Making Solutions Worksheet

1)   Explain how you would make 750. mL of a 1.35 M KOH solution.

2)   If you dilute 15.0 mL of a 12.0 M HCl solution to make a 2.50 M HCl solution what will the final volume be?

3)   How many grams of magnesium bromide are needed to make 1.0 L of a 4.0 M magnesium bromide solution?

4)   Why is the following procedure is incorrect: To make 1.00 L of a 1.00 M $CaCl_2$ solution, dissolve 111 grams of calcium chloride in 1.00 L of water.

Solutions

1) Explain how you would make 750. mL of a 1.35 M KOH solution.

0.750 L KOH x <u>1.35 mole KOH</u> x <u> 59 g KOH </u> = 56.7 g KOH
**   1 L KOH   1 mole KOH**

Measure 56.7 g KOH into a container and add water to 750 mL volume.

2) If you dilute 15.0 mL of a 12.0 M HCl solution to make a 2.50 M HCl solution what will the final volume be?

$(12.0 \text{ M})(15.0 \text{ mL}) = (2.50 \text{ M}) V_2$

$V_2 = \underline{(12.0 \text{ M})(15.0 \text{ mL})} = 72.0 \text{ mL}$
**   (2.50 M)**

3) How many grams of magnesium bromide are needed to make 1.0 L of a 4.0 M magnesium bromide solution?

1.0 L MgBr_2 x <u>4.0 mole MgBr_2</u> x <u>184.3 g MgBr_2</u> = 737.2 g MgBr_2
**   1 L MgBr_2 1 mole MgBr_2**

4) Why is the following procedure is incorrect: To make 1.00 L of a 1.00 M $CaCl_2$ solution, dissolve 111 grams of calcium chloride in 1.00 L of water.

Making a solution this way would result in a final volume greater than 1.00 L because the calcium chloride has volume too. The proper method would be to measure 111 g $CaCl_2$ into a container, then add water to 1.00 L volume.