Answer on Question #50180, Chemistry, Other

How many molecules does 11.0 g of CO_2 represent?

Solution:

$$n = \frac{m}{M_r} = \frac{V}{V_m} = \frac{N}{N_a}$$

$$\frac{m}{M_r} = \frac{N}{N_a}$$

$$N = \frac{m \times N_a}{M_r}$$

Where **m** – mass of compound,

M_r – molecular mass of compound and

N_a – Avogadro constant, 6.022×10^{23} mol^{-1}

In case of CO2 Mr = 12 + 2 × 16 = 44 g/mol

Thus

$$N = \frac{11\ g \times 6.022 \times 10^{23}\ mol^{-1}}{44\ ^g/_{mol}} = 1.5055\ \times 10^{23}$$

Answer:

1.5055 × 10^{23} molecules