10 Sound

3 Music

TEKS 5(G)

Review Vocabulary

resonance

New Vocabulary

music

sound quality

overtone

resonator

Academic Vocabulary

fundamental

MAINIDEA

Write the Main Idea for this lesson.

A musical instrument produces combinations of frequencies that determine how the instrument sounds.

Recall the definition of the Review Vocabulary term.

resonance — the process by which an object is made to vibrate by absorbing energy at its natural frequencies

Read the definitions below, then write the key term for each one in the left column.

made of sounds that are deliberately used in a regular pattern

describes the differences among sounds of the same pitch and loudness

a vibration with a frequency that is a multiple of the fundamental frequency

a hollow space filled with air that makes sound louder when the air inside of it vibrates

Use a dictionary to define fundamental as an adjective.

fundamental — of or relating to essential structure, function, or facts

3 Music (continued)

Student Edition, pp. 317–320

Reading Essentials, pp. 183–186

Distinguish between music and noise in your own words. Give one example of each. Accept all reasonable responses.

Noise is random. It has random patterns and pitches. Music has regular patterns of sounds. An example of noise is the sounds from a busy street with lots of traffic. An example of music is a person humming a tune.

GET IT? **Compare** sound quality and pitch.

Pitch is a result of frequency. Sound quality describes the differences between two sounds with the same pitch, volume, and duration.

Sequence steps in the resonance of a woodwind instrument. Accept all reasonable responses.

Air is blown into an instrument.

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The reed of the instrument vibrates.

↓

The air in the instrument absorbs this energy and starts to vibrate.

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The resonance of the air makes the sound louder.

3 Music (continued)

Student Edition, pp. 319–322
Reading Essentials, pp. 185–186

Analyze the factors that cause each musical instrument to have its own unique sound quality. Accept all reasonable responses.

Instruments each have specific combinations of frequencies. Since the different frequencies that combine have different intensities, overtones are produced.

Complete the table showing the different types of musical instruments and how they produce sound.

Have students work with a partner to complete the table. Encourage them to think of examples of instruments that are not in their book.

Type of Instrument	How is sound	What is the	Examples
Strings	plucking, striking, drawing a bow across strings	the hollow body of the instrument	violin, guitar, harp
Brass and Woodwinds	vibration of air	metal tubing	horns, oboe, flute, trumpet, trombone
Percussion	striking, shaking, rubbing, brushing	area inside the drum	drums, xylophone, cymbals, rattles, washboards

CONNECT IT

Design a musical instrument. Make a sketch of the instrument and describe how it produces music, how you change notes, and what the resonator is.

Accept all reasonable responses.

3 Music (continued)

REVIEW IT!

14. **MAIN**IDEA **Compare and contrast** music and noise.

Music is made of sounds that are deliberately used in a regular pattern.

Noise has random patterns and pitches.

15. **Explain** how two instruments could be used to produce a pulsing sound, and identify the name for this pulsing sound.

One instrument could be set to play a note at a slightly different frequency from the other instrument. The resulting pulsing sounds are called beats.

16. **Explain** how a flute, a violin, and a kettledrum each produce sound.

In a flute, the player vibrates air in the air column that is the flute. In a violin, the player vibrates a string, which in turn vibrates the hollow resonator of the violin. With a kettledrum, the player vibrates the head of the kettledrum, which in turn vibrates the air in the drum's resonator.

17. **Think Critically** Two musical notes have the same pitch and volume. However, they sound very different from each other. How is this possible?

The two notes have different sound qualities.

18. **Calculate Frequencies** A string on a guitar vibrates with a frequency of 440 Hz. Two beats per second are heard when this string and a string on another guitar are played at the same time. What are the possible frequencies of vibration of the second string?

438 Hz or 442 Hz