

1.3 Vectors & Scalars

Question Paper

Course	DP IB Physics	
Section	1. Measurement & Uncertainties	
Topic	1.3 Vectors & Scalars	
Difficulty	Medium	

Time allowed: 20

Score: /10

Percentage: /100



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Question 1

Velocity is a vector quantity, so can be represented by a vector arrow. Which quantity is represented by the length of its vector arrow?

- A. Speed
- B. Magnitude
- C. Acceleration
- D. Distance

[1 mark]

Question 2

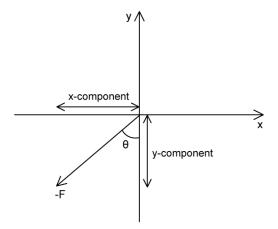
Which of the following represents correct vector and scalar quantities?

	vectors	scalars
Α.	Electric charge	Weight
В.	Impulse	Current
C.	Temperature	Pressure
D.	Time	Work done

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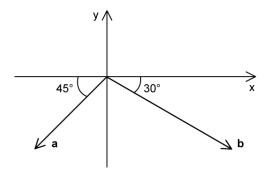
Question 3

Which of the following represents the correct values of the x-component and y-component of the vector -F?



	x-component	y-component
Α.	-Fsinθ	-Fcosθ
В.	−F cos θ	-Ftanθ
C.	Fsinθ	-Fcosθ
D.	-Fcosθ	−F sin θ

The magnitude of \boldsymbol{a} is 15 N and that of \boldsymbol{b} is 30 N.



Which of the following represents the correct resultant horizontal and vertical components of the vectors in the diagram?

	Horizontal Component	Vertical Component
Α.	$15\sqrt{3} - 7.5\sqrt{2} \mathrm{N}$	$15 - 7.5\sqrt{2} \mathrm{N}$
В.	$15\sqrt{3} - 7.5\sqrt{2}^{\circ}$	-15 - 7.5√2°
C.	$15\sqrt{3} - 7.5\sqrt{2} \mathrm{N}$	$-15 - 7.5\sqrt{2}$ N
D.	-15 - 7.5 √2 N	15 − 7.5 $\sqrt{2}$ N

You may use the fact that:

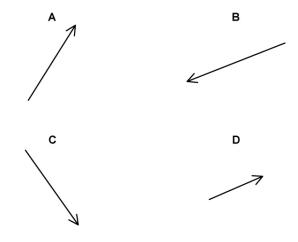
$$cos(30) = \frac{\sqrt{3}}{2}$$
 and $cos(45) = \frac{\sqrt{2}}{2}$

$$\sin(30) = \frac{1}{2}$$
 and $\sin(45) = \frac{\sqrt{2}}{2}$

The diagram shows vector \boldsymbol{p} .



In which of the following diagrams is vector \boldsymbol{p} multiplied by a scalar represented?



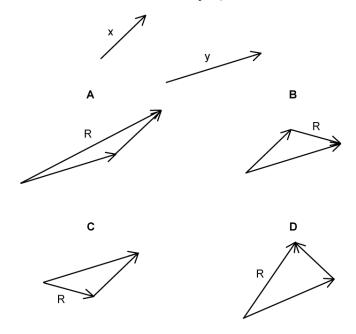
- A.1and4
- B. 2 only
- C.2 and 4
- D.1 only



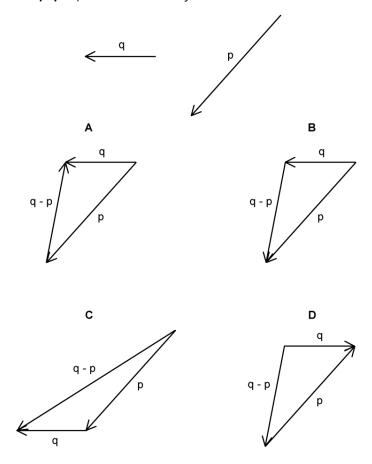
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Question 6

In which of the following diagrams is the addition of vectors **x** and **y** represented?



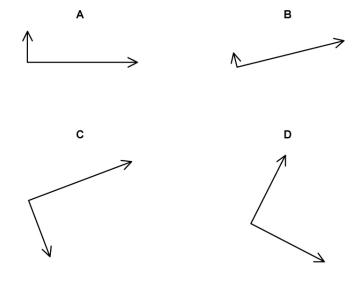
In which of the following diagrams is $\mathbf{q} - \mathbf{p}$ represented correctly?



The arrow represents the vector ${\bf R}$.



Which diagram does **not** represent **R** as two perpendicular components?

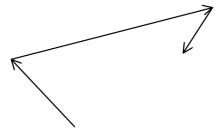




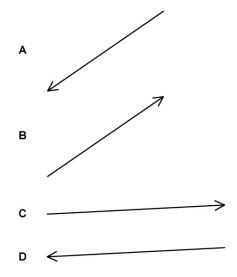
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Question 9

Three forces act on a body as shown.



Which fourth force is required so that the resultant force is zero?

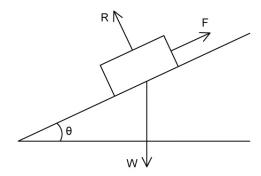




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Question 10

A rectangular object sits at rest on a plane inclined at angle to the horizontal.



R is the normal force, W is the weight and F is friction.

Which row correctly labels R and F in terms of mass m and acceleration due to gravity g.

	R	F
Α.	mg	mg
В.	mg cos θ	0
C.	mg sin θ	mg cos θ
D.	mg cos θ	mg sin θ