Performance Expectations at a Glance

In this unit, students will discover and practice the Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts needed to perform the following Performance Expectations.

<table>
<thead>
<tr>
<th>Performance Expectations</th>
<th>MODULE: Matter</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-PS1-1</td>
<td></td>
</tr>
<tr>
<td>5-PS1-2</td>
<td></td>
</tr>
<tr>
<td>5-PS1-3</td>
<td></td>
</tr>
<tr>
<td>5-PS1-4</td>
<td></td>
</tr>
<tr>
<td>3–5-ETS1-3</td>
<td></td>
</tr>
</tbody>
</table>

Correlations by Module to the NGSS

**MODULE: Matter**

<table>
<thead>
<tr>
<th>5-PS1</th>
<th>Matter and Its Interactions</th>
<th>10, 19, 22–23, 49, 52–54, 55, 57, 58, 59, 61, 62, 63</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-PS1-1</td>
<td>Develop a model to describe that matter is made of particles too small to be seen.</td>
<td>[Clarification Statement: Examples of evidence supporting a model could include adding air to expand a basketball, compressing air in a syringe, dissolving sugar in water, and evaporating salt water.] [Assessment Boundary: Assessment does not include the atomic-scale mechanism of evaporation and condensation or defining the unseen particles.]</td>
</tr>
</tbody>
</table>

**SEP Science and Engineering Practices**

**Developing and Using Models**

Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.

- Develop a model to describe phenomena. (5-PS1-1)

**DCI Disciplinary Core Ideas**

**PS1.A: Structure and Properties of Matter**

- Matter of any type can be subdivided into particles that are too small to see, but even then the matter still exists and can be detected by other means. A model shows that gases are made from matter particles that are too small to see and are moving freely around in space can explain many observations, including the inflation and shape of a balloon and the effects of air on larger particles or objects. (5-PS1-1)

Inquiry activities are in Italics.
### Crosscutting Concepts

<table>
<thead>
<tr>
<th>Scale, Proportion, and Quantity</th>
<th>10, 15, 29, 49, 55, 56, 57, 58, 59, 61, 62, 63, 67</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural objects exist from the very small to the immensely large. (5-PS1-1)</td>
<td>Teacher’s Edition Only: 9, 15</td>
</tr>
</tbody>
</table>

### 5-PS1 Matter and its Interactions

<table>
<thead>
<tr>
<th>5-PS1-2</th>
<th>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. [Clarification Statement: Examples of reactions or changes could include phase changes, dissolving, and mixing that forms new substances.] [Assessment Boundary: Assessment does not include distinguishing mass and weight.]</th>
<th>19, 22–23, 26–27, 36–38, 40, 47, 55, 57</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Teacher’s Edition Only 45</td>
<td></td>
</tr>
</tbody>
</table>

### Science and Engineering Practices

#### Using Mathematics and Computational Thinking

Mathematical and computational thinking in 3–5 builds on K–2 experiences and progresses to extending quantitative measurements to a variety of physical properties and using computation and mathematics to analyze data and compare alternative design solutions.

- Measure and graph quantities such as weight to address scientific and engineering questions and problems. (5-PS1-2)

#### Disciplinary Core Ideas

**PS1.B: Chemical Reactions**

- No matter what reaction or change in properties occurs, the total weight of the substances does not change. (Boundary: Mass and weight are not distinguished at this grade level.) (5-PS1-2)

- Teacher’s Edition Only 45

### Crosscutting Concepts

**Connections to Nature of Science**

**Scientific Knowledge Assumes an Order and Consistency in Natural Systems**

- Science assumes consistent patterns in natural systems. (5-PS1-2)

| 22–23, 24, 25, 26–27 |

**Scale, Proportion and Quantity**

- Standard units are used to measure and describe physical quantities such as weight, time, temperature, and volume. (5-PS1-2),(5-PS1-3)

| 19, 22–23, 26–27, 36–38, 47, 57, 65–70 |

Inquiry activities are in Italics.
### Next Generation Science Standards

<table>
<thead>
<tr>
<th>5-PS1</th>
<th>Matter and Its Interactions</th>
</tr>
</thead>
</table>
| **5-PS1-3** | Make observations and measurements to identify materials based on their properties.  
**Clarification Statement:** Examples of materials to be identified could include baking soda and other powders, metals, minerals, and liquids. Examples of properties could include color, hardness, reflectivity, electrical conductivity, thermal conductivity, response to magnetic forces, and solubility; density is not intended as an identifiable property.  
**Assessment Boundary:** Assessment does not include density or distinguishing mass and weight. | 8–9, 11, 12–13, 14, 17, 22–23, 65–70, 71 |

