

4-LS1-1 From Molecules to Organisms: Structures and Processes

California Science Test—Item Content Specifications

# 4-LS1-1 From Molecules to Organisms: Structures and Processes

Students who demonstrate understanding can:

Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.

[Clarification Statement: Examples of structures could include thorns, stems, roots, colored petals, heart, stomach, lung, brain, and skin. Each structure has specific functions within its associated system.] [*Assessment Boundary: Assessment is limited to macroscopic structures within plant and animal systems.*]

| Science and Engineering Practices | Disciplinary Core Ideas | Crosscutting Concepts |
| --- | --- | --- |
| 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).  Construct an argument with evidence, data, and/or a model. | LS1.A: Structure and Function  2. Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction. | Systems and System Models  A system can be described in terms of its components and their interactions. |

## Assessment Targets

Assessment targets describe the focal knowledge, skills, and abilities for a given three-dimensional Performance Expectation. Please refer to the Introduction for a complete description of assessment targets.

### Science and Engineering Subpractice(s)

Please refer to appendix A for a complete list of Science and Engineering Practices (SEP) subpractices. Note that the list in this section is not exhaustive.

7.1 Ability to construct scientific arguments

### Science and Engineering Subpractice Assessment Targets

Please refer to appendix A for a complete list of SEP subpractice assessment targets. Note that the list in this section is not exhaustive.

7.1.1 Ability to identify evidence/data that supports a claim

7.1.2 Ability to develop scientific arguments that are supported by evidence/data

7.1.3 Ability to use reasoning to explain how relevant evidence/data supports or refutes the claim; the reasoning should reflect application of scientific concepts, principles, ideas, and models

### Disciplinary Core Idea Assessment Targets

#### LS1.A.2

* Identify the internal or external structures of selected plants and their primary functions
* Identify the internal or external structures of selected animals and their primary functions
* Describe how the functions of internal and external structures of plants support survival/growth/behavior/reproduction
* Describe how the functions of internal and external structures of animals support survival/growth/behavior/reproduction
* Describe how different structures work together as part of a system to support survival/growth/behavior/reproduction

### Crosscutting Concept Assessment Target(s)

CCC4 Describe a system in terms of its components and their interactions

## Examples of Integration of Assessment Targets and Evidence

Note that the list in this section is not exhaustive.

Task provides a particular plant/animal structure:

* Constructs an argument, containing a claim, evidence/data, and reasoning about how the function of the structure supports survival/growth/behavior/reproduction (7.1.1, LS1.A.2, and CCC4)

Task provides an incomplete argument about how the function of a particular plant/animal structure supports survival/growth/behavior/reproduction:

* Completes the argument about how the function of a particular plant/animal structure supports survival/growth/behavior/reproduction (7.1.1, LS1.A.2, and CCC4)
* Identifies the correct claim that was missing from the argument about how the function of a particular plant/animal structure supports (7.1.1, LS1.A.2, and CCC4)

Task provides evidence to support a claim that the function of a particular internal or external structure supports survival/growth/behavior/reproduction:

* Explains why the evidence/data is or is not relevant and sufficient to justify the claim (7.1.2, LS1.A.2, and CCC4)
* Provides correct reasoning to explain how the evidence/data support the claim (7.1.3, LS1.A.2, and CCC4)

Task provides a claim that the function of a particular internal or external structure supports survival/growth/behavior/reproduction:

* Identifies relevant, valid, and/or reliable piece(s) of evidence/data that support the claim (7.1.2, LS1.A.2, and CCC4)

Task provides multiple pieces of evidence/data from different sources, such as science journals, news reports, and fiction books, or provides arguments that include different amounts of relevant evidence/data to support a claim that the function of a particular internal or external structure supports survival/growth/behavior/reproduction:

* Evaluates the strength of the arguments based on whether they are supported by evidence or data from multiple sources of similar strength and reliability (7.1.1, LS1.A.2, and CCC4)

Task provides a list of arguments with different justifications for a claim(s) about how the function of a particular structure supports survival/growth/behavior/reproduction:

* Applies scientific concepts to correctly select the argument with the most convincing and appropriate justification (7.1.3, LS1.A.2, and CCC4)

## California Environmental Principles and Concepts

* EP2: The long-term functioning and health of terrestrial, freshwater, coastal, and marine ecosystems are influenced by their relationships with human societies.

## Possible Phenomena or Contexts

Note that the list in this section is not exhaustive.

* Structure and/or function of the following:
  + - Tree bark
    - Roots
    - Seeds
    - Stomach
    - Brain
    - Fur

## Common Misconceptions

Note that the list in this section is not exhaustive.

* All plants have similar structures with similar functions.
* All animals have structures and functions like those found in humans.

## Additional Assessment Boundaries

None listed at this time.

## Additional References

[4-LS1-1 Evidence Statement](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/4-LS1-1%20Evidence%20Statements%20June%202015%20asterisks.pdf) <https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/4-LS1-1%20Evidence%20Statements%20June%202015%20asterisks.pdf>

[Environmental Principles and Concepts](http://californiaeei.org/abouteei/epc/) <http://californiaeei.org/abouteei/epc/>

[California Education and the Environment Initiative](http://californiaeei.org/) <http://californiaeei.org/>

The *2016 Science Framework for California Public Schools Kindergarten through Grade 12*

Appendix 1: Progression of the Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts in Kindergarten through Grade 12 <https://www.cde.ca.gov/ci/sc/cf/documents/scifwappendix1.pdf>

Appendix 2: Connections to Environmental Principles and Concepts <https://www.cde.ca.gov/ci/sc/cf/documents/scifwappendix2.pdf>

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