

Problem Set 2: Presenting Chemical Data

1) For each of the following values identify the number of significant figures.

- a) 5046 m 4 significant figures
- b) 67 000 kg 2 significant figures
- c) 67 050 cm 4 significant figures
- d) 0.0070800 kg 5 significant figures
- e) 2.0027 mm 5 significant figures
- f) 6 000 001 km 7 significant figures
- g) 345. 067 g 6 significant figures

2) Write each of the following values in scientific notation.

- a) 46.23 4.623×10^1
- b) 0.052 5.2×10^{-2}
- c) 62 420 000 6.242×10^7
- d) 0.000 007 243 7.243×10^{-6}

3) Use scientific notation to represent each of the following measurements in SI base units.

- a) 46 mL 4.6×10^{-2} L
- b) 239 km 2.39×10^5 m
- c) 5.6 ns 5.6×10^9 s
- d) 51340 mA 5.134×10^1 A

4) Solve the following calculations and write each answer using the appropriate number of significant figures for each calculation.

- a) 445.65 grams + 298 grams = 744 g
- b) 45.2 grams / 2.2 mL = 21 g/mL
- c) 3.22×10^3 joules / 45 seconds = 72 J/s
- d) 0.0020 meters – 0.21 meters = - 0.21 m
- e) 439 cm + 1.20 cm + 200 cm = 640 cm
- f) 560 meters / 125 seconds = 4.5 m/s
- g) 398.02 kilograms + 24.152 kilograms = 422.17 kg
- h) 95 m/s x 32.211 s = 3100 m

5) What is the volume of a space that measures 1.004 m long, 0.0025 m wide and 0.055 m high? Write your answer in scientific notation.

$$1.004 \text{ m} \times 0.0025 \text{ m} \times 0.055 \text{ m} = 1.4 \times 10^{-4} \text{ m}^3$$