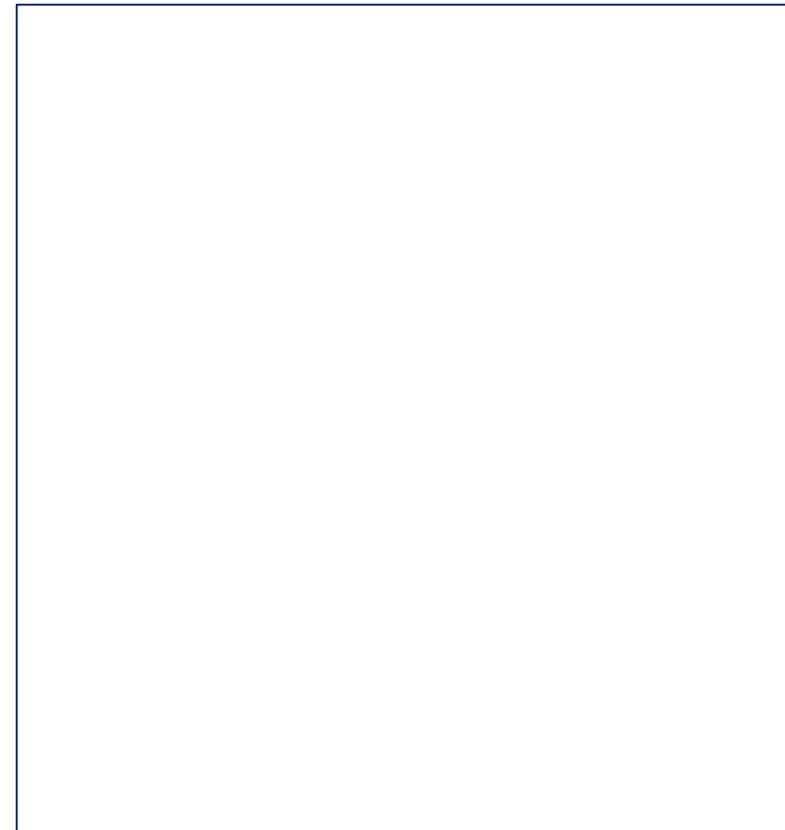
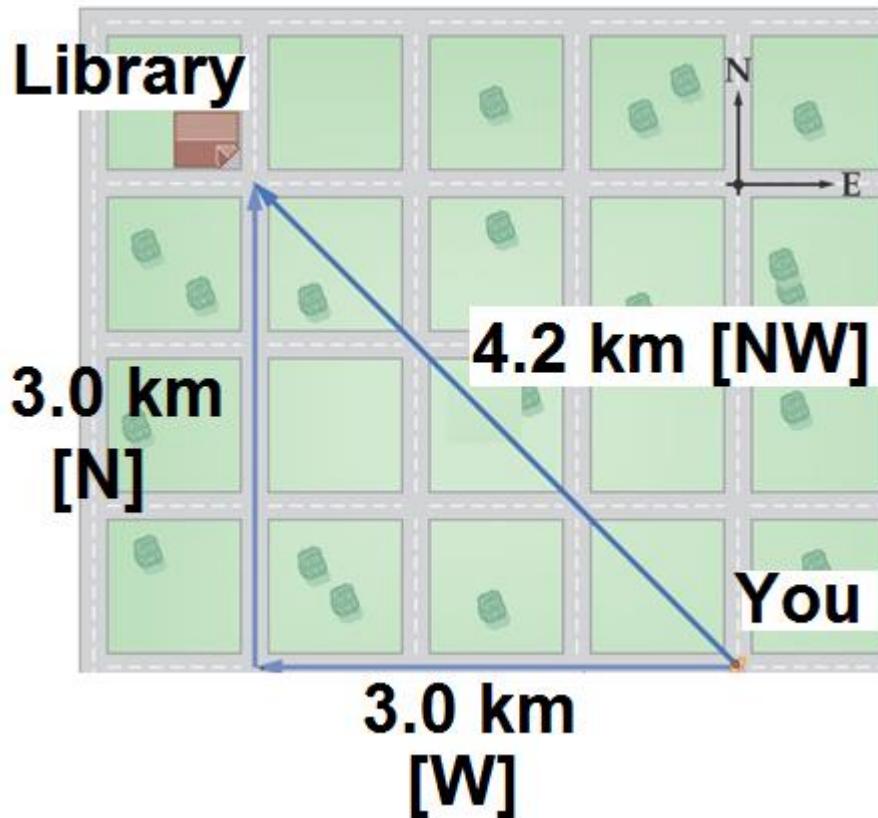


Using Components 2D Vector Analysis

- The Components of a Vector
- Adding and Subtracting Vectors using components

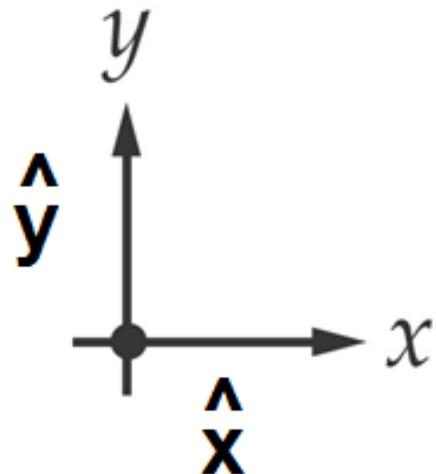
The Components of a Vector

Consider the diagram below: The library is 4.2 km [NW] of your location. How will you get there?



