Unit 3: Chemistry REVIEW.

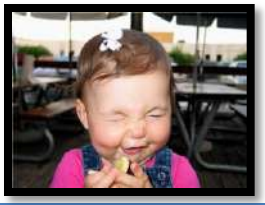
BELL RINGER:

Take out your study guide!

1.) Balance the following equation…

Unit 3: Chemistry REVIEW. Study Guide.

Acids and Bases



1. **Acids** are compounds that have H^+ ions dissolved in water.

-> Acids taste sour and are electrolytes

2. **Bases** are compounds that have OH^- ions dissolved in water.

-> Bases taste bitter, feel slippery, and are electrolytes.

3. **Salts** are an ionic compound formed when an acid neutralizes a base.

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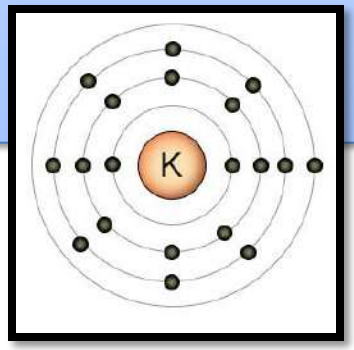
Ions and Ionic Bonding

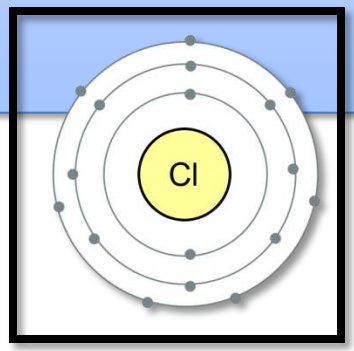
4. An **ion** forms when an atom gains or loses a/an electron.

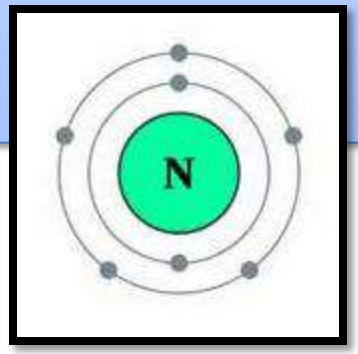
-> An example of how to write a stable ion of *potassium* would be K^+

-> An example of how to write a stable ion of *chlorine* would be Cl^-

-> An example of how to write a stable ion of *nitrogen* would be N^{3-}







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Ions and Ionic Bonding

5. Positively and negatively charged atoms are attracted by ionic bonds.

6. These bonds form between metals and nonmetals.
-> 3 Examples of ionic bonds: NaBr , Li_2O , KCl
-> Ionic Bonds also include: acids, bases and salts

$CaCO_3$	+	$2HCl$	→	H_2O	+	$CaCl_2$	+	CO_2
Calcium carbonate		Hydrochloric acid		Water molecules		Calcium chloride		

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Covalent Bonding

7. Covalent bonds are created when electrons are shared.

8. By sharing electrons, these atoms can have full outer shells and be stable.

9. Covalent bonding usually occurs between nonmetals and metals.

-> List 3 examples of covalent bonds: H_2O , CO_2 , any organic compounds

-> Covalent bonds include: diatomic molecules

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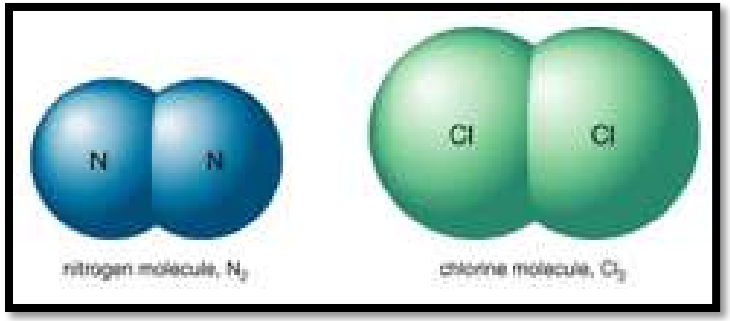
Carbohydrates/ sugars/ fats…
ALL ORGANIC COMPOUNDS!

