Name:

Physics 11
M. Lam

More Vectors

Block:

1. Determine the horizontal and vertical components of the following vectors.
   a) 1.5 m 22° south of east
   b) 180 km/h 40° east of north
   c) 9.00×10^4 kg m/s 6.00° north of west
   d) 0.40 N 33° west of south

2. Add the following displacement vectors. Be sure to determine both the magnitude and direction of the resultant vector.
   a) 0.50 m south; 1.20 m north
   b) 19 m west; 19 m south
   c) 9.0 km north; 3.4 km 25° east of south
   d) 145 m south; 82 m west
   e) 1500 km 40° east of north; 2700 km south
   f) 984 m 35.0° north of east; 424 m 10.0° north of east

3. A duck is initially swimming at a velocity of 20.0 cm/s to the east. It is later seen swimming at a velocity of 20.0 cm/s to the south. What is the duck's change in velocity?

4. Katelyn drives down an 15° incline (measured above the horizontal). If she has descended 20.0 m vertically, how far has she driven along the incline?

5. Bob is swimming to the east across a river. If he swims at a speed of 2.6 m/s with respect to the water and there is a current to the south with a speed of 1.4 m/s, what is his velocity as seen by someone on the shore?

6. A stationary dog owner is watching his dog run in a park. The dog is first seen 25 m north. The dog is later seen 12 m 25° north of west. What is the displacement of the dog?

7. A plane is flying with a velocity of 190 km/h east with respect to the air. An observer on the ground sees the plane moving at a velocity of 210 km/h 10.0° north of east. What is the velocity of the wind?

8. Alex and Ryan are on opposite sides of a river. If Alex must swim directly east to reach his friend, what direction should he aim if he can swim at a speed of 2.5 m/s in still water and the current is 1.2 m/s to the north?