

Worksheet: Vector Algebra

IGCSE · Class 12 · Mathematics · 8 questions · 35 marks

Name: _____

Date: _____

Score: _____ / 35

Q1. Classify time period, distance, and force as scalar or vector quantities. *[2 marks]*

Q2. Find the unit vector in the direction of $\mathbf{a} = \mathbf{i} + \mathbf{j} + 2\mathbf{k}$. *[3 marks]*

Q3. Find the position vector of the midpoint of the vector joining $P(2,3,4)$ and $Q(4,1,-2)$. *[4 marks]*

Q4. Find the projection of the vector $\mathbf{i} - \mathbf{j}$ on the vector $\mathbf{i} + \mathbf{j}$. *[4 marks]*

Q5. Find the area of the triangle with vertices $A(1,1,2)$, $B(2,3,5)$, $C(1,5,5)$. *[5 marks]*

Q6. If $\mathbf{a}$, $\mathbf{b}$, $\mathbf{c}$ are unit vectors such that $\mathbf{a} + \mathbf{b} + \mathbf{c} = \mathbf{0}$, find $\mathbf{a} \cdot \mathbf{b} + \mathbf{b} \cdot \mathbf{c} + \mathbf{c} \cdot \mathbf{a}$. *[5 marks]*

Q7. Show that $(a-b) \times (a+b) = 2(a \times b)$. [6 marks]

Q8. Find the position vector of R which divides PQ (position vectors $i+2j-k$ and $-i+j+k$) externally in the ratio 2:1. [6 marks]
