

## Vector Applications

Name \_\_\_\_\_

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



- 2) Lucas, Claire, Ryan, and Chiara 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) Alison and Isabel are taking flying lessons. They are flying  $70^\circ$  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  $123^\circ$  is affecting their speed and direction. In what direction and at what speed is the plane actually travelling?



- 4) After Alison and Isabel get lost, Owen Jennings has to go find them and escort them back to the airport. Because Owen had already travelled 75 miles south west in a direction of  $223^\circ$  from the airport when he got the distress call, he had to turn and head due north for 90 miles to catch up to Alison and Isabel. How far from the airport and in what direction is he when he finally catches up to Alison and Isabel?

