Specific Heat Problems

Name:_____
Date:_____ **Per:**_____

1. Define each of the variables in the formula for specific heat: $q=mc\Delta T$

   q=

   m=

   c=

   ΔT=

Some Common Specific Heat Values	
Water (l)	4.18 J/g°C
Aluminum (s)	0.908 J/g°C
Ammonia (g)	2.189 J/g°C
Lead (s)	0.128 J/g°C
Mercury (l)	0.139 J/g°C
Copper (s)	0.398 J/g°C
Silver (s)	0.235 J/g°C

2. Calculate the amount of heat needed to raise the temperature of a 100g block of aluminum 10°C.

3. Calculate the mass of a sample of mercury if 35.0 J of heat raises the temperature 5°C.

4. If 375 J of heat energy are added to 35.0 g of H_2O, what is the temperature change?

5. If a 5.4g lead block is cooled from 550°C to 30°C, how much heat is released?

6. If 136J of heat is removed from 76g of water that starts is 45°C calculate the final temperature of the water.

Use the following information to answer questions 7-10.

A calorimeter is a device used to measure heat given off by a substance or reaction. This calorimeter is used to find the initial temperature of a hot block of metal. There are 25 g of water inside the calorimeter. A 18g block of silver is placed in the calorimeter and the temperature of the water changes from 17.5°C to 35°C. Assume that the final temperature of the water is equal to the final temperature of the silver.

7. Calculate the heat absorbed by the water.

8. Calculate q for the silver. Remember that heat released by the silver is equal to heat absorbed by the water.

9. Calculate the temperature change for the silver.

10. Calculate the initial temperature of the silver.

Questions 11-15: For the following real world situations, explain the benefit or cause, based on what you know about specific heat.

11. Expensive aluminum pots and pans have cooper on the bottom.

12. On a hot day, vinyl car seats will not burn you as much as metal seat buckles.

13. The ocean in September is warmer than the ocean in May.

14. Fruit growers spray water on their trees to fight a spring frost.

15. When cooking something in an oven, you would burn yourself more by touching aluminum foil than a ceramic dish.