

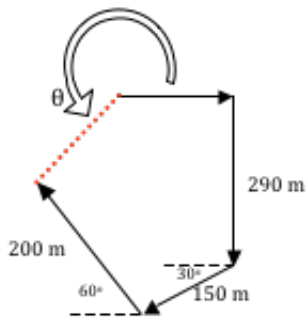
Name _____

Date _____

Vectors and Trig I

1. A submarine dives 120 m at an angle of 12.0° below the horizontal. What are the horizontal and vertical components of the submarine's displacement? Draw a diagram.
2. A golfer takes two putts to sink his ball in the hole once he is on the green. The first putt displaces the ball 6.10 m east, and the second putt displaces it 5.40 m south. What displacement would put the ball in the hole in one putt? (*reminder: displacement is a vector, so therefore you must find a magnitude and direction*)
3. A person walks 28.0° north of east for 3.50 km. How far would another person walk due north and due east to arrive at the same location?
4. A roller coaster travels 38.1 m at an angle of 46.0° above the horizontal. How far does it move horizontally? How far does it move vertically?

5. A person walks the path shown below. The total trip consists of four straight-line paths. At the end of the walk, what is the person's resultant displacement measured from the starting point? Find the distance, and the direction, measured counterclockwise from the $+x$ direction.



6. The eye of a hurricane passes over Grand Bahama Island. It is moving in a direction 60.0° north of west with a speed of $v_1 = 36.0 \text{ km} \cdot \text{h}^{-1}$. Exactly three hours later, the course of the hurricane shifts due north, and its speed slows to $v_2 = 27.0 \text{ km} \cdot \text{h}^{-1}$, as shown in the figure below. How far from Grand Bahama, in kilometers, is the hurricane 4.50 h after it passes over the island?

