Name: _____

Chapter 15 and 16 Math Practice

**Potential Energy Problems
Formula: PE = mgh   g= 9.8 m/s^2
1. Find the gravitational potential energy of a light that has a mass of 13.0 kg and is 4.8 m above the ground.

2. An apple in a tree has a gravitational potential energy of 175 J and a mass of 0.36 g. How high from the ground is the apple?

3. A marble is on a table 2.4 m above the ground. What is the mass of the marble if it has a gravitational potential energy of 568 J.

4. A box with a mass of 12.5 sits on the floor. How high would you need to lift it for it to have a GPE of 355J ?

5. A cart at the top of a 300 m hill has a mass of 40 kg. What is the cart's gravitational potential energy?

**Kinetic Energy Problems
Formula: KE = ½ mv^2
6. What is the kinetic energy of a jogger with a mass of 65.0 kg traveling at a speed of 2.5 m/s?

7. What is the mass of a baseball that has a kinetic energy of 105 J and is traveling at 10 m/s?

8. What is the kinetic energy of a 0.38 kg soccer ball that is traveling at a speed of 120 m/s?

9. What is the kinetic energy of a 0.50 kg ball travelling at a speed of 120 m/s ?

10. What is the kinetic energy of a 0.50 kg ball that is travelling at a speed of 40 m/s?

Heat Problems

Formula: Q = mcΔT

11. How much heat must be absorbed by 375 grams of water to raise its temperature by 25° C? (The specific heat of water is 4.18 J/g°C.)

12. What mass of water can be heated from 25.0° C to 50.0° C by the addition of 2825 J? (The specific heat of water is 4.18 J/g°C.)

13. How much energy is required to raise the temperature of 345.34g of aluminum from 35.0°C to 250.0°C ? The specific heat of aluminum is 0.90 J/g°C.

14. What is the specific heat of a substance that has a temperature increase of 30°C when 3200J of heat are added to a 100g sample?

15. What is the temperature change of 250g of water that has 1980J of heat added to it? (The specific heat of water is 4.18 J/g°C.)