AP Chem @ Timber Creek with Mr. Ackley

Welcome to Advanced Placement Chemistry!!!

I am sure you are anxious to get started. Some of the material we cover will be a review, some an extension and some entirely brand new. Please remember that no question should remain unasked. The pace of the course if very quick and it is your job to catch up when falling behind.

You should make sure that your class and lab notebooks from 1st-year Chemistry are stored in a place where you can get to them. You may continue to use your lab notebook in the fall; the course notebook will serve as a good review of the fundamental concepts as we go through the AP course.

The textbook (Chemistry by Zumdahl, Zumdahl and DeCoste) is a college-level textbook and may take some getting used to. The more you read it, the better your comfort level. Reading each chapter before we cover it in class is a strong recommendation. Also, there are significant e-resources available to you for the text this year. It is in your best interest to take advantage of those.

To get started, this summer assignment reviews the fundamental calculations in Chemistry in 3 parts. The online problems MUST BE Submitted online and are due **before the first day of school**. It is worth 3 homework grades. The **test on this preliminary material** will be the **second Friday** after we return (9/13/18). This test is important because it evaluates the basic skills you have learned in your previous chemistry course. These skills are absolutely necessary for understanding the new material and it is almost impossible to pass the AP exam without them. This first test must be retaken until you get an 80%. You **will not be able to do test corrections** on any future exam without meeting this goal.

Online Tools

Google Classroom – Will use to share most resources & for some assignments

- Ask Mr. Ackley to add you if you don't see it on your home screen
- Pay attention to the stream & about tab - study material will show up here

Quizlet – use "sign-in with Google" once you get there. We will create and share study sets to help each other out through the year here.

- Follow this link to sign-up https://quizlet.com/join/y56PrZEsG

Albert – use sign-in with Google" once you get there - will use for homework sets & AP test practice problems

- Class Enrollment Code: **T1EC0T876H8R**

Remind.com

- Download the app and enter the join code: @mrak3

or

- Text the message: @mrak3 to: 81010

Required Summer Work

Part I - Quick-Prep Problems assigned online (Due **before the 1st day** of school)

1. Register for the online class using the link in Google Classroom
    a. Note the textbook access here as well
2. Complete the "**Quick-Prep**" assignment under the "assignment" tab after logging into your account & clicking "Launch Course".
    a. Everyone gets one shot at the "**quiz**" which evaluates what you know. Please do your best
    b. A unit "**Study Plan**" will get created out of 22 objectives. You may or may not see all 22 as only 15 are "required". If you do well in the quiz fewer will be required. 7 are optional.
        i. OWL does a good job guessing the formulas you want to write, but it may take a minute getting used to the math-type for formulas
        ii. When given a chance click "try another version" after you see the explanation for something you got wrong

Part II - Science Portfolio in Google Sites & Textbook Reading

Portfolio - Google Site

You will be creating the skeleton for a portfolio which will be housed in Google Sites and used to reflect on and provide evidence of your learning.

Steps

1. In Google Drive (or a new folder Titled "18-19 AP Chem") Click the "New" Button - then "more" - then "Google Sites"
2. Name your site "18-19 Science Portfolio <Your Name>"
3. Using the page menu on the right-hand side create a page for every unit we will cover
    a. You can find the unit list on the course syllabus which will be in the about tab of Google Classroom
4. Get creative on your site home page & use the insert menu to add basic content about you. Pictures, videos & text that will tell your classmates about you and your interests is a good place to start
5. Click publish once you are finished and email dackley@bhprsd.org the public URL

Textbook reading (chp 1-3) & FlipGrid - Reflection Videos

You will make one reflection video for each of 1st 3 chapters of the textbook that you read using the FlipGrid platform. Follow the link in Google Classroom

- Follow this link for links to the 3 chapters. Make sure you post one video under each of the "topics" which will be the first 3 chapters
- If you are uncertain about FlipGrid it is a place to share your voice and have conversations.

Part III - Memorize!!

Some background knowledge is required so memorization of the following is of paramount importance. You will see this all year and it is assumed on the test that the following is known by the student:

Polyatomic Ions, Strong Acids and bases. These things will be assessed with the first exam.

Solubility rules: (Optional for the first exam, will be intermittently helpful on the AP Test)

1. **Salts of (NH_4^+) ammonium and Group I are always soluble**.
2. All Cl^-, Br^-, I^-, are soluble except Ag^+, Hg_2^{2+}, and Pb^{2+} which are insoluble.
3. ClO_3^-, **NO_3^-**, CH_3COO^- **are soluble**.
4. SO_4^{2-} are soluble except with; Sr^{2+}, Ba^{2+}, Hg^{2+}, and Pb^{2+} which are insoluble
5. S^{2-} are insoluble except NH_4^+, group I cations, Ca^{2+}, Sr^{2+}, and Ba^{2+} which are soluble.
6. OH^- are insoluble except NH_4^+, group I cations, Ca^{2+}, Sr^{2+}, and Ba^{2+} which are soluble.
7. CO_3^{2-} are insoluble except $NH_4^+$and group I cations which are soluble.
8. PO_4^{3-} are insoluble except $NH_4^+$and group I cations which are soluble.

Polyatomic Ions:

Anions (Negatively Charged) A note on the table below: not all ions are listed. Prefixes (hypo-, per-) are omitted, as is the suffix "-ite." If you need to look up an ion with one of these prefixes or suffices, use the following basic rules. In some cases (for example, permanganate ion), an ion with a prefix is listed for it is the only common form.

