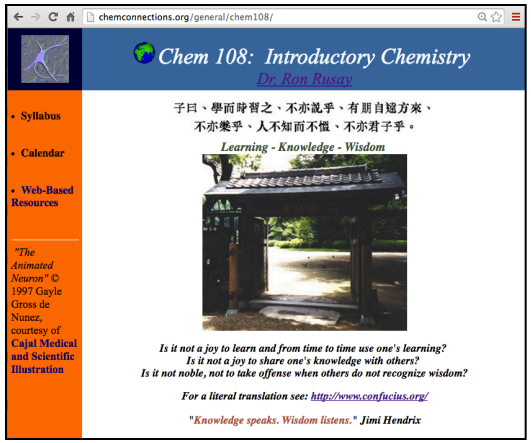
Chem 108

Introductory Chemistry

http://chemconnections.org/general/chem108/



Class: MW 11:10-12:35 (PS 275)

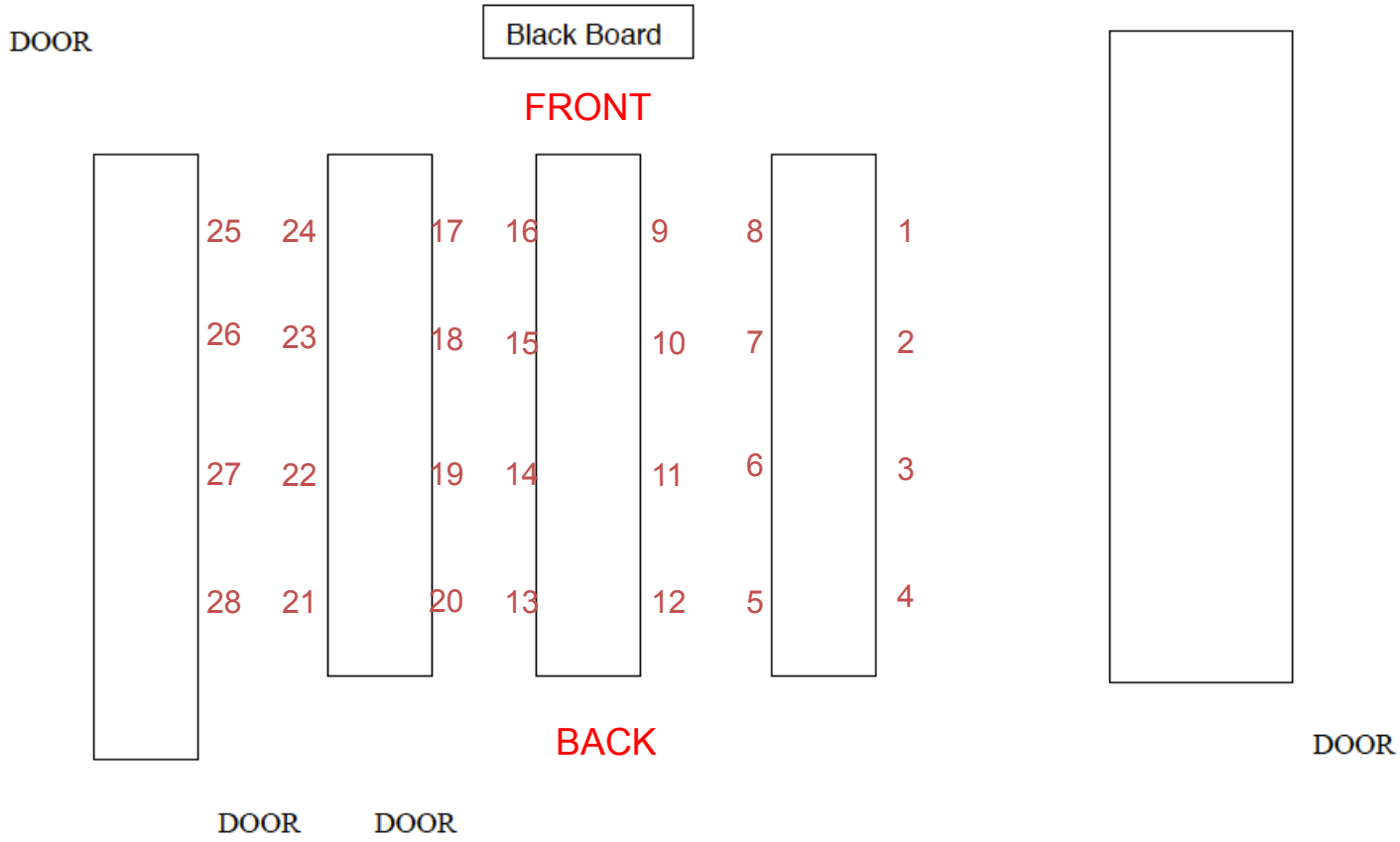
Discussion/Lab:
12:45-3:55 M (PS 221) *sec. 2102*
12:45-3:55 W (PS 221) *sec. 2116*

Dr. Ron Rusay
E-mail: rrusay@chemconnections.org (preferred)
or rrusay@dvc.edu

- **Please sign the roster next to your name on the clipboard that is at the front of lab.**
- **If your name does not appear, please stand at the back of the lab.**

Chem 108

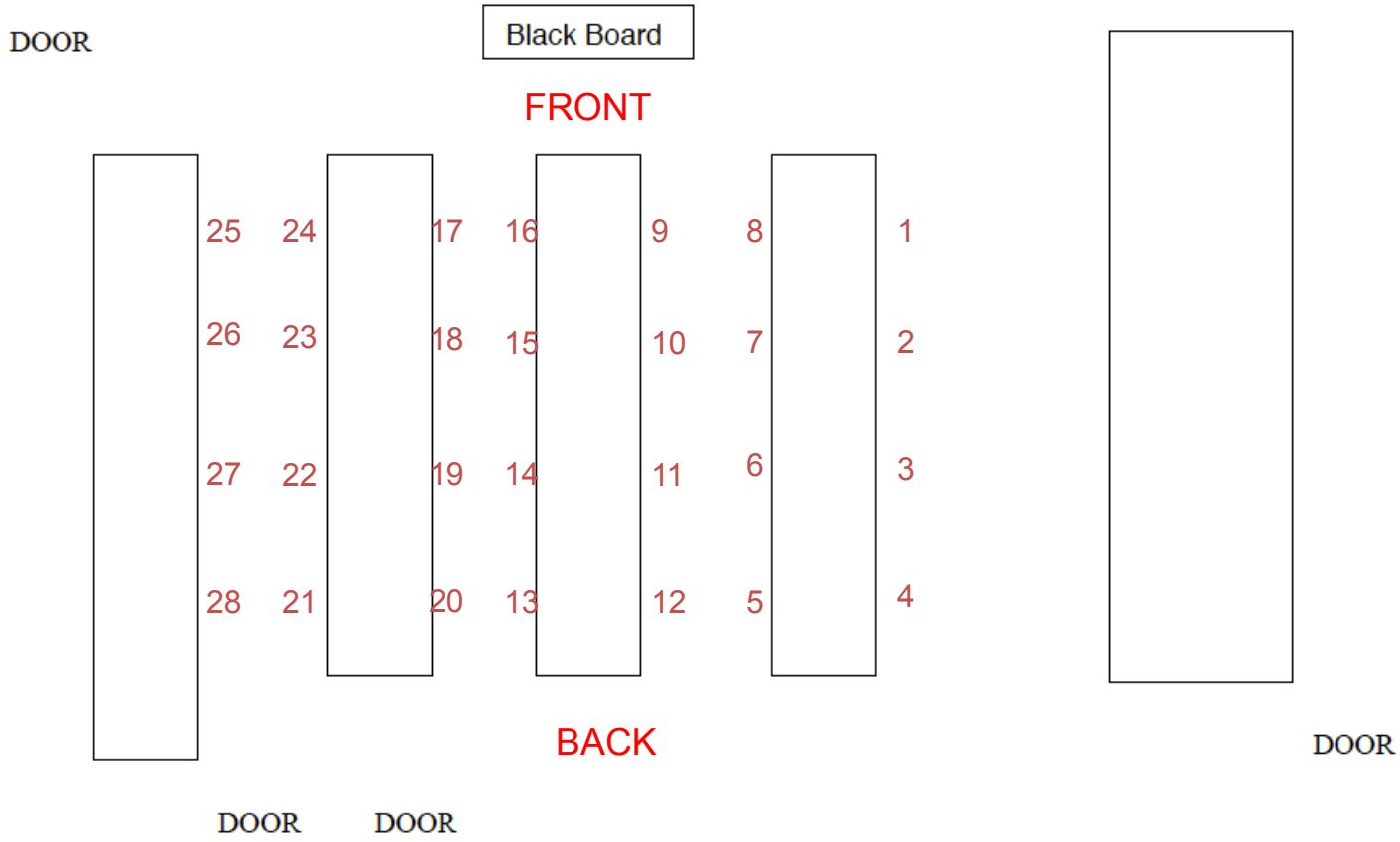
Lab Map



Class size is limited to a maximum of 28 due to lab safety. Anyone on the roster who is absent today will be placed at the end of the wait listed and new sign-ins. **28 lab drawers** will be assigned today to the first 28 signed in on the roster. **Add codes will be provided as needed at the end of lab today.**

