

Molarity Calculations

Calculate the molarities of the following solutions:

- 1) 2.3 moles of sodium chloride in 0.45 liters of water.

- 2) 1.2 moles of calcium carbonate in 1.22 liters of water.

- 3) 0.09 moles of sodium sulfate in 12 mL of water.

- 4) 0.75 moles of lithium fluoride in 65 mL of water.

- 5) 0.8 moles of magnesium acetate in 5 liters of water.

- 6) 120 grams of calcium nitrite in 240 mL of water.

- 7) 98 grams of sodium hydroxide in 2.2 liters of water.

- 8) 1.2 grams of hydrochloric acid in 25 mL of water.

- 9) 45 grams of ammonia in 0.75 L of water.

Explain how you would make the following solutions. You should tell how many grams of the substance you need to make the solution, not how many moles.

10) 2 L of 6 M HCl

11) 1.5 L of 2 M NaOH

12) 0.75 L of 0.25 M Na₂SO₄

13) 45 mL of 0.12 M sodium carbonate

14) 250 mL of 0.75 M lithium nitrite

15) 56 mL of 1.1 M iron (II) phosphate

16) 6.7 L of 4.5 M ammonium nitrate

17) 4.5 mL of 0.05 M magnesium sulfate

18) 90 mL of 1.2 M BF₃

Molarity Calculations – Answer Key

Calculate the molarities of the following solutions:

- 1) 2.3 moles of sodium chloride in 0.45 liters of water. **5.11 M**
- 2) 1.2 moles of calcium carbonate in 1.22 liters of water. **0.98 M**
- 3) 0.09 moles of sodium sulfate in 12 mL of water. **7.5 M**
- 4) 0.75 moles of lithium fluoride in 65 mL of water. **11.5 M**
- 5) 0.8 moles of magnesium acetate in 5 liters of water. **0.16 M**
- 6) 120 grams of calcium nitrite in 240 mL of water. **3.79 M**
- 7) 98 grams of sodium hydroxide in 2.2 liters of water. **1.11 M**
- 8) 1.2 grams of hydrochloric acid in 25 mL of water. **1.35 M**
- 9) 45 grams of ammonia in 0.75 L of water. **3.53 M**

Explain how you would make the following solutions.

- 10) 2 L of 6 M HCl **Dissolve 426 g HCl, dilute to 2 L**
- 11) 1.5 L of 2 M NaOH **Dissolve 120 g NaOH, dilute to 1.5 L**
- 12) 0.75 L of 0.25 M Na₂SO₄ **Dissolve 26.64 g Na₂SO₄, dilute to 0.75 L**
- 13) 45 mL of 0.12 M sodium carbonate **Dissolve 0.57 g Na₂CO₃, dilute to 45 mL**
- 14) 250 mL of 0.75 M lithium nitrite **Dissolve 9.92 g LiNO₂, dilute to 250 mL**
- 15) 56 mL of 1.1 M iron (II) phosphate **Dissolve 22.02 g Fe₃(PO₄)₂, dilute to 56 mL**
- 16) 6.7 L of 4.5 M ammonium nitrate **Dissolve 2412 g NH₄NO₃, dilute to 6.7 L**
- 17) 4.5 mL of 0.05 M magnesium sulfate **Dissolve 0.02709 g MgSO₄, dilute to 4.5 mL**
- 18) 90 mL of 1.2 M BF₃ **Dissolve 7.32 g BF₃, dilute to 90 mL**