

Salisbury's AP Chemistry Summer Work

Sign up to keep in touch!

Since Schoology is non-existent over the summer, I'll be using Google Classroom to keep up with your summer assignments that require online submissions.

The class access code for Google Classroom is: 9bfopni

Please also sign up for my remind 101: Text @salzapchem to 81010

Review of Chemistry Concepts

The first part of your summer assignment will be a brief review of important chemistry concepts to keep at the front of your brain, so that you're ready to add to the foundation you've already received. If you haven't had chemistry in over a year, you may want to spend a little more time than this assignment reviewing the basic chemistry concepts. I'll post some videos in Google Classroom that will help refresh your memory.

See the attached sheet for Review work. **This is due at the end of the first week of school.**

Science Literacy

One of the main goals of AP Chemistry is to make you a scientifically literate individual. Science literacy is the information and skill set you acquire that will help you understand the scientific issues of your time on this planet. According to Robert Hazen, a distinguished research scientist at the Carnegie Institution of Washington's Geophysical Laboratory, there are three main reasons why you should become scientifically literate:

- The general welfare of our nation is stronger when its citizenry is scientifically informed
- Understanding science enriches our appreciation of everyday activities
- The intellectual climate of our era is influenced by our understanding of science

(If you're intrigued check out more here: <http://www.actionbioscience.org/education/hazen.html>)

Anyways, I think it's to your benefit to explore what science is really like, so I'm asking you to do some sleuthing through the *open access* chemistry peer-reviewed literature this summer.

You will choose 2 articles and use a prompt to direct your reading of the article and the retrieval skills needed to find information within peer-reviewed literature.

To find *open access* articles in chemistry, go to this website:

<https://www.elsevier.com/physical-sciences/chemistry/chemistry-journals>

Scroll down to find a broad category within chemistry that interests you, and select a journal within that category. Click the Science Direct link to access the articles. You can search for key words or just browse through the articles to find something that sounds interesting to you. Look for open access articles, these are fully available to the public without purchase.

In Google Classroom, there is a form **you fill out and submit for each article you read.**

You will be asked for the title of the article, the authors, information about the journal you found the article in, and then you will be asked to summarize the methods used in the article and the main points of the results and conclusion. Follow the directions on the form and look at the sample in Google Classroom if you have any questions about generally where to find things in an article.

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Don't freak out if you don't know a word used in the article. My recommendation is to highlight the word or write it down somewhere, and look it up on Google. You all are in charge of your own learning, and you need to learn not to give up easily. Science is about discovering something, conquering challenges, and acquiring knowledge. Try to have some fun with this. 😊

Of course, you can email me if there's a meltdown: sksalisbury@henrico.k12.va.us
I'll try to check things fairly regularly, but I have some trips planned this summer, and may be a little unresponsive at times. Do your best, and don't give up!

All the best,

Ms. Salisbury

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Please complete the following practice problems. Feel free to put your work/answers on a separate sheet of paper. If math is involved, show all of your work- and don't forget units!!!

- How many **significant figures** are in each of the following?
 - 1.9200 mm
 - 0.0301001 kJ
 - 6.022×10^{23} atoms
 - 460.000 L
 - 0.000036 cm³
 - 10000
 - 1.001
 - 0.001345
- Record the following in correct **scientific notation**:
 - 4050,000,000 cal
 - 0.000123 mol
 - 0.00345 Å
 - 700,000,000 atoms
- Calculate the following to the **correct number** of significant figures.
 - $1.270 \text{ g} / 5.296 \text{ cm}^3$
 - $12.235 \text{ g} / 1.010 \text{ L}$
 - $12 \text{ g} + 0.38 \text{ g}$
 - $170\text{g} + 2.785 \text{ g}$
 - 2.100×3.2102
 - $2.35 - 0.4 - 1.23 =$
- Write **the latin** names for each of the elements symbols:
 - Na
 - Au
 - Ag
 - Sn
 - Fe
 - Hg
 - K
 - Pb
- Write the formula of the following compounds?
 - Calcium sulfate.
 - Ammonium Phosphate
 - Lithium Nitrite

 - potassium perchlorate.
 - Barium Oxide
 - Zinc sulfide.

 - Sodium Perbromate
 - Calcium Iodide
 - Aluminum Carbonate.
- What is the empirical formula of a compound that contains 53.73% Fe and 46.27% of S ?
- Determine the number of molecules present in 4.50 mol of Nitrogen dioxide, the number of atoms of oxygen.
- List the following as diatomic molecule, molecular compound, ionic compound, Atomic element. Draw particle diagram for each.
 - F₂
 - Cl₂
 - C
 - NaCl
 - KF
 - CO₂
 - H₂
 - Ag

 - Rust (Fe₂O₃)
 - MgO
 - O₂
 - I₂
 - CO
 - K₂CO₃
- The molecular formula of morphine, a pain-killing narcotic, is C₁₇H₁₉NO₃.
 - What is the molar mass?
 - What fraction of atoms in morphine is accounted for by carbon?

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c. Which element contributes least to the molar mass?

10. Write a **balanced equation** for the following:

a. Reaction of boron trifluoride gas with water to give liquid hydrogen fluoride and solid boric acid, (H_3BO_3).

b. Reaction of magnesium Oxide with Iron to form Iron (III) Oxide and Magnesium.

c. The decomposition of dinitrogen Oxide gas to its elements.

d. The reaction of Calcium Carbide solid with water to form calcium hydroxide and acetylene (C_2H_2) gas.

e. The reaction of solid calcium cyan amide (CaCN_2) with water to form calcium carbonate and ammonia gas.

f. Ethane burns in air (Oxygen).

11. Fill in the formula for the following:

Common Polyatomic Ions (that pop up on the AP Exam)

Name	Formula	Name	Formula
a) Acetate		b) Ammonium	
c) Carbonate		d) Chlorate	
e) Chlorite		f) Chromate	
g) Cyanide		h) Dichromate	
i) monohydrogen Phosphate		j) Dihydrogen Phosphate	
k) Hydrogen Carbonate		l) Hydrogen Sulfate	
m) Hydrogen Sulfite		n) Hypochlorite	
o) Hydroxide		p) Nitrate	
q) Nitrite		r) Oxalate	
s) Perchlorate		t) Permanganate	
u) Peroxide		v) Phosphate	
w) Sulfate		x) Sulfite	
y) Thiosulfate			

Common Acids	Formula	Common Acids	Formula
Hydrochloric Acid		Phosphoric acid	
Perchloric acid		Hydrofluoric acid	
Carbonic acid		Sulfurous Acid	
Nitrous acid		Sulfuric Acid	
Nitric Acid		Hypochlorous Acid	
Chlorous Acid		Chloric Acid	