

Question #82522, Chemistry / General Chemistry | for completion

What is the molarity of a solution of 20. ml of 0.98 M HCl (hydrochloric acid) diluted with 150. ml water? How many grams of HCl do we have?

$$V_1 = 20 \text{ ml} = 0.02 \text{ l}$$

$$C_{M1} = 0.98 \text{ mol/l}$$

$$V_2 = 150 \text{ ml} = 0.150 \text{ l}$$

$$C_{M2} = ?$$

$$m(\text{HCl}) = ?$$

Solution.

$$n = C_{M1} * V_1 = C_{M2} * V_2 = 0.98 * 0.02 = 0.0196 \text{ mol}$$

$$m(\text{HCl}) = M(\text{HCl}) * n = 36.5 * 0.0196 = 0.7154 \text{ g.}$$

$$C_{M2} = C_{M1} * V_1 / V_2 = 0.98 * 0.02 / 0.15 = 0.13 \text{ mol/l}$$

Answer: $m(\text{HCl}) = 0.7154 \text{ g}$, $C_{M2} = 0.14 \text{ mol/l}$

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