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| **Content: MS-PS4-1 (Waves and their Application in Technologies for Information Transfer)** | **Grade Level: 6** |
| **Standard:** Use mathematical representations to describe a simple model for waves that includes how the amplitude of a wave is related to the energy of a wave. |
| **I can statements:*** Characterize physical waves by frequency, wavelength, amplitude and speed
* Apply these properties to the pitch and volume of sound waves and to the wavelength and magnitude of water waves
 |
| **Score 4.0** | **In addition to Score 3.0, in-depth inferences and applications that go beyond what was taught.** | **Sample Activities** |
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|  | **3.5** | In addition to score 3.0 performance, in-depth inferences and applications with partial success. |  |
| **Score 3.0** | **The student:*** Characterize physical waves by frequency, wavelength, amplitude and speed
* Apply these properties to the pitch and volume of sound waves and to the wavelength and magnitude of water waves

**The student exhibits no major errors or omissions.** | * Use the spring or string to demonstrate frequency, wavelength, amplitude and speed
 |
|  | **2.5** | No major errors or omissions regarding 2.0 content and partial knowledge of the 3.0 content. |  |
| **Score 2.0** | **There are no major errors or omissions regarding the simpler details and processes as the student:*** recognizes or recalls specific terminology, such as: frequency, amplitude,

 speed, wavelength, pitch, volume, magnitude as applied to waves**However, the student exhibits major errors or omissions regarding the more complex ideas and processes.** |  |
|  | **1.5** | Partial knowledge of the 2.0 content, but major errors or omissions regarding the 3.0 content. |  |
| **Score 1.0** | **With help, a partial understanding of some of the simpler details and processes and some of the more complex ideas and processes.** |
|  | **0.5** | With help, a partial understanding of the 2.0 content, but not the 3.0 content. |
| **Score 0.0** | **Even with help, no understanding or skill demonstrated.** |