

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

California Science Test—Item Content Specifications

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

Students who demonstrate understanding can:

Support an argument that plants get the materials they need for growth chiefly from air and water.

[Clarification Statement: Emphasis is on the idea that plant matter comes mostly from air and water, not from the soil.]

| 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).  Support an argument with evidence, data, or a model. | LS1.C: Organization for Matter and Energy Flow in Organisms   1. Plants acquire their material for growth chiefly from air and water. | Energy and Matter  Matter is transported into, out of, and within systems. |

## 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

7.2 Ability to compare, evaluate, and critique competing 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

7.1.3 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

7.2.2 Ability to respond to a critique from others by revising an argument after analysis of the reasoning and evidence

7.2.3 Ability to evaluate competing perspectives/claims using reasoning and evidence

### Disciplinary Core Idea Assessment Targets

#### LS1.C.3

* Identify materials plants need for growth, including air and water
* Identify that change in mass or height supports the claim that plants obtain materials needed for growth from air and water

### Crosscutting Concept Assessment Target(s)

CCC5 Identify that matter is transported into, out of, and within systems

## Examples of Integration of Assessment Targets and Evidence

Note that the list in this section is not exhaustive.

Task provides a claim about the materials needed for plant growth:

* Identifies evidence that should be collected to support the claim (7.1.2, LS1.C.3, and CCC5)

Task provides a claim and data from an experiment on plant growth:

* Identifies how the data support the claim about the relationship of soil and plant growth (7.1.2, LS1.C.3, and CCC5)

Task provides data collected during a study of materials needed for plant growth:

* Identifies a claim about plant growth that can be supported by the data (7.1.3, LS1.C.3, and CCC5)
* Describes the reasoning that links the evidence/data to the claim (7.1.3, LS1.C.3, and CCC5)

Task provides two or more different perspectives about the materials required for plant growth:

* Evaluates competing perspectives using the data provided (7.2.3, LS1.C.3, and CCC5)

## California Environmental Principles and Concepts

* EP4: The exchange of matter between natural systems and human societies affects the long-term functioning of both.

## Possible Phenomena or Contexts

Note that the list in this section is not exhaustive.

* Carbon dioxide gas is part of air.
* Oxygen is produced in photosynthesis.
* Molecules of water are used in photosynthesis.
* Plants increasing in mass
* Plants increasing in height

## Common Misconceptions

Note that the list in this section is not exhaustive.

* Plants absorb soil.
* Increasing water levels always increases plant growth.
* Plants do not need air (or gases in the air) to survive.
* Plants must be grown in soil.

## Additional Assessment Boundaries

None listed at this time.

## Additional References

5-LS1-1 Evidence Statement [https://www.nextgenscience.org/sites/default/files/evidence\_statement/black\_white/5-LS1-1 Evidence Statements June 2015 asterisks.pdf](https://www.nextgenscience.org/sites/default/files/evidence_statement/black_white/5-LS1-1%20Evidence%20Statements%20June%202015%20asterisks.pdf)

Environmental Principles and Concepts <http://californiaeei.org/abouteei/epc/>

California Education and the Environment Initiative <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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