Answer on Question #69337, Chemistry, General Chemistry

How many moles of $Ba(OH)_2$ are required to make 1.0 L of solution in which the OH concentration is 0.050 M?

(1) 0.025

(2) 0.050

(3) 0.10

(4) 2.0

(5) 0.15

Solution:

Barium hydroxide is a strong base, that's why the dissociation process is:

$Ba(OH)_2 \rightarrow Ba^{+2} + 2OH^-$

The concentration of OH^- - ions equals 0.050 M. It means that concentration of $Ba(OH)_2$ is 0.050/2 = 0.025 M, according to dissociation process.

If we know the molar concentration and the volume of solution, we can determine the number of moles of $Ba(OH)_2$, using formulae:

$C(Ba(OH)_2) = \frac{n(Ba(OH)2)}{V}$, where n is number of moles; V is volume of solution.

So:

$n(Ba(OH)_2) = C(Ba(OH)_2) \cdot V = 0.025 \cdot 1.0 = 0.025$ (mol)

Answer: (1) 0.025.