Answer on the question #50318, Chemistry, Other

Question:

What would be the mass of 1.20 x 1024 molecules of water?

Solution:

The mass of number of molecules is easy to calculate, if we convert it to the number of the mole:

$$\begin{pmatrix} N = n * N_A \\ m = n * M \end{pmatrix} \Rightarrow m = \frac{N}{N_A} * M,$$

Where n—number of the moles,

N_A—Avogadro number, 6.02 * 10^{23} mol^{-1},

M—molar mass of water, 18 g/mol.

$$m = \frac{1.2 * 10^{24}}{6.02 * 10^{23}} * 18 = 35.9\ g$$

Answer: 35.9 g.