CONCEPT: PRINCIPAL SPECIES

The acid constant, K_a, of an acid tells us the numerical value that an acidic hydrogen can be removed.

For a **monoprotic acid**: When the pH < pka then [HA] is _____ than [A⁻].

When the pH > pka then [HA] is _____ than [A⁻].

- The relationship between pH and pKa can be furthered applied to diprotic and polyprotic acids.

EXAMPLE 1: What is the predominant form of the diprotic acid, methionine, at a pH equal to 4.18? $K_{a1} = 6.6 \times 10^{-3}$ and $K_{a2} = 8.3 \times 10^{-10}$.

EXAMPLE 2: What is the predominant form of histidine at a pH equal to 8.00? $pK_{a1} = 1.6$, $pK_{a2} = 5.97$ and $pK_{a3} = 9.28$.

EXAMPLE 3: What is the second most predominant form in the previous question?