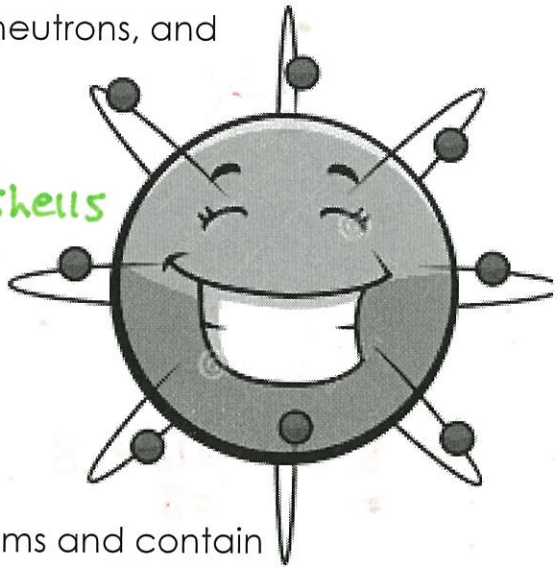
Name KEY Review Guide Chem #2 class _____



1. Explain the differences between protons, neutrons, and electrons.

   Proton = positive - in nucleus
   neutron = neutral - in nucleus
   electron = negative - in electron shells

2. Which subatomic particle determines the identity of the atom?

   Protons!

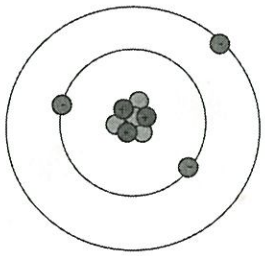
3. Which statement is true?

   A. The nucleus is found in the center of atoms and contain protons and electrons
   B. The nucleus is found in the center of atoms and contains protons and neutrons
   C. Electrons have a neutral charge
   D. Neutrons have a negative charge

4. What is the role of electrons in an atom?
   A. Electrons are in the nucleus and have a negative charge
   B. Electrons are in the nucleus and have a positive charge
   C. Electrons are outside the nucleus and have a negative charge
   D. Electrons are outside the nucleus and have a positive charge

5. How many electrons are in Lithium?

   A. 3
   B. 4
   C. 7
   D. 10



use periodic table

in an atom,
protons = # electrons

Name _____ Review Guide Chem #2 class _____

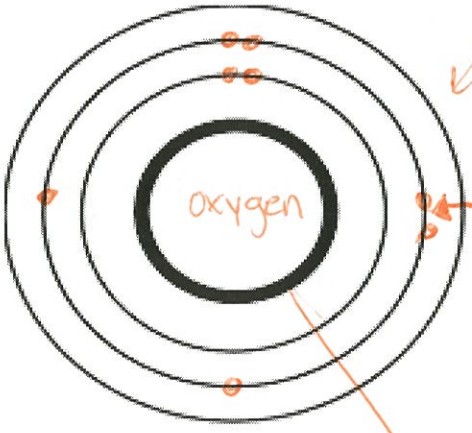
6. What statement is not true?
   A. Protons are positive and neutrons are neutral
   B. Electrons have the most mass of the subatomic particles
   C. Protons and Neutrons are found in the nucleus
   D. Electrons are found outside the nucleus and have a negative charge

electrons have no mass.

7. Draw an oxygen atom. You must use the following labels:

+ Proton = 8
Neutron = 16 - 8 = 8
- Electron = 8

Nucleus
Positive (+)
Neutral (o)
Negative (-)
Electron shell
Valence shell



electron shells (where the e⁻ are)
Valence Shell (outer shell of e⁻)
Nucleus

8. Explain what a compound is. How can you tell one by looking at a chemical formula?

ex) H + O
Mixture
H_2O Compound

Compounds have more than 1 element bonded together.
☆ Look for capital letters

9. How many different elements are present in **$C_6H_{12}O_6$**? How do you know?

3 elements
Carbon
Hydrogen
Oxygen

☆ Everytime a capital letter appears

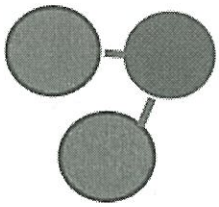
Name _____ Review Guide Chem #2 class _____

