Learning Portfolio #1
Hattie Huang

Current Submission Date: March 24th

Use this to reflect on areas of strength and how to improve as a learner for learning portfolio submissions and/or after test assessments.

Doing well	Skills & habits for learning & assessment success	To improve
	Attend class & keep up on any missed classes	
	● Engage fully during class time on all activities (no phone and brain on, active learning). ● Includes fully completing all work.	
	Collaboration with group; be a full participant, sharing your ideas and not relying on others to answer questions & complete work	
	Communication; ● communicate your understanding to peers and teacher as this solidifies learning and allows errors in understanding to be corrected. ● Ask questions of peers & teacher as needed. ● Test writing skills: Understanding question & thoroughly answering while matching quantity to marks.	
	Critical thinking; be sure to engage in analyzing content, what it is important for, how it related to other topics taught. Analyze your own understanding	
	Learning to learn; ● Identify learning gaps ● Take appropriate actions to correct & improve learning (includes practice outside of class, studying sufficiently and in advance of test) ● Seek help as needed ● Fully utilize quiz opportunities to improve understanding.	
	Other	

Include the learning artifacts by copying your slides (eg 3-2-1), or for quia quizzes recording your score and noting questions you had incorrect using screenshots, inserting photos or any other means. Just ensure your methods are fairly easy for you and I will be able to determine your understanding. This portfolio is NOT intended to be time-consuming beyond regular learning expectations, but should greatly enhance your learning and retention if instructions are followed :)

FOLLOW LIST provided on the submission tables in Learning Portfolio Description document

Submission 1 Artifacts

START ADDING ITEMS AFTER THIS SLIDE

IMPORTANT ORGANIZATION REQUIREMENTS:

- Keep MY ORDER: Orange background divider, THEN rubric, THEN checklist slide THEN your artifacts
- Put all extra artifacts AFTER the required ones.
- All images as LARGE AS POSSIBLE And UPRIGHT
- All Text **at least** size **14 point** (bigger is easier to read on my devices)
- DO NOT USE SPEAKER NOTES, just add more slides as needed you can use multiple slides for one artifact. Reflections can be on a new slide from the item.
- Put a LARGE title on each item that is easily readable in the “thumbnails” of slides to the left :)
- All this helps me and you to easily locate items and is part of meeting the organization grade.

Cells and Classification Table of Contents

Topic	Your Materials (your copy of slides, docs etc)	Other Materials (eg quia, quizizz, flashcard links, note if there are physical items in your binder etc)
Aluminum lab 3-2-1	Copy of Aluminum lab 3-2-1 response slide	Physical notes
Periodic Trends Activity	Periodic Trends Assignment	Physical notes
Full Nomenclature Quia Quiz	None	Full Nomenclature Quia Quiz
Building Molecules Sheet	Feedback of Build Molecules Sheet	Physical notes
Sketchnote	Sketchnote on topic	Physical notes

Colour of each row on this table corresponds to their respective slide colours for easy location/grouping :)

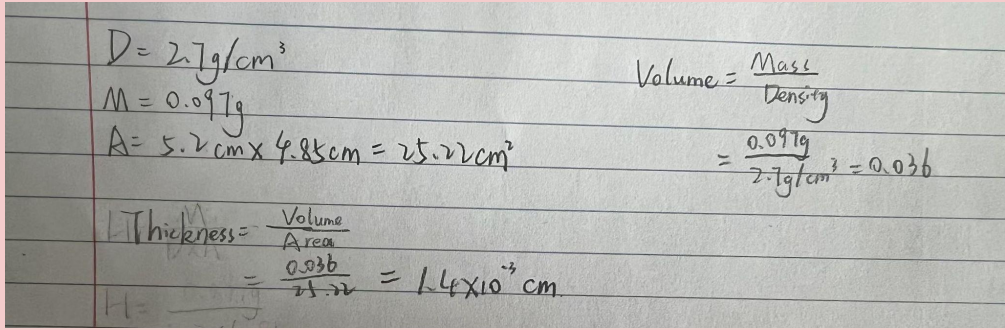
Artifact: Aluminum lab 3-2-1

THREE:

- Density - 2.7g/cm^3
- Mass - 0.097g
- Area - 5.2cm(Length) x 4.85 cm(Width) = 25.22 cm^2

TWO

- Difficulty in accurately measuring the length and width due to wrinkles and bends in the aluminum foil.
- Variability in the mass measurements caused by fluctuations in the scale readings between 0.095 and 0.1 grams.



