

# CHEMISTRY DAILY PLAN

**Class:**

**Date:**

**Subject: Molar Mass (Atomic Weight and Molecular Weight)**

**Time:**

## Atomic Weight

The mass of 1 mole particles is called **molar mass**.

Molar mass of Li = 7 g/mole  $\Rightarrow$  1 mole Li is equal to 7 grams.

Molar mass of Na = 23 g/mole  $\Rightarrow$  1 mole Na is equal to 23 grams.

Molar mass of Ca = 40 g/mole  $\Rightarrow$  1 mole Ca is equal to 40 grams.

You don't have to memorize these numbers. They are given in questions.

The ratio of the mass of the element to its atomic mass gives the mole number. The molar mass of elements is called atomic mass of elements. The atomic mass of elements is known as the molar mass of elements.

$n = \frac{m}{M.M}$	n = mole number
	m = mass of elements
	M.M = molar mass

Ask the atomic weight of the elements from periodic table to students.

**Example:** What is the mole number of 14 g Li? (Li:7)

**Example:** What is the mass of 0.1 mole Ca? (Ca:40)

**Example:** Calculate the mole number of each of the followings.

**a)** 13.7g Ba (Ba:137)    **b)** 10.4 g Cr (Cr:52)    **c)** 635 g Cu (Cu:63.5)    **d)** 12 g Mg (Mg:24)

**Example:** Calculate the mass of each of the following.

**a)** 0.1 mole Na (Na:23)    **b)** 0.5 mole Be (Be:9)    **c)** 2 mole K (K:39)    **d)** 1.5 mole Fe (Fe:56)

## Molecular Weight

The molar mass of ionic compounds is known as molecular formula weight of compounds. The molar mass of covalent compounds is known as molecular weight of compounds.

Let's calculate the molar mass of NaCl. (Na:23, Cl:35.5)

So, 1 mole NaCl weighs 58.5 g.

NaCl	
└─┬─┘	35.5 g
└─┬─┘	23 g
└─┬─┘	+
└─┬─┘	58.5 g / mole

**Example:** Calculate the molar mass of each of the following.

**a)** H<sub>2</sub>O    **b)** P<sub>4</sub>    **c)** CaCl<sub>2</sub>    **d)** Na<sub>2</sub>CO<sub>3</sub>    **e)** C<sub>2</sub>H<sub>5</sub>OH    **f)** Al(OH)<sub>3</sub>    **g)** NH<sub>4</sub>NO<sub>3</sub>  
**h)** H<sub>2</sub>SO<sub>4</sub>    **i)** Ca(OH)<sub>2</sub>    **j)** KClO<sub>4</sub>    **k)** H<sub>3</sub>PO<sub>4</sub>    **l)** N<sub>2</sub>O<sub>5</sub>    **m)** CaCO<sub>3</sub>    **n)** Ca<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub>

**Example:** How many moles are 8.8 g of CO<sub>2</sub> gas? (0.2 mole)

**Example:** How many grams are 0.015 moles of Cl<sub>2</sub> gas? (1.065 g)

**Example:** How many moles are there in 10.26 g of Al<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub>? (0.03)

**Example:** What is the mole number of He gas that contains 3.01 10<sup>23</sup> atoms in its structure? (0.05 mole)

**Example:** How many molecules are there in 0.025 mole of CH<sub>4</sub>? (1.505 10<sup>22</sup>)

**Example:** What is the mole number of Fe<sub>2</sub>O<sub>3</sub> that contains 6.02 10<sup>23</sup> atoms? (0.2)

**Example:** What is the mass of 3.01 10<sup>22</sup> C<sub>2</sub>H<sub>6</sub> molecules? (1.5 g)

**Example:** Answer the following questions for 62 g Ca<sub>3</sub>(PO<sub>4</sub>)<sub>2</sub>

**a)** How many molecules does it have?    **b)** How many oxygen atoms does it contain?  
**c)** How many Ca atoms does it contain?    **d)** How many grams Ca and O atoms does it contain?

**Example:** 0.2 moles of X<sub>2</sub>O<sub>5</sub> compound weigh 21.6 g. What is the molar mass of X? (O:16)

**Example:** 36 g XO compound contains total 6.02 10<sup>23</sup> atoms. What is the molar mass of X? (O:16)