

# FORMULA MASS



## MOLAR MASS WORKSHEET



1. Define 'formula mass.'
2. Define 'molar mass.'
3. Differentiate between formula mass and molar mass.
4. Determine the formula or molar mass of the following.
  - a)  $\text{CO}_2$
  - b)  $\text{H}_2\text{O}$
  - c)  $\text{C}_{12}\text{H}_{22}\text{O}_{11}$
  - d)  $\text{ZnCl}_2$

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### Answers

1. Define 'formula mass.'

The formula mass of a substance is the result of adding up the atomic masses of all the atoms present in that substance.

2. Define 'molar mass.'

The molar mass is the mass of a single mole of a substance, i.e., the ratio of mass and volume of a given amount of the substance.

3. Differentiate between formula mass and molar mass.

Formula Mass	Molar Mass
The unit used is atomic mass unit (amu)	The unit used is grams/mole (g/mol)
Its a molecular property	Its a bulk property

4. Determine the formula or molar mass of the following.

a)  $\text{CO}_2$

Formula mass of  $\text{CO}_2 = (1 \times 12) + (2 \times 16) = 12 + 32 = 44$  amu

Molar mass of  $\text{CO}_2 = (1 \times 12) + (2 \times 16) = 12 + 32 = 44$  g/mol

b)  $\text{H}_2\text{O}$

Formula mass of  $\text{H}_2\text{O} = (2 \times 1) + (1 \times 16) = 2 + 16 = 18$  amu

Molar mass of  $\text{H}_2\text{O} = (2 \times 1) + (1 \times 16) = 2 + 16 = 18$  g/mol

c)  $\text{C}_{12}\text{H}_{22}\text{O}_{11}$

Formula mass of  $\text{C}_{12}\text{H}_{22}\text{O}_{11} = (12 \times 12) + (22 \times 1) + (11 \times 16) = 144 + 22 + 176 = 342$  amu

Molar mass of  $\text{C}_{12}\text{H}_{22}\text{O}_{11} = (12 \times 12) + (22 \times 1) + (11 \times 16) = 144 + 22 + 176 = 342$  g/mol

d)  $\text{ZnCl}_2$

Formula mass of  $\text{ZnCl}_2 = (1 \times 65) + (2 \times 35.5) = 65 + 71 = 136$  amu

Molar mass of  $\text{ZnCl}_2 = (1 \times 65) + (2 \times 35.5) = 65 + 71 = 136$  g/mol