### Grade 5

#### 3.2.5.D Physical Science: Matter and Its Interactions

**Students who demonstrate understanding can** 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.

**Clarifying Statement:** Examples of reactions or changes could include phase changes, dissolving, and mixing that form new substances.

**Assessment Boundary:** Assessment does not include distinguishing mass and weight.

### Science and Engineering Practices (SEP)

**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.

### Disciplinary Core Ideas (DCI)

**PS1.A: Structure and Properties of Matter**
- The amount (weight) of matter is conserved when it changes form, even in transitions in which it seems to vanish.

**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.)

### Crosscutting Concepts (CCC)

**Scale, Proportion, and Quantity**
- Standard units are used to measure and describe physical quantities such as weight, time, temperature, and volume.

**Connections to Nature of Science**
- **Scientific Knowledge Assumes an Order and Consistency in Natural Systems**
  - Science assumes consistent patterns in natural systems.

### Pennsylvania Context:

**N/A**

### PA Career Ready Skills:

Identify one’s own strengths, needs, and preferences.

### Connections to Other Standards Content and Practices

<table>
<thead>
<tr>
<th>Standard Source</th>
<th>Possible Connections to Other Standard(s) or Practice(s)</th>
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<tbody>
<tr>
<td>Agriculture (AFNR)</td>
<td>CS.06.01.01.c: Teach others about the impact of foundational cycles within AFNR systems.</td>
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<tr>
<td>Science, Environmental Literacy and Sustainability (NAAEE)</td>
<td>5-8 Strand 1.C. Collecting information: Learners locate and collect quantitative and qualitative information about the environment and environmental topics, using a range of methods and sources. They explain why they used selected information collection methods.</td>
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| **PA Core Standards: ELA**                          | CC.1.2.5.G: Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.  
CC.1.4.5.S: Draw evidence from literary or informational texts to support analysis, reflection, and research, applying grade level reading standards for literature and informational texts.  
CC.1.4.5.V: Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.  
CC.1.4.5.W: Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources.  
CC.1.5.5.A: Engage effectively in a range of collaborative discussions on grade-level topics and texts, building on others’ ideas and expressing their own clearly. |
| **PA Core Standards and Practices: Math**           | MP.2: Reason abstractly and quantitatively.  
MP.4: Model with mathematics.  
CC.2.1.5.C.2: Apply and extend previous understandings of multiplication and division to multiply and divide fractions.  
CC.2.4.5.A.1: Solve problems using conversions within a given measurement system.                                                                                                                                                                                                                                       |
| **PA Standards: Social Studies**                    | N/A                                                                                                                                                                                                                                                                                                                                                                               |
| **Educational Technology (ISTE)**                   | 1.1. Empowered Learner: Students leverage technology to take an active role in choosing, achieving, and demonstrating competency in their learning goals, informed by the learning sciences.                                                                                                                                                                                                                       |
| **Technology and Engineering (ITEEA)**              | STEL-2I: Describe the properties of different materials.                                                                                                                                                                                                                                                                                                                                  |