

## Vectors : Quiz-60

- 1) What is a vector?
- 2) Give three examples of vectors.
- 3) Two vectors are given;  $[-5.0, -2.0]$  and  $[9.0, -4.0]$ .

a) Their sum = [      ,      ]

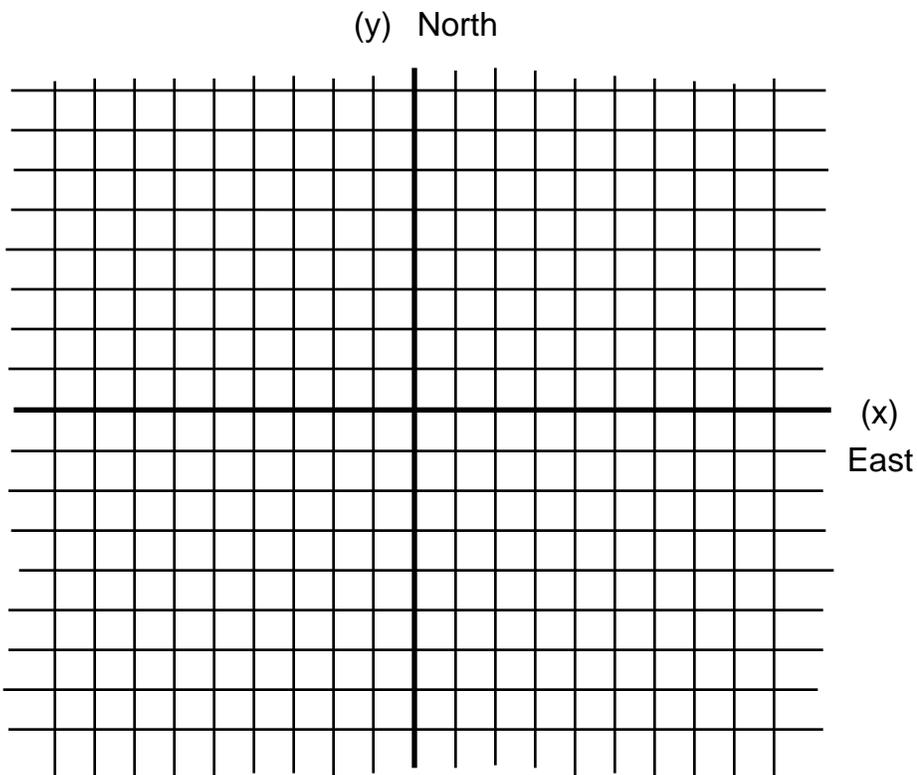
b) The magnitude of this sum = \_\_\_\_\_ .

- 4) Sketch the following vectors on the x-y grid below.

a)  $[7, 4]$ ,

b)  $[3, -6]$

c)  $[-8, 5]$



- 5) Give the alternative representation of each of the vectors above.

a) \_\_\_\_\_ [ \_\_\_\_\_ ° \_\_\_\_\_ of \_\_\_\_\_ ]

b) \_\_\_\_\_ [ \_\_\_\_\_ ° \_\_\_\_\_ of \_\_\_\_\_ ]

c) \_\_\_\_\_ [\_\_\_\_\_ ° \_\_\_\_\_ of \_\_\_\_\_ ]

6) A man walks with the following displacements; [6, 0] blocks, [0, -4] blocks, [-9, 0] blocks, and [0, 11] blocks.

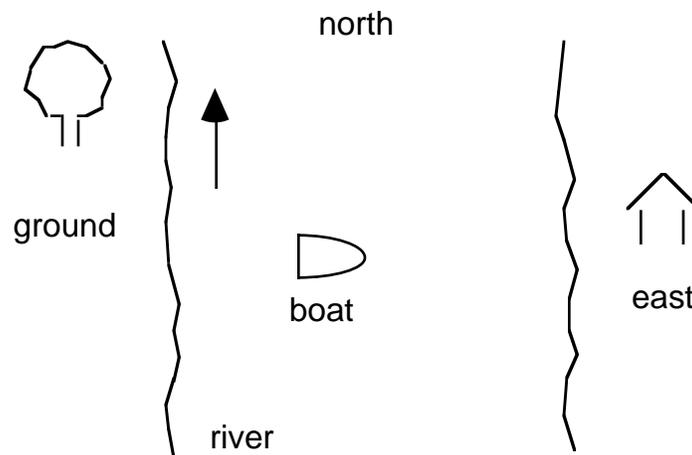
The total displacement = [ \_\_\_\_\_ , \_\_\_\_\_ ] blocks

7) A plane flies east with an **airspeed** of 125 km/hr. Wind blows to the west at 33 km/hr. Find the velocity of the plane relative to the ground.

