Water is weak electrolyte. In the similar manner to pH and pOH, pKa is equal to the negative decimal logarithm of the constant of dissociation for an acid, while pKb is equal to the decimal logarithm of the constant of dissociation for a base. To avoid the usage of low numbers, it was suggested to use negative decimal logarithm of the concentration of H+ ions to describe the level of acidity in water solution. Since the most of the constants of dissociation are expressed by very low numbers, it is better to use their negative decimal logarithms to compare them with each other. The level of pH in the solution of strong acid is calculated from the activity of H+ ions that is equal to their concentration multiplied by the coefficient of activity (fa). For alkali you need to calculate the activity of OH− ions, convert it to pOH, and then minus the resulting number from 14. We can calculate it for 1 L of water: the density of water is 1 g/ml, the mass of water is 1000 g, the molar mass is 18 g/mol, and the number of moles is 55.6 mol. pH = −log[H+] pOH = −log[OH−] pH + pOH = 14 In the same manner we can calculate pOH from the concentration of OH− ions. pKa = −log Kdiss for an acid (Ka − acid ionization constant).

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