

# Periodic Trends Worksheet 1

Name: Key

Date: \_\_\_\_\_

Block: \_\_\_\_\_

- The Periodic Table is organized according to what number? atomic number
- The columns on a periodic table are called the groups / families
- The rows on a periodic table are called the periods
- The most reactive metallic family is the alkali metals
- The most reactive non-metallic family is the halogens
- The family which has no reactive elements is the noble gases
- Define the term **atomic radius**. Describe the periodic trend as you move UP a family. Describe the periodic trend as you move ACROSS (to the right of) a period.

Atomic radius : half the distance between the nuclei of 2 adjacent atoms

As you move up a family : smaller atomic radius

As you move across a period : smaller atomic radius

- Arrange the following atoms in order of **increasing** atomic radius: N, Sb, P, Bi, As



- Arrange the following ions in order of **increasing** atomic radius:  $Cl^-$ ,  $K^+$ ,  $S^{2-}$ ,  $Ca^{2+}$ ,  $P^{3-}$



- Define **ionization energy**.

The energy required to remove an electron from a neutral atom.

- What is the relationship between atomic radius and ionization energy?

As atomic radius increases, ionization energy decreases.

- On the periodic table below, draw and label an arrow of increasing atomic radius. Then, draw and label an arrow of increasing ionization energy.

1 H																	2 He
3 Li	4 Be											5 B	6 C	7 N	8 O	9 F	10 Ne
11 Na	12 Mg											13 Al	14 Si	15 P	16 S	17 Cl	18 Ar
19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr
37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe
55 Cs	56 Ba	57 La	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn
87 Fr	88 Ra	89 Ac	104 Rf	105 Ha	106 Sg	107 Ns	108 Hs	109 Mt	110	111	112	(113)	(114)	(115)	(116)	(117)	(118)

Diagram showing a blue arrow labeled "atomic radius" pointing from the top-left (H) to the bottom-right (Fr), and a red arrow labeled "ionization energy" pointing from the bottom-left (Fr) to the top-right (He).

- Arrange the following atoms in order of **increasing** first ionization energy: Ba, Ca, Be, Sr, Mg

