

Appendix C Exercises

1. What is the concentration of NaCl when 25.0 g of NaCl is dissolved in water to make 450. mL of solution?
2. How many mL of a 5.0 M solution of HCl contains 0.10 moles of HCl?
3. How many moles of K_2SO_4 are contained 100. mL of a 1.35 M solution?
4. What is the concentration of K^{1+} ions in 500. mL of a 0.125 M solution of K_2SO_4 ?
5. How many mL of a 0.10 M solution of NaCl contains 6.2×10^{-3} moles of NaCl?
6. How many grams of $CaCl_2$ are required to make 10.0 mL of 1.00 M $CaCl_2$ solution?
7. How many moles of Cl^{1-} ions are contained in 250. mL of a 0.552 M solution of $MgCl_2$?
8. How many mL of a 0.80 M solution of Na_2CO_3 contains 0.20 moles of Na^{1+} ions?
9. How many moles of Li_2CO_3 are contained in 25.0 mL of a 1.15 M solution?
10. An experiment calls for 1.00 L of a 0.150 M KCl solution. How many mL of a 4.00 M stock solution of KCl must be used to prepare this solution?
11. How many moles of Cl^{1-} ions are contained in 18.5 mL of a 1.28 M solution of NaCl?
12. What is the concentration of K^{1+} ions in 25.0 mL of a 1.00 M solution of KCl?
13. What is the concentration of NaCl when 5.75 g of NaCl is dissolved in water to make 1.86 L of solution?
14. How many grams of LiCl are required to make 125 mL of 0.100 M LiCl solution?
15. How many mL of a 1.25 M solution of KCl contains 2.35 g of KCl?
16. How many grams of LiCl are required to make 625 mL of 2.87 M LiCl solution?
17. 10.0 mL of a 3.25 M solution of HCl is diluted with 200 mL of a 0.100 M solution of HCl. What is the concentration of the resulting solution? Assume that the volumes are additive.
18. What is the concentration of the solution prepared by diluting 25 mL of a 0.50 M solution of HCl to 125 mL with pure water?
19. What is the concentration of the solution prepared by diluting 5.0 mL of a 6.25 M solution of HCl to 65 mL with pure water?
20. How many moles of Li^{1+} ions are contained in 0.500 L of a 2.25 M solution of Li_2CO_3 ?
21. An experiment calls for 125 mL of a 0.625 M HCl solution. How many mL of a 12.0 M stock solution of HCl must be used to prepare this solution?
22. 12.5 mL of a 12.0 M stock solution of HCl is diluted with 85.0 mL of a 0.200 M solution of HCl. What is the concentration of the resulting solution? Assume that the volumes are additive.

ANSWERS:

- | | | | | |
|--------------|---------------|----------------|--------------|-------------|
| 1. 0.950 M | 6. 1.11 g | 11. 0.0237 mol | 16. 76.1 g | 21. 6.51 mL |
| 2. 20 mL | 7. 0.276 mol | 12. 1.00 M | 17. 0.250 M | 22. 1.71 M |
| 3. 0.135 mol | 8. 125 mL | 13. 0.0528 M | 18. 0.10 M | |
| 4. 0.250 M | 9. 0.0288 mol | 14. 0.530 g | 19. 0.48 M | |
| 5. 62 mL | 10. 37.5 mL | 15. 25.2 mL | 20. 2.25 mol | |