ONE

The thickness of the aluminum foil my measure was calculated to be 1.4 X 10^-8 cm. The variation in thickness compared to other groups can be attributed to several factors, primarily the precision of the scale used. Since the scale fluctuates between 0.095 and 0.1 grams, slight difference in mass measurements led to variations in the calculated thickness.

Additionally, inconsistencies in the foil's flatness and handing could have contributed to these differences.

Artifact: Aluminum lab 3-2-1

Two Improvement:

- It can use a more precise electronic balance to measure the mass of the aluminum foil. The current balance fluctuates between 0.095g to 0.1g, leading to erros in mass measurements. Using a higher precision balance can reduce this fluctuation, thereby improving the accuracy of the thickness calculation.
- When measuring the length and width of the aluminum foil, in order to reduce erros, the foil could be laid flat on a smooth surface and pressed down with weights before measurement. This ensures that the foil remains flat during measurement, thereby improving the accuracy of the thickness calculation too.

Extend: Aluminum Lab 3-2-1

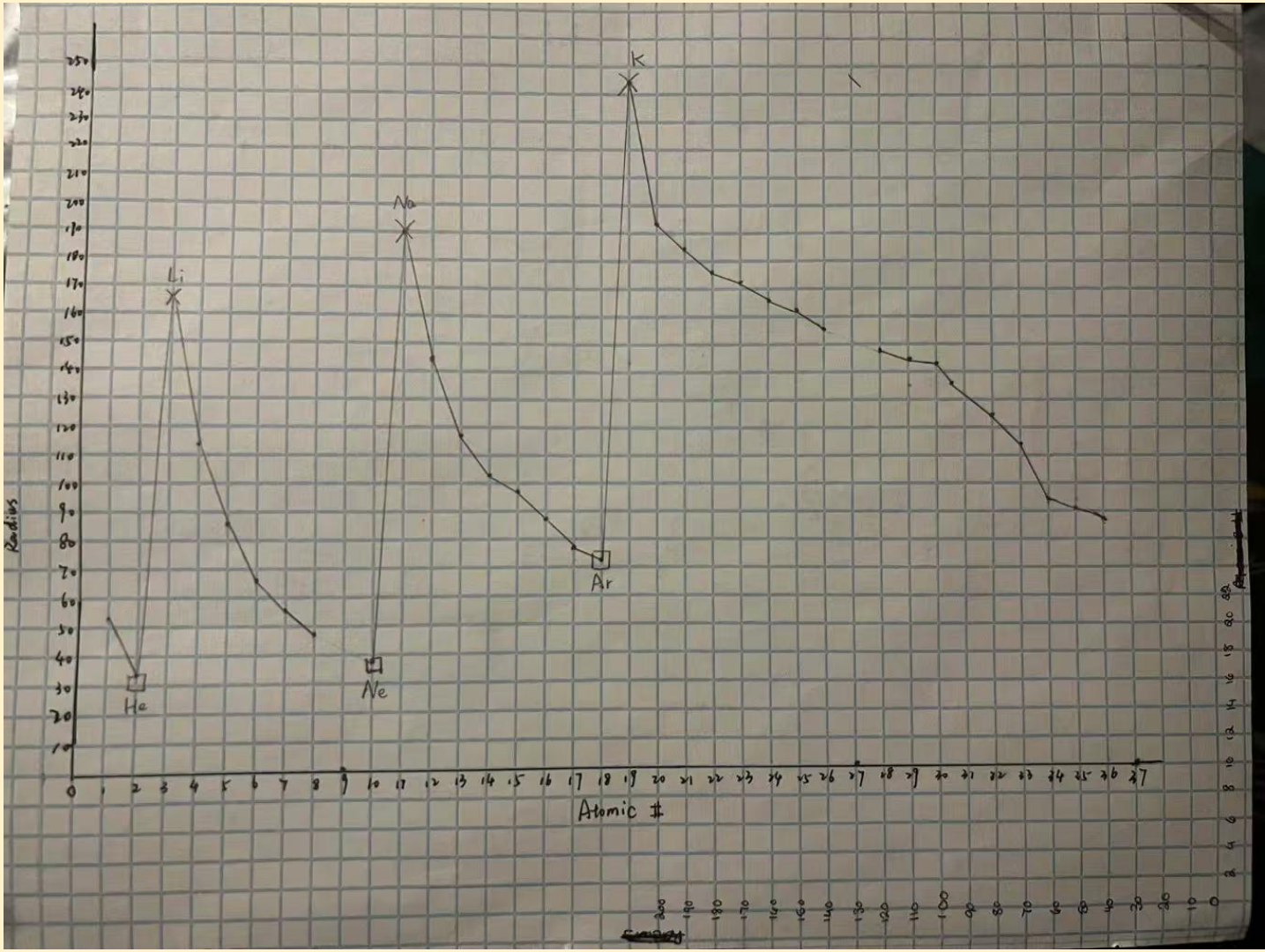
1. Explain the importance of measurement in science.
    - Because science is based on facts instead of guesswork, and measurement provides facts for scientists to compare results, repeat experiments and share their finding with others, so measurement is a important part of science.

