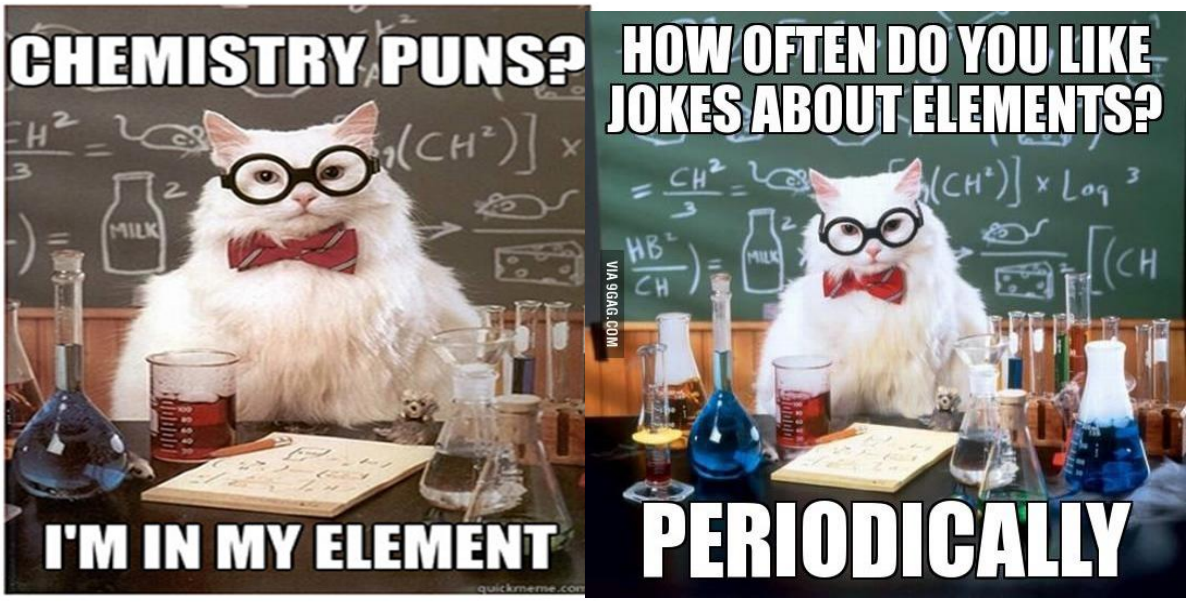
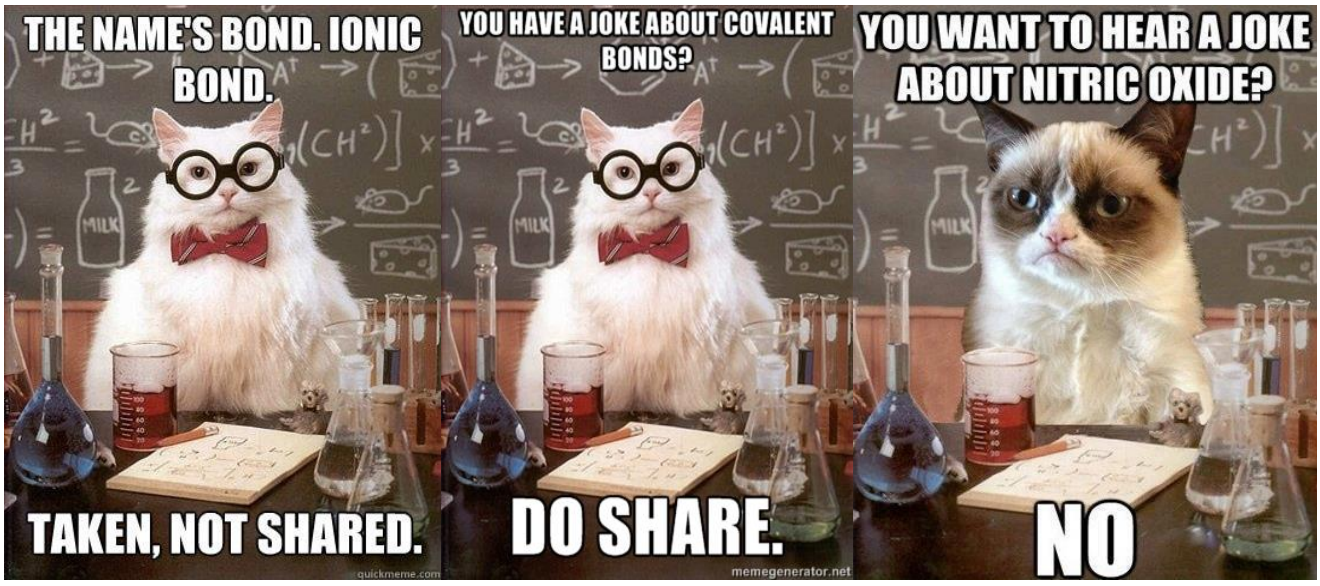




