

# Molarity Worksheet

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1. Calculate the mass of  $\text{CuSO}_4 \cdot 6\text{H}_2\text{O}$  required to prepare 200.0 mL of 0.300 M solution.
2. Calculate the mass of  $\text{CoCl}_3 \cdot 8\text{H}_2\text{O}$  required to prepare 300.0 mL of a 0.520 M solution.
3. 150.0 g of NaCl is dissolved in 250.0 mL of water. Calculate the molarity.
4. 25.2 g of  $\text{CuSO}_4 \cdot 6\text{H}_2\text{O}$  is dissolved in 28.0 mL of water. Calculate the molarity.
5. Calculate the mass of NaCl required to prepare 565.0 mL of a 0.450 M solution.
6. Calculate the volume of 0.250 M NaCl solution required to contain 0.0300 g of NaCl.
7. Calculate the volume of 0.500 M NaCl solution required to contain 0.52 g of NaCl.
8. Calculate the mass of NaCl required to prepare 360.0 mL of a 0.35 M solution.
9. 55.6 g of NaCl is dissolved in 562 mL of water. Calculate the molarity.
10. 78.9 g of  $\text{CuSO}_4 \cdot 8\text{H}_2\text{O}$  is dissolved in 500.0 mL of water. Calculate the molarity.

# Molarity Worksheet

## Answers

1. Calculate the mass of  $\text{CuSO}_4 \cdot 6\text{H}_2\text{O}$  required to prepare 200.0 mL of 0.300 M solution.

$$\text{Mass} = 0.200 \text{ L} \times 0.300 \text{ moles/1 L} \times 267.72 \text{ g/1 mole} = 16.1 \text{ g}$$

2. Calculate the mass of  $\text{CoCl}_3 \cdot 8\text{H}_2\text{O}$  required to prepare 300.0 mL of a 0.520 M solution.

$$\text{Mass} = 0.300 \text{ L} \times 0.520 \text{ moles/1 L} \times 309.56 \text{ g/1 mole} = 48.3 \text{ g}$$

3. 150.0 g of NaCl is dissolved in 250.0 mL of water. Calculate the molarity.

$$\text{Molarity} = (150.0 \text{ g} \times 1 \text{ mole}/58.5 \text{ g})/0.250 \text{ L} = 10.3 \text{ M}$$

4. 25.2 g of  $\text{CuSO}_4 \cdot 6\text{H}_2\text{O}$  is dissolved in 28.0 mL of water. Calculate the molarity.

$$\text{Molarity} = (25.2 \text{ g} \times 1 \text{ mole}/267.72 \text{ g})/0.0280 \text{ L} = 3.36 \text{ M}$$

5. Calculate the mass of NaCl required to prepare 565.0 mL of a 0.450 M solution.

$$\text{Mass} = (0.5650 \text{ L} \times 0.450 \text{ moles/1 L}) \times 58.5 \text{ g/1 mole} = 14.9 \text{ g}$$

6. Calculate the volume of 0.250 M NaCl solution required to contain 0.0300 g of NaCl.

$$\text{Volume} = 0.0300 \text{ g NaCl} \times 1 \text{ mole}/58.5 \text{ g} \times 1 \text{ L} / 0.250 \text{ mole} = 0.00205 \text{ L}$$

7. Calculate the volume of 0.500 M NaCl solution required to contain 0.52 g of NaCl.

$$\text{Volume} = 0.52 \text{ g NaCl} \times 1 \text{ mole}/58.5 \text{ g} \times 1 \text{ L}/0.500 \text{ mole} = 0.018 \text{ L}$$

8. Calculate the mass of NaCl required to prepare 360.0 mL of a 0.35 M solution.

$$\text{Mass} = 0.3600 \text{ L} \times 0.35 \text{ moles/1 L} \times 58.5 \text{ g/1 mole} = 7.4 \text{ g}$$

9. 55.6 g of NaCl is dissolved in 562 mL of water. Calculate the molarity.

$$\text{Molarity} = (55.6 \text{ g} \times 1 \text{ mole}/58.5 \text{ g})/0.562 \text{ L} = 1.69 \text{ M}$$

10. 78.9 g of  $\text{CuSO}_4 \cdot 8\text{H}_2\text{O}$  is dissolved in 500.0 mL of water. Calculate the molarity.

$$\text{Molarity} = (78.9 \text{ g} \times 1 \text{ mole}/303.76 \text{ g})/0.5000 \text{ L} = 0.519 \text{ M}$$