P h y s i c s name _____perioid ____

Inv-3 Expansion I - Vector Construction

sheet # ____

Vectors are used throughout all physical sciences. You need to become "an expert" at working with vectors before moving on.

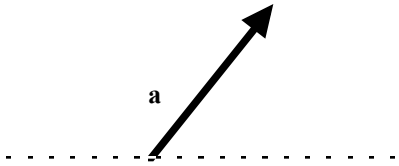
I. Use a protractor and ruler to describe the following **map view** of the velocity vectors.

Description: _____

scale: 1 cm = 10 m/s

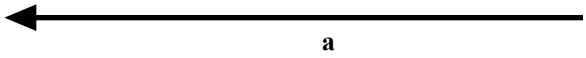
Description: _____

II. Use a protractor and ruler to describe the following **profile view** of the acceleration vectors.



Description: _____

scale: 1 cm = 20 m/s/s



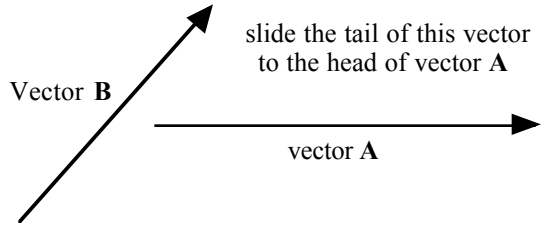
Description: _____

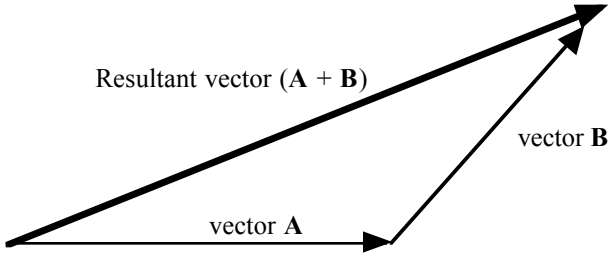
III. **A scalar quantity** is one in which direction is either not applicable or not specified. We will distinguish vectors from scalars by drawing an arrow above the letter that represent the vector (or show the letter in boldface). Decide which of the following are vectors and which are scalars:

	temperature	force	volume	displacement	speed	distance	velocity	time
vector								
scalar								

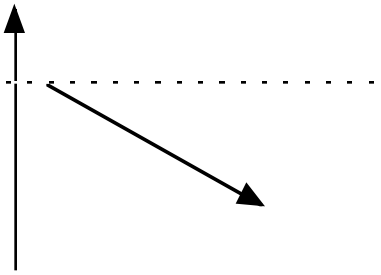
Now, adding or subtracting scalars is no problem, but adding or subtracting vectors is a little different. Not only do you have to worry about the magnitude, you also need to take into account the direction. When vectors are added together they make a "resultant" vector. We will use two methods for adding vectors.

Head-to-tail method: You were introduced to this method during the construction part of the exploration lab. Remember the coolest thing about vectors? **As long as you keep the magnitude and orientation constant, you can move a vector anywhere you want on the page.** We can use this to add the vectors trogether. Place the tail (the beginning) of one vector at the head (the end) of the other. You must be very careful to keep the magnitude (length) and orientation (angles) of the vectors consistent as you redraw one of the vectors. The resultant vector (sum of) the two given vectors is found by drawing the arrow from the tail (beginning) of the first vector to the head (end) of the second vector. This method is shown in the following example on the back:





Construct the resultant vector from the following two vectors (slide one)



Construct the resultant vectors from the following three vectors. (slide two)