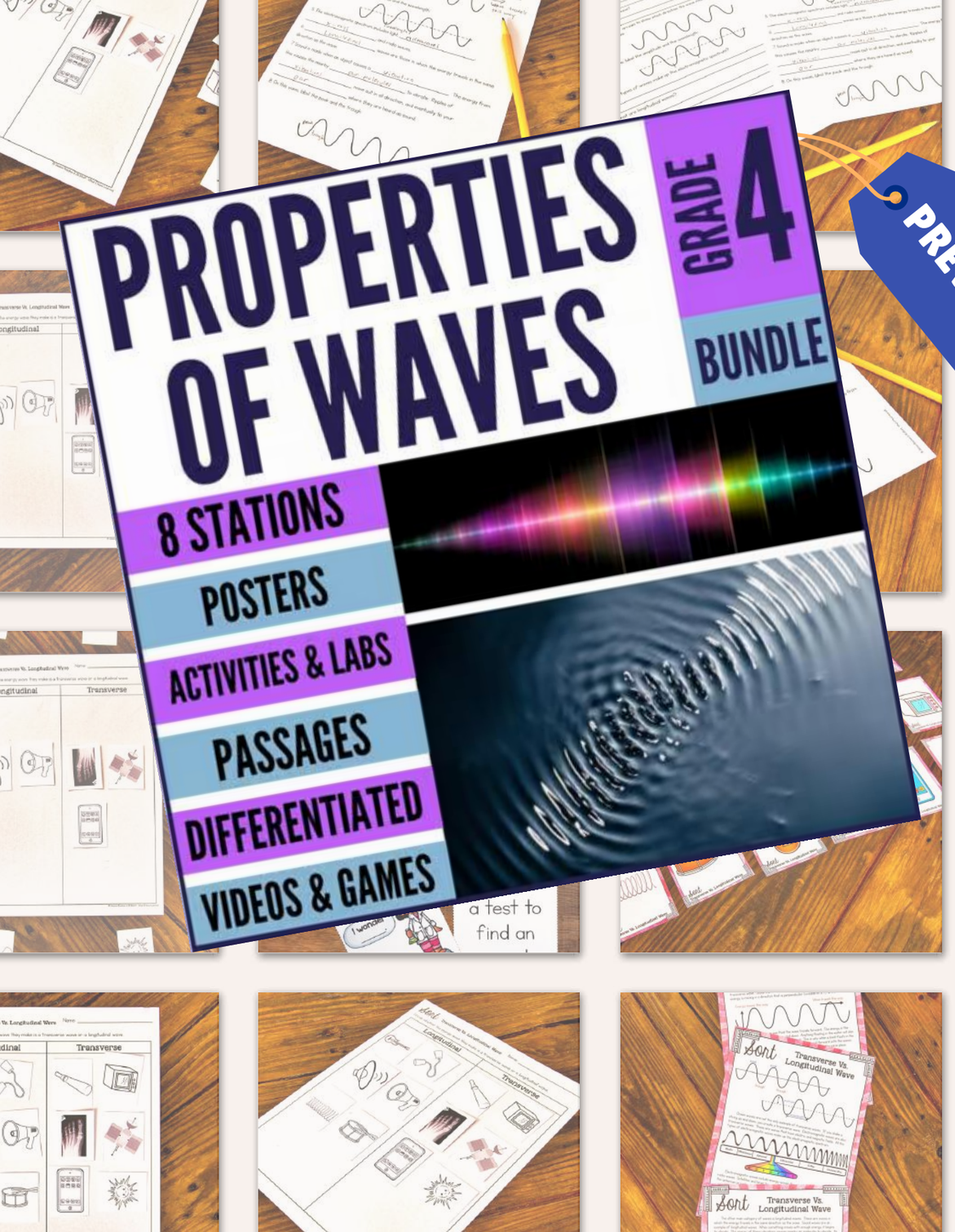


Make Waves & Learn About

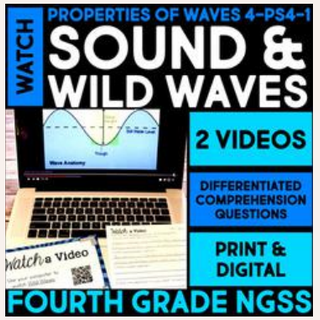
4TH GRADE

PROPERTIES OF WAVES

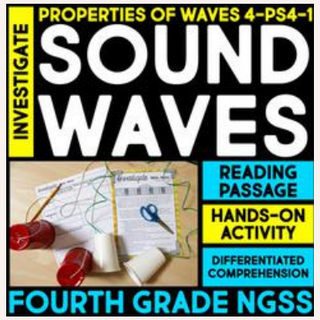
SCIENCE STATIONS UNIT - 4TH GRADE NGSS CENTERS - 4-PS4-1

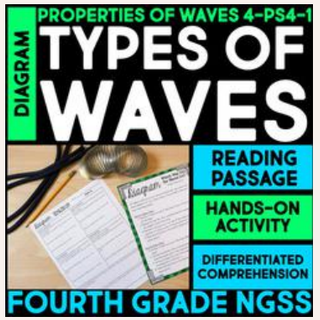
KEEP SCROLLING TO SEE WHAT'S INSIDE!

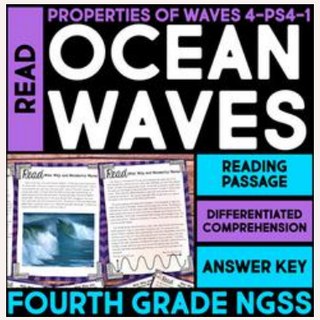
WHAT'S INCLUDED IN THE BUNDLE?

