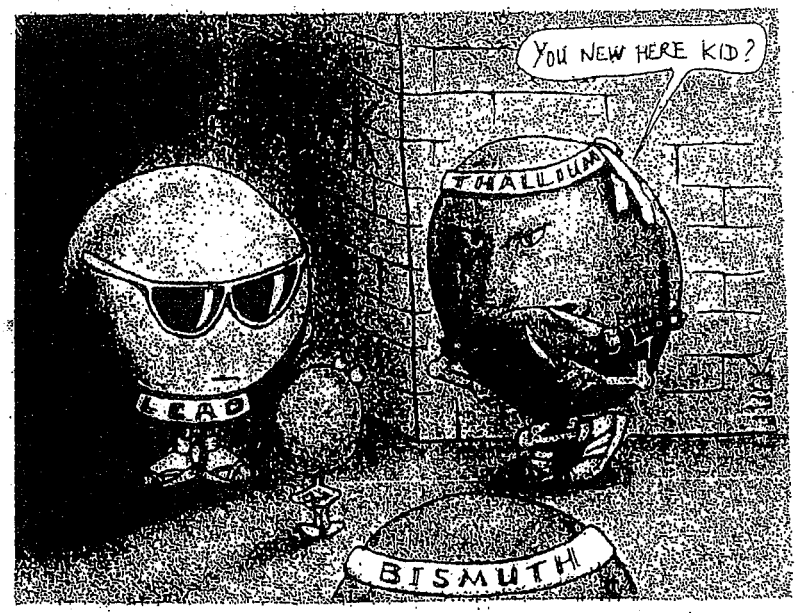
Name:_____ Date:_____

HONORS CHEMISTRY "Summer" ASSIGNMENT



Unwittingly, and against his mother's advice, Vince the first-row transition metal had been lured far away from home, and now found himself surrounded by heavier elements of the P-block.

This assignment is due the first day of class.

This is worth a TEST GRADE!!!

Honors Chemistry
Math Assessment

Supply the answers in the blanks.

1. $1.62 \times 10^6 + 1.9 \times 10^5$ = _____
2. $1.62 \times 10^6 - 1.9 \times 10^5$ = _____
3. $3.72 \times 10^{-8} + 0.211 \times 10^{-7}$ = _____
4. $3.72 \times 10^{-8} - 0.211 \times 10^{-7}$ = _____
5. $(2.3 \times 10^4)(3.1 \times 10^4)$ = _____
6. $2.3 \times 10^4 (3.1 \times 10^{-4})$ = _____
7. square root of 9.0×10^{-8} = _____
8. cube root of 8.0×10^{-9} = _____
9. approximate square root of 3.2 = _____
10. $\dfrac{(2.6 \times 10\text{-}8)}{(0.52 \times 10\text{-}9)}$ = _____
11. x if $10^x = 2$ and $\log 2 = 0.30$ = _____
12. log 24 if log 2 = 0.30 and log 3 = 0.48 = _____
13. x if $\dfrac{x^2}{0.10} = 4.0 \times 10^{-9}$ = _____
14. x if $xy = 16$ and $y^2 = 225$ = _____
15. $\dfrac{(2.4 \times 10^{-8})(0.25 \times 10^{-2})}{(1.5 \times 10\text{-}4)}$ = _____
16. $\log (1.0 \times 10^4)$ = _____
17. $\log (1.0 \times 10^{-4})$ = _____
18. x if $x^2 - 3x + 2 = 0$ = _____
19. approximate value of X of $(x + 0.1)(x) = 2.0 \times 10^{-8}$ = _____
20. x if $x + y = 3$ amd $x - y = 9$ = _____
21. If a megabuck is one million dollars and a Kilobuck is one thousand dollars, how many Kilobucks is 342 dollars? = _____
22. A certain fuel burns to give 15% ash. How much fuel needs to be burned to produce 120 pounds of ash? = _____

23. If 25,000 points are equally spaced along a straight line 0.40in. long, how far apart are adjacent points? = _____

24. There are some blondes and redheads in a Room. If 5 blondes went out and 5 redheads came in, there would be just as many blondes as redheads. However, if instead 5 redheads went out and 5 blondes came in, there would be twice as many blondes as redheads. How many redheads originally were in the room? = _____

25. A tile floor has a pattern which requires 4 red tiles for every 17 blue tiles. If there are a total of 7,749 tiles in the floor, how many of there are red? = _____

26. A ten inch candle is being burned at both ends. One end burns at the rate of one inch per hour; the other end, one and a half inches per hour. How far from the center of the candle will the burning ends meet? = _____

27. If A is inversely proportional to B and B is proportion to the square of C, what happens to A if C is doubled? = _____

28. A box contains 1085 grams total weight of marbles and ball bearings. There are two marbles for every three ball bearings. If each marble's weight is 2.0 grams and each ball bearing 9.0 grams, how many marbles are in the box? = _____

29. A wooden cube 3 in. on each edge is placed Inside a cube box that is 6in. on each edge. How Much free space is left in the box? = _____

Advanced Chemistry Assessment

Name: _____

1. What is matter?

2. The _____ of an object is the amount of matter the object contains.

3. Matter that has a uniform and definite composition is called a _____.

4. How many kinds of matter does a pure substance contain? _____

5. A physical property is a quality or condition of a substance that can be _____ or _____ without changing the substance's composition.

