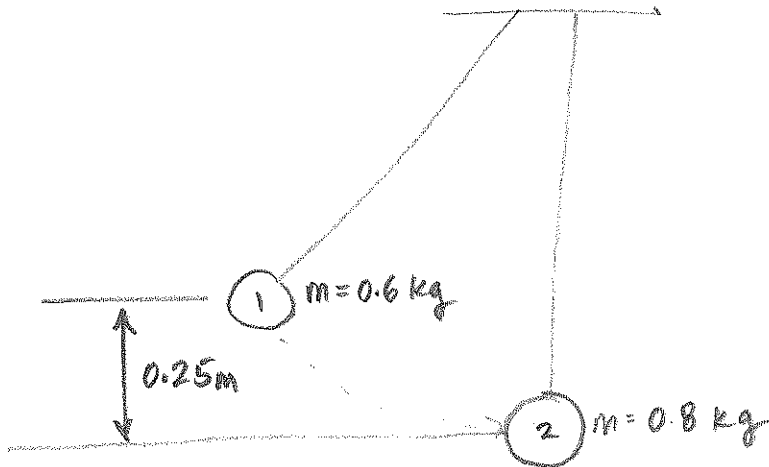


# Momentum & Energy

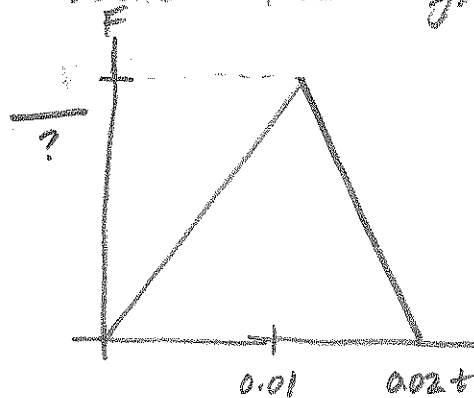


These two objects collide in a perfectly elastic collision.

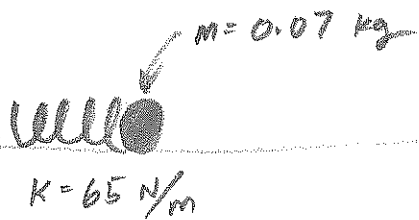
1.) What is the speed of (2) after the collision?  
(Hint:  $P_0 = P_f$  and  $K_0 = K_f$ . Use [wolframalpha.com](http://wolframalpha.com))

2.) To what height does (2) swing up to?

3.) Find the force in the  $F$  vs  $t$  graph below that will make the graph true for this collision.

