### 3-PS2-1 Motion and Stability: Forces and Interactions

<table>
<thead>
<tr>
<th>Science &amp; Engineering Practices</th>
<th>Disciplinary Core Ideas</th>
<th>Performance Expectations</th>
</tr>
</thead>
</table>
| 1 Asking questions (for science) and defining problems (for engineering) | Forces and Motion:  
   - Each force acts on one particular object and has both strength and a direction. An object at rest typically has multiple forces acting on it, but they add to give zero net force on the object. Forces that do not sum to zero can cause changes in the object’s speed or direction of motion. (Boundary: Qualitative and conceptual, but not quantitative addition of forces are used at this level.) | 3-PS2-1  
Students who demonstrate understanding can: |
| 2 Developing and using models | Types of Interactions:  
   - Objects in contact exert forces on each other. | Plan and conduct investigations on the effects of balanced and unbalanced forces on the motion of an object.  
(Connected to 3-PS2-2) |
| 3 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. | Clarification Statement:  
Examples could include an unbalanced force on one side of a ball can make it start moving; and, balanced forces pushing on a box from opposite sides will not produce any motion at all. |
| 4 Analyzing and interpreting data |  | Assessment Boundary:  
Assessment is limited to one variable at a time: number, size, or direction of forces. Assessment does not include quantitative force size, only qualitative and relative. Assessment is limited to gravity being addressed as a force that pulls objects down. |
| 5 Using mathematics and computational thinking |  |  |
| 6 Constructing explanations (for science) and designing solutions (for engineering) |  |  |
| 7 Engaging in argument from evidence |  |  |
| 8 Obtaining, evaluating, and communicating information |  |  |

### Crosscutting Concepts: Cause and Effect
- Cause and effect relationships are routinely identified.

### Oklahoma Academic Standards Connections

<table>
<thead>
<tr>
<th>ELA/Literacy</th>
<th>Mathematics</th>
</tr>
</thead>
<tbody>
<tr>
<td>RI.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.</td>
<td>MP.2 Reason abstractly and quantitatively.</td>
</tr>
<tr>
<td>W.3.7 Conduct short research projects that build knowledge about a topic.</td>
<td>MP.5 Use appropriate tools strategically.</td>
</tr>
<tr>
<td>W.3.8 Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.</td>
<td>3.MD.A.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.</td>
</tr>
</tbody>
</table>

*The performance expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.*
### 3-PS2-2 Motion and Stability: Forces and Interactions

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<tr>
<td>1. Asking questions (for science) and defining problems (for engineering)</td>
<td>Forces and Motion:</td>
<td>3-PS2-2</td>
</tr>
<tr>
<td>2. Developing and using models</td>
<td>• The patterns of an object’s motion in various situations can be observed and measured; when that past motion exhibits a regular pattern, future motion can be predicted from it. (Boundary: Technical terms, such as magnitude, velocity, momentum, and vector quantity, are not introduced at this level, but the concept that some quantities need both size and direction to be described is developed.)</td>
<td>Students who demonstrate understanding can:</td>
</tr>
<tr>
<td>3. 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.</td>
<td></td>
<td>Make observations and/or measurements of the object’s motion to provide evidence that a pattern can be used to predict future motion. (Connected to 3-PS2-1)</td>
</tr>
<tr>
<td>• Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution.</td>
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<td></td>
</tr>
<tr>
<td>4. Analyzing and interpreting data</td>
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<td></td>
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<td>5. Using mathematics and computational thinking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Constructing explanations (for science) and designing solutions (for engineering)</td>
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<td></td>
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<tr>
<td>7. Engaging in argument from evidence</td>
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<tr>
<td>8. Obtaining, evaluating, and communicating information</td>
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</tbody>
</table>

**Crosscutting Concepts: Patterns**

- Patterns of change can be used to make predictions.

