**Test date: Friday April 14**

**Physical Science**

**Chapter 9 Study Guide – Work and Energy**

* **Equations (Given on Test)**
	+ $F=ma$
	+ $a (gravity)=9.8\frac{m}{s^{2}}$
	+ $W=Fd$
	+ $P=\frac{W}{t}$
	+ $IMA=\frac{input distance}{output distance}$
	+ $AMA=\frac{output force}{input force}$
	+ $efficiency=\frac{AMA}{IMA}=\frac{useful work output}{work input}$
	+ $PE=mgh$
	+ $KE=\frac{1}{2}mv^{2}$
* **Vocabulary**
	+ Work
	+ Power
	+ Simple machine
		- Lever
			* 1st class
			* 2nd class
			* 3rd class
		- Pulley
		- Wheel and axle
		- Incline plane
		- Wedge
		- Screw
	+ Compound machine
	+ Mechanical advantage
		- Ideal mechanical advantage
		- Actual mechanical advantage
	+ Efficiency
	+ Potential energy
	+ Kinetic energy
	+ Law of Conservation of energy
* **Objectives**
	+ Solve problems involving work (including those with unit conversions and finding an alternate variable) using the work equation.
	+ Solve problems involving power (including those with unit conversions and finding an alternate variable) using the power equation.
	+ Classify simple machines and levers
	+ Use the concept of mechanical advantage to explain how machines make doing work easier
	+ Differentiate between ideal and actual mechanical advantage
	+ Calculate the ideal, and actual mechanical advantage of various simple machines.
	+ Calculate and analyze the efficiency of various simple machines
	+ Define potential energy and kinetic energy and give examples of each
	+ Calculate kinetic energy and gravitational potential energy
	+ Explain the law of conservation of energy