

# Unit 7 - The Mole

Content Area: **Science**  
Course(s): **Chemistry CP**  
Time Period: **February**  
Length: **6 weeks**  
Status: **Published**

## Transfer Skills

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The mole is the chemist's invaluable unit for specifying the amount of material.

## Enduring Understandings

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Models of molecules help scientists understand properties.

The mole is an important unit of measurement that aides in the quantification of matter.

Chemical formulas provide information about the amount of chemicals that can be used or produced during a reaction.

## Essential Questions

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Why is the mole an important measurement in chemistry?

How can the molecular formula of a compound be determined experimentally?

How do chemists count the number of atoms, molecules, or formula units in a substance?

## Content

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empirical formula, molecular formula, mole, percent composition, molar mass

## Skills

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Determine the molar mass of a compound.

Determine a compound's percent composition

Solve mole conversion problems involving grams, particles, and liters.

Identify Avogadro's constant.

## Resources

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## Standards

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SCI.9-12.5.1.12.B.1	Design investigations, collect evidence, analyze data, and evaluate evidence to determine measures of central tendencies, causal/correlational relationships, and anomalous data.
SCI.9-12.5.1.12.B.2	Build, refine, and represent evidence-based models using mathematical, physical, and computational tools.
SCI.9-12.5.1.12.B.3	Revise predictions and explanations using evidence, and connect explanations/arguments to established scientific knowledge, models, and theories.
SCI.9-12.5.1.12.B.4	Develop quality controls to examine data sets and to examine evidence as a means of generating and reviewing explanations.
SCI.9-12.5.1.12.B.d	Scientific reasoning is used to evaluate and interpret data patterns and scientific conclusions.
SCI.9-12.5.1.12.D.a	Science involves practicing productive social interactions with peers, such as partner talk, whole-group discussions, and small-group work.
SCI.9-12.5.2.12.B.a	An atom's electron configuration, particularly of the outermost electrons, determines how the atom interacts with other atoms. Chemical bonds are the interactions between atoms that hold them together in molecules or between oppositely charged ions.
SCI.9-12.5.2.12.B.b	A large number of important reactions involve the transfer of either electrons or hydrogen ions between reacting ions, molecules, or atoms. In other chemical reactions, atoms interact with one another by sharing electrons to create a bond.
SCI.9-12.5.2.12.B.c	The conservation of atoms in chemical reactions leads to the ability to calculate the mass of products and reactants using the mole concept.