

**3-5-ETS1-3 Engineering Design**

California Alternate Assessment for Science—Item Content Specifications

# 3-5-ETS1-3 Engineering Design

| California Science Connector | Focal Knowledge, Skills, and Abilities | Essential Understanding |
| --- | --- | --- |
| Carry out tests in which variables are controlled and failure points are considered to determine which solution best solves the problem. | 1. Ability to carry out tests in which variables are controlled and failure points are considered to determine which solution best solves the problem. | Match possible solutions to a simple problem and recognize a failure point. |

## CA NGSS Performance Expectation

Students who demonstrate understanding can:

**Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.**

## Mastery Statements

Students will be able to:

* Identify a failure point in a solution to a simple problem
* Recognize which of two solutions to a simple problem has a failure point
* Given data from testing two solutions to a problem, identify the solution that best solves the problem and recognize why the other is not the best solution
* Given data from testing two solutions to a problem, identify the solution that best solves the problem and recognize why it is the best solution

## Possible Phenomena or Contexts

*Note that the list in this section is not exhaustive or prescriptive.*

**Possible contexts include the following:**

* Comparing two coats for effectiveness, (e.g., one with a warm hood and one without a hood)
* Noise to identify appropriate or inappropriate interactions between moving parts (e.g., a squeaky door needs lubrication to reduce friction)
* Ice cream melting and dripping from an ice cream cone
* Observations from a simple scientific demonstration with only two variables, (e.g., using two different materials as insulation to keep ice from melting)
* Simple tools that have a weakness that can cause them to break when used, (e.g., a plastic spoon being used to scoop out frozen ice cream)
* A ladder that is not tall enough to reach what is needed

## Additional Assessment Boundaries

* None listed at this time

## Additional References

California Science Test Item Specification for 3-5-ETS1-3

<https://www.cde.ca.gov/ta/tg/ca/documents/itemspecs-3-5-ets1-3.docx>

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

The *2016 Science Framework for California Public Schools Kindergarten through Grade Twelve* <https://www.cde.ca.gov/ci/sc/cf/cascienceframework2016.asp>

Appendix 1: Progression of the Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts in Kindergarten through Grade Twelve

<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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