

Unit 5: Chemical Magic

5th Grade Science

25/35 Class Meetings

Revised June 2026

Essential Questions

- What is matter made of, even when we cannot see it?
- How can observations and measurements help us identify different materials?
- What happens to matter when substances are heated, cooled, or mixed?
- How can investigations help us determine whether a new substance has formed?

Enduring Understandings with Unit Goals

EU 1: Matter is made of particles too small to be seen.

- All matter is composed of tiny particles that cannot be observed with the naked eye.
- Models help scientists explain structures and processes that cannot be directly seen.
- Different states of matter can be explained by how particles move and interact.

EU 2: Matter is conserved even when it changes.

- Heating, cooling, or mixing substances may change how matter looks or behaves.
- The total amount of matter remains the same during physical and chemical changes.
- Measurements and graphs provide evidence that matter is conserved.

EU 3: Materials can be identified by their properties and can be mixed to make new materials.

- Substances have observable and measurable properties such as color, hardness, mass, magnetism, and solubility.
- Careful observations help identify unknown substances.
- Some mixtures combine without forming new substances.
- Other combinations result in chemical reactions that create new substances with different properties.
- Investigations help determine whether a change is physical or chemical.

Standards

Common Core State and NGSS Standards:

5-PS1-1. Develop a model to describe that matter is made of particles too small to be seen.

5-PS1-2. Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.

5-PS1-3. Make observations and measurements to identify materials based on their properties.

5-PS1-4. Conduct an investigation to determine whether the mixing of two or more substances results in new substances.

CCSS.ELA-Literacy.RI.5.1: Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.

CCSS.ELA-Literacy.RI.5.2: Determine the main idea of a text and explain how it is supported by key details; summarize the text.

CCSS.ELA-Literacy.RI.5.4: Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a *grade 4 topic or subject area*.

CCSS.ELA-Literacy.RI.5.9: Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably.

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CCSS.ELA-Literacy.W.5.2: Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

CCSS.ELA-Literacy.W.5.2.a: Introduce a topic clearly and group related information in paragraphs and sections; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension.

CCSS.ELA-Literacy.W.5.2.b: Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.

CCSS.ELA-Literacy.W.5.2.c: Link ideas within categories of information using words and phrases (e.g., *another*, *for example*, *also*, *because*).

CCSS.ELA-Literacy.W.5.2.d: Use precise language and domain-specific vocabulary to inform about or explain the topic.

CCSS.ELA-Literacy.W.5.2.e: Provide a concluding statement or section related to the information or explanation presented.

CCSS.ELA-Literacy.W.5.4: Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience

CCSS.ELA-Literacy.W.5.5: With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing.

CCSS.ELA-Literacy.W.5.6: With some guidance and support from adults, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of one page in a single sitting.

CCSS.ELA-Literacy.W.5.7: Conduct short research projects that build knowledge through investigation of different aspects of a topic.

CCSS.ELA-Literacy.W.5.8: Recall relevant information from experiences or gather relevant information from print and digital sources; take notes and categorize information and provide a list of sources.

CCSS.ELA-Literacy.W.5.9: Draw evidence from literary or informational texts to support analysis, reflection, and research.

CCSS.ELA-Literacy.SL.4.1: Engage effectively in a range of collaborative discussions (one-on one, in groups, and teacher-led) with diverse partners on *grade 4 topics and texts*, building on others' ideas and expressing their own clearly.

CCSS.ELA-Literacy.SL.5.1.a: Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.

CCSS.ELA-Literacy.SL.5.1.b: Follow agreed-upon rules for discussions and carry out assigned roles.

CCSS.ELA-Literacy.SL.5.1.c: Pose and respond to specific questions to clarify or follow up on information and make comments that contribute to the discussion and link to the remarks of others.

CCSS.ELA-Literacy.SL.5.1.d: Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.

CCSS.ELA-Literacy.SL.5.2: Paraphrase portions of a text read aloud, or information presented in diverse media and formats, including visually, quantitatively, and orally.

CCSS.ELA-Literacy.SL.5.3: Identify the reasons and evidence a speaker provides to support particular points.

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CCSS.ELA-Literacy.SL.5.4: Report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace.

ISAAC Vision of the Graduate Competencies

Competency 1: Write effectively for a variety of purposes.

Competency 2: Speak to diverse audiences in an accountable manner.

Competency 3: Develop the behaviors needed to interact and contribute with others on a team.

Competency 4: Analyze and solve problems independently and collaboratively.

Competency 5: Be responsible, creative, and empathetic members of the community.

Unit Content Overview

1. Matter Is Made of Tiny Particles

- Define matter and identify examples of solids, liquids, and gases.
- Develop models showing that matter is made of particles too small to see.
- Explore how particle motion explains differences between states of matter.
- Use diagrams and physical models to represent particle arrangement and movement.