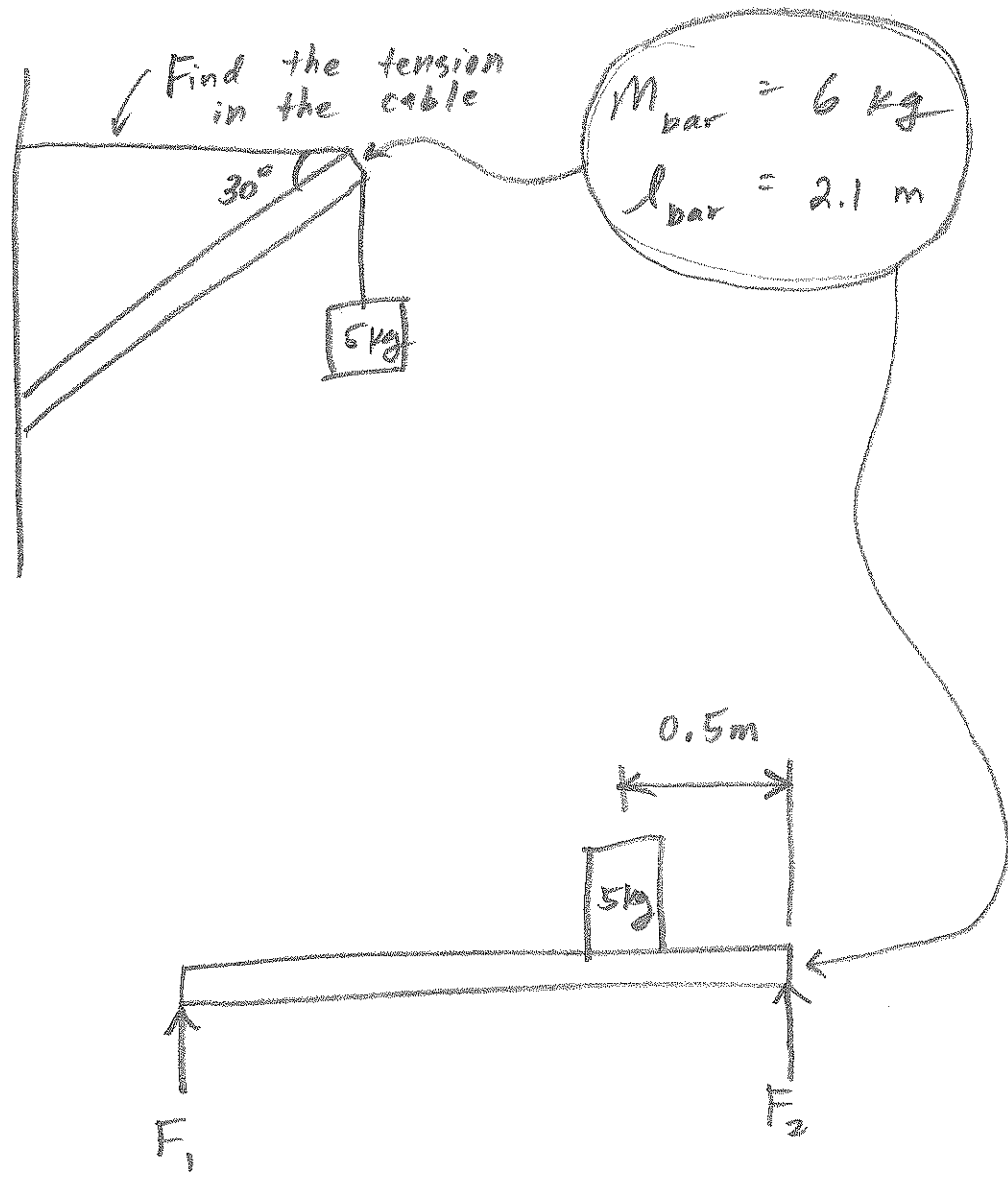


# Work & Energy



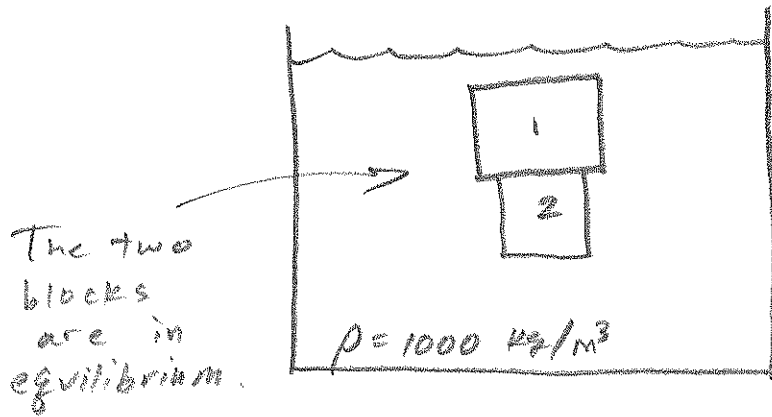
- 1.) If the spring is compressed  $0.15 \text{ m}$  and then released, how much work does the spring do on the marble?
- 2.) Find the speed of the marble.
- 3.) The marble experiences a frictional force of  $1.2 \text{ N}$  as it rolls. Use Work & Energy to find the distance required to stop the marble.

# Torque



Find  $F_1$  &  $F_2$

# Buoyancy



The two blocks are in equilibrium.

$$\begin{array}{l} \text{1} \\ V = 0.03 \text{ m}^3 \\ \rho = 1050 \frac{\text{kg}}{\text{m}^3} \end{array}$$

$$\begin{array}{l} \text{2} \\ V = 0.025 \text{ m}^3 \end{array}$$

1.) Find the mass of object 2.

2.) If object 1 is removed, what fraction of object 2's volume will be submerged.