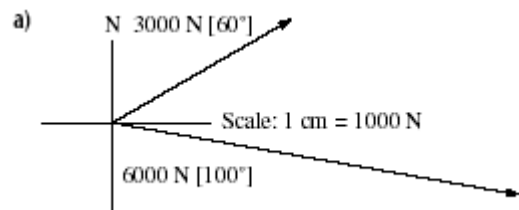# PHYSICS 11

Name: _____

Chapter 6 – Vectors

1. A canoe with a forward velocity of 3 km/h is traveling directly eastward across a river. At the same time, a current of 1.5 km/h [N] carries the canoe down the river. Determine the resultant velocity of the canoe.

2. A golfer hits a golf ball with an initial velocity of 25 m/s due south. A crosswind blows at 6 m/s due west. Find the resultant velocity of the golf ball immediately after it has been hit.

3. A plane is traveling at 500 km/h due north. It encounters a wind that blows from the west at 80 km/h. Find the resultant velocity of the plane.

4. A plane wishes to travel at 500 km/h due east. There is a wind that blows from the south at 80 km/h. Determine the speed and heading the plane must fly.

5. A ship starts its journey at point A and travels for 200 km on a bearing of 50° [E of N] to a point B. The ship then changes direction and travels for 100 km on a bearing of 40° [E of S] to a point C. Calculate the resultant displacement vector.

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6. A plane is traveling at 550 km/h toward 50° [W of S]. A wind of 70 km/h blows toward 40° [E of S]. Find the resultant velocity of the plane.

7. Annie and Emily are kayaking. The kayak is paddled at 5 km/h toward 25° [W of N] while an ocean current carries the kayak at 1.5 km/h toward 65° [W of S]. What is the resultant velocity of the kayak?

8.

a)

N 3000 N [60°]

Scale: 1 cm = 1000 N

6000 N [100°]

9. A ship starts its journey at point A and travels for 200 km on a bearing of 30° [W of N]to a point B. The ship then changes direction and travels for 100 km on a bearing of 40° [S of W] to a point C. Calculate the resultant displacement vector. **Component:**

Assignment

1) A canoe with a forward velocity of 4 km/h is traveling directly westward across a river . At the same time, a current of 2.0 km/h [N] carries the canoe down the river. Determine the resultant velocity of the canoe.

2) A golfer hits a golf ball with an initial velocity of 30 m/s due south. A crosswind blows at 7 m/s due east. Find the resultant velocity of the golf ball immediately after it has been hit.

3) A plane is traveling at 650 km/h due north. It encounters a wind that blows from the west at 80 km/h. Find the resultant velocity of the plane.

4) A plane wishes to travel at 850 km/h due east. There is a wind that blows from the north at 80 km/h. Determine the speed and heading the plane must fly.

5) A plane is traveling at 600 km/h on a bearing of 25° [E of S]. It encounters a wind that blows from 65° [W of S] at 30 km/h. Find the resultant velocity of the plane.

6) A plane is traveling at 700 km/h toward 40° [S of E]. A wind of 70 km/h blows toward 40° [E of N]. Find the resultant velocity of the plane.

7) Annie and Emily are kayaking. The kayak is paddled at 4.5 km/h toward 5° [W of N] while an ocean current carries the kayak at 1.5 km/h toward 85° [W of S]. What is the resultant velocity of the kayak?

8) Two tugboats pull a freighter out of a harbour. The first tug pulls with a force of 21 000 N toward 30° [N of W], while the second tug pulls with a force of 18 000 N towards 60° [S of W]. What is the resultant force?

Assignment Answers 1) 4.5 Km/h@27° [N of W]   2) 30.8 m/s @ 13° [E of S]°   3) 655 km/h @ 7° [E of N] 4) 854 km/h @ 84.6° [E of N]   5) 601 km/h @ 62.2° [S of E]   6) 703.5 km/h @ 34.3° [S of E]   7) 4.7 km/h @ 66.6° [N of W]   8) 27658 N @ 10.6° [S of W]