**Oklahoma Academic Standards Connections**

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<tr>
<td>W.3.7 Conduct short research projects that build knowledge about a topic.</td>
<td>MP.2 Reason abstractly and quantitatively.</td>
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<tr>
<td>W.3.8 Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.</td>
<td>MP.3 Construct viable arguments and critique the reasoning of others.</td>
</tr>
<tr>
<td></td>
<td>MP.4 Model with mathematics.</td>
</tr>
<tr>
<td></td>
<td>MP.5 Use appropriate tools strategically.</td>
</tr>
<tr>
<td></td>
<td>3.MD.B.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.</td>
</tr>
<tr>
<td></td>
<td>3.N.F.A Develop understanding of fractions as numbers.</td>
</tr>
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*The performance expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.*
### 3-PS2-3 Motion and Stability: Forces and Interactions

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</thead>
</table>
| **Asking questions (for science) and defining problems (for engineering)** | Types of Interactions:  
- Electric, and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other. | **3-PS2-3**  
Students who demonstrate understanding can:  
**Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other.**  
Clarification Statement:  
Examples of an electric force could include the force on hair from an electrically charged balloon and the electrical forces between a charged rod and pieces of paper; examples of a magnetic force could include the force between two permanent magnets, the force between an electromagnet and steel paperclips, and the force exerted by one magnet versus the force exerted by two magnets. Examples of cause and effect relationships could include how the distance between objects affects strength of the force and how the orientation of magnets affects the direction of the magnetic force.  
Assessment Boundary:  
Assessment is limited to forces produced by objects that can be manipulated by students, and electrical interactions are limited to static electricity. |
| **Asking questions and defining problems in grades 3–5 builds on grades K–2 experiences and progresses to specifying qualitative relationships.**  
- Ask questions that can be investigated based on patterns such as cause and effect relationships.  
- Developing and using models  
- Planning and carrying out investigations  
- Analyzing and interpreting data  
- Using mathematics and computational thinking  
- Constructing explanations (for science) and designing solutions (for engineering)  
- Engaging in argument from evidence  
- Obtaining, evaluating, and communicating information |  |

### Crosscutting Concepts: Cause and Effect
- Cause and effect relationships are routinely identified, tested, and used to explain change.

### Oklahoma Academic Standards Connections

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<tr>
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| **RI.3.1** Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.  
**RI.3.3** Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.  
**RI.3.8** Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence).  
**SL.3.3** Ask and answer questions about information from a speaker, offering appropriate elaboration and detail. | **MP.1** Make sense of problems and persevere in solving them.  
**3.MD.B.4** Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters. |

*The performance expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.*
## 3-PS2-4 Motion and Stability: Forces and Interactions

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</thead>
<tbody>
<tr>
<td>① Asking questions (for science) and defining problems (for engineering) Asking questions and defining problems in grades 3–5 builds on grades K–2 experiences and progresses to specifying qualitative relationships. • Define a simple problem that can be solved through the development of a new or improved object or tool.</td>
<td>Types of Interactions: • Electric, and magnetic forces between a pair of objects do not require that the objects be in contact. The sizes of the forces in each situation depend on the properties of the objects and their distances apart and, for forces between two magnets, on their orientation relative to each other.</td>
<td>3-PS2-4 Students who demonstrate understanding can: <strong>Define a simple design problem that can be solved by applying scientific ideas about magnets.</strong></td>
</tr>
<tr>
<td>② Developing and using models ③ Planning and carrying out investigations ④ Analyzing and interpreting data ⑤ Using mathematics and computational thinking ⑥ Constructing explanations (for science) and designing solutions (for engineering) ⑦ Engaging in argument from evidence ⑧ Obtaining, evaluating, and communicating information</td>
<td>Interdependence of Science, Engineering, and Technology: • Scientific discoveries about the natural world can often lead to new and improved technologies, which are developed through the engineering design process.</td>
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</table>

* Connections to Engineering, Technology, and Application of Science

### Crosscutting Concepts: N/A

### Oklahoma Academic Standards Connections

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<tbody>
<tr>
<td>N/A</td>
<td>MP.1 Make sense of problems and persevere in solving them. MP.4 Model with mathematics. 3.MD.B.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters. 3.N.F.A Develop understanding of fractions as numbers.</td>
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*The performance expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.*
### 3-LS1-1 From Molecules to Organisms: Structure and Processes

#### Science & Engineering Practices

1. Asking questions (for science) and defining problems (for engineering)
2. 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 models to describe phenomena.
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Constructing explanations (for science) and designing solutions (for engineering)
7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information

#### Disciplinary Core Ideas

**Growth and Development of Organisms:**
- Reproduction is essential to the continued existence of every kind of organism.
- Plants and animals have unique and diverse life cycles.

