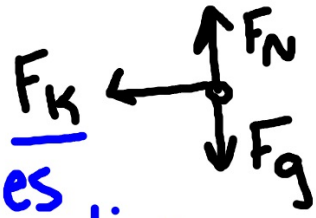
Bellwork 5/2

A 20N frictional force brings a sliding object to rest in 0.40 m. How fast was the object moving initially? The mass of the object is 2kg.

[Answer = 2.8 $\frac{m}{s}$]



F_N & F_g do NOT do work.

F_K Does negative work

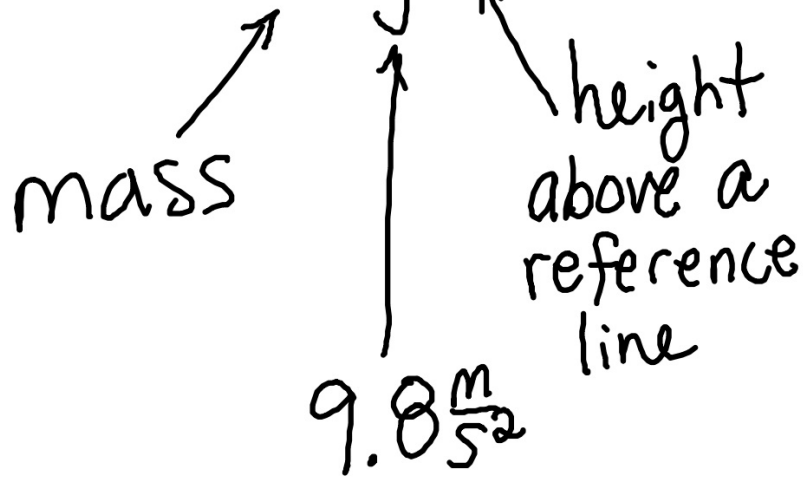
$$W_K = K_F - K_i$$
$$-F_K D = K_F - K_i$$
$$-(20N)(0.4m) = 0 - \frac{1}{2}(2Kg)V_i^2$$
$$\boxed{V_i = 2.82 \frac{m}{s}}$$

$$W = K_f - K_i$$

$$W = \pm FD$$

$$K = \frac{1}{2}mv^2 \text{ (use } v_f \text{ or } v_i\text{)}$$

Gravitational Potential Energy: $P = mgh$



If gravity is the only force doing work, then an object conserves its energy

No energy is transferred from object to surroundings

h	P = mgh	v	K	E
22.6 m	9967J	$0\frac{m}{s}$	0J	9967J
11.3 m	4983J	$14.9\frac{m}{s}$	4984J	9967J
0 m	0J	$21\frac{m}{s}$	9967J	9967J

* Dropped from rest

$$E = K + P$$

B) $9967J = K + 4983J$

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

$$4984J = \frac{1}{2}(45kg)v^2$$

$$v = 14.9\frac{m}{s}$$