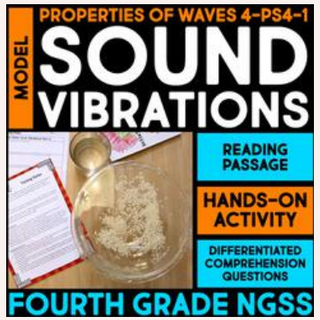


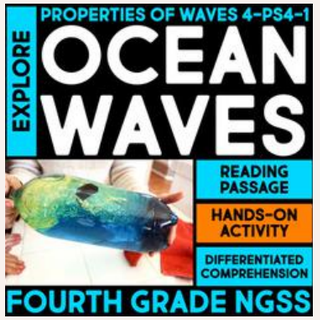


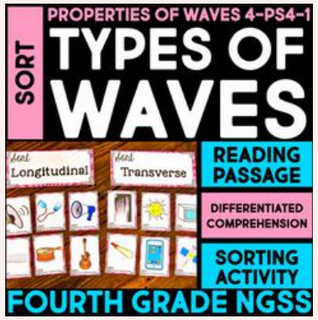












- 8 Science Stations aligned with the NGSS for 4th grade
- 6 Reading passages
- Hands-on activities
- Differentiated comprehension questions
- Digital Videos & Video Games
- Digital Google Slides & Forms