6	2	25	53	16	69	86	39
C	He	Mn	I	S	Tm	Rn	Y
Carbon 12.0107	Helium 4.002602	Manganese 54.938045	Iodine 126.90447	Sulfur 32.065	Thulium 168.93421	Radon [222]	Yttrium 88.90585

91	6	19	63	69
Pa	C	K	Eu	Tm
Protactinium 231.03588	Carbon 12.0107	Potassium 39.0983	Europium 151.964	Thulium 168.93421

Mrs. Cooks

(Due at the end of class on 10/9

Name:_____Period:____

TARGET CHECK

Target		Red- I'm Lost	Yellow – I get it MOST of the time	Green – I get this ALL of the time
8.5A	I can identify the parts of the atom, their charges, and their location within the atom.			
8.5A	I can determine the number of: • Protons			
	• Neutrons			
	• Eletrons			
	• Valence Electrons			
	• Energy Levels in an element.			
8.5B	I can identify which subatomic particle is responsible for an element's identity and the role that valence electrons plays in an element's reactivity.			
8.5C	I can use and interpret the Periodic Table to identify characteristics including valence electrons, energy levels, charges, metals, non-metals, and metalloids.			
8.5C	I can identify groups and periods on the Periodic Table.			
8.5C	I can use an element"s properties to explain it"s location on the Periodic Table			
8.5D	I can identify the following in a chemical formula			
	• **coefficient**			
	• **subscript**			
	• **reactant**			
	• **product**			
8.5D	I can analyze a chemical formula to determine the number of atoms of each element.			
8.5E	I can recognize signs that a chemical reaction is taking place.			
8.5F	I can use a chemical equation to prove the law of conservation of mass.			
8.5F	I can recognize whether or not an equation is balanced or unbalanced			

Periodic Table

The periodic table is organized like a big grid. Each element is placed in a specific location because of its atomic structure. As with any grid, the periodic table has rows (left to right) and columns (up and down). Each row and column has specific characteristics. For example, beryllium (Be) and magnesium (Mg) are found in column two and share certain similarities while potassium (K) and calcium (Ca) from row four share different characteristics.

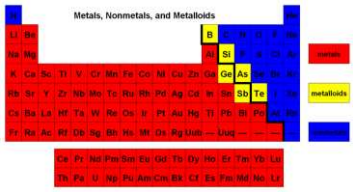
Procedure:

1. Complete the chart below using a periodic table

Element Name	Symbol	Atomic Number	Atomic Mass (ROUNDED)
Gold			
	Ag		
	Cu		
Zinc			
Sodium			
		6	
	Mn		
Magnesium			
Mercury			
	Fe		
Lead			
		1	
	K		

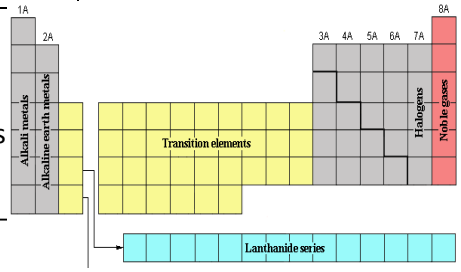
Periodic Table Notes

- Arrangement of elements
- Arranged by
  - Periods
    - _____
    - Same number of _____ _____
    - _____ Total
  - Groups
    - _____
    - Same number of _____ _____
    - ____ Total
    - Similar _____ _____
- Hydrogen and Helium
  - Special Elements
- Elements are Grouped By Type

