SCIENCE 10 REVIEW ACTIVITY FOR CHEMISTRY II

Name: Key **Block:** _____

Objective: Welcome back to school! And welcome to Chemistry 11! Today you will be getting back into the swing of things and kicking off with a REVEW of the key components of SCIENCE 10. This is an activity designed to refresh + test your knowledge of science, and to allow you to meet and work with your fellow classmates as possible. Don't worry if it's a topic you don't remember much about. Read the prompt cards at each station carefully: they are designed to provide you with the necessary information to answer the questions in this student handout. Get to know your classmates! Chat amongst your lab group and work together! Science is NOT a solo spot. A great scientist knows when to collaborate with others and ask for help.

I will be asking you to: (1) Tell me about yourself, (2) complete science tasks, and (3) meet and get to know your classmates.

You will be rotating through a series of stations, but while you are waiting for us to begin, please fill out the "All About Me" section below. I will let you know when it is time to begin.

All About Me:

1. My full name is Miss Zukowski, my preferred pronouns are she/her and I prefer to be called Miss Zee.
2. What is the best thing you did this summer?
   camping with my family.
3. When I leave high school, I would like to:
   been there, done that
5. What would you like to be doing ten years from now?
   early retirement?
6. What is your **most** and **least** favorite thing about school?
   most - sharing my ♡ of science with amazing students
   least - never enough time!

Station #1: Lab Equipment

*Describe it's use: choose from measuring, holding/observing or heating

Name of Equipment	Describe its Use	Units of Measure
scale/electronic balance	measuring	grams (g)
ruler	measuring	centimeters (cm)
beaker	holding/observe	mililitres (mL)
Erlenmeyer Flask	holding/observe	mililitres (mL)
watch glass	holding/observe	none
evaporating dish	heating	none
graduated cylinder	measuring	mililiters (mL)
pipette	measuring	mililiters (mL)

What is something you are good at that no one knows? (think: secret talent)

student answers will vary.

Station #2: Laboratory Safety

Safety Feature	Location	What it's used for?
Fume Hood	x2; front corners	vent + filter harmful fumes
Fire Extinguisher	x2; front beside doors	to put out small fires (not on people)
Fire Blanket	front right corner	smoother flames on people
Broken Glass Box	beside prep sink	to store broken glass, not to be placed in reg. garbage
Spill Kit Powders	" " "	to neutralize acid or base spills.
Safety Shower	beside prep room door.	wash large chemical spills on people
Eye Wash	inside safety shower	rinse chemicals from eyes. flush 15min.

What is your favorite TV show, and why?

*First Aid Kit (inside chem prep room)

Station #3: Scientific Notation

Change from Regular Notation to Scientific Notation:		Change from Scientific Notation to Regular Notation:	
1.) 45,000	4.5×10^{4}	1.) 9.46×10^{-6}	.00000946
2.) 9,000,000	9×10^{6}	2.) 2.5×10^{3}	2500
3.) 7,450	7.45×10^{3}	3.) 1.6×10^{-2}	.016
4.) .0000378	3.78×10^{-7}	4.) 4×10^{5}	400,000
5.) .05	5×10^{-2}	5.) 7.25×10^{4}	72,500
6.) 670,400	6.704×10^{5}	6.) 3.2456×10^{-8}	.000000032456
7.) 7,070,000,000	7.070×10^{9}	7.) 6×10^{-3}	.006
8.) .00000089	8.9×10^{-7}	8.) 9.7×10^{7}	97,000,000
9.) .18900097	1.8900097×10^{-1}	9.) 5.06×10^{-4}	.000506
10.) 570,000,000	5.7×10^{8}	10.) 8×10^{2}	800

What is one thing you would change about school, and why?