UNIT OVERVIEW

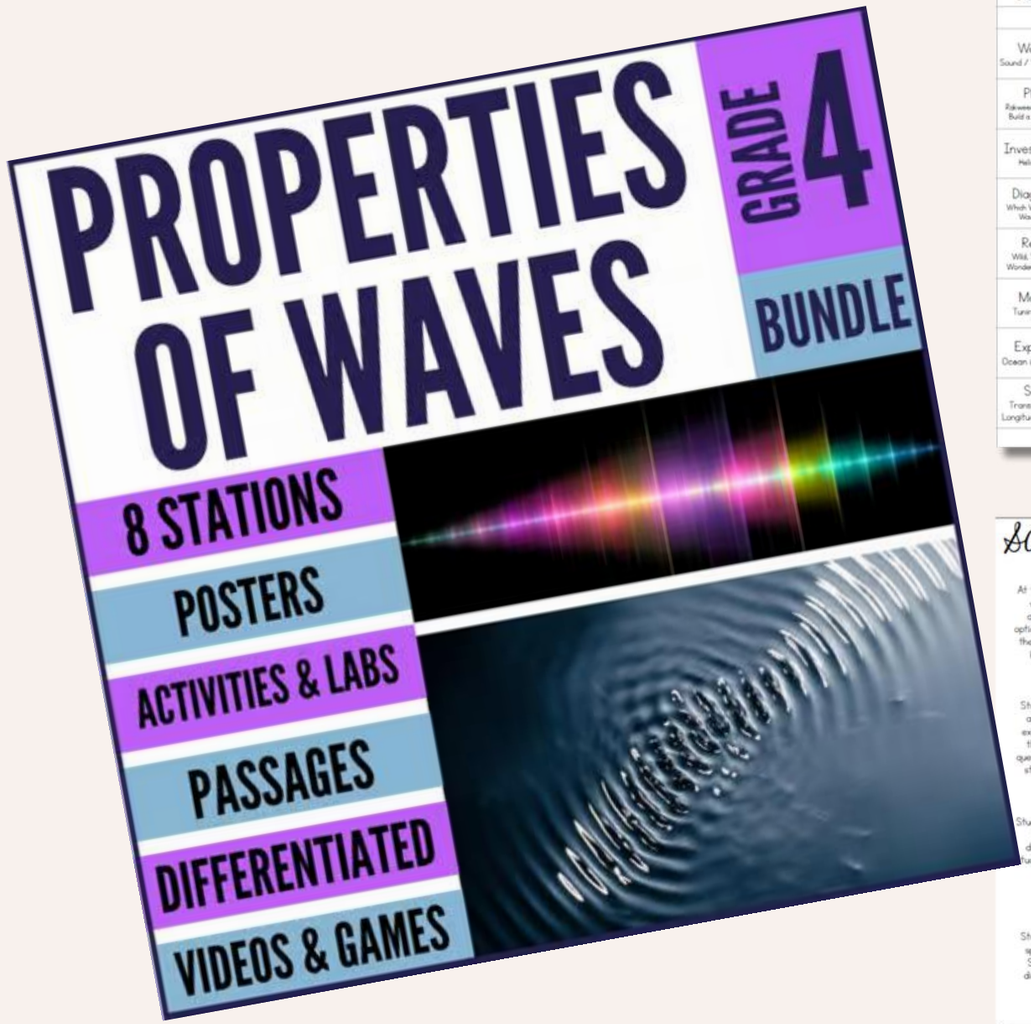




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Science Station	Standard	Objective	Materials	Page
Vocabulary Cards				9
Watch: Sound / Wild Waves	4-PS3-1, 4-PS3-4, (Math) 4.OA.C.5, (ELA) SL.4.2	Students will watch a video about sound or a video about waves. They will answer questions in order to reinforce what they have learned.	Computer / Device Student Sheets Science Journal	27
Play: Rakweed & Sound / Build a Xylophone	4-PS3-1, 4-PS3-4, (Math) 4.OA.C.5, (ELA) SL.4.2	Students will play a game in order to learn about sound. They will answer questions in order to reinforce what they have learned.	Computer Student Sheets Science Journal	45
Investigate: Hello, Hello!	4-PS3-1, 4-PS3-4, (ELA) RI.4.10, RI.4.3, RI.4.9, RI.4.15, RI.4.7	Students will read about sound waves. They will construct a "phone" in order to investigate this. The will answer questions in order to reinforce what they have learned.	See Material's List or Activity Directions Page	61
Diagram: Which Way Do the Waves Go?	4-PS3-1, 4-PS3-4, (Math) 4.OA.C.5, (ELA) RI.4.10, RI.4.3, RI.4.9, RI.4.15, RI.4.7	Students will read about different types of waves. They will perform an activity and draw a diagram of their observations of waves. They will answer questions in order to reinforce what they have learned.	Student sheets 6 foot rope (roughly) Slinky (standard size)	74
Read: Wild, Willy, and Wonderful Waves	4-ESS3-1, 4-PS3-1, 4-PS3-4, (Math) 4.OA.C.5, (ELA) RI.4.10, RI.4.3, RI.4.9, RI.4.15, RI.4.7	Students will read about ocean waves. They will answer questions in order to reinforce what they have learned.	Student Sheets Science Journal Red and blue marker or pencil	89
Model: Tuning Forks	4-PS3-1, 4-PS3-4, (ELA) RI.4.10, RI.4.3, RI.4.9, RI.4.15, RI.4.7	Students will read about sound and model vibrations in sounds in different ways. They will answer questions in order to reinforce what they have learned.	See Material's List or Activity Directions Page	102
Explore: Ocean in a Bottle	4-PS3-1, 4-PS3-4, (Math) 4.OA.C.5, (ELA) RI.4.10, RI.4.3, RI.4.9, RI.4.15, RI.4.7	Students will read about the ocean and explore what they have learned in a simulation. They will answer questions in order to reinforce what they have learned.	See Material's List or Activity Directions Page	114
Sort: Transverse vs. Longitudinal Wave	4-PS3-1, 4-PS3-2, 4-PS3-4, (Math) 4.OA.C.5, (ELA) RI.4.10, RI.4.3, RI.4.9, RI.4.15, RI.4.7	Students will read about transverse and longitudinal waves. They will sort waves into each categories. They will then answer questions in order to reinforce what they have learned.	Student Sheets Scissors Glue	128
Answer Key				144

Table of Contents



Making Waves
Science Stations

The sets of science stations for 4-LS1A and D (especially D) will teach students about what happens when sound enters the ear. Many of the stations below teach how sounds waves are generated. One or more of these stations may be an appropriate review later on when you are introducing the biology of hearing sounds. Alternatively, if you have taught the biology of sound reception first, you may want to review with students what happens to the sound waves when they are picked up by the ear.

In Fourth Grade, the Engineering Standards are incorporated within the Disciplinary Core Ideas (DCI) of these science standards. For this reason, we incorporated the engineering standards within the science stations for the Physical, Life, and Earth Science standards. For example, In 4-PS3, 4-ETS1A is listed as one of the DCIs. We created the 4-PS3 station set to include, not only the physical science concept of "energy," but also the engineering practice of "defining engineering problems." We will always use the "Investigate" science station in the science station set to meet this engineering DCI, and may use 1 or more other station as well.

These Science Stations have several different ways students can display their understanding. Most of the variations are similar to each other, but differentiated for various classrooms and learning styles. Included are worksheets for both short-answer and fill-in-the-blank and task cards for both short-answer and multiple choice responses. To provide even more support, give students a word list for the fill-in-the-blank options. Also included are vocabulary cards in two formats which could become a ninth station if needed.

Students are encouraged to use their Science Journals with the task cards, but worksheets are provided as well. Use the checklist to monitor student progress through the stations. The Science Stations are designed to last about 20 minutes each. Students may do one a day for 8 days or 2 a day for four days. The following checklists will help you organize the stations.

Watch a Video
Students will watch a video about sound or a video about waves. They will answer questions in order to reinforce what they have learned.

Play a Video Game
Students will play a game in order to learn about sound. They will answer questions in order to reinforce what they have learned.

Investigate
Students will read about sound waves. They will construct a "phone" in order to investigate this. The will answer questions in order to reinforce what they have learned.

Draw a Diagram
Students will read about different types of waves. They will perform an activity and draw a diagram of their observations of waves. They will answer questions in order to reinforce what they have learned.

Read a Passage
Students will read about ocean waves. They will answer questions in order to reinforce what they have learned.

Create a Model
Students will read about sound and model vibrations in sounds in different ways. They will answer questions in order to reinforce what they have learned.

Explore
Students will read about the ocean and explore what they have learned in a simulation. They will answer questions in order to reinforce what they have learned.

Sort
Students will read about transverse and longitudinal waves. They will sort waves into each categories. They will then answer questions in order to reinforce what they have learned.

Background Information



Science Stations Overview

Watch a Video
At this station, students will watch a video relevant to the topic and answer questions. You have the option of the included worksheet with the questions or use task cards and have students respond in their science journals.

Play a Video Game
Students play an online video game and answer questions about the experience. You have the option of the included worksheet with the questions or use task cards and have students respond in their science journals.

Investigate
Students use materials to investigate the science topic by following directions and recording results. Students answer questions about the investigation.

Draw a Diagram
Students draw and label a diagram specific to certain requirements. Students then explain how their diagram meets the requirements.

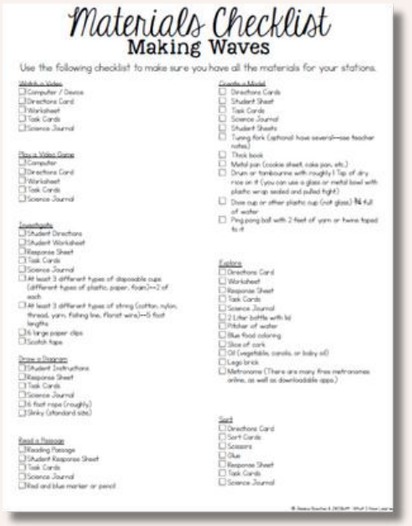
Read a Passage
Students read a short passage about the topic and answer questions about the information in the passage. You have the option of the included worksheet with the questions or use task cards and have students respond in their science journals.

