

# Molarity Worksheet

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1. Find the molarity of the following solutions:

(a) 4.67 moles of  $\text{Li}_2\text{SO}_3$  dissolved to make 2.04 liters of solution.

(b) 0.629 moles of  $\text{Al}_2\text{O}_3$  to make 1.500 liters of solution.

(c) 8.00 moles of EDTA to make 7.56 liters of solution

2. What is the number of moles of silver nitrate in a 125 mL solution of 0.125 M?

3. How many grams of calcium acetate are present in a 225 mL solution that is 1.20 M?

4. What mass of glucose,  $\text{C}_6\text{H}_{12}\text{O}_6$ , is needed to prepare 250 mL of a 1.50 M glucose solution?

5. What volume of a 0.150 M NaOH solution contains 2.50 g of sodium hydroxide?

6. What is the molarity of potassium chlorate prepared by mixing 45.0 g of  $\text{KClO}_3$  to make a 600 mL solution?

7. Given a 2.0 M ammonium sulfide,  $(\text{NH}_4)_2\text{S}$ . Answer the following:

(a) What is the molarity of ammonium ions?

(b) What is the molarity of the sulfide ions?

# Molarity Worksheet

## Answers

1. Find the molarity of the following solutions:

(a) 4.67 moles of  $\text{Li}_2\text{SO}_3$  dissolved to make 2.04 liters of solution.

$$\text{Molarity} = 4.67 \text{ mol} / 2.04 \text{ L} = 2.29 \text{ M}$$

(b) 0.629 moles of  $\text{Al}_2\text{O}_3$  to make 1.500 liters of solution.

$$\text{Molarity} = 0.629 \text{ mol} / 1.500 \text{ L} = 0.42 \text{ M}$$

(c) 8.00 moles of EDTA to make 7.56 liters of solution

$$\text{Molarity} = 8.00 \text{ mol} / 7.56 \text{ L} = 1.06 \text{ M}$$

2. What is the number of moles of silver nitrate in a 125 mL solution of 0.125 M?

$$\text{Moles of silver nitrate} = 0.125 \text{ M} \times 0.125 \text{ L} = 0.0156 \text{ L or } 15.6 \text{ mL}$$

3. How many grams of calcium acetate are present in a 225 mL solution that is 1.20 M?

$$\text{Mass} = 1.2 \text{ M} \times 0.225 \text{ L} \times 158 \text{ g/mol} = 42.588 \text{ g}$$

4. What mass of glucose,  $\text{C}_6\text{H}_{12}\text{O}_6$ , is needed to prepare 250 mL of a 1.50 M glucose solution?

$$\text{Mass} = 1.50 \text{ M} \times 0.250 \text{ L} \times 180 \text{ g/mol} = 67.50 \text{ g}$$

5. What volume of a 0.150 M NaOH solution contains 2.50 g of sodium hydroxide?

$$\text{Volume} = (2.50 \text{ g} \times 1 \text{ mol} / 40 \text{ g}) / 0.150 \text{ M} = 0.417 \text{ L or } 417 \text{ mL}$$

6. What is the molarity of potassium chlorate prepared by mixing 45.0 g of  $\text{KClO}_3$  to make a 600 mL solution?

$$\text{Molarity} = (45.0 \text{ g} \times 1 \text{ mol} / 122.5 \text{ g}) / 0.600 \text{ L} = 0.611 \text{ M}$$

7. Given a 2.0 M ammonium sulfide,  $(\text{NH}_4)_2\text{S}$ . Answer the following:

(a) What is the molarity of ammonium ions?

$$\text{Molarity} = 2 \times 2.0 \text{ M} = 4.0 \text{ M}$$

(b) What is the molarity of the sulfide ions?

$$\text{Molarity} = 2.0 \text{ M}$$