Follow the hyperlink below and then click “Launch” to be directed to the wave virtual lab

<https://www.sascurriculumpathways.com/portal/Launch?id=1200>

**WAVE BASICS**

Introduction

1. Define and illustrate the types of waves
   1. –
   2. –
2. What direction does the medium flow?
   1. Transverse:
   2. Longitudinal:

Experiment

1. Describe the motion of the transverse wave (green) and the medium (red) through which it travels.
2. Describe the motion of the longitudinal wave (green) and the medium (red) through which it travels.

Data

|  |  |  |  |
| --- | --- | --- | --- |
| Transverse Wave | | | |
| Effect of… | Wavelength | Frequency | Amplitude |
| Longer Wavelength | N/A |  |  |
| Shorter Wavelength | N/A |  |  |
| Increasing Frequency |  | N/A |  |
| Decreasing Frequency |  | N/A |  |
| Increasing Amplitude |  |  | N/A |
| Decreasing Amplitude |  |  | N/A |

|  |  |  |  |
| --- | --- | --- | --- |
| Longitudinal Wave | | | |
| Effect of… | Wavelength | Frequency | Amplitude |
| Longer Wavelength | N/A |  |  |
| Shorter Wavelength | N/A |  |  |
| Increasing Frequency |  | N/A |  |
| Decreasing Frequency |  | N/A |  |
| Increasing Amplitude |  |  | N/A |
| Decreasing Amplitude |  |  | N/A |

|  |  |  |
| --- | --- | --- |
| Effect of… | Pitch | Volume |
| Longer Wavelength |  |  |
| Shorter Wavelength |  |  |
| Increasing Frequency |  |  |
| Decreasing Frequency |  |  |
| Increasing Amplitude |  |  |
| Decreasing Amplitude |  |  |

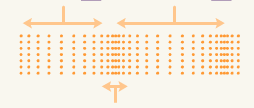
Analysis

1. Describe the similarities and differences between transverse and longitudinal waves.
2. Which type of waves are sound waves?
3. Describe the relationships among wavelength, frequency, and amplitude.

**INTERFERENCE**

Introduction

1. Define the two types of interference
   1. –
   2. –
2. Label the illustrate below…

Data

|  |  |  |
| --- | --- | --- |
| Trial 1 | | |
| Position | Wave | Amplitude |
| A | 1 |  |
| 2 |  |
| 1 & 2 |  |
| B | 1 |  |
| 2 |  |
| 1 & 2 |  |
| C | 1 |  |
| 2 |  |
| 1 & 2 |  |

Interference type:

|  |  |  |
| --- | --- | --- |
| Trial 2 | | |
| Position | Wave | Amplitude |
| A | 1 |  |
| 2 |  |
| 1 & 2 |  |
| B | 1 |  |
| 2 |  |
| 1 & 2 |  |
| C | 1 |  |
| 2 |  |
| 1 & 2 |  |

Interference type:

|  |  |  |
| --- | --- | --- |
| Trial 3 | | |
| Position | Wave | Amplitude |
| A | 1 |  |
| 2 |  |
| 1 & 2 |  |
| B | 1 |  |
| 2 |  |
| 1 & 2 |  |
| C | 1 |  |
| 2 |  |
| 1 & 2 |  |

Interference type:

|  |  |  |  |
| --- | --- | --- | --- |
| Trial 4 | | | |
| Position | Wave | Amplitude | Interference |
| A | 1 |  |  |
| 2 |  |
| 1 & 2 |  |
| B | 1 |  |  |
| 2 |  |
| 1 & 2 |  |
| C | 1 |  |  |
| 2 |  |
| 1 & 2 |  |

|  |  |  |  |
| --- | --- | --- | --- |
| Trial 5 | | | |
| Position | Wave | Amplitude | Interference |
| A | 1 |  |  |
| 2 |  |
| 1 & 2 |  |
| B | 1 |  |  |
| 2 |  |
| 1 & 2 |  |
| C | 1 |  |  |
| 2 |  |
| 1 & 2 |  |

1. Compare pitch & volume of sounds in trials 1-3. Is there a connection between interference you observe and sound you hear?
2. Listen to trials 1, 2, & 4. How does sounds 2 & 4 compare to sound 1?

**Sound & Music**

Introduction

1. “Music is produced when \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ interfere with one another in specific ways. Not all interactions of sound waves produce music; in fact, most produce nothing but \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.”

Data

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Trial 1 | | | | |
| Wave | Frequency | Ratio | Quality | Volume |
| 1 |  |  |  |  |
| 2 |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Trial 2 | | | | |
| Wave | Frequency | Ratio | Quality | Volume |
| 1 |  |  |  |  |
| 2 |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Trial 3 | | | | |
| Wave | Frequency | Ratio | Quality | Volume |
| 1 |  |  |  |  |
| 2 |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Trial 4 | | | | |
| Wave | Frequency | Ratio | Quality | Volume |
| 1 |  |  |  |  |
| 2 |  |  |  |  |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Trial 5 | | | | |
| Wave | Frequency | Ratio | Quality | Volume |
| 1 |  |  |  |  |
| 2 |  |  |  |  |

Analysis

Compare frequency rations for the trials resulting in music with those resulting in noise. How do the numbers they contain differ?