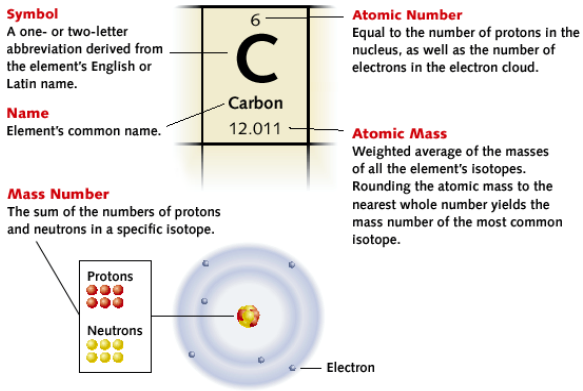


Metals	Nonmetals	Metalloids
• Left side of staircase • Malleable • Solid and Shiny • Conduct Electricity and Heat • _____ electrons	• Right side of staircase • Liquid/Gas • Brittle • _____ electrons	• Either side of the staircase • Can have properties of both metals and non-metals

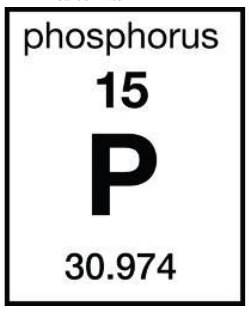
- Elements in each family have similar properties
  - Alkali Metals – Group 1 (no H): most _____ metals
  - Alkaline Earth Metals – Group 2: only needs to _____ 2 electrons
  - Halogens – Group 17: most _____ non-metals
  - Noble Gases – Group 18: not reactive because they are _____



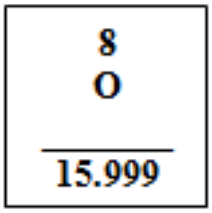
- Elements
  - Symbol
    - _____
    - Not always first letter
    - Sometimes Latin Name
      - Ex. Gold = Au = Aurum
  - Atomic Number
    - # of _____
    - # of _____
  - Atomic Mass
    - # of Protons _____ the # of Neutrons



- Element Practice
  - Fill in the blanks below.
  - Phosphorus
    - Symbol: _____
    - Atomic Number: _____
    - Atomic Mass: _____
    - Protons: _____
    - Neutrons: _____
    - Electrons: _____



