

# Triton Regional High School Science Summer Assignments

## TABLE OF CONTENTS

Page 2 to 17 – AP Biology, Dr. Stephens  
Page 18 to 21 – AP Environmental Science, Ms. Pasquarello  
Page 22 – AP Physics, Mr. Benbassat  
Page 23 – Honors Lab Chemistry, Ms. Kind  
Page 24 to 28 – AP Chemistry, Ms. Cabbage

# A.P. Biology Summer Assignments

A.P. Biology Students,

The attached assignments are all due on the first day of school, Thursday, September 3rd 2009. I will grade each objective as a separate assignment. Before handing in the assignments, please separate the individual objectives. Your name should be on each objective and please staple any objectives that include more than one page.

Together these assignments will constitute 10% of your 1<sup>st</sup> marking period grade. In addition, there will be a quiz on Chapter 40 on September 8<sup>th</sup>, a quiz on Chapter 41 on September 11<sup>th</sup>, and a quiz on chapter 5 on September 15<sup>th</sup>.

I have no problem with you meeting in groups to discuss the assignments, **however your answers should be your own. There is no acceptable reason that two people should turn in assignments with the same answers.**

Please read through the entire packet before the end of this school year so you are sure that you understand the assignments. If you have any questions throughout the summer, you may e-mail me at [b\\_stephens412@hotmail.com](mailto:b_stephens412@hotmail.com). I will try to read my e-mail at least once a week and get back to you quickly. Several students found this very helpful last year.



9. Name and briefly describe the 3 vertical layers of the pelagic zone.

Name	Description
------	-------------

A.

B.

C.

10. Describe a typical food chain in the pelagic zone.

11. With no sunlight, what is the source of energy for the benthic zone?

12. Describe 2 different sources of nutrients available to the neritic zone.

A.

B.

13. What problem must organisms in coastal waters overcome?

14. Name and describe the 3 types of coral reefs.

Name	Description
------	-------------

A.

B.

C.

15. Define the “intertidal zone.”

16. Describe 3 reasons that estuaries are so rich in nutrients.

A.

B.

C.

17. Name and describe the 3 zones in a typical freshwater lake.

Name

Description

A.

B.

C.

18. What are the “spring and autumn overturns” and what causes them to occur?

19. What is the difference between an oligotrophic and a eutrophic lake?

20. Why are biomes typically characterized by the type of plant that grows there?

21. Describe the climatic conditions and location of the tropical rainforest biome.

22. Describe the climatic conditions and location of the deciduous forest biome.

23. Describe the climatic conditions and location of the coniferous forest biome.

24. What does the term “taiga” mean in Russian?
  
25. Describe the climatic conditions and location of the tundra biome.
  
26. What does the term “tundra” mean in Russian?
  
27. Describe the climatic conditions and location of the grassland biome.
  
28. Describe the climatic conditions and location of the savanna biome.
  
29. Describe the climatic conditions and location of the chaparral biome.
  
30. Describe the climatic conditions and location of the desert biome.
  
31. Describe 2 adaptations that plants have evolved to survive the rigors of desert life.
  - A.
  - B.

Chapter 41 – Ecosystems & Communities

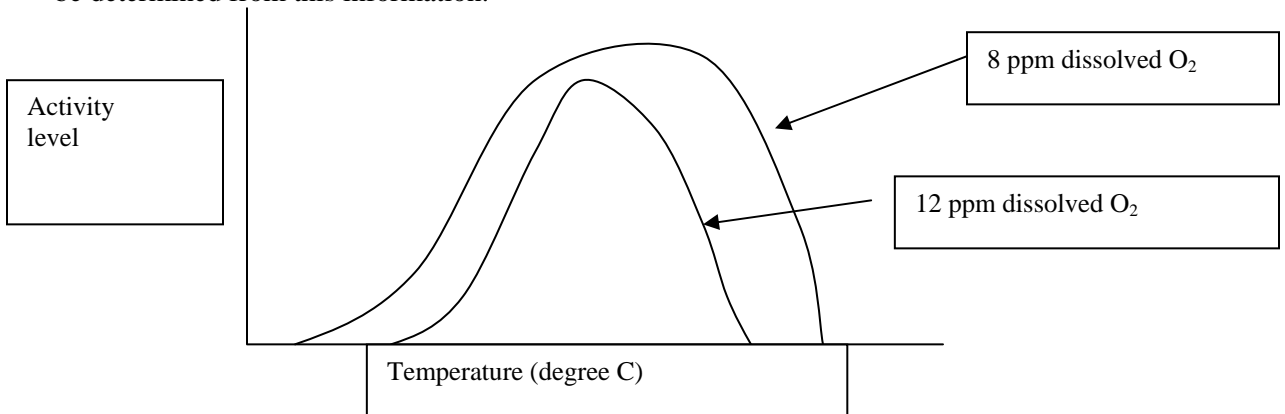
Answer the following in complete sentences.

