**#67967 Chemistry, Other**

**If 80 g of X combines with $1.5x10^{23}$ atoms of Y to form $XY_2$ without any of either element remaining, determine gram atomic weight of X.**

**Answer:**

1 mole contains $6.04 \cdot 10^{23}$ atoms

According to the formula, the amount of X atoms in 2 times less than Y. Therefore:

$X = 1.5 \times 10^{23} / 2 = 0.75 \times 10^{23}$.

That is why, number of moles of X is: $n(X) = 0.75 \times 10^{23} / 6.04 \times 10^{23} = 0.12$ mol

$n = m/M$ $M = m / n$ $M(X) = 80 / 0.12 = 645.2$ g/mol