

THE MOLE AND AVOGADRO'S NUMBER

One mole of a substance contains Avogadro's Number (6.02×10^{23}) of molecules.

How many molecules ^{mc} are in the quantities below?

1. 2.0 moles $\frac{2 \text{ mol}}{1} \times \frac{6.02 \times 10^{23} \text{ mc}}{1 \text{ mol}} = 1.204 \times 10^{24} \text{ mc}$

2. 1.5 moles $\frac{1.5 \text{ mol}}{1} \times \frac{6.02 \times 10^{23} \text{ mc}}{1 \text{ mol}} = 9.03 \times 10^{23} \text{ mc}$

3. 0.75 mole $\frac{0.75 \text{ mol}}{1} \times \frac{6.02 \times 10^{23} \text{ mc}}{1 \text{ mol}} = 4.515 \times 10^{23} \text{ mc}$

4. 15 moles $\frac{15 \text{ mol}}{1} \times \frac{6.02 \times 10^{23} \text{ mc}}{1 \text{ mol}} = 9.03 \times 10^{24} \text{ mc}$

5. 0.35 mole $\frac{0.35 \text{ mol}}{1} \times \frac{6.02 \times 10^{23} \text{ mc}}{1 \text{ mol}} = 2.107 \times 10^{23} \text{ mc}$

How many moles ^{mol} are in the number of molecules ^{mc} below?

1. 6.02×10^{23} $\frac{6.02 \times 10^{23} \text{ mc}}{1} \times \frac{1 \text{ mol}}{6.02 \times 10^{23} \text{ mc}} = 1 \text{ mol}$

2. 1.204×10^{24} $\frac{1.204 \times 10^{24} \text{ mc}}{1} \times \frac{1 \text{ mol}}{6.02 \times 10^{23} \text{ mc}} = 2 \text{ mol}$

3. 1.5×10^{20} $\frac{1.5 \times 10^{20} \text{ mc}}{1} \times \frac{1 \text{ mol}}{6.02 \times 10^{23} \text{ mc}} = .00025 \text{ mol}$

4. 3.4×10^{26} $\frac{3.4 \times 10^{26} \text{ mc}}{1} \times \frac{1 \text{ mol}}{6.02 \times 10^{23} \text{ mc}} = 564.78 \text{ mol}$

5. 7.5×10^{19} $\frac{7.5 \times 10^{19} \text{ mc}}{1} \times \frac{1 \text{ mol}}{6.02 \times 10^{23} \text{ mc}} = .00012 \text{ mol}$