Specific Heat Worksheet #2

Name: _____ Per: ___ Seat: ___

Directions: Calculate the following showing **ALL** work to receive credit.
Formula **Q = mcΔT**, where **Q** is heat in joules, **c** is specific heat capacity in J/g°C, **m** is the mass in grams, and **delta T** is the change in temperature in °C.

Q	Work	Answer with Units!
1	How much heat is lost when a 640 g piece of copper cools from 375 °C, to 26 °C? (The specific heat of copper is 0.38452 J/g°C)	
2	The specific heat of iron is 0.4494 J/g°C. How much heat is transferred when a 24.7 kg iron ingot is cooled from 880 °C to 13 °C	
3	How many grams of water would require 2.20 x 10^4 calories of heat to raise its temperature from 34.0 °C to 100.0 °C? (Remember the specific heat of water is 1.00 cal/g x °C)	
4	8750 J of heat are applied to a piece of aluminum, causing a 56 °C increase in its temperature. The specific heat of aluminum is 0.9025 J/g °C. What is the mass of the aluminum?	
5	Find the mass of a sample of water if its temperature dropped 24.8 °C when it lost 870 J of heat.	
6	Find the specific heat of an unknown metal with an initial temperature of 16.0 °C, when 3500 Joules are applied to a 40.0g sample and the final temperature is 81.0 °C.	

Q	Work	Answer with Units!
7	What must be the specific heat of a sample of an unknown material of 36.359g, when 59.912 J of heat are applied raising the temperature 152.0°C?	
8	What would be the final temperature of a 73.174g sample of cobalt with an initial temperature of 102.0 °C, after it loses 6800 J? (Note the specific heat of cobalt is 0.4210 J/g°C)	
9	How much heat is gained when a 50.32 g piece of aluminum is heated from 9.0°C to 16°C?	
10	How many degrees would the temperature of a 450 g ingot of iron increase if 7600 J of energy are applied to it? (The specific heat of iron is 0.4494 J/g°C)	
11	A 250 g sample of water with an initial temperature of 98.8 °C loses 7500 joules of heat. What is the final temperature of the water?	
12	Copper has a specific heat of 0.38452 J/g°C. How much change in temperature would the addition of 3,500 Joules of heat have on a 538.0 gram sample of copper?	

Substance	Specific Heat (J/g·°C)
Air	1.05
Aluminum	0.899
Carbon dioxide	0.841
Copper	0.385
Iron	0.448
Lead	0.129
Nickel	0.444
Tin	0.222
Water	4.184
Zinc	0.385