

Name: _____ Date: _____



What is an Acoustical Engineer?

Draw and label a picture of an acoustical engineer at work.



Explain your drawing of an acoustical engineer:

Name: _____ Date: _____

What is an Acoustical Engineer?

B

Draw a picture of an acoustical engineer at work. Label your picture.



Name: _____ Date: _____

A

B

What is an Acoustical Engineer?

Which of the following would an acoustical engineer do for his or her job? Mark **ALL** that apply:

- figure out how to make a machine quieter
- study the behavior of animals making sounds
- design a computer
- repair radios
- design a scientific instrument to record animal sounds
- make a diagram for a sound-proof room
- fix musical instruments
- create a material that can stop echoes in a concert hall

Name: _____ Date: _____

A

B

Directions: For each sentence below, use ONE word from the work bank below to complete the sentence.

WORD BANK

pitch	damp	vibrate
volume	travel	duration
	increase	

1. If you put a box over a radio, the _____ will be lower.
2. Covering your ears with your hands will probably _____ sounds.
3. Sounds are made when objects _____ .
4. Some kinds of materials, like water and metal, can help sounds _____ a long way.
5. Elephants make sounds with such a low _____ that humans cannot hear them.

Name: _____ Date: _____

Directions: For each question below, write your answer in the space provided.

1. If you hear a very loud sound outside, can you completely stop the sound from coming into your house? Explain your answer.

2. A tuning fork makes a loud sound if you strike it against a table. Describe 2 things you could do to make the sound quieter:

(1) _____

(2) _____

Name: _____ Date: _____

1. Describe 2 ways that you could damp sounds from a radio:

(1) _____

(2) _____

2. A boy and his brother are racing model cars. The cars keep falling off the track and making a loud noise when they hit the floor. The boys want to find a material to damp the sound. What material should they use? Circle the BEST answer:

- A. foam
- B. a tin pan
- C. a piece of newspaper
- D. a sheet of aluminum foil

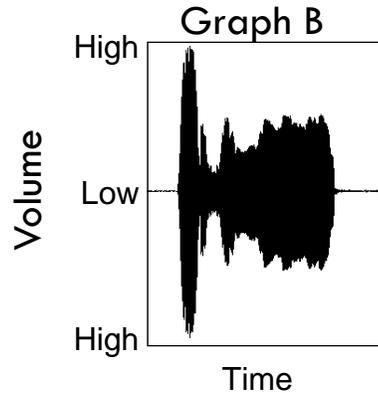
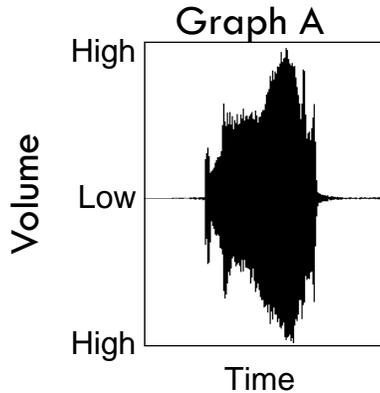
3. Why should they use the material you chose? Explain your answer.

Name: _____ Date: _____

A

B

Graph A and Graph B show diagrams of 2 different sounds. Use the diagram to answer questions 1-3 on this page.



1. What 2 properties of sound do both of these graphs show?

2. Which sound reaches the higher pitch?

- A. The sound shown by Graph A
- B. The sound shown by Graph B
- C. Both sounds reach the same pitch
- D. These graphs do not show pitch

3. Which sound reaches the highest volume?

- A. The sound shown by Graph A
- B. The sound shown by Graph B
- C. Both sounds reach the same volume
- D. These graphs do not show volume

Name: _____ Date: _____

A scientist is studying bird songs. Observers sent him these 4 graphs. Use the graphs to answer questions 1-4 on

