Name _____ Date _____ Period _____

Vector Review

Answer each of the following problems on a separate sheet of paper. Draw a vector diagram for each problem, solve each mathematically.

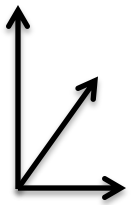
1. A person walks 40.0 m east and 100.0 m south
    a. What distance has the person traveled?
    b. What is the person's displacement?

2. A motorboat heads due west at 10.0 m/s. The river has a current of 6.00 m/s due south.
    a. What is the resultant velocity of the boat?
    b. If the river is 200. M wide, how long does it take the boat to cross the river?
    c. How far down stream is the boat when it reached the other side?

3. A rope is tied around a tree. One person pulls with a force of 40.0 N north; another person pulls with a force of 60.0 N west. What is the resultant force on the tree?

4. An airplane is flying at 175 km/h on a heading of 45^{o}. The wind is blowing from 301^{o} at 45 km/h. What is the resultant velocity of the plane?

5. Sketch the sum of the three vectors acting on the same point. Add them in two different orders to show you get the same resultant either way.



a. b.

6. A force of 75.0 N due north and 105 N due east is acting on a point
    a. What is the magnitude and direction of the resultant force?
    b. What is the magnitude and direction of the equilibrant?

7. A child is pulling on a rake handle with a force of 45.0 N at an angle of 50.0^{o} with the horizontal.
    a. What is the horizontal component of the force?
    b. What is the vertical component of the force?

8. A boulder weighing 2.00×10^{4} N is resting on a hillside with a slope of 37^{o}.
    a. What magnitude of force tends to cause the boulder to slide down the hill?
    b. What magnitude of force tends to push the boulder into the hillside