**Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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

**Potential and Kinetic Energy**

1. Energy is the ability to cause \_\_\_\_\_\_\_\_\_\_\_\_.
2. What type of energy to moving objects have; kinetic or potential?
3. How do you give an object more potential energy? What about kinetic energy?
4. Kinetic energy is energy of \_\_\_\_\_\_\_\_\_\_\_, potential energy is energy of \_\_\_\_\_\_\_\_\_\_.
5. Mass measures the total amount of \_\_\_\_\_\_\_\_\_\_\_ in an object. Weight is the force of \_\_\_\_\_\_\_\_\_\_ pulling on an object. What are the units for mass and weight?
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=1/2mv2?
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/s2.

**Work**

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

**Power**

1. Power is how much \_\_\_\_\_\_\_\_\_\_\_ is done per unit of time?
2. The unit for power is \_\_\_\_\_\_\_\_\_.
3. If it takes 5s for you to do 1000J of work, what is your power output?
4. If a runner’s power is 130W as he runs, how much work is done by the runner in 10min?
5. If you did 200J of work lifting a book, and you had a power output of 100W. How long did it take you to lift the book?

**Simple Machines and Mechanical Advantage**

1. Fill in the correct machine for each definition then sketch each machine.

\_\_\_\_\_\_\_\_\_- a bar that pivots around a fixed point to gain a mechanical advantage

\_\_\_\_\_ **class**  – the fulcrum is in the center of the lever

\_\_\_\_\_ **class** - the output force is in the center of the lever

\_\_\_\_\_**class –** the input force is in the center of a lever

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- a slanted plank along connecting different elevations

\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - a machine with a groove around which a rope can lift a weight. There are two types, fixed and movable. A fixed pulley changes only the direction, not the force. Mechanical advantage is calculated by counting the number or ropes supporting the weight

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_- machine that consists of two disks, each with a different radius

\_\_\_\_\_\_\_\_\_- an inclined plane wrapped around a center post

\_\_\_\_\_\_\_\_\_\_- an inclined plane that changes the direction of the input force

1. Define:

\_\_\_\_\_\_\_\_\_\_\_\_ is basically a force multiplier that tells you the ratio of resistance force to effort force.

1. What is the unit for mechanical advantage?
2. If an input force of 200 N is applied to a wheel barrow to lift a bricks with a weight of 1000 N. What is the mechanical advantage of this machine?
3. Suppose you need to remove a nail from a board by using a claw hammer. What is the input distance for a claw is 18 cm and the output distance is 3.0 cm. What is the mechanical advantage?
4. The mechanical advantage of an automobile’s wheel and axle is 0.0693. If the wheel’s output force is 1220 N, what is the input force that turns the axle?