

Summer Assignment for AP Chemistry (Parts I and II)

Teacher: Dr. Bennett

SFP

Summer Assignment Part I: Matter, Math and the Metric System

Part I of your summer assignment is to:

- (a) Write definitions for the key terms in the *matter and its origins* unit of the online textbook *Chemistry the Science in Context*. This vocabulary list will be included in (and graded as part of) your portfolio for the first quarter and should be mostly a review of terms you have seen in previous science courses.
- (b) Review the metric system of measurements i.e. the SI units (and common prefixes) for mass, volume, distance, temperature, and energy. Prepare a brief 1-2 page summary that you can keep in your portfolio.
- (c) Complete the tutorials on significant figures, scientific notation, dimensional analysis and temperature conversions. View these chapter one tutorials on the website listed below.

<http://www.wwnorton.com/college/chemistry/gilbert/overview/ch1.htm>

Write summary notes, for each of these four tutorials, that are complete and concise (1-2 pages each). Be sure to include worked examples. These summary notes are to be included in (and graded as part of) your portfolio for the first quarter.

Summer Assignment Part II: Visit the American Museum of Natural History

(In Search of Gems, Gold, and Other Cool Stuff)

Prior to your museum visit, discuss the following questions with your parents and grandparents and then complete the form.

Do certain gemstones or precious metals have a special importance in your culture?

What is your birthstone? What is the birthstone of one of your family members?

Is there a piece of jewelry in your family that has an interesting story behind it?

Did you or your parents ever live near a mine at any time in your life?

Do you remember what kind of mine it was?

Review the following terms **prior** to visiting the museum:

Element

Ionic compound

Crystal and crystal structure

Metal

Alloy

Museum displays to visit and required activities

- Guggenheim Hall of Minerals and Morgan Memorial Hall of Gems (including video)
- Gottesman Hall of Meteorites (including the video)
- Rose Gallery exhibit of the Willamette meteorite
- Hall of Planet Earth (in particular the Effusive Volcanism and Explosive Volcanism displays and videos)
- Grand Gallery – recent acquisitions displays – stibnite crystal

Activities and required work to hand in after the museum visit - As you visit the above exhibits, complete the **scavenger hunt** and gather information and photos for your **elements project**. Be sure to **document** your visit with ticket stubs and, photos. It may be fun to visit the museum with a friend but remember each student must do their own work and submit their own unique project. You must also hand in the **questionnaire** you completed with your family prior to your visit.

Think about It! As you visit the exhibits you will find information on the chemical composition of the various ionic compounds, network solids, metals and metal alloys on display. Why do you think some elements are found in pure form in the earth while many other elements are found in the earth only as compounds with other elements?

What were your favorites? Use your camera or cell phone to take pictures of your favorite three exhibits. Be sure to write some notes to help you remember and identify these exhibits.

Elements Project:

At the Hall of Minerals in the museum, you will search for examples of minerals that include your assigned element. Take pictures and notes, and use these in addition to further research to create a 8 ½ x 11 inch poster about your assigned element. The finished work should be slipped into a clear plastic sheet protector .

The poster will include the name of the element, its square from the periodic table (including chemical symbol, atomic number, atomic mass, and electron configuration), uses and applications, common sources, names and pictures of minerals that contain this element. Some elements will exist in the native form, for example gold. If they do, you must include a picture of it. They should also include any interesting facts you can find about the element, such as origin of the name.

Challenge- Scavenger Hunt Activity (Answer the following questions)

1. The place of origin of many of the samples that you viewed today was listed next to the sample. Which sample traveled the farthest distance to get to the Museum of Natural History?
2. Which crystal structure did you find most interesting and why?
3. Give an example of an alloy that you saw today. What is it made of?
4. Why does man value gold so much?
5. What is the historical importance of gold in South America, in Africa and in North America?
6. Name at least three places where gold is mined today?
7. Were you able to find your birthstone today? What did you learn about it?
8. Name and state the chemical composition of your favorite colored gemstone?
9. What is its color and what causes this color?
10. Where is it found in the world?