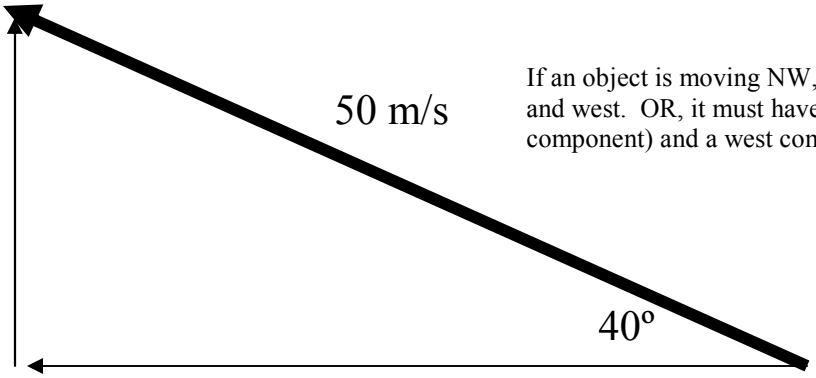
Objects Moving at Angles

Example of an object moving at an angle.

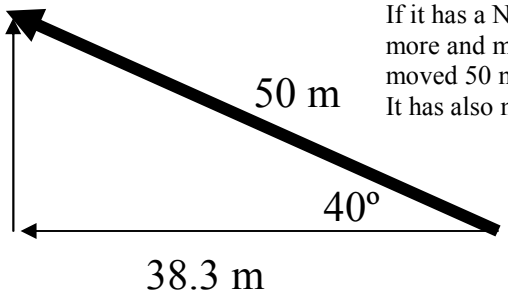
Q: The object is moving 50 m/s at 40º. How far west does it go after 2 seconds?



If an object is moving NW, then it must be moving north and west. OR, it must have a north component (y-component) and a west component (-x component).

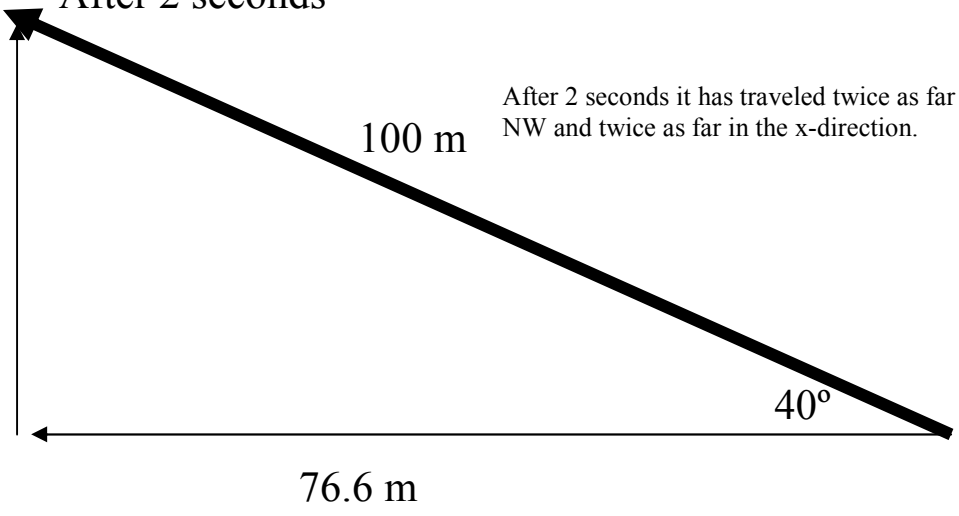
$Vx = \cos(40º)50 \text{ m/s} = 38.3 \text{ m/s}$ The west (x) component of the velocity.

After 1 second



If it has a NW velocity, then every second it must have more and more NW displacement. After 1 second it has moved 50 m at 40º.
It has also moved 38.3 m in the x-direction.

After 2 seconds



After 2 seconds it has traveled twice as far NW and twice as far in the x-direction.

Whatever motion the object undergoes at 40º, it will have x and y components of this motion, whether you are referring to its acceleration, velocity, or direction.