

MONDAY, FEBRUARY 18th

DO NOW

- In your notebooks, to be checked, solve this problem...
There are about 30 inches of Mercury (inHg) in 1 bar and about 15 pounds per square inch (psi) in 1 bar. These are units of Pressure!

Know:

$$30 \text{ inHg} = 1\text{bar} \qquad 15\text{psi} = 1\text{bar}$$

Asked: How many pounds per square inch are in 2 bar?

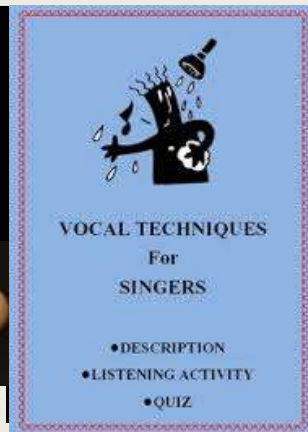
TODAY'S PLAN

1. Do and review the **DO NOW** and **Qualitative Prompt (QP)**!
 - Today's **QP** = QP QUIZ PREP = Using your Jot-Down Notes SKETCH Bohr Models for the following Elements; Nitrogen (7P, 7N, 7E), Argon (18P, 22N, 18E), and Potassium (19P, 20N, 19E)!
2. Open books, **WORK** on today's **AO**!
3. ***HW** = Read & Do Pg. 188-189!

TODAY'S ACADEMIC OBJECTIVE

Today you will use information about a Chemical Element for use in **BRINGING** a 2-D Atomic Model into three dimensions!

SCIENCE QUIZ ALERT



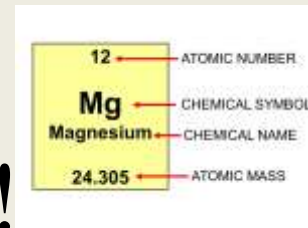
• Students, listen UP!!!

– We will be having **VOCAL QUIZ** soon to help us LEARN the Chemical Symbols for some COMMON Chemical Elements!

– This quiz will require you to STUDY your Periodic Tables!

– You are responsible for learning the NAME that goes with these 12 Chemical Element SYMBOLS!

• Mn, U, W, Pt, Ag, Au, Hg, Sn, Pb, I, Kr, Rn!



SCIENCE QUIZ ALERT



VOCAL TECHNIQUES

Periodic Table of the Elements

1 H Hydrogen 1.008																	2 He Helium 4.003
3 Li Lithium 6.941	4 Be Beryllium 9.012											5 B Boron 10.811	6 C Carbon 12.011	7 N Nitrogen 14.007	8 O Oxygen 15.999	9 F Fluorine 18.998	10 Ne Neon 20.180
11 Na Sodium 22.990	12 Mg Magnesium 24.305											13 Al Aluminum 26.982	14 Si Silicon 28.086	15 P Phosphorus 30.974	16 S Sulfur 32.066	17 Cl Chlorine 35.453	18 Ar Argon 39.948
19 K Potassium 39.098	20 Ca Calcium 40.078	21 Sc Scandium 44.956	22 Ti Titanium 47.867	23 V Vanadium 50.942	24 Cr Chromium 51.996	25 Mn Manganese 54.938	26 Fe Iron 55.845	27 Co Cobalt 58.933	28 Ni Nickel 58.693	29 Cu Copper 63.546	30 Zn Zinc 65.38	31 Ga Gallium 69.723	32 Ge Germanium 72.613	33 As Arsenic 74.922	34 Se Selenium 78.971	35 Br Bromine 79.904	36 Kr Krypton 83.798
37 Rb Rubidium 84.468	38 Sr Strontium 87.62	39 Y Yttrium 88.906	40 Zr Zirconium 91.224	41 Nb Niobium 92.906	42 Mo Molybdenum 95.95	43 Tc Technetium 98.907	44 Ru Ruthenium 101.07	45 Rh Rhodium 102.906	46 Pd Palladium 106.42	47 Ag Silver 107.868	48 Cd Cadmium 112.414	49 In Indium 114.818	50 Sn Tin 118.710	51 Sb Antimony 121.760	52 Te Tellurium 127.6	53 I Iodine 126.904	54 Xe Xenon 131.294
55 Cs Cesium 132.905	56 Ba Barium 137.328	57-71 Lanthanides	72 Hf Hafnium 178.49	73 Ta Tantalum 180.948	74 W Tungsten 183.84	75 Re Rhenium 186.207	76 Os Osmium 190.23	77 Ir Iridium 192.22	78 Pt Platinum 195.085	79 Au Gold 196.967	80 Hg Mercury 200.592	81 Tl Thallium 204.383	82 Pb Lead 207.2	83 Bi Bismuth 208.980	84 Po Polonium [209]	85 At Astatine 209.987	86 Rn Radon 222.018
87 Fr Francium 223.020	88 Ra Radium 226.025	89-103 Actinides	104 Rf Rutherfordium [261]	105 Db Dubnium [262]	106 Sg Seaborgium [266]	107 Bh Bohrium [264]	108 Hs Hassium [269]	109 Mt Meitnerium [268]	110 Ds Darmstadtium [269]	111 Rg Roentgenium [272]	112 Cn Copernicium [277]	113 Uut Ununtrium unknown	114 Fl Flerovium [289]	115 Uup Ununpentium unknown	116 Lv Livermorium [298]	117 Uus Ununseptium unknown	118 Uuo Ununoctium unknown
57 La Lanthanum 138.905	58 Ce Cerium 140.116	59 Pr Praseodymium 140.908	60 Nd Neodymium 144.243	61 Pm Promethium 144.913	62 Sm Samarium 150.36	63 Eu Europium 151.964	64 Gd Gadolinium 157.25	65 Tb Terbium 158.925	66 Dy Dysprosium 162.500	67 Ho Holmium 164.930	68 Er Erbium 167.259	69 Tm Thulium 168.934	70 Yb Ytterbium 173.055	71 Lu Lutetium 174.967			
89 Ac Actinium 227.028	90 Th Thorium 232.038	91 Pa Protactinium 231.036	92 U Uranium 238.029	93 Np Neptunium 237.048	94 Pu Plutonium 244.064	95 Am Americium 243.061	96 Cm Curium 247.070	97 Bk Berkelium 247.070	98 Cf Californium 251.080	99 Es Einsteinium [254]	100 Fm Fermium 257.095	101 Md Mendelevium 258.1	102 No Nobelium 259.101	103 Lr Lawrencium [262]			

