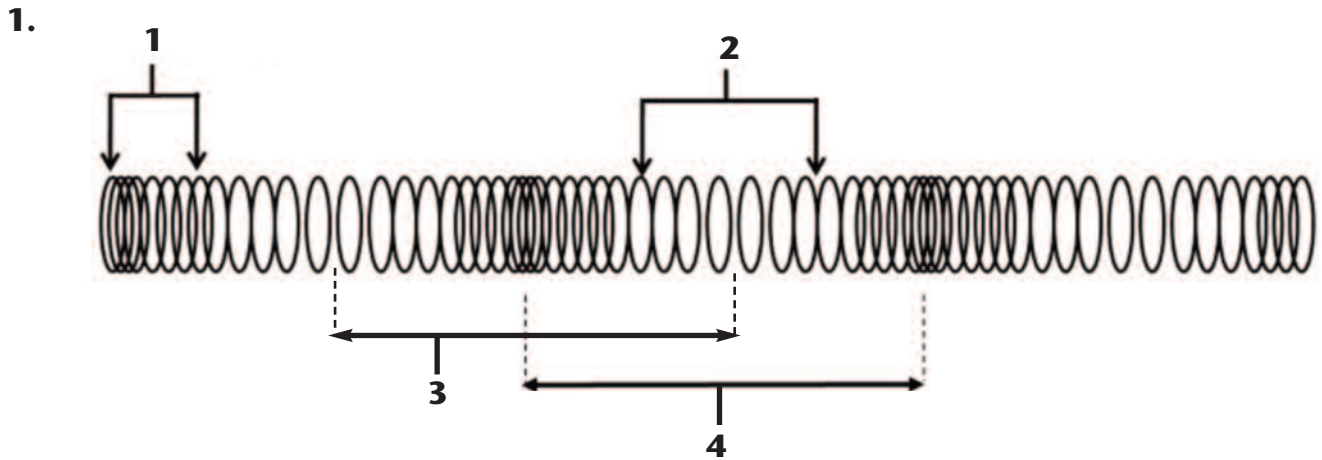


# TEST TAKING STRATEGY-2



Which arrow is pointing to the wavelength of a compression wave as measured from one compression to the next compression?

- A 1
- B 2
- C 3
- D 4

2. What happens to sound in a vacuum?

- F The pitch is lowered.
- G The sound cannot travel.
- H The sound is amplified.
- J The frequency increases.

3. Bats locate prey in their path and navigate by receiving reflected –

- A compressions
- B rarefactions
- C ultrasonic waves
- D infrasonic waves

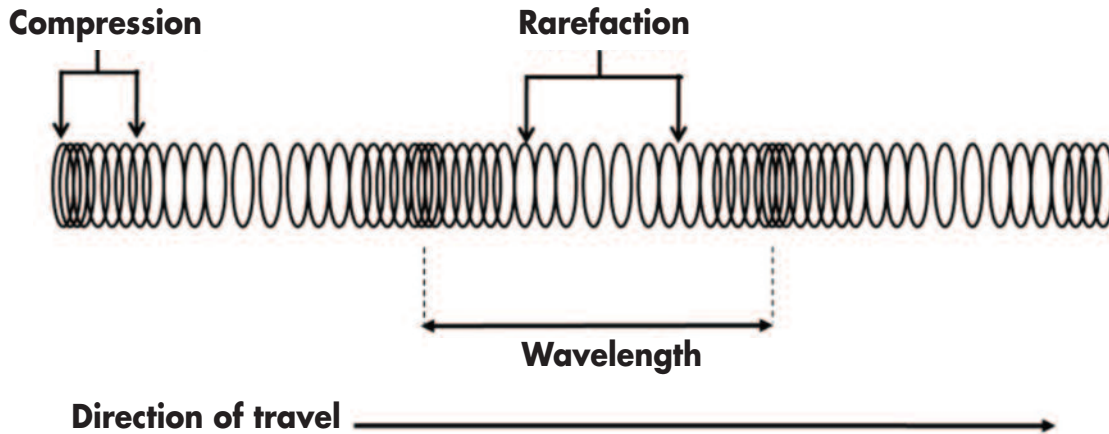
4. Which of the following is the *best* explanation of why this instrument produces sound?

- F The instrument is struck.
- G The instrument has air blown across it.
- H The instrument is played with a bow.
- J The instrument produces different pitches by changing the length of tubing the air moves through.



