

LESSON SET II ASSESSMENT

Identify An Unknown Substance

SCIENCE

Asking Questions, Investigating, Analyzing Data, Constructing Explanations, Engaging in Argument and Obtaining, Evaluating, and Communicating Information

ENGLISH LANGUAGE ARTS

Reading Informational Text, Writing an Explanation

GRADE 8

90-120
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

- Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks. CCSS.ELA-LITERACY.RST.6-8.3
- 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
- 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
- Draw evidence from informational texts to support analysis, reflection, and research. CCSS.ELA-LITERACY.WHST.6-8.9

● Next Generation Science Standards

- Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred. MS-PS-1-2
- 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.
- Chemical Reactions. PS1.B
Substances react chemically in characteristic ways. In a chemical process, the atoms that make up the original substances are regrouped into different molecules, and these new substances have different properties from those of reactants. with one

● Science and Engineering Practices

- Asking questions and defining problems
- Planning and carrying out investigations
- Analyzing and interpreting data
- Constructing explanations and designing solutions
- Engaging in argument from evidence
- Obtaining, evaluating, and communicating information



LEARNING GOALS

- Understand that pure substances react in characteristic ways (chemical reaction).
- Understand characteristics of chemical reactions.



SUCCESS CRITERIA

- 1 Develop conjectures and hypotheses.
- 2 Use data to drive inquiry and investigation.
- 3 Apply conceptual understandings of pure substances and chemical reactions to identify an unknown substance.
- 4 Analyze and interpret data.
- 5 Construct a written analysis that clearly links evidence (data) to findings.
- 6 Use logical reasoning in written response.



ASSESSMENT TASK

You have learned about chemical reactions and how to use evidence to determine whether chemical reactions have taken place. In this assessment task, you will use what you have learned to identify an unknown substance. Record your hypotheses, conjectures, investigation procedures, observations, and data in your Science Notebook. Write a laboratory report that includes clear descriptions of your data, analysis, interpretations, and well-formulated conclusion. Support your answer with references to relevant and appropriate sources, including your investigation data.

Option 2 [Inquiry in Action \(2007\) – Using Chemical Change to Identify an Unknown](http://www.inquiryinaction.org/pdf/chapter5/5.2_teacher.pdf) (http://www.inquiryinaction.org/pdf/chapter5/5.2_teacher.pdf).

PART I: INTRODUCTION

INTRODUCE THE ASSESSMENT TASK Explain that today students will work together to test different powders using various solutions. They will study the reactions and apply what they learn about the ways these substances react to ultimately identify an unknown powder.

PART II: GUIDED PRACTICE



SUCCESS CRITERION

EVIDENCE-GATHERING OPPORTUNITY

- Develop conjectures and hypotheses.
- Use data to drive inquiry and investigation.

Gather evidence of learning by observing students as they work together to complete the investigation. Listen to student discussions as a source of evidence. Consider the degree to which students are talking about the

reactions they are observing and connecting these to evidence of chemical change students learned in Lesson Nine. Another source of evidence is the Science Notebook. Check student hypotheses and conjectures. Ask them follow-up questions to assess the degree to which students are using the data they are acquiring to drive further inquiry.



If students have difficulty making connections between their observations and evidence of chemical change, remind them to review the text they read in the previous lessons. Support students by reviewing evidence if necessary.

COMPLETE INVESTIGATION Provide students with the unknown powder when students have completed the first part of the investigation.



- Apply conceptual understandings of pure substances and chemical reactions to identify an unknown substance.

As students continue to test the unknown powder observe them as they continue to work in groups. Listen to the conversation and check that students are using the data they have gathered as part of the investigation activity to support them in the identification process. Students should be making connections to the data and understand that they are using these observations to identify the powder. You are looking for evidence that students understand substances react in characteristic ways.

PART III: CULMINATING TASK

laboratory report should include:

- well-reasoned hypotheses and conjectures
- clearly organized and labeled data tables and observation notes
- observations and data to support analysis and conclusion
- a conclusion that demonstrates logical reasoning, summarizes learning, and establishes connections
- accurate identification of the unknown substance
- appropriate use of content vocabulary
- justification for warrants and/or responses
- appropriate and relevant references to texts and sources

FORMATIVE ASSESSMENT II

You have learned about chemical reactions and how to use evidence to determine whether chemical reactions have taken place. In this assessment task, you will use what you have learned to identify an unknown substance. Record your hypotheses, conjectures, investigation procedures, observations, and data in your Science Notebook. Write a laboratory report that includes clear descriptions of your data, analysis, interpretations, and well-formulated conclusion. Support your answer with references to relevant and appropriate sources, including your investigation data.

Your written laboratory report should include:

- well-reasoned hypotheses and conjectures
- clearly organized and labeled data tables and observation notes
- observations and data to support your analysis and conclusion
- a conclusion that demonstrates logical reasoning, summarizes learning, and establishes connections
- accurate identification of the unknown substance
- appropriate use of content vocabulary
- justification for warrants and/or responses
- appropriate and relevant references to texts and sources