Warm Up

Determine the molar concentration of a solution in which 68.0g of NaCl is dissolved in 800. mL of water.

$C = ?$

$m = 68.0\,g$ NaCl

$V = 800.\,mL$

$68.0\,g\,NaCl \times \frac{1\,mol\,NaCl}{58.44\,g\,NaCl} = 1.164\,mol\,NaCl$

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

$C = \frac{1.164\,mol}{0.800\,L} = \boxed{1.45\,mol/L}$

What is the new concentration of a solution if 150. mL of water is used to dilute 325 mL of a 0.450M solution?

$V_i = 325\,mL$

$C_i = 0.450\,M$

$V_F = 475\,mL$

$C_F = ?$

$V_i C_i = V_F C_F$

$(325\,mL)(0.450\,mol/L) = (475\,mL)C_F$

$C_F = \frac{(325\,mL)(0.450\,mol/L)}{(475\,mL)}$

$\boxed{C_f = 0.308\,mol/L}$

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

$V \times C = \frac{n}{V} \times V$, solve for n

Solve for V

$V \times C = n$

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

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

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

Worksheet