

### Molarity Calculations

Calculate the molarities of the following solutions:

2.3 moles of sodium chloride in 0.45 liters of solution.

1.2 moles of calcium carbonate in 1.22 liters of solution.

0.09 moles of sodium sulfate in 12 mL of solution.

0.75 moles of lithium fluoride in 65 mL of solution.

0.8 moles of magnesium acetate in 5 liters of solution.

120 grams of calcium nitrite in 240 mL of solution.

98 grams of sodium hydroxide in 2.2 liters of solution.

1.2 grams of hydrochloric acid in 25 mL of solution.

45 grams of ammonia in 0.75 L of solution.

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) 2.000 L of 6.000 M HCl

11) 1.500 L of 2.000 M NaOH

12) 0.7500 L of 0.2500 M  $\text{Na}_2\text{SO}_4$

13) 45 mL of 0.12 M sodium carbonate

14) 250. mL of 0.750 M lithium nitrite

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

16) 6.700 L of 4.500 M ammonium nitrate

17) 4.6 mL of 0.050 M magnesium sulfate

18) 90.0 mL of 1.20 M  $\text{BF}_3$

### Molarity Practice Problems

- 1) How many grams of potassium carbonate are needed to make 200 mL of a 2.5 M solution?
- 2) How many liters of 4 M solution can be made using 100 grams of lithium bromide?
- 3) What is the concentration of an aqueous solution with a volume of 450 mL that contains 200 grams of iron (II) chloride?
- 4) How many grams of ammonium sulfate are needed to make a 0.25 M solution at a concentration of 6 M?
- 5) What is the concentration of a solution with a volume of 2.5 liters containing 660 grams of calcium phosphate?
- 6) How many grams of copper (I) fluoride are needed to make 6.7 liters of a 1.2 M solution?
- 7) How many liters of a 0.88 M solution can be made with 25.5 grams of lithium fluoride?
- 8) What is the concentration of a solution with a volume of 660 mL that contains 33.4 grams of aluminum acetate?
- 9) How many liters of a 0.75 M solution can be made with 75 grams of lead (II) oxide?
- 10) How many grams of manganese (IV) oxide are needed to make 5.6 liters of a 2.1 M solution?
- 11) What is the concentration of a solution with a volume of 9 mL that contains 2 grams of iron (III) hydroxide?
- 12) How many liters of a 3.4 M isopropanol solution can be made with 78 grams of isopropanol ( $C_3H_8O$ )?
- 13) What is the concentration of a solution with a volume 3.3 mL that contains 12 grams of ammonium sulfite?