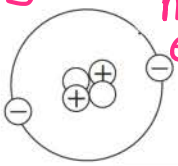
Station #4: Periodic Table Trends

1. A *horizontal row* on the periodic table is a period and a *vertical column* is called a group (family)
2. Your periodic table shows a dotted line, to the left is labelled **"A ←"** and to the right is labelled **"→B"**.
   What do A and B represent? **A)** metals **B)** non-metals
3. What color represents the **noble gases**? light blue (group 18)
4. What color represents the **transition metals**? dark blue (group 3-12 + partsof 13-17)
5. The **green column** on the right side of the table contains elements called? Alkali Metals
6. The lanthanides and actinides are identified by what color? purple (rows 6+7)
7. What color represents the **Alkaline Earth Metals**? Yellow (group 2)

What school activities are you involved in? or interested in joining?

Station #5: Subatomic Particles

1. An element is determined by the number of Protons in its nucleus. *(ie: the Atomic Number)*
2. Each chemical element is made up of only one kind of atom.
3. A neutron is a subatomic particle with no charge.
4. The atom shown right is an: **ATOM** **ION** *(circle the correct answer)*
5. Explain how you know: it is an atom because the number of protons = electrons. So it is electrically neutral.

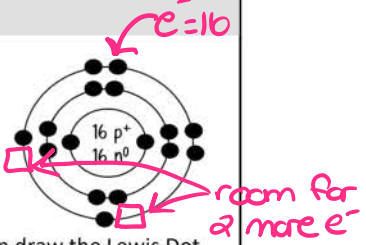


8 O 16	6. What is the atomic number of this element? 8 7. How many neutrons does this element have? 8	8. What is the atomic mass of this element? 27 9. How many electrons does this element have? 13	13 Al 27

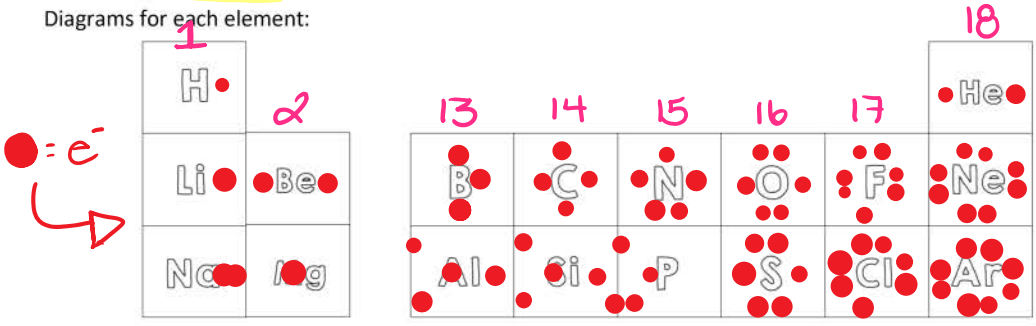
What is your dream job? Or plans after graduation?

Station #6: Atomic Diagrams

1. The diagram *(shown right)* is a Bohr diagram of a(n) sulfur atom ion *(circle one)* (16p⁺ = 16e⁻ = oxygen)
2. How many energy levels (or shells) does it have? 3
3. Is the valence shell full? No How many more e⁻ would this atom need to have a full outer shell? 2 If it gained e⁻ what would the ion charge be?



4. Write the group number above each group in the section of the periodic table below. Then draw the Lewis Dot Diagrams for each element:



If you could travel anywhere, where would you go and why?

Station #7: Ionic +Covalent Bonds

1. A cation gains / loses *(circle)* electrons to become a positively charged ion.
2. An anion gains / loses *(circle)* electrons to become a negatively charged ion.
3. Complete the following table by indicating if the metal/non-metal will become a + or – ion

Atom	Metal or Non-Metal	Ion Charge(s)
P	non-metal	-3
Mg	metal	+2
Cl	non-metal	-1
O	non-metal	-2
Pb	metal	+2 or +4 (multivalent)
Cu	metal	+1 or +2 (multivalent)

HINT
metal
non-metal

4. Complete the following table indicating if the compound is **covalent (C) or ionic (I):**

Compound	C or I ?	Compound	C or I ?	Compound	C or I ?
$SnBr_4$	I	$AlCl_3$	I	O_2	C
N_2O_4	C	HCl	I	$Ca(OH)_2$	I

acids are made from "free ions" in solution H^+ and Cl^- so charged ions = ionic comp.

