

Measurement And Metric Worksheet

I. Fill in the blanks with the word or words that best completes the statement.

- 1) The meter is a little longer than _____ ft.
- 2) One-half an inch would be (shorter, longer) than 1.0 cm.
- 3) Write the accepted SI abbreviations for each unit.
 - (a) milligram
 - (b) microliter
 - (c) deciliter
 - (d) milliliter
- 4) The _____ of a measurement describes how close the measurement agrees with the accepted value.
- 5) The _____ of a measurement depends on its reproducibility.
- 6) The space occupied by a sample of matter is known as _____.
- 7) The quantity of _____ an object contains is its mass.
- 8) The mass of 1.0 cm^3 of water at 4°C is _____.
- 9) The ratio of the mass of an object to its volume is its _____.
- 10) To convert $^\circ\text{C}$ to Kelvin, the number _____ is added to $^\circ\text{C}$.

II. Change each measurement to scientific notation.

- (a) 1,062,457 mm
- (b) 0.00543 km
- (c) 111.6 g
- (d) 0.00000521 L
- (e) 5.025 cm³

III. Change each measurement to a whole number or decimal.

- (a) 6.150 x 10³ km
- (b) 5.362 x 10² mg
- (c) 2.35 x 10⁻² cm
- (d) 8.79 x 10⁻⁵ cm²

IV. Perform the following operations and give the answers in scientific notation with the correct number of significant figures.

- (a) 21.6 m + 8.02 m + 171.220 m
- (b) 2083 L - 20 L
- (c) 47.68 km + 538.01 km + 39 km
- (d) 0.32 cm x 0.76 cm x 14.2 cm
- (e) (7.24 x 10⁴ mm)/(4.6 x 10² mm)
- (f) 3.05 x 10⁻⁵ m x 3.44 x 10⁻³ m

V. Use the Factor Label Method to perform the following conversions and give your answers to the correct number of significant figures.

(a) 0.10 m = _____ cm

(b) 2985 m = _____ cm

(c) 15.64 g = _____ g

(d) 1640 mL = _____ L

(e) 15 mm = _____ cm

(f) 15 cm = _____ m

(g) 0.98 m = _____ cm

(h) 0.067 g = _____ mg

(i) A proton has a mass of 1.67×10^{-27} kg. Calculate the mass of 6.02×10^{23} protons.

Solutions

I. Fill in the blanks with the word or words that best completes the statement.

- 1) 3
- 2) longer
- 3) (a) mg (c) dl
(b) μl (d) ml
- 4) accuracy
- 5) precision
- 6) volume
- 7) matter
- 8) 1.0 g
- 9) density
- 10) 273

II. Change each measurement to scientific notation.

- (a) 1.062457×10^6 mm
- (b) 5.43×10^{-3} km
- (c) 1.116×10^2 g
- (d) 5.21×10^{-6} L
- (e) 5.025 cm^3

III. Change each measurement to a whole number or decimal.

- (a) 6150 km
- (b) 536.2 mg
- (c) 0.0235 cm
- (d) 0.0000879 cm^2

IV. Perform the following operations and give the answers in scientific notation with the correct number of significant figures.

- (a) 200.84 m
- (b) 2063 L
- (c) 625 km
- (d) 3.5 cm^3
- (e) 160
- (f) $1.05 \times 10^{-7} \text{ m}^2$

V. Use the Factor Label Method to perform the following conversions and give your answers to the correct number of significant figures.

(a) $0.10 \text{ m} \times 10^2 \text{ cm/1 m} = 1.0 \text{ cm}$

(b) $2985 \text{ m} \times 1 \text{ km}/10^3 \text{ m} = 2.985 \text{ km}$

(c) $15.64 \text{ mg} \times 1 \text{ g}/10^3 \text{ mg} = 0.01564 \text{ g}$

(d) $1640 \text{ ml} \times 1\text{L}/10^3 \text{ ml} = 1.64 \text{ L}$

(e) $15 \text{ mm} \times 1 \text{ cm}/10 \text{ mm} = 1.5 \text{ cm}$

(f) $15 \text{ cm} \times 1 \text{ m}/10^2 \text{ cm} = 0.15 \text{ m}$

(g) $0.98 \text{ m} \times 10^2 \text{ cm/1 m} = 98 \text{ cm}$

(h) $0.067 \text{ g} \times 10^3 \text{ mg/1 g} = 67 \text{ mg}$

(i) $1.67 \times 10^{-27} \text{ kg/p}^+ \times 6.02 \times 10^{23} \text{ p}^+ = 1.01 \times 10^{-3} \text{ kg}$