express \overrightarrow{OC} in terms of \mathbf{a} and \mathbf{b} . 1

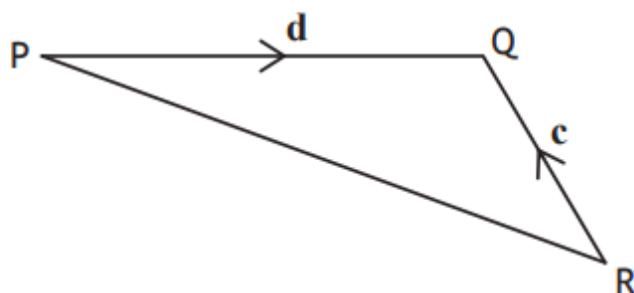
Answers:

(a) $\underline{\mathbf{b}} - \underline{\mathbf{a}}$ (or equivalent)

(b) $2(\underline{\mathbf{b}} - \underline{\mathbf{a}})$ or $2\underline{\mathbf{b}} - 2\underline{\mathbf{a}}$ (or equivalent)



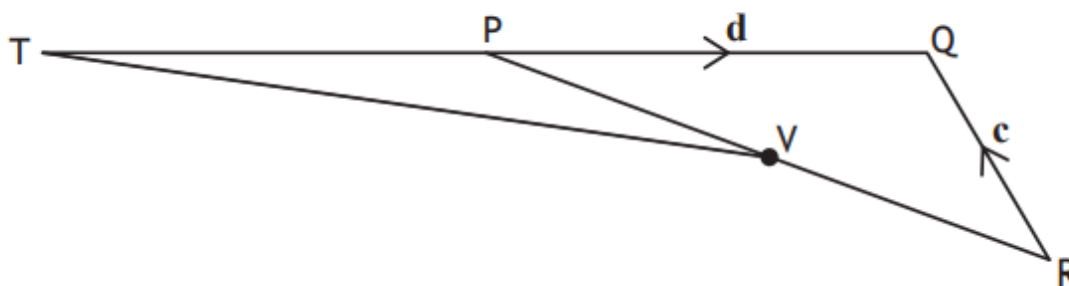
In the diagram below, \vec{RQ} and \vec{PQ} represent the vectors \mathbf{c} and \mathbf{d} respectively.



(a) Express \vec{PR} in terms of \mathbf{c} and \mathbf{d} .

1

The line QP is extended to T.



- $TP = PQ$
- V is the midpoint of PR

(b) Express \vec{TV} in terms of \mathbf{c} and \mathbf{d} .

Give your answer in simplest form.

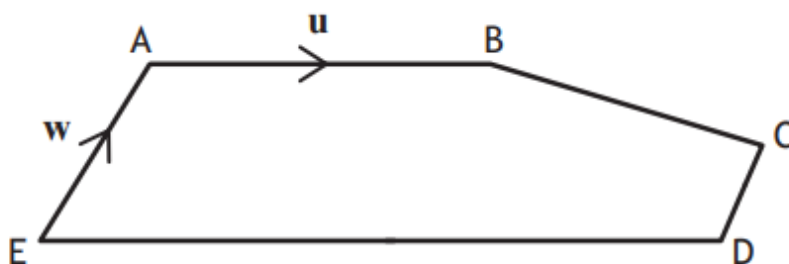
2

Answers:

(a) $\underline{\mathbf{d}} - \underline{\mathbf{c}}$ (or equivalent)

(b) $\frac{3}{2}\underline{\mathbf{d}} - \frac{1}{2}\underline{\mathbf{c}}$ (or equivalent)

In the diagram below, \vec{AB} and \vec{EA} represent the vectors \mathbf{u} and \mathbf{w} respectively.



- $\vec{ED} = 2\vec{AB}$
- $\vec{EA} = 2\vec{DC}$

Express \vec{BC} in terms of \mathbf{u} and \mathbf{w} .

