Concentration Worksheet Solutions

1. $ppm = \frac{\text{mass solute mg}}{\text{volume (L)}}$

$1.50 ppm = \frac{m}{0.250 L}$

$m = 0.375 mg$

2. a) $c = \frac{n}{V}$

$= \frac{4.67 mol}{2.04 L}$

$= 2.29 mol/L$

b) $c = \frac{0.629 mol}{1.500 L}$

$= 0.419 mol/L$

c) $M_{Na_2CO_3} = 105.988 g/mol$

$n_{Na_2CO_3} = \frac{4.783 g}{105.988 g/mol}$

$= 0.04513 mol$

$c = \frac{0.04513 mol}{10.00 L}$

$= 0.004513 mol/L$

3. $M_{NaCl} = 58.443 g/mol$

$n_{NaCl} = \frac{28.0 g}{58.443 g/mol}$

$= 0.479 mol$

$c = \frac{n}{V} = \frac{0.479 mol}{1 L} = 0.479 mol/L$

4. $c = \frac{n}{V}$

$V = \frac{n}{c} = \frac{4.1 mol}{0.055 mol/L} = 75 L$

5. $n = c \cdot V$

$= 2.00 mol/L \times 0.75 L$

$= 1.5 mol$

$M_{H_2SO_4} = 98.077 g/mol$

$m_{H_2SO_4} = 1.5 mol \times 98.077 \frac{g}{mol}$

$= 147 g$

6. $V = \frac{n}{c} = \frac{0.050 mol}{7.6 mol/L}$

$= 0.0066 L$ or $6.6 mL$

7. $c_c = 1.00 mol/L$

$c_d = 0.750 mol/L$

$v_d = 100.0 mL$

$c_c v_c = c_d v_d$

$v_c = \frac{c_d v_d}{c_c}$

$= \frac{(0.750 mol/L)(100.0 mL)}{1.00 mol/L}$

$= 75.0 mL$

8. $c_c = 18.0\ mol/L$ $c_d = 1.00\ mol/L$

$V_c = ?$ $V_d = 2.00\ L$

$$V_c = \frac{c_d V_d}{c_c}$$

$$= \frac{(1.00\ mol/L)(2.00\ L)}{18.0\ mol/L}$$

$$= 0.111\ L$$

9.

$$V_c = \frac{c_d V_d}{c_c}$$

$$= \frac{(1.00\ mol/L)(2.00\ L)}{12.0\ mol/L}$$

$$= 0.167\ L$$

10. total volume $= 2.00\ L + 4.00\ L$

$= 6.00\ L$

$n_{\#1} = c \cdot V$

$= (3.00\ mol/L)(2.00\ L)$

$= 6\ mol$

$n_{\#2} = c \cdot V$

$= (1.50\ mol/L)(4.00\ L)$

$= 6\ mol$

total $n = 6\ mol + 6\ mol = 12\ mol$

$$c = \frac{n}{V}$$

$$= \frac{12\ mol}{6.00\ L}$$

$$= 2.00\ mol/L$$