

Review assignment #1

Chapter 1 # 1, 2, 3, 4, 7, 8, 10

Chapter 2 # 5, 9, 11, 15, 16, 32, 33, 34, 20, 25, 30, 31, 47, 48

Chapter 3 # 2, 5, 6, 7

~~1.1~~ Chapter 1

1.1 (a) $1 \text{ day} \times \frac{24 \text{ hours}}{1 \text{ day}} \times \frac{60 \text{ min}}{\text{hour}} \times \frac{60 \text{ s}}{\text{min}} = 8.64 \times 10^4 \text{ s}$

(b) $1 \text{ year} \times \frac{365.25 \text{ day}}{\text{year}} \times \frac{8.64 \times 10^4 \text{ s}}{\text{day}} = 3.1558 \times 10^7 \text{ s}$

(c) $8.1764 \times 10^{17} \text{ s} \times \frac{1 \text{ year}}{3.15576 \times 10^7 \text{ s}} \times \frac{1 \text{ century}}{100 \text{ yr}} = 2.5909 \times 10^{10} \text{ centuries}$

(d) the relevant conversion factors are exact, by definition, and thus do not affect the significance of the final result

$3.45 \times 10^{-3} \text{ miles} \times \frac{5280 \text{ ft}}{\text{mile}} \times \frac{12 \text{ in}}{\text{ft}} \times \frac{2.54 \text{ cm}}{\text{in}} = 555 \text{ cm}$

(e) $7.5000 \times 10^4 \text{ m} \times \frac{1 \text{ km}}{1000 \text{ m}} = 7.5000 \times 10^1 \text{ km}$
(writing the answer like this clarifies the # of sig figs)

(f) $32.6 \text{ cm} \times \frac{1 \text{ m}}{100 \text{ cm}} = 0.326 \text{ m}$

1.2 (a) $1 \text{ cm}^2 = \left(1 \text{ cm} \times \frac{1 \text{ in}}{2.54 \text{ cm}}\right)^2 = 0.155 \text{ in}^2$

(b) $1 \text{ cm}^3 = \left(1 \text{ cm} \times \frac{1 \text{ in}}{2.54 \text{ cm}}\right)^3 = 0.0610 \text{ in}^3$

(c) $1 \text{ L} = 1000 \text{ mL}$ (by definition)

(d) $1 \text{ L} = 1000 \text{ mL} = 1000 \text{ cm}^3$ (by definition)

(e) $1 \text{ L} \times \frac{1000 \text{ mL}}{\text{L}} \times \left(\frac{1 \text{ in}}{2.54 \text{ cm}}\right)^3 = 61.0 \text{ in}^3$

(f) $1 \text{ L} = 61.0 \text{ in}^3 \times \frac{5.787 \times 10^{-4} \text{ ft}^3}{\text{in}^3} = 3.53 \times 10^{-2} \text{ ft}^3$