Example 2

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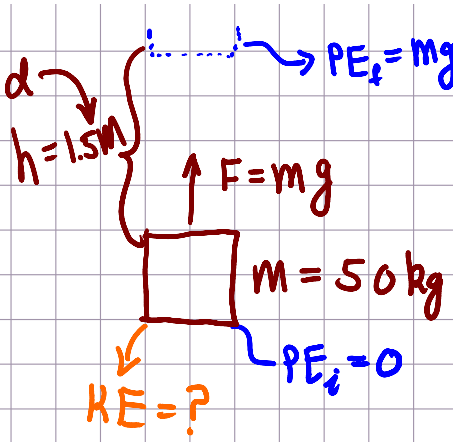
$g = 10\ m/s^2$

Example 2 (Parallel Exercise Group B #10)

2) How much work is done in raising a 50.0 kg crate a distance of 1.5 m above a storeroom?

b) What is the change of potential energy as a result of this move?

c) How much kinetic energy will the crate have as it falls and hits the floor?



a) $W = Fd$

$W = mgd$

$W = (50kg)(10m/s^2)(1.5m)$

$W = 750J$

b) $\Delta PE = PE_f - PE_i$

$\Delta PE = mgh - 0 = mgh = 750J$ so $W = \Delta PE$

c) $KE = 750J$

Example 3

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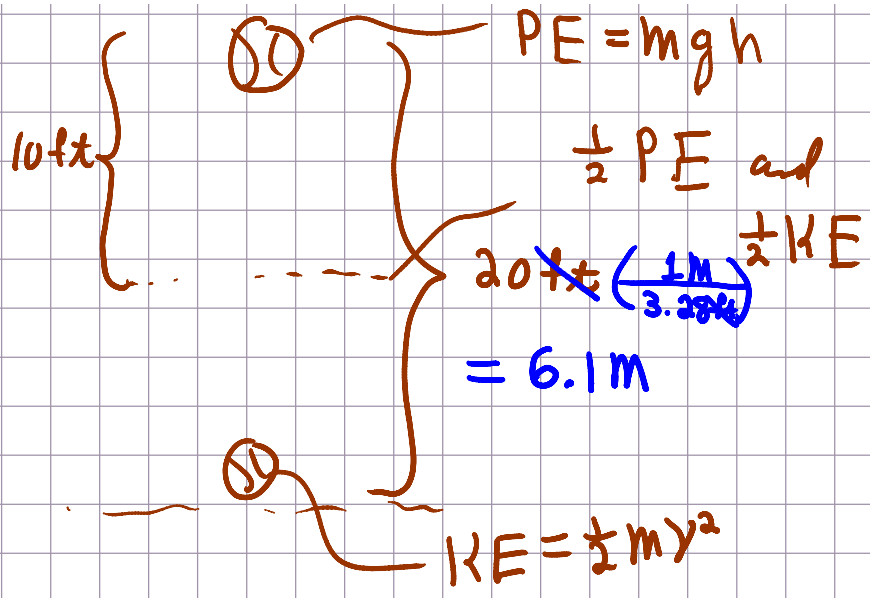
Example 3 (Parallel Exercise Group B #17)

3) A ball is dropped from 20.0 ft above the ground.

a) At what height is half of its energy kinetic and half potential?

b) Using energy considerations only, what is the velocity of the ball just as it hits the ground?

$1\text{m} = 3.28\text{ft}$



$KE = PE$

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

$2\left[\frac{1}{2}v^2 = gh\right]$

$v^2 = 2gh$

$v = \sqrt{2gh}$

$v = \sqrt{2\,(10\,m/s^2)(6.1\,m)}$

$v = 11\,m/s$