

Energy

Many different forms of energy. Some of these are:

Kinetic Energy

Potential Energy

Nuclear

Chemical

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Kinetic Energy Formula

Example: p. 173 #3

$$KE = \frac{1}{2} m v^2 \rightarrow \begin{matrix} \text{VELOCITY} \\ (\text{m/s}) \end{matrix}$$

$$\begin{matrix} \text{mass} \\ (\text{kg}) \end{matrix}$$

$$J \rightarrow \text{kg} \frac{\text{m}^2}{\text{s}^2}$$

$$KE_1 = \frac{1}{2} (3g) \left(\frac{1kg}{1000g} \right) (40 \text{ m/s})^2 = 2.4 J$$

$$KE_2 = \frac{1}{2} (3g) \left(\frac{1kg}{1000g} \right) (80 \text{ m/s})^2 = 9.6 J$$

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Potential Energy Formulas

Gravitational and Elastic

Example: p. 177 #3

$$PE = m g \cdot h \rightarrow \begin{matrix} \text{Height} \\ (\text{m}) \end{matrix}$$

$$\begin{matrix} \text{mass} \\ (\text{kg}) \end{matrix}$$

$$J \rightarrow \text{kg} \frac{\text{m}^2}{\text{s}^2}$$

$$PE = \frac{1}{2} k x^2$$

$$PE = \frac{1}{2} (5.2 \frac{N}{m}) (3.57m - 2.45m)^2$$

$$PE = 3.26 J$$

$$PE = \frac{1}{2} k x^2 \rightarrow \begin{matrix} \text{DISTANCE} \\ (\text{m}) \end{matrix}$$

$$\downarrow$$

$$\text{Spring constant} \\ (\frac{N}{m})$$

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Mechanical Energy = Kinetic Energy + All forms of Potential Energy

Frictional forces, heat, sound, and light are forms of energy that one will not have to worry about yet in class.

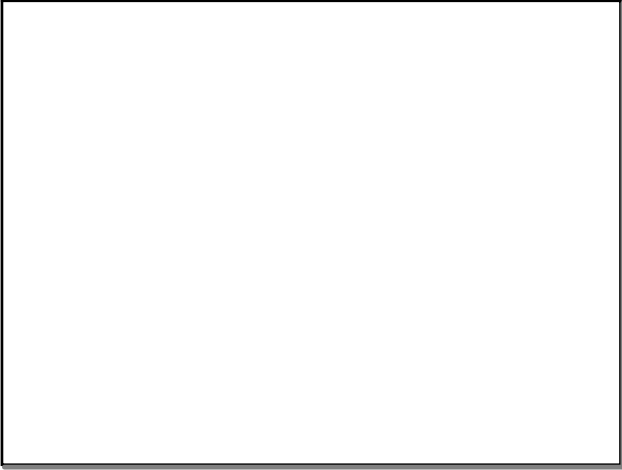
$$ME = KE + \text{ALL } PE$$

$$ME = KE + \sum PE$$

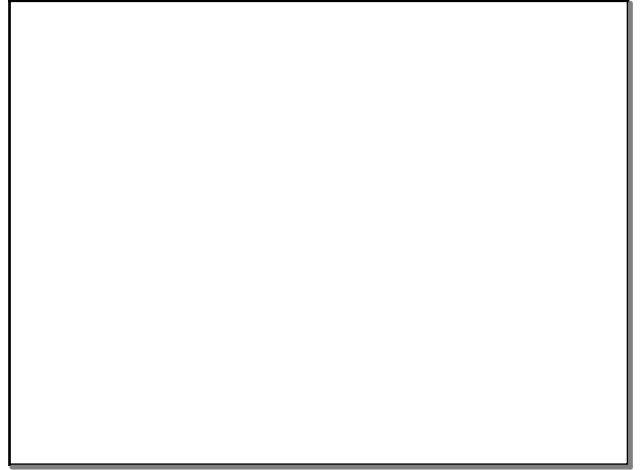
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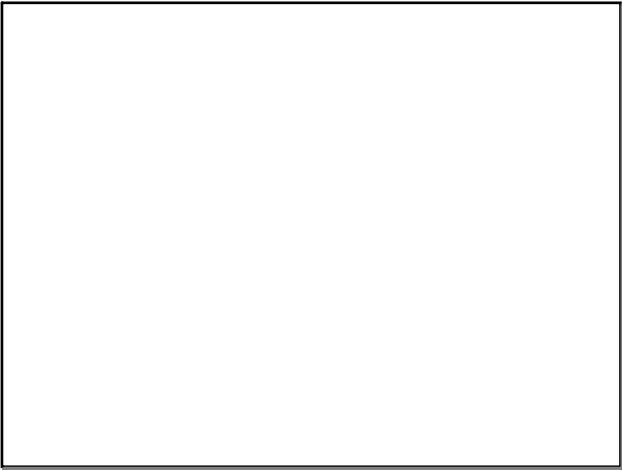
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