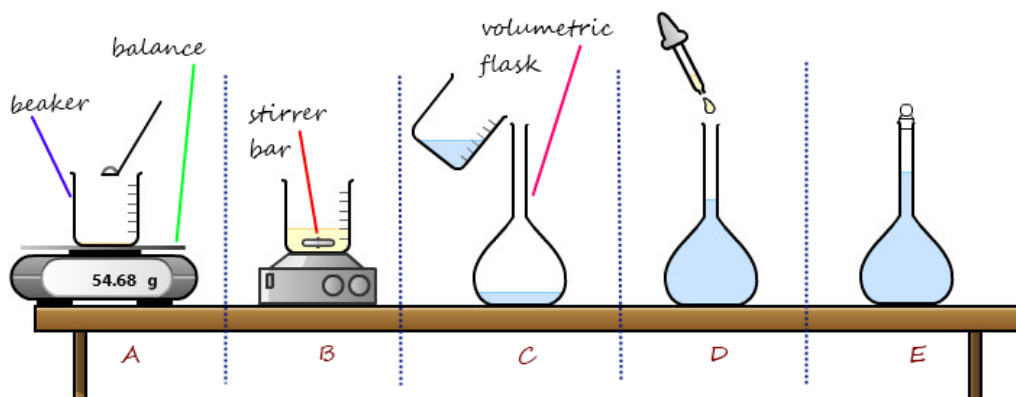


## SCH 3U

### PREPARING A SOLUTION (& DILUTIONS)

#### ① PREPARING STOCK SOLUTIONS



##### STEPS

A:

B:

C:

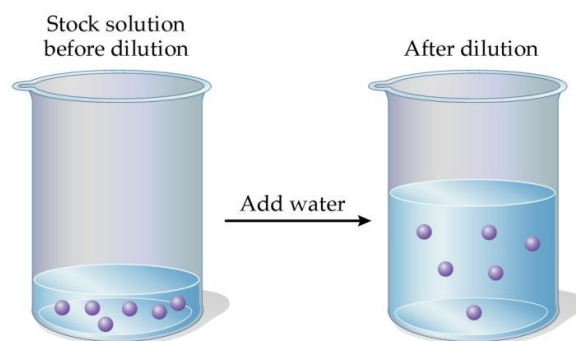
D:

E:

#### ② DILUTING SOLUTIONS

$$(c_{\text{initial}})(V_{\text{initial}}) = (c_{\text{final}})(V_{\text{final}})$$

$$c_1 V_1 = c_2 V_2$$



The two beakers contain the same number of moles of solute.

$$n_1 = 6 \text{ mol}$$

$$V_1 = 2 \text{ L}$$

$$c_1 = \frac{n}{V} = 3.0 \text{ M}$$

$$n_2 = 6 \text{ mol}$$

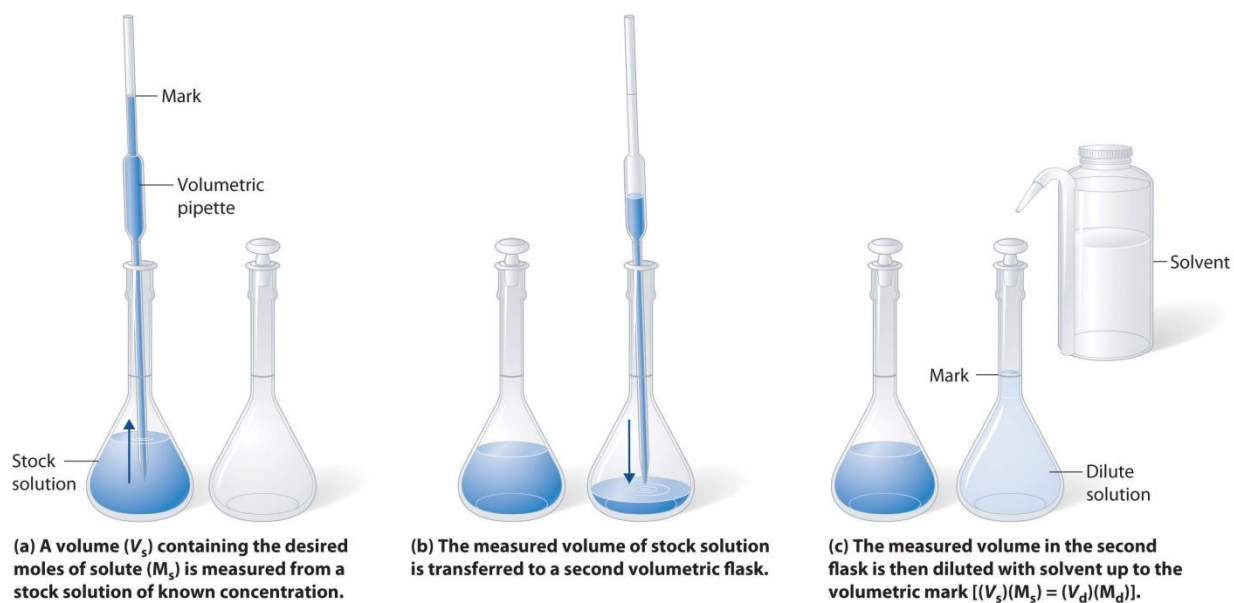
$$V_2 = 10 \text{ L}$$

$$c_2 = 0.6 \text{ M}$$

$$\text{Since } n_1 = n_2$$

$$c_1 V_1 = c_2 V_2$$

### ③ HOW TO DILUTE A SOLUTION



#### EXAMPLES:

- ① You are given a concentrated solution of 18.0 mol/L sulfuric acid. If you want to make up 2.0 L of a 0.10 mol/L solution, what volume of conc. acid is needed in mL? What volume of water was used to dilute the solution?
  
  
  
  
  
  
  
  
  
  
- ② If 25.0 mL of a 0.750 mol/L solution of  $K_2CO_{3(aq)}$  solution is diluted to 2.00 L, what concentration of solution is obtained?

- ③ What volume of 12.0 M  $HCl$  solution and volume of distilled water are needed to make a dilute solution with a concentration of 5% (m/V)?
- ④
- A) A 500 mL volumetric flask is used to create a 1.50 M stock solution of potassium chlorate. Describe the steps of preparing the solution.
  - B) To perform a lab, you need 200 mL of a 6% (m/V) potassium chlorate solution. What volume of the stock solution in part A will be withdrawn and what volume of distilled water will be used to make up the 200 mL solution.