2. Conservation of Matter

- Measure the mass of substances before and after heating, cooling, or mixing.
- Conduct investigations demonstrating that matter is not created or destroyed.
- Record and graph measurement data to analyze changes.
- Use evidence from investigations to explain conservation of matter.

3. Identifying Materials by Their Properties and Forming New Materials

- Observe physical properties such as color, texture, magnetism, hardness, and solubility.
- Measure mass, volume, and other quantifiable properties using scientific tools.
- Compare materials and classify them based on shared properties.
- Identify unknown substances using observational and measurement evidence.
- Investigate what happens when substances are combined.
- Compare mixtures that remain the same with those that form new substances.
- Observe signs of chemical reactions such as temperature change, gas formation, or color change.
- Use investigation results to determine whether new substances were created.

Vocabulary and Key Terms: Matter, particle, atom, model, solid, liquid, gas, properties, physical property, chemical change, physical change, mass, volume, measurement, conservation of matter, mixture, solution, substance, reaction, evidence, observation, investigation, data, graph, temperature, dissolve, classify

Interdisciplinary Connection:

ELA, Math, Humanities

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Daily Learning Objectives with TWPS

Students will be able to...

- Observe and describe examples of matter in everyday life.
 - *What objects around you are made of matter? How do you know?*
- Define matter and identify solids, liquids, and gases. **
 - *How are solids, liquids, and gases similar and different?*
 - *Is air matter? How could we prove it?*
- Develop a model showing that matter is made of tiny particles. **
 - *Why do scientists use models to explain things we cannot see?*
 - *Can something be matter if we cannot see it? Explain.*
- Compare how particles move in solids, liquids, and gases.
 - *How does particle movement explain different states of matter?*
- Measure the mass of materials using scientific tools.
 - *Why is measurement important in science?*
- Investigate measuring matter before and after mixing substances. *
 - *What do you notice about the total mass?*
- Graph measurement data from investigations.
 - *What patterns do you see in your graph?*
- Explain how evidence supports the conservation of matter.
 - *Did the amount of matter change? How do you know?*
- Observe and record physical properties of different materials.
 - *Which properties help you describe each material?*
- Test materials for properties such as magnetism or solubility. *
 - *How can these tests help identify unknown materials?*
- Compare and classify materials based on observations and measurements.
 - *What properties are most useful for identification?*
- Mix different substances and observe results.
 - *What changes do you notice?*
- Investigate whether mixing substances creates a new material. **
 - *What evidence suggests a new substance formed?*
 - *If a solid changes shape, is it still solid? Why or why not?*
- Distinguish between physical and chemical changes.
 - *How can you tell the difference?*
- Record investigation data using tables and scientific notes.
 - *Why is accurate data important?*
- Construct explanations using evidence from investigations.
 - *What evidence supports your conclusion?*
- Communicate findings using models, graphs, and written explanations.
 - *How do scientists share their discoveries?*
- Reflect on how scientists use investigations to understand matter.
 - *How did investigations help you learn about matter?*

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Instructional Strategies/Differentiated Instruction

- Whole group instruction
- Paragraph frames and sentence starters
- Teacher modeling
- Think-write-pair-share and small-group discussions
- Graphic organizers
- Accountable talk
- Homework
- Word walls with visuals
- Small group instruction
- Visual exemplars with teacher and student critiques
- Text and video chunking
- Spiraling back to guiding questions
- Close reading with text-dependent questions

EL Differentiation Strategies

- Key vocabulary, Word Banks and Word Walls with visuals
- TWPS (Think, write, pair, share)
- Pre-reading strategies
- Culturally responsive teaching
- Explicit teacher modeling
- Graphic organizers
- Strategic Grouping
- Non-verbal assessments

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Assessments

FORMATIVE ASSESSMENTS:

- Do Now
- Academic Discourse
- Exit Slips
- Accountable Talk Discussions
- Completed notes
- Completed graphic organizers
- Homework
- Performance Task – “Mystery at the Matter Lab”
 - Teacher’s rubric/scoring guide

SUMMATIVE ASSESSMENTS:

- Quiz: Matter Make Up, Matter Conservation (EU1 and EU2)
- Unit Task: “Mystery at the Matter Lab” (EU1, EU2, and EU3)

Unit Task

Unit Task Name: Mystery at the Matter Lab

Description: Students will take on the role of Forensic Matter Scientists hired to analyze evidence from the demonstration and create an official scientific report for the museum. Using evidence from provided sources and their own investigations, students will prepare a scientific investigation report that answers the museum’s central question: Did matter disappear, stay the same, or turn into something new?

Evaluation: Teacher’s Scoring Guide

Unit Resources

- NewsEla
- Google Slides (Teacher’s)
- Student Journals
- Chromebooks
- ReadWorks
- Virtual Fieldtrips
- Google Classroom
- Mystery Science