

Chapter 15-2 Practice worksheet

1. What is the molarity of the solution produced when 145g of sodium chloride (NaCl) is dissolved in sufficient water to prepare 2.75 L of solution?
2. How many grams of potassium chloride (KCl) are needed to prepare 0.750 L of a 1.50 M solution of potassium chloride in water?
3. What is the molarity of the solution produced when 85.6 g of hydrochloric acid (HCl) is dissolved in sufficient water to prepare 0.385 L of solution?
4. To produce 3.00 L of a 1.90 M solution of sodium hydroxide (NaOH), how many grams of sodium hydroxide must be dissolved?
5. If 8.77 g of potassium iodide (KI) are dissolved in sufficient water to make 4.75 L of solution, what is the molarity of the solution?
6. In order to prepare 2.00 L of a 3.00 M solution of ferric chloride (FeCl₃), how many grams of ferric chloride must be used?
7. What is the molarity of the solution produced when 14.1g of ammonia (NH₃) is dissolved in sufficient water to prepare 0.1000 L of solution?
8. To prepare 10.5 L of a 2.50 M solution of potassium hydroxide (KOH), how many grams of potassium hydroxide must be used?
9. What is the molality of a solution containing 75.2 g of silver perchlorate (AgClO₄) dissolved in 885 g of benzene?
10. What is the molality of a solid solution containing 0.125 g of chromium and 81.3 g of iron?
11. If 18.6 g of methanol is used to dissolve 2.68 of Hg(CN)₂, what is the molality of the solution?
12. What is the molality of solid solder wire if it is made from 68.7 g of lead dissolved in 117 g of tin?

13. What is the molality of a solution made by dissolving 8.11 g of potassium sulfide (K_2S) in 47.6 g of ethanol?
14. What is the molality of a solution containing 1330 g of methanol (CH_3OH) and 16.6 g of sodium bromide ($NaBr$)?
15. What is the molality of a solution containing 867 g of aluminum and 14.9 g of copper?
16. Calculate the molality of a solution produced using 15.2 g of calcium chloride ($CaCl_2$) and 345 g of methanol (CH_3OH).
17. In order to prepare a 0.523 m aqueous solution of potassium iodide (KI), how many grams of potassium iodide must be added to 2.00 kg of water?
18. A gas mixture contains 45.6 g of carbon monoxide and 899 g of carbon dioxide. What is the mole fraction of carbon monoxide?
19. A gas mixture contains the following gases with the mole fractions indicated: CH_4 (0.510), C_2H_6 (0.431), C_3H_8 (0.011), and C_4H_{10} (0.013). The mixture also contains the gas acetylene (C_2H_2). What is the mole fraction of acetylene?
20. What is the mole fraction of oxygen in a mixture that contains 66.8 g of oxygen, 44.1 g of nitrogen, and 21.5 g of hydrogen?
21. What is the mole fraction of xenon in a mixture that contains 0.584 g of xenon, 86.40 g of argon, and 3.62 g of neon?
22. A gas mixture contains the following gases with the mole fractions indicated: NH_3 (0.214), Cl_2 (0.452), NH_2Cl (0.118), and N_2 (0.1750). The mixture also contains HCl gas. What is the mole fraction of HCl gas?
23. A gas mixture contains 70.25 g of steam, 1.470 g of hydrogen, and 6.58 g of nitrogen what is the mole fraction of steam?
24. What is the mass percent water in the last problem?