6. Circle the letter of the term that is NOT a physical property.
   a. odor c. boiling point
   b. density d. melting

7. Is the following sentence true or false? A chemist can help identify a substance by its physical properties.

8. Circle the letter of the term that is NOT a physical state of matter.
   a. water c. liquid
   b. gas d. solid

9. Match each arrangement of the particles in matter with a physical state.
   _____ gas a. packed tightly together
   _____ liquid b. close, but not rigidly packed
   _____ solid c. spaced far apart

10. Is the following sentence true or false? The words *gas* and *vapor* can be used interchangeably. _____

11. The term gas is limited to those substances that exist in the gaseous state at ordinary _____.

12. What is vapor?

13. A physical change alters a given material without changing its chemical _____.

14. What are some examples that describe physical change?

15. What do boiling, freezing, and melting have in common? _____

16. Is the following sentence true or false? Most samples of matter are mixtures. _____

17. What is a mixture?

18. Is the following sentence true or false? A heterogeneous mixture is one that has a completely uniform composition. _____

19. What is another name for a homogeneous mixture? _____

20. Which physical state, if any, cannot exist in a solution?

21. How many phases exist in these types of mixtures?
    a. Homogeneous _____
    b. Heterogeneous _____

22. Match each type of solution with an example of it.

_____ solid-solid	a. sugar water
_____ solid-liquid	b. vinegar
_____ liquid-liquid	c. carbon mixed with iron to form steel
_____ gas-liquid	d. soda water
_____ gas-gas	e. air

23. What is distillation?

24. Is the following sentence true or false? Elements can be separated easily into simpler substances _____

25. Compounds are substances that can be separated into simpler substances only by _____ means.

26. Is the following sentence true or false? The properties of compounds are different from those of their component elements. _____

27. Is the following sentence true or false? The elements that make up a compound are always present in the same proportions. _____

28. Answer the following questions.
    a. Pb is the symbol for what element? _____
    b. What is the symbol for gold? _____
    c. What is the symbol for silver? _____

29. What happens in a chemical reaction?

30. In chemical reactions, the starting substances are called _____ and the substances formed are called _____.

31. Is the following sentence true or false? Chemical properties are observed only when a substance undergoes a chemical change. _____

32. What are some words that describe chemical change?

33. Which representation of a chemical reaction is correct?
    a. products go to reactants
    b. reactants go to products

34. During a chemical reaction, the mass of products is always equal to the mass of _____.

35. What is the law of conservation of mass?

36. Is the following statement true or false? A qualitative measurement gives a precise, numerical result.

_____

37. Is the following statement true or false? A quantitative measurement gives a result in a definite form, usually as a number and a unit. _____

38. Five types of measurements you might make are described below. Label each sentence that describes a qualitative measurement QUAL. Label each sentence that describes a quantitative measurement QUAN.

_____ You touch another person's forehead and say, "You feel feverish."

_____ You need to cut wood to make a shelf for a bookcase. You use a tape measure to mark off a 50-centimeter length of wood.

_____ With a thermometer, you find that you have a temperature of 39.0 °C.

_____ After visually observing a car speed down a street, you exclaim to a friend that the car was traveling "way too fast."

_____ You hold two rocks, one in each hand, and say, "The rock in my right hand is heavier."

39. Circle the letter of the answer in which 503 000 000 is written correctly in scientific notation.

a. 5.03×10^{-7}
b. 503×10^{6}
c. 5.03×10^{8}
d. 503 million

40. Is the following sentence true or false? To decide whether a measurement has good precision or poor precision, the measurement must be made more than once. _____

41. Label each of the three following sentences that describes accuracy with an *A*. Label each sentence that describes precision with a *P*.

_____ a. Four of five repetitions of a measurement were numerically identical, and the fifth varied from the others in value by less than 1%.

_____ b. Eight measurements were spread over a wide range.

_____ c. A single measurement is within 1% of the correct value.

42. Circle the letter of the correct digit. In the measurement 43.52 cm, which digit is the most uncertain?

a. 4 c. 5
b. 3 d. 2

43. Circle the letter of the correct number of significant figures in the measurement 6.80 m.

a. 2 c. 4
b. 3 d. 5

_____ name

_____ per

_____ date

Matter Webquest

Matter: Is anything that has mass and takes up space.

Visit http://www.chem.purdue.edu/gchelp/atoms/elements.html

1) Define the term element and include a diagram to illustrate.

2) Define the term compound and include a diagram to illustrate.

3) Define the term mixture and include a diagram to illustrate.

Visit http://www.meta-synthesis.com/webbook/31_matter/matter.html

4) Draw a diagram below that shows how matter can be classified into mixtures and pure substances, then into heterogeneous and homogeneous mixtures, and elements and compounds.

