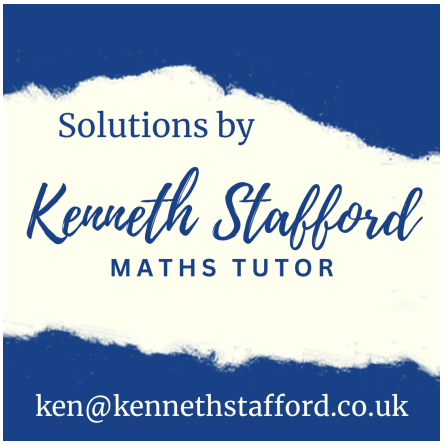
Name: SOLUTIONS

GCSE (1 - 9)

Vectors





These questions are compiled from *released* Pearson Edexcel GCSE maths exam papers
They contain exam questions from up until the ***Summer 2023*** exam series
More recent exam papers do exist but are withheld for mock exams
As new exam papers are released these worksheets will gradually be updated
The ***most current*** version of these worksheets will always be available at: kennethstafford.co.uk

Question	Where the question appeared
1	Edexcel, GCSE, Autumn 2020, Paper 2F, Q26
2	Edexcel, GCSE, Autumn 2019, Paper 2F, Q30
3	Edexcel, GCSE, Summer 2019, Paper 2F, Q29
4	Edexcel, GCSE, Summer 2018, Paper 1F, Q26
5	Edexcel, GCSE, Summer 2017, Paper 1F, Q27
6	Edexcel, GCSE, November 2022, Paper 2F, Q30

Vectors (Questions from Past Papers)

1

$\mathbf{a} = \begin{pmatrix} 3 \\ 4 \end{pmatrix}$ $\mathbf{b} = \begin{pmatrix} 5 \\ -2 \end{pmatrix}$

Find $2\mathbf{a} - 3\mathbf{b}$ as a column vector.

$$\begin{bmatrix} 6 \\ 8 \end{bmatrix} - \begin{bmatrix} 15 \\ -6 \end{bmatrix} = \begin{bmatrix} -9 \\ 14 \end{bmatrix}$$

$\begin{pmatrix} -9 \\ 14 \end{pmatrix}$

(Total for Question 26 is 2 marks)

[Edexcel, GCSE, Autumn 2020, Paper 2F, Q26]

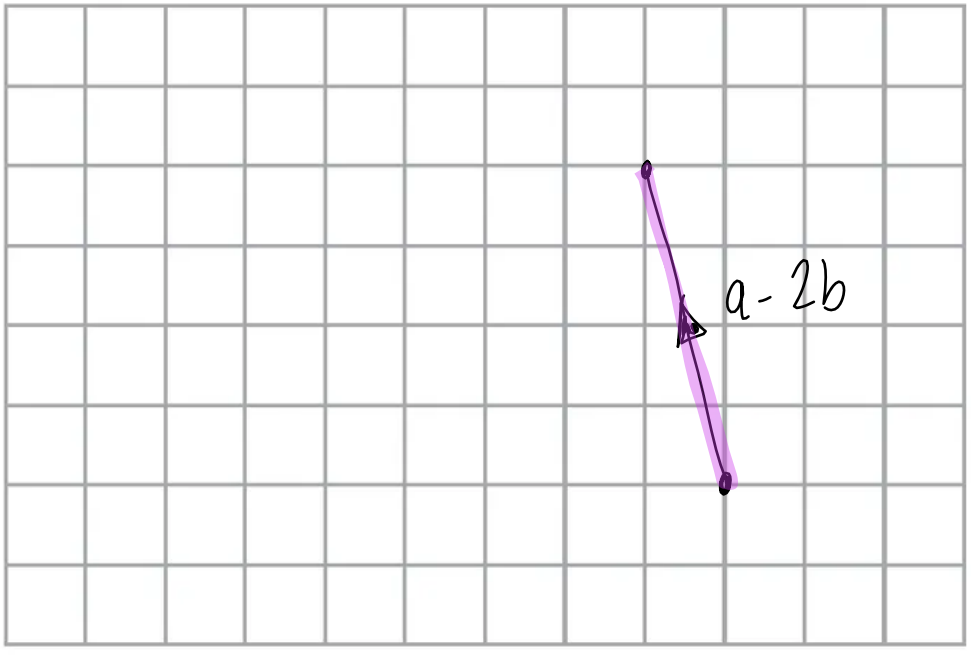
2

Here are two column vectors.

