Concentration and Dilution Questions

1. Determine the number of moles of $CaCl_2$ in 1.45 L of a 0.5 M solution.

2. Calculate the mass of $Ba(OH)_2$ required to make 550 mL of a 2.0 M solution.

3. Determine the concentration of a solution made by dissolving 84 grams of NaOH in 2 L of water.

4. What volume of a 0.5 M solution can be made from 120 grams of KNO_3?

5. Determine the mass of $Pb(NO_3)_2$ required to make 300 mL of a 1.5 M solution.

6. How much of a 2.0 M NaCl stock solution would you need to make 250 mL of a 0.15 M NaCl solution?

7. What would be the concentration of a solution made by diluting 45.0 mL of 4.2 M KOH to 250 mL?

8. What would be the concentration of a solution made by adding 250 mL of water to 45.0 mL of 4.2 M KOH?

9. What volume of a 0.20 M glucose solution can be made from 50 mL of a 0.50 M glucose solution?

10. Determine how much distilled water must be added to 250 mL of a 1.5 M solution of Na_2CO_3 to dilute it to a concentration of 0.5 M.

11. 175 mL of a 2 M Na_2SO_4 solution was brought to a volume of 950 mL by addition of distilled water. Determine the diluted concentration of Na^+ ions.

12. Determine the amount, in L, of a 0.2 M solution of HCl that can be made from 1.5 L of a 12 M stock solution.

13. Determine the concentration of a solution made by diluting 150 mL of a 2 M HCl solution to a volume of 750 mL.

14. Determine the amount of distilled water required to dilute 75 mL of a 5.5 M NaOH solution to a concentration of 1 M.

15. Find the volume of a 0.75 M solution that could be prepared using 80 g of KNO_3. What would be the concentration if the volume of the solution was tripled?

16. Calculate the concentration of lithium ions when 350 mL of a 6.5 M solution of Li_3PO_4 is diluted to a volume of 2.1 L.

17. 25 mL of a stock H_2SO_4 solution was required to make 3.2 L of a 0.15 M solution. Calculate the original concentration.

18. Calculate the resulting concentration when 3.5 L of a 1.5 M $CaCl_2$ solution is left with the lid open in the Sun, allowing 680 mL of the water to evaporate away.