Topic Reminder: Quiz 9
Solution Stoichiometry

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1. A 10mL beacker of 0.5M $AlCl_3$ has 10mL of water added to it.

Determine the concentration of each ion before and after the water is added.

| | Before | After |
|---|---|---|
| $[Al^{3+}]$ | .5 | 0.25 |
| $[Cl^{-1}]$ | 1.5 | 0.75 |

$M_1V_1 = M_2V_2$

$.5\ 10 = x \cdot 20 \quad x = 0.25$

$1.5 \cdot 1.0 = x \cdot 20$

$x = .75$

2. A 10mL beaker of 0.5M $MgCl_2$ has 10mL of 1.0M $AgNO_3$ added to it forming AgCl.
   a. Write the molecular balanced molecular equation.

$$2AgNO_3 + MgCl_2 \rightarrow 2AgCl + Mg(NO_3)_2$$

   b. Determine the concentration of each ion before and after the reaction.

| | | | |
|---|---|---|---|
| $[Mg^{2+}]$ | .5 | → | .25 |
| $[Cl^{-1}]$ | 1.0 | → | 0 |
| $[Ag^{+}]$ | 1.0 | → | 0 |
| $[NO_3^{-1}]$ | 1.0 | → | .5 |

Limiting ions: $Cl^-$ $Ag^+$ these match

Charges match
$Mg^{+2}$ +1
.25 .5

   c. In the beakers below draw the before and after beakers. Use the smallest number of particles required to express the concentrations.