

Dilution Problems

1. How many milliliters of 2.00 M copper(II) sulfate solution must be added to 165 mL of water to achieve a 0.300 M copper(II) sulfate solution?
2. Calculate the volume of solution prepared by diluting 6.929 mL of 3.555 M solution to 0.8229 M.
3. Calculate the concentration of formaldehyde (CH_2O) in a solution prepared by mixing 125 mL of 6.13 M CH_2O and 175 mL of 4.34 M CH_2O and diluting the mixture to 500.0 mL.
4. Calculate the following quantity: volume of 2.48 M calcium chloride that must be diluted with water to prepare 356.0 mL of a 0.0586 chloride ion solution. (give answer in mL)
5. The concentration of muriatic acid is 11.7 M. A diluted solution of 3.50 M is prepared. How many milliliters of 3.50 M muriatic acid solution contains 35.7 g of HCl? (give answer in mL)
6. Determine the mass (g) of calcium nitrate in each milliliter of a solution prepared by diluting 56.0 mL of 0.705 M calcium nitrate to a final volume of 0.100 L .
7. Concentrated sulfuric acid is 98.0% H_2SO_4 by mass and has a density of 1.84 g/mL. Determine the volume of acid required to make 1.00 L of 0.100 M H_2SO_4 solution.
8. What is the $[\text{NO}_3^-]$ in 200. mL of 0.350 M $\text{Al}(\text{NO}_3)_3$?
9. What is the $[\text{NO}_3^-]$ in the solution above after adding 200.0 mL of 0.150 M $\text{Ca}(\text{NO}_3)_2$
10. If a solution of MgCl_2 is $1/8$ M, what will its concentration be if it is diluted by 27%?
11. If 45 mL of water are added to 250 mL of a 0.75 M K_2SO_4 solution, what will the molarity of the diluted solution be?
12. If water is added to 175 mL of a 0.45 M KOH solution until the volume is 250 mL, what will the molarity of the diluted solution be?
13. How much 0.075 M NaCl solution can be made by diluting 450 mL of 9.0 M NaCl?
14. If 550 mL of a 3.50 M KCl solution are set aside and allowed to evaporate until the volume of the solution is 275 mL, what will the molarity of the solution be?
15. How much water would need to be added to 750 mL of a 2.8 M HCl solution to make a 1.0 M solution?