

# MOLES, MOLECULES, AND GRAMS WORKSHEET

Answer the following questions.

1) How much do  $7.4 \times 10^{23}$  molecules of  $\text{AgNO}_3$  weigh?

2) How many grams are there in  $3.3 \times 10^{23}$  molecules of  $\text{N}_2\text{I}_6$ ?

3) How many grams are there in  $9.4 \times 10^{25}$  molecules of  $\text{H}_2$ ?

4) How many grams do  $4.3 \times 10^{21}$  molecules of  $\text{UF}_6$  weigh?

5) How many grams are there in  $1 \times 10^{24}$  molecules of  $\text{BCl}_3$ ?

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## Answers

1) How much do  $7.4 \times 10^{23}$  molecules of  $\text{AgNO}_3$  weigh?

Molar mass of  $\text{AgNO}_3 = 169.87 \text{ g/mol}$

So,  $6.023 \times 10^{23}$  molecules of  $\text{AgNO}_3$  weigh 169.87 grams

$7.4 \times 10^{23}$  molecules of  $\text{AgNO}_3$  weigh 208.7 grams

2) How many grams are there in  $3.3 \times 10^{23}$  molecules of  $\text{N}_2\text{I}_6$ ?

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

So,  $6.023 \times 10^{23}$  molecules of  $\text{N}_2\text{I}_6$  weigh 789.44 grams

$3.3 \times 10^{23}$  molecules of  $\text{N}_2\text{I}_6$  weigh 432.53 grams

3) How many grams are there in  $9.4 \times 10^{25}$  molecules of  $\text{H}_2$ ?

Molar mass of  $\text{H}_2 = 2.01568 \text{ g/mol}$

So,  $6.023 \times 10^{23}$  molecules of  $\text{H}_2$  weigh 2.01568 grams

$9.4 \times 10^{25}$  molecules of  $\text{H}_2$  weigh 314.5 grams

4) How many grams do  $4.3 \times 10^{21}$  molecules of  $\text{UF}_6$  weigh?

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

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

$4.3 \times 10^{21}$  molecules of  $\text{UF}_6$  weigh 2.51 grams

5) How many grams are there in  $1 \times 10^{24}$  molecules of  $\text{BCl}_3$ ?

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

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

$1 \times 10^{24}$  molecules of  $\text{BCl}_3$  weigh 194.53 grams