Summer ECHS chemistry work.

The following packet has to assignments that are to be turned in on the first day of school. They will be worth 50% of a test grade for the first six weeks. The other 50% will be a test over that same material on the second day of school. I will not only be grading the answers, but I will also be grading your work that gets you the answer. So it is very important that you use my method in solving the unit conversions. My method is also mentioned in some notes given in this packet. I also did a practice worksheet with me working the problems the way I want them done by you. If you need any assistance this summer give me an email at csmith@athensisd.net and we can arrange a day that we can meet at the school to go over how to do these problems.

C.Smith

The only slides you need to look at are labled with a ☆.

Chapter 5 measurements
Eustace

- 2 types of measurements
  - **Qualitative** → description without using numbers
  - **Quantitative** → gives results more accurately in numbers and units.

☆

Scientific notation

- Used when numbers are to big or small to show every digit.
- Example: 16 grams of oxygen contains this many atoms 602,000,000,000,000,000,000,000.
- In scientific notation the same number is 6.02×10^{23}
- 7.5×10^{-4} = .000075

☆

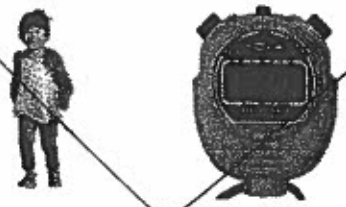
Practice

- 543,000,000 5.43×10^{8}
- 74,000 7.4×10^{4}
- 847,000,000,000 8.47×10^{11}
- 590,000,000 5.9×10^{8}
- .0000234 2.34×10^{-5}
- .00044 4.4×10^{-4}
- .00000000081 8.1×10^{-10}

Practice

- 7.21×10^{7} 72100000
- 8.06×10^{9} 8060000000
- 2.22×10^{4} 22200
- 3.11×10^{-3} .00311
- 8.05×10^{-4} .000805
- 1.11×10^{-6} .0000111

- Measurements need to be correct and reproducible.
- For a number to be correct in chemistry they need to be accurate and precise.
- **Accuracy**→ measure of how close a measurement comes to the actual or true value of whatever is measured.
- **Precision**→ measure of how close a series of measurements are to one another.



Finding percent error

- Any time you see the word "percent" in chemistry class this should be a red flag that means your problem will look something like this

$$\frac{\text{You got- should have got}}{\text{Should have got}} \times 100$$

OR (same thing)

$$\frac{\text{Ex. Value- acc. Value}}{\text{Accepted value}} \times 100$$

- Scientist world wide have agreed on a basic system of measurement known as the **International system of measurement.** You will refer to this system in this class in the abbreviated form called **SI.**

- Before we go into more detail about this system you are going to have to do some good old fashion memorizing of what unit measures what. So here is the list you need to memorize.

Base units

- Grams measures mass
- Meters measures length
- Liters measures volume
- Volume is the space occupied by a sample of matter. (The container)

More to memorize
prefixes to go in front of base unit

Prefix	Symbol	Factor Number	Factor Word
Kilo	k	1,000	Thousand
Hecto	h	100	Hundred
Deca	da	10	Ten
Deci	d	0.1	Tenth
Centi	c	0.01	Hundredth
Milli	m	0.001	Thousandth

Prefixes for really big or really small things.

- Mega→ million times bigger
- Micro→ million times smaller

- Dimensional analysis
- Example 1.
  - 425meters equals how many kilometers?

  - Step 1: set up conversion factor. meter to kilometers. $\frac{1 \text{ kilometer}}{1000 \text{ meters}}$

Step 2: then you line up the units so they cancel each other out. $\frac{425 \text{ meters}}{} \quad \frac{1 \text{ kilometer}}{1000 \text{ meters}}$

- step 3: if it is above the line then you multiply and below the line then you divide.

425 times 1 divided by 1000 = .425kilometer

- 3.32 millimeters equals how many meters ?
- Step 1: make a conversion factor

$\frac{1000 \text{ millimeters}}{1 \text{ meter}}$

- Step 2: line up units so they cancel out

$\frac{3.32 \text{ millimeters}}{} \quad \frac{1 \text{ meter}}{1000 \text{ millimeter}}$

- Step 3 if above line multiply below line divide.

3.32 times 1 divided by 1000 =.00332meters

- .824 meters is how many centimeters?
- Step 1: make a conversion factor

$$\frac{100 \text{ centimeters}}{1 \text{ meter}}$$

- Step 2: line up units so they cancel out

$$\frac{.824 \text{ meters}}{} \quad \frac{100 \text{ centimeters}}{1 \text{ meter}}$$

- Step 3 if above line multiply below line divide.

.824 times 100 divided by 1 =82.4 centimeters

- Problem solving in chemistry is similar to problem solving in real life.
- There are a few basic steps to follow when figuring out any numerical problem.

Steps to problem solving

- **Step 1:** Map out where you are going
- **Step 2:** Write down any possible conversion factors need to solve problem.
- **Step 3:** aligning conversion factors up correctly
- **Step 4:** perform arithmetic.

Step 2
What is a conversion factor?

- A conversion factor is any relationship between 2 variables.
- Ex. 1 dozen eggs= 12 eggs 20 nickels= 1 dollar
- In problem solving you would write them down like this.

$$\frac{1 \text{ dozen eggs}}{12 \text{ eggs}} \qquad \frac{20 \text{ nickels}}{1 \text{ dollar}}$$

Name: _____ Date: _____

problems worked the way you need to work them

Measuring Units Worksheet

Convert.