<table>
<thead>
<tr>
<th>5-PS1 Matter and Its Interactions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>5-PS1-4</strong></td>
</tr>
</tbody>
</table>

### Science and Engineering Practices

#### Planning and Carrying Out Investigations

- Make observations and measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon. (5-PS1-3)

<table>
<thead>
<tr>
<th>5-PS1</th>
<th>Matter and Its Interactions</th>
</tr>
</thead>
</table>
| 5-PS1-3 | Make observations and measurements to identify materials based on their properties.  
**Clarification Statement:** Examples of materials to be identified could include baking soda and other powders, metals, minerals, and liquids. Examples of properties could include color, hardness, reflectivity, electrical conductivity, thermal conductivity, response to magnetic forces, and solubility; density is not intended as an identifiable property.  
**Assessment Boundary:** Assessment does not include density or distinguishing mass and weight. | 8–9, 11, 12–13, 14, 17, 22–23, 65–70, 71 |

### Disciplinary Core Ideas

#### PS1.A: Structure and Properties of Matter

- Measurements of a variety of properties can be used to identify materials.  
**Boundary:** At this grade level, mass and weight are not distinguished, and no attempt is made to define the unseen particles or explain the atomic-scale mechanism of evaporation and condensation.  
(5-PS1-3) | 8–9, 10, 11, 12–13, 14, 16–17, 22–23, 52–54, 57, 65–70 |

### Crosscutting Concepts

#### Scale, Proportion, and Quantity

- Standard units are used to measure and describe physical quantities such as weight, time, temperature, and volume.  
(5-PS1-2),(5-PS1-3) | 17, 19, 22–23, 26–27, 36–38, 47, 57, 65–70 |

Inquiry activities are in Italics.
### Disciplinary Core Ideas (DCI)

#### PS1.B: Chemical Reactions
- When two or more different substances are mixed, a new substance with different properties may be formed. (5-PS1-4)

### Crosscutting Concepts (CCC)

#### Cause and Effect
- Cause and effect relationships are routinely identified, tested, and used to explain change. (5-PS1-4)

### 3–5-ETS1 Engineering Design

#### 3–5-ETS1-3
- Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

### Science and Engineering Practices (SEP)

#### Planning and Carrying Out Investigations
- Planning and carrying out investigations to answer questions or test solutions to problems in 3–5 builds on K–2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions.
- Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered. (3–5-ETS1-3)

### Disciplinary Core Ideas (DCI)

#### Developing Possible Solutions
- Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved. (3–5-ETS1-3)

#### Optimizing the Design Solution
- Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints. (3–5-ETS1-3)

### CCSS Math Connections

- 5.MD.C.3a, b
- 5.MD.C.4

### ELD Connections

- ELD.PI.5.1

---

*Inquiry activities are in Italics.*
Continued from previous page.

| ELD.PI.5.6 | 10, 11, 12–13, 24–25, 40, 42–43, 56, 58, 61  
Teacher's Edition only 28, 30, 39, 60 |
|------------|-----------------------------------------------|

### CCSS ELA/Literacy Connections

| SL.5.1 | 3, 5, 7, 12–13, 22–23, 28, 36–38, 61, 65–70 |
| SL.5.4 | 18, 27, 32, 61, 64 |
| SL.5.5 | 64 |

### ALSO INTEGRATES:

- **SEP Analyzing and Interpreting Data**  
  9, 23, 26–27, 28, 36–38, 52–54, 57, 65–70
- **SEP Asking questions (for science) and defining problems (for engineering)**  
  3, 7, 21, 35, 51  
  Teacher's Edition only
- **SEP Engaging in Argument from Evidence**  
  5, 33, 36–38, 39, 42–43, 46, 47, 49, 52–54, 55, 57, 63
- **SEP Obtaining, Evaluating, and Communicating Information**  
  5, 12–13, 18, 24–25, 27, 40, 42–43, 46, 56, 58, 61, 64, 65–70
- **DCI: Matter and its Interactions**  
  13
- **CCC Systems and System Models**  
  28, 35, 48, 58, 59, 62, 65–70
- **CCC Energy and Matter: Flows, Cycles, and Conservation**  
  19, 26–27, 35, 36–38, 40, 41, 47, 51, 57, 58, 59, 62, 63, 65–70
- **ELA RI.5.7**  
  Teacher's Edition only: 58
- **ELA 5.W.2**  
  41
- **ELA 5.W.8**  
  41
- **ELA L.5.4**  
  10, 11, 24, 25, 40, 56  
  Teacher's Edition only 6, 15
- **ELD PI.5.9**  
  Teacher's Edition only: 32
- **ELD PI.5.11**  
  Teacher's Edition only: 46
- **Math 5.MD.B.2**  
  38

*Inquiry activities are in Italicics.*