

UNIT 1 REVIEW WORKSHEET

Part 1 - Unit Conversions

1. 0.9785 kg to g

2. 2830 mm to m

3. 19.3 L to cL

4. 3.4 g to Mg

5. $6.75 \times 10^5 \frac{\text{mL}}{\text{cm}^3}$ to $\frac{\text{L}}{\text{dm}^3}$

$$0.9785 \text{ kg} \times \frac{1 \times 10^3 \text{ g}}{1 \text{ kg}} = 978.5 \text{ g}$$

$$2830 \text{ mm} \times \frac{1 \times 10^{-3} \text{ m}}{1 \text{ mm}} = 2.83 \text{ m}$$

$$19.3 \text{ L} \times \frac{1 \text{ cL}}{1 \times 10^{-2} \text{ L}} = 1,930 \text{ cL}$$

$$3.4 \text{ g} \times \frac{1 \text{ Mg}}{1 \times 10^6 \text{ g}} = 3.4 \times 10^{-6} \text{ Mg}$$

$$6.75 \times 10^5 \text{ mL} \times \frac{1 \times 10^{-3} \text{ L}}{1 \text{ mL}} = 6.75 \times 10^2 \text{ dm}^3 (\text{L}) \text{ or } 675 \text{ dm}^3$$

Part 2 - Tell the number of significant figures in each of the following measurements.

6.) 48 cm **2**

7.) 306.2 g **4**

8.) 0.329 m **3**

9.) 83.952 K **5**

10.) 3700 mm **2**

11.) 400. cm³ **3**

12.) 71.60 g **4**

13.) 82.000 g **5**

Part 3 - Perform each of the following calculations, expressing the answer to the correct number of significant figures.

14.) $3.482 \text{ cm} + 8.51 \text{ cm} + 16.324 \text{ cm} = 28.316$

28.32 cm

15.) $8.3 \text{ m} \times 4.0 \text{ m} \times 0.9823 \text{ m} = 32.61236$

33 m³

16.) $\frac{4.93 \text{ mm}^2}{18.71 \text{ mm}} = 0.263495457$

0.263 mm

17.) $106.5 \text{ mL} - 32 \text{ mL} = 74.5$

75 mL

Part 4 - Percent Error

18.) Experimental value = 1.24 g, Accepted value = 1.30 g **4.62% or 5%**

19.) Experimental value = 22.2 L, Accepted value = 22.4 L **0.893% or 0.9%**

20.) A person attempting to lose weight on a diet weighed 175 lb on a bathroom scale at home. An hour later at the doctor's office, on a more accurate scale, this person's weight is recorded as 178 lb. Assuming that there was no real weight change in that hour, what is the percent error between these readings? **1.69% or 2%**

$$\% \text{ error} = \frac{|\text{accepted} - \text{experimental}|}{\text{accepted}} \times 100$$

Part 5 - Density

21.) What is the mass of a sample of material that has a volume of 55.1 cm³ and a density of 6.72 g/cm³?

22.) A sample of a substance that has a density of 0.824 g/mL has a mass of 0.451 g. Calculate the volume of the sample.

$$D = \frac{m}{V} \quad 6.72 \text{ g/cm}^3 = \frac{m}{55.1 \text{ cm}^3} \quad m = 370.272$$

$$m = 370. \text{ g}$$

$$m = 3.70 \times 10^2 \text{ g}$$

$$0.824 \text{ g/mL} = \frac{0.451 \text{ g}}{V} \quad V = \frac{0.451 \text{ g}}{0.824 \text{ g/mL}}$$

$$V = 0.5473300971$$

$$V = 0.547 \text{ mL}$$