Math Review & Problem-Solving 5

Unit Conversions • Chemistry 210

KEY

Carry out the following conversions. Express the answers to the correct number of significant figures. *(Use the back cover of the book for some conversion factors.)*

1) 0.00232 g → μg

$$\frac{.00232\,g}{} \cdot \frac{1\,\mu g}{1\times10^{-6}\,g} = 2320$$

2) 5130 g → kg

5.13 kg

3) 200 cm → dm

20 dm

4) 200 cm² → dm²

$$\frac{200\,cm^2}{} \cdot \frac{1\,dm^2}{100\,cm^2} = 2\,dm^2$$

5) 200 cm³ → dm³

$$\frac{200\,cm^3}{} \cdot \frac{1\,dm^3}{1000\,cm^3} = 0.2\,dm^3$$

6) 3.5 x 10⁵ ng → mg

$$\frac{3.5\times10^5\,ng}{} \cdot \frac{1000\,mg}{1\times10^9\,ng} = 0.35\,mg$$

7) 8.43 x 10¹² mg → Gg

8.43 Gg

8) 25 miles → m

$$\frac{25\,miles}{} \cdot \frac{1\,km}{0.6214\,mi} \cdot \frac{1000\,m}{1\,km} = 40.\,m$$

9) 0.0038 dL → μL

380 μL

10) 0.0344 g/mL → g/L

$$\frac{0.0344\,g}{1\,mL} \cdot \frac{1000\,mL}{1\,L} = 34.4\,g/L$$

11) 3500 kg → mg

3500 000 000

3.5 x 10⁹ mg

12) 3500 kg → μg

3.5 x 10¹² μg

13) 3500 kg → Mg

3.5 Mg

14) 1.11 x 10⁷ ns → ms

11.1 ms

15) 785 mg → dg

7.85 dg

16) 0.0088 mg → pg

$$\frac{0.0088\,mg}{} \cdot \frac{1\times10^{12}\,pg}{1000\,mg} = 8.8\times10^6\,pg$$

17) 2.5 x 10¹¹ dg → Gg

$$\frac{2.5\times10^{11}\,dg}{} \cdot \frac{1\,g}{10\,dg} \cdot \frac{1\,Gg}{1\times10^9\,g} = 2.5\,Gg$$

18) 3.22 x 10⁵ mL → dm³

$$\frac{3.22\times10^5\,mL}{} \cdot \frac{1\,L}{1000\,mL} \cdot \frac{1\,dm^3}{1\,L} = 322\,dm^3$$

19) 4.44 lbs → kg

$$\frac{4.44\,lbs}{} \cdot \frac{453.6\,g}{1\,lb} \cdot \frac{1\,kg}{1000\,g} = 2.01\,kg$$

20) 5.55 x 10¹⁰ cm³ → m³

$$\frac{5.55\times10^{10}\,cm^3}{} \cdot \frac{1\,m^3}{1\times10^6\,cm^3} = 55,500\,m^3$$

21) 75 mi/hr → m/s

$$\frac{75\,mi}{1\,hr} \cdot \frac{1\,hr}{3600\,s} \cdot \frac{1000\,m}{0.6214\,mi} = 34\,m/s$$

22) 6.7 lb/ft³ → g/mL

$$\frac{6.7\,lb}{ft^3} \cdot \frac{453.6\,g}{1\,lb} \cdot \frac{1\,ft^3}{1728\,in^3} \cdot \frac{1\,in^3}{16.39\,cm^3} \cdot \frac{1\,cm^3}{1\,mL}$$