

## Question #82524, Chemistry / Inorganic Chemistry

### Question:

A sample of MgO contains  $1.54 \times 10^{24}$  molecules. How many moles of MgO are present?

### Solution:

Number of moles can be calculated from the equation:

$$v = \frac{N}{N_A}$$

Where  $v$  – number of moles in a sample of MgO,  $N$  - number of molecules,  $N_A$  - Avogadro's number ( $6.02 \times 10^{23} \text{ mol}^{-1}$ ).

As the required number of molecules is  $N = 1.54 \times 10^{24}$  molecules,  $N_A = 6.02 \times 10^{23}$ , then:

$$v(\text{MgO}) = \frac{N}{N_A} = \frac{1.54 \times 10^{24} \text{ molecules}}{6.02 \times 10^{23} \text{ mol}^{-1}} = 0.26 \times 10^1 \text{ mol} = 2.6 \text{ mol}$$

### Answer:

There are 2.6 moles of MgO.