



GSE 8th Physical Science Pacing Guide

Crosscutting Concepts: Cause and Effect; Structure and Function; Energy and Matter; System and System Models

Topics: Waves: Electromagnetic and Mechanical

7-week Instructional Segment

Anchoring Phenomenon	Standard	Sample Lessons	Disciplinary Core Ideas	Science and Engineering Practices	Instructional Notes
<p>Best Seats in the House: In our homes the transfer of energy runs our garage door openers, TV, radios, etc. This instructional segment uses these everyday applications to lead to a larger decision about where to buy tickets for an upcoming concert and designing a new entertainment</p>	<p>S8P4. a, b, c, d, e, f, g</p>	<p>Best Seats in the House: Electromagnetic Waves</p> <p>Best Seats in the House: Sound Waves</p>	<p>From <i>A Framework for K-12 Science Education</i>:</p> <p style="text-align: center;"><i>By the end of grade 8</i></p> <ul style="list-style-type: none"> ● A simple wave has a repeating pattern with a specific wavelength, frequency, and amplitude. ● A sound wave needs a medium through which it is transmitted. ● 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. ● Lenses and prisms are applications of bending light. ● A wave model of light is useful for explaining brightness, color, and the frequency-dependent bending of light at a surface between media (prisms) 	<ul style="list-style-type: none"> ● Developing and using models ● Analyze and interpret data ● Constructing explanations and designing solutions ● Asking questions 	<p>Making explicit connections from the transformation of electrical energy in the home to other energy transformations/transfers that occur as a result of technologies can be one of the underlying premises of this instructional segment. These energy transformations/transfers also connect to the way energy interacts within its environment and how what we understand about this is used to design and engineer new technologies, make building/construction decisions, etc.</p> <p>By the end of this unit, students are using the following language in their speaking and writing during EXPLAIN or ELABORATE.</p> <ul style="list-style-type: none"> ● Electromagnetic wave ● Mechanical wave

venue.			<ul style="list-style-type: none"> ● Because light can travel through space, it cannot be a matter wave, like sound or water waves. ● Many modern communication devices use digitized signals (sent as wave pulses) as a more reliable way to encode and transmit information. 		<ul style="list-style-type: none"> ● Transverse wave ● Longitudinal wave ● Crest ● Trough ● Compression ● Rarefaction ● Density ● Reflection ● Refraction ● Diffraction ● Transmission ● Absorption ● Scattering ● Speed ● Frequency ● Wavelength ● Amplitude ● Convex ● Concave ● Focal length ● Magnification ● Real and virtual image ● Forms of Energy (mechanical (sound), electromagnetic)
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This instructional segment will connect to Energy and Matter: Forces.