

UNIT 1

Introduction to Waves

Big Idea

Waves transfer energy and interact in predictable ways.

6-8-J_CNLAESE589435_140P

Background photo: Objective: to show the predictable pattern of properties of waves
Spec Idea: [photo]: a photo of Henderson waves bridge

The seven undulating waves of the Henderson Wave Bridge, a pedestrian walkway in Singapore, illustrate some of the properties of waves.

What do you think?

A surfer takes advantage of a wave's energy to catch an exciting ride. What other properties of waves might help a surfer "catch a wave"?

The higher the ocean wave, the farther the surfer can travel.

6-8-J_CNLAESE589435_141P

Inset Photo: Objective: to show of applied use of the properties of waves
Spec Idea: [photo]: a photo of someone surfing.

1

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6J_CNLAESE589435_U010.indd 1

3/7/11 2:59:15 PM

Answers

Sample answer: The surfer knows that waves are predictable and can use prior experience with waves to anticipate frequency or height.

InCopy Notes

- 1. File CED by BPN 2/22/11.

InDesign Notes

- 1. DSN-I have altered the layout to accomodate the caption -PR 1/14
- 2. DSN- The orange color fo th e 1st caption seems a little odd. Can it be white? -PR 1/14

Answers

1. Sketch should show a wave. Labels may include length, width, or frequency.

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Answers

1. Sketches may identify crest, trough, and wavelength.
2. Answers may include information that the FCC controls the spectrum, a radio or TV station must apply for a license to use a particular frequency, and information about the controversial shrinkage of independent radio ownership in the United States.
- 3A. call signs will vary; AM radio frequency should be between 535 and 1705 kHz; range is approximately 200 feet (61 meters) from the carrier power line
- 3B. Sample answer: The cost of a small broadcasting kit, info on other community stations, licensing requirements (campus radio Stations, or carrier current stations, do not require a license to set up and operate).
- 3C. Sample answer: To increase the listening area of the station would require more broadcast power and would require applying for a license.

InCopy Notes

DSN: Need a space for drawing under the first three WOLs. Also need 3 WOLs after the second question in part 1 (no WOS for second part). EBR 1/19

1. DSN: Add caption to radio dial photo: Each number on a radio dial represents a different wave frequency. JMc 2/18/11

2. DSN: It is ok to remove as much as 1/3 of the WOS for the radio dial caption--students are simply drawing a simple sine wave and adding labels [pjm-7357-3/1/11].

CITIZEN SCIENCE

Hit the Airwaves

When you hear the word *waves*, you probably think of waves in an ocean. But you encounter waves every day. For example, radio stations use airwaves to broadcast sounds to an audience.

1 Think about It

What do you know about the properties of waves? Sketch and label two full waves in the space below to show your current understanding of waves.

Each number on a radio dial represents a different wave frequency.



12345

InDesign Notes

1. Ed: Please provide the detailed content text for page 2.
1. EDH/DSN: I think #1 need WOLs, no? -PR 1/14
2. DSN: 6-8-J_CNLAESE589435_142p This art missing in mediaBin Please update PMG 2/11

2 Ask a Question

How does the Federal Communications Commission (FCC) assign the broadcast frequencies for radio and television stations? You might be surprised to discover that the FCC also assigns frequencies for devices that use radio waves. Such devices include garage-door openers and radio-controlled toys. With a partner, research this topic and share your findings with your class.

3 Make a Plan

A Choose a call sign, broadcast frequency (has to be AM), and listening area for a *campus radio station* based on your research.

B List some other kinds of data you would need to research to start your own campus radio broadcasting station.

C Could you increase the listening area of your radio station?

Take It Home

Talk with an adult about starting a radio station in your school. What types of programs would students want to hear? Could you actually create a school radio broadcasting station? Write a description of your radio station to turn in to your teacher.

6-8-J_CNLAESE589435_143P

Objective: for visual interest and to show young people expressing themselves via radio waves

Spec Idea: [photo] young person or young people in a broadcast booth speaking into a microphone

3

12345

InCopy Notes

DSN: Please adjust fade on announcer's head. Please add WOLs to #3 (Start a Station)--if possible, two to each; at least add two to the bottom question. Text box should stop not block the radio, but it is ok to cut off the top of the feather duster [pjm-7357-1/21/11].

1. COMP/DSN: Please fix leading of last line of text in Question #2. CED-BPN 2/22/11.

InDesign Notes

1. DSN--The top of this persons head goes to fade. Not sure this is needed--and it looks odd. -PR 1/14
2. DSN/EDH-- Is there enough WOLs for thes student to do the activity? -PR 1/14
3. DSN: Please remove white bkgrd from photo. MW