Name: _____ Period: _____

Honors Chemistry
2015-2016
Summer Assignments

Student Information
Please go to the following website. Fill out the form and submit it. http://goo.gl/forms/NTqYZj4eRu

Pages 2 and 3
Read and summarize chapter 3. Each section should be summarized in one or two paragraphs. Include the definitions for all the blue bold words in the text (also in parenthesis next to the section number).

Pages 4 - 7
Use your textbook, notes from previous classes, notes on the worksheets and the internet to answer the questions on worksheets 1-4. The topics include scientific notation, metric conversions and significant figures.

Page 8
Memorize the glassware on page 9.

Page 9
Read the safety rules. Sign and have your parent/guardian sign on the bottom

Pages 10
Please have your parents complete this sheet.

There will be a quiz during the first day or two of school that includes: glassware, the metric system, conversions, scientific notation and significant figures.

If you have any questions or need any help completing the assignments, please feel free to contact Mrs. Wahba or Mrs. Beckstedt
Email: mwahba@wscloud.org or abeckstedt@wscloud.org
Moodle: Honors Chemistry

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Chapter 3 Summaries
Scientific Measurement

Section 3.1 (measurement, scientific notation, accuracy, precision, accepted value, experimental value, error, percent error, significant figures)

Section 3.2 (international system of units, meter, liter, kilogram, weight, temperature, Celsius scale, Kelvin scale, absolute zero, energy, joule, calorie)

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Section 3.3 (conversion factor, dimensional analysis)

Section 3.4 (density)

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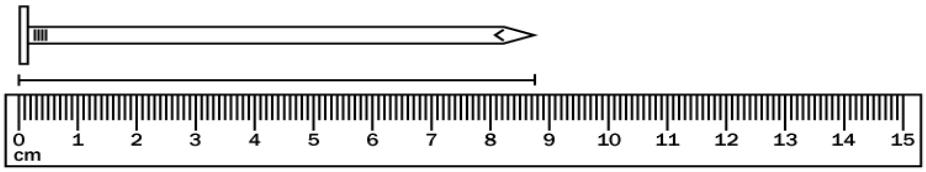
Worksheet 1 – Measurements

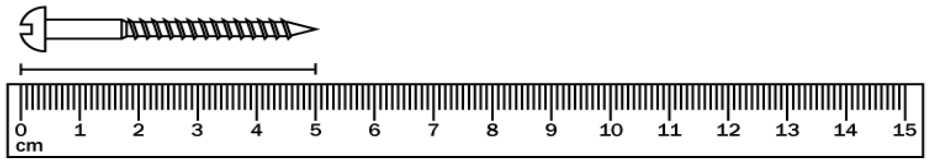
When taking measurements, you read the smallest increment on your measuring device and estimate one more digit. For example if you have a ruler that has the smallest increments (lines) marked every meter, your measurement should be recorded to the tenth of meter.

1. Read the following ruler measurements.

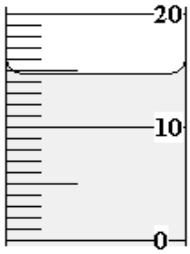
a) _____



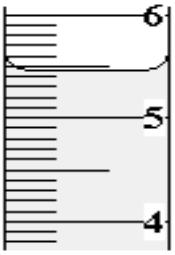
b) _____



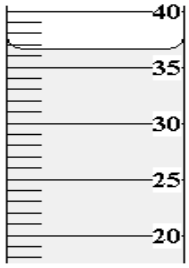
2. Read the following graduated cylinder measurements.



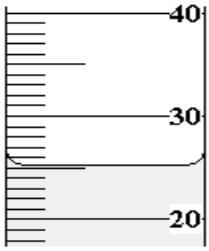
a) _____



b) _____

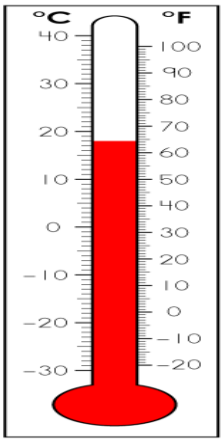


c) _____

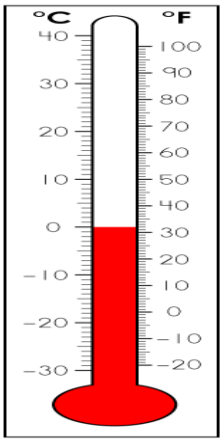


d) _____

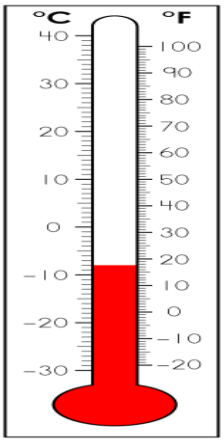
3. Read the following temperature measurements in degrees Celsius.



