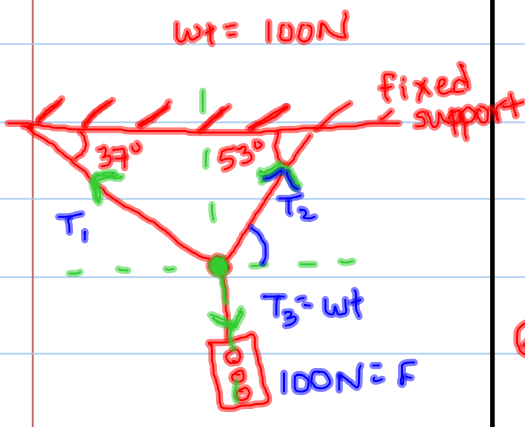


Ex. 4.1



$$wt = mg \quad \text{kg} \frac{\text{m}}{\text{s}^2} = \text{N}$$

tension T , special F in a cable, rope, etc.
 * T pull cable tight

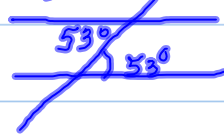
① FBD, arrows on F
 x-y axis at junction

② in static equilibrium
 $\Sigma F = 0$ $a = 0$ or constant velocity

③ sum all components
 wt objects = its tension down

$$\Sigma F_x = T_2 \cos 53 - T_1 \cos 37 = 0$$

$$\Sigma F_y = T_2 \sin 53 + T_1 \sin 37 - 100 = 0$$



2 unknowns; have to have 2 equations

simplify + set up for substitution

pick 1 to solve all the way down (pick easiest one)

$$.6T_2 - .8T_1 = 0$$

$$.8T_2 + .6T_1 - 100 = 0$$

$$\frac{.6T_2}{.6} = \frac{.8T_1}{.6}$$

$$* T_2 = 1.3T_1$$

substitute

$$.8(1.3T_1) + .6T_1 - 100 = 0$$

$$1.04T_1 + .6T_1 - 100 = 0$$

$$\frac{1.64T_1}{1.64} = \frac{100}{1.64}$$

$$T_1 = 60\text{N}$$

$$T_2 = 1.3(60) = 78\text{N} = T_2$$

$$T_3 = 100\text{N}$$