10. Which of the following is not a compound?

A. $C_6H_{12}O_6$
B. $(SO)_4$
C. H_2O
D. Cl_3 ← Chlorine is an element

11. This model represents a:

A. Compound
B. Mixture
C. Element
D. Electrons



12. Classify each as a mixture, element, or compound

a. H_20 Compound

b. H_2 element

c. Fe and S Mixture

13. Classify each as an element (E), compound (C), or mixture (M) – Put letter in each box

C_4 E	O E	Cl_3 E	N_2 E
Cl E	$C_6H_{12}O_6$ C	NaCl C	CO_2 C
HCl C	H_2O_2 C	$CaCO_3$ C	NaOH C
NaCl + H_2O M	Chocolate Milk M	Sand + H_2O M	Tea + Sugar M

Name _____ Review Guide Chem #2 class _____

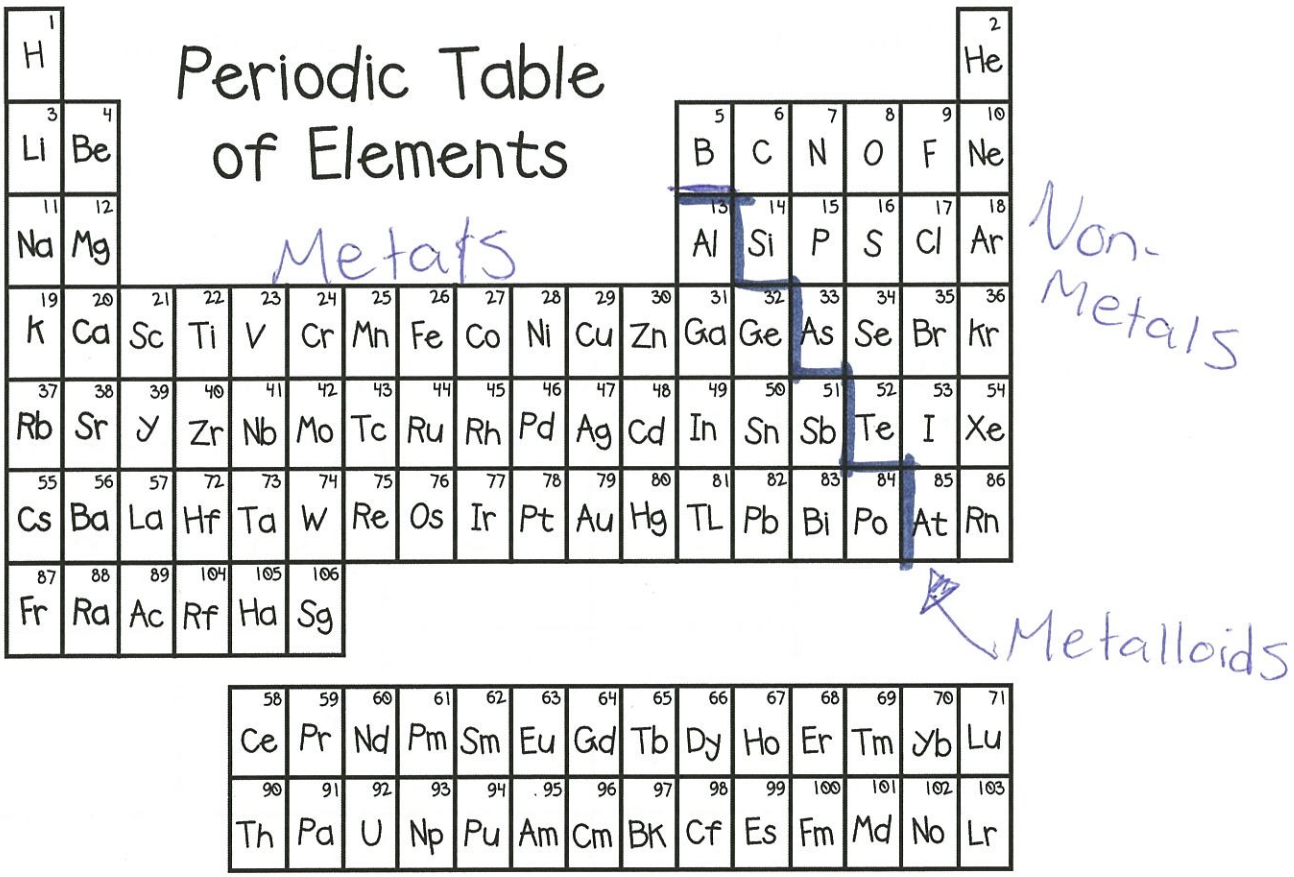
14. How many <u>elements</u> are present in the compound below?