Create a Model
Students use materials to illustrate the science concept and answer questions. You have the option of the included worksheet with the questions or use task cards and have students respond in their science journals.

Explore
Students create a sample and manipulate it using the new science concepts they have learned. Students answer question based on the effects.

Sort
Students sort cards into groups or put them in a specific order. Students record the sort and then describe their reasoning.

Science Station Overview



Materials Checklist
Making Waves

Use the following checklist to make sure you have all the materials for your stations.

Watch a Video
- ☐ Computer / Device
- ☐ Directions Card
- ☐ Worksheet
- ☐ Task Cards
- ☐ Science Journal

Play a Video Game
- ☐ Computer
- ☐ Directions Card
- ☐ Worksheet
- ☐ Task Cards
- ☐ Science Journal

Investigate
- ☐ Student Directions
- ☐ Student Worksheet
- ☐ Response Sheet
- ☐ Task Cards
- ☐ Science Journal
- ☐ At least 3 different types of disposable cups (different types of plastic, paper, foam)—2 of each
- ☐ At least 3 different types of string (cotton, nylon, thread, yarn, fishing line, Planet wire)—5 foot lengths
- ☐ 16 large paper clips
- ☐ Scotch tape

Draw a Diagram
- ☐ Student Instructions
- ☐ Response Sheet
- ☐ Task Cards
- ☐ Science Journal
- ☐ 6 foot rope (roughly)
- ☐ Slinky (standard size)

Read a Passage
- ☐ Reading Passage
- ☐ Student Response Sheet
- ☐ Task Cards
- ☐ Science Journal
- ☐ Red and blue marker or pencil

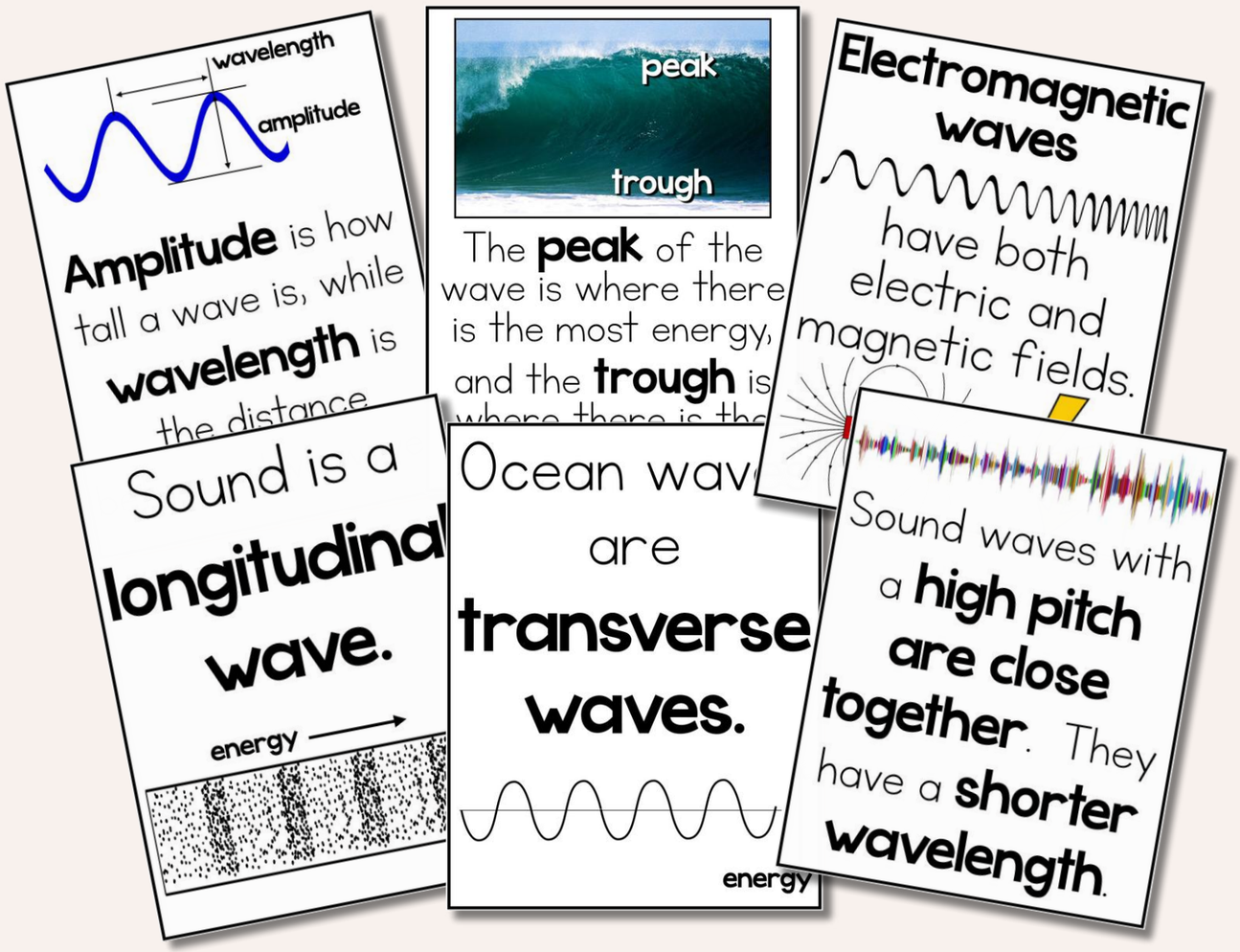
Create a Model
- ☐ Directions Cards
- ☐ Student Sheet
- ☐ Task Cards
- ☐ Science Journal
- ☐ Student Sheets
- ☐ Tuning fork (optional have several—see teacher notes)
- ☐ Thick book
- ☐ Metal pan (cookie sheet, cake pan, etc.)
- ☐ Drum or tambourine with roughly 1 Tsp. of dry rice on it (you can use a glass or metal bowl with plastic wrap sealed and pulled tight)
- ☐ Dixie cup or other plastic cup (not glass) ¾ full of water
- ☐ Ping pong ball with 2 feet of yarn or twine taped to it

Explore
- ☐ Directions Card
- ☐ Worksheet
- ☐ Response Sheet
- ☐ Task Cards
- ☐ Science Journal
- ☐ 2 Liter bottle with lid
- ☐ Pitcher of water
- ☐ Blue food coloring
- ☐ Slice of cork
- ☐ Oil (vegetable, canola, or baby oil)
- ☐ Lego brick
- ☐ Metronome (There are many free metronomes online, as well as downloadable apps.)

