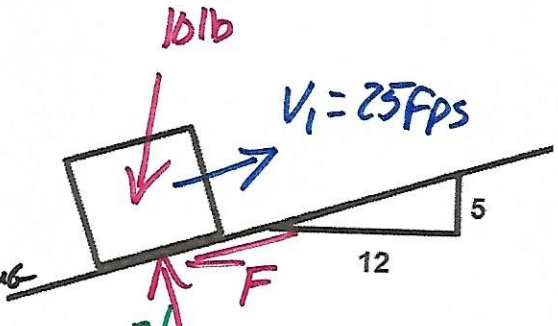
**Work Energy III - Problem 2**

The 10 lb block has an initial velocity of 25 fps going up the incline. If the coefficient of kinetic friction, $\mu_k = 0.1$, how far along the incline does the block go before stopping?




MOTION

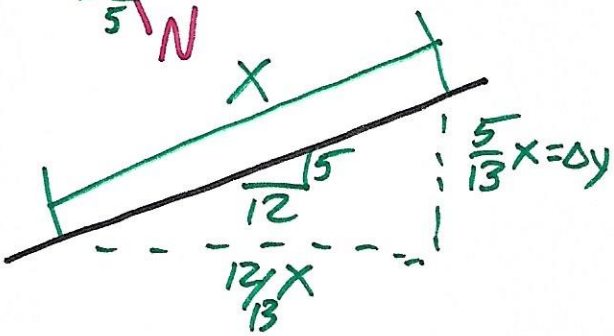
TRANS

PROPERTIES

$W = 10\text{lbs}, \; m = \frac{10}{32^2} = 0.31 \text{ slug}$

WORK

FRICTION + WEIGHT




$U_{FR} = -0.1\left(\frac{12}{13}\right)(10)X = -0.923X$

$U_W = -10\left(\frac{5}{13}X\right) = -3.846X$ $\quad \Sigma U_{1-2} = -4.77X \text{ Ft-lb}$

ENERGY

$T_2 = 0$ @ REST $\quad T_1 = \frac{1}{2}mV_1^2 = \frac{1}{2}(.31)(25)^2 = 97$ Ft-lb

W-E

$T_1 + U_{1-2} = T_2$

$97 - 4.77X = 0$

$X = 20.3'$ UNTIL BLOCKS STOPS