

Hw. week 2 Chem. 6A CSUS S05

14. (a) 1000 meters = a kilometer (d) 0.01 meter = a centimeter
 (b) 0.1 gram = a decigram (e) 0.001 liter = a milliliter
 (c) 0.000001 liter = a microliter

18. (a) 63,000 zeros are not significant
 (b) 6.004 zeros are significant
 (c) 0.00543 zeros are not significant
 (d) 8.3090 zeros are significant

19. Significant figures

- (a) 0.025 (2) (c) 0.0404 (3)
 (b) 22.4 (3) (d) 5.50×10^3 (3)

20. Round to three significant figures

- (a) 8.87 (c) 130. (1.30×10^2)
 (b) 21.3 (d) 2.00×10^6

21. Exponential notation

- (a) 2.9×10^6 (c) 8.40×10^{-3}
 (b) 5.87×10^{-1} (d) 5.5×10^{-6}

26. (a)
$$\begin{array}{r} 15.2 \\ -2.75 \\ \hline 15.67 \\ 28.1 \end{array}$$

(b) $(4.68)(12.5) = 58.5$

(c) $\frac{182.6}{4.6} = 4.0 \times 10^1$ or 40.

(d) 1986

$$\frac{23.84}{0.012} = 2009.852 = 2010. = 2.010 \times 10^3$$

(e) $\frac{29.3}{(284)(415)} = 2.49 \times 10^{-4}$

(f) $(2.92 \times 10^{-3})(6.14 \times 10^5) = 1.79 \times 10^3$

30. (a) $x = \frac{212 - 32}{1.8}$
 $x = 1.0 \times 10^2$

(c) $72 = 1.8x + 32$

$$72 - 32 = 1.8x$$

(b) $8.9 \frac{\text{g}}{\text{mL}} = \frac{40.90 \text{ g}}{x}$

$$40. = 1.8x$$

$$\left(8.9 \frac{\text{g}}{\text{mL}}\right)x = 40.90 \text{ g}$$

$$\frac{40.}{1.8} = x$$

$$x = \frac{40.90 \text{ g}}{8.9 \frac{\text{g}}{\text{mL}}} = 4.6 \text{ mL}$$

$$22 = x$$

34. (a) The conversion is: $m \rightarrow cm \rightarrow in. \rightarrow ft$

$$(35.6 \text{ m}) \left(\frac{100 \text{ cm}}{1 \text{ m}} \right) \left(\frac{1 \text{ in.}}{2.54 \text{ cm}} \right) \left(\frac{1 \text{ ft}}{12 \text{ in.}} \right) = 117 \text{ ft}$$

(b) $(16.5 \text{ km}) \left(\frac{1 \text{ mi}}{1.609 \text{ km}} \right) = 10.3 \text{ mi}$

(c) $(4.5 \text{ in.}^3) \left(\frac{2.54 \text{ cm}}{1 \text{ in.}} \right)^3 \left(\frac{10 \text{ mm}}{1 \text{ cm}} \right)^3 = 7.4 \times 10^4 \text{ mm}^3$

(d) $(95 \text{ lb}) \left(\frac{453.6 \text{ g}}{1 \text{ lb}} \right) = 4.3 \times 10^4 \text{ g}$

40. The conversion is: $mi \rightarrow km \rightarrow m \rightarrow s$

93 million miles = $9.3 \times 10^7 \text{ mi}$

$$(9.3 \times 10^7 \text{ mi}) \left(\frac{1.609 \text{ km}}{\text{mi}} \right) \left(\frac{1000 \text{ m}}{1 \text{ km}} \right) \left(\frac{1 \text{ s}}{3.00 \times 10^8 \text{ m}} \right) = 5.0 \times 10^2 \text{ s}$$

47. The conversion is: $\frac{\$}{L} \rightarrow \frac{\$}{qt} \rightarrow \frac{\$}{gal} \rightarrow \$$

$$\left(\frac{\$0.35}{1 \text{ L}} \right) \left(\frac{0.946 \text{ L}}{1 \text{ qt}} \right) \left(\frac{4 \text{ qt}}{1 \text{ gal}} \right) (15.8 \text{ gal}) = \$21$$

54. $(16 \text{ in.})(8 \text{ in.})(10 \text{ in.}) \left(\frac{2.54 \text{ cm}}{1 \text{ in.}} \right)^3 \left(\frac{1 \text{ L}}{1000 \text{ mL}} \right) \left(\frac{1 \text{ qt}}{0.946 \text{ L}} \right) \left(\frac{1 \text{ gal}}{4 \text{ qt}} \right) = 6 \text{ gal}$

61. $d = \frac{m}{V} = \frac{78.26 \text{ g}}{50.00 \text{ mL}} = 1.565 \frac{\text{g}}{\text{mL}}$