

NGSS CORRELATIONS

WAVES

Crosscutting Concepts		Activity number
Patterns	Patterns can be used to identify cause and effect relationships.	2, 7, 8
	Graphs, charts, and images can be used to identify patterns in data.	1, 3, 7, 9, 13
Structure and Function	Complex and microscopic structures and systems can be visualized, modeled, and used to describe how their function depends on the relationships among its parts; therefore, complex natural and designed structures/systems can be analyzed to determine how they function.	8
	Structures can be designed to serve particular functions by taking into account properties of different materials, and how materials can be shaped and used.	2, 4, 5, 6, 8, 9, 10, 11, 13, 14
Connections to the Nature of Science	Scientific knowledge is based on logical and conceptual connections between evidence and explanations.	9
	Scientific knowledge can describe the consequences of actions but does not necessarily prescribe the decisions that society takes.	15
	Advances in technology influence the progress of science, and science has influenced advanced in technology.	6
Connections to Engineering, Technology, and Applications of Science	Technologies extend the measurement, exploration, modeling, and computational capacity of scientific investigations.	3, 5, 6, 12
Science and Engineering Practices		Activity number
Analyzing and Interpreting Data	Analyze and interpret data to determine similarities and differences in findings.	3
	Construct and interpret graphical displays of data to identify linear and nonlinear relationships.	3, 4
	Analyze and interpret data to provide evidence for phenomena.	8, 9, 11, 13, 14
	Analyze displays of data to identify linear and nonlinear relationships.	1
Developing and Using Models	Develop a model to predict and/or describe phenomena.	2, 5, 7, 8, 9, 13
	Develop a model to describe unobservable mechanisms.	2, 14
Obtaining, Evaluating, and Communicating Information	Integrate qualitative scientific and technical information in written text with that contained in media and visual displays to clarify claims and findings.	3, 4, 5, 6, 12, 15

NGSS CORRELATIONS

WAVES (continued)

Science and Engineering Practices		Activity number
Planning and Carrying Out Investigations	Plan an investigation individually and collaboratively, and in the design: identify independent and dependent variables and controls, what tools are needed to do the gathering, how measurements will be recorded, and how many data are needed to support a claim.	8, 9
	Conduct an investigation and evaluate the experimental design to produce data to serve as the basis for evidence that can meet the goals of the investigation.	14
	Conduct an investigation to produce data to serve as the basis for evidence that meet the goals of an investigation.	7, 8, 9, 10, 11, 13
Using Mathematics and Computational Thinking	Use mathematical representations to describe and/or support scientific conclusions and design solutions.	1, 3, 4, 7, 8
Connections to the Nature of Science	Scientific knowledge is based on logical and conceptual connections between evidence and explanations.	8, 12, 14
	Science findings are frequently revised and/or reinterpreted based on new evidence.	12
Disciplinary Core Ideas		Activity number
Wave Properties (PS4.A)	A simple wave has a repeating pattern with a specific wavelength, frequency, and amplitude.	1, 2, 3, 4, 7
	A sound wave needs a medium through which it is transmitted.	3, 12
Electromagnetic Radiation (PS4.B)	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.	8, 9, 10, 11, 12, 13, 14, 15
	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.	8, 9
	A wave model of light is useful for explaining brightness, color, and the frequency-dependent bending of light at a surface between media.	9, 10, 12
	Because light can travel through space, it cannot be a matter wave, like sound or water waves.	12
Information Technologies and Instrumentation (PS4.C)	Digitized signals (sent as wave pulses) are a more reliable way to encode and transmit information.	5, 6

NGSS CORRELATIONS

WAVES (continued)

	Performance Expectations	Activity number
Waves and Their Applications in Technologies for Information Transfer (PS4)	Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy in a wave. (MS-PS4-1)	7
	Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials. (MS-PS4-2)	13
	Integrate qualitative scientific and technical information to support the claim that digitized signals (sent as wave pulses) are a more reliable way to encode and transmit information than analog signals. (MS-PS4-3)	6

COMMON CORE STATE STANDARDS CORRELATIONS

WAVES

	Common Core State Standards – English Language Arts	Activity number
Reading in Science and Technical Subjects (RST)	Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions. (RST.6-8.1)	3, 6, 12, 15
	Follow precisely a multi-step procedure when carrying out experiments, taking measurements, or performing technical tasks. (RST.6-8.3)	1, 2, 5, 7, 8, 9, 10, 11, 13, 14
	Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic. (RST.6-8.9)	3, 6, 12
Writing in History/ Social Studies, Science, and Technological Subjects (WHST)	Draw evidence from informational texts to support analysis, reflection, and research. (WHST.6-8.9)	5, 6, 15
	Common Core State Standards – Mathematics	Activity number
Mathematical Practice (MP)	Reason abstractly and quantitatively. (MP.2)	1, 2, 3, 11
	Model with mathematics. (MP.4)	1, 3, 4
Ratios and Proportional Reasoning (RP)	Understand the concept of a ratio, and use ratio language to describe a ratio between two quantities. (6.RP.A.1)	1
	Recognize and represent proportional relationships between quantities. (7.RP.A.2)	1