

Chemistry – Chapter 3 Book assignment #3: Accuracy & precision, significant figures, metric system, density

1. Three students made multiple weighings of a copper cylinder, each using a different balance. Describe the accuracy and precision of each student's measurements if the correct mass of the cylinder is 47.32 grams.

	Mass of cylinder (g)		
	Colin	Lamont	Kivrin
Weighing 1	47.13	47.45	47.95
Weighing 2	47.94	47.39	47.91
Weighing 3	46.83	47.42	47.89
Weighing 4	47.47	47.41	47.93

2. How many significant figures are in each underlined measurement?

- a. 60 seconds = 1 minute
- b. 47.70 grams of copper
- c. 1 km = 1000 meters
- d. 25 computers
- e. 9 innings in a baseball game
- f. 0.0950 meters of gold chain

3. Round off each of these measurements to three significant figures.

- a. 98.473 L
- b. 0.00076321 cg
- c. 57.048 m
- d. 12.17°C
- e. 0.0074983 X 10⁴ mm
- f. 1764.9 mL

4. Round off each of the answers correctly

- a. 8.7 g + 15.43 + 19 g = 43.13 g
- b. 4.32 cm X 1.7 cm = 7.344 cm²
- c. 853.2 L – 627.443 L = 225.757 L
- d. 38.742 m² / 0.421 m = 92.023 m
- e. 5.40 m X 3.21 m X 1.871 m = 32.431914 m³

f. $5.47 \text{ m}^3 + 11 \text{ m}^3 + 87.300 \text{ m}^3 = 103.770 \text{ m}^3$

5. Express each of the rounded-off answers in problems 3 & 4 in scientific notation

6. Write the SI base unit of measurement for each of these quantities

a. time

b. length

c. temperature

d. mass

e. energy

f. amount of a substance

7. Order these units from smallest to largest: cm, um, km, mm, m, nm, dm, pm. Then give each measurement in terms of meters.

8. State the relationship between degrees Celsius and kelvins.

9. The melting point of silver is 962°C . Express this temperature in kelvins.

10. Would the density of a person be the same on the surface of Earth and on the surface of the moon? Explain.

11. A shiny, cold-colored bar of metal weighing 57.3 grams has a volume of 4.7 cm^3 . Is the bar of metal pure gold? (The density of gold is 19.3 g/cm^3).

12. Three balloons filled with neon, carbon dioxide, and hydrogen are released into the atmosphere. Describe the movement of each balloon if their densities are 0.84 g/cm^3 , 1.83 g/cm^3 , and 0.084 g/cm^3 respectively. The density of air is 1.20 g/cm^3 .