1. Define the following:
  - A. population
  - B. community
  - C. ecosystem
2. **Contrast** abiotic and biotic conditions

3. **Name** and **describe** the 3 components of the biotic environment.

Name	Description
A.	
B.	
C.	

4. Below is a graph of the tolerance range of bass eggs for temperature. List 3 conclusion that can be determined from this information.

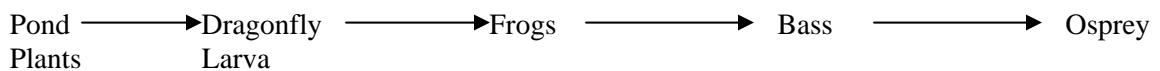


- A..
- B.
- C.

5. State Lieberg's Law of the Minimum

6. **Contrast** the terms “habitat” and “niche.”
  
7. Why is it important for an organism that is used as a biological control agent to have a narrow niche breadth?
  
8. What occurs when two different species have identical niches?
  
9. Describe an example of ecological equivalents.
  
10. **Contrast** a trophic level diagram and a food chain.
  
11. **Contrast** a trophic level diagram and an ecological pyramid.
  
12. Use the following information to complete the chart below and to answer questions # 13 – 19.

A pond ecosystem includes the following food chain:



If all the plants in the pond were collected and weighed, the total biomass would be 1,000,000 grams. Complete the following chart by showing how much biomass would be transferred at each level and how many of each animal the ecosystem should be able to support.

Animal	Total Biomass	Mass of an Individual	Total Number of Individuals
Dragonfly larva		2 grams	
Frogs		10 grams	
Bass		20 grams	

Osprey		50 grams	
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A nearby farmer sprayed an herbicide on his field to kill weeds and some of the herbicide drained into the pond. This resulted in the death of 10% of the pond plants (90% or 900,000 grams survived).  
 What is the effect on the food chain?

Animal	Total Biomass	Mass of an Individual	Total Number of Individuals
Dragonfly larva		2 grams	
Frogs		10 grams	
Bass		20 grams	
Osprey		50 grams	

13. How much energy (and resulting biomass) is **lost** at each trophic level?
  
14. What specifically is the fate of the energy that isn't transferred?
  
15. What major trophic level is missing from the above food chain?
  
16. Keeping in mind that it takes 2 ospreys to make baby ospreys, what is the fate of the osprey population at this pond?
  
17. Suppose this herbicide were a fat-soluble compound that accumulates in the tissues? Compare the concentration that would be expected in the tissues of frogs vs. ospreys. (which is greater)
  
18. What is the term that question # 17 demonstrates?
  
19. Which organism in the food chain would be a secondary consumer?
  
20. In the space below **draw** and **label** a diagram of the hydrologic (water) cycle.

21. List 3 possible fates of the water that is absorbed by plant roots.

A.

B.

C.

22. In the space below **draw** and **label** a diagram of the carbon cycle.

23. In the space below **draw** and **label** a diagram of the nitrogen cycle.

24. Describe how bacteria play an important role in the nitrogen cycle.

25. List the 3 major lessons learned from the biogeochemical cycles.

A.

B.

C.

26. What do the prefixes “bio” and “geo” mean and why do you suppose the term biogeochemical cycling was chosen for this topic?

A. bio =

B. geo =

C. why chosen?

27. Define the term succession.

28. What are the characteristics of a pioneer community?

29. What are the characteristics of a climax community?

30. What causes the change from a pioneer to a climax community?

31. List 3 examples of **primary** succession

A.

B.

C.

32. List 2 reasons why **secondary** succession occurs more quickly than **primary** succession.

A.

B.

