Third Grade "Sound" Assessment

1a. The form of energy you HEAR is called _____.
   a. light
   b. heat
   c. sound

1b. The form of energy you HEAR is called _____.

1c. Define sound.
_____
_____
_____
_____

2a. Sound is caused by an object vibrating _____.
   a. rapidly
   b. slowly

2b. Rapid vibration of an object causes _____.

2c. Explain what causes sound.
_____
_____
_____

3a. When we speak of something _____, we mean it is moving back and forth quickly and rhythmically.
   a. waving
   b. vibrating

3b. When we speak of something _____, we mean it is moving back and forth quickly and rhythmically.

3c. Define vibration.
_____
_____
_____

4a. Does sound travel fastest through air (gases), water (liquids), or metal (solids)?
_____

4b. Sound travels at different speeds through gases, liquids, and solids. Rank them in order from fastest to slowest:
Fastest _____
_____
Slowest _____

4c. Describe how the speed of sound changes as it travels through gases, liquids, and solids.

_____
_____
_____

5a. Sound travels very fast, but never as fast as _____.

a. light
b. dark
c. space

5b. _____ travels very fast, but never as fast as _____.

a. Sound; light
b. Light; sound

5c. Explain what happens during a storm when you hear thunder and you see a flash of lightning. What happens first and why?

_____
_____
_____

6a. When we are talking about how high or low a sound is we are referring to _____.

a. volume
b. pitch

6b. When we are talking about how high or low a sound is we are referring to _____.

6c. What is pitch?

_____
_____
_____
_____

7a. The pitch of a sound goes higher when the vibration gets_____; it goes lower when the vibration gets _____.

a. faster; slower
b. slower; faster

7b. The pitch of a sound goes higher when the vibration gets_____; it goes lower when the vibration gets _____.

a. harder; softer
b. slower; faster
c. softer; harder
d. faster; slower

7c. On a guitar the strings vibrate. Explain how you can change the pitch.

_____
_____
_____

8a. When we are talking about how loud a sound is we are referring to _____.
a. pitch
b. volume

8b. When we are talking about how loud a sound is we are referring to _____.

8c. A tuning fork will sound louder when it's struck against the bottom of a plastic cup than when it's struck and held in the middle of a classroom. Explain the difference in intensity between the loudness of the tuning fork held against the cup and the quietness of the fork held in the classroom.

_____
_____
_____

9a. The _____ is the more proper name for the voice box, or what we refer to as the "Adam's apple," that holds your vocal cords.
a. larynx
b. throat

9b. The _____ is the more proper name for the voice box, or what we refer to as the "Adam's apple," that holds your vocal cords.

9c. Explain the function of the voice box or the larynx.

_____
_____
_____

10a. The vocal cords are the two bands of tissue in the larynx that vibrate when air passes over them. The resulting sound waves help us _____ and _____.
a. walk; run
b. talk; sing

10b. When we talk and sing, what is vibrating in the larynx? _____

10c. Explain what happens in the larynx when we talk and sing.

_____
_____
_____

11a. With the muscles in our larynx we can tighten our vocal cords (make them shorter and thinner) to make a _____ sound; or we can loosen the cords (make them longer and thicker) to make a _____ sound.

a. higher; lower
b. lower; higher

11b. With the muscles in our larynx we can _____ our vocal cords (make them shorter and thinner) to make a _____ sound; or we can _____the cords (make them longer and thicker) to make a _____ sound.

a. tighten/lower; loosen/higher
b. tighten/higher; loosen/lower
c. loosen/lower; tighten/higher
d. loosen/higher; tighten/lower

11c. Explain what has happened in the larynx when someone has a deeper, lower voice.

