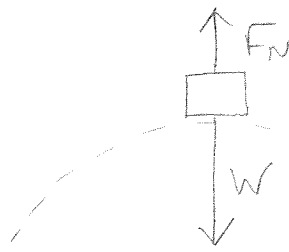


a) $V_t = v$
 $r = r$

$$F_N = ?$$



$$\downarrow F_c = F_{net}$$

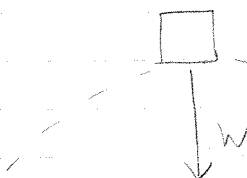
F_c is directed down (towards the circle's center)
 so, $F_c = W - F_N$

$$\frac{m \cdot v^2}{r} = m \cdot g - F_N$$

$$F_N = m \cdot g - \frac{m v^2}{r} \quad \text{so}$$

$$F_N = m \cdot \left(g - \frac{v^2}{r} \right)$$

b) $r = 30.0 \text{ m}$
 $F_N = 0 \text{ N}$



$$\downarrow F_c = F_{net}$$

For $F_N = 0$, F_c must be completely provided by weight

$$F_c = W$$

$$\frac{m \cdot v_t^2}{r} = m \cdot g$$

$$\frac{v_t^2}{(30 \text{ m})} = 9.8 \text{ m/s}^2$$

$$v_t = 17.1 \text{ m/s}$$