2. Why using significant figures is essential?
    - Because they reflect the precision of a measurement. They tell us how digits in a measurement are reliable. For example, if you measure the length of an object as 2.50 cm, it means the measurement is precise to the hundredth place, while 2.5 cm is only precise to the tenths place, so if significant figures were not used, scientific results could become inaccurate of misleading.

3. What else did you learn from this?
    - By learning about this experiment, I've gained a deeper understanding of the significant figures and measurement and realized science is a subject based on fact and details, so I will more attention to details in scientific research. What is more, using more precise tools can improve the quality of results, and significant figures can help record and reflect the precision.

Artifact: Periodic Trends Activity

Part 1 Graph



Partner's name:
Shivani and Hattie

Artifact: Periodic Trends Activity

Part 1

1. a) Lithium because it has less number of protons.

2. Atomic radii increase down a group because across a period.

3. Fluorine: 0.64
   Cobolt: 125
   Elements 37: 2.27

4. As the number of protons increase, atomic size generally decreases.

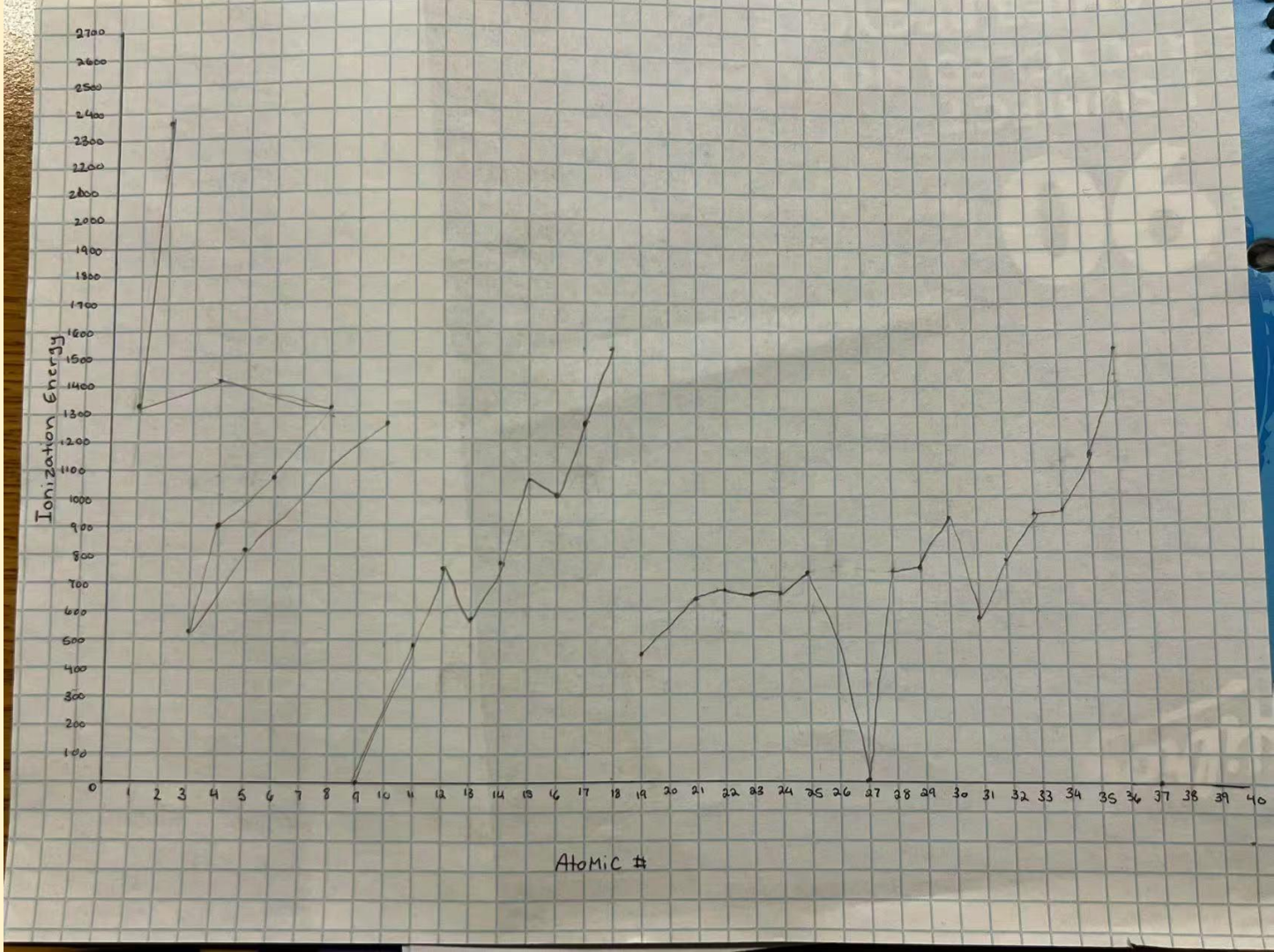
5. Na+1, Si+4, Cl+7, Ar+8, core charge relates+0. Atomic size by indicating that higher core charge generally leads to smaller atomic size.

