Molarity Practice Problems

(assume all solutions are aqueous)

1. How many grams of potassium carbonate are needed to make 200.0 mL of a 2.5 M solution?

2. How many liters of 4.0 M solution can be made using 100.0 grams of lithium bromide?

3. What is the concentration of 450.0 mL of solution that contains 200.0 grams of iron (II) chloride?

4. How many grams of ammonium sulfate are needed to make 0.250 L solution at a concentration of 6.0 M?

5. What is the concentration of a solution that has a volume of 2.5 L and contains 660 grams of calcium phosphate?

6. How many grams of copper (II) fluoride are needed to make 6.7 liters of a 1.2 M solution?

7. How many liters of 0.88 M solution can be made with 25.5 grams of lithium fluoride?

8. What is the concentration of a solution that with a volume of 660 mL contains 33.4 grams of aluminum acetate?

9. How many milliliters of 0.75 M solution can be made using 75 grams of lead (II) oxide?

10. How many grams of manganese (IV) oxide are needed to make 5.60 liters of a 2.10 M solution?

11. What is the concentration of a solution with a volume of 9.0 mL that contains 2.0 grams of iron (III) hydroxide?

12. How many liters of 3.4 M solution can be made using 78 grams of isopropanol (C_3H_8O)?

13. What is the concentration of a solution with a volume of 3.3 mL that contains 12 grams of ammonium sulfite?

14. What is the concentration of a solution made from dissolving 32.9 grams of ammonium nitrate in a total solution volume of 500.0 mL?

Molarity Practice Problems - Answers

(assume all solutions are aqueous)

1. How many grams of potassium carbonate are needed to make 200.0 mL of a 2.5 M solution? K_2CO_3 = 138.21 g/mol   **ans.** 69 g potassium carbonate required

2. How many liters of 4.0 M solution can be made using 100.0 grams of lithium bromide? LiBr = 86.84 g/mol **ans.** 0.29 L of lithium bromide solution

3. What is the concentration of 450.0 mL of solution that contains 200.0 grams of iron (II) chloride? $FeCl_2$ = 126.75 g/mol **ans.** 3.506 M

4. How many grams of ammonium sulfate are needed to make 0.250 L solution at a concentration of 6.00 M? $(NH_4)_2SO_4$ = 132.17g/mol **ans.** 198 g ammonium sulfate

5. What is the concentration of a solution that has a volume of 2.5 L and contains 660 grams of calcium phosphate? $Ca_3(PO_4)_2$ = 310.18 g/mol   **ans.** 0.85 M

6. How many grams of copper (II) fluoride are needed to make 6.7 liters of a 1.2 M solution? CuF_2 = 101.55 g/mol **ans.** 820 g copper fluoride

7. How many liters of 0.88 M solution can be made with 25.5 grams of lithium fluoride? LiF = 25.94 g/mol **ans.** 1.2 L of solution

8. What is the concentration of a solution that with a volume of 660 mL contains 33.4 grams of aluminum acetate? $Al(C_2H_3O_2)_3$ = 204.13 g/mol   **ans.** 0.25M

9. How many milliliters of 0.75 M solution can be made using 75 grams of lead (II) oxide? PbO = 223.2 g/mol **ans.** 450 mL of solution

10. How many grams of manganese (IV) oxide are needed to make 5.60 liters of a 2.10 M solution? MnO_2 = 86.94 g/mol **ans.** 1020 g of manganese (IV) oxide

11. What is the concentration of a solution with a volume of 9.0 mL that contains 2.0 grams of iron (III) hydroxide? $Fe(OH)_3$ = 106.88 g/mol   **ans.** 2.1 M

12. How many liters of 3.4 M solution can be made using 78 grams of isopropanol (C_3H_8O)? C_3H_8O = 60.11 g/mol   **ans.** 0.38 L

13. What is the concentration of a solution with a volume of 3.3 mL that contains 12 grams of ammonium sulfite? $(NH_4)_2SO_3$ = 116.17 g/mol   **ans.** 31 M

14. What is the concentration of a solution made from dissolving 32.9 grams of ammonium nitrate in a total solution volume of 500.0 mL? NH_4NO_3 = 80.06 g/mol **ans.** 0.822 M