SCIENCE QUIZ ALERT



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TUESDAY, FEBRUARY 19th

DO NOW

- In your notebooks, to be checked, solve this problem...
There are about 30 inches of Mercury (inHg) in 1 bar and about 15 pounds per square inch (psi) in 1 bar. These are units of Pressure!

Know:

$$30 \text{ inHg} = 1 \text{ bar} \quad 15 \text{ psi} = 1 \text{ bar}$$

Asked: How many pounds per square inch (psi) are in 120 inches of Mercury (inHg)?

TODAY'S PLAN

1. Do and review the **DO NOW** and **Qualitative Prompt (QP)**!
 - Today's **QP** = QP QUIZ PREP = DRAW Bohr Models for the following IONS; Hydrogen (1P, 0N, 0E), Helium (2P, 2N, 0E), Fluoride (9P, 10N, 10E), AND Oxide (8P, 8N, 10E)!
2. Open books, **WORK** on today's **AO**!
3. ***HW** = Study for VOCAL QUIZ!

TODAY'S ACADEMIC OBJECTIVE

Today you will use information about a Chemical Element for use in **BRINGING** a 2-D Atomic Model into three dimensions!

Lewis Dot Diagrams – Jot This Down!

- “Lewis Dot Diagrams” are another type of Atomic MODEL, specifically designed to just show the outer aka VALENCE Electrons in an Atom of an Element!
- Valence Electrons are involved in Chemical BONDING, so Lewis Diagrams can help in PREDICTING bonds!

LEWIS DIAGRAMS							
PERIODIC TABLE ELEMENTS 1-20							
HYDROGEN 1 H·							HELIUM 2 He·
LITHIUM 3 Li·	BERYLLIUM 4 Be·	BORON 5 ·B·	CARBON 6 ·C·	NITROGEN 7 ·N·	OXYGEN 8 ·O·	FLOURINE 9 ·F·	NEON 10 ·Ne·
SODIUM 11 Na·	MAGNESIUM 12 Mg·	ALUMINUM 13 ·Al·	SILICON 14 ·Si·	PHOSPHORUS 15 ·P·	SULFUR 16 ·S·	CHLORINE 17 ·Cl·	ARGON 18 ·Ar·
POTASSIUM 19 K·	CALCIUM 20 Ca·	H· ·O· ·C· ·N· Hydrogen Oxygen Carbon Nitrogen		H H:O: H:C:H H			

How To Draw Lewis Dot Diagrams – Jot This Down!

- To draw a Lewis Diagram, draw a BOHR MODEL of the Element and then place ONLY the outer Electrons as dots AROUND the Chemical Symbol of the Element!

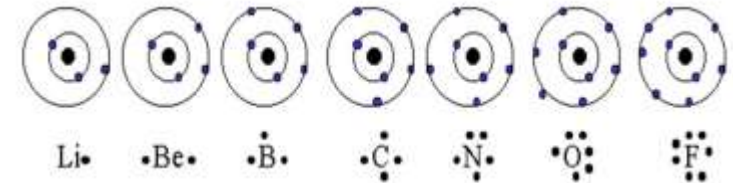
– **NOTE:** No more than 2 dots can go on the top, left, right, and bottom of an Element Symbol, and we **MUST** have at least 1 dot on the top, left, right, and bottom before placing 2 on any side!