**Answer the following in complete sentences.**

1. How did Ernst Overton come to his conclusion in 1890 that the cell possesses a “lipid-containing membrane?”
2. Describe Gorter and Grundel’s 1925 conclusions about the cell membrane.
3. Sketch a phospholipid molecule (page 77) and label the hydrophilic and hydrophobic ends.
4. Contrast the Davson-Danielli and the Singer-Nicolson models of membrane structure.
5. How did freeze-fracturing support the Singer-Nicholson model?
6. The membrane is said to be a “fluid-mosaic.” Describe how the membrane is fluid and how t is a mosaic.

A. fluid.

B. mosaic

7. Which 3 scientists receive the most credit for the cell theory. Did they work together on the theory?

8. State the cell theory.

9. Contrast prokaryotic and eukaryotic cells.

10. Read the essay on pages 808 and 809. We currently use the 5-kingdom model of classification. Which of the 5 kingdoms are prokaryotes and which are eukaryotes?

11. If Woese and Fox have their way and we adopt the new 3-kingdom model, how will that change your answer to question #10?

12. describe the functions of each of the following membrane components:

A. phospholipids

B. proteins

C. glycoproteins

13. Define the term “organelle.”

14. Describe the structure, location in the cell, and function of the nucleus.

Structure

Location

Function

15. Describe the structure, location in the cell, and function of the nuclear envelope.

Structure

Location

Function

16. Describe the structure, location in the cell, and function of the rough endoplasmic reticulum.

Structure

Location

Function

17. Describe the structure, location in the cell, and function of the smooth endoplasmic reticulum.

Structure

Location

Function

18. Describe the structure, location in the cell, and function of the Golgi complex. (a.k.a. Golgi bodies, Golgi apparatus, Golgi)

Structure

Location

Function

19. Describe the controversy over the Golgi complex and how the controversy was finally resolved.

20. Describe the structure, location in the cell, and function of the lysosome.

Structure

Location

Function

21. Describe the structure, location in the cell, and function of the vacuoles.

Structure

Location

Function

22. Describe the structure, location in the cell, and function of the nucleus.

Structure

Location

Function

23. Describe the structure, location in the cell, and function of the mitochondria.

Structure

Location

Function

24. Describe the structure, location in the cell, and function of the chloroplasts.

Structure

Location

Function

25. Describe the structure, location in the cell, and function of the cytoskeleton.

Structure

Location

Function

26. Contrast microtubules, microfilaments, and intermediate filaments

27. Contrast primary and secondary cell walls.

28. Name and describe the 3 types of intercellular junctions found in animals.

A.

B.

C.

**Ms. Pasquarello Triton APES  
SUMMER READING ASSIGNMENT**

**Ishmael** by Daniel Quinn pub. Bantam/Turner Books

Complete the attached study guide. It is due the day you return to school in September. There will be a Quiz two days after our return.

Any problems or questions my e-mail address is apasquarello @ bhprsd.org

Have a great summer with Ishmael. Hopefully you will become friends.

**Triton APES  
Study Guide  
Ishmael**

Name \_\_\_\_\_

Part 1

1. What was the writer looking for when he answered the ad and what is his name?
  
  
  
  
  
  
  
  
  
  
2. Research the significance of the name Ishmael and discuss why Sokolow renamed Goliath Ishmael.
  
  
  
  
  
  
  
  
  
  
3. In chapter 6, Ishmael states, “You’re captives of a civilization system that more or less compels you to go on destroying the world in order to live”. What does he mean?
  
  
  
  
  
  
  
  
  
  
4. According to Ishmael in chapter 6, why can’t we escape from captivity?

Part2

5. Who is Mother culture?

6. What is the purpose of the journey Ishmael will take the writer on?

Part 3

7. According to Ishmael, why is our vision of creation and evolution a myth and why doesn’t our culture recognize this?

Part 4

8. According to the Takers, what is man's destiny?

9. According to Ishmael, what is the price of enacting this destiny?

Part 5

10. Why, under human rule, has the earth not become a paradise?

Part 6

11. Where should we look for the information on how we ought to live and what will happen if we don't find it?

Part 7&8

12. What four things do Takers do that are not done by any other species in the community of life?

13. What law does every species on earth follow except the Takers, and what is the result of this for humankind?

Part 9

14. Distinguish between the Tree of Life and the Tree of Knowledge of Good and Evil.

15. As the Takers expanded the agricultural revolution what happened to the Leavers?

Parts 10&11

16. How does the 'cultural revolution' of the Takers and Leavers differ and what does Mother culture say about each?

Part 12

17. What happens to people who live in the hands of the gods that will not happen to those who live in the knowledge of good and evil?