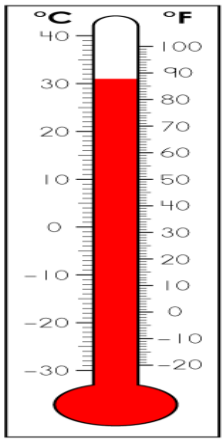
a) _____



b) _____



c) _____



d) _____

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Worksheet 2 – Metric Conversions & Scientific Notation

In the chemistry classroom and lab, the metric system of measurements is used so it is important to be able to convert from one unit to another.

Mega	Kilo	Hecto	Deca	**Basic Unit**	Deci	Centi	Milli	Micro
M	k	h	da	**Gram (g)**	d	c	m	μ
10^6	10^3	10^2	10^1	**Liter (L)**	10^{-1}	10^{-2}	10^{-3}	10^{-6}
1000000	1000	100	10	**Meter (m)**	0.1	0.01	0.001	0.000001

Factor label Method

1. Write the given number and unit.
2. Set up a conversion factor (fraction used to convert one unit to another).
   a) Place the given unit as denominator of conversion factor.
   b) Place desired unit as numerator.
   c) Place a "1" in front of the larger unit.
   d) Determine the number of smaller units needed to make "1" of the larger unit.
3. Cancel units. Solve the problem.

Example 1: 55 mm = _____ m

$$\frac{55\ \text{mm}}{} \left| \frac{1\ \text{m}}{1000\ \text{mm}} \right. = 0.055\ \text{m}$$

Example 2: 88 km = _____ m

$$\frac{88\ \text{km}}{} \left| \frac{1000\ \text{m}}{1\ \text{km}} \right. = 88{,}000\ \text{m}$$

Example 3: 7000 cm = _____ hm

$$\frac{7000\ \text{cm}}{} \left| \frac{1\ \text{m}}{100\ \text{cm}} \right| \frac{1\ \text{hm}}{100\ \text{m}} = 0.7\ \text{hm}$$

Example 4: 8 daL = _____ dL

$$\frac{8\ \text{daL}}{} \left| \frac{10\ \text{L}}{1\ \text{daL}} \right| \frac{10\ \text{dL}}{1\ \text{L}} = 800\ \text{dL}$$

1. Convert the following.

a) 35 mL = _____dL **d) 1000 L = _____ kL** **g) 25 cm = _____ mm**

b) 950 g = _____ kg **e) 1000 mL = _____ L** **h) 0.005 kg = _____ dag**

c) 275 mm = _____ cm **f) 4500 mg = _____ g** **i) 0.075 m = _____ cm**

2. Convert the following to scientific notation. Ex: 1,500,000 = 1.5 x 10^6 ; 0.000025 = 2.5 x 10^{-5}

d) 0.005 = _____ **c) 0.00000025 = _____** **e) 5000 = _____**

e) 0.520 = _____ **d) 1005000 = _____** **f) 1200 = _____**

3. Convert the following to standard form.

a) 2.5 x 10^4 = _____ **c) 0.90 x 10^5 = _____** **e) 6.7 x 10^8 = _____**

b) 3.6 x 10^{-3} = _____ **d) 0.78x 10^{-2} = _____** **f) 5.9 x 10^{-6} = _____**

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Worksheet 3 – Significant Figures

The rules for determining the number of significant figures are:

- All digits 1-9 inclusive are significant. Ex: 129 has 3 significant figures.
- Zeros between significant digits are always significant. Ex: 5007 has 4 significant figures.
- Trailing zeros in a number are significant only if the number contains a decimal point. Ex: 100.0 has 4 significant figures, 100 has 1 significant figure.
- Zeros in the beginning of a number whose only function is to place the decimal point are not significant. Ex: 0.0034 has 2 significant figures.
- Zeros following a decimal significant figure are significant. Ex 0.000470 has 3 significant figures, 0.47000 has 5 significant figures.