$Na_2S_2O_3$ 3 elements Na_4OH 3

15. How many total <u>atoms</u> are present in the compounds below?

$Mg(OH)_2$ 1 2 2 = 5 CH_3OH 1 3 1 1 = 6

16. Label metals, metalloids, and non-metals on the following periodic table – hint start by drawing the staircase!



Name _____ Review Guide Chem #2 class _____

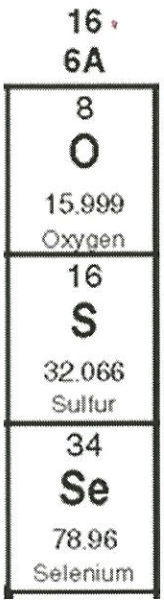
17. Label each property as a property of **METAL (M), METALLOID (L), or NON-METAL (N).**

Right Side of periodic table N	Found on the 'staircase' of the periodic table L
Shiny Luster M	Good conductor M
Mostly Solid L, M	Dull N
Malleable M	Brittle L, N
Ductile M	Poor Conductor L, N
Left side of the periodic table M	Properties of metals and nonmetals L

18. Circle one – groups aka families on the periodic table go (up & down / left & right)

19. Circle one – periods on the periodic table go (up & down / left & right)

Name _____ Review Guide Chem #2 class _____



20. Use the picture to the right. Which is not true about all of these elements?
A. They are all in the same group
B. They all have the same number of valence electrons
C. They all have the same number of protons
D. They all share similar properties

21. Which element has 2 valence electrons and is in period 4? → alkaline earth family → run left and right
A. Sodium
B. Carbon
C. Beryllium
D. Calcium

22. Which two elements share similar properties?
A. Oxygen and Sulfur → in same family
B. Oxygen and Nitrogen
C. Oxygen and Helium
D. Oxygen and Chlorine

23. Which element is the most reactive? HOW DO YOU KNOW?
A. Silicon
B. Oxygen
C. Lithium → Alkali metal family
D. Aluminum

24. Which number determines how the periodic table is arranged?
A. Atomic number → # of protons
B. Atomic Mass
C. Number of Neutrons
D. Number of ions