8) A plane **heads** south. The airspeed is 75 km/hr. An 18 km/hr wind blows to the west. Find the velocity of the plane with respect to the ground. (or find **groundspeed** and **track**)

9)a) A boy can row a boat in still water with a speed of 1.8 m/s. If he rows towards the **east** across a river that is flowing **north** with a speed of 0.70 m/s, find his velocity relative to the ground.

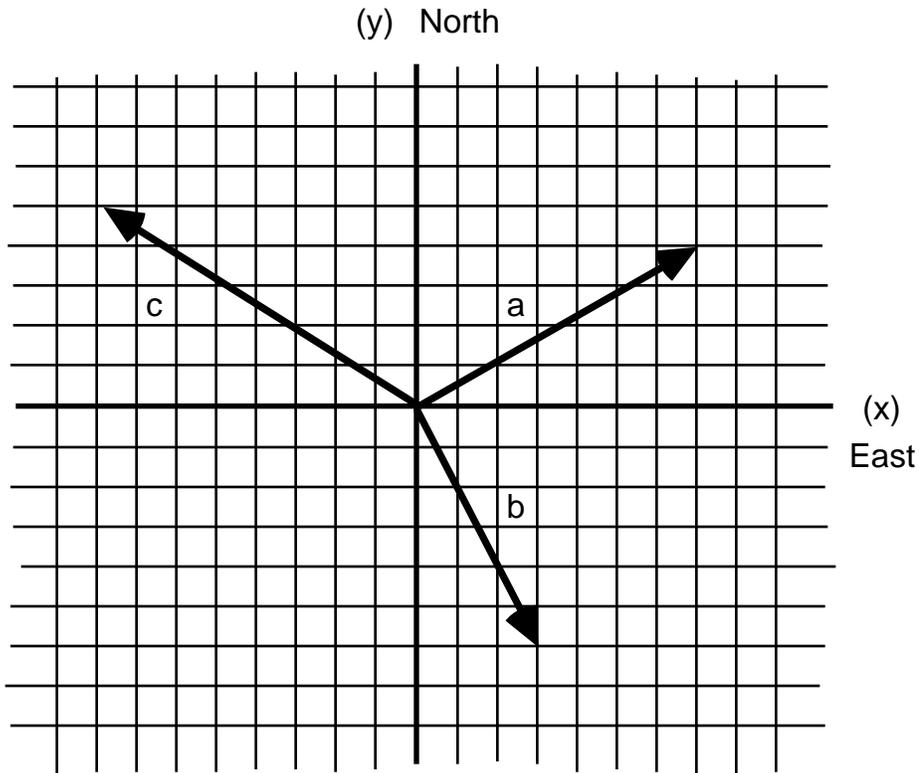
b) Suppose that he **really** wants to move east. In which direction should he head? What will his speed be?



10) Find the sum of the two vectors; 15.0 [35.0° south of east], and 25.0 [15.0° west of north]. \_\_\_\_\_ [\_\_\_\_\_ ° \_\_\_\_\_ of \_\_\_\_\_ ]

(hint: convert the vectors to ordered pairs and then add)

Answers: 1) It is a magnitude and a direction., 2) displacement, velocity, acceleration., 3)a) [4.0, -6.0], b) 7.2, 4)



5)a) 8.1 [30.° N of E], b) 6.7 [63° S of E], c) 9.4 [32° N of W].  
6) [-3, 7] blocks, 7) 92 km/hr [east], 8) 77 km/hr [13° W of S],  
9)a) 1.9 m/s [21° N of E], b) 23° S of E, speed = 1.7 m/s, 10)  
16.6 [ 69.5° N of E]