Protons, Neutrons, Electrons Worksheet



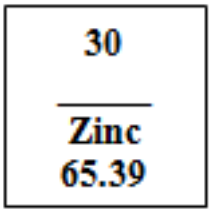
Atomic # = _____

Atomic Mass = _____

# of Protons = _____

# of Neutrons = _____

# of Electrons = _____



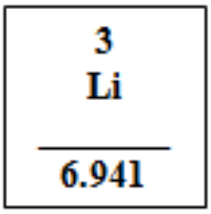
Atomic # = _____

Atomic Mass = _____

# of Protons = _____

# of Neutrons = _____

# of Electrons = _____



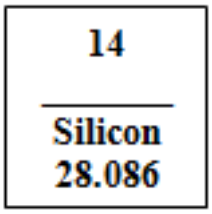
Atomic # = _____

Atomic Mass = _____

# of Protons = _____

# of Neutrons = _____

# of Electrons = _____



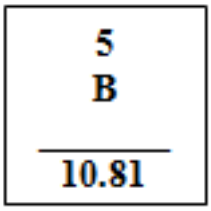
Atomic # = _____

Atomic Mass = _____

# of Protons = _____

# of Neutrons = _____

# of Electrons = _____



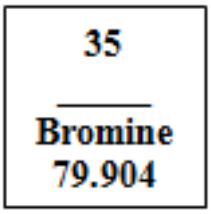
Atomic # = _____

Atomic Mass = _____

# of Protons = _____

# of Neutrons = _____

# of Electrons = _____



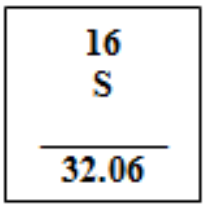
Atomic # = _____

Atomic Mass = _____

# of Protons = _____

# of Neutrons = _____

# of Electrons = _____



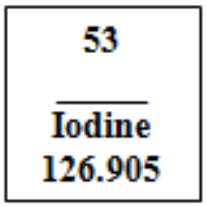
Atomic # = _____

Atomic Mass = _____

# of Protons = _____

# of Neutrons = _____

# of Electrons = _____



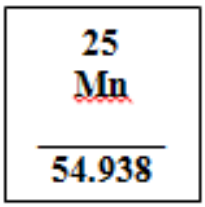
Atomic # = _____

Atomic Mass = _____

# of Protons = _____

# of Neutrons = _____

# of Electrons = _____



Atomic # = _____

Atomic Mass = _____

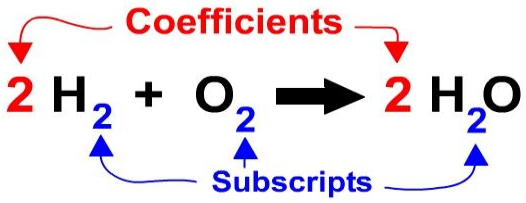
# of Protons = _____

# of Neutrons = _____

# of Electrons = _____

Counting Atoms Notes

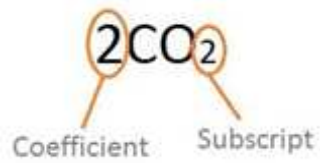
- Writing Compounds
  - Coefficient
    - Number _____ the element/compound
    - Tells you how many of the element/compound there are
  - Subscript
    - Number _____ element
    - Tells you how many atoms of that element there are



- Counting Atoms in a Compound Practice
  - $CaCO_3$
    - Ca =
    - C =
    - O =
  - $C_9H_8O_4$
    - C =
    - H =
    - O =
  - $Mg(OH)_2$
    - Mg =
    - O =
    - H =
  - $2FeS_2$
    - Fe =
    - S =
  - $H_2O + O_2$ =
    - H =
    - O =
  - $2C_7H_5(NO_2)_3$
    - C =
    - H =
    - N =
    - O =

Counting Atoms Worksheet

List the number of atoms of each element within the compound below.



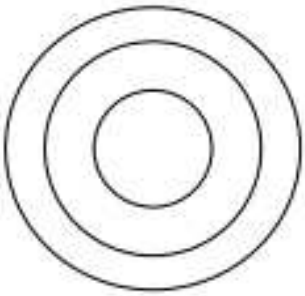
C = 2

O = 4

Compound	Atoms in Compound
NaCl	Na = 1 Cl = 1
$BaCl_2$	Ba = Cl =
LiBr	
FeS_2	
$BaSO_4$	Ba = O= S =
$CaSO_4$	
$3CaCO_2$	
$C_6H_4Cl_2$	
$C_2H_4O_2$	
$Mg(OH)_2$	
$C_7H_5(NO_2)_3$	
$2\ Ca(H_2PO_4)_2$	
$2HBr$	
$3H_20$	
$2C_20_2$	

Bohr Model Notes

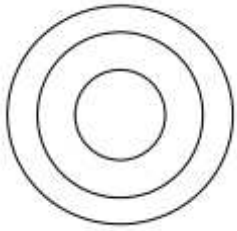
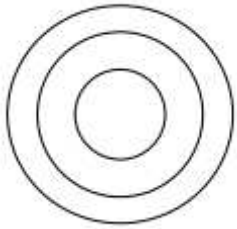
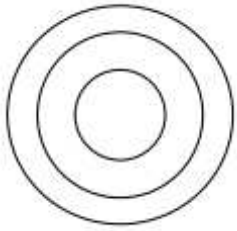
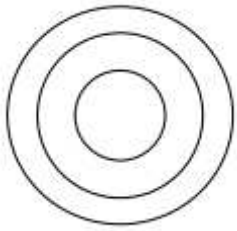
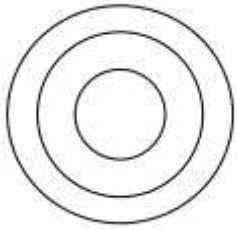
- Used to show arrangement of electrons
- Electrons are placed on the _____ energy level first
- Once full, extra electrons are placed in the next shells
- Maximum number of electrons on shells
  - 1^{st} = _____ electrons
  - 2^{nd} – _____ electrons
  - 3^{rd} – _____ electrons
- Periodic Table Tips
  - The periodic table can help you quickly complete the Bohr model
    - The number of periods shows you the number of _____
    - The number of groups shows you the number of _____ in the outer shell
- Bohr Model Practice
  - Fill in the blanks below.
    - Phosphorus
    - Symbol: _____
    - Atomic Number: _____
    - Atomic Mass: _____
    - Protons: _____
    - Neutrons: _____
    - Electrons: _____



Bohr Model Worksheet

Use the description sheet and the periodic table to help you complete the following Bohr models.

