Unit 5 - Chemical Quantities

↓ amount

Mole (mol)

1 mol = 602000000000000000000000 particles

$1\ mol = 6.02 \times 10^{23}$ particles AVOGADRO'S #

↓

atoms (elements)
molecules (covalent compounds)
formula units (ionic compounds)

&) How many (atoms)? are in 1.50 mol (Given) of nickel?

$$1.50\ \cancel{mol}\ Ni \left(\frac{6.02 \times 10^{23}\ atoms}{1\ \cancel{mol}}\right) = 9.03 \times 10^{23}\ atoms\ Ni$$

How many (moles)? are in 5.46×10^{24} molecules (Given) of dinitrogen monoxide?

$$5.46 \times 10^{24}\ \cancel{molecules}\ N_2O \left(\frac{1\ mol}{6.02 \times 10^{23}\ \cancel{molecules}}\right) = 9.07\ mol\ N_2O$$

How many (formula units)? are in 3.268 moles of (Given) silver (I) sulfite?

$$3.268\ \cancel{mol}\ Ag_2SO_3 \left(\frac{6.02 \times 10^{23}\ f.units}{1\ \cancel{mol}}\right) = 1.967 \times 10^{24}\ f.units\ Ag_2SO_3$$

How many moles (?) are in 3000000 marshmallow peeps (GIVEN)?

$$3000000 \text{ peeps} \left(\frac{1 \text{ mol}}{6.02 \times 10^{23} \text{ peeps}}\right) = 4.98 \times 10^{-18} \text{ mol}$$

5×10^{-18} mol peeps

How many formula units are in 0.0015 moles of phosphoric acid?

1.5×10^{-3} moles H_3PO_4

$$\left(\frac{6.02 \times 10^{23} \text{ f. units}}{1 \text{ moles}}\right) = 9.0 \times 10^{20} \text{ f. units } H_3PO_4$$