

- 1) For each description below, write **acid** if it tells about a property of an acid or **base** if it tells about a property of a base. If the property does not apply to either an acid or a base, write **neither**. If it applies to both an acid and a base, write **both**.

- BOTH a) Can turn litmus paper a different color
ACID b) Reacts with certain metals to release H₂ gas
ACID c) Contains more hydrogen ions than hydroxide ions
BASE d) Feels slippery
ACID e) Reacts with carbonates
NEITHER f) Feels rough
NEITHER g) Contains equal numbers of hydrogen and hydroxide ions
BASE h) Tastes bitter
ACID i) Tastes sour
BOTH j) Acts as an electrolyte

- 2) How do the concentrations of hydrogen ion and hydroxide ion determine whether a solution is acidic, basic, or neutral?

In acidic solution, $[H^+] > [OH^-]$; in basic solution $[H^+] < [OH^-]$; in neutral solution $[H^+] = [OH^-]$

- 3) In the Arrhenius model, an acid contains hydrogen and produces hydronium ions in aqueous solutions. Write an example of an Arrhenius acid ionization:



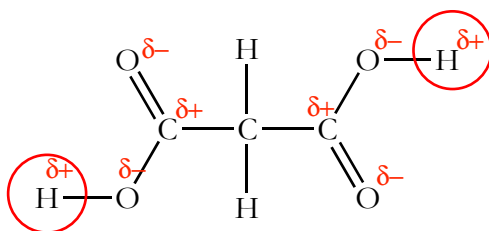
- 4) In the Arrhenius model, a base contains hydroxide and produces hydroxide ions in aqueous solutions. Write an example of an Arrhenius base ionization:



- 5) Arrhenius acids & bases are considered electrolytes (like ionic compounds) because their solutions conduct electricity. What do their solutions contain that enables them to do this? Why does pure H₂O not conduct electricity (what is it missing)?

Their solutions contain ions, which are mobile charge carriers. Pure water does not contain any ions.

- 6) Only polar H atoms will dissociate in aqueous solution. On the Lewis structure below, write in the partial charges (δ^+/δ^-) and identify any hydrogen atoms that are likely to be ionizable (able to dissociate).



- 7) Based on their formulas, which of the following compounds *may* be Arrhenius acids: CH₄, SO₂, H₂S, Ca₃(PO₄)₂, HClO₃, C₆H₅COOH? Explain your reasoning.

H₂S, HClO₃, and C₆H₅COOH have polar H-X or O-H bonds.