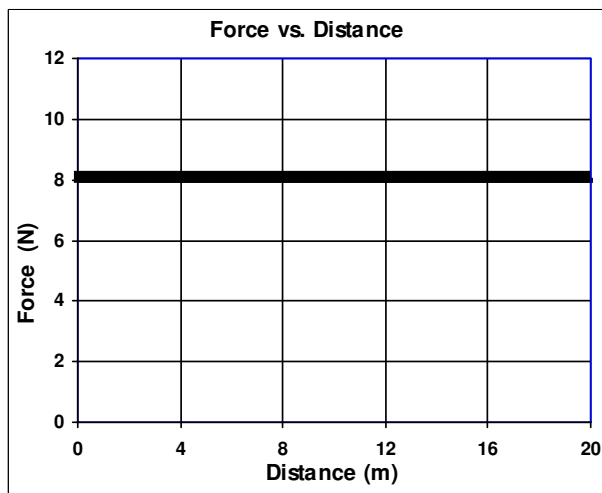
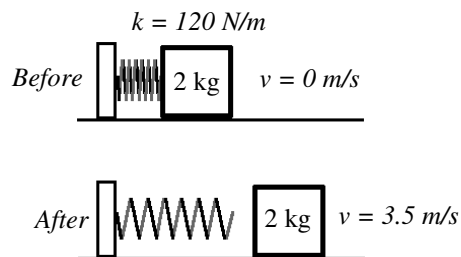


2008 Energy 5

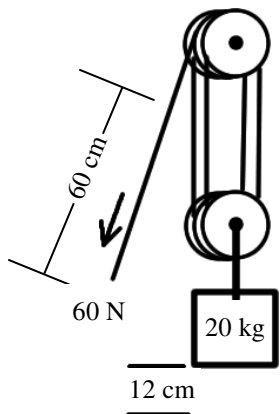


- The black line on the graph shows the force acting on an object.
 - How big is the force?
 - For how much distance does the force act (the whole graph)?
 - Calculate the work done by the force.
- If the force lifts a 5 kg object, how high is the object lifted?

- A spring is compressed 0.6 m and has a spring constant of 120 N/m. When released, a 2 kg object slides over a surface that has friction.
 - Calculate W_{in} ?
 - Calculate W_{out} ?
 - Calculate the efficiency.

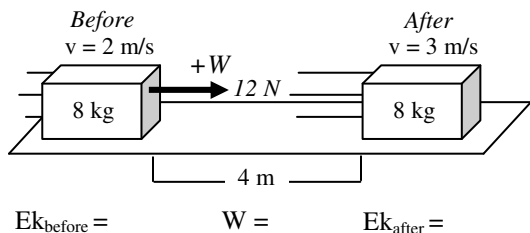


- How much energy was lost (amount, not %)?



- A pulley system lifts a 20 kg object.
 - What is the weight of the object?
 - What is the Mechanical Advantage (MA) of the system?
 - Remembering to use meters, calculate $W_{in} =$
 - Calculate $W_{out} =$
 - Calculate efficiency.

- What is the biggest efficiency that can exist in an energy transfer?



- An 8 kg object is pushed by a 12 N force to accelerate it from 2 m/s to 3 m/s.
 - BELOW THE DIAGRAM calculate the kinetic energies before and after and the work done.
 - How much energy was gained by the object (using the two kinetic energies)?
 - How much energy was given to the object (work)?
 - Calculate efficiency.

6. A rock is dropped from 25 m. Using Conservation of Energy, how fast is it going just before it hits the ground?

7. For each of the following elements tell me how many electrons they gain or lose. The first one is done for you.

- A. G 1 Chlorine
 B. Oxygen

- C. Sodium
 D. Argon

- E. Nitrogen
 F. Calcium

Electron Arrows — An easy visual aid.

<p><u>The Symbols</u></p> <p>→ Losing 1 electron</p> <p>> Gaining 1 electron</p> <p>→> An ionic bond</p>	<p><i>Magnesium loses 2 electrons</i></p> <p>$Mg^{2+} \rightarrow \rightarrow$</p> <p><i>Chlorine gains 1 electron</i></p> <p>$> Cl^{1-}$</p>	<p><i>Magnesium will combine with 2 Chlorines</i></p> <p>$Mg^{2+} \rightarrow \rightarrow Cl^{1-}$ $\rightarrow \rightarrow Cl^{1-}$</p> <p>Magnesium Chloride: $MgCl_2$ (a 1:2 ratio)</p>	<p><i>Magnesium Sulfide: MgS</i></p> <p>$Mg^{2+} \rightarrow \rightarrow$ <i>Loses 2</i></p> <p>$> >$ S^{2-} <i>Gains 2</i></p> <p>$Mg^{2+} \rightarrow \rightarrow S^{2-}$ MgS</p>
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8. Using electron arrows make ionic bonds for the following:

A. Lithium and Oxygen

B. Calcium and Fluorine.