How would you prepare a total volume of 500 mL NaCl solution with a concentration of 4.5 % (w/v).

Prepare 342 mL of a 9.1 % (w/v) NaCl solution.

Prepare 9 L of a 9.2 % NaCl solution.

Prepare a 12.2 % NaCl solution given 32 g_{NaCl}.

Prepare a 0.12 % NaCl solution given 1.2 kg_{NaCl}.

Prepare a 12 % $MgSO_4$ solution given 1.2 kg_{MgSO_4}.

How would you prepare a total volume of 500 mL NaCl solution with a concentration of 4.5 % (w/v).

$$C = \frac{m_{NaCl}}{\forall_{total}}$$

$$4.5\%\,(w/v) = \frac{m}{500\,mL}$$

$$\frac{4.5\ g}{100\ mL} = \frac{m}{500\ mL}$$

$$m = \frac{(4.5\ g)(500\ \cancel{mL})}{100\ \cancel{mL}}$$

$$m = 22.5\ g$$

$$\boxed{m_{NaCl} = 20\ g}$$

Prepare 342 mL of a 9.1 % (w/v) NaCl solution.

$$C = \frac{m_{NaCl}}{\forall_{total}}$$

$$9.1\ \%(w/v) = \frac{m}{342\ mL}$$

$$\frac{9.1\ g}{100\ mL} = \frac{m}{342\ mL}$$

$$m = \frac{(9.1\ g)(342\ \cancel{mL})}{100\ \cancel{mL}}$$

$$m = 31.122\ g$$

$$\boxed{m_{NaCl} = 31\ g}$$

Prepare 9 L of a 9.2 % NaCl solution.

$$C = \frac{m_{NaCl}}{\forall_{total}}$$

$$9.2\,\% = \frac{m}{9\,L}$$

$$\frac{9.2\ g}{100\ mL} = \frac{m}{9\,L}$$

$$m = \frac{(9.2\ g)(9\ \cancel{L})}{100\ \cancel{mL}}\left(\frac{1000\ \cancel{mL}}{1\ \cancel{L}}\right)$$

$$m = 828\ g$$

$$\boxed{m = 800\ g}$$

Prepare a 12.2 % NaCl solution given 32 g_{NaCl}.

$$C = \frac{m_{NaCl}}{V_{total}}$$

$$12.2\% = \frac{32\ g}{V}$$

$$\frac{12.2\ g}{100\ mL} = \frac{32\ g}{V}$$

$$V = \frac{(100\ mL)(32\ g)}{12.2\ g}$$

$$V = 262.295\ mL$$

$$\boxed{V_{total} = 260\ mL}$$

Prepare a 0.12 % NaCl solution given 1.2 kg_{NaCl}.

$$C = \frac{m_{NaCl}}{\forall_{total}}$$

$$0.12\,\% = \frac{1.2\ kg}{\forall}$$

$$\frac{0.12\ g}{100\ mL} = \frac{1.2\ kg}{\forall}$$

$$\forall = \frac{(100\ mL)(1.2\ kg)}{0.12\ g}\left(\frac{1000\ g}{1\ kg}\right)$$

$$\forall = 1000\,000\ mL\left(\frac{1\ L}{1000\ mL}\right)$$

$$\boxed{\forall = 1.0 \times 10^{3}\ L}$$

Prepare a 12 % $MgSO_4$ solution given 1.2 kg_{MgSO_4}.

$$C = \frac{m_{MgSO_4}}{V_{total}}$$

$$12\% = \frac{1.2\ kg}{V}$$

$$\frac{12\ g}{100\ mL} = \frac{1.2\ kg}{V}$$

$$V = \frac{(100\ mL)(1.2\ kg)}{12\ g}\left(\frac{1000\ g}{1\ kg}\right)$$

$$V = 10\,000\ mL\left(\frac{1\ L}{1000\ mL}\right)$$

$$\boxed{V = 1.0 \times 10^{1}\ L}$$