Answer on Question #62848 - Chemistry - General Chemistry

How many iodine atoms are present in 8.91 moles of iodine molecules? Give your answer in scientific notation.

Solution

Each iodine molecule (I_2) consists of two iodine atoms. Therefore, the amount of iodine atoms:

$$\nu(I) = 2 \times \nu(I_2) = 2 \times 8.91\ mol = 17.82\ mol$$

To find the number of atoms, we should use the Avogadro number:

$$N(I) = \nu(I) \times N_A = 17.82\ mol \times 6.02 \times 10^{23}\ mol^{-1} = 107.2764 \times 10^{23} \approx 1.073 \times 10^{25}$$

Answer: 1.073×10^{25}