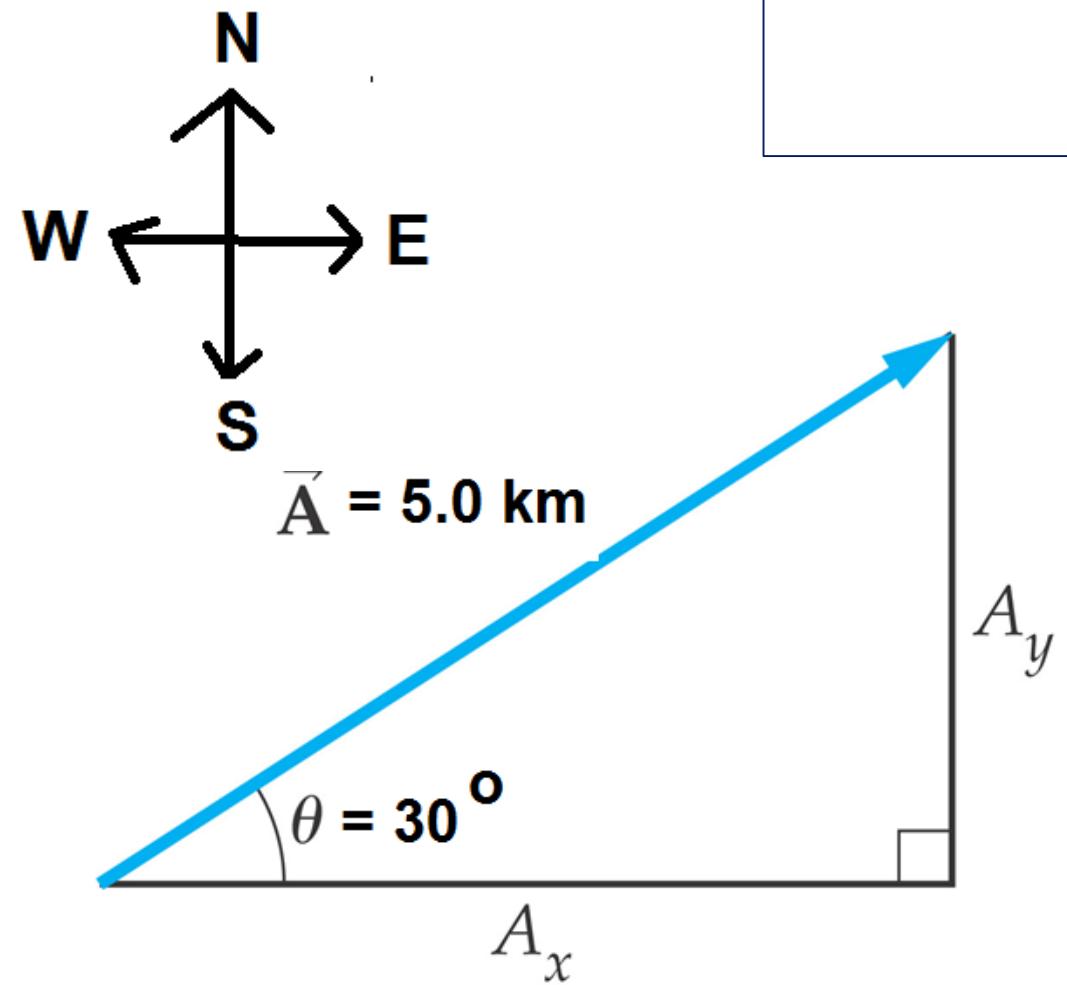
Cartesian Components:

In a 2D plane, we can define a co-ordinate system made up of 2 orthogonal
() unit vectors:



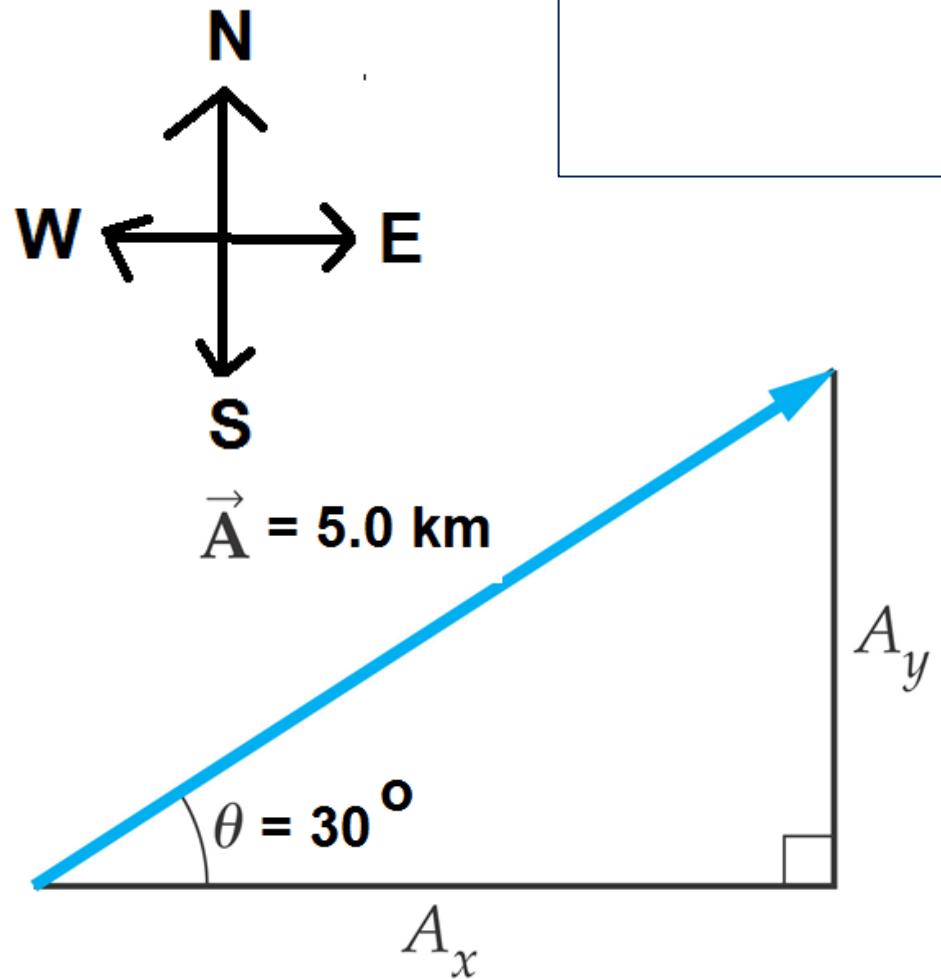
We can _____ or _____ any vector in a 2D plane into _____ in each unit vector direction:

Position vector Vector A can be written two ways:



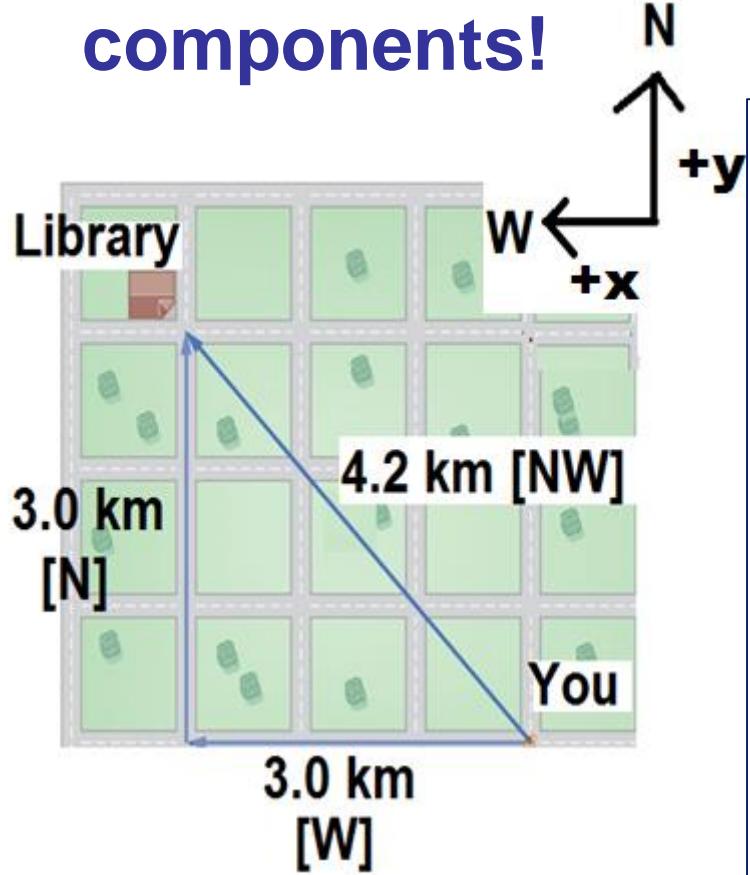
We can find the values of Ax and Ay using
Trig!

$$\vec{A} = A_x \hat{x} + A_y \hat{y}$$



The Components of a Vector

Back to the library displacement! We can represent the displacement using components!



Adding vectors using components!

Find the x and y components for each vector:

Add up all of the x and y components:

Sketch the total x and y components and use Pythagorean Theorem & SOHCAHTOA to write in magnitude angle form.