#### Performance Expectations

**3-LS1-1**

Students who demonstrate understanding can:

- Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.

**Clarification Statement:**
Changes different organisms go through during their life form a pattern.

**Assessment Boundary:**
Assessment of plant life cycles is limited to those of flowering plants. Assessment does not include details of human reproduction or microscopic organisms.

### Crosscutting Concepts: Patterns

- Patterns of change can be used to make predictions.

### Oklahoma Academic Standards Connections

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<tr>
<td>RI.3.7 Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).</td>
<td>MP.4 Model with mathematics.</td>
</tr>
<tr>
<td>SL.3.5 Create engaging audio recordings of stories or poems that demonstrate fluid reading at an understandable pace; add visual displays when appropriate to emphasize or enhance certain facts or details.</td>
<td>3.NBT Number and Operations in Base Ten</td>
</tr>
<tr>
<td></td>
<td>3.NF Number and Operations—Fractions</td>
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*The performance expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.*
### 3-LS2-1 Ecosystems: Interactions, Energy, and Dynamics

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<th>Science &amp; Engineering Practices</th>
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</table>
| 1. Asking questions (for science) and defining problems (for engineering) | Social Interactions and Group Behavior:  
- Being part of a group helps animals obtain food, defend themselves, and cope with changes.  
- Groups may serve different functions and vary dramatically in size. | 3-LS2-1  
Students who demonstrate understanding can:  
**Construct an argument that some animals form groups that help members survive.**  
Clarification Statement:  
Arguments could include examples of group behavior such as division of labor in a bee colony, flocks of birds staying together to confuse or intimidate predators, or wolves hunting in packs to more efficiently catch and kill prey.  
Assessment Boundary: N/A |
| 2. Developing and using models |  |  |
| 3. Planning and carrying out investigations |  |  |
| 4. Analyzing and interpreting data |  |  |
| 5. Using mathematics and computational thinking |  |  |
| 6. Constructing explanations (for science) and designing solutions (for engineering) |  |  |
| 7. Engaging in argument from evidence |  |  |

**Crosscutting Concepts: Cause and Effect**
- Cause and effect relationships are routinely identified and used to explain change.

### Oklahoma Academic Standards Connections

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| RI.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.  
RI.3.3 Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.  
W.3.1 Write opinion pieces on topics or texts, supporting a point of view with reasons. | MP.4 Model with mathematics.  
3.NBT Number and Operations in Base Ten |

*The performance expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.*
## 3-LS3-1 Heredity: Inheritance and Variation of Traits

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</table>
| 1. Asking questions (for science) and defining problems (for engineering)  
2. Developing and using models  
3. Planning and carrying out investigations  
4. Analyzing and interpreting data  
Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used.  
• Analyze and interpret data to make sense of phenomena using logical reasoning.  
5. Using mathematics and computational thinking  
6. Constructing explanations (for science) and designing solutions (for engineering)  
7. Engaging in argument from evidence  
8. Obtaining, evaluating, and communicating information | Inheritance of Traits:  
• Many characteristics of organisms are inherited from their parents.  
Variation of Traits:  
• Different organisms vary in how they look and function because they have different inherited information. | 3-LS3-1  
Students who demonstrate understanding can:  
**Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.**  
Clarification Statement:  
Patterns are the similarities and differences in traits shared between offspring and their parents, or among siblings. Emphasis is on organisms other than humans.  
Assessment Boundary:  
Assessment does not include genetic mechanisms of inheritance and prediction of traits. Assessment is limited to non-human examples. |

### Crosscutting Concepts: Patterns

- Similarities and differences in patterns can be used to sort and classify natural phenomena.

