

1MA1 Foundation themed papers: Vectors

Write your name here			
Surname	Other names		
Centre Number		Candidate Number	
Pearson Edexcel Level 1/Level 2 GCSE (9–1)			
Mathematics			
Vectors			
			Paper Reference 1MA1
You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.			Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- You must **show all your working.**
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.

Information

- The total mark for this paper is **14**. There are **5** questions.
- Questions have been arranged in an ascending order of mean difficulty, as found by all students in the June 2017–November 2019 examinations.
- The marks for **each** question are shown in brackets – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

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

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

$$\begin{pmatrix} \\ \text{-----} \\ \end{pmatrix}$$

(Total for Question 1 is 2 marks)

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

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

$$\begin{pmatrix} \\ \text{-----} \\ \end{pmatrix}$$

(Total for Question 2 is 2 marks)

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3 Here are two column vectors.

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

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

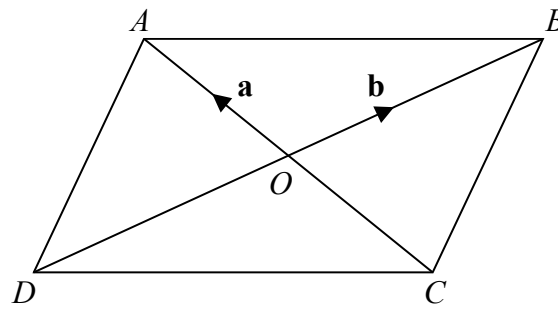


(Total for Question 3 is 3 marks)

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4



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

$$\vec{OA} = \mathbf{a} \text{ and } \vec{OB} = \mathbf{b}$$

(a) Find, in terms of \mathbf{b} , the vector \vec{DB} .

.....
(1)

(b) Find, in terms of \mathbf{a} and \mathbf{b} , the vector \vec{AB} .

.....
(1)

(c) Find, in terms of \mathbf{a} and \mathbf{b} , the vector \vec{AD} .

.....
(1)

(Total for Question 4 is 3 marks)

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5 $\mathbf{a} = \begin{pmatrix} 1 \\ 4 \end{pmatrix}$ and $\mathbf{b} = \begin{pmatrix} 3 \\ 2 \end{pmatrix}$

(a) Write down as a column vector

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

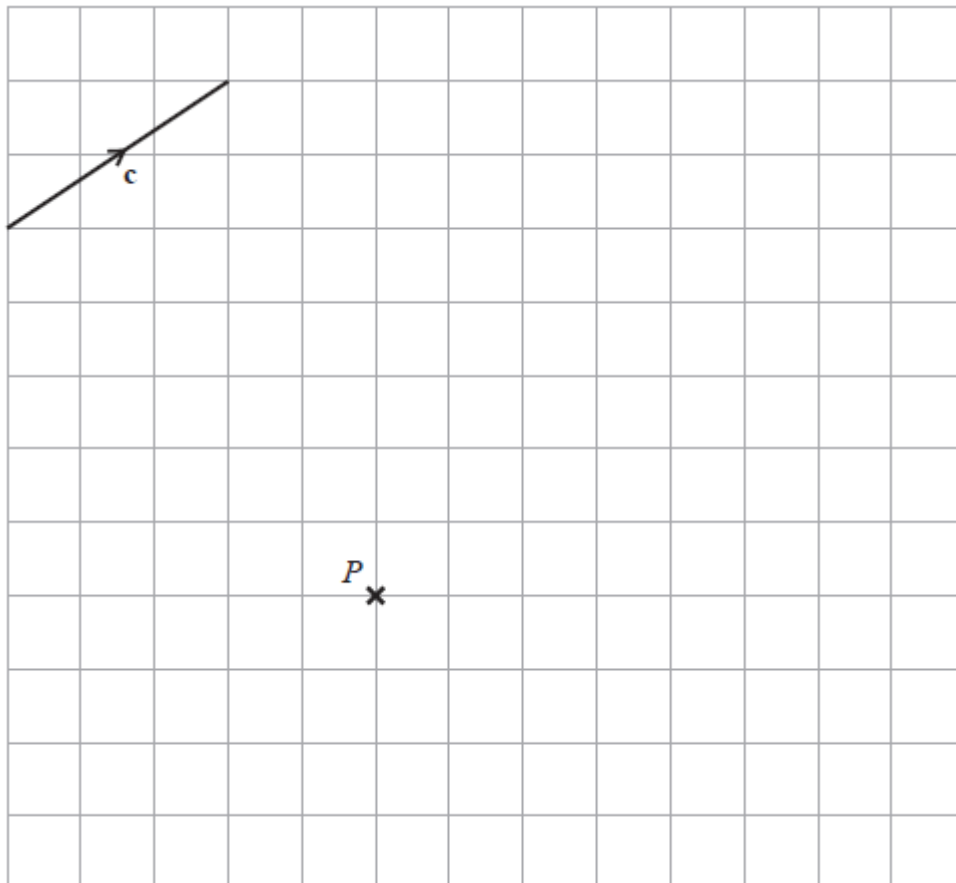
.....

(ii) $2\mathbf{a} + 3\mathbf{b}$

.....

(3)

The vector \mathbf{c} is drawn on the grid.



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

(1)

(Total for Question 5 is 4 marks)

TOTAL MARKS FOR PAPER: 14