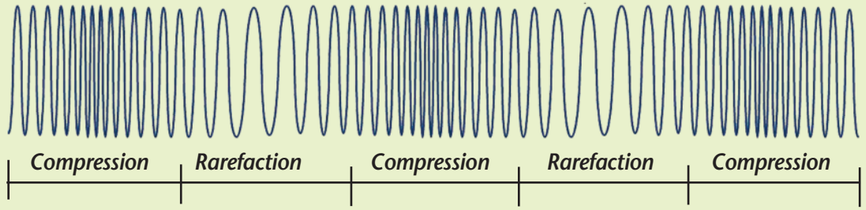
RECAP AND REVIEW

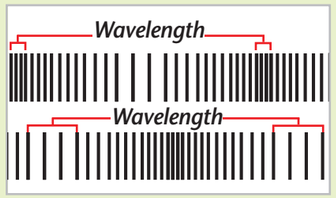
SOUND

Sound is what we hear when matter vibrates. Sound is energy.
Sound travels in **compression waves**.



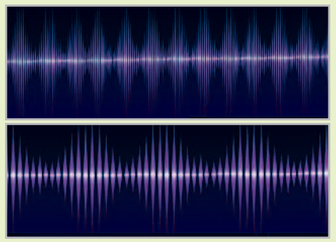
WAVELENGTH

The distance between two compressions or two rarefactions



FREQUENCY

The number of wavelengths in a given unit of time



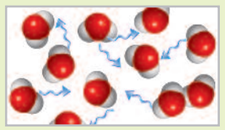
PITCH

How high or low a sound is

REMEMBER!

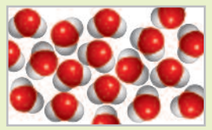
High Frequency = High Pitch
Low Frequency = Low Pitch

Sound waves only travel where there is matter to transmit them. They need something to carry the vibration.



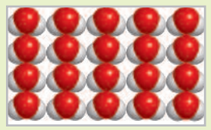
GASES

Sound travels slowly because the molecules are farther apart.



LIQUIDS

Sound travels faster because the molecules are closer together.



SOLIDS

Sound travels fastest because the molecules are very close together.

MUSICAL INSTRUMENTS VIBRATE TO PRODUCE SOUND

Woodwind = Vibrating air
Percussion = Vibrating surfaces
Brass = Vibrating lips
Strings = Vibrating strings

WHAT CAN WE HEAR?

Humans: 20-20,000 Hz
Bats: 20-150,000 Hz
Dogs: 40-60,000 Hz
Beluga whale: 1,000-123,000 Hz

Use pages 28-29 to answer questions 1-3.

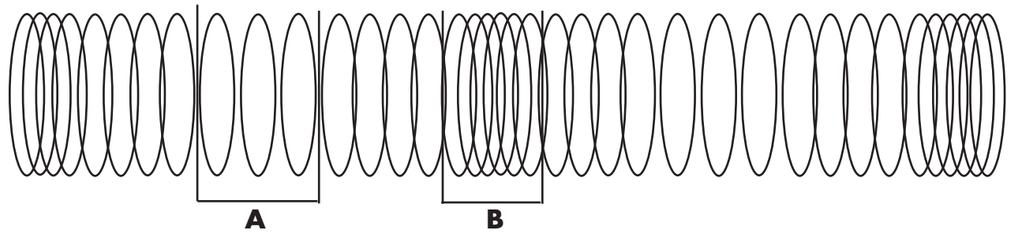
1. How do ears detect sound?
2. How do people in different professions use sounds?
3. What is sound?

Use pages 30-31 to answer questions 4 and 5.

4. Use the words **vibrate** and **force** to describe how sound is made.
5. What do decibels measure?

Use pages 32-33 to answer questions 6 and 7.

6. Why is a sound wave called a compression (longitudinal) wave?
7. Study the sound wave seen here. What does the letter A show? What does the letter B show?



Use pages 34-35 to answer questions 8 and 9.

8. Describe how sound travels in a gas, liquid, and solid. In which state of matter does sound travel fastest?
9. Why can't sound travel in space?

Use pages 36-37 to answer question 10.

10. Explain the relationship between frequency and pitch.

Use pages 38-39 to answer question 11.

11. Sketch four images to illustrate how each of the following affects the pitch of a vibrating object: tension, thickness, air and pitch, and length. You may also choose to describe these using complete sentences.

Use pages 40-41 to answer question 12.

12. Compare and contrast the sounds humans create and hear to those of other animals.

Use pages 42-43 to answer question 13.

13. Create a chart to explain and describe how each group of musical instruments produces sound.

YOU ARE THE SCIENTIST

If Earth was in need of a non-electric communication system, how might people be able to communicate over long distances without physically traveling from one place to another? Think like a scientist and use what you know about how sound travels through different states of matter to design this new communication system. Why would this idea be effective?

DATA DETETCTIVE

Four million workers go to work each day in places where the noise level is so high it can damage hearing. Carpenters face an especially high risk. Based on this graph, which power tool is the most dangerous for hearing-health.