

Name: KEY

Date: 5/6/13 Period: \_\_\_\_\_ ASSIGN

## EOG Review: Chemistry

- Matter is anything that takes up space and has mass. All matter is made of atoms.
- Atoms are made of Protons (+), neutrons (neutral), and electrons (-).
- Protons and neutrons are in the nucleus of the atom and when added together they give you the atomic mass # of the atom.
- electrons move quickly and constantly around the outside of the nucleus in the electron cloud.
- The number of electrons can change which forms ions (+ or -).
- We call atoms of the same elements with different numbers of neutrons isotopes.
- The atomic number tells you how many protons an atom has.
- Elements are classified as metals, nonmetals, or metalloids.
- In the boxes below, label the atomic number, element symbol, element name, and atomic mass #.

16
S
Sulfur
32.066
19
K
Potassium
39.098

- How many protons does Potassium have? 19
- How many electrons does Sulfur have? 16
- How many neutrons does Potassium have? 20
- How many electrons would Potassium (+1) have? 18
- How many electrons would Sulfur (-1) have? 17
- How many oxygen atoms are in  $C_{12}H_6O_6$ ? 6
- How many carbon atoms are in this  $C_{12}H_6O_6$ ? 12
- When balancing a chemical equation, you can NEVER change the subscript, you must change the coefficient.
- Balance the following reaction:  

$$\underline{2} NaCl + \underline{\quad} I_2 \rightarrow \underline{2} NaI + \underline{\quad} Cl_2$$
- Why do we balance chemical reactions? - a chemical rxn will only take place if this law is followed  
Law of Conservation of Mass - mass is neither created nor destroyed - same # of atom on both sides of equation
- 2 grams of sodium are mixed with 2 grams of chlorine. They undergo a chemical reaction. What is the mass of the product, sodium chloride? 4 grams

For the questions below, use pages NC 25-27 to help you.

- Define malleable: able to be molded or reshaped
- What types of elements are malleable? metals
- Define ductile: able to be stretched into wire or hammered very thin.
- What types of elements are ductile? metals
- Define conductivity: how well it conducts electricity
- What types of elements are good at conducting electricity? metals
- Define magnetism: if it's magnetic (+ or - charges)
- What types of elements are magnetic? metals
- Define density: how much mass in a given amount of space (m ÷ v)
- Specific Heat: how much energy it takes to heat up 1 gram of a substance by 1°C
- Solubility: how much of something can dissolve in another substance.
- How could you use the characteristics above to identify an unknown substance?  
Figure out what characteristics the unknown substance has - this will narrow down the choices.

For questions 31-42 below, write the word that best fits the description. the choices:

- Acid Chemicals with a pH BELOW 7
- Isotopes Carbon-13, Carbon-14, Carbon-15
- Solution Solute + solvent
- Neutral solution Chemicals with a pH AT 7
- 1 - farther from neutral Which pH is stronger: 5 or 1
- Solution A homogeneous mixture
- Concentration The measure of how much stuff is in a solution
- 9 - closer to neutral Which pH is weaker: 13 or 9
- Law of Conservation of Mass You must have the same mass at the beginning and the end of a reaction.
- Metalloid Type of element that has properties of both metals and nonmetals
- Base Chemicals with a pH ABOVE 7

44. How is the periodic table organized?

by atomic number

45. Atoms of the same element will ALWAYS have the same atomic number.

46. An atom becomes a positive ion if it loses electrons.

47. An atom becomes a negative ion if it gains electrons.

48. The rows in the periodic table are called periods, and the columns in the periodic table are called groups or families.

49. Most of the elements on the periodic table are metals.

50. The four types of evidence that show a chemical change/reaction has occurred are a change in color, a change in temperature, formation of a gas, or formation of a precipitate.

51. What is the difference between a physical change and a chemical change?  
Physical changes appearance, chemical changes the actual substance.


52. Water changing from a liquid to a solid is an example of a physical change.

53. Rust forming on an iron fence is an example of a chemical change.

54. Elements and compounds are both pure substances. How are they different? Elements are only one kind of atom, compounds are 2 or more types bonded together.

H<sub>2</sub>O vs H<sub>2</sub>O<sub>2</sub> - 55. How can the same elements form different compounds? different ratios of atoms

56. The freezing point of a solution is lower than the freezing point of the pure solvent, and the boiling point is higher than the boiling point of the pure solvent.

57. Describe what happens to the molecules of a substance as it goes from a solid, to a liquid, to a gas.  
The molecules get farther apart. 

58. As a substance goes from a solid, to a liquid, to a gas, density decreases.

59. The octet rule says that elements will join chemically until they get 8 valence electrons.

60. A high solubility means a large amount of solute can dissolve in the solvent, while a low solubility means a small amount of solute can dissolve.

61. How do you increase the solubility of solids? Gases?

Solids: increase temperature, gases: increase pressure.

Fill in the chart below. Use the periodic table to help you.

