Molarity Worksheet

1. What does molarity mean?

2. What is the molarity of a solution that contains 4.53 moles of lithium nitrate in 2.85 liters of solution?

3. What is the molarity of a solution that contains 0.00372 moles of hydrochloric acid in 2.39×10^{-2} liters of solution?

4. What is the molarity of a solution where 0.4 mol of NaCl is dissolved in a 1.6 L solution?

5. What is the molarity of a 0.3-liter solution containing 0.5 moles of NaCl?

6. What is the molarity of a 9.79 liter solution that contains 0.4 M HCl?

7. Find the molarity of the following solutions.

a. 1.0 moles of potassium fluoride is dissolved to make 0.10 L of solution.

b. 1.0 grams of potassium fluoride is dissolved to make 0.10 L of solution.

c. 1.0 grams of potassium fluoride is dissolved to make 0.10 mL of solution.

8. How many grams of potassium carbonate are needed to make 200 mL of a 2.5 M solution?

Molarity Worksheet

Answers

1. What does molarity mean?

   Molarity = Number of moles of solute/1 liter solution

2. What is the molarity of a solution that contains 4.53 moles of lithium nitrate in 2.85 liters of solution?

   Molarity = 4.53 mol $LiNO_3$/ 2.85 L soln = 1.59 M $LiN0_3$

3. What is the molarity of a solution that contains 0.00372 moles of hydrochloric acid in 2.39×10^{-2} liters of solution?

   Molarity = 0.00372 mol HCL/2.39×10^{-2} L soln = 0.156 M HCL

4. What is the molarity of a solution where 0.4 mol of NaCl is dissolved in a 1.6 L solution?

   Molarity = 0.4 mol NaCl/1.6 L soln = 0.25 M NaCl

5. What is the molarity of a 0.3-liter solution containing 0.5 moles of NaCl?

   Molarity = 0.5 mol NaCl/ 0.3 L soln = 1.67 M NaCl

6. What is the molarity of a 9.79 liter solution that contains 0.4 M HCl?

   Molarity = 0.4 mol HCl/ 9.79 L soln = 0.0409 M HCl

7. Find the molarity of the following solutions.

a. 1.0 moles of potassium fluoride is dissolved to make 0.10 L of solution.

   Molarity = 1.0 mole KF/0.10 L soln = 10 M KF

b. 1.0 grams of potassium fluoride is dissolved to make 0.10 L of solution.

   No. of moles of KF = 1.0 g KF x 1 mole KF/58 g KF = 0.0172 mol KF

   Molarity = 0.0172 mol KF/0.10 L soln = 0.17 M

c. 1.0 grams of potassium fluoride is dissolved to make 0.10 mL of solution.

   No. of moles of KF = 1.0 g KF x 1 mole KF/58 g KF = 0.0172 mol KF

   Molarity = 0.0172 mol KF/0.10×10^{-3} L soln = 170 M

8. How many grams of potassium carbonate are needed to make 200 mL of a 2.5 M solution?

   Number of moles of K_2CO_3 = 200×10^{-3} L x 2.5 mol/L = 0.5 mol

   Amount of K_2CO_3 = 138.21 g/mol x 0.5 mol = 69.105 g