6. Moving down one period has a larger impact on atomic size than moving across one family.

Artifact: Periodic Trends Activity

Part 2 Graph

Partner's name:
Shivani and Hattie



Artifact: Periodic Trends Activity

Part 2

1. a) Fluorine because ionization energy increases around a period, and decrease down a group.
   b) Lithium because ionization energy decreases down a group.
   c) Chlorine because ionization energy decreases down a group.

2. I think there are 2 trends in ionization energy, the first trend is in the same cycle, ionization energy is increasing from left to right. The second trend is decreasing form up to down.

3. a) Fluorine: 1681 KJ/ml
   b) Cobalt: 760 KJ/ml
   c) Elements 37: 403 KJ/ml

4. d)Identify one anomaly: An example of an anomaly is the lower ionization energy of Al compared to Mg, even though Al is to the right of Mg in the periodic table.
   e)This anomaly can be explained by the electron configuration. Mg has a full filled 3s orbital, which is more stable, where as Al has one electron in the 3p orbital, which is easier to remove.

Extend: Periodic Trends Activity

1. How the ionization energy trend is determined largely by the atomic radius trend.
    - As the atomic radius become larger, the electrons are further from nucleus, so the distances between electrons and nucleus are increasing, the nuclear charge is less attractive to electrons, the ionization energy become lower. When the atomic radius become smaller, the electrons are closer from nucleus, so the distance between electrons and nucleus are decreasing, the nuclear charge is bigger attractive to electrons.the ionization energy become higher.

2. How does atomic radii help in understanding why metals lose electrons while nonmetals gain electrons in forming ionic compounds.
    - Metals electrons usually have larger atomic radius, so their valence electrons is further from nucleus, the nuclear charge is less attractive to valence electrons. It means metals valence electrons is easier to lose electrons to form positive ions. As for nonmetals electrons usually have smaller radius, so their valence electrons is closer to the nucleus, the nuclear charge is bigger attractive to electrons to valence electrons. It means nonmetals valence electrons is easier to gain electrons to form negative ions.

Artifact: Full Nomenclature Quia Quiz

4. A polyatomic cation is: ___.
    - My Result: sulfate ion.
    - Explanation: My answer is wrong because a polyatomic cation is a positively charged ion composed of multiple atoms, but the sulfate ion is a polyatomic anion because it carries a negative charge, so my answer is wrong.

7. If the first element is a metal, the compound is ___. If the cation is polyatomic and the anion is polyatomic, the compound is ____.
    - My Result: ionic, covalent
    - Explanation: My answer is wrong because the definition of ionic compounds is as being composed of cations and anions held together by electrostatic forces, and covalent compounds is a chemical bond that involves the sharing of electrons to form electron pairs between atoms. Although the cation is polyatomic and the anion is polyatomic, them still are ionic compounds not covalent compounds,

Extend: Full Nomenclature Quia Quiz

1. One example of naming an acid:
   - Formula: HClO3
   - Naming Rules: if the name of polyatomic anion ends with “ate”, the acid name ends with “ic”. Adding the word “acid” before the ion name.
   - Result: According to the rules, HClO3 is named chloric acid.

2. One example of determining an acid formula from its name:
   - Name: Hydrobromic acid
   - Naming Rules:If acids without oxygen, it typically start with “hydro” and end with “ic”. The anion is a monatomic ion, and its name ends with “ide”.
   - Result: According to the rules, the formula from Hydrobromic acid is HBr.

