

LESSON SET I ASSESSMENT

Atoms & Molecules

SCIENCE

Constructing Explanations, Engaging in Argument and
Obtaining, Evaluating, and Communicating Information

ENGLISH LANGUAGE ARTS

Reading Informational Text, Writing an Explanation

GRADE 8

45-60
minutes



PURPOSE

In this formative assessment task, students apply what they have learned about atomic structure and forming molecules in Lessons One through Six. Students use the notes they have accumulated in their Science Notebooks, texts, and other sources to support them in identifying, illustrating, and describing molecules.



STANDARDS

● Common Core State Standards

- Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table). CCSS.ELA-LITERACY.RST.6-8.7
- Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic. CCSS.ELA-LITERACY.RST.6-8.9
- Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples. CCSS.ELA-LITERACY.WHST.6-8.2.B
- Use precise language and domain-specific vocabulary to inform about or explain the topic. CCSS.ELA-LITERACY.WHST.6-8.2.D



STANDARDS CONTINUED

● Common Core State Standards

- Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.
CCSS.ELA-LITERACY.WHST.6-8.8

● Next Generation Science Standards

- Develop models to describe the atomic composition of simple molecules and extended structures. MS-PS-1-1

- Structures and Properties of Matter. PS1.A

Substances are made from different types of atoms, which combine with one another in various ways. Atoms form molecules that range in size from two to thousands of atoms.

Solids may be formed from molecules, or they may be extended structures with repeating subunits (e.g., crystals).

● Science and Engineering Practices

- Constructing explanations and designing solutions
- Engaging in argument from evidence
- Obtaining, evaluating, and communicating information



LEARNING GOALS

- Understand that all molecules are made up of atoms.
- Understand characteristics of simple and complex molecules.



SUCCESS CRITERIA

- 1 Identify the components of atoms and molecules in explanations.

- 2 Describe the relationship between atoms and molecules.
- 3 Apply understandings of atoms and molecules to formulate accurate responses to tasks.
- 4 Use multiple sources to gather appropriate and relevant information (periodic table, website sources, readings, notes).



ASSESSMENT TASK

You have learned about atoms, simple molecules, and complex molecules. In this assessment task, you will use what you have learned to illustrate and describe a series of molecules. Write a description for each molecule. Support your answer with references to relevant and appropriate sources.

PART I: INTRODUCTION

INTRODUCE THE ASSESSMENT TASK Explain that today students will receive a list, or individual cards, with the names and chemical formulas of simple and complex molecules.

PART II: GUIDED PRACTICE

READ AND ANNOTATE Provide students with a copy of the assessment task handout to read and annotate. Students should be clear about what they are expected to do as part of the assessment.

GATHER INFORMATION FROM MULTIPLE SOURCES Students work independently to gather information that will help them illustrate and write molecule descriptions. Explain to students that they should consult the texts and materials they have annotated and completed in previous lessons. Remind students to use their *Science Notebooks* to record notes.



SUCCESS CRITERION

EVIDENCE-GATHERING OPPORTUNITY

- Identify the components of atoms and molecules in explanations.
- Describe the relationship between atoms and molecules.

- Apply understandings of atoms and molecules to formulate accurate responses to tasks.
- Use multiple sources to gather appropriate and relevant information (periodic table, website sources, readings, notes).

Gather evidence of learning by observing students as they complete the assessment. Observe students as they consult resources to complete the assessment task. Note the resources that students use to gain a sense of the degree to which students use multiple sources. Check individual student Science Notebooks to gather evidence of learning related to understanding of science concepts.



ANTICIPATED RESPONSE PEDAGOGICAL ACTION

If students have difficulty identifying sources, locating information, or using multiple sources, provide students with a list of the texts and materials they have read and created in previous lessons. A list of texts and resources can be used to support student organization and identification of relevant and appropriate source to reference.

PART III: CULMINATING TASK

WRITE MOLECULE DESCRIPTIONS When students have gathered the information described in the assessment task, they should individually write descriptions of each molecule. These descriptions should reflect a student's ability to synthesize and connect ideas to demonstrate understanding. Remind students that these descriptions should be connected and should not be written in list form. Written molecule descriptions should include illustrations and descriptions.

Illustrations will:

- accurately represent simple or complex molecules
- show evidence of understanding of atomic makeup
- include repeated patterns for complex molecules

Written molecule descriptions will:

- name the elements that make up the molecule and individual atoms

- accurately describe the corresponding group of elements for each atom
- use appropriate content vocabulary
- provide clear and accurate justification
- reference relevant and appropriate texts and sources

FORMATIVE ASSESSMENT I

You have learned about atoms, simple molecules, and complex molecules. In this assessment task, you will use what you have learned to illustrate and describe a series of molecules. Write a description for each molecule. Make sure you're your description includes information to answer the following questions. Support your answer with references to relevant and appropriate sources. Cite your sources.

- What are the elements that make up the molecule?
- How many atoms are there of each element?
- What groups are represented in this molecule? What are the shared characteristics of these groups of elements?
- What is the total number of atoms? How do you know?
- Is the molecule simple or complex? How do you know?
- What additional information do you know about this molecule and/or the elements that make up this molecule?

Use your class notes, summaries and explanations, reading annotations, and research to support your responses.

FORMATIVE ASSESSMENT I MOLECULES

Molecule	Notes
$2\text{H}_2\text{O}$ Water	
NH_3 Ammonia	
CH_4 Methane	
CO_2 Carbon Dioxide	
NaHCO_3 Sodium Bicarbonate	
NH_4Cl Ammonia Chloride	
CuSO_4 Copper Sulfate	
H_2SO_4 Sulfuric Acid	
$\text{C}_6\text{H}_8\text{O}_8$ Citric Acid	
C_8H_{18} Octane	