Grade 4

3.2.4.F Physical Science: Waves and Their Applications in Technologies for Information Transfer

Students who demonstrate understanding can *develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.*

Clarifying Statement: N/A

Assessment Boundary: Assessment does not include knowledge of specific colors reflected and seen, the cellular mechanisms of vision, or how the retina works.

Science and Engineering Practices (SEP)	Disciplinary Core Ideas (DCI)	Crosscutting Concepts (CCC)
Developing and Using Models Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions. • Use and/or develop models to describe phenomena.	**Electromagnetic Radiation** • An object can be seen when light reflected from its surface enters the eyes.	**Cause and Effect** • Cause and effect relationships are routinely identified and used to explain change.

Pennsylvania Context: N/A

PA Career Ready Skills: Identify one's own strengths, needs, and preferences.

Connections to Other Standards Content and Practices

Standard Source	Possible Connections to Other Standard(s) or Practice(s)
Agriculture (AFNR)	CS.01.02.01.a: Research technologies used in AFNR systems.
Science, Environmental Literacy and Sustainability (NAAEE)	K-4 Strand 1.F. Working with models and simulations: Learners use models to represent environmental relationships, patterns, and processes.
PA Core Standards: ELA	CC.1.5.4.A: Engage effectively in a range of collaborative discussions on grade-level topics and texts, building on others' ideas and expressing their own clearly.
PA Core Standards and Practices: Math	MP.4: Model with mathematics. CC.2.3.4.A.1: Draw lines and angles and identify these in two-dimensional figures. CC.2.4.4.A.2: Translate information from one type of data display to another.
PA Standards: Social Studies	N/A

Standard Source	Possible Connections to Other Standard(s) or Practice(s)
Educational Technology (ISTE)	1.6. Creative Communicator: Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals.
Technology and Engineering (ITEEA)	STEL-2G: Illustrate how, when parts of a system are missing, it may not work as planned.