Chem 108

Lab Map



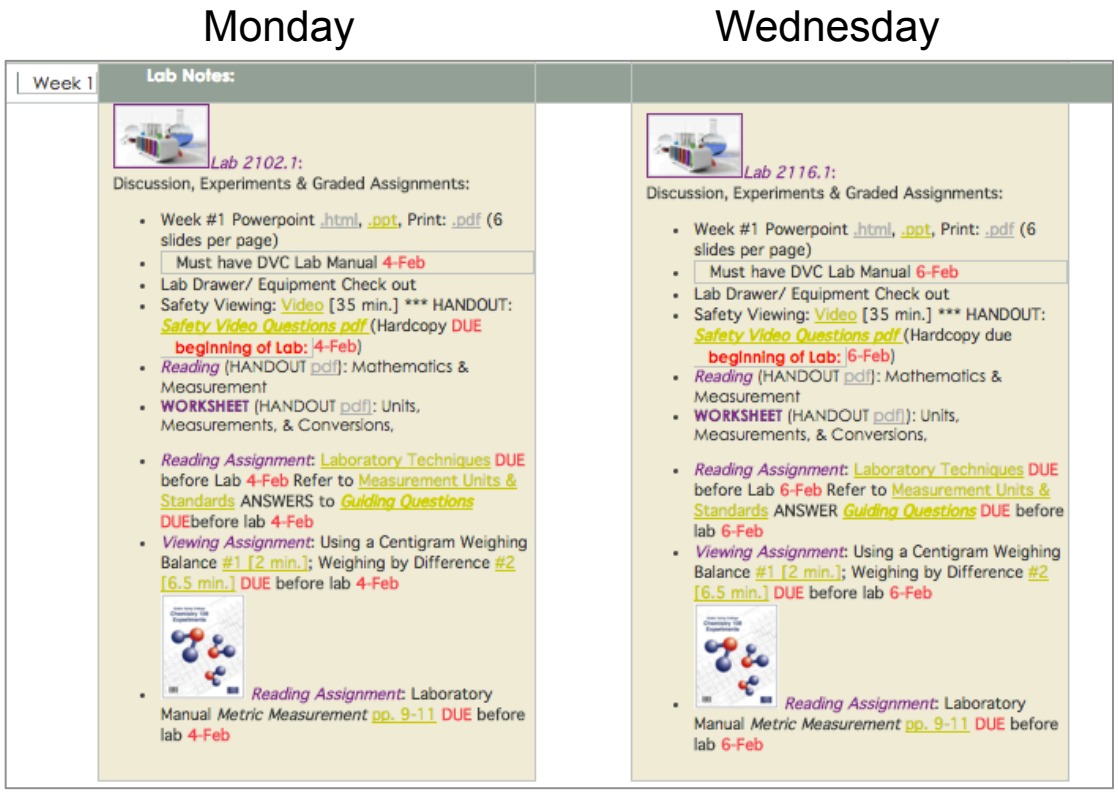
- If you are on the roster & signed in, select one of the numbered lab stations in the above lab map and then move to that location. (1 per station)
- Introduce yourself to one or more of the classmates around your station; Describe what other courses you are taking this semester to them and learn what your classmate(s) is (are) taking.

Chem 108: Lab

http://chemconnections.org/general/chem108/calendar-108-s19.html

Take out your smart phone or get a laptop from the front of the lab.

Open DVC wifi.
Connect to the Internet.
Go to:
http://chemconnections.org/general/chem108/



Week 1	Monday	Wednesday
	Lab Notes:	
	Lab 2102.1: Discussion, Experiments & Graded Assignments: • Week #1 Powerpoint .html, .ppt, Print: .pdf (6 slides per page) • Must have DVC Lab Manual 4-Feb • Lab Drawer/ Equipment Check out • Safety Viewing: Video [35 min.] *** HANDOUT: *Safety Video Questions pdf* (Hardcopy DUE beginning of Lab: 4-Feb) • *Reading* (HANDOUT pdf): Mathematics & Measurement • **WORKSHEET** (HANDOUT pdf): Units, Measurements, & Conversions, • *Reading Assignment*: Laboratory Techniques DUE before Lab 4-Feb Refer to Measurement Units & Standards ANSWERS to *Guiding Questions* DUEbefore lab 4-Feb • *Viewing Assignment*: Using a Centigram Weighing Balance #1 [2 min.]; Weighing by Difference #2 [6.5 min.] DUE before lab 4-Feb • *Reading Assignment*: Laboratory Manual *Metric Measurement* pp. 9-11 DUE before lab 4-Feb	*Lab 2116.1*: Discussion, Experiments & Graded Assignments: • Week #1 Powerpoint .html, .ppt, Print: .pdf (6 slides per page) • Must have DVC Lab Manual 6-Feb • Lab Drawer/ Equipment Check out • Safety Viewing: Video [35 min.] *** HANDOUT: *Safety Video Questions pdf* (Hardcopy due beginning of Lab: 6-Feb) • *Reading* (HANDOUT pdf): Mathematics & Measurement • **WORKSHEET** (HANDOUT pdf): Units, Measurements, & Conversions, • *Reading Assignment*: Laboratory Techniques DUE before Lab 6-Feb Refer to Measurement Units & Standards ANSWER *Guiding Questions* DUE before lab 6-Feb • *Viewing Assignment*: Using a Centigram Weighing Balance #1 [2 min.]; Weighing by Difference #2 [6.5 min.] DUE before lab 6-Feb • *Reading Assignment*: Laboratory Manual *Metric Measurement* pp. 9-11 DUE before lab 6-Feb

Click on Calendar link

Refer to [***Lab Notes:*** Week #1 Powerpoint link] for today's lab.
Links for subsequent labs will be provided throughout the semester.

Doing: Lab Experiments

Safety

(Video & Handout)

http://chemconnections.org/general/chem108/Lab/Safety_focus_ques-18.pdf

Names: _____

LAB SAFETY: Chem 108

I. *Answer the following in a complete sentence based on common sense and the Safety Video: (If not sure simply write: Not sure.)*

1. What is the safest way to pour liquids that are stored in large bottles?

2. What should be done with any excess chemicals from your experiments?

3. What are 2 ways of heating a test tube?

4. What may you eat or drink in the lab?

5. When must safety glasses be worn in lab?

6. What should be done immediately when an accident occurs?

7. What should you do if you spill chemicals on the lab bench? ..... on yourself?

8. What should you do if your clothes catch on fire? ..... if it is your lab partner's?

9. Where do you properly dispose of the following in the Chem 106 laboratory:

   a. broken glass

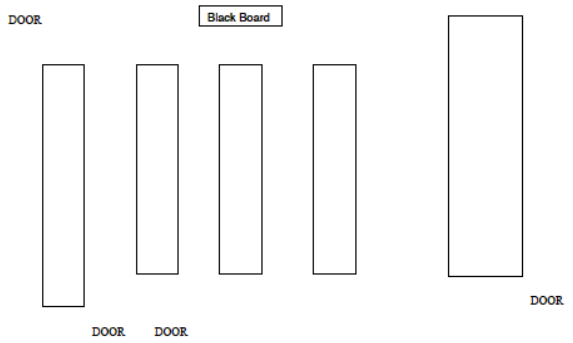
   b. used matches

   c. chemical waste

   d. acids

10. Complete the following map of the lab. Mark your lab station with an X. Identify on the map the following items.

    Eye wash fountain, safety shower, fire extinguishers, sinks, fire blanket, fume hoods, fire alarm, Exits.



Have map page signed by Dr. R. before leaving Lab today.
Completed handout due Week #2 before beginning experiment.