18. What will eventually happen to the takers?

19. What does belonging to the world mean?

20. According to Ishmael, what is the only way we will change our behavior?

AP Physics Students:

Welcome to AP Physics. I am planning to use an Internet product called WebAssign for most of our assignments. Before classes start, I would like you to log on and get used to using the system. The log on procedure is as follows:

- go to [www.webassign.net](http://www.webassign.net)
- click on Login
- enter Username: first letter of your first name concatenated with your last name (omit any spaces or apostrophes)
- enter Institution: triton.nj
- enter Password: your student ID number

None of the entries are case sensitive.

After you log on you can click on *My Options* (upper right of screen) and enter your email address and change your password if you wish. Your email is needed in case you forget your password.

Return to your home page. Under My Assignments, click on *APCh1a*. There are 8 questions which cover some of the basic math that you need. The topics include conversions, dimensional analysis, geometry, and trigonometry. Spend a little time getting used to answering questions. If you don't miss any, try putting in some wrong answers. In general you will be able to answer the questions up to ten times. For numerical answers, the tolerance will generally be set to within 1%.

The following online resources are available. The web sites should be added to your favorite lists. Both can be copied from the description in the above assignment.

- Interactive problems
  - <http://higheredbcs.wiley.com/legacy/college/cutnell/0471151831/ilw/audio/ilw.html?newwindow=true>
  - practice with problem 2.1
- Concept Simulations
  - <http://higheredbcs.wiley.com/legacy/college/cutnell/0471151831/concepts/index.htm?newwindow=true>
  - practice with problem CS1.1

A graphing calculator is not required for the class. A scientific calculator is sufficient. If you are using a graphing calculator, you may want to spend some time this summer to learn how to solve quadratic equations and simultaneous equations. The following functions can be used on a TI89:

- math / matrix / simult
- math / algebra / solve
- math / algebra / zeros

The TI83 will probably require writing and storing a program and learning how to enter and invert a matrix.

The attached sheet is a review of the metric system, scientific notation, and significant figures. It is assumed that you have been using and are comfortable with this material.

If you have any questions or problems, you can send me an email at [dbenbassat@bhprsd.org](mailto:dbenbassat@bhprsd.org).

Enjoy the summer. I am looking forward to working with you in the fall.

Mr. Benbassat



## **Summer Assignment for Honors Chemistry**

Please come to S4 to get your textbook. Be sure to fill out a blue textbook receipt and write your name in the book. If I am not in the room there will be a cart with books on the right side of the room next to the glass equipment case.

Read Chapter 1 “Introduction to Chemistry” in textbook.

Complete questions #16, 18, 12, 23, 24, 25, 30 in Chapter Review (p. 25-26)

Complete questions # 1-5, 9-12 in “Standardized Test Prep” (p. 27)

Complete “Interpreting Graphics” worksheet (attached)

I look forward to being your teacher. Have a great summer!

Mrs. Kind

## Ms. Cubbage – AP Chem

### Welcome to Advanced Placement Chemistry!!!

I am sure you are anxious to get started. Some of the material we will cover next year will be a review of your first year Chemistry course. Some of it will be an extension of what you already covered and some will be entirely new stuff... Please remember that no question should remain unasked. You can't learn unless you ask questions.

You should make sure that your class and lab notebooks from 1<sup>st</sup> 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 that you will be using is Chemistry, the Central Science by Brown and LeMay. It is a college-level textbook and may take some getting used to. The more you read it, the better your comfort level.

To get you started, this summer assignment reviews the fundamental calculations in Chemistry. The test on this preliminary material will be on the second Friday after we return. The summer assignment, along with additional work, will be due on that day. I will answer homework questions during and after class and discuss extensions of these problems.

Please make sure you login and become a member of our class on turn it in.com. Our class number is 2280392. The password is *science*. If you have any problems please use the discussion board to voice them. We can have a dialogue in which other members of the class can be involved. **You can reach me at any time at:** [mcubbage@bhprsd.org](mailto:mcubbage@bhprsd.org)

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:

Solubility Rules, Polyatomic Ions, Strong Acids and bases

I suggest making index cards for the following. On the first day of class you will be given an assessment on memorized material. The problems will not be on the assessment, however the solubility rules, ions, and strong acids and bases are fair game.

