NAME: _______________

Specific Heat Capacity

Use $\Delta E_h = mc\Delta T$ to solve the following problems.

1. How much heat is needed to raise the temperature of 90.0 kg of water from 18˚C to 80°C?

23.4 MJ

2. If 1.0 MJ (megajoule) of heat is transferred to 10.0 kg of water initially at 15˚C, what will its final temperature be?

38.8˚C

3. If 12.0 kg of water cools from 100°C down to room temperature (20°C), how much heat will it release to the environment?

-4.032 MJ (negatives indicates energy given off)

4. Why is water such a desirable material to use as a coolant in a car engine?

5. If it takes 1200 J to raise the temperature of 0.500 kg of brass from 20.0˚C to 26.2°C, what is the specific heat capacity of brass?

c = 387 J/kg/˚C

6. How much heat would be needed to warm 1.6 kg of ice from -15°C up to its melting point of 0.0°C?

50.4 kJ

7. A 5.0 kg block of lead at 250°C cools down to 20°C. How much heat does it give off in doing so?

-149.5 kJ (negative implies energy given off)

Table of Specific Heat Capacities

SUBSTANCE	**(J/kg/˚C)**	**SUBSTANCE**	**(J/kg/˚C)**
water	4200	steam	2100
methyl alcohol	2400	aluminum	920
ethylene glycol (antifreeze)	2200	glass	840
ice	2100	iron	450
kerosene	2100	copper	430
		lead	130