



2D FORCES & GUIDED PRACITCE

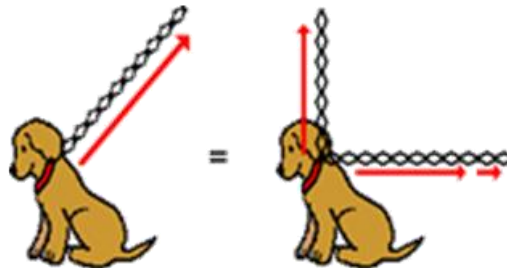


SP2. Obtain, evaluate, and communicate information about how forces affect the motion of objects
 b. Use mathematical representations to calculate magnitudes and vector components for typical forces including gravitational force, normal force, friction forces, tension forces, and spring forces.

Some Forces are TWO DIMENSIONAL

$$\text{SinOppHyp} - \text{CosAdjHyp} - \text{TanOppAdj}$$

- Some forces move in two dimensions (X & Y axis)
- Each part of a two-dimensional vector is known as a _____.
- If a degeed angle and magnitude is given for the two-dimensional vector, the _____ of the x and y _____ can be found using _____.

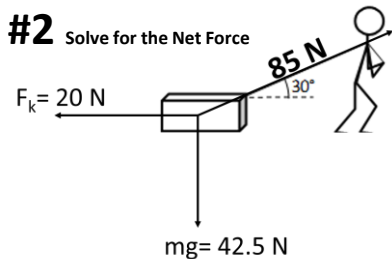


- **To find the X (parallel) component** it will most likely equal= Hyp x _____ of angle
- **To find the Y (perpendicular) component** it will most likely equal= hyp x _____ of angle

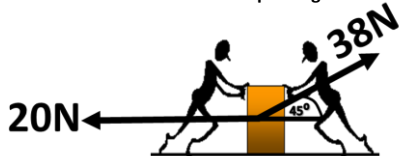
GUIDED PRACTICE

#1 A Baseball player hits a ball with a 50N force at a 60 degree angle.
 Find the x & y components of this force

- 1) Draw the two dimensional vector
- 2) Draw the components of the 2D vector
- 3) Solve for the components using trig



#3 Isaiah and Jamellia are pushing a box that accelerates at 2 m/s^2 , what is the mass of the box?



- 1) Draw a FBD
- 2) Draw the components of the 2D vector
- 3) Solve for the components using Trigonometry
- 4) Find the net force on the object on whatever axis is needed
- 5) Use Newton's 2nd Law to solve for unknown quantities

#4 If total mass of the sled is 40kg and is accelerating at 3 m/s^2 , how much friction is acting on the sled?

