$$C = \frac{n}{V}$$

← # of moles

← volume

molar concentration

mass ⟶ # of moles

Ex. What volume of solution is required to dissolve 1.75 mol to make a 0.95 mol/L solution of $CaCO_3$?

$V = ?$

$n = 1.75 mol$

$C = 0.95 mol/L$

$C = \dfrac{n}{V}$

$0.95 mol/L = \dfrac{1.75 mol}{V}$

$V = \dfrac{1.75 mol}{0.95 mol/L}$

$\boxed{V = 1.8\ L}$

Ex. A sample of laboratory ammonia solution has a concentration of 14.8 mol/L. What mass of ammonia is present in a 25.0 mL sample of this solution?

NH_3

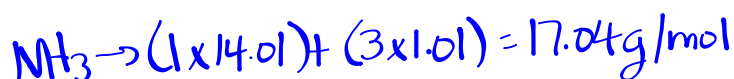$C = 14.8 mol/L$

$m = ?$

$V = 25.0 mL$

$\quad = 0.0250 L$

$C = \dfrac{n}{V}$

$14.8 mol/L = \dfrac{n}{0.0250 L}$

$n = (14.8 mol/L)(0.0250 L)$

$n = 0.37 mol$

$0.37\ mol\ NH_3 \times \dfrac{17.04 g\ NH_3}{1\ mol\ NH_3} = \boxed{6.30 g\ NH_3}$

$NH_3 \rightarrow (1 \times 14.01) + (3 \times 1.01) = 17.04 g/mol$

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Practice Problems

p. 481 #8,9
p. 483 #10,11
Worksheet