Name: _____

Period: _____

Conservation of Energy

Text book pages 83-86

18

What does the word work really mean?_____

How are work and energy related?_____

Can you ever get more work out of a machine than you put into it? Explain._____

_____

What does efficiency mean?_____

How efficient would the ideal machine be and why?_____

What is the most efficient machine ever made and how efficient was it?_____

Explain what power means in physics._____

What is the unit for power and why is it named so?_____

How much horsepower is a 100 watt light bulb? Show your work?_____

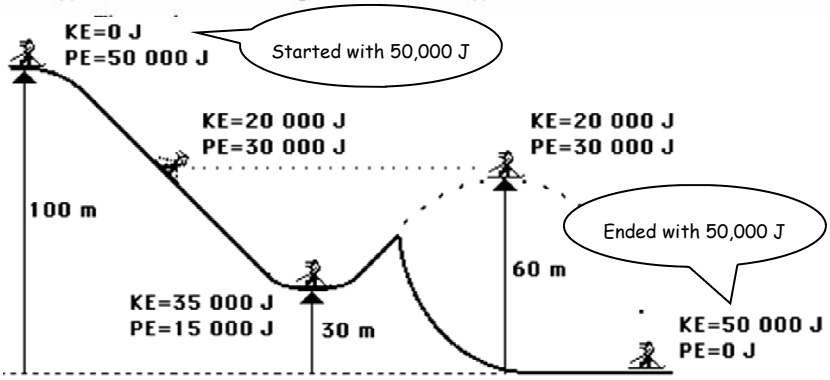
Law of Conservation of Energy: $E_{before} = E_{after}$
"Energy is never created nor destroyed, just transformed into other forms of energy."

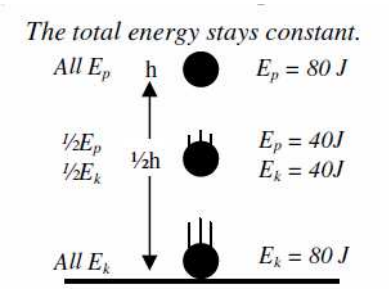
Energy Before Equals Energy After

Conservation of energy means energy is saved, retained. All the energy before an energy transformation must equal all of the energy afterwards OR $E_{before} = E_{after}$.

Remember our example of Li Ping Phar? She kept the same total amount of Mechanical Energy throughout the whole jump!

$TME = PE + KE$



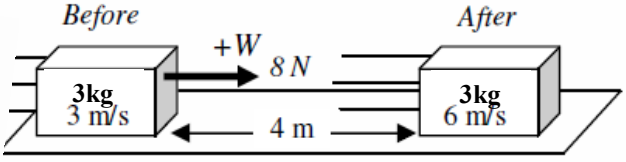


By Conservation of Energy if you know the height of the object at the top, you can find its speed at the bottom and vice versa!

Changing Energy Takes Work

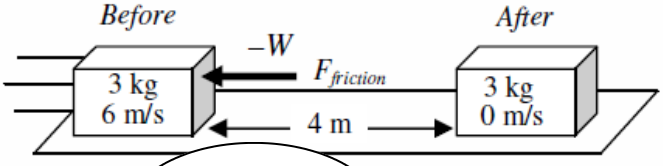
If energy is gained or lost during a transfer $E_{before} \neq E_{after}$. In order to change an object's energy work must be done, whether positive or negative. So, actually EB ± W = EA.

If the object's energy increases, add work: $E_{before} + W = E_{after}$.



Positive work adds energy!

If the object's energy decreases, subtract work: $E_{before} - W = E_{after}$.



Friction is a drag!

Negative work takes energy away!

Text book pages 91-92

What does it mean to transfer energy?_____

Draw an example of an energy transfer.

How does energy get "spent?"_____

Where did the energy go?_____

Describe in your own words the energy transfer that occurs in the Skate/Hill example._____

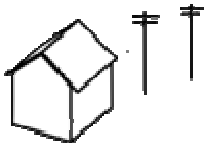
_____

_____

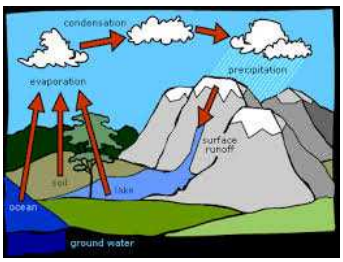
Draw a picture of your description.

Draw a picture of how the Water Cycle is used to give us radiant energy in a light bulb. Make sure that you account for any losses of energy during the total transfer. Make sure that you explain where the energy came from in the first place. Use the picture below and the textbook (pages 425-427) to help you with your picture. Label where there is Kinetic Energy (energy in motion) and Potential Energy (stored energy) transfers take place.

Power Lines



The Sun



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