- Start with the "-ate" form of an ion as a root.
- If the ion in question begins with "per-" then there is one more oxygen present in the ion than there is in the "-ate" form.
- If the ion in question ends in "-ite" without "hypo-" at the beginning, then there are one fewer oxygens than in the "-ate" form.
- If the ion in question ends in "-ite" and begins with "hypo-" then there are two fewer oxygens than in the "-ate" form.
- All of the prefixed or suffixed ions have the same charge as the root (-ate) form.
- Example: The hypochlorite ion is identical to the chlorate ion, but has two fewer oxygens. Thus, the formula is ClO^-.

Name	Formula	Charge
acetate	CH_3COO^-	-1
arsenate	AsO_4^{3-}	-3
bicarbonate (hydrogen carbonate)	HCO_3^-	-1
bisulfate (hydrogen sulfate)	HSO_4^-	-1
bromate	BrO_3^-	-1
bromide	Br^-	-1
carbonate	CO_3^{2-}	-2
chlorate	ClO_3^-	-1
chloride	Cl^-	-1
chlorite	ClO_2^-	-1
chromate	CrO_4^{2-}	-2
cyanide	CN^-	-1
dichromate	$Cr_2O_7^{2-}$	-2
dihydrogen phosphate	$H_2PO_4^-$	-1
fluoride	F^-	-1
hydroxide	OH^-	-1
hypochlorite	ClO^-	-1
iodate	IO_3^-	-1
iodide	I^-	-1
nitrate	NO_3^-	-1
nitrite	NO_2^-	-1
nitride	N^{3-}	-3
oxalate	$C_2O_4^{2-}$	-2
oxide	O^{2-}	-2
perchlorate	ClO_4^-	-1
permanganate	MnO_4^-	-1
peroxide	O_2^{2-}	-2
phosphate	PO_4^{3-}	-3
sulfate	SO_4^{2-}	-2
sulfite	SO_3^{2-}	-2
sulfide	S^{2-}	-2

Cations (Positively Charged) A note on the table below: most transition metals have multiple oxidation states. The roman numerals in parentheses in names denotes the oxidation state of the particular ion. For example, iron (II) has an oxidation number of +2, while iron (III) has an oxidation number of +3.

Name	Formula	Charge
aluminum	Al^{3+}	+3
ammonium	NH_4^+	+1
barium	Ba^{2+}	+2
cadmium	Cd^{2+}	+2
calcium	Ca^{2+}	+2
cesium	Cs^+	+1
chromium (II)	Cr^{2+}	+2
chromium (III)	Cr^{3+}	+3
cobalt (II)	Co^{2+}	+2
cobalt (III)	Co^{3+}	+3
cobalt (IV)	Co^{4+}	+4
copper (I)	Cu^+	+1
copper (II)	Cu^{2+}	+2
gold (I)	Au^+	+1
gold (III)	Au^{3+}	+3
hydrogen *{See note}*	H^+	+1
hydronium *{See note}*	H_3O^+	+1
iron (II)	Fe^{2+}	+2
iron (III)	Fe^{3+}	+3
lead (II)	Pb^{2+}	+2
lead (IV)	Pb^{4+}	+4
lithium	Li^+	+1
magnesium	Mg^{2+}	+2
manganese (II)	Mn^{2+}	+2
manganese (III)	Mn^{3+}	+3
manganese (VII)	Mn^{7+}	+7
dimercury {mercury (I)} *{See note}*	Hg_2^{2+}	+2
mercury (II)	Hg^{2+}	+2
nickel (II)	Ni^{2+}	+2
nickel (IV)	Ni^{4+}	+4
potassium	K^+	+1
rubidium	Rb^+	+1
scandium (III)	Sc^{3+}	+3
silver	Ag^+	+1
sodium	Na^+	+1
tin (II)	Sn^{2+}	+2
tin (IV)	Sn^{4+}	+4
titanium (II)	Ti^{2+}	+2
titanium (III)	Ti^{3+}	+3
titanium (IV)	Ti^{4+}	+4
vanadium (II)	V^{2+}	+2
vanadium (III)	V^{3+}	+3
vanadium (IV)	V^{4+}	+4

zinc	Zn^{2+}	+2

A note about hydrogen and hydronium: rarely does hydrogen ion exist on its own. When H^+ is written in equations or textbooks, it usually is a simplified way of saying H_3O^+. Water, H_2O, is constantly breaking up to form a dilute solution of hydroxide (OH^-) and hydronium ions.

A note about mercury: mercury (I) is diatomic. Hg_2 is generally treated as a single unit.

Strong Acids: HBr, HCl, HI, HNO_3, H_2SO_4, $HClO_3$ and $HClO_4$.
Strong Bases: Group I and II oxides and hydroxides. $Mg(OH)_2$ and MgO are exceptions.

Additionally, please go to the College Board website for the AP courses, AP Central at http://apcentral.collegeboard.com and read the course description for AP Chem.

This is a lot of work, so please do not wait until the last minute to start this. The sooner you start working on it, the more you will remember from your previous class, making the assignment a little easier. I recommend devoting a week for the OWL work, a few days to work on the portfolio & reviewing the memory items several times a week all summer.

If you have any questions, you can reach me at any time at dackley@bhprsd.org. Over the summer, please do not expect an immediate response, but I will respond when I have the opportunity. You can also reply to the post in the Google Classroom with a "private" or "class" comment. I also reply to messages sent via remind.

Mr. Ackley