HAT 4/16/18 Name:_____

HW: Vectors with Components

1. Suppose a vector $\vec{a}$ represents a 2nm route with a heading of 325°.

   a. Make a sketch of the vector $\vec{a}$ and include the north and west vectors that would give the resultant $\vec{a}$.

   b. What are the measures of the angles of the triangle formed by these three vectors?

   c. Compute the magnitudes of the north and west vectors.

   d. What are the headings of the north and west vectors? These vectors will be referred to as the horizontal and vertical components.

2. Given $\vec{v} = \left[4, D\,30^\circ\right]$ and $\vec{w} = \left[6, D\,160^\circ\right]$.

   a. On graph paper, draw $\vec{v} + \vec{w}$.

   b. Draw the horizontal and vertical components of $\vec{v}$ and $\vec{w}$ in one color.

   c. Draw the horizontal and vertical components of $\vec{v} + \vec{w}$ in a different color.

   d. Explain how the components of two vectors can be used to find the sum of the two vectors.