1. How many electrons can each shell hold?
   a. 1^{st} = _____
   b. 2^{nd} = _____
   c. 3^{rd} = _____

Element	Atomic #	Atomic Mass	Protons	Neutrons	Electrons	Bohr Model
Carbon	6	12	6	6	6	
Hydrogen	1	1				
Lithium	3		3		3	
Magnesium	12	24				
Boron	5	11				

Lewis Notes

- Lewis Dot Diagrams
  - Illustrates the number of valence electrons
    - Valence electrons = Number of electrons in _____ shell
    - Placed around the symbol of the element
  - Helps us determine how compounds are formed / how elements bond
- Periodic Table Tips
  - Same with the Bohr Model
    - You don't need the number of shells / periods
    - The group # gives you the number of _____ electrons
- Drawing Valence Electrons
  - How many valence electrons does Fluorine have?
  - Start at 12:00 with your first dot

    F
  - Add dots at 3:00, 6:00, and 9:00 moving clockwise until you reach the correct number of valence electrons.

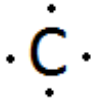
    F F F
  - You need one dot at each location before you start adding your second dots

    F F F
- Lewis Dot Diagram Practice
  - Draw the Lewis Dot Diagram for Phosphorus
    - Phosphorus
    - Symbol: ____
    - Atomic Number: _____
    - Atomic Mass: ____
    - Protons: ____
    - Neutrons: _____
    - Electrons: _____
    - **Valance Electrons: _____**

P

Lewis Dot Diagram Worksheet

Use the Bohr models to determine the number of valance electrons. Once you have found the number of valance electrons, place them around the elements symbol.

Element	Atomic #	Atomic Mass	Protons	Neutrons	Electrons	Lewis Dot
Carbon	6	12	6	6	6	 4 dots around the symbol
Lithium	3	7	3		3	Li
Magnesium	12	24	12	12		Mg
Boron	5	11	5		5	B
Oxygen	8	16	8		8	O
Fluorine	9	19	9	10		F
Nitrogen	7	14	7		7	N

Element	Atomic #	Atomic Mass	Protons	Neutrons	Electrons	Lewis Dot
Helium	2	4		2	2	He
Potassium	19		19		19	K
Aluminum	13					Al
Beryellium	4	9	4		4	Be
Silicon	14	28		14	14	Si
Iodine	52					I
Chlorine	17				17	Cl
Neon	10	20				Ne

Why do Elements Bond?

Element	# of Valence Electrons	Type of Element	What happens to the electrons	Number of Electrons Gained or Lost
Lithium	1	Metal	Lose	1 electron
Chlorine				
Sodium				
Carbon				
Calcium				
Beryllium				
Boron				
Nitrogen				
Oxygen				
Fluorine				
Hydrogen				
Magnesium				
Phosphorous				
Iodine				
Lead				
Sulfur				
Aluminum				
Neon				
Cesium				
Silicon				

Balanced or Not

Directions: List the number of elements and atoms of each element in the following equations.

6. $2HgO \rightarrow 2Hg + O_2$

Reactants		Products
Element	Atoms	Atoms

Is this equation balanced?

7. $N_2 + O_2 \rightarrow N_2O$

Reactants		Products
Element	Atoms	Atoms

Is this equation balanced?

8. $C_{10}H_{16} + Cl_2 \rightarrow C + HCl$

Reactants		Products
Element	Atoms	Atoms

Is this equation balanced?

9. $Fe + O_2 \rightarrow Fe_2O_3$

Reactants		Products
Element	Atoms	Atoms

Is this equation balanced?

10. $P_4 + O_2 \rightarrow P_2O_5$

Reactants		Products
Element	Atoms	Atoms

Is this equation balanced?

