### Quarter 1

**Unifying Concept**

Students will understand relationships between motion and force; the laws that govern these relationships.

**Reading Focus**
Information/Literature

**Writing Focus**
Narrative, Informative / Explanatory

<table>
<thead>
<tr>
<th>Highly Leveraged¹</th>
<th>Supporting²</th>
<th>Constant³</th>
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**Crosscutting Concepts (CCC)**

- Patterns
- Cause & Effect
- Structure & Function
- Stability & Change
- Systems & System Models
- Scale, Proportion, & Quantity
- Energy & Matter

**Quarter 2

**Unifying Concept**

Students will understand the relationships between force, work, and energy; the conservation of energy in a system; the laws of thermodynamics.

**Reading Focus**
Information/Literature

**Writing Focus**
Narrative, Informative / Explanatory

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**Crosscutting Concepts (CCC)**

- Patterns
- Cause & Effect
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- Systems & System Models
- Scale, Proportion, & Quantity
- Energy & Matter

### Quarter 3

**Unifying Concept**

Students will understand the relationship between circular motion and universal gravitation.

**Reading Focus**
Information/Literature

**Writing Focus**
Narrative, Informative / Explanatory

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**Crosscutting Concepts (CCC)**

- Patterns
- Cause & Effect
- Structure & Function
- Stability & Change
- Systems & System Models
- Scale, Proportion, & Quantity
- Energy & Matter

### Quarter 4

**Unifying Concept**

Students will understand the relationship between harmonic motion and waves.

**Reading Focus**
Information/Literature

**Writing Focus**
Narrative, Informative / Explanatory

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**Crosscutting Concepts (CCC)**

- Patterns
- Cause & Effect
- Structure & Function
- Stability & Change
- Systems & System Models
- Scale, Proportion, & Quantity
- Energy & Matter
## Science and Engineering Practices

<table>
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<tr>
<th>Scale, Proportion, &amp; Quantity</th>
<th>Energy &amp; Matter</th>
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<tbody>
<tr>
<td>Ask questions and define problems</td>
<td>Use mathematics and computational thinking</td>
</tr>
<tr>
<td>Develop and use models</td>
<td>Construct explanations and design solutions</td>
</tr>
<tr>
<td>Plan and carry out investigations</td>
<td>Engage in argument from evidence</td>
</tr>
<tr>
<td>Analyze and interpret data</td>
<td>Obtain, evaluate, and communicate information</td>
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1. **Highly-Leveraged Standards** are essential for students to learn because they have endurance (knowledge and skills relevant throughout a student’s lifetime); leverage (knowledge and skills used across multiple content areas); and essentiality (knowledge and skills necessary for success in future courses or grade levels). This definition for Highly-Leveraged Standards was adapted from the “power standard” definition on the website of the Millis Public Schools, K-12, Massachusetts, USA, 2016.

2. **Supporting Standards** are emphasized during the quarter as they are integral to achieve mastery of the Highly Leveraged Standards. Mastery of these standards are measured using classroom assessments.

3. **Constant Standards** are repeatedly addressed to reinforce grade-level mastery.