LEWIS DIAGRAMS

- Also known as **Lewis dot diagrams**
- Are a *simplified* version of Bohr-Rutherford diagrams.

Lewis Dot Diagrams

- Illustrates the number of **valence electrons**
 - Valence electrons = Number of electrons in **outer** shell
 - Placed around the symbol of the element
- Helps us determine how compounds are formed / how elements bond



PERIODIC TABLE ELEMENTS 1–20							
HYDROGEN 1 H •							HELIUM 2 He •
LITHIUM 3 Li •	BERYLLIUM 4 Be •	BORON 5 •B•	CARBON 6 •C•	NITROGEN 7 •N•	OXYGEN 8 •O•	FLOURINE 9 •F•	NEON 10 •Ne•
SODIUM 11 Na •	MAGNESIUM 12 Mg •	ALUMINIUM 13 •Al•	SILICON 14 •Si•	PHOSPHORUS 15 •P•	SULFUR 16 •S•	CHLORINE 17 •Cl•	ARGON 18 •Ar•
POTASSIUM 19 K •	CALCIUM 20 Ca •						

Lewis Dot Diagrams – Jot This Down!

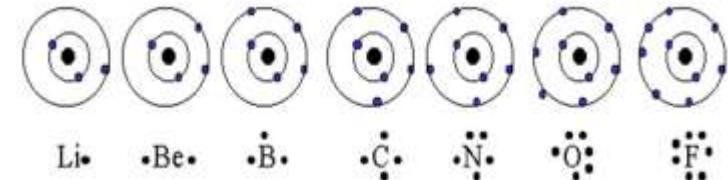
- “Lewis Dot Diagrams” are another type of Atomic MODEL, specifically designed to just show the outer aka VALENCE Electrons in an Atom of an Element!
- To draw a Lewis Diagram, draw a BOHR MODEL of the Element and then place ONLY the outer Electrons as dots AROUND the Chemical Symbol of the Element!
 - **NOTE:** No more than 2 dots can go on the top, left, right, and bottom of an Element Symbol, and we MUST have at least 1 dot on the top, left, right, and bottom before placing 2 on any side!
 - *SHORTCUT:* For Groups #13-18 (Not Including Helium!) you can draw a Lewis Diagram even quicker by subtracting 10 from the Element’s Group Number, and then placing the number you get (this number is the Element’s number of VALENCE Electrons!) as dots around the Element’s Symbol!
 - *NOTE:* For Elements in Groups (COLUMNS) #1-2, the Number of Valence Electrons is the SAME as the Group Number!
- Valence Electrons are involved in Chemical BONDING, so Lewis Diagrams can help in PREDICTING bonds!

LEWIS DIAGRAMS

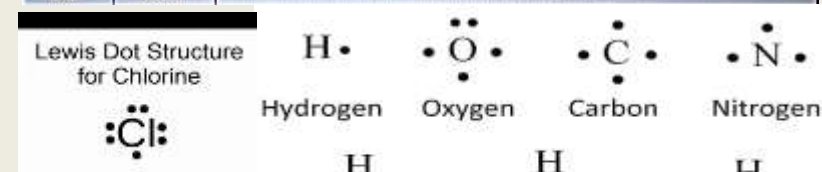
- Also known as **Lewis dot diagrams**
- Are a *simplified* version of Bohr-Rutherford diagrams.

Lewis Dot Diagrams

- Illustrates the number of **valence electrons**
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 - Placed around the symbol of the element
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PERIODIC TABLE ELEMENTS 1-20							
HYDROGEN 1 H ·							HELIUM 2 He ·
LITHIUM 3 Li ·	BERYLLIUM 4 Be ·	BORON 5 ·B ·	CARBON 6 ·C ·	NITROGEN 7 ·N ·	OXYGEN 8 ·O ·	FLUORINE 9 ·F ·	NEON 10 ·Ne ·
SODIUM 11 Na ·	MAGNESIUM 12 Mg ·	ALUMINUM 13 ·Al ·	SILICON 14 ·Si ·	PHOSPHORUS 15 ·P ·	SULFUR 16 ·S ·	CHLORINE 17 ·Cl ·	ARGON 18 ·Ar ·
POTASSIUM 19 K ·	CALCIUM 20 Ca ·						



THURSDAY, FEBRUARY 21st

DO NOW

Know: Systems are a set of things that work together to accomplish a task or compose a structure.

Asked: Which is a system and one of its parts?

