

N5 - Applications

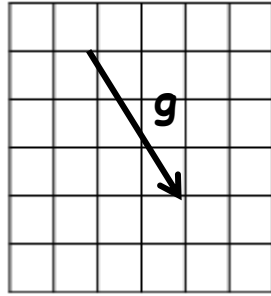
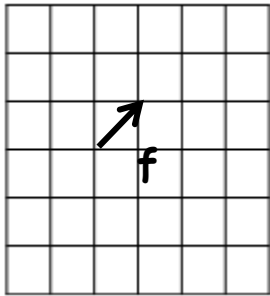
Worksheet 3

Gold Level

Outcome 1 - Sketching Vectors

For the following directed line segments, sketch the resultant vector.

1



Sketch $4\mathbf{f} + \mathbf{g}$.

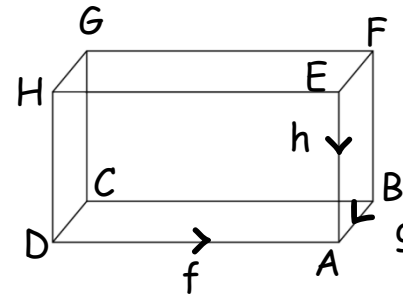
Outcome 2 - Vector Journeys

The diagram represents a cuboid.

$\overrightarrow{DA}$ represents vector $\mathbf{f}$, $\overrightarrow{BA}$ represents vector $\mathbf{g}$

$\overrightarrow{EA}$ represents vector $\mathbf{h}$.

Express the following in terms of $\mathbf{f}$, $\mathbf{g}$ and $\mathbf{h}$.



1 $\overrightarrow{BE}$ 2 $\overrightarrow{FD}$

Outcome 3 - Using Vector Components

Given that...

$$\mathbf{a} = \begin{pmatrix} 1 \\ -3 \\ 0 \end{pmatrix}, \mathbf{b} = \begin{pmatrix} 2 \\ 4 \\ -5 \end{pmatrix} \text{ and } \mathbf{c} = \begin{pmatrix} -6 \\ 0 \\ 18 \end{pmatrix},$$

1 Express $6\mathbf{a} - \mathbf{b} + \frac{1}{3}\mathbf{c}$ in component form.

2 Express $7\mathbf{a} + 2\mathbf{b} - \frac{1}{2}\mathbf{c}$ in component form.

Outcome 4 - Calculating Magnitude

Calculate the magnitude for the following vectors...

1 Vector $\mathbf{c} = \begin{pmatrix} 3 \\ -2 \\ 0 \end{pmatrix}$. Calculate $|2\mathbf{c}|$.

2 Vector $\mathbf{m} = \begin{pmatrix} 4 \\ 1 \\ 2 \end{pmatrix}$ and vector $\mathbf{n} = \begin{pmatrix} 5 \\ 0 \\ -3 \end{pmatrix}$.
Calculate $|4\mathbf{m} - 3\mathbf{n}|$.