

# THE MOLE WORKSHEET

Answer the following questions.

1. Define the term "mole".
2. How are the terms 'atomic mass' and 'molar mass' different from one another?
3. Which is the better unit to express molar mass - "amu" or "grams/mol"?
4. Solve the following problems.
  - a) Number of moles present in 34 grams of  $\text{Cu}(\text{OH})_2$
  - b) Weight of 4.2 moles of  $\text{Ca}(\text{NO}_3)_2$
  - c) Weight of  $3.4 \times 10^{24}$  molecules of  $\text{NH}_3$

# THE MOLE WORKSHEET

## Answers

1. Define the term "mole".

The base unit for an amount of substance proportional to  $6.023 \times 10^{23}$  particles like atoms, molecules, ions, etc., determined by the International System of Units.

2. How are the terms 'atomic mass' and 'molar mass' different from one another?

Atomic mass refers to the mass of an individual unit of the substance, while molar mass refers to the mass of one mole of said substance.

3. Which is the better unit to express molar mass - "amu" or "grams/mol"?

Grams/mol is usually the better option. This is because molar mass designates a macroscopic amount of substance which is better represented in the form of grams rather than amu.

4. Solve the following problems.

a) Number of moles present in 34 grams of  $\text{Cu}(\text{OH})_2$

Molar mass of  $\text{Cu}(\text{OH})_2$  is 97.56 g/mol

97.56 grams of  $\text{Cu}(\text{OH})_2$  is present in 1 mole

34 grams of  $\text{Cu}(\text{OH})_2$  is present in 0.35 moles

b) Weight of 4.2 moles of  $\text{Ca}(\text{NO}_3)_2$

Molar mass of  $\text{Ca}(\text{NO}_3)_2$  is 164 g/mol

4.2 moles of  $\text{Ca}(\text{NO}_3)_2$  is 689 grams

c) Weight of  $3.4 \times 10^{24}$  molecules of  $\text{NH}_3$

Molar mass of  $\text{NH}_3$  is 17 g/mol

$6.023 \times 10^{23}$  molecules of  $\text{NH}_3$  weigh 17 grams

$3.4 \times 10^{24}$  molecules of  $\text{NH}_3$  weigh 95.9 grams