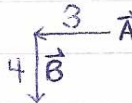
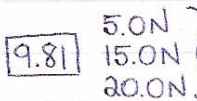

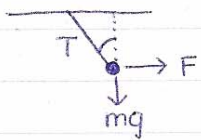


1.  sum of the vectors?  
 $R_x = -3, R_y = -4$   
 $|R| = \sqrt{(-3)^2 + (-4)^2} = 5m$

2.  } any combo b/c no direction

3.   $a = 1.8$   
 $T_{\text{table}} = +mg + ma = 8000N$   
 $= 9800 - 1800$   
 $\Sigma y = T - mg = -ma$



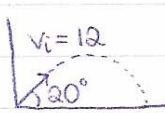
$$\left. \begin{aligned} \Sigma F_x &= -T_x + F = 0 = -T \sin \theta + F \\ \Sigma F_y &= T_y - mg = 0 = T \cos \theta - mg \end{aligned} \right\} \text{divide}$$

$$-\tan \theta = -\frac{F}{mg}$$

$$-\tan \theta = -\frac{200}{1000 \cdot 9.8}$$

$$\theta = 11^\circ$$

5.  $v_f^2 = v_i^2 + 2a\Delta x$   $PE_g = KE_f$   
 $v_f^2 = 0 + 2(9.8)(23)$   $mgh = \frac{1}{2}mv^2$   
 OR  $v = \sqrt{2gh} = \sqrt{2(+9.8)(23)} = 21$

6.   $v_{0y} = \Delta x \frac{1}{2}at^2$   $\Delta t = 2t$   $v = \sqrt{2gh}, v^2 = 2g\Delta y$   
 $\Delta y = v_i t - \frac{1}{2}gt^2$   
 $\Delta y = v_i \sin \theta - \frac{1}{2}gt^2$   
 $2t = \frac{2v_i \sin \theta}{g}$   
 $t = 0.84$

DEMO: Even though things are launched, they're both under gravity  
 #2: Gravity on ball and plate allows ball to hit plate