### Oklahoma Academic Standards Connections

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| **RI.3.1** Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers. | **MP.2** Reason abstractly and quantitatively.  
**MP.4** Model with mathematics. |
| **RI.3.2** Determine the main idea of a text; recount the key details and explain how they support the main idea. | **3.MD.B.4** Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters. |
| **RI.3.3** Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect. | **W.3.2** Write informative/explanatory texts to examine a topic and convey ideas and information clearly. |
| **SL.3.4** Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace. | **SL.3.4** Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace. |

*The performance expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.*
### 3-LS3-2 Heredity: Inheritance and Variation of Traits

#### Science & Engineering Practices
1. Asking questions (for science) and defining problems (for engineering)
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Constructing explanations (for science) and designing solutions (for engineering)

#### Disciplinary Core Ideas

<table>
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<tr>
<th>Inheritance of Traits:</th>
<th>Variation of Traits:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Other characteristics result from individuals’ interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment.</td>
<td>• The environment also affects the traits that an organism develops.</td>
</tr>
</tbody>
</table>

#### Performance Expectations

3-LS3-2
Students who demonstrate understanding can:

**Use evidence to support the explanation that traits can be influenced by the environment.**

Clarification Statement:
Examples of the environment affecting a trait could include normally tall plants grown with insufficient water are stunted; a pet dog that is given too much food and little exercise may become overweight; and animals who teach their offspring skills like hunting.

Assessment Boundary:
N/A

### Crosscutting Concepts: Cause and Effect

- Cause and effect relationships are routinely identified and used to explain change.

### Oklahoma Academic Standards Connections

#### ELA/Literacy

- **RI.3.1** Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
- **RI.3.2** Determine the main idea of a text; recount the key details and explain how they support the main idea.
- **RI.3.3** Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.
- **W.3.2** Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
- **SL.3.4** Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.

#### Mathematics

- **MP.2** Reason abstractly and quantitatively.
- **MP.4** Model with mathematics.
- **3.MD.B.4** Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.

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*The performance expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.*
## 3RD GRADE

### 3-LS4-1 Biological Unity and Diversity

<table>
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</table>
| ① Asking questions (for science) and defining problems (for engineering) | Evidence of Common Ancestry and Diversity:  
• Some kinds of plants and animals that once lived on Earth are no longer found anywhere.  
• Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environments. | 3-LS4-1  
Students who demonstrate understanding can:  
**Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.** |
| ② Developing and using models | | |
| ③ Planning and carrying out investigations | | |
| ④ Analyzing and interpreting data  
Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used.  
• Analyze and interpret data to make sense of phenomena using logical reasoning. | | |
| ⑤ Using mathematics and computational thinking | | |
| ⑥ Constructing explanations (for science) and designing solutions (for engineering) | | |
| ⑦ Engaging in argument from evidence | | |
| ⑧ Obtaining, evaluating, and communicating information | | |

### Crosscutting Concepts: Scale, Proportion, and Quantity
- Observable phenomena exist from very short to very long time periods.

### Oklahoma Academic Standards Connections

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RI.3.2 Determine the main idea of a text; recount the key details and explain how they support the main idea.  
RI.3.3 Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.  
W.3.1 Write opinion pieces on topics or texts, supporting a point of view with reasons.  
W.3.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly.  
W.3.9 Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories. | MP.2 Reason abstractly and quantitatively.  
MP.4 Model with mathematics.  
MP.5 Use appropriate tools strategically.  
3.MD.B.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters. |

*The performance expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.*
3-LS4-2 Biological Unity and Diversity

Science & Engineering Practices

1. Asking questions (for science) and defining problems (for engineering)
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Constructing explanations (for science) and designing solutions (for engineering)

Disciplinary Core Ideas

Natural Selection:
- Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing.

Performance Expectations

3-LS4-2
Students who demonstrate understanding can:

Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving and reproducing.

Clarification Statement:
Examples of cause and effect relationships could be plants that have larger thorns than other plants may be less likely to be eaten by predators; and, animals that have better camouflage coloration than other animals may be more likely to survive and therefore more likely to leave offspring.

Assessment Boundary:
N/A

Crosscutting Concepts: Scale, Proportion, and Quantity
- Observable phenomena exist from very short to very long time periods.

Oklahoma Academic Standards Connections

ELA/Literacy

RI.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
RI.3.2 Determine the main idea of a text; recount the key details and explain how they support the main idea.
RI.3.3 Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.
W.3.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
SL.3.4 Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.

