

Phys11 Vectors : Quiz-40

- 1) Add these vectors.
- a) $6.0 \text{ m [N]} + 15.0 \text{ m [S]}$
 - b) $18 \text{ m [W]} + 10. \text{ m [W]} + 25 \text{ m [W]}$
 - c) $4.5 \text{ m/s [S]} + 12.5 \text{ m/s [N]}$
 - d) $3.0 \text{ N [E]} + 4.0 \text{ N [N]}$
 - e) $5.0 \text{ m [W]} + 12 \text{ m [S]}$

2) Find the magnitude and direction.

$$5.0 \text{ cm [E]} + 7.0 \text{ cm [S]} + 2.0 \text{ cm [W]} =$$

$$\text{_____ cm [_____}^\circ \text{ _____ of _____]}$$

3) The air speed (speed relative to air) of a plane is 480. km/hr. Find the ground speed if :

- a) There is a headwind of 32 km/hr
- b) There is a tailwind (from the rear) of 32 km/hr

4) An airplane has a heading of due south. The airspeed is 195 km/hr. The wind speed is 85.0 km/hr from the east.

- a) What is the plane's velocity (speed and direction) relative to the ground.
- b) What distance over the ground will the plane travel in 2.5 hr?

5) The pilot of an airplane which flies at an airspeed of 300. km/hr, wishes to travel to a city 740. km due north. There is a 45.0 km/hr wind from the west.

- a) Find the ground speed and heading.
- b) How much time does it take to make the trip.

6) A river with a width of 0.30 km flows from west to east with a water speed of 2.0 km/hr. A man in a row boat can row at a rate of 4.0 km/hr in still water.

a) If the man heads across the river perpendicular to the shore from the south side, what is his speed and direction relative to the ground?

b) How much time does it take to go across?

c) How far downstream does he land on the opposite side?
(distance parallel to river)

d) Give the direction he should head in order to travel directly across the river?

Answers : 1a) 9.0 m [S], b) 53 m [W], c) 8.0 m/s [N], d) 5.0 N [53° N of E], e) 13 m [67° S of W], 2) 7.6 cm [67° S of E], 3a) 448 km/hr, b) 512 km/hr, 4a) 213 km/hr [23.6° W of S], b) 532 km, 5a) 297 km/hr, 8.63° [W of N], b) 2.49 hr, 6a) 4.5 km/hr [27° E of N], b) 0.075 hr, c) 0.15 km, d) 30.° [W of N].