_____
_____
_____

12a. Number the following steps IN ORDER to describe how we hear sound:

___1__ Sound waves are collected and focused by the outer ear and travel down the ear canal to the eardrum.
_____ The vibrations in the little bones in turn send vibrations into the snail-shaped cochlea.
_____ The little hairs found in the cochlea sort the sounds according to pitch and the vibrations are converted into electric signals.
___7__ The brain interprets the signals and we hear.
_____ When sound waves hit the eardrum it vibrates.
_____ The signals are sent to the brain through the auditory nerve.
___3__ The vibrations of the eardrum pass along vibrations to the hammer, anvil, and stirrup (the little bones in the ear).

12b. In the following explanation of how we hear, fill in the missing steps (in your own words).

a. Sound waves are collected and focused by the outer ear and travel down the ear canal to the eardrum.
b. _____
c. Vibrations are passed along to the hammer, anvil, and stirrup, the little bones in the ear.
d. _____
e. The little hairs found in the cochlea sort the sounds according to pitch and the vibrations are converted into electric signals.
f. _____
g. The brain interprets the signals and we hear.

12c. Explain the steps for how we hear sound.

_____
_____
_____

13a. Too much exposure to _____noise can result in hearing loss.
a. loud
b. soft

13b. Mark the following items which name ways to protect hearing:
a. _____ Wear ear muffs or ear plugs at a loud factory.
b. _____ Be careful of the volume when listening to music.
c. _____ When wearing stereo earphones turn them all the way up.
d. _____ Have a pair of ear plugs handy at loud concerts.
e. _____Wear a heavy coat in a blizzard.

13c. List three ways to protect your hearing.

_____
_____
_____

14a. In 1876, _____ invented the telephone.
a. Thomas Alva Edison
b. Alexander Graham Bell

14b. Alexander Graham Bell, in addition to inventing the telephone, spent a lot of his life in education of the _____ and in making electronic devices for helping them _____better.
a. deaf; hear
b. blind; see

14c. What do you think was Alexander Graham Bell's most important invention or contribution? Give at least one reason why you think so.

_____
_____
_____

The following Colorado Model Content Standards are covered in this assessment by the questions indicated:

Questions 2a, 2b, 2c, 3a, 3b, 3c, 4a, 4b, 4c, 5c, 6a, 6b, 6c, 7a, 7b, 7c, 8a, 8b, 8c, 11a, 11b, 11c: Standard K-4.1.a asking questions and stating predictions (hypotheses) that can be addressed through scientific investigation

Questions 2a, 2b, 2c, 3a, 3b, 3c, 4a, 4b, 4c, 6a, 6b, 6c, 7a, 7b, 7c, 8a, 8b, 8c, 10a, 10b, 10c, 11a, 11b, 11c: Standard K-4.1.b selecting and using simple devices to gather data related to an investigation *(for example, length, volume, and mass measuring instruments, thermometers, watches, magnifiers, microscopes, calculators, and computers)*

Questions 2a, 2b, 2c, 3a, 3b, 3c, 4a, 4b, 4c, 6a, 6b, 6c, 7a, 7b, 7c, 8a, 8b, 8c, 10a, 10b, 10c, 11a, 11b, 11c: Standard K-4.1.c using data based on observations to construct a reasonable explanation

Questions 2a, 2b, 2c, 3a, 3b, 3c, 4a, 4b, 4c, 6a, 6b, 6c, 7a, 7b, 7c, 8a, 8b, 8c, 10a, 10b, 10c, 11a, 11b, 11c: Standard K-4.1.d communicating about investigations and explanations

Questions 1a, 1b, 1c, 2a, 2b, 2c, 3a, 3b, 3c, 4a, 4b, 4c, 5c, 6a, 6b, 6c, 7a, 7b, 7c, 8a, 8b, 8c, 10a, 10b, 10c, 11a, 11b, 11c: Standard K-4.2.2.a recognizing that energy *(for example, light, heat, motion, sound, mechanical)* can affect common objects and is involved in common events

