Grades 6–8

3.2.6-8.R Physical Science: Waves and Electromagnetic Radiation

Students who demonstrate understanding can *develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials.*

Clarifying Statement: Emphasis is on both light and mechanical waves. Examples of models could include drawings, simulations, and written descriptions.

Assessment Boundary: Assessment is limited to qualitative applications pertaining to light and mechanical waves.

Science and Engineering Practices (SEP)	Disciplinary Core Ideas (DCI)	Crosscutting Concepts (CCC)
Developing and Using Models Modeling in 6–8 builds on K–5 and progresses to developing, using, and revising models to describe, test, and predict more abstract phenomena and design systems. • Develop a model to predict and/or describe phenomena.	**Wave Properties** • A sound wave needs a medium through which it is transmitted. **Electromagnetic Radiation** • When light shines on an object, it is reflected, absorbed, or transmitted through the object, depending on the object's material and the frequency (color) of the light. The path that light travels can be traced as straight lines, except at surfaces between different transparent materials (e.g., air and water, air and glass) where the light path bends. A wave model of light is useful for explaining brightness, color, and the frequency-dependent bending of light at a surface between media. However, because light can travel through space, it cannot be a matter wave, like sound or water waves.	**Structure and Function** • Structures can be designed to serve particular functions by taking into account properties of different materials, and how materials can be shaped and used.

Pennsylvania Context: N/A

PA Career Ready Skills: Explain to others one's own strengths, needs, and preferences specific to a context.

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.

Standard Source	Possible Connections to Other Standard(s) or Practice(s)
Science, Environmental Literacy and Sustainability (NAAEE)	5-8 Strand 1.F. Working with models and simulations: Learners use models to analyze information that support their environmental investigations. They explain the purposes and limitations of these models.
PA Core Standards: ELA	CC.1.5.8.E: Adapt speech to a variety of contexts and tasks.
PA Core Standards and Practices: Math	N/A
PA Standards: Social Studies	N/A
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-3G: Explain how knowledge gained from other content areas affects the development of technological products and systems.