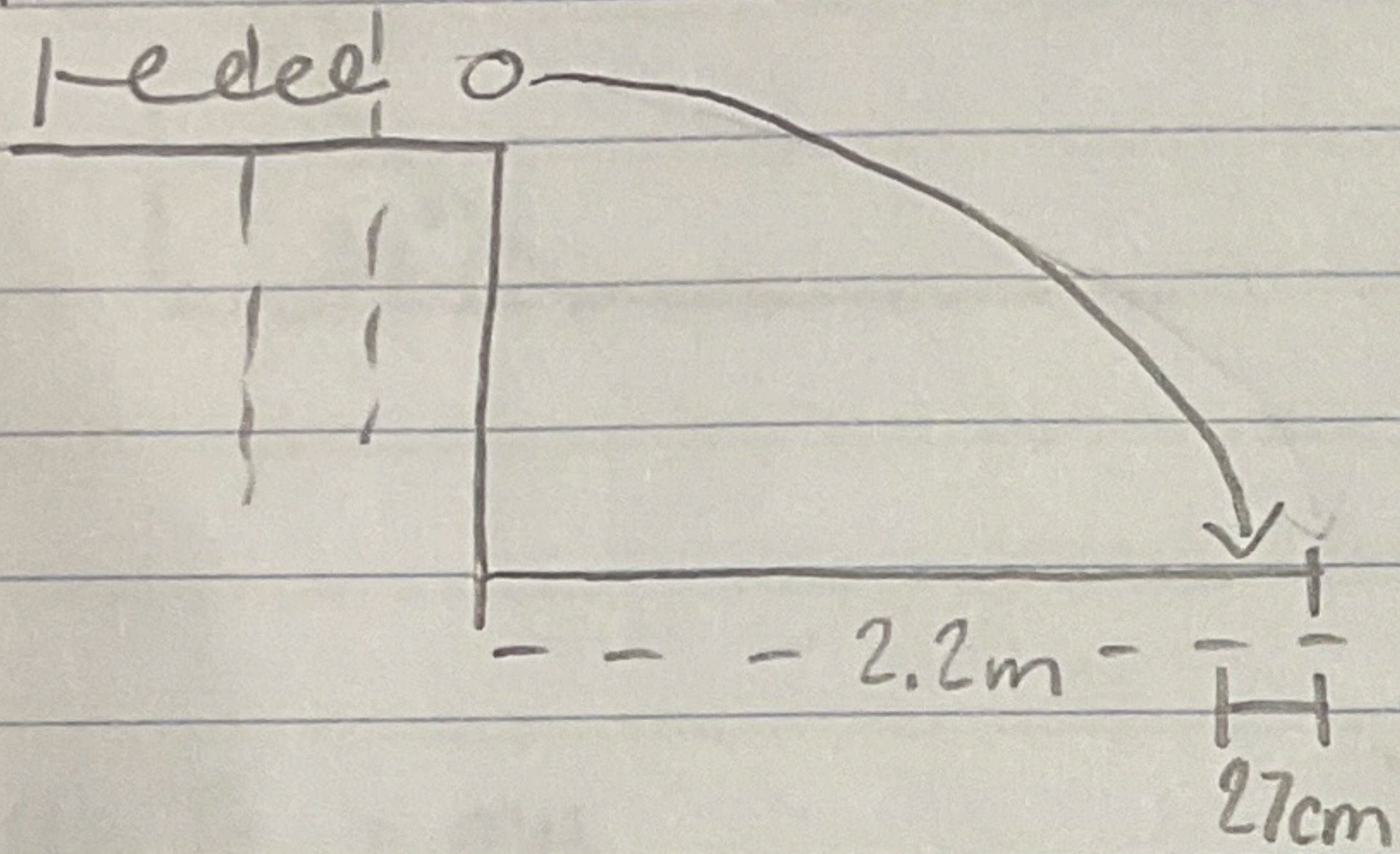


Show Work

q. $x = 1.1 \text{ cm}$ $x = 0$



- $KE_i + U_i = KE_f + U_f$ - energy conservation

- Spring PE: $U_s = \frac{1}{2} Kx^2$

- Grav. PE: $U_g = mgh$

- Kinetic Energy: $KE = \frac{1}{2} mv^2$

- Velocity = $\frac{\text{dis.}}{\text{time}}$

$$g = 10 \text{ m/s}^2$$

- $x = v_i t + \frac{1}{2} a t^2$

$$KE_i = 0$$

$$U_i = \frac{1}{2} Kx^2 + mgh$$

$$KE_f = \frac{1}{2} mv_f^2 \rightarrow \frac{1}{2} m \left(\frac{d}{t} \right)^2$$

$$mgh = \frac{1}{2} mv^2$$

$$v^2 = 2gh$$

$$v = \sqrt{2gh}$$

$$\frac{1}{2} K(0.011) = \frac{1}{2} mv_f^2$$

$$v_f = \frac{1.941}{0.629}$$

$$= 3.08 \text{ m/s}$$

$$1.941 = 0t + 2(-9.8)t^2$$

$$1.941 = -4.9t^2$$

$$t = 0.629 \text{ s}$$

$$K = 280 \text{ N/m}$$