

## Grade 1 Science, Unit 2

# Characteristics of Living Things

### Overview

#### Unit abstract

In this unit students are expected to develop understanding of how plants and animals use their external parts to help them survive, grow, and meet their needs, as well as how the behaviors of parents and offspring help offspring survive. The understanding that young plants and animals are like, but not exactly the same as, their parents is developed. The crosscutting concept of patterns is called out as an organizing concept for the disciplinary core ideas. In the first grade performance expectations, students are expected to demonstrate grade-appropriate proficiency in obtaining, evaluating, and communicating information and constructing explanations. Students are expected to use these practices to demonstrate understanding of the core ideas.

#### Essential questions

- What are some ways plants and animals meet their needs so that they can survive and grow?
- How are parents and their children similar and different?

## Written Curriculum

### Next Generation Science Standards

<b>1. Structure, Function, and Information Processing</b>		
Students who demonstrate understanding can:		
<p><b>1-LS3-1: Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.</b> [Clarification Statement: Examples of patterns could include features plants or animals share. Examples of observations could include leaves from the same kind of plant are the same shape but can differ in size; and, a particular breed of dog looks like its parents but is not exactly the same.] [Assessment Boundary: Assessment does not include inheritance or animals that undergo metamorphosis or hybrids.]</p>		
The performance expectations above were developed using the following elements from the NRC document <i>A Framework for K-12 Science Education</i> :		
<p style="text-align: center;"><b>Science and Engineering Practices</b></p> <p><b>Constructing Explanations and Designing Solutions</b></p> <p>Constructing explanations and designing solutions in K–2 builds on prior experiences and progresses to the use of evidence and ideas in constructing evidence-based accounts of natural phenomena and designing solutions.</p> <ul style="list-style-type: none"> <li>▪ Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena. (1-LS3-1)</li> </ul>	<p style="text-align: center;"><b>Disciplinary Core Ideas</b></p> <p><b>LS3.A: Inheritance of Traits</b></p> <ul style="list-style-type: none"> <li>▪ Young animals are very much, but not exactly, like their parents. Plants also are very much, but not exactly, like their parents. (1-LS3-1)</li> </ul> <p><b>LS3.B: Variation of Traits</b></p> <ul style="list-style-type: none"> <li>▪ Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways. (1-LS3-1)</li> </ul>	<p style="text-align: center;"><b>Crosscutting Concepts</b></p> <p><b>Patterns</b></p> <ul style="list-style-type: none"> <li>▪ Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. (1-LS3-1)</li> </ul>
<i>Connections to other DCIs in first grade: N/A</i>		
<i>Articulation of DCIs across grade-levels: 3.LS3.A (1-LS3-1); 3.LS3.B (1-LS3-1)</i>		
<p><i>Common Core State Standards Connections:</i></p> <p><i>ELA/Literacy –</i></p> <p><b>RI.1.1</b> Ask and answer questions about key details in a text. (1-LS3-1)</p> <p><b>W.1.7</b> Participate in shared research and writing projects (e.g., explore a number of “how-to” books on a given topic and use them to write a sequence of instructions). (1-LS3-1)</p> <p><b>W.1.8</b> With guidance and support from adults, recall information from experiences or gather information from provided sources to answer a question. (1-LS3-1)</p> <p><i>Mathematics –</i></p> <p><b>MP.2</b> Reason abstractly and quantitatively. (1-LS3-1)</p> <p><b>MP.5</b> Use appropriate tools strategically. (1-LS3-1)</p> <p><b>1.MD.A.1</b> Order three objects by length; compare the lengths of two objects indirectly by using a third object. (1-LS3-1)</p>		

