**8th Grade Science Homework Menu Week #17**

Directions: You are to perform the following tasks on SEPARATE SHEETS OF PAPER and submit on Friday, March 7th. Each task is worth a specific amount of points. You NEED TO COMPLETE 20 POINTS worth of Homework to receive full credit.

**1. Define the following terms: (5 Points)**

a. work

b. power

c. energy

d. kinetic energy

e. potential energy

2. **Work Problems (5 Points)**

1.While working out at the gym, Ms. Overton uses her arms to exert a force of 200 N each time she lifts a weight 1 meter (She’s doing bicep curls). How much TOTAL work does Ms. Overton do in 6 lifts?

2. A mother bird uses 5 N of force to lift the baby bird 4 meters off the ground. How much work does the mother bird use?

3.How much work do I do if I pull a shopping cart 10 meters with a force of 15 N?

4. Give an example of a situation in which NO work is being done. Explain your example.

5. Give an example of a time when you did work. Explain your example.

3.**Power Problems (5 Points)**

1. The elevator is able to do 600 J of work in 3 seconds. What is the power output?
2. I do 50 J of work in 20 seconds. What is my power?
3. If your power is 20 Watts, and you want to do 60 J of work, how long will it take you?
4. Your power is 50 Watts, and it takes you 10 seconds to lift weights. How much work did you have to do to lift the weights?
5. Explain the **difference** between work and power.

4. **Work & Energy (10 Points)**

Write 2-3 paragraphs explaining the relationship between work and energy. Include **at least** two examples of work/energy transformations as part of your explanation.

5. **Work, Power, Potential Energy Problems** **(5 points)**

1. Katie throws a toy helicopter in the air to get it started. If Katie puts a 10 N force on the helicopter and it move her 15 meters, how much **work** did Katie do?
2. Godzilla is standing on top of the Empire State Building, 500m above the ground. If Godzilla has a mass of 100kg, what is his **potential energy**?
3. Katie lifts a book by doing 40 J of work in 0.5 s. How much **power** did Katie have?
4. What is the **potential energy** of a 10kg bird that is flying at an altitude of 200m?
5. You need to take your 3 kg dog to the vet, a distance of 90 meters. How much **work** are you doing?