Name _____ Review Guide Chem #2 class _____

25. All of the elements in the same group have the same _____.

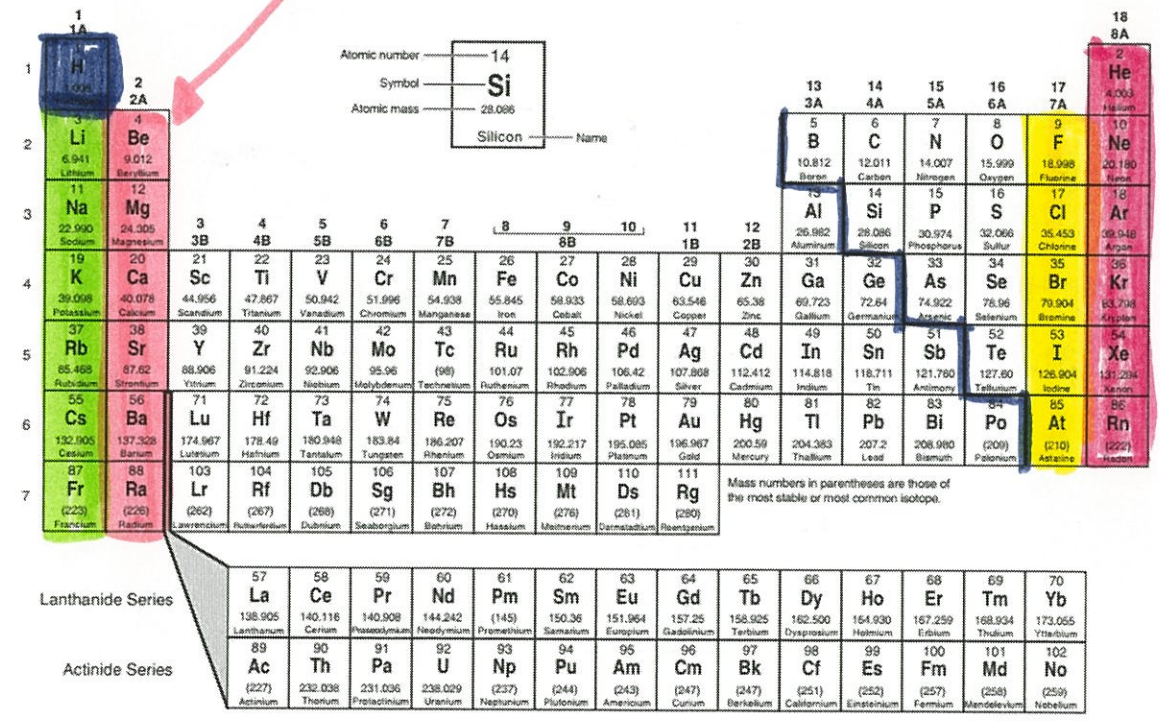
family

A. Valence electrons
B. Energy shells or orbitals
C. Atomic mass
D. Atomic number

26. Colour each family in a different colour. Be sure to make a key.

Valence e⁻

Hydrogen → 1
Noble Gas → full shell
Alkali → 1
Halogens → missing 1
Alkaline Earth → 2



Name _____ Review Guide Chem #2 class _____

Ionic vs Molecular

27. In Ionic bonds, electrons are (taken/ shared)

28. In molecular bonds, electrons are (taken, shared)

29. Draw an atom of lithium.
List the protons, neutrons, and electrons.

+ P=3
& N=7-3=4
- e⁻=3

very reactive. wants to get rid of outer electron.

overall neutral charge

30. Draw an ION of lithium.
List the number of protons, neutrons, and electrons. AND CHARGE!

P=3 Charge=1+
N=4
e⁻=2

lost a negative e⁻

so it is more positive now

31. Calculate the number of neutrons for:

Fluorine: 19 − 9 = 10

Gold: 197 − 79 = 118

Mercury: 201 − 80 = 121

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NAMING IONIC VS MOLECULAR:

32. Remember some basic rules- Molecular

1) Mono 2) di 3) tri 4) tetra 5) penta

6) hexa 7) hepta 8) octa 9) nona 10) deca

* No mono for first element.

1. Cl_2Br_3 dichlorine tribromide
2. N_2O dinitrogen monoxide
3. P_3As_2 triphosphorous diarsenide
4. C_2S_5 dicarbon pentasulphide

5. carbon hexachloride CCl_6
6. diphosphorus trifluoride P_2F_3
7. oxygen trichloride OCl_3
8. diarsenic monoxide As_2O
9. sulphur pentanitride SN_5
10. triiodine dioxide I_3O_2
11. carbon triarsenide CAs_3

Name _____ Review Guide Chem #2 class _____

33. Remember some basic rules- Ionic.

1) I 2) II 3) III 4) IV 5) V

6) VI 7) VII

* roman numerals are used to show which <u>metal</u> ion charge you are using. Metal first, then non-metal. CHARGES OF POSITIVE AND NEGATIVE MUST BALANCE!

a. Li_2O lithium oxide

b. Zn_3As_2 zinc arsenide

c. CaS Calcium Sulphide

d. Na3N Sodium nitride

e. BeF2 Beryllium fluoride

f. SrBr2 Strontium bromide

g. magnesium sulphide MgS

h. beryllium fluoride BeF_2

i. aluminum oxide Al_2O_3

j. aluminum nitride AlN

k. calcium arsenide Ca_3As_2

l. gold (III) fluoride AuF_3

m. mercury (I) oxide Hg_2O

1. titanium (III) chloride $TiCl_3$