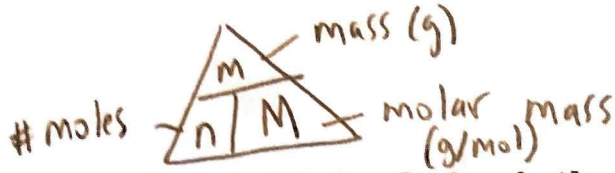

More Mole Calculations! – ANSWERS

1) How many grams does 0.500 moles of CuBr weigh?

$M_{CuBr} = \frac{Cu}{1(63.546)} + \frac{Br}{1(79.904)}$
$= 143.45\ g/mol$

$m = nM$
$= (0.500\ mol)(143.45\ g/mol)$
$= 71.73\ g$

2) How many molecules are there in 0.655 moles of C_6H_{14}?

$N = n \cdot N_A$
$= (0.655\ mol)(6.02 \times 10^{23})$
$= 3.943 \times 10^{23}$ molecules

3) How many moles are there in 2.35×10^{24} molecules of water?

$n = \frac{N}{N_A}$
$= \frac{2.35 \times 10^{24}\ \text{molecules}}{6.02 \times 10^{23}}$
$\doteq 3.904$ moles

4) How many grams does 5.60×10^{22} molecules of SiO_2 weigh?

$M_{SiO_2} = \frac{Si}{1(28.086)} + \frac{O}{2(15.999)}$
$= 60.084\ g/mol$

$n = \frac{N}{N_A}$
$= \frac{5.60 \times 10^{22}}{6.02 \times 10^{23}}$
$\doteq 0.0930\ mol$

$m = nM$
$= (0.0930\ mol)(60.084\ g/mol)$
$\doteq 5.59\ g$

5) How many molecules are there in 21.6 grams of CH_4?

$M_{CH_4} = \frac{C}{1(12.011)} + \frac{H}{4(1.0079)}$
$= 16.043\ g/mol$

$n = \frac{m}{M}$
$= \frac{21.6\ g}{16.043\ g/mol}$
$\doteq 1.346\ mol$

$N = n N_A$
$= (1.346\ mol)(6.02 \times 10^{23})$
$\doteq 8.103 \times 10^{23}$ molecules