Name Key Date Per

Periodic Trends

1. What is the trend for atomic radius as you move across a row in the periodic table? Explain why.

   decreases left to right

   ↳ due to an ↑ eff. nuclear charge

2. What is the trend in atomic radius as you move down a column in the periodic table? Explain why.

   increases top to bottom

   ↳ more/larger energy shells as you go down

3. Put the following elements in order from smallest to largest atomic radius and explain why: C, O, Sn, Sr.

   O, C, Sn, Sr

   Sn and Sr must be largest because they're the furthest down. Sr and C are the largest in their row because they are further left.

4. Circle the atom in each pair that has the largest atomic radius.

   a. (Al) B
   b. (Na) Al
   c. (S) O
   d. (O) F
   e. (Br) Cl
   f. Mg (Ca)

5. Explain how shielding contributes to the atomic radius trend within a group.

   There are more core electrons pushing the valence e⁻ away from nucleus as you move down a group.

6. Define electronegativity.

   the tendency of an atom to attract e⁻ to itself

7. What is the trend for electronegativity as you go across a row left to right?

   increases left to right

8. What is the trend for electronegativity as you go down a column?

   decreases top to bottom

9. Define ionization energy.

   amt of energy needed to take an electron from an atom

10. Is it easier to form a positive ion with an element that has a high ionization energy or an element that has a low ionization energy. Explain.

    ↓ ionization energy means it's easier to remove an electron + since positive ions have lost e⁻, the lower ionization energy the better

11. What is the trend for first ionization energy as you move across a row in the periodic table? Explain why.

    1st IE ↑ as you go across. Things that have 1 valence e⁻ are fairly happy to lose that e⁻, but as you get more valence e⁻, they get more resistant to leaving.

12. What is the trend in first ionization energy as you move down a column in the periodic table? Explain why.

IE ↓ as you go down because the valence e^- are further from the nucleus meaning they are easier to remove.

13. Put the following elements in order from lowest to highest first ionization energy and explain why: Al, Ar, Cs, Na.

Cs, Na, Al, Ar

It's the opposite of atomic radius. As an atom gets smaller, it is less likely to want to give away an e^-

14. Circle the atom in each pair that has the greater first ionization energy.

a.	Li	(Be)	d.	P	(Ar)
b.	(Ca)	Ba	e.	(Cl)	Si
c.	(Na)	K	f.	(Li)	K

15. Explain why the negative ions (anions) are larger than their neutral atoms.

more electrons (neg charge) to pull in w/ the same # of protons (pos charge) pulling in on them.

16. Explain why the positive ions (cations) are smaller than their neutral atoms.

Cations lose the e^- in their outermost shell meaning the outer layer is gone (took off winter coat ex)

17. Who is credited for organizing the periodic table by increasing atomic number, as we know it to be arranged today?

Mosely

18. A column going down from top to bottom is called a group/family.

19. A single row going across from left to right is called a period.

20. What element has the electron configuration $1s^2 2s^2 2p^6 3s^2 3p^3$? P

21. Identify the element described: contains a full third energy level Ar

Contains 7 electrons in the 3d subshell Co

Has its outermost electron in $4s^1$ K

** Be sure to review your polyatomic ions and electron configurations as they are fair game as well.**