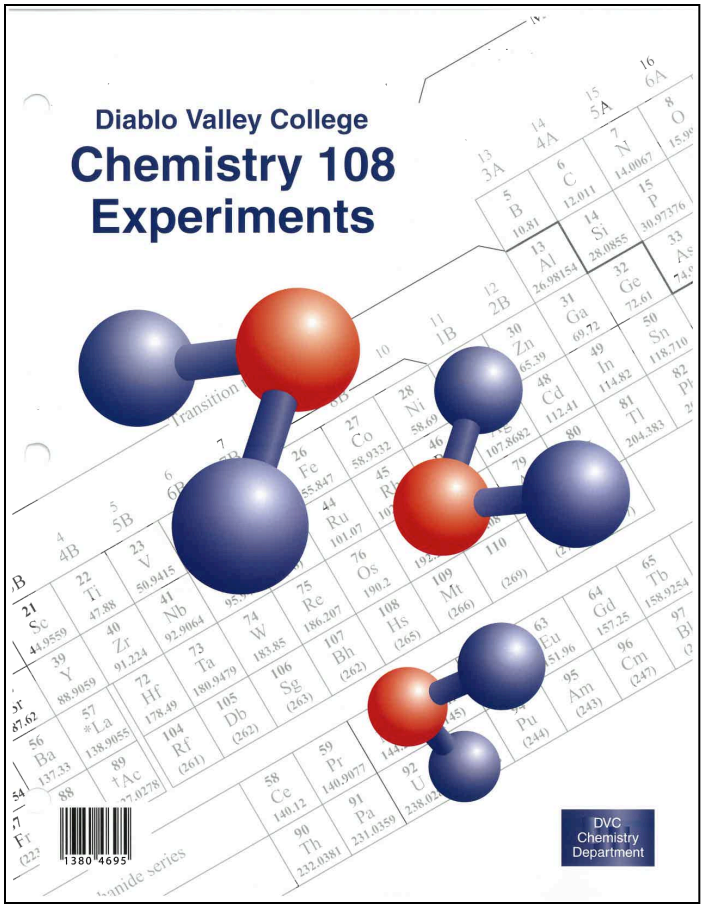
Doing: Lab Experiments

Safety

(Video & Handout)

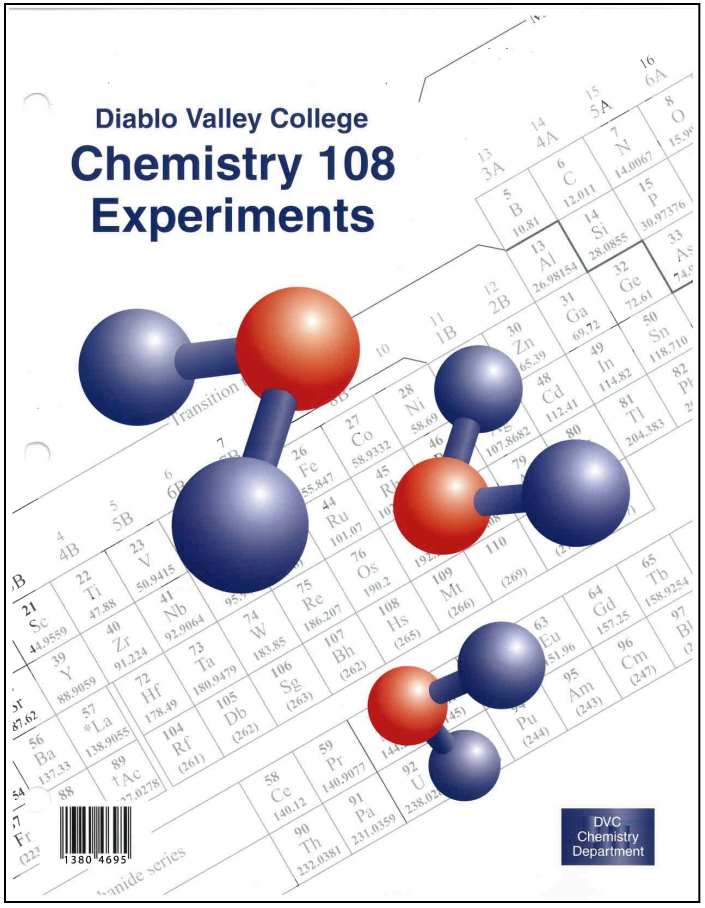
http://chemconnections.org/general/movies/Safety_Video.mp4/

Lab Drawer Check Out



Follow instructions

Lab Drawer Check Out



PURCHASE a copy of the Lab Manual @ the DVC Bookstore before the next lab.

Doing: Lab Experiments

Metric Measurement [Experiment #1: Week 2]

(Course/ Lab Manual pp. 9-11; pp. 12-15 [Report Form])

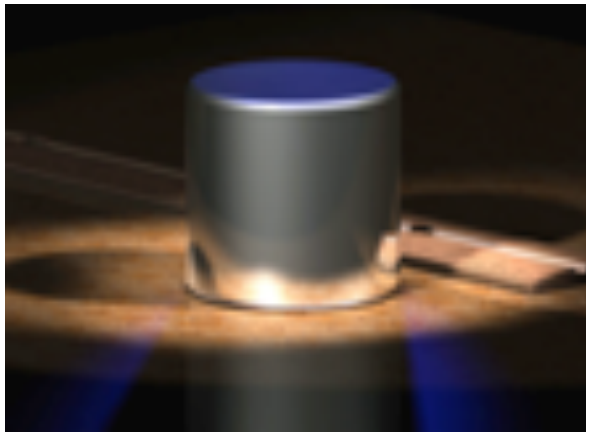
http://chemconnections.org/general/chem108/calendar-108-s19.html

Week 1	**Lab Notes:**	
	 *Lab 2102.1*: Discussion, Experiments & Graded Assignments: • Week #1 Powerpoint .html, .ppt, Print: .pdf (6 slides per page) • Must have DVC Lab Manual 4-Feb • Lab Drawer/ Equipment Check out • Safety Viewing: Video [35 min.] *** HANDOUT: *Safety Video Questions pdf* (Hardcopy DUE beginning of Lab: 4-Feb) • *Reading* (HANDOUT pdf): Mathematics & Measurement • **WORKSHEET** (HANDOUT pdf): Units, Measurements, & Conversions, • *Reading Assignment*: Laboratory Techniques DUE before Lab 4-Feb Refer to Measurement Units & Standards ANSWERS to *Guiding Questions* DUEbefore lab 4-Feb • *Viewing Assignment*: Using a Centigram Weighing Balance #1 [2 min.]; Weighing by Difference #2 [6.5 min.] DUE before lab 4-Feb  • *Reading Assignment*: Laboratory Manual *Metric Measurement* pp. 9-11 DUE before lab 4-Feb	 *Lab 2116.1*: Discussion, Experiments & Graded Assignments: • Week #1 Powerpoint .html, .ppt, Print: .pdf (6 slides per page) • Must have DVC Lab Manual 6-Feb • Lab Drawer/ Equipment Check out • Safety Viewing: Video [35 min.] *** HANDOUT: *Safety Video Questions pdf* (Hardcopy due beginning of Lab: 6-Feb) • *Reading* (HANDOUT pdf): Mathematics & Measurement • **WORKSHEET** (HANDOUT pdf): Units, Measurements, & Conversions, • *Reading Assignment*: Laboratory Techniques DUE before Lab 6-Feb Refer to Measurement Units & Standards ANSWER *Guiding Questions* DUE before lab 6-Feb • *Viewing Assignment*: Using a Centigram Weighing Balance #1 [2 min.]; Weighing by Difference #2 [6.5 min.] DUE before lab 6-Feb  • *Reading Assignment*: Laboratory Manual *Metric Measurement* pp. 9-11 DUE before lab 6-Feb

Doing: Lab Experiments (NEXT WEEK)

Metric Measurement [Experiment #1]

(Course/ Lab Manual pp. 9-11; pp. 12-15 [Report Form])



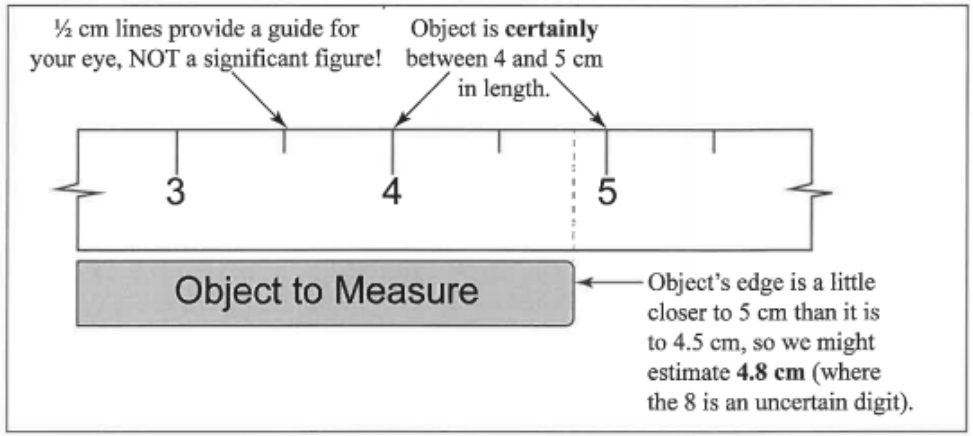


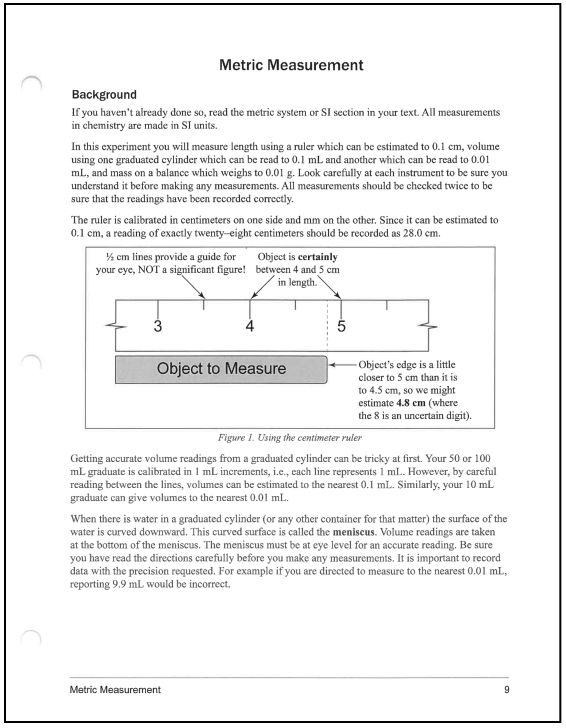
Figure 1. Using the centimeter ruler

Doing: Lab Experiments (NEXT WEEK)

Metric Measurement [Experiment #1]

(Course/ Lab Manual pp. 9-11; pp. 12-15 [Report Form])

http://chemconnections.org/general/chem108/calendar-108-s19.html



Metric Measurement

Background

If you haven't already done so, read the metric system or SI section in your text. All measurements in chemistry are made in SI units.

