

Name: _____

Period: _____

Seat#: _____

Directions: Any worksheet that is labeled with an * means it is suggested extra practice. We do not always have time to assign every possible worksheet that would be good practice for you to do. You can do this worksheet when you have extra time, when you finish something early, or to help you study for a quiz or a test. If and when you choose to do this Extra Practice worksheet, please do the work on binder paper. You will include this paper stapled into your Rainbow Packet when you turn it in, even if you didn't do any of this. We want to make sure we keep it where it belongs so you can do it later if you want to (or need to). If you did the work on binder paper you can include that in your Rainbow Packet after this worksheet. If we end up with extra class time then portions of this may turn into required work. If that happens you will be told which problems are turned into required. Remember there is tons of other extra practice on the class website...and the entire internet! See me if you need help finding practice on a topic you are struggling with.

- 1) Rank the sets of atoms from smallest to largest atomic radius.
 - a) Li, C, F
 - b) Li, Na, K
 - c) Ge, P, O
 - d) C, N, Al
- 2) Rank each set of atoms from lowest to highest ionization energy.
 - a) Mg, Si, S
 - b) Mg, Ca, Ba
 - c) F, Cl, Br
 - d) Ba, Cu, Ne
 - e) Si, P, He
- 3) Rank each set of atoms from highest to lowest electronegativity.
 - a) Li, C, N
 - b) C, O, Ne
 - c) Si, P, O
 - d) K, Mg, P
 - e) S, F, He
- 4) Brainstorm a mnemonic to help you remember which way the three trends (radius, ionization energy, electronegativity, electron affinity) increase on the PT (up/down/left/right)
- 5) Rank the following elements by increasing atomic radius: carbon, aluminum, oxygen, potassium.
- 6) Rank the following elements by increasing electronegativity: sulfur, oxygen, neon, aluminum.
- 7) Why does fluorine have a higher ionization energy than iodine?
- 8) Why do elements in the same family generally have similar properties?
- 9) Indicate whether the following properties increase or decrease from left to right across the periodic table.
 - a) atomic radius (excluding noble gases)
 - b) ionization energy
 - c) electronegativity
 - d) electron affinity
- 10) What trend in atomic radius occurs down a group on the periodic table? What causes this trend?
- 11) What trend in ionization energy occurs across a period on the periodic table? What causes this trend?
- 12) Circle the atom in each pair that has the largest atomic radius.
 - a) Al or B
 - b) S or O
 - c) O or F
 - d) Na or Al
 - e) Br or Cl
 - f) Mg or Ca
- 13) Circle the atom in each pair that has the greater ionization energy.
 - a) Li or Be
 - b) Ca or Ba
 - c) Na or K
 - d) P or Ar
 - e) Cl or Si
 - f) Li or K
- 14) Define electronegativity.
- 15) Circle the atom in each pair that has the greater electronegativity.
 - a) Ca or Ga
 - b) Br or As
 - c) Li or O
 - d) Ba or Sr
 - e) Cl or S
 - f) O or S
- 16) Define electron affinity.
- 17) Circle the atom in each pair that has the greater electronegativity.
 - a) Ca or Ga
 - b) Br or As
 - c) Li or O
 - d) Ba or Sr
 - e) Cl or S
 - f) O or S

- 18) Define shielding
- 19) Define “effective nuclear charge”
- 20) Calculate the Z_{eff} for each atom:
- | | |
|-------|-------|
| a) Li | d) Se |
| b) Ca | e) Br |
| c) Al | f) Ar |
- 21) What is a group?
- 22) What is a period?
- 23) Why are noble gases “happy” and inert?
- 24) List everything you are now able to find by looking at the PT. You should be able to list over 15 things!
- 25) Describe the pattern on the periodic table that helps you figure out how many valence electrons the “A group” elements have. Give some examples.
- 26) Describe the pattern on the periodic table that helps you figure out what charge the “A group” elements like to make. Give some examples.
- 27) Why do things in the same family behave the same way?
- 28) Give an example of two ions that each have a larger atomic radius than their neutral parent atom.
- 29) Give an example of two ions that each have a smaller atomic radius than their neutral parent atom.
- 30) Which halogen has the strongest tendency to gain an electron? Which has the least tendency? Why?
- 31) Describe why sometimes there is a drastic leap in the magnitude of an ionization energy when going from 1st to 2nd, or 2nd to 3rd, or 3rd to 4th etc. Give an example.
- 32) Based off pattern predictions, not actual data, which ion is smaller Ca^{2+} or Br^- ?

EVEN MORE PRACTICE! Hard work now during the chapter will set you up for success and save you time long term! Make smart, mature choices!

- 33) Consider doing some of the Honors Chem worksheets! *(You would be surprised how many AP Chem students miss points on exams for Honors level questions and not even the AP level questions! You will hear me all year long saying “don’t lose points in AP Chem for Honors level material!”)*
- www.mychemistryclass.net/HCrainbowpacket2NEW.html
<https://mychemistryclass.net/HCrainbowpacket3.html>



- 34) Read, take notes, try some problems from your Tro online Textbook. *(Remember that the textbook often covers more material than we need for this class. If it isn’t something I talked about in my lectures/handouts/worksheets, then you can skip it! I won’t officially assign reading or problems from the textbook because it isn’t a very efficient way to teach this class, but some students might need to read the textbook sections, or do extra practice in order for things to “click” differently for them. That is ok! Not everyone is going to need the same amount or type of studying. A lot of this class is figuring out what you personally need to do in order to feel successful. You will have access to the textbook all year, don’t forget about it!)*



Chapter 2: Atoms and Elements
 Chapter 7: The Quantum Mechanical Model
 Chapter 8: Periodic Properties of the Elements
mlm.pearson.com/northamerica/masteringchemistry/

- 35) Don’t forget that there is extra practice on the class website too! AP Chem Tab → Study Materials Link → Scroll to the chapter we are on → Extra Study Materials Link. *(I don’t always have answer keys for the extra materials. If there is one, it will be in the folder!)*
- 36) Don’t forget that there is extra practice on GoFormative too! www.goformative.com
(Another teacher made some assignments on GoFormative the year the school was Remote due to Covid. I have not proofread all the remote assignments, but I have published them so they are available for you to try if you would like!)
- 37) Don’t forget that there is extra practice on AP Classroom too! <https://myap.collegeboard.org>
(AP Classroom is a bit clunky, doesn’t allow me to easily post questions in the order we go, sometimes crashes, still has old material we no longer cover, etc. BUT it is a source of questions that we know came from College Board! You can use the “tags” I made to pull up practice that is just on the chapter you are interested in studying.)
- 38) ScienceGeek.net has some good online practice tests. I haven’t checked all of them, but the ones I have checked are pretty good!
<https://www.sciencegeek.net/APchemistry/APtaters/directory.shtml>
- 39) Don’t forget that you can sign up for my Access periods! You must sign up by Tuesday 8am of the week you want to attend. The links are on the front page of my class website and at the top of my Class Calendar.
- 40) Don’t forget that our school has free peer tutoring available through the Academic Leadership class! The links are on the top of my Class Calendar.