Element	Symbol	Atomic Mass #	Atomic #	# protons	# neutrons	# elect. s
Calcium-40 (+2)	Ca	40	20	20	20	18
Nickel -59 (-1)	Ni	59	28	28	31	29
Boron-12 (+3)	B	12	5	5	7	2
Iodine -125	I	125	53	53	72	53
Argon-41 (-1)	Ar	41	18	18	23	19
Lithium-9 (+1)	Li	9	3	3	6	2

62. The element located in Period 2, Group 17 is Fluorine. Its symbol is F. Alkali Metals

63. The element located in Period 4, Group 12 is Zinc. Its symbol is Zn.

64. On the periodic table, which group of elements is least reactive? 18 most reactive? 1 + 17

65. Particles with opposite charges attract each other. (Noble Gases)

66. Particles with same charges repel each other. Halogen

67. When atoms combine, they form compounds.

68. Chemical Bonds act like the "glue" to hold atoms together. They involve electrons.

Write the chemical formula for the following compounds. Use the periodic table for help!

69. atom of barium, 2 atoms of oxygen: BaO<sub>2</sub>

70. 3 atoms of copper, 2 atoms of chlorine: Cu<sub>3</sub>Cl<sub>2</sub>

71. 1 atom of sulfur, 4 atoms of oxygen: SO<sub>4</sub>

72. 1 atom of potassium, 1 atom of iodine: KI

73. 3 Arsenic atoms, 1 Aluminum atom, and 3 Oxygen atoms: As<sub>3</sub>AlO<sub>3</sub>

Write the charge each element would have if it became an ion.

74. Ca: +2

77. S: -2

75. K: +1

78. N: -3

76. Ga: +3

79. F: -1

80. What do you think is the MOST IMPORTANT thing you need to know about chemistry?

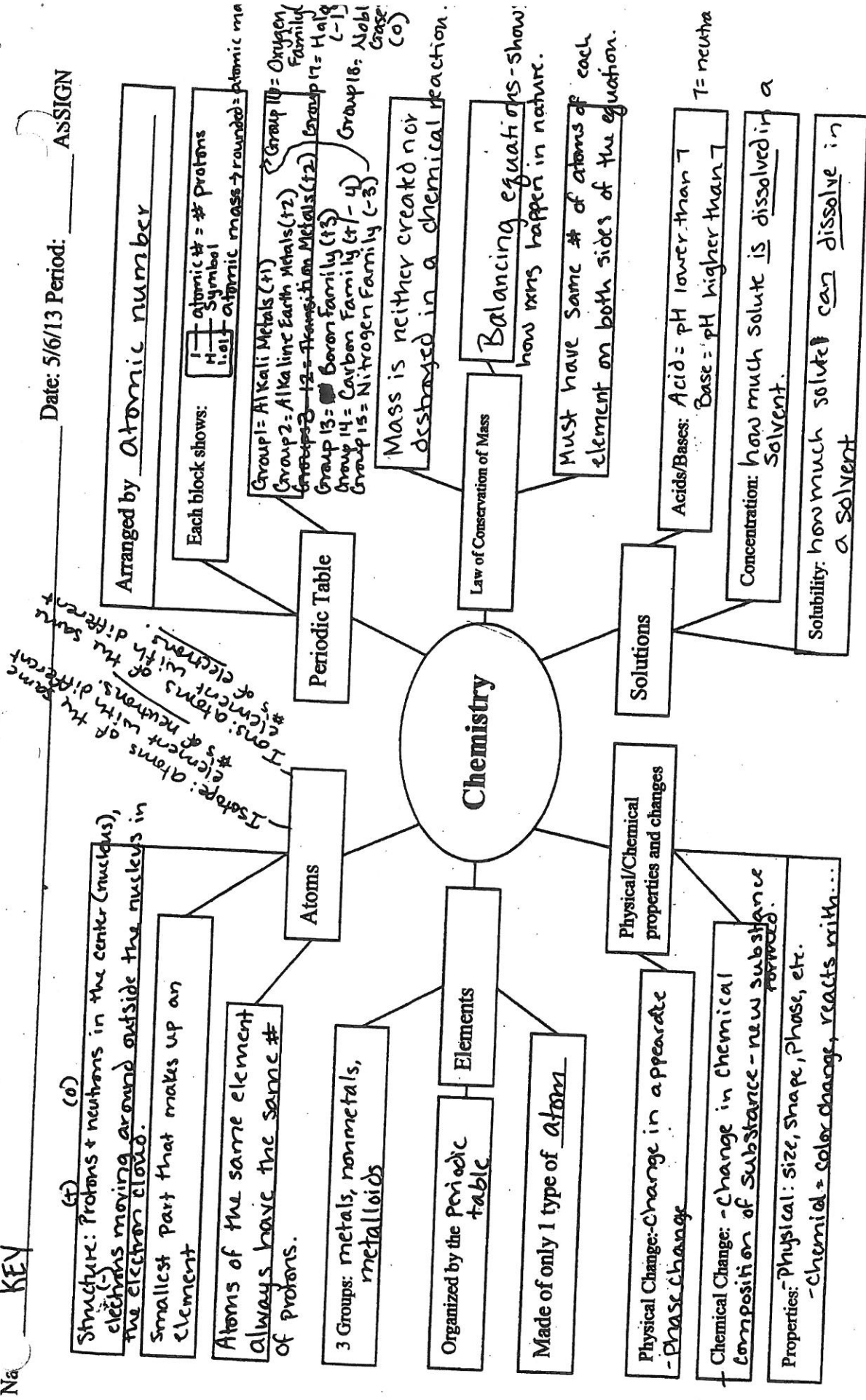
- Atomic Structure,

- Law of Conservation of Mass

- Reading the periodic table

- Physical vs. chemical changes





Summarize the information in this diagram.

