Name: Key

**Energy, Power, Machines Test Review (modified)**

**Potential and Kinetic Energy**

1. Energy is the ability to cause Change.
2. What type of energy to moving objects have; kinetic or potential?
3. How do you give an object more potential energy? increase height or mass. What about kinetic energy? increase mass or velocity
4. Kinetic energy is energy of moving object, potential energy is energy of stored energy or position
5. Mass measures the total amount of matter in an object. Weight is the force of gravity pulling on an object. What are the units for mass and weight? Kg N
6. A toy car has a mass of 4.5 kg, and a velocity of 3 m/s. What is the kinetic energy of the moving car? If $KE=1/2mv^2$? $KE = \frac{1}{2}(4.5)(3^2) = \frac{1}{2}(4.5)(9) = 20.25\ J$
7. What is the gravitational potential energy of a textbook with a mass of 3 kg on the top of a bookshelf with a height of 2m above the ground? Assume that acceleration due to gravity is 9.8 $m/s^2$.

$GPE = mgh = (3)(2)(9.8) = 58.8\ J$ units is J not N. it was a typo.

**Work**

1. Work requires a force to be applied and for an object to move in the same direction as the force ?
2. The unit for work is J.
3. How much work does an elephant do while moving a circus wagon 20m with a pulling force of 200N?

$W = Fd = (200)(20) = 4000\ J$

4. Sarah exerts a force of 4.5N on a book to slide it across a table. If Sarah does 2.7J of work in the process, how far did she move the book? $W = Fd \quad 2.7 = 4.5d \quad d = \frac{2.7}{4.5} = 0.6m$

**Power**

1. Power is how much work is done per unit of time?
2. The unit for power is watts.
3. If it takes 5s for you to do 1000J of work, what is your power output?

$P = \frac{W}{t} = \frac{1000}{5} = 200\ watts$