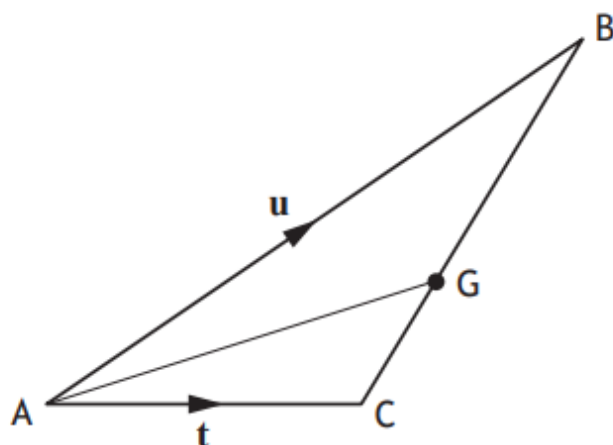
Give your answer in its simplest form.

2

Answer:

$$\underline{\mathbf{u}} - \frac{1}{2} \underline{\mathbf{w}}$$

The triangle ABC is shown below



$$\vec{AB} = \mathbf{u} \text{ and } \vec{AC} = \mathbf{t}.$$

G is the point such that $CG = \frac{1}{3}CB$.

Express \vec{AG} in terms of \mathbf{u} and \mathbf{t} .

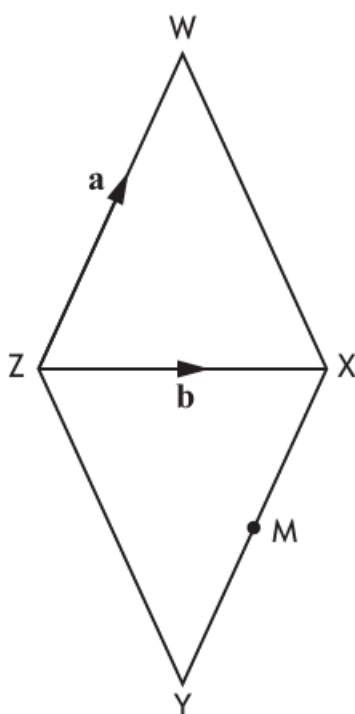
Give your answer in simplest form.

3

Answer:

$$\frac{2}{3}\mathbf{t} + \frac{1}{3}\mathbf{u} \text{ (or equivalent)}$$

The diagram shows a rhombus WXYZ with a diagonal ZX drawn.



\vec{ZW} represents vector \mathbf{a} and \vec{ZX} represents vector \mathbf{b} .

(a) Express \vec{WX} in terms of \mathbf{a} and \mathbf{b} .

1

M is the mid-point of XY.

(b) Express \vec{WM} in terms of \mathbf{a} and \mathbf{b} .

Give your answer in its simplest form.

2

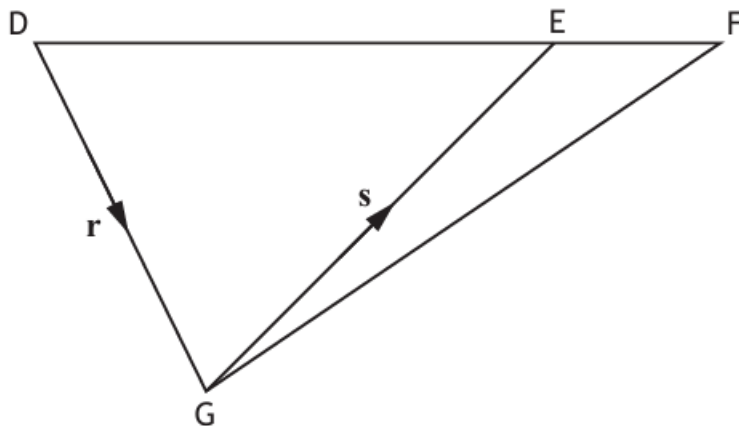
Answers:

(a) $\mathbf{b - a}$ or $-\mathbf{a + b}$

(b) $\mathbf{b - \frac{3}{2}a}$

National 5 Maths
SQA 2025 Paper 2
Question 15

In the diagram, \vec{DG} and \vec{GE} are represented by the vectors \mathbf{r} and \mathbf{s} respectively, and $\vec{DE} = 3\vec{EF}$.



Express \vec{GF} in terms of \mathbf{r} and \mathbf{s} .
Give your answer in its simplest form.

2

Answer:

$$\frac{4}{3}\mathbf{s} + \frac{1}{3}\mathbf{r}$$