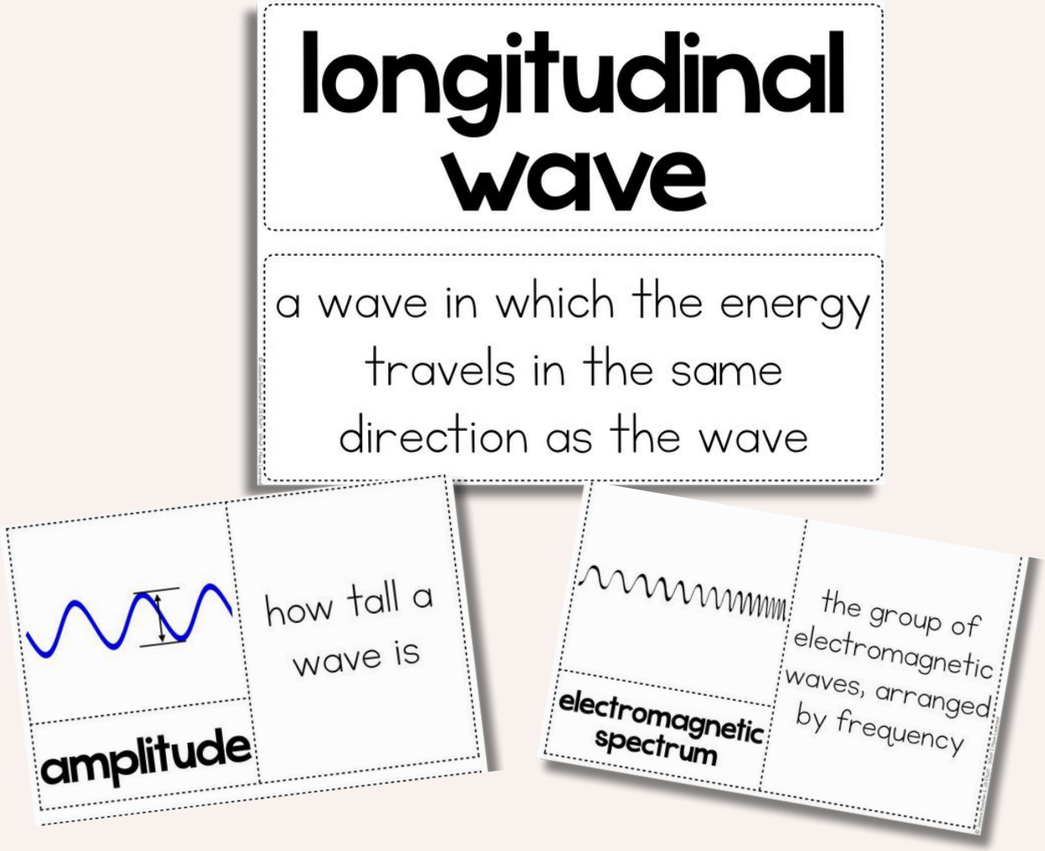
Sort
- ☐ Directions Card
- ☐ Sort Cards
- ☐ Scissors
- ☐ Glue
- ☐ Response Sheet
- ☐ Task Cards
- ☐ Science Journal

