Multiple choice questions - Vectors in two dimensions

Year: Year 12 · 10

Question 1 $\begin{pmatrix}2\\3\end{pmatrix}+\begin{pmatrix}1\\-5\end{pmatrix}=$

- ○ **A.** $\begin{pmatrix}3\\-2\end{pmatrix}$
- ○ **B.** $\begin{pmatrix}1\\-2\end{pmatrix}$
- ○ **C.** $\begin{pmatrix}3\\8\end{pmatrix}$
- ○ **D.** $\begin{pmatrix}2\\-15\end{pmatrix}$

Question 2 The magnitude of $\begin{pmatrix}8\\15\end{pmatrix}$ is

- ○ **A.** 17
- ○ **B.** 23
- ○ **C.** 7
- ○ **D.** $\sqrt{23}$

Question 3



- ○ **A.** $\mathbf{a}-\mathbf{b}$
- ○ **B.** $\mathbf{b}-\mathbf{a}$
- ○ **C.** $\mathbf{a}+\mathbf{b}$
- ○ **D.** $\frac{1}{2}(\mathbf{a}+\mathbf{b})$

Question 4 Which vector is parallel to $\begin{pmatrix}1\\2\end{pmatrix}$?

- ○ **A.** $\begin{pmatrix}2\\1\end{pmatrix}$
- ○ **B.** $\begin{pmatrix}3\\6\end{pmatrix}$
- ○ **C.** $\begin{pmatrix}2\\3\end{pmatrix}$

- ○ **D.** $\begin{pmatrix} -1 \\ 2 \end{pmatrix}$

Question 5 The midpoint of the points with position vectors $\mathbf{a}$ and $\mathbf{b}$ is

- ○ **A.** $\mathbf{a} + \mathbf{b}$
- ○ **B.** $\frac{1}{2}(\mathbf{a} + \mathbf{b})$
- ○ **C.** $\frac{1}{2}(\mathbf{b} - \mathbf{a})$
- ○ **D.** $\mathbf{b} - \mathbf{a}$

Question 6 A unit vector has magnitude

- ○ **A.** 0
- ○ **B.** 1
- ○ **C.** 2
- ○ **D.** any value

Question 7 The unit vector in the direction of $\begin{pmatrix} 3 \\ 4 \end{pmatrix}$ is

- ○ **A.** $\begin{pmatrix} 3 \\ 4 \end{pmatrix}$
- ○ **B.** $\begin{pmatrix} 0.6 \\ 0.8 \end{pmatrix}$
- ○ **C.** $\begin{pmatrix} 0.8 \\ 0.6 \end{pmatrix}$
- ○ **D.** $\begin{pmatrix} 1 \\ 1 \end{pmatrix}$

Question 8 $3\begin{pmatrix} 2 \\ -1 \end{pmatrix} =$

- ○ **A.** $\begin{pmatrix} 6 \\ -3 \end{pmatrix}$
- ○ **B.** $\begin{pmatrix} 5 \\ 2 \end{pmatrix}$
- ○ **C.** $\begin{pmatrix} 6 \\ -1 \end{pmatrix}$
- ○ **D.** $\begin{pmatrix} 2 \\ -3 \end{pmatrix}$

Question 9 Collinear points lie on

- ○ **A.** a circle
- ○ **B.** a straight line

- ◯ **C.** a parabola
- ◯ **D.** two lines

Question 10 The vector $-2\mathbf{i} + 2\mathbf{j}$ makes which angle with the positive x-axis?

- ◯ **A.** 45°
- ◯ **B.** 135°
- ◯ **C.** 225°
- ◯ **D.** 315°

Answer grid - Vectors in two dimensions

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Question	Answer	Explanation
1	**A**	Add components.
2	**A**	$\sqrt{64+225}$.
3	**B**	End minus start.
4	**B**	$3\times$.
5	**B**	Average.
6	**B**	Definition.
7	**B**	Divide by 5.
8	**A**	Multiply each component.
9	**B**	By definition.
10	**B**	Second quadrant.