11. $8Fe + S_8 \rightarrow 8FeS$

Reactants		Products
Element	Atoms	Atoms

Is this equation balanced?

Balance This

Directions: Determine if the following equations are balanced, If the equation is not balanced, balance it. Remember, you cannot change a subscript to balance the equation, nor can you add in new compounds.

15. $Al + FeO \rightarrow Al_2O_3 + Fe$

16. $3Fe + 4H_2O \rightarrow Fe_3O_4 + 4H_2$

17. $S_8 + O_2 \rightarrow SO_3$

18. $N_2 + H_2 \rightarrow NH_3$

19. $2N_2 + O_2 \rightarrow 2N_2O$

20. $Al + O_2 \rightarrow Al_2O_3$

21. $2C_2H_6 + 7O_2 \rightarrow 4CO_2 + 6H_2O$

22. $C_3H_8 + O_2 \rightarrow CO_2 + H_2O$

23. $CO_2 + H_2 \rightarrow CH_4 + H_2O$

24. $Al + CuO \rightarrow Al_2O_3 + Cu$

25. $I_2 + Na_2S_2O_3 \rightarrow NaI + Na_2S_4O_6$

Physical versus Chemical Properties Activity

Classify the following properties as either chemical or physical by putting a check in the appropriate column.

	Statement	Physical Property	Chemical Property
1.	One can use their five senses to determine the properties of a substance.		
2.	Properties usually describe how a substance reacts		
3.	Oxygen is odorless and colorless		
4.	The density of water is 1.0 gram per cubic centimeter		
5.	The tree is 8 meters high		
6.	Alka-Seltzer tablets react with water to produce gas		
7.	Iron reacts with oxygen and forms rust		
8.	The boiling point of water is 100 degrees C		
9.	Baking soda reacts with vinegar		
10.	Oxygen is a gas		

Physical versus Chemical Reactions Activity

Classify the following properties as either chemical or physical by putting a check in the appropriate column.

	Statement	Physical Change	Chemical Change
1.	Change is easily reversible		
2.	A change that does produce a new substance.		
3.	Crushing a can		
4.	Rusting of Iron		
5.	Burning a block of wood		
6.	Mixing sand and water		
7.	Breaking a glass		
8.	Mixing baking soda and vinegar to produce carbon dioxide gas		
9.	Dissolving salt and water		
10.	Baking a cake		
11.	Chopping wood		
12.	Mixing red and green marbles		
13.	A solid is crushed to a powder		
14.	A marshmallow is toasted over a campfire		
15.	An ice cube is place in the sun. Later there is a puddle of water. Later still the puddle is gone.		

Changes in Everyday Life

Physical and chemical reactions occur all around you every day. Read the story below and underline the physical and chemical reactions you see within it. Use your **blue** pen to underline physical reactions and your **red** pen to underline chemical reactions.

Just One of Those Days

Aaahhh. A brand new day. You go into the kitchen and open the fridge and pour a glass of milk. Before you even drink it you can tell from the smell that the milk has soured. You make a glass of ice water instead. Suddenly, you hear your cat screech. You run to help her and see she has stepped on a rusty tack (you know from science class that it rusted due to oxidation). You run to call the emergency traveling vet to come to your house. As you are walking back to the kitchen, you notice that some of your plants are dying and beginning to decay and that some saltwater has evaporated out of your fish tank. You make a mental note to take care of both after school.

You go back to get your ice water but you find that the ice has melted. You are so thirsty you don't care and drink it anyway. You suddenly realize how hungry you are and take an apple from the counter and bite into it. Yum. Then you hear glass breaking. (What kind of crazy day is this?!) You run to see what has happened and find that the traveling vet accidentally broke a window. But he promises to pay for the damage before he takes your cat away to attend to her injury.

What a day, and it's only just begun. You go back to the apple, but it has turned brown. You decide to make some eggs and toast instead. You first whip the eggs with a fork and then cook them. You pop a piece a bread in the toaster, which a few minutes later turns nice and brown. You melt some butter on the toast and add some jelly.

You think about dyeing your hair purple but then remember how your parents reacted when your sister did that. So instead you just decide to finish breakfast and catch the bus, hoping the crazy part of your day has ended.