Vector Addition

1. If you walk from your home eastward along a straight street three blocks to the drugstore and then one block further to the hardware store, what is your resultant displacement? (+ 4 blocks)

2. A student making deliveries to stores in a neighbourhood travels from the warehouse 5 blocks west, 3 blocks north, 7 blocks east, 2 blocks south, 4 blocks south, 3 blocks west, 1 block north, 3 blocks west and 2 blocks north.
   A. What distance did he travel? (30 blocks)
   B. What is his displacement? (- 4 blocks)
   C. What is the distance and direction back to the warehouse? (+ 4 blocks)

3. A boy delivering papers covers his route by travelling 3.0 blocks west, 4.0 blocks north, then 6.0 blocks east. A) What is his final displacement? B) What is the total distance travelled? (5.0 blocks 037°, 13 blocks)

4. Find the sum of two vectors, one of which is 2.00 m east and the other is 3.00 m south. (3.61 m 146)

5. A Bumble Bee can fly with a speed of 0.50 m/s when the air is still. What effect will a 1.00 m/s wind have on its velocity if it flies A) into the wind? B) with the wind? C) directly across the wind?
   (0.50 m/s with the wind, 1.50 m/s with the wind, 1.1 m/s 27^0 with the wind)

6. A plane is flying due north with a speed of 250 km/h when a wind comes up blowing at 40.0 km/h from the east. What is the resultant velocity of the plane if the pilot makes no correction in her flight? (253 km/h 351)

7. A man walks 600 m bearing 270^0, then turns and walks 250 m bearing 180^0. Find his resultant displacement. (650 m 247)

8. An airplane flies 400 km/h 000^0 when there is no wind. If a 50.0 km/h East wind comes up and the pilot makes no correction in his flight, what will his resultant velocity be? (403 km/h 353)

9. A man heads straight across a river in his canoe paddling at the rate of 2.0 m/s. The river current is flowing at the rate of 4.0 m/s. What is the resultant velocity of the canoe? (4.5 m/s 27^0 to shore)

10. A person rows a boat directly across a river that is 300 m wide with a speed of 1.00 m/s. If the river is flowing at 4.00 m/s
    A. what will be the actual velocity of the boat? (4.12 m/s 14^0 to shore)
    B. How long will it take to row the boat to the other side of the river? (300 s)
    C. How far downstream does the boat go? (1.20 x 10^3 m)