EO 3 Science
Sound and Light

Name _____

What Causes Sound? (p. 2-3)

1. How is sound made? _____

_____

2. What are forms of energy? _____

_____

3. What is an area of high pressure called? _____

4. What do the areas of high and low pressure form?

_____

5. What is wavelength? _____

_____

6. When something vibrates slowly, the compressions are farther apart. The wavelength is _____.

7. When something vibrates quickly, the compressions are close together. The wavelength is _____.

Name _____

How Does Sound Travel? (p. 4-5)

Use the words in the box to complete the following sentences.

sound waves	speed of sound	temperature	shock wave
sonic boom	Chuck Yeager	1947	near the source

Sound waves have the most energy _____ of the sound. They get weaker and weaker as you move away from the source. If you were very far away, you would barely hear the sound. If you were even farther away, you would not hear the sound at all.

Sound travels through different kinds of matter at different speeds. The _____ in air is about 340 meters per second. _____ travel differently through solids, liquids, and gases. Sound travels faster through water than through air.

The speed of sound also depends on the _____ of the matter sound travels through. Sound travels slower in cold air. High about Earth the air is always cold. So the speed of sound is slower there. It is easier for a high-flying airplane to go faster than sound. When an airplane reaches the speed of sound, the sound waves it makes begin to bunch up in front of the airplane. The waves pile up to make one big wave. This is called a _____. On the ground, this sound may be heard as a loud _____.

_____ was the first person to fly a plane faster than the speed of sound. In _____ he flew a Bell X-1 airplane at a speed of 700 miles per hour.

Name _____

How Are Sounds Different? (p. 6-7)

Matching

_____ 1. pitch	A. how much energy a sound wave has
_____ 2. volume	B. lowness or highness of a sound
_____ 3. amplitude	C. amount of sound energy that Reaches your ears

True or False

4. Two sounds with different pitches can never have the same volume. _____
5. Low-pitch sounds have a long wavelength. _____
6. Different sounds have different pitches. _____
7. The pitch of a sound depends on how fast an object is running. _____
8. Some sounds are high and some are low. _____
9. The greater the amplitude, the greater the sound. _____
10. The moo of a cow has a high pitch. _____

Name _____

How is Sound Absorbed and Reflected? (p. 8)

1. Sonar stands for:

a. sound ears b. sound navigation and ranging c. sound narking

2. Sounds that are not absorbed bounce back, or _____.

a. reflect b. refract c. repeat d. renew

3. Some ships use an instrument called _____.

a. steering b. sonar c. stealing d. sledding

4. When sounds are absorbed, a room is _____.

a. louder b. nicer c. cuter d. quieter

5. When sound waves hit a hard surface and reflect back, the sound we may hear is called an _____.

a. echo b. loudness c. softness d. yelling

6. Smooth, hard surfaces like walls reflect _____.

a. light b. sounds c. mirrors d. candy

7. Sound waves travel though seawater at about _____ meters per second.

a. 100 b. 1, 000 c. 1, 530 d. 500

Name _____

What is Noise Pollution? (p. 9)

Fill in the blanks using the words from the box.

harmed	noise pollution	loudness	80 decibels
decibels	120 decibels	0 decibels	amplitude

Loudness depends on the _____ of a sound wave. The _____ of a sound wave can be measured using a sound level meter. Loudness is measured in units called _____. Sounds are loudest when we are close to them. So decibel readings are taken near the object making the sound. A sound of _____ is a very, very soft sound. Very few people can hear it.

_____ is any sound that causes problems for people or things. There are many sources of noise pollution. Any sound above _____ can cause hearing loss. Sounds of _____ or higher can cause ear pain. The longer people are around loud sounds, the more their hearing is _____.

Name _____

How Do We Speak and Hear? (p. 10-11)

Matching

_____1. auditory nerve

_____2. inner ear

_____3. middle ear

_____4. vocal chords

_____5. eardrum

_____6. ear canal

a. folds of thin muscle tissue in our larynx, or voice box

b. three smallest bones in the body are found here

c. the cochlea is found here

d. sound waves enter here

e. when sound waves hit this, they make it vibrate

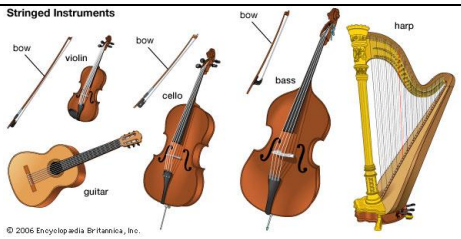
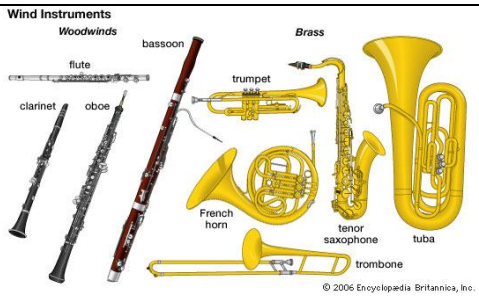
f. this nerve sends the signals to the brain.

Name _____

How Do Musical Instruments Make Sounds? (p. 12-13)

Complete the table by using the words in the word bank.

Percussion Instruments	Wind Instruments
Tuning Fork	Stringed Instruments

	1. _____
2. _____	
	3. _____
4. _____	

How Do Musical Instruments Make Sounds? (p. 12-13)

Matching

5. _____ percussion instruments

6. _____ stringed instruments

7. _____ wind instruments

8. _____ tuning forks

a. make sounds when a person blows air into them

b. make sounds with vibrating stings

c. can be used to adjust, or tune, musical instruments

d. vibrate and make sounds when they are hit

Name _____

Audiologists (p. 14)

1. What is an audiologist? _____

_____

2. What are two tools an audiologist uses to test hearing?

(a)_____

(b)_____

3. Audiologists may suggest _____ to help a person hear better.

4. Audiologists can train people in _____ so they can figure out what people are saying to them.

Name _____

About Echolocation (p. 15)

Use the word bank to fill in the paragraphs.

bounce	echolocation	dolphin
ultrasonic	air	reflect
thousands	high-pitched	fish
people	way	far away
clicking	echoes	close up

Many kinds of bats eat insects. Bats usually hunt for insects at night. It is hard for some bats to see in the dark. So these bats use a form of sonar called _____ to find their food. The bats send out _____ clicking sounds. These high-pitched sounds are called _____ sounds. _____ cannot hear ultrasonic sounds.

The sounds that bats make _____ off objects around them. The bouncing sounds make _____ that the bats can hear. A bat can tell from the echoes how _____ objects are. A bat also can tell what kinds of objects are nearby. By using echoes, bats can find and eat _____ of insects each hour!

Bats use echolocation to find their _____ in the air. _____ use echolocation in the water. A dolphin makes _____ sounds that move out through the water. The sounds reflect off _____ and other objects. Then the sounds _____ back to the dolphin.