

**4-PS4-2 Waves and Their Applications in Technologies for Information Transfer**

California Alternate Assessment for Science—Item Content Specifications

# 4-PS4-2 Waves and Their Applications in Technologies for Information Transfer

| California Science Connector | Focal Knowledge, Skills, and Abilities | Essential Understanding |
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| Recognize that an object can be seen when light reflected from its surface enters the eye. | 1. Ability to recognize that an object can be seen when light reflected from its surface enters the eye. | Compare the quality of sight before and after dimming a light source. |

## **CA NGSS Performance Expectation**

Students who demonstrate understanding can:

**Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.** *[Assessment Boundary*: *Assessment does not include knowledge of specific colors reflected and seen, the cellular mechanisms of vision, or how the retina works. (Comparisons should be absolute (light vs. dark) rather than incremental changes in brightness.)]*

## Mastery Statements

Students will be able to:

* Identify light as necessary to see
* Identify darkness as a condition that impairs sight
* Identify the resulting views in the presence or absence of light
* Identify the correct path of light that enables a person to see
* Identify that light must enter the eye in order to see
* Identify that light must reflect off an object in order for the object to be seen
* Identify that light must reflect off an object and enter a person’s eye for the person to see the object
* Complete a diagram to create the correct path light must travel in order for an object to be seen

## Possible Phenomena or Contexts

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

**Possible contexts include the following:**

* Removing, turning off, or completely blocking a light source
* Producing shadows by partially blocking a light source
* Using an opaque barrier between an object and an eye
* Using the path of light reflecting off an object to the eye (The angles of incidence and reflection must be depicted accurately.)
* Showing that an object cannot be observed without light reflecting off of its surface

## Additional Assessment Boundaries

None listed at this time

## Additional References

California Science Test Item Specification for 4-PS4-2

<https://www.cde.ca.gov/ta/tg/ca/documents/itemspecs-4-ps4-2.docx>

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>

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