

Name : \_\_\_\_\_ Date : \_\_\_\_\_



# Grams to Moles to Atoms Worksheet



Answer the following questions.

1 How many molecules do 122 grams of  $\text{Cu}(\text{NO}_3)_2$  represent?

2 How many molecules are present in 9.34 grams of  $\text{LiCl}$ ?

3 What is the weight of  $4.3 \times 10^{21}$  molecules of  $\text{UF}_6$ ?

4 What is the weight of  $1 \times 10^{24}$   $\text{BCl}_3$  molecules?

5 How much do  $3.3 \times 10^{23}$  molecules of  $\text{N}_2\text{I}_6$ ?



# Grams to Moles to Atoms Worksheet



## Answers

- 1 How many molecules do 122 grams of  $\text{Cu}(\text{NO}_3)_2$  represent?

Molar mass of  $\text{Cu}(\text{NO}_3)_2 = 187.56 \text{ g/mol}$

187.56 grams of  $\text{Cu}(\text{NO}_3)_2$  represent 1 mole, i.e.,  $6.023 \times 10^{23}$  molecules

122 grams of  $\text{Cu}(\text{NO}_3)_2$  represent  $3.91 \times 10^{23}$  molecules

- 2 How many molecules are present in 9.34 grams of  $\text{LiCl}$ ?

Molar mass of  $\text{LiCl} = 42.394 \text{ g/mol}$

42.394 grams of  $\text{LiCl}$  represent  $6.023 \times 10^{23}$  molecules

9.34 grams of  $\text{LiCl}$  represent  $1.32 \times 10^{23}$  molecules

- 3 What is the weight of  $4.3 \times 10^{21}$  molecules of  $\text{UF}_6$ ?

Molar mass of  $\text{UF}_6 = 352.02 \text{ g/mol}$

352.02 grams of  $\text{UF}_6$  represent  $6.023 \times 10^{23}$   $\text{UF}_6$  molecules

So,  $4.3 \times 10^{21}$   $\text{UF}_6$  molecules weigh  $352.02 \times [(4.3 \times 10^{21}) / (6.023 \times 10^{23})]$

= 2.51 grams

- 4 What is the weight of  $1 \times 10^{24}$   $\text{BCl}_3$  molecules?

Molar mass of  $\text{BCl}_3 = 117.17 \text{ g/mol}$

117.17 grams of  $\text{BCl}_3$  represent  $6.023 \times 10^{23}$  molecules

$1 \times 10^{24}$   $\text{BCl}_3$  molecules weigh  $117.17 \times [(1 \times 10^{24}) / (6.023 \times 10^{23})] = 194.53$  grams

- 5 How much do  $3.3 \times 10^{23}$  molecules of  $\text{N}_2\text{I}_6$ ?

Molar mass of  $\text{N}_2\text{I}_6 = 789.44 \text{ g/mol}$

$6.023 \times 10^{23}$  molecules weigh 789.44 grams

$3.3 \times 10^{23}$  molecules weigh  $789.44 \times [(3.3 \times 10^{23}) / (6.023 \times 10^{23})]$  grams

= 432.5 grams