POWER – HW WORKSHEET #1

1. Complete the table below:

Force (N)	Distance (m)	Time (sec)	Work (J)	Power (W)
100	2	5		
100	2	10		
100	4	10		
100		25	500	
	20	20	1000	
	30	10		60
9	20			60
3			75	5

2. Oliver weighs 600. N. He climbs a flight of stairs that is 3.0 meters tall in 4.0 seconds.

   a. How much work did he do?
   b. What was Oliver's power in watts?

3. An elevator weighing 6,000 N moves up a distance of 10.0 meters in 30.0 seconds.

   a. How much work did the elevator's motor do?
   b. What was the power of the elevator's motor in watt and in horsepower?

4. A television converts 12,000 joules of electrical energy into light and sound every minute. What is the power of the television?

5. After a large snowstorm, you shovel 2,500 kilograms of snow off of your sidewalk in half an hour. You lift the shovel to an average height of 1.5 meters while you are piling the snow in your yard.

   a. How much work did you do? Hint: The force is the weight of the snow.
   b. What was your power in watts? Hint: You must always convert time to seconds when calculating power.

6. The power of a typical adult's body over the course of a day is 100 watts. This means that 100 joules of energy from food are needed each second. An average apple contains 500,000 joules of energy. For how many seconds would an apple power a person?

   a. How many joules are needed each day?
   b. How many apples would a person need to eat to get enough energy for one day?

7. A mass of 1,000 kilograms of water drops 10.0 meters down a waterfall every second.

   a. How much potential energy is converted into kinetic energy every second?
   b. What is the power of the waterfall in watts and in horsepower

8. An alkaline AA battery stores approximately 12,000 J of energy. A small flashlight uses two AA batteries and will produce light for 2 hours. What is the power of the flashlight bulb? Assume all of the energy in the batteries is used.