5. List 3 properties of Ionic and Covalent Compounds:

Ionic Compounds	Covalent Compounds
metal + non-metal crystalline solid high melting + boiling points strong bonds	all non-metals mostly liquids + gases lower melting + boiling points weak(er) bonds

Do you have any pets? What are they? Names?

_____

_____

*NOTE: Step 1 is to determine if the compound is ionic or covalent... THEN follow appropriate naming rules!

Station #8: Naming Compounds

1. Write the NAME for the following compounds:

Chemical Formula	Name	Chemical Formula	Name
SiO_2	silicon dioxide	N_2O_5	dinitrogen pentoxide
$Cu(NO_3)_2$	copper (II) nitrate	$CoBr_2$	cobalt (II) bromide
NaI	sodium iodide	PCl_3	phosphorus trichloride

2. Write the CHEMICAL FORMULA for the following compounds:

Chemical Formula	Name	Chemical Formula	Name
Aluminum bromide	$AlBr_3$	Sulphur monochloride	SCl
Chlorine heptoxide	ClO_7	Chromium (III) chloride	$CrCl_3$
Carbon disulphide	CS_2	Sodium acetate → CH_3COO^-	$NaCH_3COO$

What is your favorite meal, and can YOU make it?

Station #9: Classifying Chemical Reactions

1. Classify the following chemical reactions as: synthesis, decomposition, single replacement, double replacement, combustion, or neutralization

Chemical Reaction	Classification
$MgCl_2 + Li_2CO_3 \rightarrow MgCO_3 + 2\ LiCl$	double replacement
$P_4 + 3\ O_2 \rightarrow 2\ P_2O_3$	synthesis
$Pb + FeSO_4 \rightarrow PbSO_4 + Fe$	single replacement
$CaCO_3 \rightarrow CaO + CO_2$	decomposition
$C_3H_6O + 4\ O_2 \rightarrow 3\ CO_2 + 3\ H_2O$	combustion
$H_2SO_4 + NaOH \rightarrow Na_2SO_4 + H_2O$	neutralization

2. In a neutralization reaction an acid and a base react to product salt and water
3. When propane (C_3H_8) undergoes combustion, what are the products formed? *Write the full chemical reaction in the space below:*

$C_3H_{8(g)} + 5O_{2(g)} \rightarrow 3CO_{2(g)} + 4H_2O_{(g)}$

Would you rather: NEVER hear your favorite song again for the rest of your life, or ONLY be able to hear that song for the rest of your life? *Explain.*

Station #10: Balancing Chemical Reactions

1. Balance the following chemical reactions according to the Law of Conservation of Atoms:

1) 2 K + 1 Cl_2 → 2 KCl (the "1" is implied, never written as a coefficient.)

2) 2 NH_3 → ___ N_2 + 3 H_2

3) 2 NaF + ___ Br_2 → 2 NaBr + ___ F_2

4) ___ SO_2 + 2 Li_2Se → ___ SSe_2 + 2 Li_2O

5) 2 $PbSO_4$ → 2 $PbSO_3$ + ___ O_2

6) 2 Al + ___ Fe_2O_3 → 2 Fe + ___ Al_2O_3

7) ___ SF_6 → ___ S + 3 F_2

8) ___ C_2H_4 + 3 O_2 → 2 CO_2 + 2 H_2O

9) 2 $KClO_3$ → 2 KCl + 3 O_2

10) ___ $Pb(NO_3)_2$ + 2 NaCl → 2 $NaNO_3$ + ___ $PbCl_2$

If you were given 1 Million Dollars tomorrow, what would you do with it?

_____

_____

When you have completed each station, review your work, then hand in to your teacher 😊