

Name: _____
Pre-Calculus

Date: 3/25/15
Ms. Wilson

More Problems with Vectors
Due Monday, March 30th

For each question, make sure to draw a SKETCH of the situation. Show all drawings and work on looseleaf paper.

- 1.) During one part of its migration, a salmon is swimming upstream at 6 mph and the current is flowing downstream at 3 mph at an angle of 7° . How fast is the salmon moving upstream?
- 2.) An airplane is flying at a bearing of 170° at 460 mph. A wind is blowing with the bearing 200° at 80 mph.
 - a.) Find the component form of the velocity of the airplane.
 - b.) Find the actual ground speed and direction of the airplane.
- 3.) In a warehouse, a box is being pushed up 15° inclined plane with a force of 2.5 lb.
 - a.) Find the component form of the force.
 - b.) What is one interpretation of the horizontal and vertical components of the force.
- 4.) A force of 50 pounds just keeps a box from sliding down a ramp that is inclined at 18° . Find the weight of the box.
- 5.) You and your sister have a very unruly pet puppy who is very difficult to walk. You have devised a plan to walk the puppy with two leashes: you pull with a force of 23 lb at an angle of 18° , and your sister pulls with a force of 27 lb at an angle of 15° . How hard is the puppy pulling if you aren't moving anywhere?
- 6.) A force of 50 lb acts on an object at an angle of 45° ; a second force of 75 lb acts on the same object at an angle of -30° . Find the magnitude and direction of the resultant force.
- 7.) Three forces with magnitudes 100, 50, and 80 lb, act on an object at 50° , 160° , and -20° , respectively. Find the magnitude and direction of the resultant force.
- 8.) A motor boat capable of 20 mph keeps the bow of the boat pointed straight across a mile-wide river. The current is flowing left to right at 8 mph. How far downshore will the boat land?
- 9.) A ship heads due south with the current flowing northwest. Two hours later, the ship is 20 miles in the direction 30° west of south from the original starting point. Find the speed with no current of the ship and the rate of the current.