

ARISE Curriculum Guide

Chemistry: Topic 7—Moles

ChemMatters

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Articles for Student Use

Bringing Helium Down to Earth: Oct. 1985, pp. 14-15.

Homeopathy: Dec. 1991, pp. 8-11.

Articles for Teacher Use

Number and Topic: 3. Problem Solving

7. Moles

17. Water, Aqueous Solutions

Source: *ChemMatters*, Dec. 1991, pp. 8-11, “Homeopathy”

Type of Material: Student Journal Article

Building on: Problem solving, solutions

Leading to: Serial dilutions, process of science

Links to Physics:

Links to Biology: Placebo effect

Good Stories:

Activity Description: Article describes the notion of “Homeopathy,” or the use of what are basically infinitely diluted solutions to treat illnesses. While the article contains a lot of good information relating to dilutions, etc., its major value probably lies in its exposition of what constitutes “good science” vs. the claims of pseudoscientific arguments and “scientific experiments” of questionable design.

Number and Topic: 4. Atomic Structure

5. Radioactivity, Fusion, Fission

7. Moles

Source: *ChemMatters*, Oct. 1985, pp. 14-15, “Bringing Helium Down to Earth”

Type of Material: Student Journal Article

Building on: Basic chemical knowledge

Leading to: Spectroscopy, radioactivity, subatomic particles, properties of noble gases, Rutherford’s scattering experiment, transmutation of elements, determination of Avogadro’s number

Links to Physics: The sun, light, electromagnetic spectrum, subatomic particles

Links to Biology:

Good Stories:

Activity Description: This article presents the history behind the discovery of helium, first in the sun and later on earth. It continues to discuss the transmutation of elements and how Ernest Rutherford determined Avogadro’s number.

Flinn ChemTopic Labs

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Demo: Conceptual Understanding of Moles
Demo: How Big is a Mole? - Imagining the Mole Activities
Demo: Mole Creativity - Make-a-Mole Pattern
Demo: Mole Samples and Molar Mass - Authentic Assessment
Demo: Stoichiometry and Solubility - Mole Ratios and Chemical Formulas
Demo: Stoichiometry Balloon Race - Limiting and Excess Reagents
Lab: Decomposition of Sodium Chlorate - Mass, Moles and the Chemical Equation
Lab: Determining a Molecular Formula
Lab: Formula of a Blue Hydrate
Lab: Magnesium Oxide - Percent Composition and Empirical Formula
Lab: Micro Mole Rockets - Hydrogen and Oxygen Mole Ratio
Lab: Mole Ratios - Copper and Silver Nitrate
Lab: Who's Counting? - Atoms, Mass and Moles
Webpage: Learning Stoichiometry

ICE LABS

[Online Descriptions and Experiments](#)

Number and Topic: 6. Chemical Names and Formulas,
7. Moles.

Source: ICE Laboratory Leadership

Type of Material: Lab 7. Determining a Molecular Formula

Building on: 8. Chemical reactions 12. Gases/Gas Laws/Kinetic theory

Leading to: 9. Stoichiometry

Links to Physics: Gas behavior (?)

Links to Biology: Analysis of complex molecules

Good Stories:

Activity Description: The molecular (true) formula for a substance is not always the same as its empirical (simplest) formula. Both acetylene and benzene have the empirical formula CH. However, the molar mass for acetylene is 26 g/mol, while the molar mass of benzene is 78 g/mol. This is because the molecular formula for acetylene is C₂H₂ while the molecular formula for benzene is C₆H₆. To determine the molar mass of a gaseous substance and to use this value to find the molecular formula of the substance.

Technology-Adapted Labs

No activities for this topic.