1. 800 g of water are warmed from 10 °C to 80 °C. **How much energy** in J were absorbed?

2. 700 g of water are allowed to cool from its boiling point to 20 °C. **How much energy in** kJ were released into the room? 1kJ=1000J

3. **How many <u>kJ</u> of energy** must a heater supply in order for 200 kg of bathwater to warm up from 10 °C to our body temperature of 37 °C?

4. If 9000 J of heat are absorbed by 800 g of water at 5 °C, **what will be its final temperature?**

5. 800 kJ were absorbed by a pond, sending its temperature rising from 20 °C to 25 °C. **How much water was in the pond?**

6. **Find the specific heat capacity** of a material that lost 41 900 J of energy when 200 g of the material went down 50 °C in temperature.

7. The temperature of a piece of Metal X with a mass of 95.4g increases from 25.0°C to 48.0°C as the metal absorbs 849 J of heat. What is the specific heat of Metal X?

8. When 435 J of heat is added to 3.4 g of olive oil at 21°C, the temperature increases to 85°C. What is the specific heat of the olive oil?

9. A piece of stainless steel with a mass of 1.55 g absorbs 141 J of heat when its temperature increases by 178°C. What is the specific heat of the stainless steel?

10. How much heat is required to raise the temperature of 250.0 g of mercury by 52°C? C=140 J/kg°C

11. How many kilojoules of heat are absorbed when 1.00 L of water is heated from 18°C to 85°C? *(Hint: You first need to determine the mass of the water, then calculate q in the requested unit, 1L = 1000mL.)*

12. A piece of aluminum with a mass of 100.0 g has a temperature of 20.0°C. It absorbs 1100 J of heat energy. What is the final temperature of the metal? C=902J/kg°C

13. An unknown metal has a mass of 18.0 g. If the temperature of the metal sample rises from 15.0°C to 40.0°C as the sample absorbs 89.0 J of heat, what is the specific heat of the sample? Now look at your periodic table and choose a metal that is most likely the identity of the sample.

KEY:

1. 234640J
2. 234.640KJ
3. 22626KJ
4. 7.68°C
5. 38.1862kg
6. 4190 J/kg°C
7. 387 J/kg°C
8. 1999 J/kg°C
9. 511 J/kg°C
10. **1820 J**
11. 280.73 kJ
12. **32.2°C**
13. 198 J/g°C