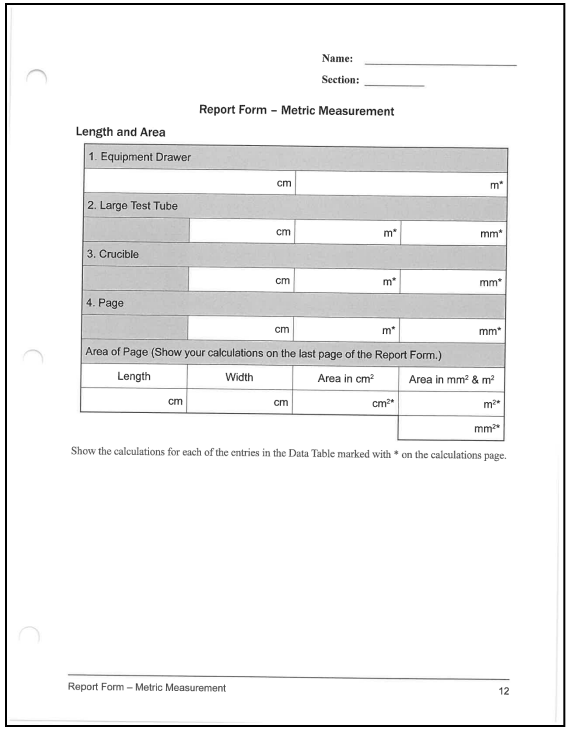
In this experiment you will measure length using a ruler which can be estimated to 0.1 cm, volume using one graduated cylinder which can be read to 0.1 mL and another which can be read to 0.01 mL, and mass on a balance which weighs to 0.01 g. Look carefully at each instrument to be sure you understand it before making any measurements. All measurements should be checked twice to be sure that the readings have been recorded correctly.

The ruler is calibrated in centimeters on one side and mm on the other. Since it can be estimated to 0.1 cm, a reading of exactly twenty–eight centimeters should be recorded as 28.0 cm.

Figure 1. Using the centimeter ruler

Getting accurate volume readings from a graduated cylinder can be tricky at first. Your 50 or 100 mL graduate is calibrated in 1 mL increments, i.e., each line represents 1 mL. However, by careful reading between the lines, volumes can be estimated to the nearest 0.1 mL. Similarly, your 10 mL graduate can give volumes to the nearest 0.01 mL.

When there is water in a graduated cylinder (or any other container for that matter) the surface of the water is curved downward. This curved surface is called the **meniscus**. Volume readings are taken at the bottom of the meniscus. The meniscus must be at eye level for an accurate reading. Be sure you have read the directions carefully before you make any measurements. It is important to record data with the precision requested. For example if you are directed to measure to the nearest 0.01 mL, reporting 9.9 mL would be incorrect.



Name: _____

Section: _____

Report Form – Metric Measurement

Length and Area

1. Equipment Drawer			
	cm		m*
2. Large Test Tube			
	cm	m*	mm*
3. Crucible			
	cm	m*	mm*
4. Page			
	cm	m*	mm*
Area of Page (Show your calculations on the last page of the Report Form.)			
Length	Width	Area in cm^2	Area in mm^2 & m^2
cm	cm	cm^{2*}	m^{2*}
			mm^{2*}

Show the calculations for each of the entries in the Data Table marked with * on the calculations page.

Collaboration is encouraged, but individual record keeping and submissions are required.

Doing: Lab Experiments (Submit before NEXT WEEK)

Metric Measurement [Experiment #1]

Background & Preparation [Graded Guiding Questions]

http://chemconnections.org/general/chem108/Measurements.Units-Guide.html

Measurement: Units & Standards

Refer to the guiding questions below. Open:
http://chemconnections.org/general/chem106/measurement.html
View the links and complete the guiding questions.

* Required

Name: Last, First *

DVC id *

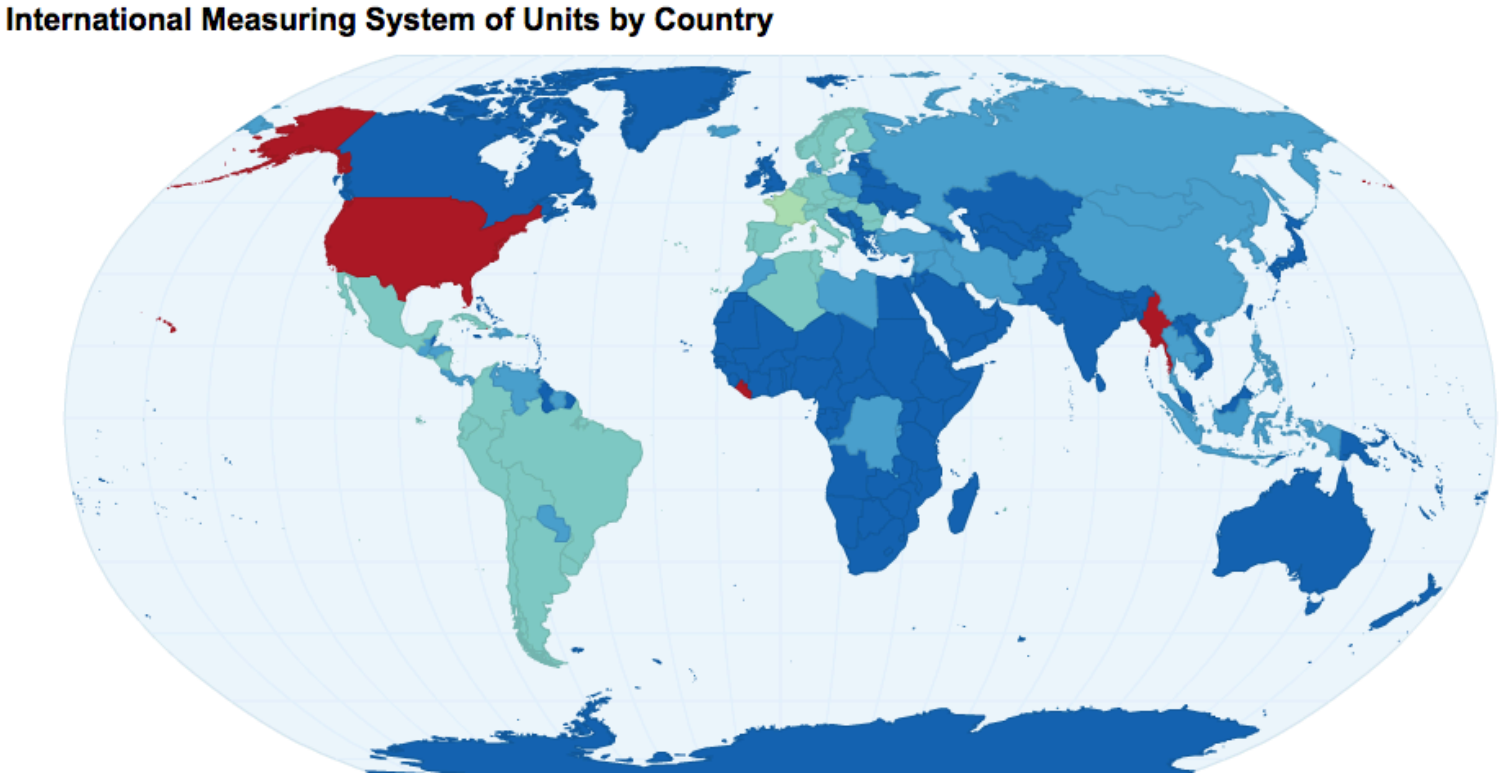
Units of Measurement

Base Units	*U.S.*	*SI*	*Chemistry*
Mass (weight)	Pound (lb)	Kilogram (kg)	"Gram" (**g**, mg)
Volume	Gallon (gal)	Liter (L)	"Liter" (**mL**, L)
Temperature	Fahrenheit (^oF)	Kelvin (K)	K & Celsius (^oC)
Length	Mile (mi), Feet(ft), Inches (in)	Meter (m)	"Meter" (**cm**, mm, nm)
Time		Second (s)	Second (s)
			Mole (mol)

International SI units are based on the metric system, not the English units commonly used in the U.S.