<u>Or</u> you can use the "dot right, not left" method. This means:

- If you have a dot (decimal point), then you start at the rightmost end of your number and go towards the left until you reach the last non-zero digit. This number and all numbers to the right of it are significant. Ex: 0.002020 has 4 sig figs, 2.9400 has 5 sig figs.
- If you do not have a decimal point, then you start at the leftmost end of your number and go towards the right until you reach the last non-zero digit. This number and all the numbers to the left of it are significant. Ex: 10200 has 3 sig figs

1. Determine the number of significant figures in the following numbers.

a) 263 _____ d) 0.505 _____ g) 10200 _____

b) 45309 _____ e) 0.000070 _____ h) 800 _____

c) 0.0022 _____ f) 900. _____ i) 0.3000 _____

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Worksheet 4 – Calculations with Significant Figures

When multiplying and dividing, limit and round to the least number of significant figures in any of the original number.
Example: 23.0 cm x 432 cm x 19 cm = 188,784 cm^3 which rounds to **190,000 cm^3**.
23.0 has 3 sig figs, 432 cm has 3 sig figs, 19 has 2 sig figs so the answer should have 2 sig figs (the least number of significant figures).

When adding and subtracting, linit and round your answer to the least number of decimal praces in any of the number that make up your answer.
Example: 123.5 mL + 46.0 mL + 86.257 mL = 255.507 mL which rounds to **255.5 mL**.
123.5 and 46.0 are significant to the tenths place, 86.257 is significant to the thousandths place, so the answer so be rounded to the tenths place (least number of decimal places.)

Perform the following operations and express your answer with the correct number of significant figures.

1) 1.35 m x 2.467 m =

2) 1035 m^2 ÷ 42 m =

3) 12.01 mL + 35.2 mL + 6 mL =

4) 55.46 g – 28.9 g =

5) 0.021 cm x 3.2 cm x 100.1 cm =

6) 0.15 cm + 1.15 cm + 2.051 cm =

7) 150 L^3 ÷ 4 L =

8) 505 kg – 450.25 kg =

9) 1.252 mm x 0.115 mm x 0.012 mm =

10) 1.278 x 10^3 m^2 ÷ 1.4267 x 10^2 m =

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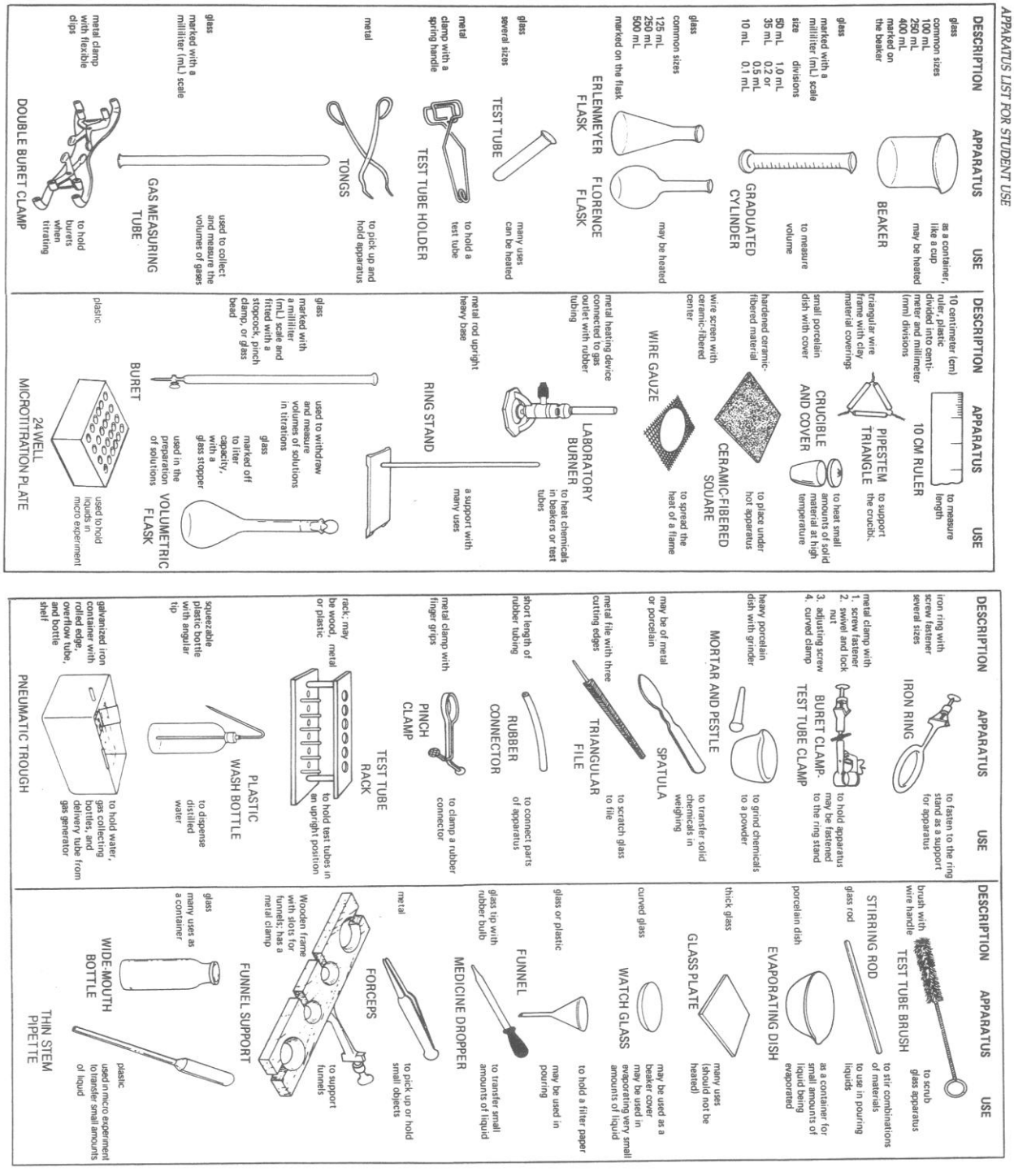
Glassware

