Conversion Practice

1. $14\ mm \times \frac{1\ m}{1000\ mm} = 0.014\ m$

2. $35\ kg \times \frac{1000\ g}{1\ kg} = 35000\ g$

3. $57\ mL \times \frac{1\ L}{1000\ mL} = 0.057\ L$

4. $88\ m/s \times \frac{100\ cm}{1\ m} = 8800\ cm/s$

5. $9.45\ g/L \times \frac{1\ L}{1000\ mL} = 0.00945\ g/mL$

6. $15.9\ mm \times \frac{1\ km}{1000000\ mm} = 0.0000159\ km$

7. $0.0982\ hg \times \frac{100\ g}{1\ hg} \times \frac{100\ cg}{1\ g} = 982\ cg$

8. $13455\ g \times \frac{1\ Kg}{1000\ g} = 13.455\ kg$

9. $73.5\ Km/hr \times \frac{1000\ m}{1\ km} \times \frac{1\ hr}{3600\ s} = 20.4\ m/s$

10. $4.52\ g/mL \times \frac{1\ Kg}{1000\ g} \times \frac{1000\ mL}{1\ L} = 4.52\ Kg/L$

Dimensional Analysis

1. $(1.564\ kg + 2.43\ kg) \cdot 7.552\ s$
   $= (3.99\ kg) \cdot 7.552\ s$
   $= 30.1\ kgs$

2. $5.825\ m/s + (6.51\ m \div 5.1\ s)$
   $= 5.825\ m/s + 1.3\ m/s$
   $= 7.1\ m/s$

3. $(7.221\ g + 8.252\ g + 7.123\ g) \cdot 3\ m/s$
   $= (22.596\ g) \cdot 3\ m/s$
   $= 70\ gm/s$

4. $61000.0\ kgm/s^2 \cdot 510.0\ m \cdot 2\pi$
   $= 99337159.7\ kgm^2/s^2$
   $= 99340000\ kgm^2/s^2$

5. $50.00\ g \div 7.86\ g/mL = 50.00\ g \times \frac{1\ mL}{7.86\ g}$
   $= 6.36\ mL$ of iron

6. $0.178\ g/L \times 375.0\ mL \times \frac{1\ L}{1000\ mL}$
   $= 0.0668\ g/L$

7. Total travel distance is 25.0 cm
   $25.0\ cm \times \frac{1\ m}{100\ cm} = 0.250\ m$
   $0.250\ m \div 45.8\ m/s = 0.250\ m \times \frac{1\ s}{45.8\ m}$
   $= 0.00546\ s$

8. $25.0 \times 10^{23}\ atoms \div 6.02 \times 10^{23}\ atoms/mol$
   $= 4.15$ mol

9. $25 \text{ atoms} \div 6.02 \times 10^{23} \text{ atoms/mol}$
$= 4.2 \times 10^{-23} \text{ mol}$

10. $3.0 \times 10^{10} \text{ cm/s} \times \frac{1 \text{ m}}{100 \text{ cm}} \times \frac{1 \text{ Km}}{1000 \text{ m}} \times \frac{3600 \text{ s}}{1 \text{ h}}$
$= 1.1 \times 10^{9} \text{ Km/h}$

11. 6.277 g/L is given.

$6.277 \text{ g/L} \times 15.0 \text{ mL} \times \frac{1 \text{ L}}{1000 \text{ mL}}$

$= 0.0942 \text{ g}$

$0.0942 \text{g} \times \frac{1000 \text{ mg}}{1 \text{ g}} = 94.2 \text{ mg}$

Moar Dimensional Analysis

1. $13.6 \text{ g/mL} \times 3.55 \text{ mL} = 48.3 \text{ g}$
2. $11.3 \text{ g/mL} \times 45 \text{ mL} = 510 \text{ g}$
3. $2.16 \text{ g/mL} \times 100.0 \text{ mL} = 216 \text{ g}$
4. $15 \text{ Km/s} \times 5.5 \text{ s} = 83 \text{ Km}$
5. $6.02 \times 10^{23} \text{ atoms/mol} \times 0.525 \text{ mol} = 3.16 \times 10^{23}$
6. $61.2 \text{ g/L} \times 2.75 \text{ L} = 168.3 \text{ g}$
7. $0.000245 \text{ g/mL} \times 50.0 \text{ mL} = 0.0123 \text{ g}$