Countries using “English” Units

in red



All other countries use the metric system.

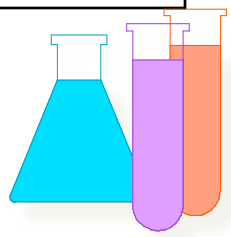
English : Metric Comparisons

Measurement & Units

International SI units & common units in Chemistry

- MASS (Chem 108: gram; SI: kg; other mg)
- LENGTH (Chem 108: cm & mm; SI: m; other km)
- TEMPERATURE (Celsius & Kelvin; SI: K)
- VOLUME (Chem 108: mL; SI: Liter; other dL)
- CHEMICAL AMOUNT: mole (mol); SI: (mol); other (mmol)

SI units are based on the metric system, not the English units commonly used in the U.S.



Language describes scale (prefixes)

Shorthand Prefixes

Table: SI prefixes

Factor	Name	Symbol	Factor	Name	Symbol
10^{24}	yotta	Y	10^{-1}	deci	d
10^{21}	zetta	Z	10^{-2}	centi	c
10^{18}	exa	E	10^{-3}	milli	m
10^{15}	peta	P	10^{-6}	micro	μ
10^{12}	tera	T	10^{-9}	nano	n
10^{9}	giga	G	10^{-12}	pico	p
10^{6}	mega	M	10^{-15}	femto	f
10^{3}	kilo	k	10^{-18}	atto	a
10^{2}	hecto	h	10^{-21}	zepto	z
10^{1}	deka	da	10^{-24}	yocto	y

Hella is a prefix associated with Northern California: UC Davis, UC Berkeley, LBL, LLNL & adopted by Google (2010) & Wolfram Alpha (2011)

"hella-" = 10^{27}

Commonly Used Prefixes in Chemistry

Metric Prefixes

Prefix	Symbol	Multiple/Fraction
giga-	G	$1{,}000{,}000{,}000 = 1 \times 10^{9}$
mega-	M	$1{,}000{,}000 = 1 \times 10^{6}$
kilo-	k	$1{,}000 = 1 \times 10^{3}$
Basic unit: meter, gram, liter, second		
deci-	d	$0.1 = 1 \times 10^{-1}$
centi-	c	$0.01 = 1 \times 10^{-2}$
milli-	m	$0.001 = 1 \times 10^{-3}$
micro-	μ*	$0.000\,001 = 1 \times 10^{-6}$
nano-	n	$0.000\,000\,001 = 1 \times 10^{-9}$

Measurement & Numbers

The Importance of Units

- Measurement - quantitative observation consisting of 2 parts
  - Part 1 - number
  - Part 2 – unit
  - Relates to the instrument (tool) used for the measurement. Examples:
  - 20.0 grams
  - 6.63×10^{-34} joules / second

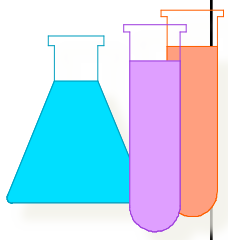
1 Joule (J):

- *The heat required to raise the temperature of 1 g of water by 0.24 K; 1 J = 0.24 calories.[6]*
- *The heat released as heat by a person at rest every 1/60 second (~17 ms); .[7]*
- *The kinetic energy of a 50 kg (110 lb) human moving at 0.43 mi/hr).*
- *The amount of electricity required to light a 1 watt LED for 1 s.*

Measurements & Numbers

- **Any number determined by any method of measurement: MUST ALWAYS INCLUDE the UNIT being measured.**
  Example: 20.0 grams

- Short Hand expression translates the number to **Scientific Notation**
  Example: 2.00×10^1 grams



Powers of Ten: Scale

exponent

10^n

base number

Powers of 10

Exponential Number	Ordinary Number
$1 \times 10^6 = 10 \times 10 \times 10 \times 10 \times 10 \times 10$	1,000,000
$1 \times 10^3 = 10 \times 10 \times 10$	1,000
$1 \times 10^2 = 10 \times 10$	100
$1 \times 10^1 = 10$	10
$1 \times 10^0 = 1$	1
$1 \times 10^{-1} = \frac{1}{10}$	0.1
$1 \times 10^{-2} = \frac{1}{10} \times \frac{1}{10}$	0.01
$1 \times 10^{-3} = \frac{1}{10} \times \frac{1}{10} \times \frac{1}{10}$	0.001
$1 \times 10^{-6} = \frac{1}{10} \times \frac{1}{10} \times \frac{1}{10} \times \frac{1}{10} \times \frac{1}{10} \times \frac{1}{10}$	0.000 001

Hearing/Viewing: Guiding Questions (GQ)

Measurements & Relative Scale

http://chemconnections.org/general/chem108/Powers%20of%20Ten-Guide.html

Answer all Guiding Questions on-line

First GQ assignment

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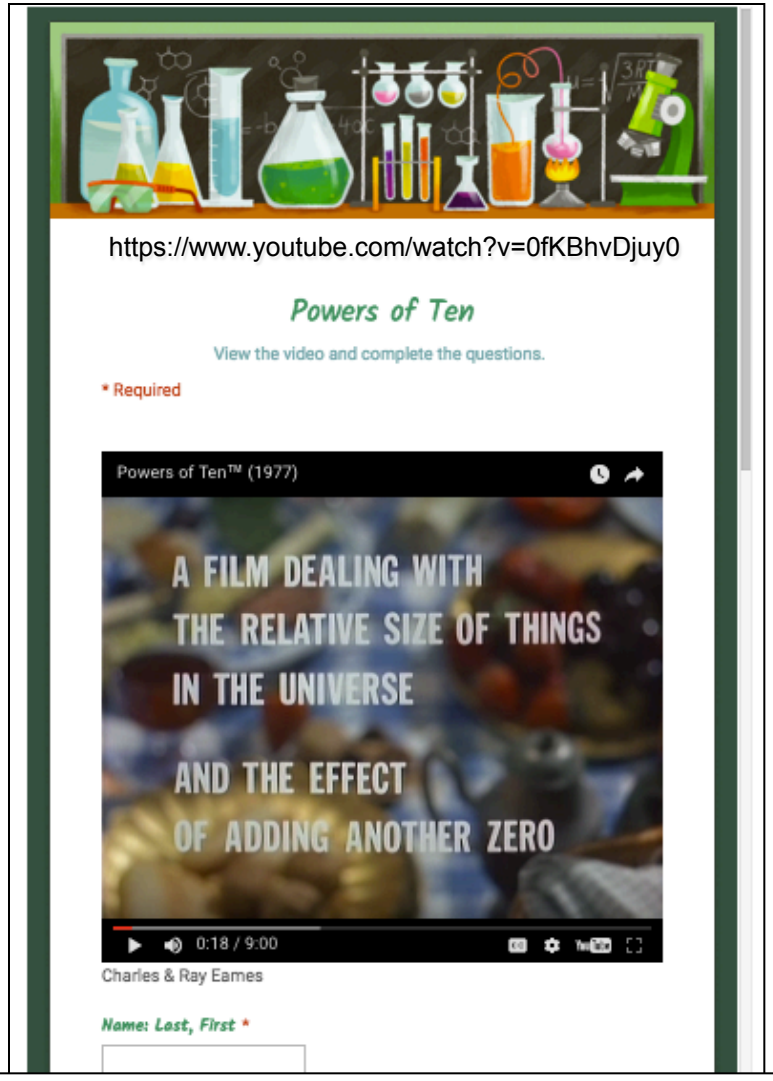


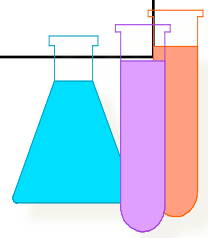
From the calendar links, submit responses on-line; graded weekly.

