A simple wave has a repeating pattern with a specific wavelength, frequency, and amplitude. (MS-PS4-1)

A sound wave needs a medium through which it is transmitted. (MS-PS4-2)

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. (MS-PS4-2)

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. (MS-PS4-2)

A wave model of light is useful for explaining brightness, color, and the frequency-dependent bending of light at a surface between media. (MS-PS4-2)

However, because light can travel through space, it cannot be a matter wave, like sound or water waves. (MS-PS4-2)

Digitized signals (sent as wave pulses) are a more reliable way to encode and transmit information. (MS-PS4-3)

Modeling in 6–8 builds on K–5 experiences and progresses to developing, using, and revising models to describe, test, and predict more abstract phenomena and design systems. Develop a model to describe phenomena. (MS-PS4-2)

Mathematical and computational thinking at the 6–8 level builds on K–5 experiences and progresses to identifying patterns in large data sets and using mathematical concepts to support explanations and arguments. Use mathematical representations to describe and/or support scientific conclusions and design solutions. (MS-PS4-1)
Science and Engineering Practices

**Obtaining, Evaluating, and Communicating Information**

Obtaining, evaluating, and communicating information in 6–8 builds on K–5 experiences and progresses to evaluating the merit and validity of ideas and methods. Integrate qualitative scientific and technical information in written text with that contained in media and visual displays to clarify claims and findings. (MS-PS4-3)

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Crosscutting Concepts

**Patterns**

Graphs and charts can be used to identify patterns in data. (MS-PS4-1)

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Crosscutting Concepts

**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. (MS-PS4-2)

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Crosscutting Concepts

**Structure and Function**

Structures can be designed to serve particular functions. (MS-PS4-3)