# SOUND STUDY GUIDE

**Sound** is a form of energy made by vibrations. Sound vibrations travel in **compression waves**.



**We hear sound when molecules vibrate.** Sound travels better in certain media (phases of matter) than in others because of how close the molecules are located. Draw a picture of how molecules would behave in each phase of matter in the boxes below:



*Molecules in a gas*



*Molecules in a liquid*

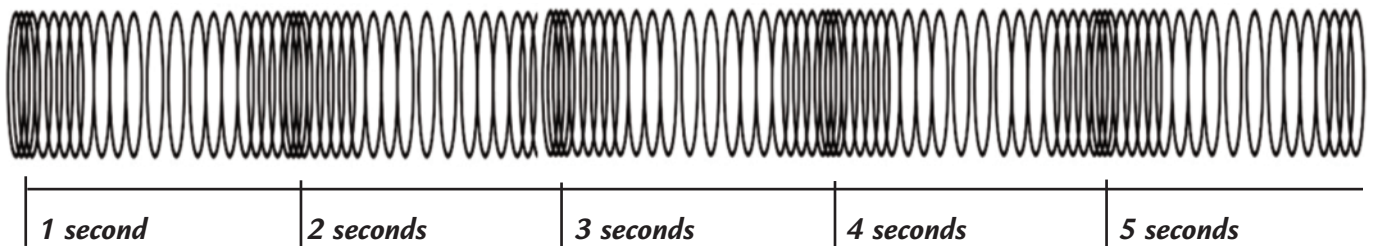


*Molecules in a solid*

*In which phase of matter does sound travel best and why?* \_\_\_\_\_

*In which phase of matter does sound travel worst and why?* \_\_\_\_\_

## 30-Second Lion's Roar Sound Wave



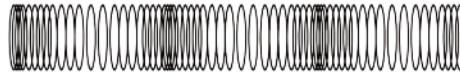
**Frequency** is the number of wavelengths in a given amount of time in a **sound wave**.

*What is the frequency of the lion's roar?* \_\_\_\_\_

**Wavelength** is the distance between any two adjacent compressions or rarefactions.

*What is the wavelength of the lion's roar in centimeters?* \_\_\_\_\_

**Higher Sound Waves = Louder Sounds**



**Lower Sound Waves = Softer Sounds**



**Pitch** is how we hear a sound. We use the words high or low to describe pitch.  
The pitch is determined by the frequency.

**High Pitch = \_\_\_\_\_ frequency**

**Low Pitch = \_\_\_\_\_ frequency**

**Animals can hear sounds that humans cannot hear.**

20,000 - 150,000 Hz



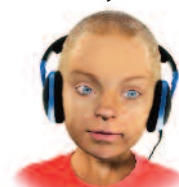
40 - 60,000 Hz



1,000 - 123,000 Hz



20 - 20,000 Hz



Which animal above can hear the lowest frequency sound? \_\_\_\_\_

Which animal above can hear the highest frequency sound? \_\_\_\_\_

**Musical instruments vibrate to produce sound.** Musical instruments are classified by the way in which the sound is produced by the instrument.

<p><b>STRING INSTRUMENTS</b> Example:  How do string instruments produce sound?</p>	<p><b>WOODWINDS</b> Example:  How do woodwinds produce sound?</p>
<p><b>PERCUSSION INSTRUMENTS</b> Example:  How do percussion instruments produce sound?</p>	<p><b>BRASS INSTRUMENTS</b> Example:  How do brass instruments produce sound?</p>



# SCIENCE Connection

**TAKE A LOOK! Chapter 3  
explores the mysteries of  
light and color.**

## Scientific Investigation, Reasoning, and Logic: Science SOL 5.3

The student will investigate and understand how sound is created and transmitted, and how it is used. Key concepts include

- transverse waves;
- the visible spectrum;
- opaque, transparent, and translucent;
- reflection of light from reflective surfaces; and
- refraction of light through water and prisms.

For more information or background knowledge to help you understand this standard, visit [http://www.doe.virginia.gov/testing/sol/standards\\_docs/science/index.shtml](http://www.doe.virginia.gov/testing/sol/standards_docs/science/index.shtml)

In this unit we will introduce the concept of visible light and how we use light in our daily lives.

## How can I supplement what is happening in class?

Here are some things you can do at home.

- **Play Flashlight Tag!** Around dusk, take your family outside to a safe area or you can play in a darker room inside. When you start the game, assign one person to be “It” and give him or her a flashlight. All other players should run and hide. After counting to 30, “It” should try and tag a player with the flashlight beam. When a player is tagged, he sits out waiting for the next round. Discuss ways players can avoid being tagged by the beam. Your child may say he could zigzag back and forth or stand behind an object. Talk about why those strategies work to avoid the light beam. Discuss how light travels in a straight line and how light cannot pass through a solid object.
- **Continue exploring with the flashlight** by using it to shine through a variety of objects. Challenge your child to locate multiple transparent, translucent, and opaque materials in each room of your house.

[http://www.bbc.co.uk/schools/scienceclips/ages/10\\_11/see\\_things.shtml](http://www.bbc.co.uk/schools/scienceclips/ages/10_11/see_things.shtml)

You may want to play some of the games on this site with your child. The first game is about reflection of light. When finished, you can click “What’s Next” at the bottom to find a game about shadows. There are many fun activities on this site pertaining to light, so have fun exploring!

## What is expected of your child?

In order to meet this standard, it is expected that students will:

- diagram and label a representation of a light wave, including wavelength, crest, and trough.
- explain the relationships between wavelength and the color of light. Name the colors of the visible spectrum.
- explain the terms transparent, translucent, and opaque, and give an example of each.
- compare and contrast reflection and refraction, using water, prisms, and mirrors.
- analyze the effects of a prism on white light and describe why this occurs.
- explain the relationship between the refraction of light and the formation of a rainbow.