

q.

"1 + 2"

1 = 10 - 10.824

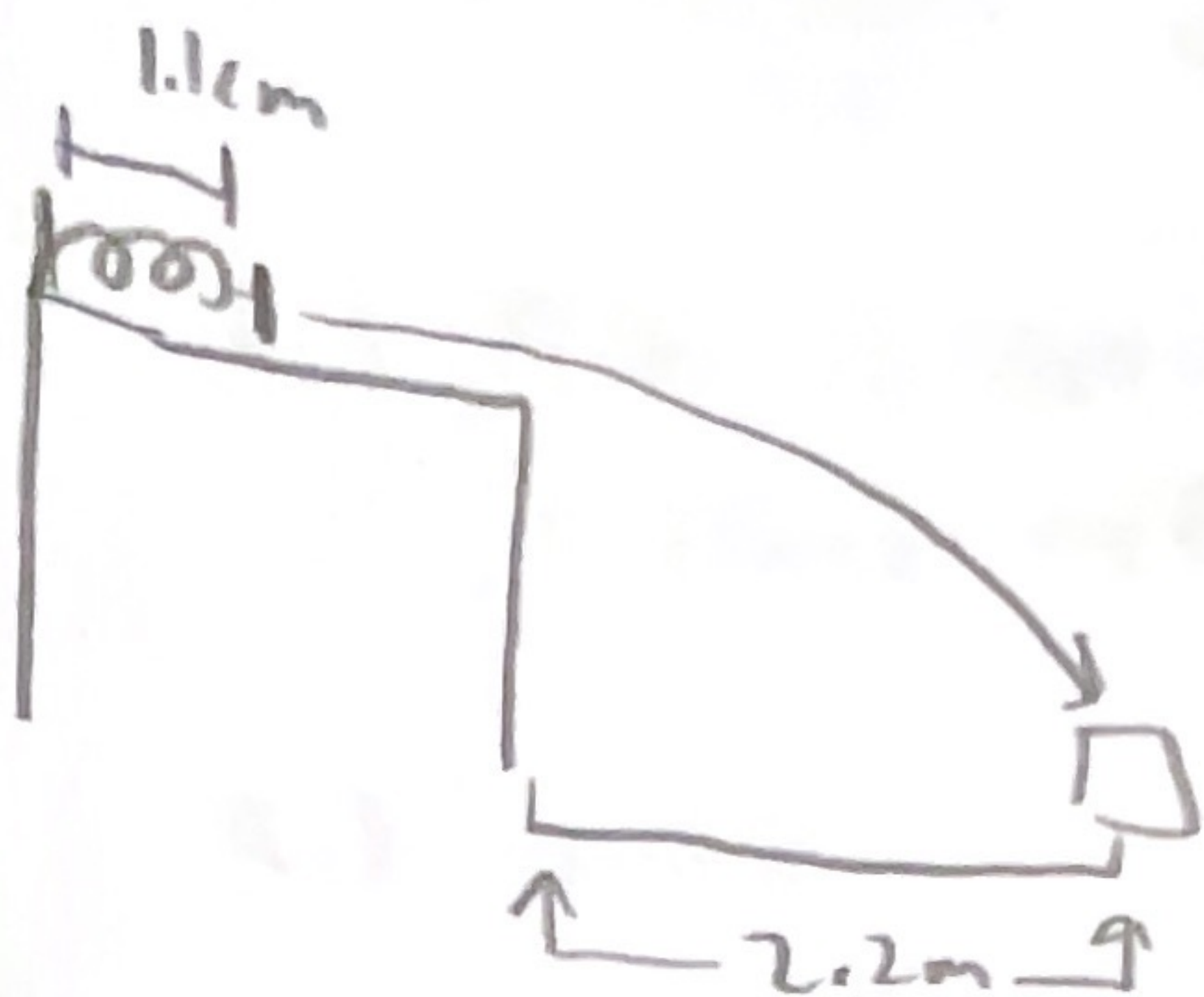
10.01

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(1.30)

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Conservation of Energy

$$\frac{1}{2}k(\Delta x)^2 = \frac{1}{2}mv^2$$

$$\frac{1}{2}k(\Delta x) = \frac{1}{2}mv^2$$

$$v = \sqrt{\frac{(\Delta x)^2 k}{m}}$$

$$\sqrt{\frac{(\Delta x)^2 k}{m}}(t) = d$$

$$\textcircled{1} \quad \frac{1}{2}k(1.1)^2 = \frac{1}{2}m\left(\frac{1.93}{t}\right)^2$$

$$\textcircled{2} \quad \frac{1}{2}k(\Delta x)^2 = \frac{1}{2}m\left(\frac{2.2}{t}\right)^2$$

$$(1.1)^2 = \left(\frac{1.93}{t}\right)^2$$

$$(\Delta x)^2 = \left(\frac{2.2}{t}\right)^2$$

Kinematics

$$v(t) = 1.93m$$

$$\sqrt{\frac{(.011)^2 k}{m}}(t) = 1.93m$$

$$\frac{(.011)^2 k}{m} = \frac{1.93^2}{t^2}$$

$$\frac{k}{m} = \frac{1.93^2}{t^2} (.011^2)$$

$$\frac{k}{m} = \frac{4.507 \times 10^{-4}}{t^2}$$

$$v(t) = 2.2m$$

$$\sqrt{\Delta x \left(\frac{4.507 \times 10^{-4}}{t^2} \right)}(t) = 2.2m$$