

# CHAPS SUMMER ASSIGNMENT

Welcome to Chemistry Honors / AP Chemistry!

Honors Chemistry / AP Chemistry is for the student who desires a more in-depth study of science that will incorporate various aspects of science and math with an emphasis on both proficiency and critical thinking/application skills. This is a fast-paced course that requires much outside classroom preparation. A summer assignment is essential as it provides all students an opportunity to gain experience with chemistry prior to starting the course. This class requires a strong work ethic and the ability to work independently. Make sure that you complete all parts of the summer assignment. Please do your own work as work directly copied from another student will receive no credit. Please show all work where applicable. The assignment will be due on **Friday, September 6, 2024**, and will count as two homework assignments.

I look forward to meeting all of you in September!

*Mr. S. Adelberg*

## **1. Video: "A Day Without Chemistry"**

- [https://www.youtube.com/watch?v=AbfW\\_CMMe48](https://www.youtube.com/watch?v=AbfW_CMMe48)
- Name three ways that you have used chemistry today

## **2. Scientific Method**

- <https://www.sciencebuddies.org/science-fair-projects/science-fair/steps-of-the-scientific-method#keyinfo>
- List the 6 Steps in the scientific method

## **3. Element Flashcards**

- Create element flashcards (element name on one side and symbol on the other) for elements #1-36.
- Practice, Practice, & Practice!

## **4. Structure of Matter**

- [https://preparatorychemistry.com/KMT\\_Canvas.html](https://preparatorychemistry.com/KMT_Canvas.html)
- Complete the attached Venn diagram to compare solids, liquids, and gases.

## **5. Scientific Notation**

- <https://www.youtube.com/watch?v=6y35Jlz332M>
- <https://www.ixl.com/math/grade-8/convert-between-standard-and-scientific-notation>
- <https://www.youtube.com/watch?v=Sj46quLDbOw&feature=youtu.be> (Ti-30Xa Calculators)
- <https://www.youtube.com/watch?v=QNim8poxZIM> (Ti-30XIIS Calculators)

**Convert the following numbers into scientific notation:**

- 1) 3,400 \_\_\_\_\_
- 2) 0.000023 \_\_\_\_\_
- 3) 101,000 \_\_\_\_\_
- 4) 0.010 \_\_\_\_\_
- 5) 45.01 \_\_\_\_\_

**Convert the following numbers into standard notation:**

- 6)  $2.30 \times 10^4$  \_\_\_\_\_
- 7)  $1.76 \times 10^{-3}$  \_\_\_\_\_
- 8)  $1.901 \times 10^{-7}$  \_\_\_\_\_
- 9)  $8.65 \times 10^{-1}$  \_\_\_\_\_
- 10)  $9.11 \times 10^3$  \_\_\_\_\_

**6. Metric Unit Flash Cards**

- a. Create metric unit flash cards (prefix on one side and factor on other side)
- b. Practice, Practice, & Practice

Exa

$10^{18}$

Symbol	Prefix	Multiplication Factor
E	exa	$10^{18}$ 1,000,000,000,000,000,000
P	peta	$10^{15}$ 1,000,000,000,000,000
T	tera	$10^{12}$ 1,000,000,000,000
G	giga	$10^9$ 1,000,000,000
M	mega	$10^6$ 1,000,000
k	kilo	$10^3$ 1,000
h	hecto	$10^2$ 100
da	deka	$10^1$ 10
d	deci	$10^{-1}$ 0.1
c	centi	$10^{-2}$ 0.01
m	milli	$10^{-3}$ 0.001
$\mu$	micro	$10^{-6}$ 0.000,001
n	nano	$10^{-9}$ 0.000,000,001
p	pico	$10^{-12}$ 0.000,000,000,001
f	femto	$10^{-15}$ 0.000,000,000,000,001
a	atto	$10^{-18}$ 0.000,000,000,000,000,001

## 7. Atomic Structure

- a. <https://www.youtube.com/watch?v=IP57gEWcisY>
  - i. What are the charges and locations of the protons and neutrons?
  - ii. What is the charge and location of an electron?
  - iii. A neutral atom contains the same number of which subatomic particles?
  - iv. Which subatomic particle identifies an atom?

## 8. Density

- a. <https://www.youtube.com/watch?v=4tYXaCADxFe>
- b. <https://www.youtube.com/watch?v=TFXC3SV50R0>

1. Density is the measurement of \_\_\_\_\_ & \_\_\_\_\_.
2. The mathematical formula for density is \_\_\_\_\_ & the units are \_\_\_\_\_.
3. What is the density of Aluminum if 50 g has a volume of 18.5 mL?
4. What is the mass, in grams, of lead if its density is 11.35 g/mL and there is a volume of 1.3L?
5. A piece of silver metal has a mass of 2.365 g. If the density of silver is 10.5 g/cm<sup>3</sup>, what is the volume of the silver?
6. What is the mass of a cube of aluminum 5.0 cm on each edge if the density of the aluminum is 2.7 g/cm<sup>3</sup>?
7. A sample of unknown metal is placed in a graduated cylinder containing water. The mass of the sample is 57.8 grams, and the water level rises from 50 mL to 57.34 mL. Which metal is the sample likely to be?

$$\text{Mg} = 1.74 \text{ g/cm}^3$$

$$\text{Ag} = 10.5 \text{ g/cm}^3$$

$$\text{Al} = 2.70 \text{ g/cm}^3$$

$$\text{Fe} = 7.87 \text{ g/cm}^3$$

$$\text{Cu} = 8.96 \text{ g/cm}^3$$

$$\text{Pb} = 11.3 \text{ g/cm}^3$$

## 9. Periodic Table

Obtain a copy of the Periodic Table from the Internet.

<https://0.tqn.com/z/g/chemistry/od/periodictableelements/1/PeriodicTableBW.pdf>

- (1) Shade the metals in RED
- (2) Shade the nonmetals in BLUE
- (3) Shade the metalloids in YELLOW
- (4) Label the following groups:
  - (a) Halogens
  - (b) Noble Gases
  - (c) Alkali Metals
  - (d) Alkaline Earth Metals