You should also memorize your solubility rules:

1. Salts of  $(\text{NH}_4^+)$  ammonium and Group I are always soluble.
2. All  $\text{Cl}^-$ ,  $\text{Br}^-$ ,  $\text{I}^-$ , are soluble except  $\text{Ag}^+$ ,  $\text{Hg}_2^{2+}$ , and  $\text{Pb}^{2+}$  which are insoluble.
3.  $\text{ClO}_3^-$ ,  $\text{NO}_3^-$ ,  $\text{CH}_3\text{COO}^-$  are soluble.
4.  $\text{SO}_4^{2-}$  are soluble except with;  $\text{Sr}^{2+}$ ,  $\text{Ba}^{2+}$ ,  $\text{Hg}^{2+}$ , and  $\text{Pb}^{2+}$  which are insoluble
5.  $\text{S}^{2-}$  are insoluble except  $\text{NH}_4^+$ , group I cations,  $\text{Ca}^{2+}$ ,  $\text{Sr}^{2+}$ , and  $\text{Ba}^{2+}$  which are soluble.
6.  $\text{OH}^-$  are insoluble except  $\text{NH}_4^+$ , group I cations,  $\text{Ca}^{2+}$ ,  $\text{Sr}^{2+}$ , and  $\text{Ba}^{2+}$  which are soluble.
7.  $\text{CO}_3^{2-}$  are insoluble except  $\text{NH}_4^+$  and group I cations which are soluble.
8.  $\text{PO}_4^{3-}$  are insoluble except  $\text{NH}_4^+$  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  $\text{ClO}^-$ .

Cells are color-coded by charge.

Name	Formula	Charge
acetate	$\text{CH}_3\text{COO}^-$	-1
bicarbonate (hydrogen carbonate)	$\text{HCO}_3^-$	-1
bisulfate (hydrogen sulfate)	$\text{HSO}_4^-$	-1
bromate	$\text{BrO}_3^-$	-1
bromide	$\text{Br}^-$	-1
carbonate	$\text{CO}_3^{2-}$	-2
chlorate	$\text{ClO}_3^-$	-1
chloride	$\text{Cl}^-$	-1
chromate	$\text{CrO}_4^{2-}$	-2
cyanate	$\text{OCN}^-$	-1
cyanide	$\text{CN}^-$	-1
dichromate	$\text{Cr}_2\text{O}_7^{2-}$	-2
dihydrogen phosphate	$\text{H}_2\text{PO}_4^-$	-1
fluoride	$\text{F}^-$	-1
hydroxide	$\text{OH}^-$	-1

iodate	$\text{IO}_3^-$	-1
iodide	$\text{I}^-$	-1
nitrate	$\text{NO}_3^-$	-1
nitride	$\text{N}^{3-}$	-3
oxalate	$\text{C}_2\text{O}_4^{2-}$	-2
oxide	$\text{O}^{2-}$	-2
permanganate	$\text{MnO}_4^-$	-1
phosphate	$\text{PO}_4^{3-}$	-3
sulfate	$\text{SO}_4^{2-}$	-2
sulfide	$\text{S}^{2-}$	-2
thiocyanate	$\text{SCN}^-$	-1
thiosulfate	$\text{S}_2\text{O}_3^{2-}$	-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.

Cells are color-coded by charge.

Name	Formula	Charge
aluminum	$\text{Al}^{3+}$	+3
ammonium	$\text{NH}_4^+$	+1
barium	$\text{Ba}^{2+}$	+2
cadmium	$\text{Cd}^{2+}$	+2
calcium	$\text{Ca}^{2+}$	+2
cesium	$\text{Cs}^+$	+1
chromium (II)	$\text{Cr}^{2+}$	+2
chromium (III)	$\text{Cr}^{3+}$	+3
cobalt (II)	$\text{Co}^{2+}$	+2
cobalt (III)	$\text{Co}^{3+}$	+3
cobalt (IV)	$\text{Co}^{4+}$	+4
copper (I)	$\text{Cu}^+$	+1
copper (II)	$\text{Cu}^{2+}$	+2
gold (I)	$\text{Au}^+$	+1
gold (III)	$\text{Au}^{3+}$	+3
hydrogen <i>[See note]</i>	$\text{H}^+$	+1
hydronium <i>[See note]</i>	$\text{H}_3\text{O}^+$	+1
iron (II)	$\text{Fe}^{2+}$	+2

