

Dilution Worksheet:

1. How would you prepare 25.00 mL of 0.1210 M CH_3COOH solution from a 0.3003 M CH_3COOH solution? Calculate and fill in the plan of action.

Dilution Formula:

$$C_1V_1 = C_2V_2$$

$$C_2 = 0.1210 \text{ M}$$

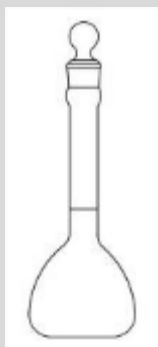
$$V_2 = 25.00 \text{ mL (or 0.02500 L)}$$

$$C_1 = 0.3003 \text{ M}$$

$$V_1 = \frac{(0.1210 \text{ M})(25.00 \text{ mL})}{0.3003 \text{ M}} = 10.07 \text{ mL}$$

At best, you would be able to use a measuring pipet or a buret to transfer in 10.07 mL of the 0.3003 M solution.

Plan of action (watch significant figures):



I would pipet 10.07 mL of CH_3COOH from the
(volume in mL)

0.3003 M M CH_3COOH solution into a volumetric flask.
(concentration)

Then I would add water to make the volume up to the mark in the volumetric

flask to obtain a total volume of 0.02500 L of a
(volume in L)

0.1210 M M CH_3COOH solution.
(concentration)

2. How would you prepare 10.00 mL of 0.6520 M HCl solution from a 1.255 M HCl solution?
Calculate and fill in the plan of action.

Dilution Formula:

$$C_1V_1 = C_2V_2$$

$$C_2 = 0.6520 \text{ M}$$

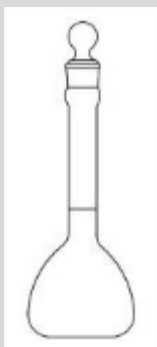
$$V_2 = 10.00 \text{ mL (or 0.01000 L)}$$

$$C_1 = 1.255 \text{ M}$$

$$V_1 = \frac{(0.6520 \text{ M})(10.00 \text{ mL})}{1.255 \text{ M}} = 5.195 \text{ mL}$$

At best, you would be able to use a measuring pipet or a buret to transfer 5.20 mL of the 1.255 M solution. Therefore, the final concentration of the solution would be 0.653 M.

Plan of action (watch significant figures):



I would pipet 5.20 mL of HCl from the
(volume in mL)

1.255 M M HCl solution into a volumetric flask.
(concentration)

Then I would add water to make the volume up to the mark in the volumetric

flask to obtain a total volume of 0.01000 L of a
(volume in L)

0.653 M M HCl solution.
(concentration)

3. How would you prepare 5.00 mL of 0.01100 M NaOH solution from a 0.9885 M NaOH solution? Calculate and fill in the plan of action.

Dilution Formula:

$$C_1V_1 = C_2V_2$$

$$C_2 = 0.01100 \text{ M}$$

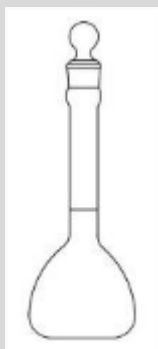
$$V_2 = 5.00 \text{ mL (or 0.00500 L)}$$

$$C_1 = 0.9885 \text{ M}$$

$$V_1 = \frac{(0.01100 \text{ M})(5.00 \text{ mL})}{0.9885 \text{ M}} = 0.0556 \text{ mL}$$

At best, you would be able to use a measuring pipet or a buret to transfer 0.06 mL of the 0.9885 M solution. Therefore, the final concentration of the solution would be 0.01 M.

Plan of action (watch significant figures):



I would pipet 0.06 mL of NaOH from the
(volume in mL)

0.9885 M NaOH solution into a volumetric flask.
(concentration)

Then I would add water to make the volume up to the mark in the volumetric

flask to obtain a total volume of 0.00500 L of a
(volume in L)

0.01 M NaOH solution.
(concentration)