

**Solve each of the following problems. Be sure to round for significant figures and include units.*

1. What is the molarity of a solution in which 12.6 g of lithium hydroxide (LiOH) is dissolved in 1.7 L of solution?
2. Calculate the volume of a 7.5 M solution containing 85.0 g of silver nitrate (AgNO_3).
3. What is the molarity of a solution in which 1.67 g of sodium hydroxide (NaOH) are dissolved in 125 mL of solution?
4. How many grams of potassium chloride (KCl) are required to make 2.0 L of a 3.0 M solution?
5. What is the volume of a 0.500 M solution containing 333 g of manganese (II) chloride (MnCl_2)?
6. What mass of iron (II) sulfate (FeSO_4) is needed to make 200.0 mL of a 0.25 M solution?

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7. Using the solubility graph on the worksheet packet, answer the following questions:

- a) What is the solubility of NH_4Cl at 70°C ? _____
 - b) Which substance is least soluble at 40°C ? _____
 - c) How many grams of KCl can be dissolved in 300 g of water at 80°C ? _____
 - d) At 30°C , 45 g of NH_4Cl is placed in 100 g of water. Most of the substance dissolves but some remains on the bottom undissolved. Is the solution saturated, unsaturated, or supersaturated? _____
 - e) At 40°C , 30 g of KNO_3 completely dissolves in 100 g of water. Is the solution saturated, unsaturated, or supersaturated? _____
8. Determine the percent by volume of a solution in which 29 mL of hydrochloric acid (HCl) are dissolved in 85 mL of water.
9. Determine the percent by mass of a solution in which 83 g of KCl are dissolved in 168 g of water?
10. What volume of concentrated 18 M HCl is needed to prepare 355 mL of a 5.0 M solution?
11. The solubility of a solute is 1.5 g/L at 2.5 atm. What will the solubility be at 3.9 atm?

Solubility as a Function of Temperature