Diatomic Molecules



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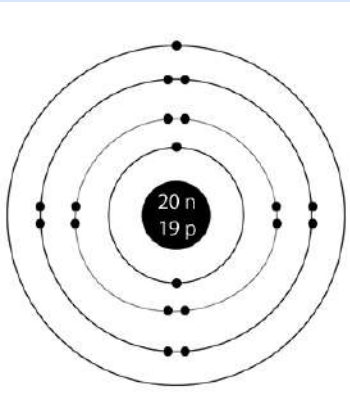
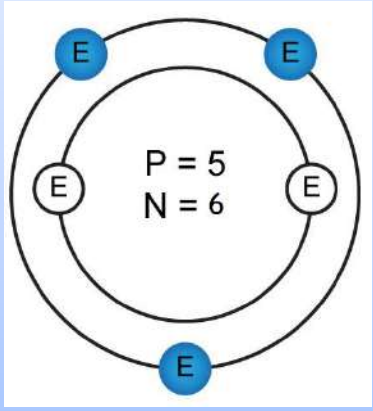
Drawing Models

10. Draw an example of a Bohr model for:

a) Potassium

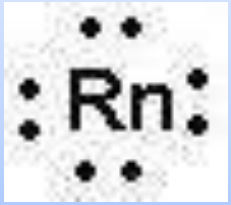


b) Boron



10. Draw an example of Lewis Dot model for:

a) Radon



b) Silicon

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Counting Atoms

12. How many atoms are there in:

a) H_2SO_4 H 2 S 1 O 4

b) $Cr(MnO_4)_6$ Cr 1 Mn 6 O 24

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Balancing Equations

13. What is the law of conservation of mass? The law that states that mass is neither created or destroyed in chemical and physical changes/ reactions

Circles the reactants and underline the products:

$Fe + Cl_2 \longrightarrow FeCl_3$

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Balancing Equations

14. Balance the following chemical equations:

$$2NaNO_3 \rightarrow 2NaNO_2 + O_2$$

$$S_8 + 12O_2 \rightarrow 8SO_3$$

$$2C_2H_3Br + 3O_2 \rightarrow 4CO + 2H_2O + 2HBr$$

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Elements, Compounds & Mixtures

An **element** is a (pure/mixed) chemical substances consisting of (two/ one) type of atom.
-> 3 Examples of elements: Sodium , Hydrogen , Iron

A **compound** is formed when two or more elements are (physically/ chemically) combined.
-> 3 Examples of compounds: H_2O_2 , H_2O , CO_2
-> 3 Examples of organic compounds: carbohydrates , sugars , fats

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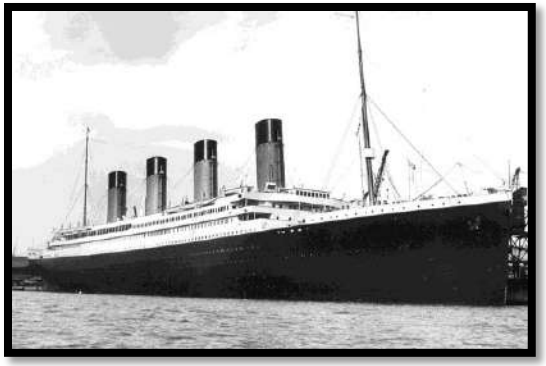
Elements, Compounds & Mixtures

A **mixture** is formed when elements or compounds are (physically/ chemically) combined

-> 3 Examples of mixtures: Salt Water , Trail Mix , Milk

-> 2 Examples of mixtures that are alloys: Brass , Steel , Bronze

Steel is an *alloy* of carbon and iron…. Which was a material used in making the titanic!



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WHY?

Metals tend to form (positive/ negative) ions? Why?