Mathematics

MP.2 Reason abstractly and quantitatively.
MP.4 Model with mathematics.
3.MD.B.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.

*The performance expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.
3-LS4-3 Biological Unity and Diversity

Science & Engineering Practices

1. Asking questions (for science) and defining problems (for engineering)
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Constructing explanations (for science) and designing solutions (for engineering)
7. Engaging in argument from evidence

Crosscutting Concepts: Cause and Effect

- Cause and effect relationships are routinely identified and used to explain change.

Disciplinary Core Ideas

Adaptation:
- For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all.

Performance Expectations

3-LS4-3
Students who demonstrate understanding can:

Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

Clarification Statement:
Examples of evidence could include needs and characteristics of the organisms and habitats involved. The organisms and their habitat make up a system in which the parts depend on each other.

Assessment Boundary:
N/A

Oklahoma Academic Standards Connections

ELA/Literacy

RI.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
RI.3.2 Determine the main idea of a text; recount the key details and explain how they support the main idea.
RI.3.3 Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.
W.3.1 Write opinion pieces on topics or texts, supporting a point of view with reasons.
W.3.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
SL.3.4 Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.

Mathematics

MP.2 Reason abstractly and quantitatively.
MP.4 Model with mathematics.
3.MD.B.3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs.

*The performance expectations marked with an asterisk integrate traditional science content with engineering through a Practice or Disciplinary Core Idea.
3-LS4-4 Biological Unity and Diversity

**Science & Engineering Practices**
1. Asking questions (for science) and defining problems (for engineering)
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Constructing explanations (for science) and designing solutions (for engineering)
7. Engaging in argument from evidence

**Disciplinary Core Ideas**

**Ecosystem Dynamics, Functioning, and Resilience:**
- When the environment changes in ways that affect a place’s physical characteristics, temperature, or availability of resources, some organisms survive and reproduce, others move to new locations, yet others move into the transformed environment, and some die. (secondary to 3-LS4-4)

**Biodiversity and Humans:**
- Populations live in a variety of habitats, and change in those habitats affects the organisms living there.

**Performance Expectations**

3-LS4-4
Students who demonstrate understanding can:

**Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.**

**Clarification Statement:**
Examples of environmental changes could include changes in land characteristics, water distribution, temperature, food, and other organisms.

**Assessment Boundary:**
Assessment is limited to a single environmental change. Assessment does not include the greenhouse effect or climate change.

**Crosscutting Concepts: Systems and System Models**
- A system can be described in terms of its components and their interactions.

**Oklahoma Academic Standards Connections**

**ELA/Literacy**
- RI.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
- RI.3.2 Determine the main idea of a text; recount the key details and explain how they support the main idea.
- RI.3.3 Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.
- W.3.1 Write opinion pieces on topics or texts, supporting a point of view with reasons.
- W.3.2 Write informative/explanatory texts to examine a topic and convey ideas and information clearly.
- SL.3.4 Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.

**Mathematics**
- MP.2 Reason abstractly and quantitatively.
- MP.4 Model with mathematics.

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## 3-ESS2-1 Earth’s Systems

<table>
<thead>
<tr>
<th>Science &amp; Engineering Practices</th>
<th>Disciplinary Core Ideas</th>
<th>Performance Expectations</th>
</tr>
</thead>
</table>
| • Asking questions (for science) and defining problems (for engineering) | Weather and Climate:  ● Scientists record patterns of the weather across different times and areas so that they can make predictions about what kind of weather might happen next. | 3-ESS2-1 Students who demonstrate understanding can:  
**Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.**  
Clarification Statement: Examples of data at this grade level could include average temperature, precipitation, and wind direction.  
Assessment Boundary: Assessment of graphical displays is limited to pictographs and bar graphs. Assessment does not include climate change. |
| • Developing and using models | | |
| • Planning and carrying out investigations | | |
| • Analyzing and interpreting data | | |

**Crosscutting Concepts: Patterns**  
• Patterns of change can be used to make predictions.

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### Oklahoma Academic Standards Connections

