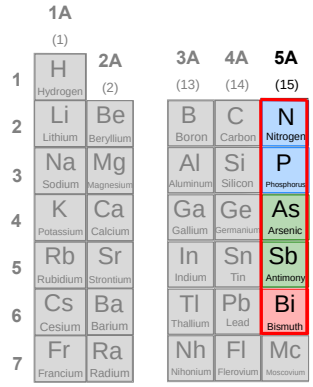
CONCEPT: NITROGEN FAMILY REACTIONS



- Reactions are driven by the presence of ___ valence electrons in their s and p subshells.
  - □ Will cover 2 types of reactions: reacting with (1) _____ & (2) _____.

(1) Reaction with Halogens

- The Nitrogen Family elements react with halogens to produce ___halides and _____halides.
  - □ Recall, nonmetals from Period ___ or lower can have expanded octets.
    - ____ and ____ cannot produce pentahalides.

Reaction with Halogens

__ M + __ X_2 ⟶ __ ____

MX_3 + X_2 ⟶ ____

EXAMPLE: Determine the product formed in the following reaction.

2 N (s) + 3 F_2 ⟶

(2) Reaction with H_2O

- The trihalides and pentahalides can react with H_2O to form oxyacids.
  - □ **Recall:** oxyacids are covalent compounds containing a hydrogen atom bonded to an oxyanion.
  - □ **Exception:** The trihalides of N are not involved in these reactions.

Reaction with H_2O

MX_3 + 3 H_2O (l) ⟶ __ _____ (aq) + __ ____ (aq)

MX_5 + 4 H_2O (l) ⟶ __ _____ (aq) + __ ____ (aq)

EXAMPLE: Complete and balance the following reaction.

AsF_3 + 3 H_2O (l) ⟶

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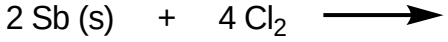
PRACTICE: Provide the products from the reaction between 2 moles of antimony with four moles of chlorine.



PRACTICE: Name the oxyacid created from the reaction between phosphorus trichloride and 3 moles of water.

a) hydrophorous acid b) phoric acid c) phosphorous acid d) phosphoric acid