# Answer on the question #54869 – Chemistry – Physical Chemistry

**Question:**

0.015 g moles of NH₄OH and 0.025 g moles of NH₄Cl are present in a solution then pH of mixture is :-

**Solution:**

Let's consider the dissociation of ammonia as a base. The reaction equation is:

$$NH_3 \cdot H_2O = NH_4^+ + OH^-$$
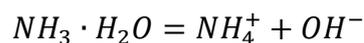
The initial concentration (before dissociation) is:

$$c_0 \qquad 0.015 \quad 0.025 \quad -$$

Then, the change in concentration due to dissociation:

$$\Delta c \qquad -x \qquad x \qquad x$$

Then, the final concentration is:

$$[c] \qquad (0.015 - x) \quad (0.025 + x) \quad x$$

Dissociation constant of ammonia is 1.8·10⁻⁵.

$$\frac{(0.025 + x)x}{(0.015 - x)} = 1.8 \cdot 10^{-5}$$

$$x = 1.08 \cdot 10^{-5}$$

Then, the equilibrium concentration of OH⁻ is x, so 1.8·10⁻⁵.

Let's find pH value:

$$pH = 14 - pOH = 14 + \lg[OH^-] = 14 - 4.97 = 9.03$$

**Answer:** 9.03