Materials Checklist

BIG IDEA POSTERS

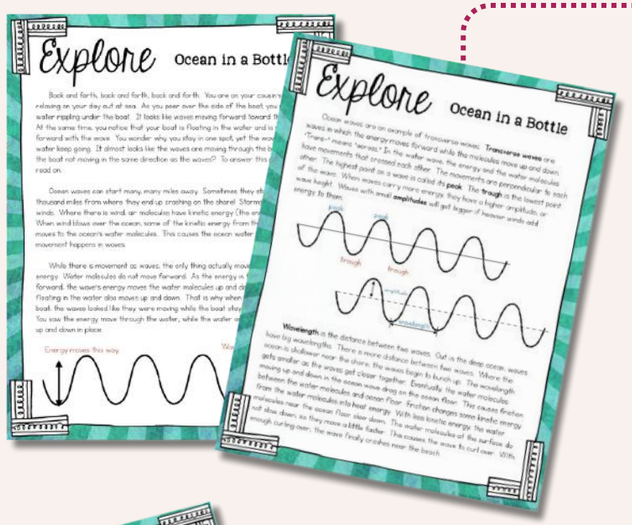


VOCABULARY CARDS IN TWO FORMATS

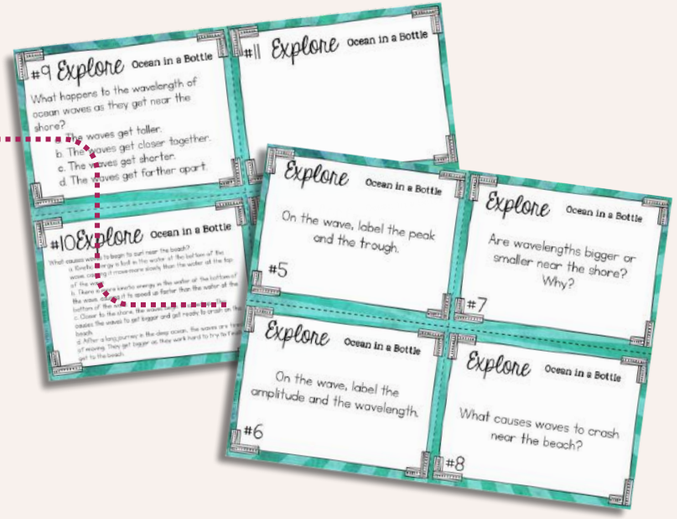


EACH STATION HAS

✓STUDENT DIRECTIONS ✓ACTIVITY ✓DIFFERENTIATED COMPREHENSION QUESTIONS



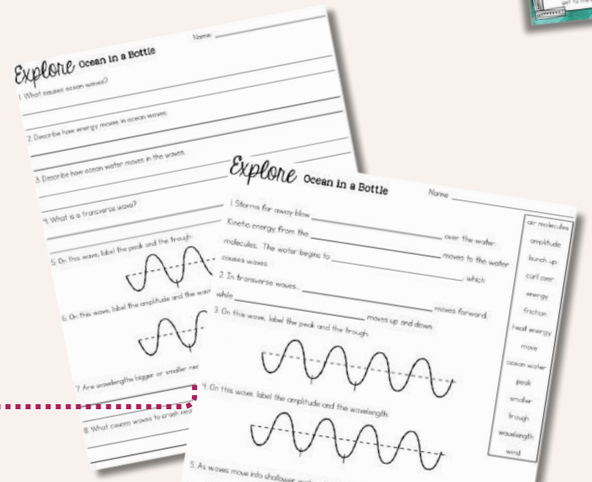
READING PASSAGE



TASK CARDS IN TWO FORMATS



ACTIVITY & RECORDING SHEETS

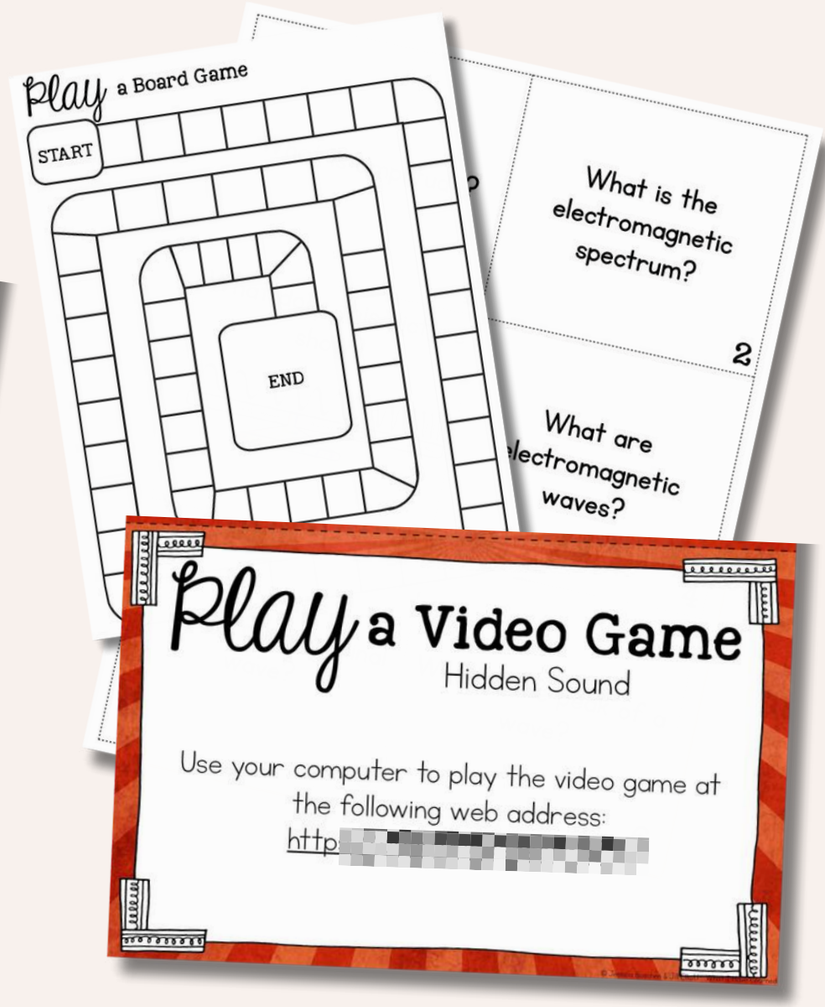


SHORT ANSWER & FILL-IN-THE-BLANK WORKSHEETS

Most stations also include additional reading to build background knowledge and an extra worksheet to help organize the new information.

