Name: _____ Date: _____

How Echoes Happen

Circle group

Have you ever shouted into a canyon or a big empty gym? Did you hear your own voice come back? That repeated sound is an echo. An echo is not a trick. It is a sound that bounced off a surface and came back to your ears.

When you speak, your voice makes sound waves. They travel through the air. A sound wave keeps moving until it hits something. A soft object, like a curtain or a pillow, soaks up much of the sound. A hard, smooth surface, like a stone wall or a cliff, sends the wave back. It bounces, just as a ball bounces off a floor.

You hear a clear echo only if the surface is far enough away. Sound travels about 343 meters in a second. That is about the length of three football fields. Your brain needs about a tenth of a second to tell one sound from another. If the wall is too close, the echo comes back too fast. It blends in with the first sound. Your voice just seems a little louder.

Animals use echoes too. A bat makes high squeaks. It listens for the echoes that come back from insects. The echo tells the bat how far away its dinner is, even in the dark.

Questions

1. What is an echo?

_____

_____

2. What kinds of surfaces make sound bounce back?

_____

_____

3. Why does a pillow or a curtain not make an echo?

_____

_____

4. Why do you not hear a clear echo when a wall is very close?

_____

_____

5. How does a bat use echoes?

_____

_____

Words to know

echo: a sound that bounces back and is heard again
canyon: a deep valley with steep rock walls
surface: the outside or top layer of something
smooth: flat and even, without bumps

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

How Echoes Happen

Triangle group

Have you ever shouted into a canyon or a big empty gym and heard your own voice come back? That repeated sound is called an echo. An echo is not a trick. It is simply a sound that has bounced off a surface and returned to your ears.

When you speak, your voice makes sound waves that travel through the air. A sound wave keeps moving until it hits something. If it strikes a soft object, such as a curtain or a pillow, much of the sound is soaked up. If it strikes a hard, smooth surface, such as a stone wall or a cliff, the wave bounces back, just as a ball bounces off a floor.

You only hear a clear echo when the surface is far enough away. Sound travels about 343 meters in a second, which is roughly the length of three football fields. Your brain needs about a tenth of a second to tell one sound from another. If the wall is too close, the echo comes back too quickly and blends in with the original sound, so it seems like your voice is just a little louder.

Animals use echoes, too. A bat makes high squeaks and listens for the echoes that come back from insects. By noticing how long the echo takes, the bat can tell how far away its dinner is, even in complete darkness.

Questions

1. What is an echo?

_____

_____

2. What kinds of surfaces make sound bounce back?

_____

_____

3. Why does a pillow or a curtain not make an echo?

_____

_____

4. Why do you not hear a clear echo when a wall is very close?

_____

_____

5. How does a bat use echoes?

_____

_____

Words to know

echo: a sound that bounces back and is heard again
canyon: a deep valley with steep rock walls
surface: the outside or top layer of something
smooth: flat and even, without bumps
original: the first one, before any copies

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

How Echoes Happen

Square group

Have you ever shouted into a canyon or a large, empty gymnasium and heard your own voice return to you? That repeated sound is called an echo. An echo is not a trick of any kind. It is simply a sound that has bounced off a surface and traveled back to your ears.

When you speak, your voice produces sound waves that travel through the air. A sound wave continues moving until it encounters an obstacle. If it strikes a soft object, such as a curtain or a pillow, much of the sound is absorbed. If it strikes a hard, smooth surface, such as a stone wall or a cliff, the wave rebounds, just as a ball bounces off a floor.

You can hear a distinct echo only when the surface is sufficiently far away. Sound travels about 343 meters in a second, which is roughly the length of three football fields. Your brain requires approximately a tenth of a second to distinguish one sound from another. If the wall is too close, the echo returns so quickly that it merges with the original sound, and your voice simply seems slightly louder.

Animals rely on echoes as well. A bat emits high squeaks and listens for the echoes that return from insects. By noticing how long the echo takes, the bat can determine how far away its dinner is, even in complete darkness.

Questions

1. What is an echo?

_____

_____

2. What kinds of surfaces cause sound to rebound?

_____

_____

3. Why does a pillow or a curtain not create an echo?

_____

_____

4. Why can you not hear a distinct echo when a wall is very close?

_____

_____

5. How does a bat rely on echoes?

_____

_____

Words to know

echo: a sound that bounces back and is heard again
canyon: a deep valley with steep rock walls
surface: the outside or top layer of something
smooth: flat and even, without bumps
original: the first one, before any copies

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

For the teacher: How Echoes Happen

Each student sheet carries a shape, not a level. The same topic and facts, written three ways.

Circle: How Echoes Happen

Easier · 213 words · Flesch-Kincaid grade 2.8

1. A sound that bounces off a surface and comes back to your ears.
2. Hard, smooth surfaces such as a stone wall or a cliff.
3. Soft objects soak up much of the sound instead of sending it back.
4. The echo comes back too fast and blends in with the first sound.
5. It listens to echoes from insects to tell how far away they are.

Triangle: How Echoes Happen

This passage · 231 words · Flesch-Kincaid grade 5.3

1. A sound that bounces off a surface and returns to your ears.
2. Hard, smooth surfaces such as a stone wall or a cliff.
3. Soft objects soak up much of the sound instead of bouncing it back.
4. The echo returns too quickly and blends in with the original sound.
5. It listens to echoes from insects to tell how far away they are.

Square: How Echoes Happen

Harder · 232 words · Flesch-Kincaid grade 6.8

1. A sound that has bounced off a surface and traveled back to your ears.
2. Hard, smooth surfaces such as a stone wall or a cliff.
3. Soft objects absorb much of the sound instead of sending it back.
4. The echo returns so quickly that it merges with the original sound.
5. It listens to echoes from insects to determine how far away they are.