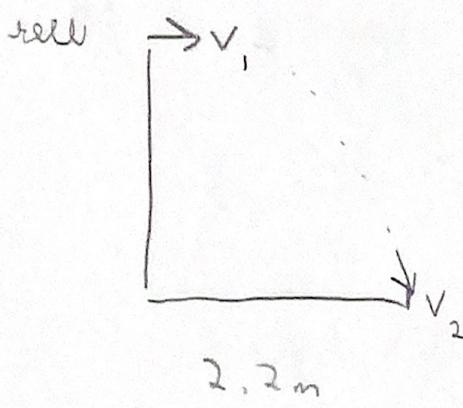


9)



Bobby:

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

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

$$d = v_1 t$$

$$t = \frac{1.93 \text{ m}}{\sqrt{\frac{1.21 \times 10^{-4} \cdot k}{m}}}$$

~~$$\frac{1}{2}mv_1^2 + mgh = \frac{1}{2}mv_2^2$$~~

$$\Delta y = v_1 t + \frac{1}{2}gt^2 \quad \leftarrow \text{from } h = \frac{1}{2}gt^2$$

$$h = \frac{1}{2} \cdot 10 \frac{\text{m}}{\text{s}^2} \cdot \frac{(1.93 \text{ m})^2}{1.21 \times 10^{-4} \cdot k} \cdot \text{m}$$

$$h = 1.54 \times 10^5 \frac{\text{m}}{\text{k}}$$

Rhoda:

$$d = 2.2 \text{ m} = v_1 t$$

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

$$t = \frac{2.2 \text{ m}}{\sqrt{\frac{kx^2}{m}}}$$

$$h = \frac{1}{2}gt^2$$

$$1.54 \times 10^5 \frac{\text{m}}{\text{k}} = \frac{1}{2} \cdot 10 \frac{\text{m}}{\text{s}^2} \cdot \frac{(2.2 \text{ m})^2}{Kx^2} \text{ m}$$

$$1.54 \times 10^5 = \frac{24.2}{x^2}$$

$$x^2 = \frac{1.54 \times 10^5}{24.2}$$

$$x = 1.254 \text{ cm}$$