1. Put a circle around ALL of the graphs that show a pitch decreasing at least once.

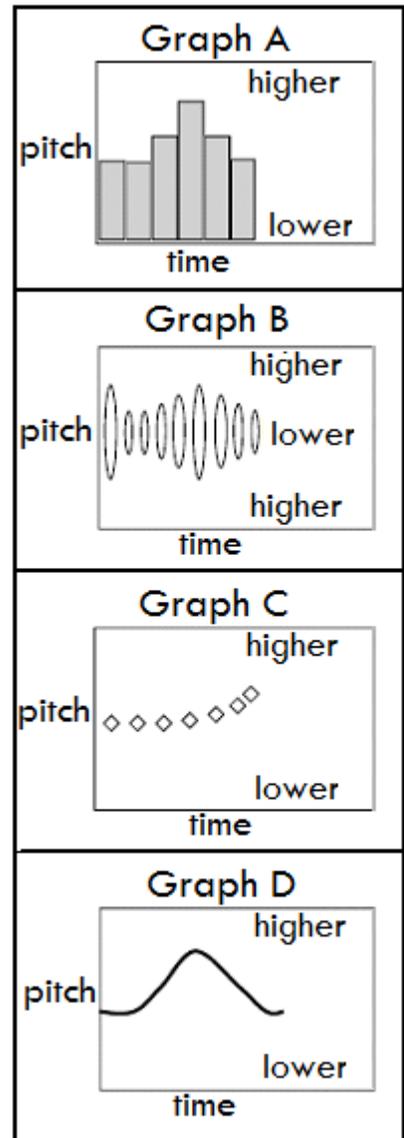
2. Draw a line connecting the 4 graphs that could represent the same bird song.

3. Which graph shows a sound where the beginning pitch is higher than the ending pitch? Circle your answer below.

- | | |
|------------|------------|
| A. Graph A | C. Graph C |
| B. Graph B | D. Graph D |

4. Which graph shows a sound where the beginning pitch is lower than the ending pitch? Circle your answer below.

- | | |
|------------|------------|
| A. Graph A | C. Graph C |
| B. Graph B | D. Graph D |



Name: _____ Date: _____

A

B

*Directions: For each question below, circle the **BEST** answer.*

1. The volume of a sound describes:

- A. how loud it is.
- B. how long it lasts.
- C. how much it echoes.
- D. how high-pitched it is.

2. The pitch of a sound is:

- A. how loud the sound is.
- B. how high the sound is.
- C. how long the sound lasts.
- D. all of the above.

3. How are higher-pitched sounds different from lower-pitched sounds?

Higher pitched sounds:

- A. are louder.
- B. last for a longer time.
- C. last for a shorter time.
- D. are made by faster vibrations.

4. When a sound has a short duration it means that:

- A. the pitch of the sound is low.
- B. the sound does not last long.
- C. the sound does not have much energy.
- D. the vibrations making the sound are fast.

Name: _____ Date: _____

A

B

*Directions: For each question below, circle the **BEST** answer.*

1. The picture shows a guitar. How could you make one of the strings on the guitar have a higher pitch?

- A. loosen the string
- B. tighten the string
- C. play the guitar louder
- D. replace it with a thicker string



2. What happens when you make a string on the guitar have a higher pitch?

- A. The string gets longer.
- B. The string gets louder.
- C. The string vibrates faster.
- D. The string vibrates more slowly.

3. A student is playing a violin. She plays a note that lasts 5 seconds. She then plays the same note again and it lasts for 2 seconds. What is different about the 2 notes?

- A. pitch
- B. volume
- C. duration
- D. the notes are the same



Name: _____ Date: _____

Directions: Make up and represent a short song for at least 2 people using at least 2 of the instruments listed below. You can sketch some ideas on the back of this page, but draw your final design in the box below.



large drum



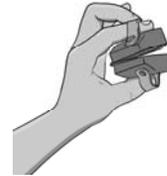
small drum



triangle



rhythm sticks



clappers



tambourine

What properties of sound will you represent? _____

Draw your final song representation in the box below. Label the parts.

Name: _____ Date: _____

B

Directions: Make up and represent a song for at least 1 person using at least 1 of the instruments listed below. You can sketch some ideas on the back of this page, but draw your final design in the box below.



large
drum



small
drum



triangle



rhythm
sticks



clappers



tambourine

What properties of sound will you represent? _____

Draw your final song representation in the box below. Label the parts.

Name: _____ Date: _____

What is an Acoustical Engineer?

Draw and label a picture of an acoustical engineer at work.

A good picture would show someone working on problems related to sound.

Examples include: someone designing a way to make a machine quieter, drawing a diagram of a sound-proof room, creating a material that can stop echoes in a concert hall, etc.

Explain your drawing of an acoustical engineer:

Answers will vary, but may include: a person concerned with solving problems related to sound.

Name: _____ Date: _____

What is an Acoustical Engineer?

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1. If you put a box over a radio, the volume will be lower.
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5. Elephants make sounds with such a low pitch that humans cannot hear them.

Name: _____ Date: _____

Directions: For each question below, write your answer in the space provided.

1. If you hear a very loud sound outside, can you completely stop the sound from coming into your house? Explain your answer.

