## Homework

Rip off the back page of your syllabus and turn it in.

Pick up a Unit 1 booklet

## Calculators

- You will be assigned a calculator.

You must keep up with and take care of this calculator like a child................ or you will pay for it.

When you take a calculator please sign and print your name by the corresponding number.

## Evaluating expressions

letters can stand for numbers. When we substitute a specific value for each variable, and then perform the operations.

## Algebra

- Variable- a letter that represents a known or unknown number
- X- most used
- Others - $y, a, b$

Math
VS
Chemistry Math
units

## Algebra- Literal Equations PEMDAS

$$
\begin{aligned}
& g=c a \quad a=? \\
& u=x a-k \\
& a b-c d=s-r \quad x=? \\
& \\
& l
\end{aligned}
$$

## Practice

Practice.... EVEN numbers on page 1

## Equations

- Used to solve for unknown numbers.
- Each variable stands for a real number
$\mathrm{E}=\mathrm{mc}^{2}$
In the case above E stands for Energy, m stands for mass, and c stands for the speed of light.

We will use equations just like this to solve for many things
Pressure, volume, temperature, moles, partial pressure, atoms, grams,

## Equations you will see again

- $P V=n R T$
- $\mathrm{M} 1 \mathrm{~V} 1=\mathrm{M} 2 \mathrm{~V} 2$
$q=m c \Delta T$
$\mathrm{pH}=-\log [\mathrm{H}+]$


## Practice with equations for the rest of class and homework

- Page 3.
-\# 1,3,6 ,9,11


## Day 3

$$
P V=n R T
$$

$$
\mathrm{q}=\mathrm{mc} \Delta \mathrm{~T}
$$

M1 V1= M2 V2
$\mathrm{pH}=-\log [\mathrm{H}]$
$\mathrm{MM}=\mathrm{g} / \mathrm{mol}$

## Real World Math

-What does this mean?

## Chemistry numbers

- Remember all numbers must have units (no naked numbers)
- From now on, no number will be accepted with out a unit
- Units- what we use to describe a number
- Variable- letter that stands for a number (don't get them mixed up)
- When doing problems, you MUST show all of your work and have a unit
- No work, no grade
- No unit = incorrect


## Density: $\mathrm{D}=\mathrm{m} / \mathrm{v}$

- I threw a plastic ball in the pool for my dog to fetch. The mass of the ball was 125 grams. What must the volume be to have a density of $0.500 \mathrm{~g} / \mathrm{mL}$.
- Units vs Variables


## $\mathrm{PV}=\mathrm{nRT}$

- What pressure is exerted by 0.622 moles of a gas contained in a 9.22 L container at a temperature of 289 K ? R is 0.0821 L -atm/K-mol
- Units vs Variables


## $M=\mathrm{mol} / \mathrm{L}$

- What volume do you need in order to make a 1.5 M (M means Molar) solution with 0.450 moles of solute?

Units vs Variables

## $M_{1} V_{1}=M_{2} V_{2}$

- What volume in mL of a $2 \mathrm{M} \mathrm{CaCl}_{2}$ solution would you need to make 0.5 L of $0.3 \mathrm{M} \mathrm{CaCl}_{2}$ solution

Units vs Variables

## Using equations to solve for units

- USE WHAT YOU KNOW ....... TO FIND WHAT YOU DO NOT
- What are the units for Density???? Given that the density formula is $\mathrm{D}=\mathrm{m} / \mathrm{v}$.
- Are units or variables given to us in this equation??
- Remember a variable represents a number........What variables do we know the units for???


## $\mathrm{q}=\mathrm{mc} \Delta \mathrm{T}$

q stands for heat and is measured in joules(J). $\mathbf{m}$ stands for mass and is measured in grams (g).
c stands for specific heat.
$\Delta \mathbf{T}$ stands for change in temperature and is measured in Celsius (C)

Is c a unit or variable??
Is grams a unit or variable??
What are the units for $\mathbf{c}$ ??

## Practice

- Page 7


## Bell work

- Review safety information
- Homework check.....page 7


## Safety test

- Answer each question to the best of your ability


## Cross out \# 21.

Instead complete the following
Draw the NFPA safety Diamond
-Label the colors
-What each color means
-The scale

## Graphing pg 12

-What is the purpose of making a graph?

- Visually show the relationships between sets of data

Table 1: Salt Concentration and Light Transmittance

| Calt <br> Concentration <br> (\%) | Transmittance (\%T) |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | Trial \#1 | Trial \#2 | Trial \#3 | Trial \#4 | Trial \#5 |
| 0 | 77.23 | 74.50 | 64.88 | 75.27 | 54.66 |
| 3 | 85.23 | 92.82 | 78.91 | 60.71 | 57.96 |
| 6 | 88.39 | 100.05 | 73.66 | 66.51 | 64.54 |
| 9 | 80.71 | 100.05 | 68.29 | 64.91 | 52.96 |
| 12 | 82.66 | 117.18 | 71.01 | 56.91 | 46.95 |
| 15 | 72.55 | 115.40 | 65.72 | 66.03 | 55.38 |

Expenditure per Pupil in Average Daily Attendance: Selected years, 1977-78 through 2002-03


Total
Expenditure in
Unodjusted
Dolars
Total
Expenditure in Constant 2004-05 Dollars

The NCES Common Core of Data (CCD) 2004-2005

## Parts of a graph

- X axis
- $Y$ axis
- Legend
- Title
- Independent variable
- Dependent variable
- Scale
-Trend


## Graphing

## . . . a Line graph.

- Line graphs are used to track changes over short and long periods of time. When smaller changes exist, line graphs are better to use than bar graphs. Line graphs can also be used to compare changes over the same period of time for more than one group.
. . . a Bar Graph.
- Bar graphs are used to compare things between different groups or to track changes over time. However, when trying to measure change over time, bar graphs are best when the changes are larger.







## Homework

- Page 15 graph
- And questions \#10-16


## Scientific Method Review

- Page 8-11
1.) $\mathrm{A}=\frac{x+y}{2}$ for y
2.) $12 x-4 y=20$ for $x$
3.) A procedure asked for the volume of a rock. The mass of the rock was 125 grams. What must the volume be to have a density of $0.500 \mathrm{~g} / \mathrm{mL}$ ?
- $\mathrm{D}=\mathrm{m} / \mathrm{v}$
4.) What volume is present when 0.622 moles of a gas is contained in a 0.453 atm pressure container at a temperature of 305 K ? R is $0.0821 \mathrm{Latm} / \mathrm{Kmol}$.

$$
P V=n R T
$$

