

Name: _____
Period: ____

Solution Dilution

$$C_1V_1 = C_2V_2$$

- (1) 1.5 L of a 1.0 M solution of HCl is diluted with water to a final volume of 2.5 L. Calculate the final concentration.
- (2) 445 mL of water are added to 645 mL of a 0.420 M solution of NaOH. Calculate the final concentration.
- (3) A 0.034 M solution of copper (II) sulphate is diluted to give 750 mL of 0.020 M solution. What was the initial volume of solution? What volume of water was added to the solution?
- (4) 1.02 L of potassium permanganate solution is diluted to 1.85 L of 0.080 M solution. Calculate the initial concentration of the solution.
- (5) 2.5 L of solution contains 50 g of $\text{Cr}(\text{C}_2\text{H}_3\text{O}_2)_2$. What is the initial concentration of the solution? If 1.5 L of water is added to the solution, what is the final concentration?
- (6) 114 mL of solution contains 34.5 g of calcium carbonate. Calculate the concentration of the solution. Calculate the concentration if 56.0 mL of water is added to the solution.
- (7) 256 mL of a solution of iron (II) nitrate of an unknown concentration is diluted to give 500 mL of solution with a concentration of 0.60 M. Calculate the initial concentration.
- (8) 346 mL of water are added to 789 mL of a solution of AlPO_4 with an unknown concentration. The resulting concentration of the solution is 1.30 M. Calculate the initial concentration. What mass of AlPO_4 found in the solution?

Answers:

(1) 0.60 M

(2) 0.249 M

(3) initial volume: 0.44 L
added volume: 0.31 L

(4) 0.15 M

(5) initial concentration: 0.12 M
final concentration: 0.075 M

(6) initial concentration: 3.02 M
final concentration: 2.03 M

(7) 1.2 M

(8) 1.87 M, 180 g