

Name Key Class _____ Date _____

Study Guide Sound Quiz –What Does It Sound Like?

1. Describe the factors that affect pitch and loudness of sound produced by vibrating objects.

a. Pitch is the highness or lowness of a sound.

b. Frequency is the speed of the vibration in a sound wave.

c. Changing the size thickness and tension of an object affects the pitch of the sound when it vibrates.

d. The smaller items usually have a higher pitch than a larger item.

e. Volume is the loudness of a sound.

f. Changing the energy in the vibration affects the loudness of the sound.

g. The more energy in the vibration, the louder the sound.

2. Describe how you can produce different pitches with a rubber band.

You can stretch the band to increase tension. When you pluck the band it will have a higher pitch. If you loosen the tension and pluck the band it will produce a lower pitch.

3. Describe how you can produce different volumes with a xylophone.

You can hit a bar with more force to produce a louder sound and with less force to produce a softer sound.

4. Describe how you could produce a loud, low-pitched sound with a recorder.

You can cover all the holes and blow into the mouthpiece with a lot of force to produce a loud, low-pitched sound.

5. Describe how sound is transmitted, reflected and absorbed.

Sound travels differently through solids, liquids and gases.

- a. Sound travels fastest through solids and slowest in gases.
- b. Smaller, softer, more irregular materials absorb sound better.
- c. Harder, more regular, and larger objects reflect sound better.
- d. Sound that is reflected can be heard as an echo.
- e. A sound is reflected when it hits a wall.
- f. Sonar is used by boats to locate objects below the surface of the water.
- g. Echolocation is used by bats to "see".
- h. Ultrasonography is used to see organs inside the body.
- i. Explain why you will hear echoes when you bounce a basketball in an empty gymnasium, but not in a crowded gymnasium.

Sound waves easily reflect off the smooth, hard walls, floors + ceiling of an empty gymnasium causing you to hear echoes. When the gymnasium is full of people and objects, sound waves are absorbed by these soft, irregular objects so echoes are not produced as easily

6. Name the three types of musical instruments and how they produce sound.

- a. Stringed instruments produce sound when the strings are plucked, strummed or rubbed with a bow vibrating the strings
- b. Wind instruments produce sound when air is blown into the mouth piece vibrating the air column
- c. Percussion instruments produce sound when they are struck or shaken vibrating the instrument.

7. a. Loudness is measured using decibels.

b. Frequency is measured using hertz.

c. Ultra sonic are frequencies that are too high for the human ear.

d. The apparent change in pitch of a sound caused by the relative motion between the source of the sound and the observer is the Doppler Effect. (Think of fire truck siren as it moves towards you and moves away.)

