Chemistry 1140 Exam One **Name** _____

All work must be shown to get full credit. Five points will be deducted if a pen is used.

1. (8 points) Indicate the number of significant figures underneath each of the following quantities.

a) 0.002 cm b) 6.07 kg c) 0.10 ns d) 7.50×10^4 J

2. (4 points) Indicate which of the following are exact relationships.

a) 1 inch = 2.54 cm ( ) exact ( ) not exact

b) 1 gallon = 3.8 L ( ) exact ( ) not exact

c) 100 cm = 1 m ( ) exact ( ) not exact

d) 1 pound = 454 g ( ) exact ( ) not exact

3. (6 points) Circle the units that are part of the SI system.

Celsius degree calorie joule milliliter kelvin second

4. (8 points) A box has a volume of 956.2 in^3. What is the volume in liters? (Use 1 inch = 2.54 cm.)

5. (4 points) Identify the following as either a physical or chemical property.

a) sodium burns in the presence of chlorine gas ( ) chemical ( ) physical

b) mercury is a liquid at room temperature ( ) chemical ( ) physical

c) limestone gives off carbon dioxide when heated ( ) chemical ( ) physical

d) water boils at 100º C at sea level ( ) chemical ( ) physical

6. (10 points) Complete the following table.

isotope	atomic nbr	mass nbr	protons	neutrons
		74	32	
^{84}Kr				
			1	0

7. (12 points) Complete the following table. Calculations need not be shown, but do use scientific notation when appropriate.

Hz	kHz	MHz
	7.2	
5.6×10^{4}		
		6.3×10^{-6}

8. (6 points) Make the following temperature conversions. Calculations need not be shown.

a) 100.50 ºC to K b) –122 ºC to K c) 775 K to ºC

9. (10 points) Mercury has a density of 13.6 g/mL. How many mL of mercury would one need to have 0.225 kg?

10. (12 points) If 150.0 g of metal at 100.0º C is added to 80.0 g of water at 18.5º C, the water heats up to 29.6º C. What is the specific heat of the metal? The specific heat of water is 4.184 J/g·ºC. (Hint: first find the heat flow into the water.)

11. (8 points) Give the answer for each mathematical operation.

46.2 + 209 =

25.47 x 0.0038 =

(42.72 – 0.1) x 0.6832 =

431.67 + 3.11 + 1.0 =

12. (12 points) Name each element. Use the proper spelling.

Mg	B
Ca	Co
Ni	Si
Li	Ar
F	K
V	Ti