<b>1. Structure, Function, and Information Processing</b>		
<p>Students who demonstrate understanding can:</p> <p><b>1-LS1-2. Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.</b> [Clarification Statement: Examples of patterns of behaviors could include the signals that offspring make (such as crying, cheeping, and other vocalizations) and the responses of the parents (such as feeding, comforting, and protecting the offspring).]</p>		
<p>The performance expectations above were developed using the following elements from the NRC document <i>A Framework for K-12 Science Education</i>:</p>		
<p style="text-align: center;"><b>Science and Engineering Practices</b></p> <p><b>Obtaining, Evaluating, and Communicating Information</b></p> <p>Obtaining, evaluating, and communicating information in K–2 builds on prior experiences and uses observations and texts to communicate new information.</p> <ul style="list-style-type: none"> <li>▪ Read grade-appropriate texts and use media to obtain scientific information to determine patterns in the natural world. (1-LS1-2)</li> </ul> <p style="text-align: center;">-----</p> <p style="text-align: center;"><b>Connections to Nature of Science</b></p> <p><b>Scientific Knowledge is Based on Empirical Evidence</b></p> <ul style="list-style-type: none"> <li>▪ Scientists look for patterns and order when making observations about the world. (1-LS1-2)</li> </ul>	<p style="text-align: center;"><b>Disciplinary Core Ideas</b></p> <p><b>LS1.B: Growth and Development of Organisms</b></p> <ul style="list-style-type: none"> <li>▪ Adult plants and animals can have young. In many kinds of animals, parents and the offspring themselves engage in behaviors that help the offspring to survive. (1-LS1-2)</li> </ul>	<p style="text-align: center;"><b>Crosscutting Concepts</b></p> <p><b>Patterns</b></p> <ul style="list-style-type: none"> <li>▪ Patterns in the natural world can be observed, used to describe phenomena, and used as evidence. (1-LS1-2)</li> </ul>
<p><i>Connections to other DCIs in first grade: N/A</i></p>		
<p><i>Articulation of DCIs across grade-levels: 3.LS2.D (1-LS1-2)</i></p>		
<p><i>Common Core State Standards Connections:</i></p> <p><i>ELA/Literacy –</i></p> <p><b>RI.1.1</b> Ask and answer questions about key details in a text. (1-LS1-2)</p> <p><b>RI.1.2</b> Identify the main topic and retell key details of a text. (1-LS1-2)</p> <p><b>RI.1.10</b> With prompting and support, read informational texts appropriately complex for grade. (1-LS1-2)</p> <p><i>Mathematics –</i></p> <p><b>1.NBT.B.3</b> Compare two two-digit numbers based on the meanings of the tens and one digits, recording the results of comparisons with the symbols <math>&gt;</math>, <math>=</math>, and <math>&lt;</math>. (1-LS1-2)</p> <p><b>1.NBT.C.4</b> Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning uses. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten. (1-LS1-2)</p> <p><b>1.NBT.C.5</b> Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used. (1-LS1-2)</p> <p><b>1.NBT.C.6</b> Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. (1-LS1-2)</p>		

**Clarifying the standards*****Prior learning***

There are no disciplinary core ideas that are considered prior learning for the concepts in this unit of study.

***Progression of current learning*****Driving question 1**

How are young plants and animals alike and different from their parents?

**Concepts**

- Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.
- Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways.
- Young animals are very much, but not exactly, like their parents. Plants also are very much, but not exactly, like their parents.

**Practices**

- Observe and use patterns in the natural world as evidence and to describe phenomena.
- Make observations (firsthand or from media) to construct an evidence-based account for natural phenomena.
- Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.
  - Examples of patterns could include features plants or animals share.
  - Examples of observations could include that leaves from the same kind of plant are the same shape but can differ in size and that a particular breed of puppy looks like its parents but is not exactly the same.
  - Assessment does not include inheritance or animals that undergo metamorphosis or hybrids.

**Driving question 2**

What types (patterns) of behavior can be observed among parents that help offspring survive?

