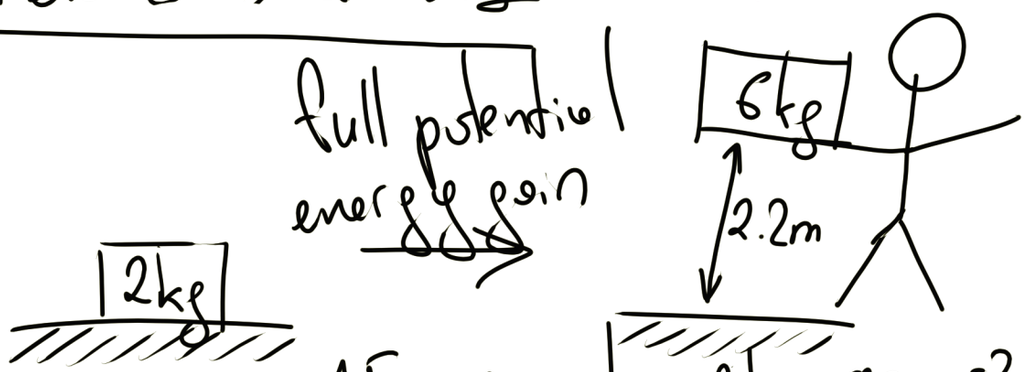
Mon Feb 8th, 2021 3.2 Practice Problems

(2)



$\Delta E = mg\Delta h = 2\,kg \times 9.8\,ms^{-2} \times 2.2m =$
$= 43.12\,J$

(1)

$V_0 = 7\,ms^{-1}$ $\Delta E = -4.2\,Jm^{-1}$

sig. figs. up to you!

$K = \frac{1}{2}mv^2 \Rightarrow K_0 = \frac{1}{2}mv_0^2 = \frac{1}{2} \cdot 6 \cdot 7^2 = 147J$

Then we have 147J and lose 4.2 J per meter.

$\therefore \Delta S = \frac{147\,J}{4.2\,Jm^{-1}} = 35m$

(3)

$K_0 = \frac{1}{2}mv_0^2$

$K_f = \frac{1}{2}m \cdot 4^2$

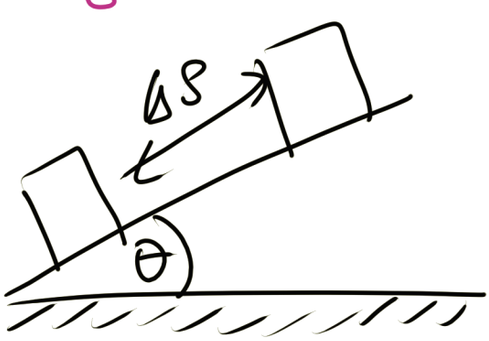
$W = \Delta K = K_0 - K_f$

$= \frac{1}{2}m(v_0^2 - 4^2)$

$= \frac{1}{2} \cdot 10(100 - 16) = 420J$

Applied against the direction of the moving box

(4)



$\Delta E = mg(\Delta S)\sin\theta$

$\parallel$

W