1 a. 2,000 m = 2 km

2000 m $\frac{1\ Km}{1000\ m}$ =

1 b. 9 km = 9000 m

9 Km $\frac{1000\ m}{1\ Km}$

2 a. 9,000 ml = 9 L

9000 mL $\frac{1\ L}{1000\ mL}$

2 b. 3 kg = 3000 g

3 Kg $\frac{1000\ g}{1\ Kg}$

3 a. 6 L = 6000 ml

6 L $\frac{1000\ mL}{1\ L}$

3 b. 90 mm = 9 cm

90 mm $\frac{1\ cm}{10\ mm}$

4 a. 6 cm = 60 mm

6 cm $\frac{10\ mm}{1\ cm}$

4 b. 4 km = 4000 m

4 Km $\frac{1000\ m}{1\ Km}$

5 a. 1,000 m = 1 km

1000 m $\frac{1\ Km}{1000\ m}$

5 b. 2,000 g = 2 kg

2000 g $\frac{1\ Kg}{1000\ g}$

6 a. 50 mm = 5 cm

50 mm $\frac{1\ cm}{10\ mm}$

6 b. 400 cm = 4 m

400 cm $\frac{1\ m}{100\ cm}$

7 a. 4 L = 4000 ml

4 L $\frac{1000\ mL}{1\ L}$

7 b. 3 km = 3000 m

3 Km $\frac{1000\ m}{1\ Km}$

8 a. 10,000 g = 10 kg

10000 g $\frac{1\ Kg}{1000\ g}$

8 b. 2 cm = 20 mm

2 cm $\frac{10\ mm}{1\ cm}$

9 a. 10,000 m = 10 km

10,000 m $\frac{1\ Km}{1000\ m}$

9 b. 9,000 g = 9 kg

9000 g $\frac{1\ Kg}{1000\ g}$

10 a. 4,000 g = 4 kg

4000 g $\frac{1\ Kg}{1000\ g}$

10 b. 8,000 ml = 8 L

8000 mL $\frac{1\ L}{1000\ mL}$

Metric System Measurement Conversions

your turn!

Name _____ Period _____ Date ____/____/____

. 1000 cL = _____ L

2 cm = _____ mm

12000 m = _____ km

3 L = _____ cL

900,000 cm = _____km

. 7000 mL = ___ L

1 kg = _____ g

. 1100 cL = _____ L

120 mm = _____ cm

11000 L = _____ kL

8 g = _____ cg

. 2000 L = _____ mL

. 11 cg = _____ mg

5 kg = _____ g

. 4000 mL = _____ L

10000 g = _____ kg

1200 cL = _____ L

. 10 cL = _____ L

. 80 mL = _____ cL

. 5 cm = _____hm

. 9000 m = _____ km

60 mm = _____ cm

. 1 cL = _____ mL

2000 mL = _____ L

Kuta Software - Infinite Algebra 1 Name_____

Writing in Scientific Notation

Date_____ Period____

Write each number in scientific notation.

1) 0.000006

2) 5400000

3) 60

4) 0.009

5) 6.7

6) 0.0000002

7) 2000000

8) 71×10^{3}

9) 48900

10) 0.0000009

11) 0.63×10^{1}

12) 33×10^{-3}

13) 0.000216

14) 0.0042

15) 0.15×10^{-2}

16) 4.8

Write each number in standard notation.

17) 0.9×10^{-1}

18) 2×10^{-1}

19) 2×10^{5}

20) 804×10^{2}

21) 2.66×10^{4}

22) 1.5×10^{-2}

23) 7.75×10^{-1}

24) 8.3×10^{7}

25) 9.5×10^{7}

26) 1.71×10^{7}

27) 0.9×10^{-3}

28) 38×10^{2}

29) 7.5×10^{-5}

30) 4×10^{0}

31) 8.4×10^{5}

32) 4×10^{-5}

Summer Reading Project 2018
Mr. Burks- jburks@athensisd.net
AP U.S. History and AP World History

Use your novel from the English project. Read the novel and fill out the "book report" below. Due: Final day of prep camp

1. Title of book: _____

2. Author: _____

3. Description of the Society in the Book": (Include: Social Pressures, Relationships, Conflict the characters have with the government, laws, or people.) What is the society like? Is it repressive? What does the society allow?

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Worth 20 points

4. Critique: Type a 250 word critique that describes your opinion of the society in the novel. Your critique must include ***evidence from the book*** to back up your opinions. (Look at book/movie reviews online for an idea of what it should look like.) – ***Worth 40 points***

5. Theme Essay: Type a 250 word essay (that includes an introduction paragraph) about a major conflict that a character had with society in the book. Include your thoughts on why these conflicts occurred. ***Use quotations from the book*** as evidence to back up your arguments. ***Worth 20 points***

6. Research the novel: In minimum of 200 word essay, research the background of the novel. What are comments about the book from the historical/literary community? Is there metaphor present? Details what metaphors some critics have found within the novel, you may also list your own opinions as well. If you are pulling information from a source please detail where you received this information ***Worth 20 points***

Attach your critique and theme essay onto the back of this sheet.