**Vector Components and Relative Motion**

Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Three dogs (Rex, Max and Fifi) finally get their wish and are pulling on a 80 kg mail carrier. If Rex pulls at 15 N [N30°E], Max pulls at 20 N [S25°E] and Fifi pulls at

70 N [W20°N], what is the acceleration of the mail carrier? [5 marks]

2. A pilot must fly due East, a distance of 1550 km in a time of 3.35 hours. The wind is from the North at 75.0 km/h. Find the correct heading and air speed for the pilot. [5]

3. A boat is heading [N35°W] at 18 m/s relative to the water, across a body of water with a current moving at 9.5 m/s [W10.0°S]. Find the velocity of the boat relative to the shore. [5]