Concepts	Practices
<ul style="list-style-type: none"> <li>• Scientists look for patterns and order when making observations about the world.</li> <li>• Patterns in the natural world can be observed, used to describe phenomena, and used as evidence.</li> <li>• Adult plants and animals can have young.</li> <li>• In many kinds of animals, parents and the offspring themselves engage in behaviors that help the offspring survive.</li> </ul>	<ul style="list-style-type: none"> <li>• Observe and use patterns in the natural world as evidence and to describe phenomena.</li> <li>• Read grade-appropriate texts and use media to obtain scientific information to determine patterns in the natural world.</li> <li>• Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive. Examples of patterns of behaviors could include               <ul style="list-style-type: none"> <li>– The signals that offspring make, such as crying, cheeping, and other vocalizations</li> <li>– The responses of the parents, such as feeding, comforting, and protecting the offspring.</li> </ul> </li> </ul>

*Integration of content, practices, and crosscutting concepts*

In this unit of study, students observe organisms in order to recognize that many types of young plants and animals are like, but not exactly the same as, their parents. Students also observe how organisms use their external parts to help them survive, grow, and meet their needs, and how the behaviors of parents and offspring help offspring survive. Throughout the unit, students will look for patterns; obtain, evaluate, and communicate information; and construct explanations.

Scientists look for patterns in the natural world and use these patterns as evidence to describe phenomena. Students begin this unit by observing and comparing external features of organisms, looking for patterns in what they observe. They will need opportunities to observe a variety of plants and animals in order to look for similarities and differences in their features. For example, when comparing the shape, size, color, or number of leaves on plants, students begin to notice that plants of the same kind have leaves that are the same shape and color, but the leaves of one plant may differ from another in size or number. When comparing body coverings; number, size, and type of external features (legs, tail, eyes, mouth parts); body size, body coloring, or eye color of animals, students learn that animals of the same kind have the same type of body covering and the same number and types of external features, but the size of the body, the size of external features, body color, and/or eye color of individuals might differ. Making observations like these helps students recognize that young plants and animals look very much, but not exactly, like their parents, and that even though individuals of the same kind of plant or animal are recognizable as similar, they can also vary in many ways.

In addition to observing and documenting similarities and differences in the external features of organisms, students also need opportunities to make direct observations, read texts, or use multimedia resources to determine patterns in the behaviors of parents and offspring that help offspring survive. While both plants and animals can have young, it is the parents of young animals who might engage in behaviors that help their young survive. Some examples of these patterns of behaviors could include the signals that offspring make, such as crying, cheeping, and other vocalizations, and the responses of parents, such as feeding, comforting, and protecting their young.

### Integration of English language arts and mathematics

#### *English language arts*

To integrate the CCSS for English Language Arts into this unit, students need opportunities to read informational texts to gather information about traits and behaviors of organisms. With adult guidance, they identify the main topic, retell key details from texts, and ask and answer questions about key details. Students should also participate in shared research and writing projects. They can gather information from a variety of preselected, grade-level-appropriate texts and resources and use that information to answer questions about traits and behaviors of organisms. In pairs or small groups, students can use pictures and words to create simple books that describe features that parents and offspring share or behaviors that parents and offspring exhibit that help offspring survive.

#### *Mathematics*

To integrate the CCSS for mathematics into this unit, students reason abstractly and quantitatively and use appropriate tools strategically as they collect and organize data, and use it to solve problems. For example, when students gather information about the shape, size, color, and number of leaves on plants, they can:

- Use grade-level-appropriate tools and strategies to measure, compare, and order leaves by length.
- Organize data (e.g., number of leaves) into simple graphs or tables, and then use strategies based on place value, properties of operations, and/or the relationship between addition and subtraction to make comparisons.
- Use drawings and equations as they solve problems (e.g., more or less, total amount, how many in each).

#### *Future Learning*

The following disciplinary core ideas are future learning related to the concepts in this unit of study. By the end of Grade 3, students know that:

- 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.
- Many characteristics of organisms are inherited from parents.
- Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment.
- Different organisms vary in how they look and function because they have different inherited information.
- The environment also affects the traits that an organism develops.

## Number of Instructional Days

*Recommended number of instructional days: 15 (1 day = approximately 30–45 minutes)*

**Note**—The recommended number of days is an estimate based on the information available at this time. Teachers are strongly encouraged to review the entire unit of study carefully and collaboratively to determine whether adjustments to this estimate need to be made.