iron (III)	Fe <sup>3+</sup>	+3
lead (II)	Pb <sup>2+</sup>	+2
lead (IV)	Pb <sup>4+</sup>	+4
lithium	Li <sup>+</sup>	+1
magnesium	Mg <sup>2+</sup>	+2
manganese (II)	Mn <sup>2+</sup>	+2
manganese (III)	Mn <sup>3+</sup>	+3
manganese (VII)	Mn <sup>7+</sup>	+7
mercury (I) <i>[See note]</i>	Hg <sub>2</sub> <sup>2+</sup>	+2
mercury (II)	Hg <sup>2+</sup>	+2
nickel (II)	Ni <sup>2+</sup>	+2
nickel (IV)	Ni <sup>4+</sup>	+4
potassium	K <sup>+</sup>	+1
rubidium	Rb <sup>+</sup>	+1
scandium (III)	Sc <sup>3+</sup>	+3
silver	Ag <sup>+</sup>	+1
sodium	Na <sup>+</sup>	+1
tin (II)	Sn <sup>2+</sup>	+2
tin (IV)	Sn <sup>4+</sup>	+4
titanium (II)	Ti <sup>2+</sup>	+2
titanium (III)	Ti <sup>3+</sup>	+3
titanium (IV)	Ti <sup>4+</sup>	+4
vanadium (II)	V <sup>2+</sup>	+2
vanadium (III)	V <sup>3+</sup>	+3
vanadium (IV)	V <sup>4+</sup>	+4
zinc	Zn <sup>2+</sup>	+2

**A note about hydrogen and hydronium:** rarely does hydrogen ion exist on its own. When H<sup>+</sup> is written in equations or textbooks, it usually is a simplified way of saying H<sub>3</sub>O<sup>+</sup>. Water, H<sub>2</sub>O, is constantly breaking up to form a dilute solution of hydroxide (OH<sup>-</sup>) and hydronium ions.

**A note about mercury:** mercury (I) is diatomic. Hg<sub>2</sub> can generally be treated as a single unit.

**Strong Acids:** HBr, HCl, HI, HNO<sub>3</sub>, H<sub>2</sub>SO<sub>4</sub>, and HClO<sub>4</sub>.

**Strong Bases:** Group I and II oxides and hydroxides. Mg(OH)<sub>2</sub> and MgO are exceptions.

**Summer Review Assignment: Students can turn in assignments via turn it in.com or if this is difficult you may submit them as attachments to emails to me.**

**Chapter 1 & 2: Problems due by 7/10/08**

**Chapter 1:**

Read the chapter summary (p. 30) and review the sections of the chapter that are needed.

Problems: pg. 30 # 1.1-1.8, 1.10, 1.15-1.16, 1.24, 1.26, 1.28, 1.34, 1.38, 1.42, 1.46, 1.50, 1.54, 1.60, 1.64, 1.65, 1.70-1.72, 1.77, 1.79, 1.80, 1.82

**Chapter 2:**

Read the chapter summary (p. 69) and review the sections of the chapter that are needed.

Problems: pg. 70 # 2.1, 2.2, 2.4, 2.6, 2.8, 2.10, 2.12, 2.14, 2.16, 2.18, 2.20, 2.22, 2.24, 2.28, 2.31, 2.39, 2.40, 2.45, 2.48, 2.50, 2.54, 2.58, 2.60, 2.68, 2.78, 2.80, 2.82, 2.90, 2.91, 2.96

**Chapter 3: Problems due by 8/15/08**

Read the chapter summary (p. 109) and review the sections of the chapter that are needed.

Problems: pg. 110 # 3.1-3.8, 3.10, 3.12, 3.14, 3.18, 3.20, 3.22, 3.24, 3.30, 3.32, 3.34, 3.42, 3.44, 3.46, 3.48, 3.50, 3.54, 3.56, 3.60, 3.62, 3.64, 3.72, 3.76

**Chapter 4 Problems due by 9/7/08**

Read the chapter summary (p156) and review the sections of the chapter that are needed.

Problems: pg 157 # 4.1-4.14, 4.18, 4.26, 4.33, 4.36, 4.40, 4.42, 4.47, 4.50, 4.54, 4.56, 4.60, 4.62, 4.66, 4.80, 4.86, 4.97

Additionally, please go to the College Board web site for the AP courses, AP Central at:

<http://apcentral.collegeboard.com> and read the course description for AP Chem.

Good Luck and I am here if you need me.

Have a good summer.

Ms. Cabbage