

What is Molarity?

Worksheet

Molarity is moles of solute per litre of solution: $M = n/V$. A 1 M solution contains 1 mole of dissolved substance in 1 litre total volume.

$$M = \frac{n}{V}$$

Questions

1. 3 moles in 2 L. Molarity?

- A) 1.5 mol/L
- B) 6 mol/L
- C) 0.67 mol/L
- D) 3 mol/L

2. Unit of molarity?

- A) g/L
- B) mol/L
- C) L/mol
- D) mol

3. 0.1 M, 500 mL solution. Moles?

- A) 0.05 mol
- B) 0.5 mol
- C) 5 mol
- D) 50 mol

4. Which affects molarity?

- A) Temperature only
- B) Solvent type only
- C) Moles of solute & total volume
- D) Density of solute

5. How many moles of NaCl are in 2 L of a 0.5 M solution?

6. A solution contains 3 moles of glucose in 1.5 L. What is its molarity?

7. To make 500 mL of 0.2 M KCl, how many moles are needed?

8. Define: What is molarity?

9. Define: Unit of molarity?

10. Define: What does 1 M mean?

Answer Key

1. A) $1.5 \text{ mol/L} - M = 3/2 = 1.5 \text{ mol/L}$.
2. B) mol/L - Molarity is moles PER litre.
3. A) $0.05 \text{ mol} - n = MV = 0.1 \cdot 0.5 = 0.05 \text{ mol}$.
4. C) Moles of solute & total volume - $M = n/V$. Both moles and volume matter.
5. $M = n/V$ $0.5 = n/2$ $n = 0.5 \cdot 2 = 1 \text{ mole NaCl}$
6. $M = n/V$ $M = 3/1.5$ $M = 2 \text{ mol/L}$
7. $500 \text{ mL} = 0.5 \text{ L}$ $M = n/V$ $0.2 = n/0.5$ $n = 0.2 \cdot 0.5 = 0.1 \text{ mol KCl}$
8. Molarity (M) is moles of solute per litre of solution: $M = n/V$.
9. mol/L (moles per litre), often written as M.
10. 1 mole of solute dissolved to make 1 litre of total solution.

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