LESSON 13 ACIDS & BASES

- Some chemicals can be classified as either an acid or a base.
- Both acids and bases are corrosive, which means they can burn your skin/eyes.

Acids

- Chemicals that produce _____ (H^+) when dissolved in water; the _____ H^+ ions, the _____ the acid.
- Bronsted-Lowry Acid: A species that _____ a proton (H^+)
- Acids take on acidic properties when _____ in water → referred to as _____ solutions. e.g., HCl → $H^+(aq)$ + Cl-(aq) (Note that it is the free H+ that produces the acidity).
- _____ due to the hydrogen ions and anions.
- Most acids can be identified by their chemical formula starting with an "_____"
  - e.g., HCl, H_2SO_4, H_3PO_4. (Exception: H_2O is not an acid!)
- Many acids show up in household products such as vinegar – _____, pop – _____, lemons – _____, etc. The _____ flavour in these foods is due to the acid.
- Many acids show up in industrial applications such as _____ and _____.
- Some animals and plants use acids as a defense mechanism such as stinging nettle and various types of ants.

Bases

- Often classified as chemicals that produce _____ (OH^-) when dissolved in _____; the more OH^- ions, the stronger the base. e.g., NaOH, $Mg(OH)_2$
- _____
- _____ due to the hydroxide ions and cations.
- Bronsted-Lawry Base: any species that accept a _____
- Many bases used in the home are _____; many feel _____ _____. (e.g. soap, oven cleaner, etc.)

- Bases are frequently used in industrial applications such as _____. E.g., NaOH is used to soften lignin in wood. _____ is like a glue that holds cellulose fibers together. _____ needs to be separated in order to make high quality paper.

pH Scale

- The pH scale is used to identify the _____ of an acid or base
- Numbered scale ranging from 0 (_____to 14 (_____) that increases by a factor of 10 for each whole number change on the scale
  - Each jump of 1 means the acid or base is _____ stronger
  - An acid with a pH of 3 is _____ times stronger than an acid with a pH of 4 and _____ times stronger than an acid with a pH of 5.
- A pH of _____ is neutral (i.e., not acidic or basic).

pH Indicators

- pH indicators are chemicals that react with acids and bases to produce a known _____.
- Example: Litmus paper → changes to _____ in acids and to _____ in bases.
- Other indicators are: methyl orange, methyl red, bromothymol blue, phenolphthalein and indigo carmine. See colour indicators page from data pages.