Scientific Notation & Mathematics

- Short Hand expression:
  Powers of Ten / Exponents of base Ten
- Count decimal places: to right (+) and to the left (-)

  $1{,}000{,}000{,}000\ kg/m^3 = 1 \times 10^{9}\ kg/m^3$

  $0.00000018\ kg/cm^3 = 1.8 \times 10^{-7}\ kg/cm^3$
- Multiplication: add exponents
- Division: subtract exponents

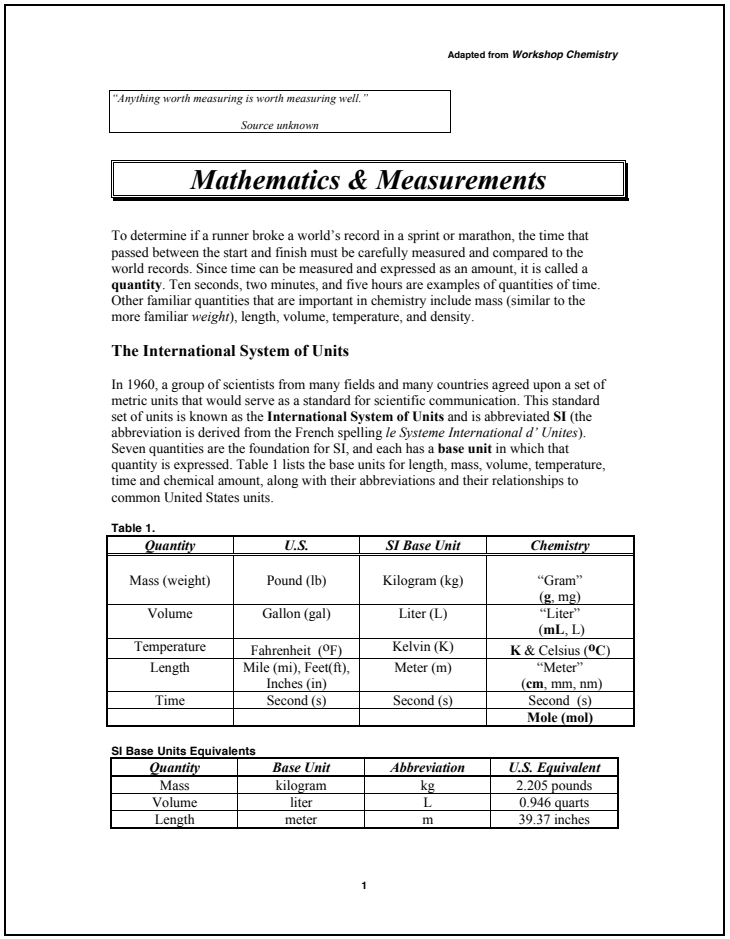


Doing: Lab Experiments (Read before NEXT WEEK)

Metric Measurement [Experiment #1]

Background & Preparation [Reading Handout & Worksheet]

http://chemconnections.org/general/chem108/Math & Measurement-2018.pdf



Adapted from ***Workshop Chemistry***

"Anything worth measuring is worth measuring well."

Source unknown

Mathematics & Measurements

To determine if a runner broke a world's record in a sprint or marathon, the time that passed between the start and finish must be carefully measured and compared to the world records. Since time can be measured and expressed as an amount, it is called a **quantity**. Ten seconds, two minutes, and five hours are examples of quantities of time. Other familiar quantities that are important in chemistry include mass (similar to the more familiar *weight*), length, volume, temperature, and density.

The International System of Units

In 1960, a group of scientists from many fields and many countries agreed upon a set of metric units that would serve as a standard for scientific communication. This standard set of units is known as the **International System of Units** and is abbreviated **SI** (the abbreviation is derived from the French spelling *le Systeme International d' Unites*). Seven quantities are the foundation for SI, and each has a **base unit** in which that quantity is expressed. Table 1 lists the base units for length, mass, volume, temperature, time and chemical amount, along with their abbreviations and their relationships to common United States units.

Table 1.

Quantity	*U.S.*	*SI Base Unit*	*Chemistry*
Mass (weight)	Pound (lb)	Kilogram (kg)	"Gram" (**g**, mg)
Volume	Gallon (gal)	Liter (L)	"Liter" (**mL**, L)
Temperature	Fahrenheit (^{o}F)	Kelvin (K)	**K** & Celsius (^{o}**C**)
Length	Mile (mi), Feet(ft), Inches (in)	Meter (m)	"Meter" (**cm**, mm, nm)
Time	Second (s)	Second (s)	Second (s)
			Mole (mol)

SI Base Units Equivalents

Quantity	*Base Unit*	*Abbreviation*	*U.S. Equivalent*
Mass	kilogram	kg	2.205 pounds
Volume	liter	L	0.946 quarts
Length	meter	m	39.37 inches

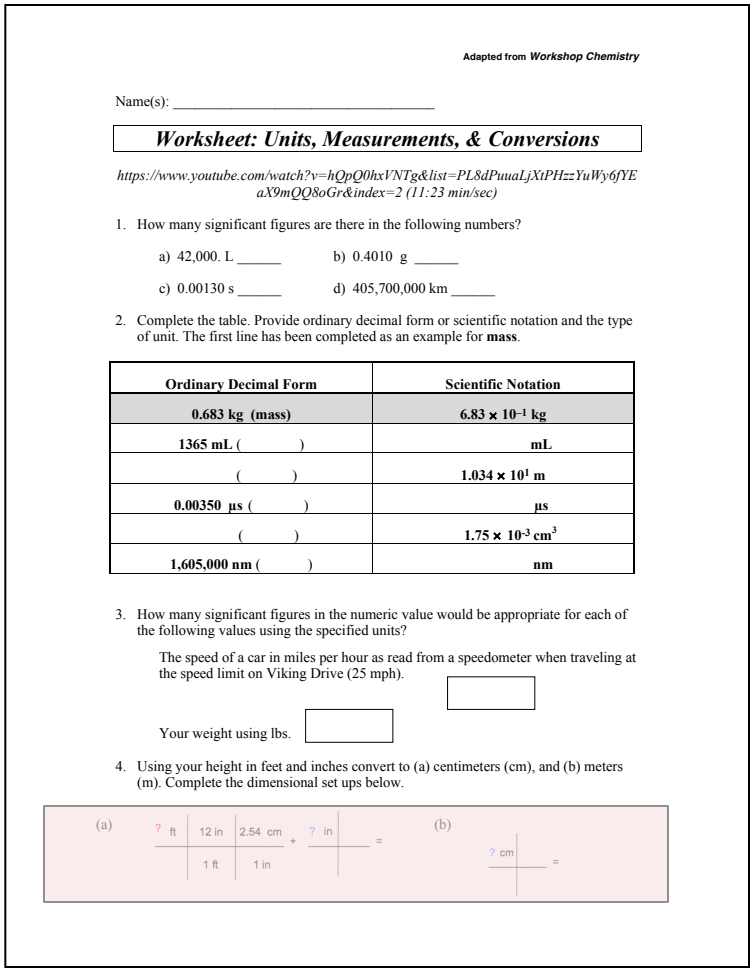
1

Doing: Lab Experiments (In lab NEXT WEEK)

Metric Measurement [Experiment #1]

Background & Preparation [Reading & Worksheet Handout]

http://chemconnections.org/general/chem108/Math & Measurements-WKS.f18.pdf



Adapted from *Workshop Chemistry*

Name(s): _____

Worksheet: Units, Measurements, & Conversions

https://www.youtube.com/watch?v=hQpQ0hxVNTg&list=PL8dPuuaLjXtPHzzYuWy6fYEaX9mQQ8oGr&index=2 (11:23 min/sec)

1. How many significant figures are there in the following numbers?

   a) 42,000. L _____ b) 0.4010 g _____

   c) 0.00130 s _____ d) 405,700,000 km _____

2. Complete the table. Provide ordinary decimal form or scientific notation and the type of unit. The first line has been completed as an example for **mass**.

Ordinary Decimal Form	Scientific Notation
0.683 kg (mass)	**6.83×10^{-1} kg**
1365 mL ( )	**mL**
( )	**1.034×10^{1} m**
0.00350 µs ( )	**µs**
( )	**1.75×10^{-3} cm^3**
1,605,000 nm ( )	**nm**

3. How many significant figures in the numeric value would be appropriate for each of the following values using the specified units?

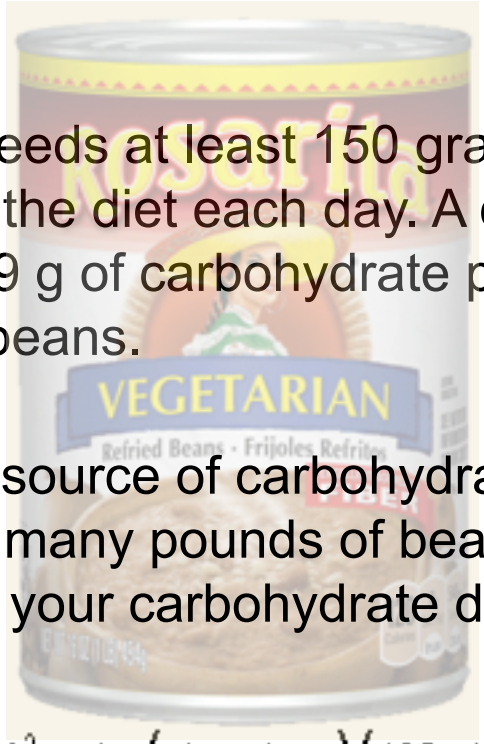
   The speed of a car in miles per hour as read from a speedometer when traveling at the speed limit on Viking Drive (25 mph).

   Your weight using lbs.

4. Using your height in feet and inches convert to (a) centimeters (cm), and (b) meters (m). Complete the dimensional set ups below.

(a) ? ft × 12 in / 1 ft × 2.54 cm / 1 in + ? in = (b) ? cm =

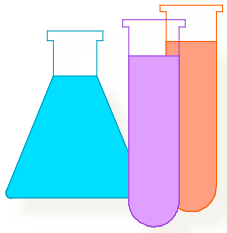
Dimensional Analysis
Conversion/Unit Factor Calculations



An average adult needs at least 150 grams (1.50×10^2 g) of carbohydrates in the diet each day. A can of vegetarian refried beans has 19 g of carbohydrate per serving. Each serving is 128 g of beans.