Memorize the following glassware/equipment:
Graduated cylinder, beaker, Erlenmeyer flask, tongs , beaker tongs, test tube, test tube holder, ring stand, iron ring (ring clamp), clay triangle (pipestem triangle), wire gauze, evaporating dish, buret, test tube rack, squirt bottle, forceps, pipette, stirring rod, Bunsen burner, spatula, scoopula, funnel, volumetric flask, test tube brush, watch glass, weigh boat, cell wells, thermometer, goggles.



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Safety Instructions for the Chemistry Laboratory

1. All students must wear safety goggles during laboratory activities.
2. Never taste chemicals or drink from a beaker in the laboratory. Food or drink is not permitted in the laboratory.
3. Always waft odors toward your nose with you hand. Never breathe odors directly, nor ask your partner to do so.
4. Wash your hands after handling chemicals.
5. Never wear expensive clothing if laboratory work is to be done. You need to wear a chemically resistant apron during lab.
6. Treat a test tube contents you are heating with extreme caution. Never point it in anyone's direction. Never heat a test tube that is more than half full. Keep a test tube moving in the flame. Never heat a closed test tube.
7. Always douse any area with a lot of water if it has contacted acid or caustic material. If the eye is involved, irrigate it in the eyewash for 15 minutes.
8. Flasks and beakers should be clamped to ring stands in addition to being supported on wire gauze and a ring.
9. Sink drains should be flushed thoroughly with water after discarding reagents.
10. When disposing of chemicals, follow the directions given by the teacher.
11. Never return unused solutions to the stock container or reagent bottles. Read the directions carefully to find out how much you need to minimize waste.
12. When diluting acids, always add the acid to the water.
13. Inspect glassware for cracks prior to use. Take cracked glassware to the teacher. Dispose of all broken glassware in the proper container.
14. If you feel faint or nauseous, begin to cough excessively or your eyes begin to water, inform your teacher. You may be having a reaction to some of the chemicals being used in the laboratory. Remember that not everyone reacts in the same way to all chemicals.
15. You should maintain a quiet behavior during lab. Never rush. Always be prepared to stop quickly and listen to teacher direction
16. Do not carry hot equipment or dangerous equipment through a group of students.
17. Do not wear loose clothing, flowing sleeves, and dangling jewelry. If your hair is shoulder length or longer, tie it back when using the burner.
18. Never leave a Bunsen burner unattended.
19. Do not wear open toed shoes during any lab.
20. Finally, most of the chemistry activities have been done by many students before you. Over the years, laboratory activities have proven to be safe. We hope that your experience in lab will be a safe one and that your experience will make you more safety conscious in all aspects of your life.

I HAVE READ THE ABOVE SAFETY REGULATIONS AND UNDERSTAND THAT I MUST FOLLOW THESE REGULATIONS IN ORDER TO WORK IN THE LABORATORY.

_____	_____	_____
Name of Student	**Signature of Student**	**Date**

I HAVE SEEN THE SAFETY REGULATIONS THAT MY CHILD HAS READ AND SIGNED.

_____	_____	_____
Name of Guardian	**Signature of Guardian**	**Date**

Name: _____ Period: _____

Parent Information Sheet

Name of parent(s) or guardian(s) and their relationship to the student

_____

Phone number(s) and e-mail address(es) of each parent or guardian

_____

_____

What is the best way to contact you? _____

Does your child have any medical problems or **allergies** that I should know of? This is very important.

_____

_____

What can you tell me about your child? (characteristics, hobbies, likes/dislikes, achievements, culture, etc….). You may use the back if you like.

_____

_____

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