

# [The acid fully dissociates. the value for](https://assignbuster.com/the-acid-fully-dissociates-the-value-for/)

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The purpose of this lab was to determine the the pKa value for ionization of two unknown weak acids using acid-base titrations. An acid-base titration is a procedure used to determine the concentration of an acid or base by using a measured volume of an acid or base of known concentration and reacting it with a sample to their equivalence  point. The equivalence point is the point of titration where the amount of titrant added is enough to completely neutralize the analyte solution. A neutralization reaction is a type of chemical reaction in which a strong acid and strong base react with each other to form water and a salt. Half-neutralizations were done on weak acids to create solutions with equal molar amounts to the acids and their conjugate bases. At the half-neutralization point, HA = A-.

The pH values were measured and used in pKa calculations for the unknowns in order to determine their identity. According to the modern Brønsted-Lowry definition, an acid is defined as any species that is capable of donating a proton. Acids can be categorized as strong or weak based off their strength and its equilibrium constant (Ka) value. An equilibrium constant is the ratio of the concentration of the products to the concentration of a reactant. A weak acid is partially dissociated into ions in an aqueous solution or water, while a strong acid fully dissociates. The value for Ka of a strong acid is very large, while the Ka for weak acids are much less than one. As an acid dissolves in water, hydrogen ions are donated to water molecules, forming H3O+ions. A conjugate acid is a species formed by receiving a hydrogen from a base, while a conjugate base is a species formed by the removal of a proton from an acid.

Another category of acids are polyprotic acids, which contain more than one ionizable hydrogen. The ionization of these acids occur in a series of steps, each having its own Ka value.