<table>
<thead>
<tr>
<th></th>
<th>ELA/Literacy</th>
<th>Mathematics</th>
</tr>
</thead>
</table>
| N/A | MP.2 Reason abstractly and quantitatively.  
MP.4 Model with mathematics.  
MP.5 Use appropriate tools strategically.  
3.MD.A.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.  
3.MD.B.3 Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in bar graphs. | |

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3-ESS2-2 Earth’s Systems

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</tr>
</thead>
<tbody>
<tr>
<td>1. Asking questions (for science) and defining problems (for engineering)</td>
<td>Weather and Climate:</td>
<td>3-ESS2-2</td>
</tr>
<tr>
<td>2. Developing and using models</td>
<td>• Climate describes a range of an area’s typical weather conditions and the extent to</td>
<td>Students who demonstrate understanding can:</td>
</tr>
<tr>
<td>3. Planning and carrying out investigations</td>
<td>which those conditions vary over years.</td>
<td>Obtain and combine information to describe climates in different regions of the world.</td>
</tr>
<tr>
<td>4. Analyzing and interpreting data</td>
<td></td>
<td>Clarification Statement: N/A</td>
</tr>
<tr>
<td>5. Using mathematics and computational thinking</td>
<td></td>
<td>Assessment Boundary: N/A</td>
</tr>
<tr>
<td>6. Constructing explanations (for science) and designing solutions (for engineering)</td>
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<tr>
<td>7. Engaging in argument from evidence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Obtaining, evaluating, and communicating information</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Obtaining, evaluating, and communicating information in 3–5 builds on K–2 experiences and</td>
<td></td>
<td></td>
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<tr>
<td>progresses to evaluating the merit and accuracy of ideas and methods.</td>
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<td></td>
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<tr>
<td>• Obtain and combine information from books and other reliable media to explain phenomena.</td>
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Crosscutting Concepts: Patterns
- Patterns of change can be used to make predictions.

Oklahoma Academic Standards Connections

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<tr>
<td>RI.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.</td>
<td>MP.2 Reason abstractly and quantitatively.</td>
</tr>
<tr>
<td>RI.3.9 Compare and contrast the most important points and key details presented in two texts on the same topic.</td>
<td>MP.4 Model with mathematics.</td>
</tr>
<tr>
<td>W.3.9 Recall information from experiences or gather information from print and digital sources; take brief notes on sources and sort evidence into provided categories.</td>
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### 3-ESS3-1 Earth and Human Activity

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<tbody>
<tr>
<td>1. Asking questions (for science) and defining problems (for engineering) 2. Developing and using models 3. Planning and carrying out investigations 4. Analyzing and interpreting data 5. Using mathematics and computational thinking 6. Constructing explanations (for science) and designing solutions (for engineering) 7. Engaging in argument from evidence Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s). • Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem. 8. Obtaining, evaluating, and communicating information</td>
<td>Natural Hazards:  • A variety of natural hazards result from natural processes.  • Humans cannot eliminate natural hazards but can take steps to reduce their impacts. (Note: This Disciplinary Core Idea is also addressed by 4-ESS3-2.)</td>
<td>3-ESS3-1 Students who demonstrate understanding can: <strong>Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.</strong></td>
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<td></td>
<td>Influence of Engineering, Technology, and Science on Society and the Natural World:  • Engineers improve existing technologies or develop new ones to increase their benefits (e.g., better artificial limbs), decrease known risks (e.g., seatbelts in cars), and meet societal demands (e.g., cell phones).</td>
<td><strong>Clarification Statement:</strong> Examples of design solutions to weather-related hazards could include barriers to prevent flooding, wind resistant roofs, tornado shelters and lighting rods.</td>
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</tbody>
</table>

**Crosscutting Concepts: Cause and Effect**
- Cause and effect relationships are routinely identified, tested, and used to explain change.

### Oklahoma Academic Standards Connections

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<td>W.3.1 Write opinion pieces on topics or texts, supporting a point of view with reasons.</td>
<td>MP.2 Reason abstractly and quantitatively.</td>
</tr>
<tr>
<td>W.3.7 Conduct short research projects that build knowledge about a topic.</td>
<td>MP.4 Model with mathematics.</td>
</tr>
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