Energy Calculations 2016 Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period \_\_\_\_\_\_\_\_

1. Draw a Venn diagram comparing and contrasting kinetic and potential energy.

2. List the equations along with all units for the following: kinetic energy, potential energy, and heat.

 KE ( ) =

 PE ( ) =

 Heat ( ) =

3. Sketch a ball thrown up into the air and falling, and label the following: 100% KE, 100% PE, 50% KE, 50% PE, 0% KE, 0% PE

4. Which has more potential energy: a 5.3 kg bowling ball at a height of 5 meters OR a baseball that is 0.145 kg at a height of 100 meters? (Show work for full points.)

5. A shot putter heaves a 7.26kg shot with a final velocity of 7.5m/s. What is the KE of the shot?

6. There is a bell at the top of a tower that is 45m high. The bell weighs 190N.
 a. What is the bell’s PE?

 b. What is the bell’s maximum velocity?

7. How high would a water balloon launched at 6.5 m/s go up?

8. A skateboarder was at the top of a 20.0-meter ramp. How fast would the skateboarder be able to go?

9. Determine the average kinetic energy of a 65 kg-person that runs 15 kilometers in 93 minutes.

10. What is the change in temperature for a 2-kg mass of water that loses 8,500 J of energy?

11. When 1,500 joules of energy is lost from a 0.12-kg object, the temperature decreases from 45 degrees C to 40 degrees C. What is the specific heat of this object?

12. A volume of water has a mass of 0.5 kilograms. If the temperature of this amount of water was raised by 7 degrees C, how much heat energy is produced? (Specific Heat of Water = 4.184 J/g K)

13. I push my son on the swing 12 times at the park. He goes higher and higher and higher! Why does he slow down and eventually come to a complete stop?

14. Explain the Law of Conservation of Energy. Draw a picture showing how the KEmax = PEmax.