

## Physics Waves Assignments

You must choose the required number of activities from each category. Follow categories in order and turn in assignments as each is completed.

### Learning Objectives:

Describe the basic characteristics of waves such as frequency, wavelength, amplitude, period, and speed.

Utilize mathematical relationships related to wave characteristics.

Identify and distinguish between contrasting types of waves.

Predict how alterations in the medium through which a wave is traveling will effect the properties of that wave.

### #1 Lab– 25pts – Must complete this introductory lab.

[Waves on a String PHET Lab.](#)

Document found on Drive in  
Unit 8 Waves.

### #2 Classwork Activities – 15pts each – Must complete 3 to make a tic-tac-toe.

[Turn in a copy of this board showing your tic-tac-toe.](#)

Draw 5 transverse waves with higher/lower amplitude/frequency. Label each part of each wave and explain how changes are related to energy.	Research echolocation and sonar. Create a mini-poster explaining how sound waves are involved in each of these processes.	Write a short story. Pretend you are a wave. Detail the way you travel, the type of wave you are, and how humans perceive you. Two paragraph minimum.
Complete Doppler Shift Gizmo. Document and directions to access Gizmos found on Drive in Unit 8 Waves.	Choose a material or medium. Show in diagrams with explanations the relationship between pitch and length, size and shape of a vibrating object.	Watch and complete the worksheets for crash course physics #17 traveling waves, #18 sound and #19 physics of music. Also write a 1 paragraph review for one of the videos highlighting main ideas learned. Documents found on Drive in Unit 8 Waves.
Write song lyrics. Use 10 or more wave vocabulary words. Choose a topic: wave properties, light waves, sound waves or electromagnetic spectrum waves. Lyrics must demonstrate understanding of vocabulary terms meaning.	Complete Hearing: Frequency and Volume Gizmo. Document and directions to access Gizmos found on Drive in Unit 8 Waves.	Research sound-proof rooms. Create of list of materials used for soundproofing with short descriptions. Which 2 materials would you recommend for a soundproof room? Explain your choices.

### #3 Test Grade Final Project – 30pts – Must complete 1.

NOTE: This product must show knowledge gained about waves. Looking for correct use/understanding of vocabulary, creativity and effort.

<b>Design a children's book.</b> The book should explain similarities and differences between light waves, sound waves, and electromagnetic spectrum waves. This book should have hand-drawn illustrations and well as text on every page. There should be a minimum of 4 pages for each type of wave and have a book cover you designed as well.	<b>Create a video.</b> Research earthquakes and the different types of seismic waves. The video should give basic information about earthquakes, specific details about seismic waves and answer the following questions: Do earthquakes travel through oceans? What is transferred from place to place as seismic waves propagate? What determines their speed?	<b>Prepare a report.</b> Do research on types of architectural acoustics that would affect a restaurant. What are acoustics problems where many people gather? How do odd-shaped ceilings, decorative panels, draperies and glass windows affect echo and noise? Find the shortest wavelengths that should be absorbed considering sounds range from 500 – 5000 Hz. Then prepare your report for a small restaurant to keep the level of noise to a minimum.
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#### Grading Rubric

Category	A	B	C	D
Content/Required Elements	Goes over and above all the required elements stated in the instructions	Includes all of the required elements as stated in the instructions	Missing one or more of the required elements as stated in the instructions	Several required elements are missing from the assignment
Creativity	Exceptionally clever and unique in showing deep understanding	Thoughtfully and uniquely presented; clever at times in showing understanding of the material	A few original touches enhance the assignment to show some understanding of the material	Shows little creativity, originality and/or effort in understanding the material
Overall Impression	Assignment is engagingly organized and presents material that is captivating for the viewer	Assignment is somewhat organized, complete and holds the attention of the viewer	Assignment is disorganized and incomplete at times and is somewhat able to hold the attention of the viewer	Assignment is incomplete and not easy to follow

[NOTE: We will have one final Google Meet on Friday, May 8<sup>th</sup>. Please join! We will play a final Physics Quizziz Live!!!](#)