

4-PS3-3 Energy

California Alternate Assessment for Science—Item Specifications

# 4-PS3-3 Energy

| California Science Connector | Focal Knowledge, Skills, and Abilities | Essential Understanding |
| --- | --- | --- |
| Identify the change in energy (e.g., speeds as objects interact) when objects collide. | 1. Ability to identify the change in energy (e.g., speeds as objects interact) when objects collide.
 | Identify the outcome of a large moving object hitting a small stationary object. |

## CA NGSS Performance Expectation

Students who demonstrate understanding can:

**Ask questions and predict outcomes about the changes in energy that occur when objects collide.** [Clarification Statement: Emphasis is on the change in the energy due to the change in speed, not on the forces, as objects interact.] *[Assessment Boundary*: *Assessment does not include quantitative measurements of energy.]*

## Mastery Statements

Students will be able to:

* Identify the outcome of a larger object colliding with a smaller object
* Identify the object that caused a specified change in energy of another object
* Identify the change in motion of one or both objects when two objects interact
* Identify the change in energy of one or both objects when two objects interact

## Possible Phenomena or Contexts

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

**Possible contexts include the following:**

* Collisions involving two carts
* Collisions involving two balls
* Collisions involving a moving object and a stationary object
* An object strikes another, producing movement

## Additional Assessment Boundaries

* Do not use arrows to represent the magnitude of speed.
* Do not include violent collisions (car crashes, football tackle).

## Additional References

California Science Test Item Specification for 4-PS3-3

<https://www.cde.ca.gov/ta/tg/ca/documents/itemspecs-4-ps3-3.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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