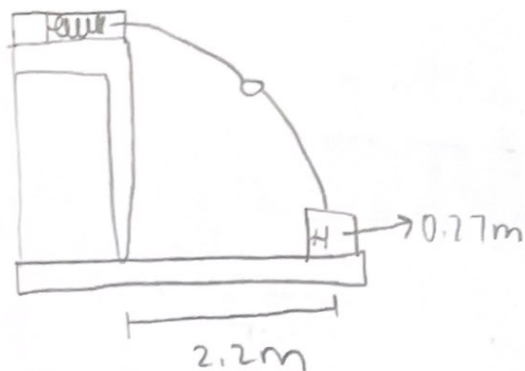


Question 9 Makenzie Holt



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

$$\frac{kx^2}{m} = \frac{mv^2}{m}$$

$$v^2 = \frac{kx^2}{m}$$

$$v_1 = \sqrt{\frac{kx^2}{m}}$$

$$y = v_{1y}t + \frac{1}{2}gt^2$$

$$t = \sqrt{\frac{2y}{g}}$$

$$y = vt$$

$$x = v_1 t \quad h = \frac{1}{2}gt^2$$

$$x = v_1 \sqrt{\frac{2h}{g}}$$

$$D_1 = 2.2 - 0.27 = 1.93m$$

$$D = 2.2m$$

$$\frac{v_2}{v_1} = \frac{D}{D_1} \quad v_2 = \frac{D}{D_1} \cdot v_1$$

$$\frac{1}{2}mv_1^2 = \frac{1}{2}kx^2$$

$$v_2 = \left(\frac{x_2}{x_1}\right)v_1 = x_2 = \frac{D}{D_1}x_1 = \frac{(2.2m)(1.1cm)}{(1.93m)} = \boxed{1.25cm}$$