Questions 4a, 4b, 4c, 6a, 6b, 6c, 7a, 7b, 7c, 8a, 8b, 8c: Standard K-4.2.2.b making observations and gathering data on quantities associated with energy, movement, and change *(for example, distances for a bean-launcher, time for a melting ice cube)*

Questions 4a, 4b, 4c, 6a, 6b, 6c, 7a, 7b, 7c, 8a, 8b, 8c: Standard K-4.2.2.c comparing quantities associated with energy movement and change by constructing simple diagrams or charts *(for example, graph of launch distances, chart of melting time)*

Questions 9a, 9b, 9c, 10a, 10b, 10c, 11a, 11b, 11c, 12a, 12b, 12c: Standard K-4.3.3.a describing human body systems *(for example, digestive, respiratory, circulatory, skeletal, muscular)*

Questions 13a, 13b, 13c, 14a, 14b, 14c: Standard K-4.5.b inventing a device that addresses an everyday problem (or task), and communicating the problem (or task), design, and solution

Answer Key

1a. c. sound
1b. sound
1c. Acceptable answers could include:
-a form of energy
-the form of energy you hear
-something caused by rapid vibration of an object

2a. a. rapidly
2b. sound
2c. Acceptable answers could include:
-the rapid vibration of an object

3a. b. vibrating
3b. vibrating
3c. Acceptable answers could include:
-something moving back and forth quickly and rhythmically

4a. metal (solids)
4b. solids, liquids, gases—in that order
4c. Acceptable answers could include:
-sound travels fastest through solids
-sound travels second fastest through liquids
-sound travels the slowest through gases

5a. a. light
5b. a. Sound; light
5c. Acceptable answers could include:
-you see the flash before you hear the thunder
-light travels faster than sound

6a. b. pitch
6b. pitch
6c. Acceptable answers could include:
-how high or low a sound is

7a. a. faster; slower
7b. d. faster; slower
7c. Acceptable answers could include:
-higher pitch- make the strings vibrate faster (by tightening them)
-lower pitch –make the strings vibrate slower (by loosening them)

8a. b. volume
8b. volume

8c. Acceptable answers could include:
-the fork held against the cup causes more sound, or loudness, because the cup's vibration causes more air to vibrate and thus, a louder sound
-the fork held in midair causes less air to vibrate so the sound is less, or quieter

9a. a. larynx
9b. larynx
9c. Acceptable answers could include:
-it contains the vocal cords
-it protects the vocal cords

10a. b. talk; sing
10b. the vocal cords
10c. Acceptable answers could include:
-air is passing by (or over or through) the vocal cords, causing them to vibrate

11a. a. higher; lower
11b. b. tighten/higher; loosen/lower
11c. Acceptable answers could include:
-the muscles in his larynx are more relaxed or looser

12a. 1, 4, 5, 7, 2, 6, 3
12b. Acceptable answers could include:
b. The eardrum begins to vibrate.
d. Vibrations are passed along to the snail-shaped cochlea
f. The signals are sent to the brain through the auditory nerve.
12c. Acceptable answers could include:
-Sound waves are collected by the outer ear and travel down the ear canal to the eardrum.
-When sound waves hit the eardrum it vibrates.
-The vibrations of the eardrum pass along vibrations to the hammer, anvil, and stirrup.
-The vibrations in the little bones in turn send vibrations into the snail-shaped cochlea.
-The little hairs in the cochlea sort the sounds according to pitch and the vibrations are converted into electric signals.
-The signals are sent to the brain through the auditory nerve.
-The brain interprets the signals and we hear.

13a. a. loud
13b. a, b, d
13c. Acceptable answers could include:
-wear earmuffs or ear plugs at a loud factory
-be careful of the volume when listening to music
-when wearing stereo earphones do not turn them up too high
-protect your ears at loud concerts with ear plugs

14a. b. Alexander Graham Bell
14b. a. deaf; hear

14c. Acceptable answers could include:
-telephone (and why)
-education of the deaf (and why)
-making electronic devices for the deaf (and why)