Visit http://www.ausetute.com.au/puresubs.html

5) What is the difference between a pure substance and a mixture? Give examples of each.

6) List 5 ways that mixtures can be separated and include the physical property that allows it to be separated.

Visit http://www.elmhurst.edu/~chm/vchembook/106Amixture.html

7) What is the difference between a **homogeneous mixture** and a **heterogeneous mixture**? What property distinguishes a homogeneous mixture from a heterogeneous mixture?

8) What are the two types of **heterogeneous mixtures**? Give an example and how do you identify one from the other?

9) What is another name for a **homogeneous mixture**? Give an example.

Visit http://education.jlab.org/qa/compound.html

10) What is the difference between an element, compound, and molecule? Based on this information, classify the following as one or more than one of the following. O_2, H_20, NaCl, N_2, S_8, $CaCl_2$, Br, C

Visit http://www.visionlearning.com/library/module_viewer.php?mid=120

11) Briefly describe the 4 states of matter.

12) Explain the Kinetic Molecular Theory and discuss how this relates to matter changing phases.

_____ name

_____ per

_____ date

WebQuest: Atoms, Elements & The Periodic Table

A WebQuest is an opportunity for you to educate yourself by doing guided research on the internet. Research each question thoroughly and answer in complete sentences. You may need to do additional research to answer questions. If you use a resource other than one I have listed, you **must** cite the reference in parenthesis at the end of your answer. *Uncited answers will receive no credit! (wickipedia is acceptable for this assignment)*

Atoms rock!

http://www.chem4kids.com/files/atom_intro.html
http://education.jlab.org/atomtour/index.html

1. What is an atom?

2. Create a data table to compare the three fundamental subatomic particles that make up an atom. Include: name, symbol, charge, location and mass of each.

3. State three things that make these subatomic particles different from one another.

4. Is there anything smaller than the three fundamental subatomic particles? What?

5. We use the Bohr model of the atom to learn about chemistry. This model was proposed in 1913 and has since been updated and modified. Why do you think we continue to use an outdated model to learn about chemistry?

It's elemental!

http://www.chem4kids.com/files/elem_intro.html
http://education.jlab.org/qa/pen_number.html

1. What is an element?

2. What is the relationship between an atom and an element?

3. Name three ways that we can distinguish between two different elements.

4. Why are the elements placed in specific places on the periodic table?

5. Why do elements gain mass as we go down/across the periodic table?

It's all about relationships!

http://www.chem4kids.com/files/elem_pertable.html
http://chemistry.about.com/od/k12gradelessons/a/periodictable_2.htm
http://www.ptable.com/

1. How is the Periodic Table arranged?

2. All elements in a "Period" have something the same. What?

3. All elements in a "Group" have something the same. What?

4. Atomic mass is a very important factor included on the Periodic Table. What is atomic mass and which two subatomic particles mainly contribute to this mass? Why is this?

5. What is an isotope of an element?

Name _____

Period _____

Date _____

Nuclear Chemistry Webquest

In this webquest, you will explore nuclear chemistry in real-world situations. You will learn about fusion and fission, types of radiation, its effects on humans, and how nuclear power is produced as well as its repercussions and disasters. Follow the steps below and perform the tasks on a separate sheet of paper.

If at any time, you are denied access to a link, you may search for the related concepts and document the answer. Be sure to cite your references!

1. Go to http://science.howstuffworks.com/nuclear1.htm
Read through this section and the next two pages and answer the following:

a. How are isotopes related to atomic mass?

b. Describe the difference between radioactive decay and radioactive rays?

c. List 4 ways we could protect ourselves from 'natural' dangers.

2. Go to http://www.wisegeek.com/what-does-radiation-do-to-living-cells.htm

a. What happens when your body receives low levels of radiation?

b. What are two ways that radiation can harm a cell?

3. Go to http://www.atomicarchive.com/Effects/radeffects.shtml

a. List the 7 parts of your body that can be affected by radiation, and briefly explain.

4. Go to http://library.thinkquest.org/3471/radiation_effects_body.html

a. What are the units of radiation dosage commonly used?

b. What is considered a lethal dose of radiation?

c. What specifically happened to people in Chernobyl, Nagasaki, and Three Mile Island?

d. What is the treatment for overexposure to radiation?

e. Search the internet to discover what has happened in Japan to their nuclear power plants as a result of the recent earthquake. Summarize the issue and where they are currently in resolving their crisis. (You may answer on a separate piece of paper.)

5. Go to http://www.howstuffworks.com/nuclear-power.htm Read the two pages about nuclear fission. Answer the following questions:

a. How many power plants are operating in the world?

b. How many in the USA?

c. How much of the world's electricity is produced from nuclear power plants?

d. What isotope is used in nuclear power plants?

6. Write a brief statement describing your opinion on whether we should allow nuclear reactors to be used in the future. Use evidence from the readings above to support your opinion.

opinion. (You should use a separate piece of paper.)