

Module 5/ Units of Measurement**Worksheet - Key**

1. Name the quantity measured by each of the following SI units and provide the SI symbol of the unit.

- a. mole - describes the amount of a substances, SI symbol = mol
- b. kilogram/ cubic meter - density of a substance; symbol is ρ expressed in kg/ m^3
- c. second – a time measurement, expressed simply as s
- d. pascal – measurement of pressure, expressed as Pa
- e. meter – measures the length of an object, expressed as m
- f. kilogram – measurement of mass of a substance, expressed as kg

2. Explain the difference between *mass* and *weight*.

Mass is a measure of the amount of matter in a substance or object, whereas weight is a measure of the forces of gravity on a substance or object. Whether an object is "weighed" on the moon or earth, the mass remains constant, it will be the weight that changes.

3. What is the symbol and meaning of each prefix?

- a. *milli-*; $m, 10^{-3}$
- b. *nano-*; $n, 10^{-9}$
- c. *deci-*; $d, 10^{-1}$;
- d. *centi-*; $c, 10^{-2}$

4. As you climbed a mountain and the force of gravity decreased, would your weight increase, decrease, or remain constant? How would your mass change?

When climbing the mountain, your weight would decrease (force due to gravity is less), but your mass would remain the same, since the amount of matter is constant.

5. What is the volume of a paperback book 21 cm tall, 12 cm wide, and 3.5 cm thick?

$$\text{Volume} = 21 \text{ cm} \times 12 \text{ cm} \times 3.5 \text{ cm}; \text{ Volume} = 8.8 \times 10^2 \text{ cm}^3$$

6. List these units in order, from largest to smallest.

- a. 1 dm^3
- b. $1 \mu\text{L}$
- c. 1 mL
- d. 1 L
- e. 1 cL
- f. 1 dL

$1 \text{ dm}^3 > 1 \text{ L} > 1 \text{ dL} > 1 \text{ cL} > 1 \text{ mL} > 1 \mu\text{L}$; these are all units of volume