

Answer on Question #74098 – Chemistry – General Chemistry

In when converting atoms into moles or moles into mass each time the exponent changes it is either negative or positive. Why does the exponent change, i get everything else about the conversions but that specific part.

Solution:

Converting from particles (atoms, molecules, or formula units) to moles: Divide your particle value by Avogadro's number, 6.02×10^{23} . Moles are always positive.

Example:

$$N(\text{CO}_2) = 12.04 \times 10^{23}$$

$$n(\text{CO}_2) = N(\text{CO}_2) / N_A = 12.04 \times 10^{23} / 6.02 \times 10^{23} = 2 \text{ mol}$$

Converting from moles to mass (grams): Multiply your initial mole value by the molar mass of the compound as determined by the periodic table. Mass has always positive values.

Example:

$$n(\text{CO}_2) = 2 \text{ mol}$$

$$m(\text{CO}_2) = M(\text{CO}_2) \times n(\text{CO}_2) = 44 \text{ g/mol} \times 2 \text{ mol} = 88 \text{ g}$$