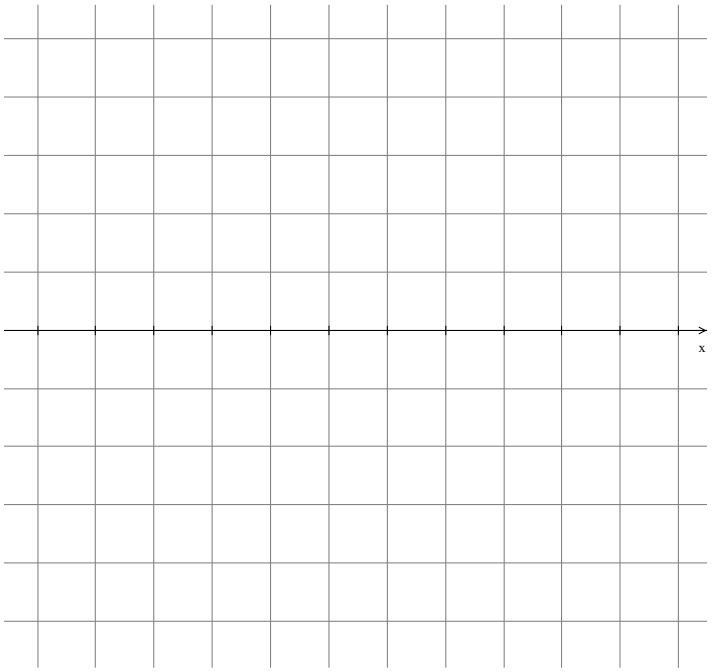
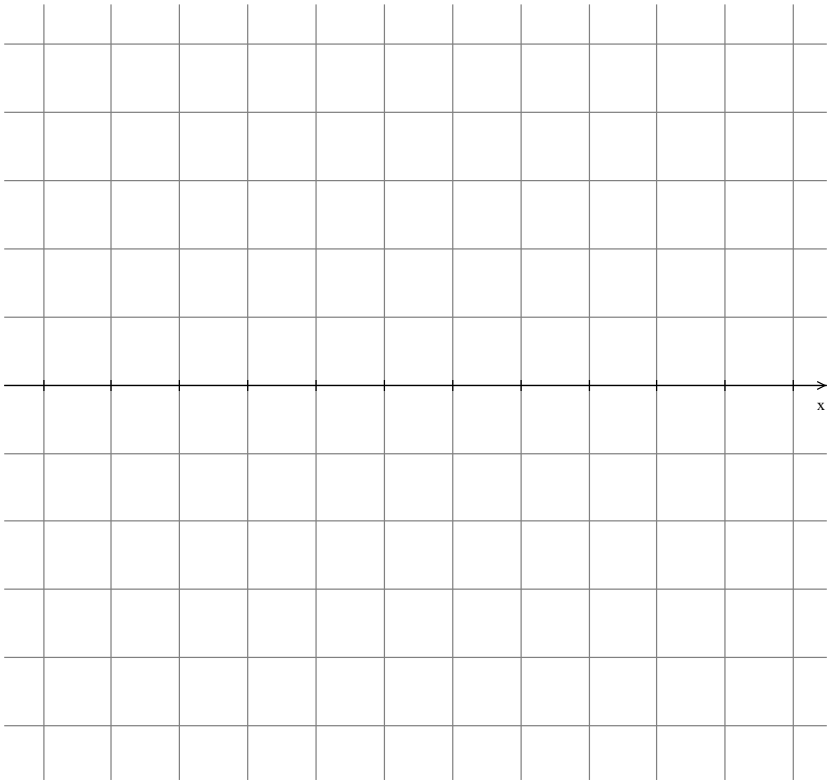
Vector Applications

Name_____

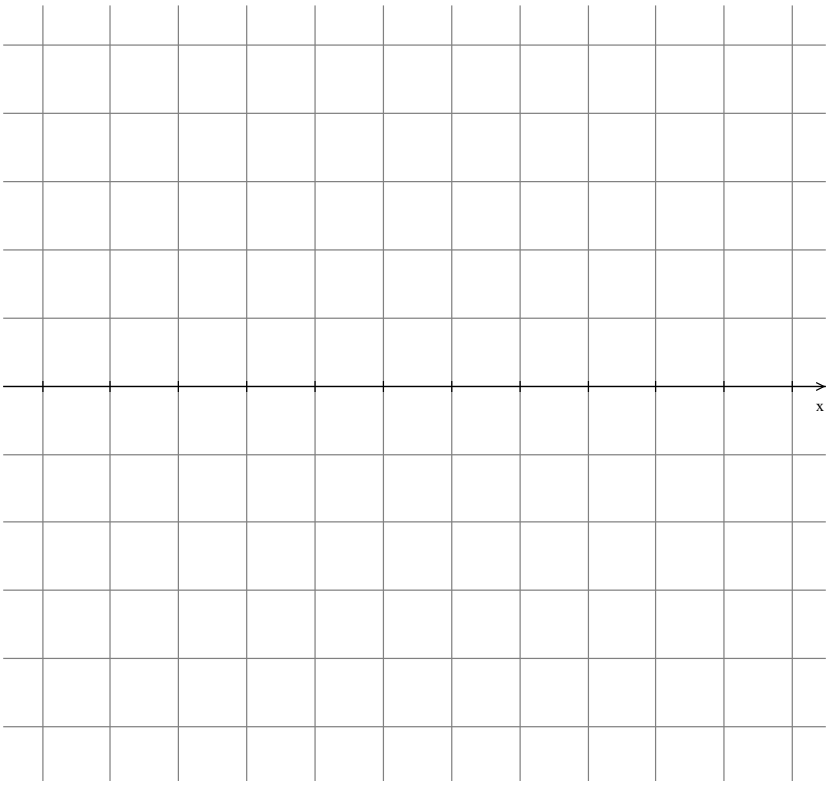
1) Find the length and direction of **u** + **v** given the vectors $\mathbf{v} = 2i + j$ and $\mathbf{u} = 4i - j$. Sketch all three vectors on the grid below.



2) Against the advice of Xavier and Bodhi, Jack and PJ are paddling a boat across Lake Merced on a windy day that has created an east bound current of 6 mph. They are rowing the boat due north at 10 mph but the current is pushing their boat off course. How fast and in what direction are they actually traveling?



3) Will and RJ are taking flying lessons. They are flying 70° north of east at a speed of 400 mph when they get into an argument over who should be pilot and who should be co-pilot. As they argue, they fail to notice that a wind blowing 65 mph in a direction of 123° is affecting their speed and direction. In what direction and at what speed is the plane actually travelling?



4) After Will and RJ get lost, Leo and Henry have to go find them and escort them back to the airport. Because Will and RJ had already travelled 75 miles south west in a direction of 223° from the airport when they got the distress call, they had to turn and head due north for 90 miles to catch up to Will and RJ. How far from the airport and in what direction are they when they finally catch up to them?