

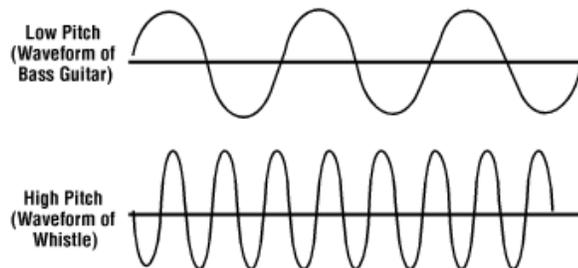
Hearing and Sound Study Guide

I made the following website as a study tool to help you prepare for Thursday with videos and sample questions hearingandsound.weebly.com

1. Sounds make vibrations and vibrations move in all directions.
2. The bigger the vibration, the louder the sound. The smaller the vibration, the quieter the sound (Think about your ruler lab).
3. Sound travels in waves, that have energy.
4. Pitch is the highness and lowness of sound. Frequency is the number of vibrations per second (Think about the lab with the coffee can/wire as well as the shoebox and plastic cups with the elastics)

High Frequency = High Pitch = Fast Vibrations

Low Frequency = Low Pitch = Slow Vibrations



5. Amplitude is the measure of how loud a sound is. This is measured in decibels. Decibels are used to tell us if a sound is safe, risky or dangerous (remember we did this on the carpet with the sound meter).
6. The human ear has three sections
 - a. The outer ear is also called the pinna
 - b. The pinna collects sound and directs sound into the middle ear
 - c. The eardrum vibrates when you hear sound
 - d. The eardrum separates the outer ear (pinna) and the middle ear
 - e. There are three bones in the middle ear
 - f. The middle ear amplifies sound vibrations
 - g. The inner ear converts vibrations to electrical signals and sends them to the brain
7. Constant exposure to loud noises will result in hearing change and possibly hearing loss.
8. Sound travels fastest through solids and slowest through gases because the particles are closest together in solids and furthest apart in gases.
9. Sign language is a language used by deaf people to communicate.
10. There are certain materials that will make sounds louder (metals) and materials that will make sound quieter (rubber or a towel).
11. Dogs can hear higher pitched sounds than humans

Hearing and Sound

Good luck! =)

True or False

- ___ 1. Sounds cause vibrations.
- ___ 2. Sound travels in waves that have energy.
- ___ 3. Frequency is the highness or lowness of sound.
- ___ 4. A decibel is the unit used to measure amplitude.
- ___ 5. Amplitude is the loudness of a sound.
- ___ 6. Another name for the middle ear is the pinna.
- ___ 7. Plucking a thick elastic will produce fast vibrations.
- ___ 8. Vibrations move in all directions.

Multiple Choice

9. Which would cause a high-pitched sound?
- a) A tight string
 - b) A loose string
 - c) A fast vibration
 - d) Both A and C
10. What is the correct order for sound to travel through the ear?
- a) Pinna, inner ear, middle ear
 - b) Pinna, outer ear, middle ear, inner ear
 - c) Pinna, middle ear, inner ear
 - d) Outer ear, inner ear, middle ear
11. The eardrum separates the
- a) Middle ear and inner ear
 - b) Outer ear and middle ear
 - c) Outer ear and inner ear
 - d) Pinna and inner ear

12. Sound travels fastest through solids because

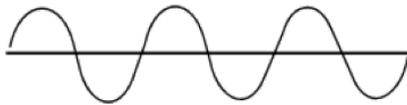
- a) Solids are hard
- b) Solids are soft
- c) The particles in solids are far apart
- d) The particles in solids are close together

13. An insulator

- a) Makes sounds quieter
- b) Makes sounds louder
- c) Is hard material
- d) Is a metal

14. This is an example of a:

- a) High pitch wave
- b) Low pitch wave
- c) High frequency
- d) Really cool drawing



15. Which part of the ear converts vibrations to electrical signals and sends them to the brain?

- a) Pinna
- b) Outer ear
- c) Middle ear
- d) Inner ear

16. Slow is low was referring to

- a) The waves of a fast moving vibration
- b) The waves of a slow moving vibration
- c) A high pitched wave

17. Dogs can hear _____ sounds than humans.

- a) Louder
- b) Quieter
- c) Higher pitched
- d) Lower pitched

Fill in the Blank

- 18. There are three bones in the _____.
- 19. The louder the sound the _____ the vibrations.
- 20. A megaphone is an example of a sound _____.
- 21. Those who are deaf use _____ to communicate.
- 22. A jet taking off is an example of a _____ sound.
- 23. The sound of a whisper is _____ to the ear.
- 24. A dangerous sound has a _____ decibel.
- 25. Sound travels slowly through _____.

middle ear	pleasant	high	bigger
dangerous	gases	amplifier	sign language

Written Response: Please use jot dots

26. When does a sound producing device, like a tuning fork, have the highest energy?

27. What do vibrations do to the air around them?

28. Draw the wave of a high pitched sound

Let's Make Music!

