Name: _____ Period: _____

Heat Problems, Part Deux (Thermochemistry)

Specific Heats:

Aluminum (s)	0.900 J/g °C	PCl_3 (s)	0.874J/g °C
Iron (s)	0.470 J/g °C	CCl_4 (s)	0.856 J/g °C
H_2O (s)	2.06 J/g °C	H_2O (l)	4.18 J/g °C
H_2O (g)	2.02 J/g °C	Cs (s)	0.246 J/g °C
Cs (l)	0.242 J/g °C	Cs (g)	0.156 J/g °C

Melting Points:

H_2O	0.0°C	Cs	28.5°C

Boiling Points:

H_2O	100.0°C	Cs	671.0°C

Find the answers the following questions. Show all of your work the same way you would for a test.

1. How much heat is required to raise the temperature of 40.0 g sample of solid PCl_3 from 20.0°C to 80.0°C?

Answer: _____

2. How much heat is required to raise the temperature of 8.77 g of solid cesium from –75.0°C to +75.0°C?

Answer: _____

3. How much heat is lost when a solid aluminum ingot with a mass of 4110 g cools from 660.0°C to 25.0°C?

Answer: _____

4. If an iron cube is given 4125 J of heat and its temperature rises from 10.0°C to 80.5°C, what is the mass of the iron?

Answer: _____

5. If 1250 J of heat are added to 42.5 g of iron, what will its final temperature be if it is currently at a comfortable 23.5°C?

Answer: _____

6. You have a sample of H_2O with a mass of 250 g. How many Joules of heat energy are necessary to:

A) Warm the sample from -40.0°C to -15.0°C?

Answer: _____

B) Warm the sample from 15.0°C to 40.0°C?

Answer: _____

C) Warm the sample from 115°C to 140°C?

Answer: _____

7. A 45.0 g sample of Cesium metal is heated from 24.0°C using 3600 J of energy. What is its final temperature? Is this reasonable? Explain.

Answer: _____

Answer: _____

8. An 50.0 g sample of an unknown metal is heated to a temperature of 100.0°C and then dropped into some cold water whose temperature is 20.0°C. The water warmed up to 25.0 °C as the metal cooled to the same temperature.

A) How much heat did the water gain?

Answer: _____

B) How much heat did the metal lose?

Answer: _____

C) What is the heat capacity of the metal?

Answer: _____