If your only dietary source of carbohydrate were vegetarian refried beans, how many pounds of beans would you need to eat today to satisfy your carbohydrate dietary needs?

$$\frac{?\,\text{lb beans}}{\text{day}} = \frac{1.50 \times 10^2\ \text{carbo}}{1\,\text{day}} \left(\frac{1\,\text{serving}}{19\,\text{g carbo}}\right)\left(\frac{128\,\text{g beans}}{1\,\text{serving}}\right)\left(\frac{1\,\text{lb}}{453.6\,\text{g}}\right)$$

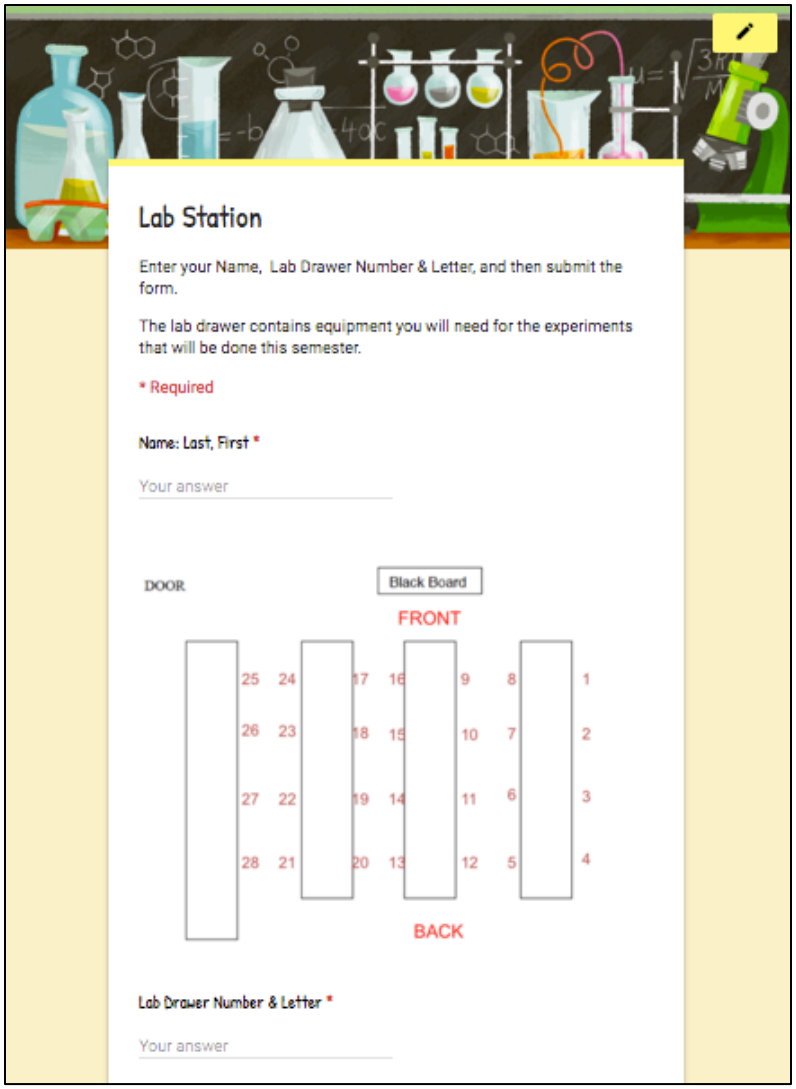


Caution

A side effect of eating beans

Even vegetarians!

Lab Drawer Check Out



The lab drawer contains equipment you will need for the experiments that will be done this semester.

Using a smart phone or a laptop:

Connect to the Internet.

Go to:

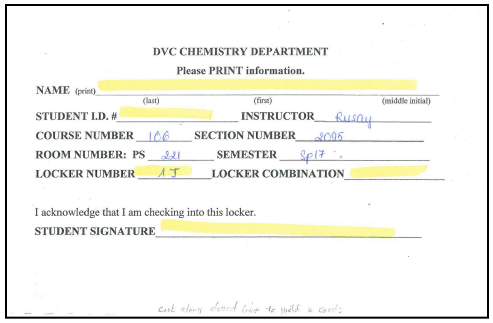
https://goo.gl/forms/9JczWUgwvujtWekJ2

Enter your Name, Lab Drawer Number & Letter, and then submit the form.

Lab Drawer Check Out

Pick up a combination lock at the front of lab.

Everyone must separately provide all of the information in each of the following 3 forms, sign and turn them in before leaving lab today.



DVC CHEMISTRY DEPARTMENT

Please PRINT information.

NAME (print)_____
(last) (first) (middle initial)

STUDENT I.D. #_____ INSTRUCTOR Russo

COURSE NUMBER 106 SECTION NUMBER 3065

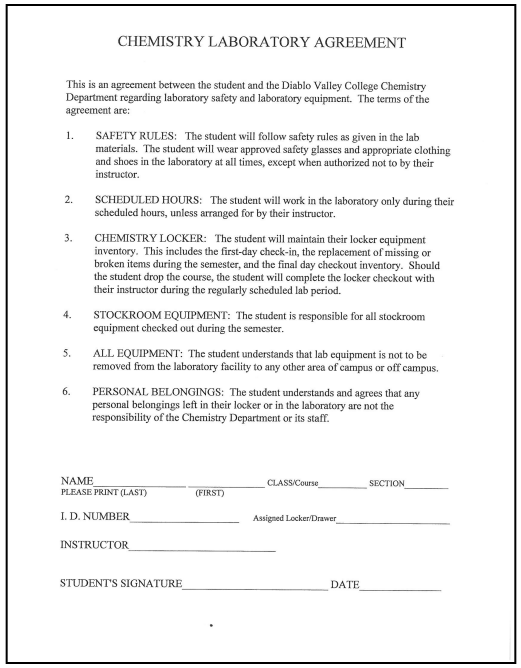
ROOM NUMBER: PS 331 SEMESTER Sp17

LOCKER NUMBER A7 LOCKER COMBINATION_____

I acknowledge that I am checking into this locker.

STUDENT SIGNATURE_____

Write down the lock's combination where you can find it; bring to lab next week



CHEMISTRY LABORATORY AGREEMENT

This is an agreement between the student and the Diablo Valley College Chemistry Department regarding laboratory safety and laboratory equipment. The terms of the agreement are:

1. SAFETY RULES: The student will follow safety rules as given in the lab materials. The student will wear approved safety glasses and appropriate clothing and shoes in the laboratory at all times, except when authorized not to by their instructor.
2. SCHEDULED HOURS: The student will work in the laboratory only during their scheduled hours, unless arranged for by their instructor.
3. CHEMISTRY LOCKER: The student will maintain their locker equipment inventory. This includes the first-day check-in, the replacement of missing or broken items during the semester, and the final day checkout inventory. Should the student drop the course, the student will complete the locker checkout with their instructor during the regularly scheduled lab period.
4. STOCKROOM EQUIPMENT: The student is responsible for all stockroom equipment checked out during the semester.
5. ALL EQUIPMENT: The student understands that lab equipment is not to be removed from the laboratory facility to any other area of campus or off campus.
6. PERSONAL BELONGINGS: The student understands and agrees that any personal belongings left in their locker or in the laboratory are not the responsibility of the Chemistry Department or its staff.

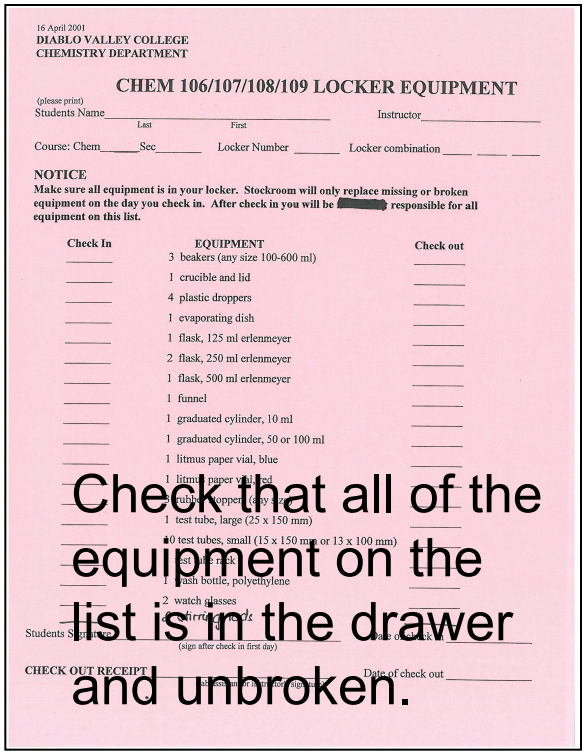
NAME_____ _____ CLASS/Course_____ SECTION_____
PLEASE PRINT (LAST) (FIRST)

I. D. NUMBER_____ Assigned Locker/Drawer_____

INSTRUCTOR_____

STUDENT'S SIGNATURE_____ DATE_____

Read carefully & sign



16 April 2001

DIABLO VALLEY COLLEGE
CHEMISTRY DEPARTMENT

CHEM 106/107/108/109 LOCKER EQUIPMENT

(please print)
Students Name_____ Instructor_____
Last First

Course: Chem_____Sec_____ Locker Number _____ Locker combination ____ ____ ____

NOTICE
Make sure all equipment is in your locker. Stockroom will only replace missing or broken equipment on the day you check in. After check in you will be [redacted] responsible for all equipment on this list.

