Name_____   Date_____   Period_____

Part I: Vector Addition

1. Given the following vectors
    A = 37 m at an angle of 32°
    B = 74 m at an angle of 168°.
    a. Find the components of each vector

    b. Add Vector **A** and Vector **B**. Include magnitude and direction

    c. Subtract **A - B.** Include magnitude and direction

2. Given the following vectors
    A = 5.0 m at an angle of 53°
    B = 7.3 m at an angle of 196°
    C = 7.2 m at an angle of 124°
    a. Find the components of each vector

    b. Add Vector **A,** Vector **B** and Vector **C**. Include magnitude and direction

    c. Compute **A - B + 2C.** Include magnitude and direction

Part II: Solve the following word problems. Remember to draw a diagram.

3. Alphonse is pulling on a rope attached to a heavy floor safe with a force of 80.0 N. Bernie is trying to help but he is pulling on a second rope with only 40.0 N and at an angle of 45.0°, from the direction that Alphonse is pulling. What is the magnitude and direction of the resultant force?

4. The LA River flows at a steady 5.00 km/h North. You wish to cross the river in an old speed boat whose only speed is 10.0 km/h East. What direction must you point your boat in order to travel straight across the river?

5. Suppose we could shoot a projectile with the speed of light (3.00×10^8 m/s) south out over the ocean and perfectly horizontal.
   a. How far would it have fallen after traveling 240 km?

6. Fred builds a simple little potato cannon which gives its projectile a speed of 32.4 m/s. He launches a spud upwards from the ground at an angle of 40.0°.
   a. What will the distance be between Fred and the splattered spud?

   b. How much time will the spud spend in the air?

   c. How high will the spud travel?

   d. Where will the spud be at 1.50 s after its launch?