Section 4B Review

Name: _____

1) Draw a wave that is 4 wavelengths long and label the wavelength, crest, trough, and amplitude

2) A wave has a wavelength of 9.6×10^{-5} m. What is the frequency of the wave? How much energy is in the wave?

3) Draw a diagram of the electromagnetic spectrum from radiation of shortest to longest wavelength and label the order of radiation types.

4) For each of the seven forms of radiation, list an application or use of the type of radiation.

5) A calorimeter containing 78 g of water at an initial temperature of 26.0 ^{O}C has 16.5 g of RbOH added to it. The temperature of the water raises to 40.2 ^{O}C. How much heat was gained by the water?

6) What is the specific heat of a 27.6 g metal sample increases temperature from 34.6 ^{O}C to 42.7 ^{O}C when 157.7 J of heat are added?

7) How much heat is absorbed by ice when 19.0 g of ice is heated from -15 ^{O}C to water at 83 ^{O}C?

8) The following data was collected in the lab for an experiment to determine the specific heat of a metal:

Mass of empty calorimeter	4.2 g
Mass of calorimeter and cold water	131.6g
Temperature of cold water	22.2 ^{O}C
Mass of piece of metal	121.9 g
Temperature of piece of metal	89 ^{O}C
Final temperature of water after metal was placed in water	24.5 ^{O}C

What is the specific heat of the metal?

9) What causes the greenhouse effect? Why is the greenhouse effect necessary for human life?

10) When sodium hydroxide is placed in water, an exothermic reaction occurs that heats the water. In lab experimentation, 14.6 grams of sodium hydroxide is placed in 123 g of water at 19.1 ^{O}C and the water heats up to 50.7 ^{O}C. How much heat per gram is released by the sodium hydroxide?

11) A 10.0 g piece of ice is placed in a styrofoam cup of warm water containing 95 g of water. After the ice cube is dropped in the water, the ice cube melts and the water cools to 27 OC. What was the initial temperature of the warm water?