Check In	EQUIPMENT	Check out
_____	3 beakers (any size 100-600 ml)	_____
_____	1 crucible and lid	_____
_____	4 plastic droppers	_____
_____	1 evaporating dish	_____
_____	1 flask, 125 ml erlenmeyer	_____
_____	2 flask, 250 ml erlenmeyer	_____
_____	1 flask, 500 ml erlenmeyer	_____
_____	1 funnel	_____
_____	1 graduated cylinder, 10 ml	_____
_____	1 graduated cylinder, 50 or 100 ml	_____
_____	1 litmus paper vial, blue	_____
_____	1 litmus paper vial, red	_____
_____	1 rubber stopper (any size)	_____
_____	1 test tube, large (25 x 150 mm)	_____
_____	10 test tubes, small (15 x 150 mm or 13 x 100 mm)	_____
_____	1 test tube rack	_____
_____	1 wash bottle, polyethylene	_____
_____	2 watch glasses	_____
_____	~~1 thermometer~~	_____

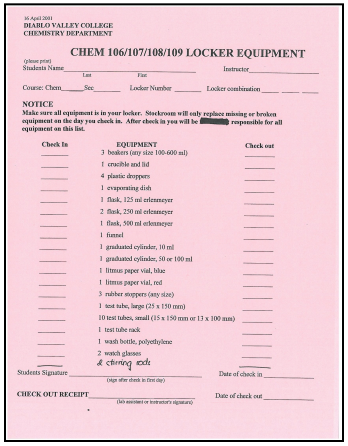
Students Signature_____ Date of check in_____
(sign after check in first day)

CHECK OUT RECEIPT _____ Date of check out_____
(signature of instructor)

Check that all of the equipment on the list is in the drawer and unbroken.

Check Out

On the pink form note what is missing or broken. If everything is OK, sign form, note combination for your use, turn in with completed/ signed acknowledgment form and card to Dr. R.



16 April 2001
DIABLO VALLEY COLLEGE
CHEMISTRY DEPARTMENT

CHEM 106/107/108/109 LOCKER EQUIPMENT

(please print)
Students Name _____ Instructor _____
Last First

Course: Chem_____Sec_____ Locker Number _____ Locker combination ___ ___ ___

NOTICE
Make sure all equipment is in your locker. Stockroom will only replace missing or broken equipment on the day you check in. After check in you will be [redacted] responsible for all equipment on this list.

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_____	4 plastic droppers	_____
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_____	1 funnel	_____
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_____	1 graduated cylinder, 50 or 100 ml	_____
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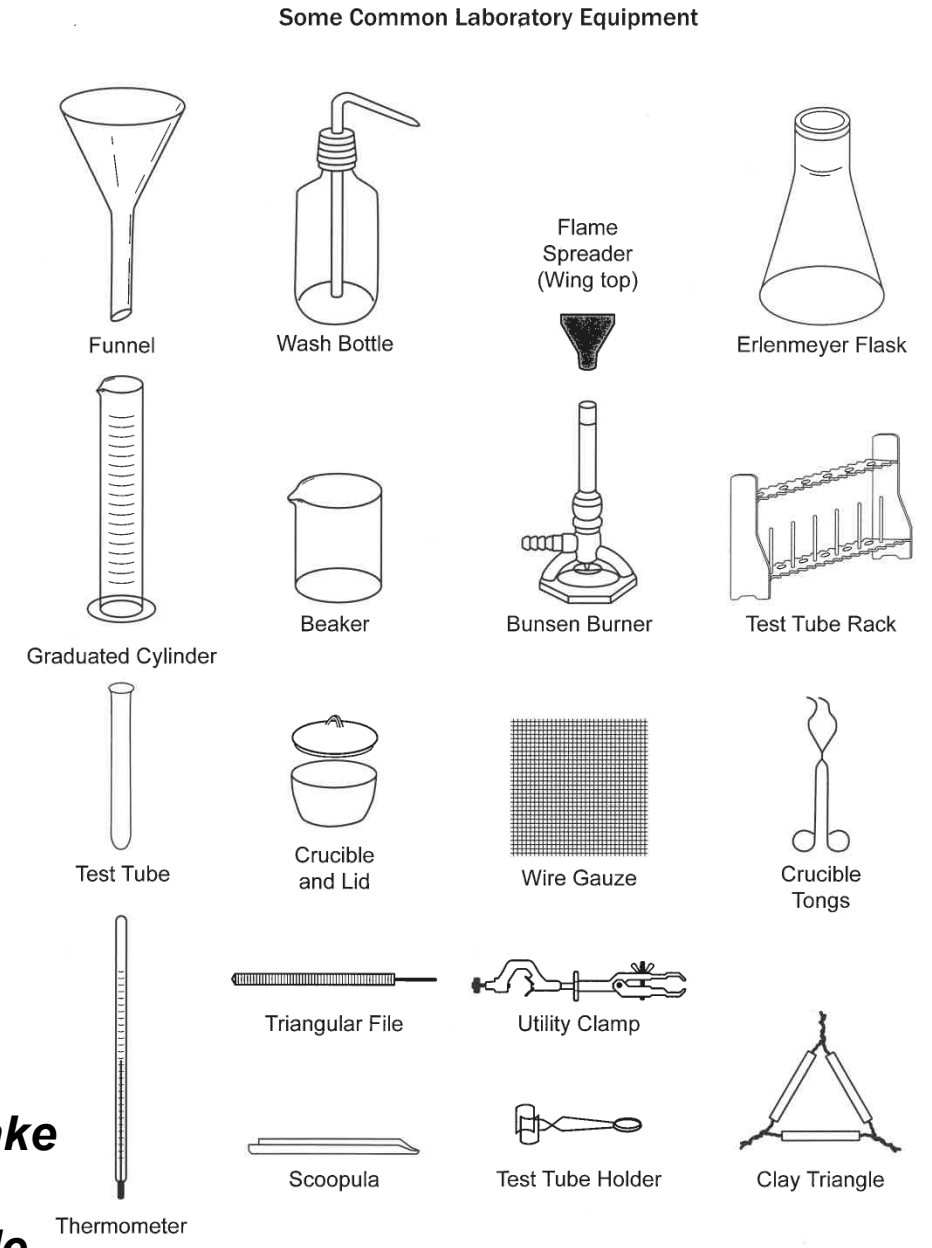
_____	1 litmus paper vial, red	_____
_____	3 rubber stoppers (any size)	_____
_____	1 test tube, large (25 x 150 mm)	_____
_____	10 test tubes, small (15 x 150 mm or 13 x 100 mm)	_____
_____	1 test tube rack	_____
_____	1 wash bottle, polyethylene	_____
_____	2 watch glasses	_____
_____	& stirring rods	_____

Students Signature _____ Date of check in _____
(sign after check in first day)

CHECK OUT RECEIPT _____ Date of check out _____
(lab assistant or instructor's signature)

If anything is missing or broken, take the pink form to the Chemistry Stockroom. Directions on next slide.

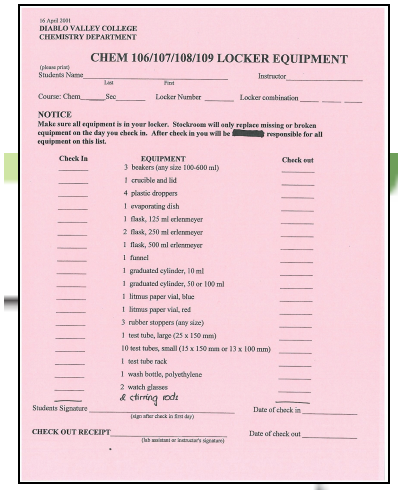


Missing or Broken Equipment

Go to stockroom window to replace missing or broken equipment.

Stockroom window is in the middle of this building. Turn right out of lab, walk past 2 lab rooms and look for the double glass doors. Window is in the back.

When everything is OK, sign form, note combination for your use, turn in with completed/ signed acknowledgment form and card to Dr. R.



16 April 2001
DIABLO VALLEY COLLEGE
CHEMISTRY DEPARTMENT

CHEM 106/107/108/109 LOCKER EQUIPMENT

(please print)
Students Name _____ Instructor _____
Last First

Course: Chem_____Sec_____ Locker Number _____ Locker combination ____ ____ ____

NOTICE
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_____	& stirring rod	_____

Students Signature _____ Date of check in _____
(sign after check in first day)

CHECK OUT RECEIPT _____ Date of check out _____
(lab assistant or instructor's signature)