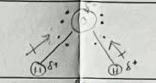
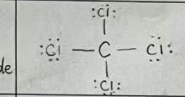
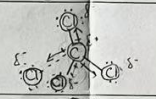
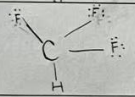
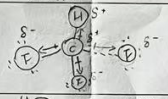
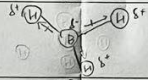
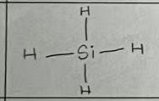
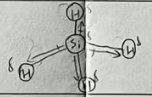
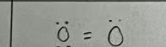
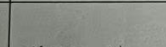
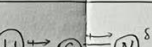
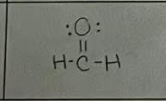
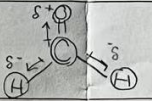
Artifact: Building Molecules Sheet

Partner's name: Shivani and Hattie

SCH **Molecule Shape & Polarity Activity**

Hattie Shivani

Complete the Table below. Use the VSEPR chart to determine overall shape,
Use Wedges and Dashed wedges to show 3D Structural diagram. Use Arrows and the symbols for partial positive and negative charge to indicate bond polarity. For electron pairs, only indicate the number around the **CENTRAL ATOM**

Formula	Name	Lewis Symbol structure	Electronegativity difference in each bond type & type (P/ NP)	Structural Diagram with dipoles (wedges/3D)	# of electron pairs	# of bonding pairs	# of non-bonding pairs	Shape Name	Overall molecule polarity (P/NP)
H_2	hydrogen	H – H	2.2 – 2.2 = 0	H – H	1	1	0	linear	NP
H_2O	water		3.4 – 2.2 = 1.2		4	2	2	bent	P
CCl_4	Carbon tetrachloride		3.2 – 2.6 = 0.6		16	4	12	tetrahedral	NP
CHF_3			4.0 – 2.6 = 1.4 2.6 – 2.2 = 0.4 1.4 – 0.4 = 1.0		4	4	0	trigonal planner	P
BH_3	Boron trihydride		2.0 – 2.2 = 0.2		3	3	0	trigonal planar	NP
SiH_4	Silicon tetrahydroide		2.2 – 1.9 = 0.3		4	4	0	tetrahedral	NP
O_2	dioxygen		3.4 – 3.4 = 0		6	2	4	Linear	NP
HCN	use ionic naming Hydrogen Ganide		2.6 – 2.2 = 0.4 3.0 – 2.6 = 0.4 0.4 – 0.4 = 0		5	4	1	Linear	NP
CH_2O			2.6 – 2.2 = 0.4 3.4 – 2.6 = 0.8 0.8 – 0.4 = 0.4		6	4	2	Linear	NP

Extend: Building Molecules Sheet

1. Explain **at least 3** factors that must be considered in determining the shape AND polarity of a molecule.
   - Electronegativity difference between atoms must be considered in determining the polarity, if electronegativity difference is from 0.41 to 1.7, it means this molecule is polar(e.g. HCl) If electronegativity difference is from 0 to 0.4, it means this molecule is nonpolar(e.g. H_2)
   - VSEPR theory is used to predict the geometric shape of a molecule. Based on number and arrangement of valence electrons pairs around the central atoms, the molecules adopts a specific shape(e.g. linear, bent, trigonal planar, tetrahedral).
   - The polarity of a molecule depends not only on the polarity of individual bonds but also on whether the overall molecular geometry is symmetrical. For example, if the molecule geometry is symmetrical (e.g.CO_2), even if individual bonds are polar, their polarities may cancel out, making the molecule nonpolar. If the molecular geometry is symmetrical (e.g.H_2O), the bond polarities will not cancel out, and the molecule is polar overall.

2. How do unbonded electron pairs affect shape?
   - The definition of unbonded electron pairs are electrons around the central atoms that are not shared with other atoms, because unbonded electrons pairs are closer to the central atom and take up more space than bonding electrons, it will attract molecular shape. Besides, unbonded electron pairs will cause the molecular shape to be different from what it would be without unbonded electron pairs.

Extend: Building Molecules Sheet

3. How do polar vs nonpolar bonds affect shape?
   - The influence of polar and nonpolar bonds on the shape of a molecule is mainly reflected in the polarity and symmetry of molecules. As for polar bonds affect shape, because polar bonds are formed between different electronegativities, causing uneven electron distribution and creating partial positive and negative charges on either end of the bonds, so if the a molecules has polar bonds and an dissymmetry shape, the molecule will be polar overall.
   - For nonpolar bonds affect shape, because nonpolar bonds are formed between atoms with the same electronegativity, resulting in even electron distribution and no charge separation, so if a molecule has only nonpolar bonds or the polar bonds are symmetrically distributed, the molecule will be nonpoler overall.

Extension Artifact:

DO NOT MOVE OR ALTER THIS SLIDE. LEAVE IT AT THE END OF ALL YOUR ARTIFACTS (last portfolio Slide)

Marking Checklist will be inserted here.