Teacher

Mr. Bechthold

Subject

Grade 3 Science

Topic/Focus

Unit D: Hearing and Sound

<p>Performance Task Overview</p>	<p>Students will demonstrate an understanding of the relationship between vibration and sound by creating their own musical instrument. Their musical instrument will demonstrate the students understanding of pitch, quality of sound and loudness of sound.</p>
<p>Materials</p>	<ul style="list-style-type: none"> • 20 Performance Task Sheets

<p>Learner Outcomes</p>		<p>Assessment Criteria</p>
<p>General Outcomes</p>	<p>Specific Outcomes</p>	<p><i>Students provide evidence of their learning as they...</i></p>
<p><i>D.3-9 Describe the nature of sound, and demonstrate methods for producing and controlling sound.</i></p>	<p>2. Recognize that sound is the result of vibration; and demonstrate that the larger the vibration, the louder the sound.</p>	<p>Oral response section</p>
<p><i>D.3-9 Describe the nature of sound, and demonstrate methods for producing and controlling sound.</i></p>	<p>4. Recognize that pitch is the result of differences in the rate of vibration, and predict how a change in the rate of vibration will affect a sound.</p>	<p>Pitch</p>
<p><i>D.3-9 Describe the nature of sound, and demonstrate methods for producing and controlling sound.</i></p>	<p>5. Demonstrate a variety of ways of producing sounds; e.g., by striking an empty glass, by blowing air into a bottle, by constructing and using a device that involves vibrating strings.</p>	<p>Pitch Oral response section Loudness Control</p>
<p><i>D.3-9 Describe the nature of sound, and demonstrate methods for producing and controlling sound.</i></p>	<p>6. Use sound-producing devices that the student has constructed to demonstrate methods for controlling the loudness, pitch and quality of sound produced.</p>	<p>Pitch Loudness Control</p>

Student Task Description

The producers of the Magic School Bus have contacted you and they are in need of a new sound! From parts of the episode you saw in class, Carlos made his own instrument. Like Carlos, you need to come up with your own instrument and creativity is encouraged! Use all of the sound knowledge you have gained in this unit, to avoid a "floopy" sound! Magic School Bus is looking for certain things in their instrument and sound! Ms. Frizzle and her class are very excited to hear your sounds!

PART ONE: INSTRUMENT

Your instrument will need to have the following to produce a quality sound:

1. Demonstrate a variety of pitches
2. Have loudness control

PART TWO: ORAL RESPONSES

For the points above, you must be able to answer the following questions related to your instrument on the day of your presentation.

1. How does your instrument demonstrate a variety of pitches? (2 points)
2. How does your instrument control the loudness of sound? (2 points)

Fill in the Blanks:

In order for my instrument to be creating sound, it must be _____. (1 point)

My instrument creates _____ vibrations with a louder sound and _____ vibrations with a softer sound. (1/2 point ea.)

PART THREE: PRESENTATION

You will also be showing your instrument to your classmates, like show and tell! On **Tuesday December 11, 2012** you will be divided into two groups. For the first half of the class, 10 students will be set up around the room to show the remaining students their instruments. Then we will switch for the last half. At this point, I will come around and ask those students presenting their instruments the questions in the Oral Response section.

**Note: Part Three is ungraded, this is strictly for you to share your instrument with your friends and see theirs too!*

Assessment Criteria

INSTRUMENT: /16

Level Criteria	4 Excellent	3 Proficient	2 Emergent	1 Not Yet *	Insufficient / Blank *
Pitch X2 [D.3-9.4, D.3-9.5, D.3-9.6]	In-depth understanding of Pitch and it's components are integrated into the instrument	Significant understanding of Pitch and many components are integrated into the instrument	Basic understanding of Pitch and some of it's components are integrated into the instrument	Limited understanding of Pitch with few components integrated into the instrument	No score is awarded because there is insufficient evidence of student performance based on the requirements of the assessment task.
Loudness Control X2 [D.3-9.5, D.3-9.6]	In-depth understanding of effective method to control loudness, specific to the instrument	Significant understanding of effective method to control loudness, specific to the instrument	Basic understanding of effective method to control loudness, specific to the instrument	Limited understanding of effective method to control loudness	

ORAL RESPONSES: /6
 [D.3-9.2, D.3-9.4, D.3-9.5, D.3-9.6]

Question	Points Earned	Possible Points
Short Answer #1		2
Short Answer #2		2
Fill in the Blank #1		1
Fill in the Blank #2		1

- When work is judged to be limited or insufficient, the teacher makes decisions about appropriate intervention to help the student improve.

Total /22

D.3-9.2. I can recognize that sound is the result of vibration; and demonstrate that the larger the vibration, the louder the sound.
 D.3-9.4. I can recognize that pitch is the result of differences in the rate of vibration, and predict how a change in the rate of vibration will affect a sound.
 D.3-9.5. I can demonstrate a variety of ways of producing sounds; e.g., by striking an empty glass, by blowing air into a bottle, by constructing and using a device that involves vibrating strings.
 D.3-9.6. I can use sound-producing devices that the student has constructed to demonstrate methods for controlling the loudness, pitch and quality of sound produced.