Waves Unit Vocabulary (Teacher’s Guide)

| Word | Definition | Examples |
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| Oscillation | Consistently repeating vibration or motion. |  |
| Medium | A physical substance that carries the wave. The wave medium always returns to its original position after the wave passes through it. | Almost any kind of matter, air, water, or solids, such as steel or rock. |
| Transverse Waves | Bouncy waves when the medium vibrates up and down. | A close up of a logo  Description automatically generated |
| Longitudinal Waves | Stretchy waves when the medium expands (stretches) and compresses (squeezes). | A close up of a logo  Description automatically generated |
| Wave Pulse | A short duration vibration that creates a single displacement traveling through the medium. | A picture containing black, darkness  Description automatically generated |
| Driven Wave | A constant oscillation that creates a continuous displacement or vibration of the medium. | A picture containing black, darkness  Description automatically generated |
| Velocity | The speed that something travels at. If we know the speed something is traveling at and the total time the object was traveling, we can determine the distance it traveled. | Velocity = distance/time  Distance = velocity · time |
| Wavelength  λ  “lambda” | The horizontal distance between the start and end points of one full wave cycle. | A picture containing screenshot, black, darkness  Description automatically generated |
| Amplitude A | The vertical height of a wave, measured from the center line to the top of a peak or the bottom of a trough. | A group of red letters on a black background  Description automatically generated with low confidence |
| Frequency *f* | The number of wavelengths that passes a fixed point in one second. | A picture containing black, darkness  Description automatically generated |
| The Wave Equation | Velocity = Frequency · Wavelength   * Velocity is represented by a V * Frequency is represented by *f* * Wavelength is represented by *λ,* which is the Greek letter “lambda” | v = f λ |
| Triangle of Power | Visual representation of equations to calculate velocity, frequency, and distance of wavelengths. | A picture containing screenshot  Description automatically generated |
| Inverse Relationship | For two interconnected quantities, as one gets bigger, the other gets proportionally smaller, and vice-versa. | *f* → *λ λ****→f*** |
| Interference | When two or more waves combine additively. |  |

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| **Word** | **Definition** | **Examples** |
| Constructive Interference | Waves combine peak + peak or trough + trough to produce a wave of larger amplitude. | A black background with red lines  Description automatically generated with low confidence |
| **Destructive Interference** | Waves combine peak + trough so that amplitudes cancel one another. |  |
| **Interference Patterns** | When two or more freely traveling waves interfere and merge via constructive and destructive interference. | A picture containing water, reflection, outdoor, nature  Description automatically generated |
| **Reflection** | When a wave bounces off a barrier and changes direction of travel. A wave that encounters a hard barrier is flipped on itself. |  |
| **Phase** | The position of one wave in relation to another. |  |
| **In Phase** | Peaks and troughs directly line up. |  |
| **Out of Phase** | Peaks and troughs do not line up. |  |
| **180° Out of Phase** | Peaks and troughs are exactly opposite. |  |
| **Resonance** | When a system vibrates at a single frequency, we call this a standing wave. Only wavelengths that fit within an object will resonate. |  |
| **Refraction** | The fact or phenomenon of light, radio wave, etc. being deflected in passing obliquely through the interface between one medium and another through a medium of varying density. |  |
| **Word** | **Definition** | **Examples** |
| **Absorption** | The process or action by which one thing soaks up or blots out another. |  |
| **Emission** | Something that has been emitted, released, or discharged. |  |