Name:_____ **Student #**:_____

PLEASE TEAR OFF THE SCRATCH SHEET AT THE END OF THIS EXAM. There are 12 questions on this examination totaling 104 points (exam is out of 100 pts), spanning 6 pages. You have 1.5 hours to complete this examination and may only use a basic scientific calculator. <u>All work must be shown for credit (unless otherwise stated) AND all answers must be expressed with the proper amount of significant figures</u>. Clearly write your name of the scratch sheet of paper and submit at the end of the examination period. If you need additional scratch paper, please raise your hand. Please sign the honor code below, when complete.   If you need further clarification, please raise your hand.   *Good Luck!*
HONOR CODE: I followed the rules set-forth and all presented work below is my own.

Signature: _____

1. Please fill-in the table below with the proper information. The chemical name must be spelled correctly to receive credit. *(8 pts total, 1 pt each)*

Name	**Symbol**
	As
Sulfur	.
Phosphorus	
	Se
Cobalt	
	Al
Sodium	
	Ti

2. Please fill-in the chart below with the appropriate response. *(6 pts total, 1.5 pts. each)*

"Decimal" Value	**Scientific Notation**	**Number of Significant Figures**
	9.990×10^{-3}	
770.		

3. Please provide the best response for the following questions. *Each blank 1.5 pts each, unless otherwise stated.* **(27 pts total).**

a. Wine is an example of a <u>homogeneous</u> *or* <u>heterogeneous</u> mixture? **Circle one.**

b. <u>True or False</u> *(circle one):* A persons weight in kg is always greater than their weight in pounds.

c. <u>True or False</u> *(circle one):* Condensation is the process of converting from a liquid to a gaseous state.

d. Two cubes have the same volume but are made of two different metals. The cube of Metal A has a lower mass than the cube of Metal B. Which metal is least dense: <u> A   or   B</u> ? *(circle one)*

e. Is water an <u>   element   *or*   a compound</u>? *(circle one)*

f. This phase of matter takes the shape of its container and does not have a definite volume:

    _____.

g. Water freezes at _____ K, _____ °F, and _____°C. *(3 pts)*

h. An example of diatomic molecule (**symbol, in correct notation please**) is _____.

i. A 12 ounces sample of coca cola contains 39 grams of sucrose.   This corresponds to _____ kcals of energy from sucrose. The number of food calories from sucrose are _____.

j. Which process requires less energy: <u>100 g of water from 0 to 55 °C</u> *or* <u>100 g of water from 25 to 76 °C</u> ?

k. Physical or Chemical Change?

    i.   Chocolate candy melts in my car_____

    ii.   Aluminum is torn into small pieces _____.

l. One "clue" that a chemical reaction has occurred is _____.

m. The following result should have _____ significant figures *(3 pts)*?   ***10.9300 g – 0.98 g***

4.   Please specify the indicated values for the metric prefixes below. *(7.5 pts. total, 1.5 pts each)*

Metric Prefix	Prefix Value
10^6	
	centi
10^{-3}	
	giga
10^{-9}	

5.   At a popular restaurant, where Chang is the head chef, following occur *(8 pts total)*
   a.   Chang determines that sales of the Chef's salad have dropped.
   b.   Chang decides the salad needs a new dressing.
   c.   In the taste tests, four bowls of lettuce are prepared with four new dressings: sesame seed, oil and vinegar, blue cheese and anchovies.
   d.   The tasters rate the sesame seed dressing the best.
   e.   After two weeks, salad sales have doubled with the sesame seed dressing.
   f.   Chang decides that the sesame seed dressing improved the sales of the Chef's salad because the dressing improved the taste.

   Which of the following is/are experiment(s):   _____ *[list letter(s)]*

   Which of the following are hypothesis(es):   _____*[list letter(s)]*

   Which of the following is/are a theory(ies):   _____*[list letter(s)]*

6.   The specific heat of gold is 0.129 J/g* ^{o}C. If a gold sample absorbs 25.47 J of energy, when heated from

   25.0^{o}C to 44.3 ^{o}C, the mass of the gold is _____. ***Show work for credit.*** *(4 pts total)*

7. *Please fill in the table below.*   *(18 pts total, 2 pts each.)*

Without doing extensive calculations (you do not need to show work), **circle** the quantity that is **larger** in value. *(18 pts total, 2 pts each.)*	
a.	35 Gigabytes or 35 Terabytes
b.	0.75 qt or 1.0 pt.
c.	1 L or 1 qt
d.	7.0 miles or 7.0 kilometers
e.	250.0 ^{o}F or 100.0 ^{o}C *(Which is colder?)*
f.	88.9 kJ or 88.9 cal
g.	10 gallons or 10 liters
h.	4 feet or 60 inches
i.	1 meter or 1 yard

8. A sample is found to have a temperature of 44.4 ^{o}F. This temperature is _____ K and _____ ^{o}C. ***Show work for credit.*** *(5 pts total, 3 and 2 pts. each, respectively)*

9. A hummingbird weighs 0.0067 kg. The mass of the bird in grams (expressed in scientific notation) is
    _____. ***Show dimensional analysis work for credit.*** *(4 pts)*

10. A trip to the beach is about 14.5 miles from my home. How many centimeters is this 14.5 mile distance?
    Show dimensional analysis work for credit. *(5 pts)*

11. If a person is trying to keep their daily intake to 1450 kcal, with 35% total kcal coming from protein and
     40% total kcal from carbohydrates, <u>how many grams of fat</u> is the person limited to? Assume only fat, carbs
     and protein in this percentage. ***Show work for credit.*** *(5 pts)*

You may wish to rotate this page 90 degrees and use the long edge of the page to answer these problems.

12. A particular cell used to fight cancer has mass of 7.89 x 10^{-5} lb cell per cup of cell solution. A doctor orders 6.9 μg of this cell to be administered to a patient in an IV. How many cm^3 or cc of the cell solution should be pushed? *(8 pts)*

Resource Sheet   **NAME:_____**

1 cal = 4.184 J

q = mcΔT

Scratch Sheet NAME:_____