# Question #81372, Chemistry / General Chemistry

Question:

Dear expert, please provide an answer to the question below within 12 hours.

(a) How many grams of solute are present in 30.0 mL of 1.33 M CoSO4?


(b) If 4.50 g of (NH4)2SO4 is dissolved in enough water to form 250. mL of solution, what is the molarity of the solution?

(c) How many milliliters of 0.460 M NiCl2 contain 1.00 g of solute?

Solution:
    a.  Cm=1.33 mol/l
V=30 ml = 0.03 l
m(CoSO4)-?


n=Cm*V = 1.33*0.03 = 0.04 moles
m = n*M, M(CoSO4)=155 g/mole
m = 0.04*155= 6.2 g

b. m((NH4)2SO4) = 4.5 g
V(solution) = 250 ml = 0.25 l
Cm-?


n = m/M = 4.5/132 = 0.034 moles
Cm = n/V = 0.034/0.25 = 0.136 mol/l

c. m(NiCl2) = 1 g
Cm = 0.46 M
V(solution)-?

n = m/M= 1/129.7 =0.0077 mol
V = n/Cm = 0.0077/0.46 = 0.017 l = 17 ml
Answer: a.6.2 g; b. 0.136 mol/l; c. 17 ml