$\mathbf{a} = \begin{pmatrix} 5 \\ 2 \end{pmatrix}$ $\mathbf{b} = \begin{pmatrix} 3 \\ -1 \end{pmatrix}$

On the grid below, draw and label the vector $\mathbf{a} - 2\mathbf{b}$

$$\begin{bmatrix} 5 \\ 2 \end{bmatrix} - \begin{bmatrix} 6 \\ -2 \end{bmatrix} = \begin{bmatrix} -1 \\ 4 \end{bmatrix}$$



(Total for Question 30 is 3 marks)

[Edexcel, GCSE, Autumn 2019, Paper 2F, Q30]

3

$\mathbf{a} = \begin{pmatrix} 4 \\ 5 \end{pmatrix}$ $\mathbf{b} = \begin{pmatrix} 3 \\ 2 \end{pmatrix}$

Work out $\mathbf{a} - 2\mathbf{b}$ as a column vector.

$$\underset{a}{\begin{bmatrix} 4 \\ 5 \end{bmatrix}} - \underset{2b}{\begin{bmatrix} 6 \\ 4 \end{bmatrix}} = \begin{bmatrix} -2 \\ 1 \end{bmatrix}$$

$\begin{pmatrix} -2 \\ 1 \end{pmatrix}$

(Total for Question 29 is 2 marks)

[Edexcel, GCSE, Summer 2019, Paper 2F, Q29]

4

$\mathbf{a} = \begin{pmatrix} 5 \\ 2 \end{pmatrix}$ $\mathbf{b} = \begin{pmatrix} -1 \\ 7 \end{pmatrix}$

Work out $2\mathbf{a} + \mathbf{b}$ as a column vector.

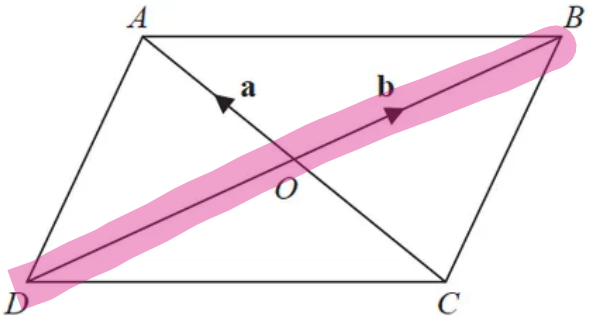
$$\underset{2a}{\begin{bmatrix} 10 \\ 4 \end{bmatrix}} + \underset{b}{\begin{bmatrix} -1 \\ 7 \end{bmatrix}} \quad \begin{bmatrix} 9 \\ 11 \end{bmatrix}$$

$\begin{pmatrix} 9 \\ 11 \end{pmatrix}$

(Total for Question 26 is 2 marks)

[Edexcel, GCSE, Summer 2018, Paper 1F, Q26]

5



$ABCD$ is a parallelogram.
The diagonals of the parallelogram intersect at O.

$\overrightarrow{OA} = \mathbf{a}$ and $\overrightarrow{OB} = \mathbf{b}$

(a) Find, in terms of **b**, the vector $\overrightarrow{DB}$.

2b

(1)

(b) Find, in terms of **a** and **b**, the vector $\overrightarrow{AB}$.

$-a+b$

(1)

(c) Find, in terms of **a** and **b**, the vector $\overrightarrow{AD}$.

$-a-b$

(1)

(Total for Question 27 is 3 marks)

[Edexcel, GCSE, Summer 2017, Paper 1F, Q27]

6

$$\mathbf{a} = \begin{pmatrix} 2 \\ 3 \end{pmatrix} \quad \mathbf{b} = \begin{pmatrix} -1 \\ 2 \end{pmatrix} \quad \mathbf{c} = \begin{pmatrix} 4 \\ 1 \end{pmatrix}$$

(a) Work out as a column vector

(i) $\mathbf{a} + \mathbf{b}$

$\begin{pmatrix} \ldots\ldots \\ \ldots\ldots \end{pmatrix}$

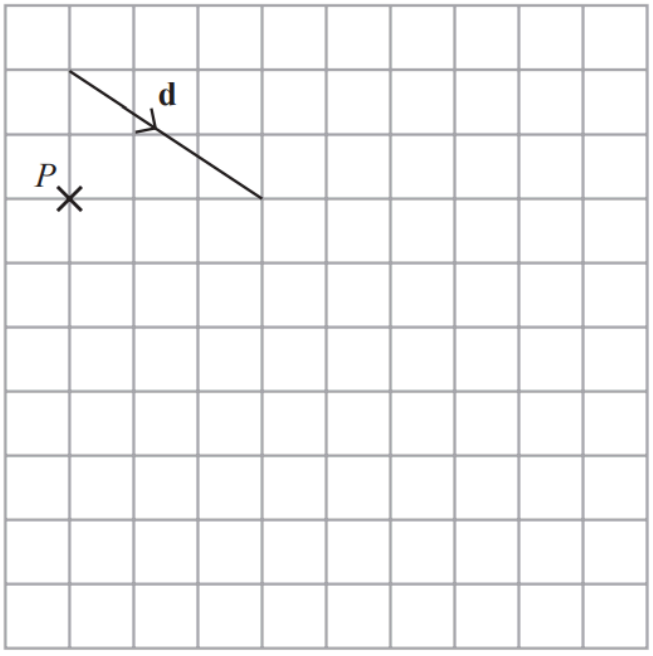
(1)

(ii) $2\mathbf{a} - \mathbf{c}$

$\begin{pmatrix} \ldots\ldots \\ \ldots\ldots \end{pmatrix}$

(2)

The vector **d** is drawn on the grid.



(b) From the point P, draw the vector $2\mathbf{d}$

(1)

(Total for Question 30 is 4 marks)

[Edexcel, GCSE, November 2022, Paper 2F, Q30]