A SAMPLE OF SOME OF THE PAGES IN EACH SECTION





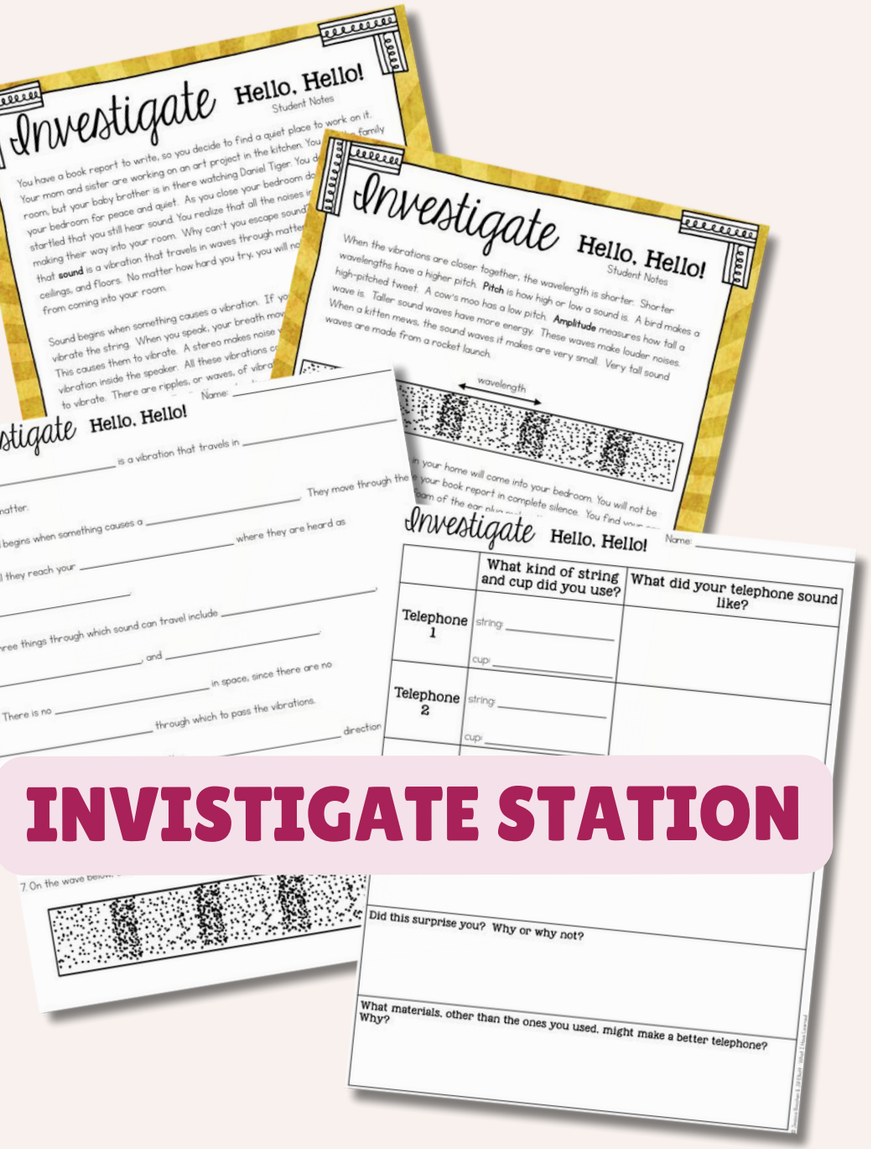


WATCH STATION

PLAY STATION

READ STATION

A SAMPLE OF SOME OF THE PAGES IN EACH SECTION



INVISTIGATE STATION

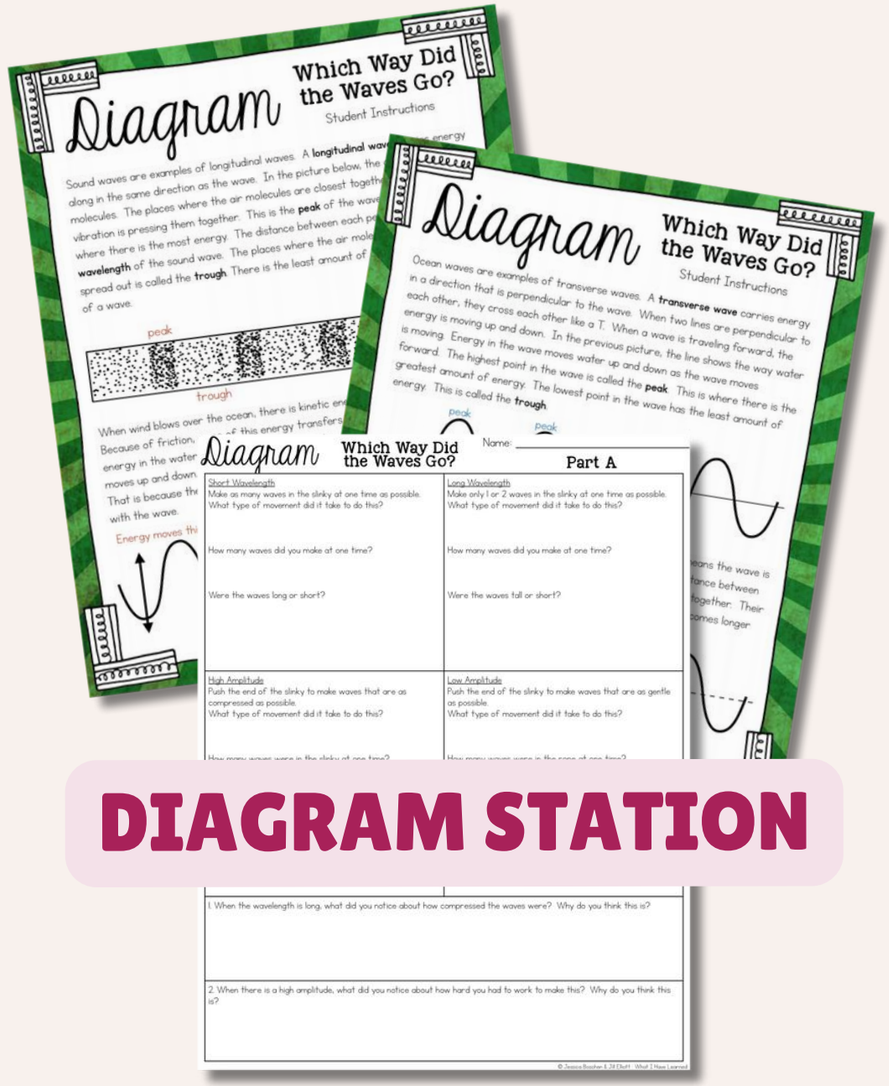
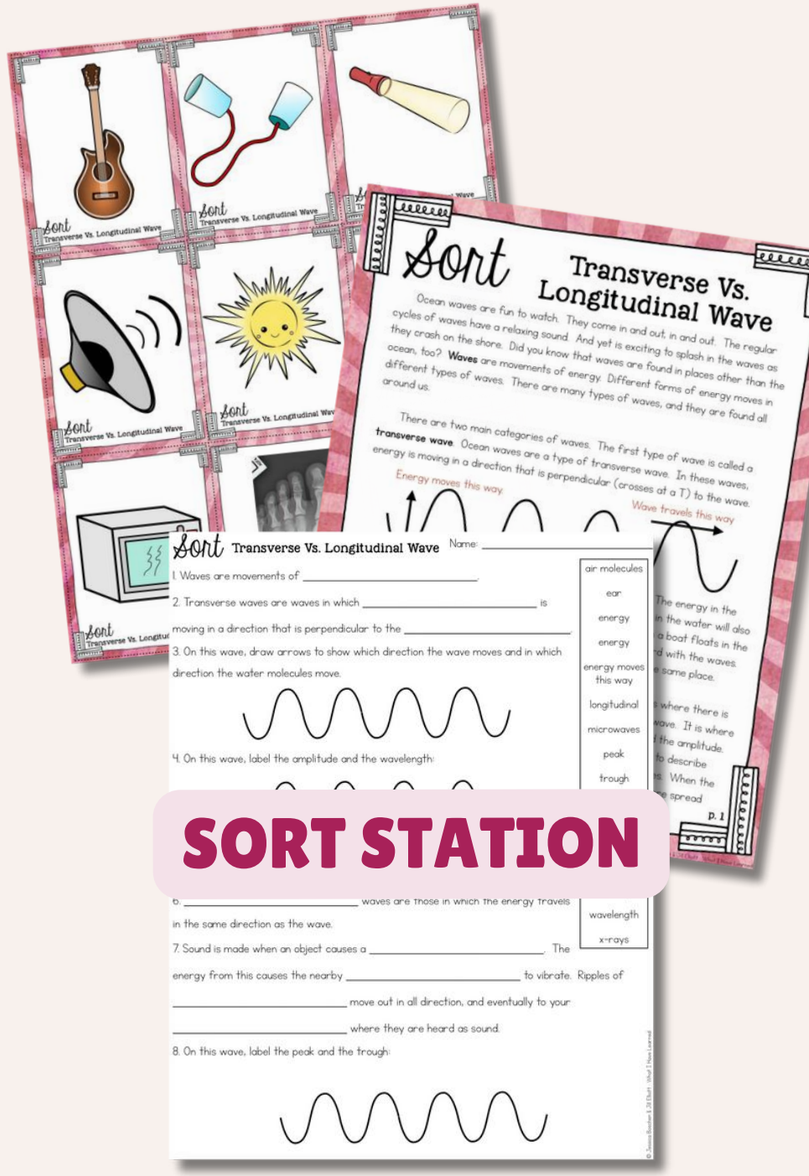