A: Protons and Electrons

B: Molecule and Electron

C: Molecule and Compound

TODAY'S PLAN

1. Do and review the **DO NOW** and **Qualitative Prompt (QP)**!
 - Today's **QP** = QP QUIZ PREP = Using your Jot-Down Notes SKETCH Lewis Diagrams for the following Elements; Helium, Argon, and Potassium!
2. Open books, **WORK** on today's **AO!**
3. ***HW** = Study for VOCAL QUIZ!

TODAY'S ACADEMIC OBJECTIVE

Today you will **REMODEL** some Chemical Elements by turning **BOHR** Models into **LEWIS** Diagrams!

FRIDAY, FEBRUARY 22nd

DO NOW

Know:

Information about Several Gases

Gas	Argon (Ar)	Fluorine (F ₂)	Hydrochloric Acid (HCl)	Oxygen (O ₂)
Color	colorless	pale yellow	colorless	colorless

Asked: Which gas exists as a Compound?

A: Argon

B: Fluorine

C: Hydrochloric Acid

TODAY'S PLAN

1. Do and review the **DO NOW** and **Qualitative Prompt (QP)**!

■ Today's **QP** = LIST the NAME, CHEMICAL SYMBOL, AND the GROUP Number for each of the 12 Chemical Elements on today's VOCAL QUIZ!

2. Open books, **WORK** on today's **AO!**

3. ***HW** = Read & Complete Pg. 192-193!

TODAY'S ACADEMIC OBJECTIVE

Today you will **SUMMON** your knowledge of Chemical Element Symbols in order to **BLAZE** through today's Vocal Quiz!

THE SGS - STUDY GUIDE SLIDE – CHEMICAL BONDS QUIZ

• Students must KNOW:

1. What happens when substances undergo Chemical Reactions, what can cause these Reactions, and WHY do certain Elements prefer to react with each other?
2. What is a Valence Electron? How many Valence Electrons does an Atom need to be “happy”?
3. How and Why do Atoms become Ions?
4. What kinds of Elements form Covalent Bonds & which form Ionic Bonds?
5. How are Chemical Formulas & Reactions written, what are the parts of each, and why/how must Reactions be Balanced?

• Students must be able to DO:

1. Differentiate between the “Bohr Model”, “Electron Cloud”, and “Space-Filling” Models for drawing Atoms
2. Draw Bohr Models & Lewis Dot Diagrams for Elements in Periods 1-4.
3. Compare & Contrast Molecules and Compounds.
4. Predict the number of Valence Electrons, Reactivity, and Properties of an Element based off of its Family/Group Name on the Periodic Table.
5. Compare & Contrast Ionic, Covalent, and Metallic Bonding/Compounds and the Properties of Each.



THE SGS - STUDY GUIDE SLIDE - CHEMICAL BONDS QUIZ

• Students must KNOW:

1. Atoms are rearranged, since bonds are just broken and reformed. Heat, collisions, concentration, and “catalysts” can cause reactions. Endothermic Reactions take in heat, Exothermic ones release it. Elements prefer to react with an Element that will give them 8 Valence Electrons.
2. The outermost Electrons. Atoms need 8 Valence Electrons to be happy aka have a full outermost energy level.
3. By losing or gaining Electrons. Atoms do this to become more stable aka to get 8 Valence Electrons. Neutral Atoms have equal numbers of Protons and Electrons. Ions bonded together make “Ionic Compounds”.
4. Nonmetal + Nonmetal = Covalent. Metal + Nonmetal = Ionic
5. Formulas show a ratio of Atoms. Formulas can have Subscripts (little # after a symbol), Coefficients (big # before a symbol), and Parentheses. Reactions are written to show “Reactant” chemicals on the left turning into “Products” on the right. Reactions are written as Equations, they use Math Symbols, but the “Yield” Arrow (\rightarrow) instead of the = sign. Reactions must be balanced due to the Law of Conservation of Energy, and to balance them just add Coefficients before each Atom/Molecule.

• Students must be able to DO:

1. Bohr shows the Valence Electrons and can help predict how Atoms bond, the Electron Cloud is the most accurate representation of an Atom, and the Space-Filling is good for showing food molecules.
2. See your Jot-Down Notes on drawing Bohr and Lewis Diagrams. Note that both are good for predicting how Atoms will bond.
3. Molecule = Two or more Atoms. Compound = Two or more DIFFERENT Atoms. All Compounds are Molecules, but not vice versa.
4. Group Number can tell you the number of Valence Electrons. Groups 1-2 have 1-2 Valence Electrons, while 13-18 have the Group Number minus 10. Elements will react to get 8 valence Electrons, and whether or not an Element tends to react depends on its number of Valence Electrons (its easier to react if an Element only needs to gain or lose 1 Valence Electrons. Ex: Alkali Metals in Group 1 are very reactive, Noble gases in Group 18 are not).
5. Ionic tend to conduct electricity when dissolved in water. Covalent involve the sharing of Electrons. Metallic are good conductors since the Electrons can move around freely.

