CONCEPT: BINARY ACID STRENGTH

STRONG ACIDS are considered _____ Electrolytes so they ionize completely in water.

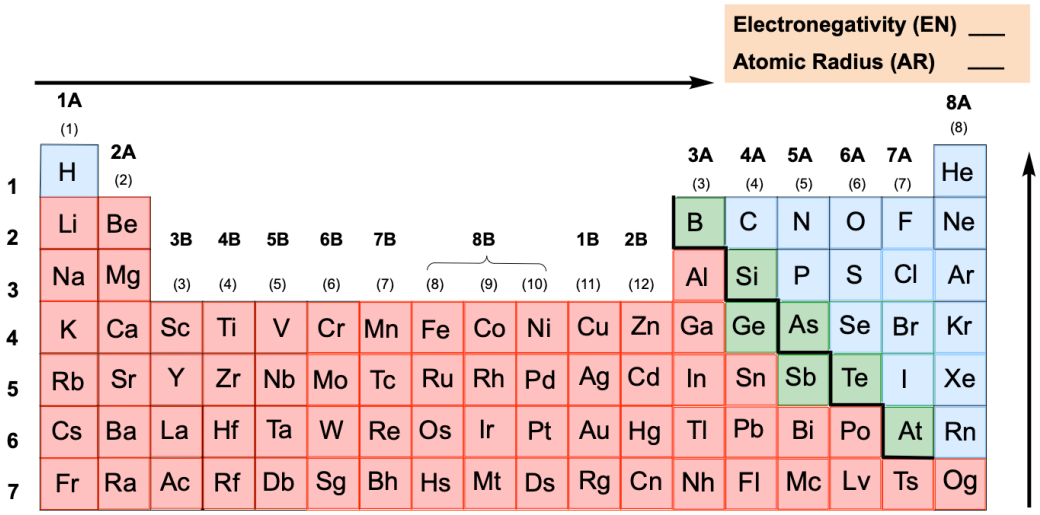
$$HCl\,(aq) \xrightarrow{H_2O} H^+\,(aq) + Cl^-\,(aq)$$

WEAK ACIDS are considered _____ Electrolytes so they don't completely ionize in water.

$$HF + H_2O \rightleftharpoons F^-\,(aq) + H_3O^+\,(aq)$$

The strength of a **BINARY ACID** is based on the _____ or _____ of the nonmetal.

- Elements in the **SAME PERIOD** look at _____ . The _____, the _____ acidic.
- Elements in the **SAME GROUP** look at _____ . The _____, the _____ acidic.



EXAMPLE 1: Which is the weakest acid from the following?

a) H_2S b) HF c) H_2Te d) All would have the same acid strength.

EXAMPLE 2: Which of the following acids would be classified as the strongest?

a) CH_4 b) NH_3 c) H_2O d) HF e) PH_3

CONCEPT: OXYACID STRENGTH

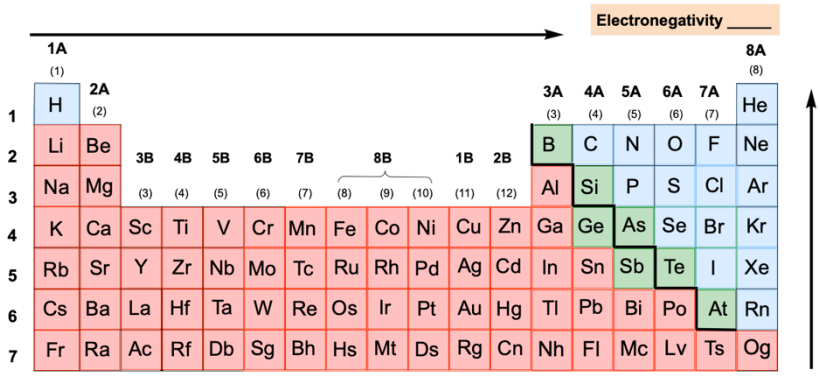
The strength of **OXYACIDS** is based on the number of _____ or the _____ of the nonmetal.

- **RULE:** If my oxyacid has **2 or More** _____ than _____ then my oxyacid is a _____ **ACID.**

$HClO_3$	HOCN	$HC_4H_7O_2$
___ Oxygens	___ Oxygens	___ Oxygens
– ___ Hydrogens	– ___ Hydrogens	– ___ Hydrogens
_____	_____	_____

When comparing the strengths of different oxyacids remember:

- If they have **different number of oxygens** then the _____ oxygen the _____ acidic
- If they have the **same number of oxygens** then the _____ electronegative the nonmetal the _____ acidic.



3 Exceptions

$H_2C_2O_4$	HIO_3	HSO_4^-
___ Oxygens	___ Oxygens	___ Oxygens
– ___ Hydrogens	– ___ Hydrogens	– ___ Hydrogens
_____	_____	_____

EXAMPLE 1: Rank the following oxyacids in terms of increasing acidity.

a) HNO_3 b) $HC_7H_5O_2$ c) H_2CO_3 d) $HClO_3$