DIAGRAM STATION



SORT STATION

WATCH • PLAY • INVESTIGATE • DIAGRAM • READ • MODEL • EXPLORE • SORT

PROPERTIES OF WAVES ACTIVITIES

SUGGESTED USES

Learning Stations

Use all eight stations or just a few as learning stations that students complete at their own pace.

Science Centers

Set up a rotation where students visit each center to complete the activities.

Whole Class

Use the activities in a whole class format.

Small Group

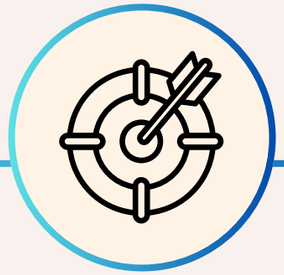
Use the activities with a small group who need extra help.

YOU WILL LOVE THIS BECAUSE



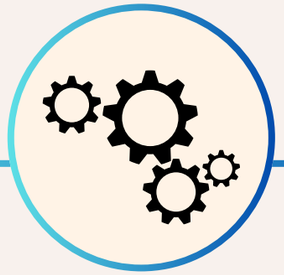
Hands-On Exploration

Each science center is a mini laboratory. Students touch, mix, and observe. Teachers witness those “aha” moments.



Aligned with NGSS

These stations aren’t just random; they’re laser-focused on Next Generation Science Standards. No more curriculum guesswork!



Engineering Integration

The engineering standards woven in? It’s like building surfboards for sound waves. Teachers become wave architects.



All activities have the same basic components:

★ Student Directions
★ Short Answer Worksheet
★ Fill-in-the-Blank Worksheet
★ Cut & Paste Worksheet
★ Short Answer Task Cards
★ Multiple Choice Task Cards

Some activities have more reading to build background knowledge and additional worksheets or activity sheets to help organize the new information.



NOT ALL VERSIONS OF THE PAGES ARE DISPLAYED ON THE FOLLOWING PAGES, BUT ALL ARE IN EACH RESOURCE

DIGITAL VERSIONS



- ✔ Google Forms and/or
- ✔ Google Slides for every station
- ✔ Videos
- ✔ Video Games
- ✔ Digital Crossword Puzzles & Word Searches

Answer keys provided



TEACHERS LOVE IT!

This resource is FULL of different and engaging ways to learn about and assess understanding of waves. My students loved it.

Judith H.



This was a great resource to teach students about the concept of waves for our expo unit. It was a fun and engaging tool to use!

Rosaland T.



My passion is making learning accessible to all students.
I love scaffolding learning, breaking down the concepts and building them up so that students can see the connections.
I love figuring out the small components that build up to the big ideas and helping students see it all.



teach MATH | teach SCIENCE | teach READING | teach WRITING

What I have LEARNED