

How many grams of CaCl₂ would be required to produce a 3.5 M (molar) solution with a volume of 2.0 L?

Solution:

We use the equation of molar concentration:

$$C_M = \frac{m}{M \cdot V}$$

From periodic table we determine the molar mass of CaCl₂ it equate:

$$M(\text{CaCl}_2) = 40.078 + 35.453 \cdot 2 = 110.984 \text{ g/mol.}$$

The mass of CaCl₂ calculate from the formula above: $m = C_M \cdot M \cdot V = 3.5 \cdot 110.984 \cdot 2.0 = 776.888 \text{ g.}$

Answer: The mass of CaCl₂ is 776.888 g.