The hypochlorite ion (OCl\(^-\)) is a strong oxidizing agent often found in household bleaches and disinfectants. It is also the active ingredient that forms when swimming pool water is treated with chlorine. In addition to its oxidizing abilities, the hypochlorite ion has a relatively high affinity for protons (it is a much stronger base than Cl\(^-\), for example) and forms the weakly acidic hypochlorous acid (HOCl, \(K_a = 3.5 \times 10^{-8}\)).

a. Write a balanced equation for the dissociation of HOCl.

b. Calculate the pH of a 0.100 M aqueous solution of hypochlorous acid.

c. Calculate the percent dissociation of hypochlorous acid.