## WORKSHEET #1

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

1. Two vectors have unequal magnitudes. Can their sum equal zero? Explain your response.

2. What is wrong with this sentence: "The F-18 pulled out of its dive, maintaining a constant velocity."?

3. A hunter walks west 2.5 km and then walks south 1.8 km. Find the hunter's resultant displacement.

**4.** A man lost in a maze makes three consecutive displacements so that at the end of the walk he is right back where he started. The first displacement is 8.00 m westward, and the second is 13.0 m northward. Find the magnitude and direction of the third displacement.

**5.** A rock is thrown with a velocity of 23.5 m/s at an angle of 22.5° to the horizontal. Find the horizontal and vertical velocity components.

**6.** A boat is rowed east across the river with a constant speed of 5.0 mi/h. If the current is 1.5 mi/h to the south, what direction must the boat row to get straight across? What is the speed that it makes good?

**7.** A car drives straight off a cliff that is 52.5 m tall. The car travels a horizontal distance of 122 m. Find: (a) how much time it will take for the car to hit the lake below and (b) the horizontal speed of the car.

8. A girl is told to "take a hike" by a sarcastic person, so she decides to do just that. Off she goes. She walks north for a while and then walks east for 1 hour and 15 minutes. During the whole time she walked at a constant speed of 2.50 m/s. Anyway. She ends up a distance of 25.2 km from her starting point (as the proverbial crow flies). (a) So how far north did she walk? (b) What is her direction from where she started?

**9.** The driver of a car slams on the brakes as a truck approaches the car head-on while slowing uniformly with acceleration - 5.6 m/s<sup>2</sup>. The driver of the car is frozen with horror for 4.2 s while the truck makes skid marks 62.4 m long. With what speed does the truck strike the car?

10. A rock is dropped from a 100.0 m tower. (a) How long does it take the rock to fall the first 50.0 m?(b) The second 50.0 m?