No, you can only make the sound quieter.

2. A tuning fork makes a loud sound if you strike it against a table. Describe 2 things you could do to make the sound quieter:

Answers will vary, but may include: wrap the tuning fork with cloth, put clay at the ends of the tuning fork, put the tuning fork into water, etc.

Name: _____ Date: _____

1. Describe 2 ways that you could damp sounds from a radio:

Answers will vary, but may include: put the radio under a blanket, turn down the volume control, cover your ears with your hands, etc.

2. A boy and his brother are racing model cars. The cars keep falling off the track and making a loud noise when they hit the floor. The boys want to find a material to damp the sound. What material should they use? Circle the BEST answer:

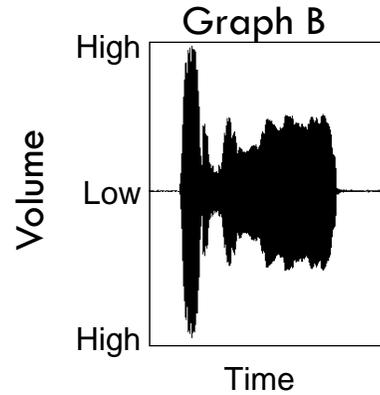
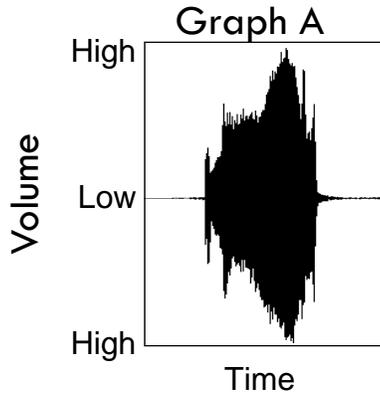
- A. foam
- B. a tin pan
- C. a piece of newspaper
- D. a sheet of aluminum foil

3. Why should they use the material you chose? Explain your answer.

Answers will vary, but may include: because it's soft; will stop vibrations; is thick; etc.

Name: _____ Date: _____

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volume and duration

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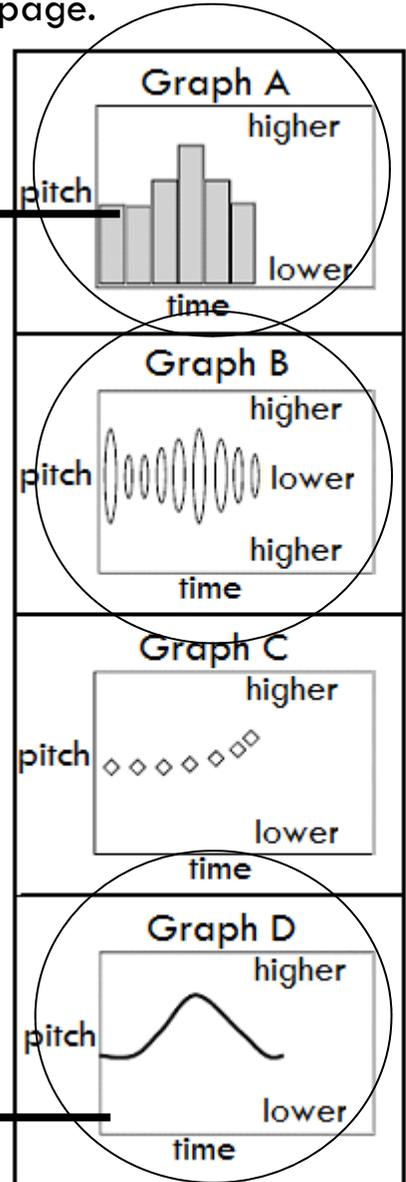
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- | | | | |
|----------------------------------|---------|----|---------|
| A. | Graph A | C. | Graph C |
| <input checked="" type="radio"/> | Graph B | D. | Graph D |

4. Which graph shows a sound where the beginning pitch is lower than the ending pitch? Circle your answer below.

- | | | | |
|----|---------|----------------------------------|---------|
| A. | Graph A | <input checked="" type="radio"/> | Graph C |
| B. | Graph B | D. | Graph D |



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Answer Key

Directions: Make up and represent a short song for at least 2 people using at least 2 of the instruments listed below. You can sketch some ideas on the back of this page, but draw your final design in the box below.



large drum



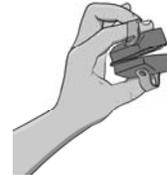
small drum



triangle



rhythm sticks



clappers

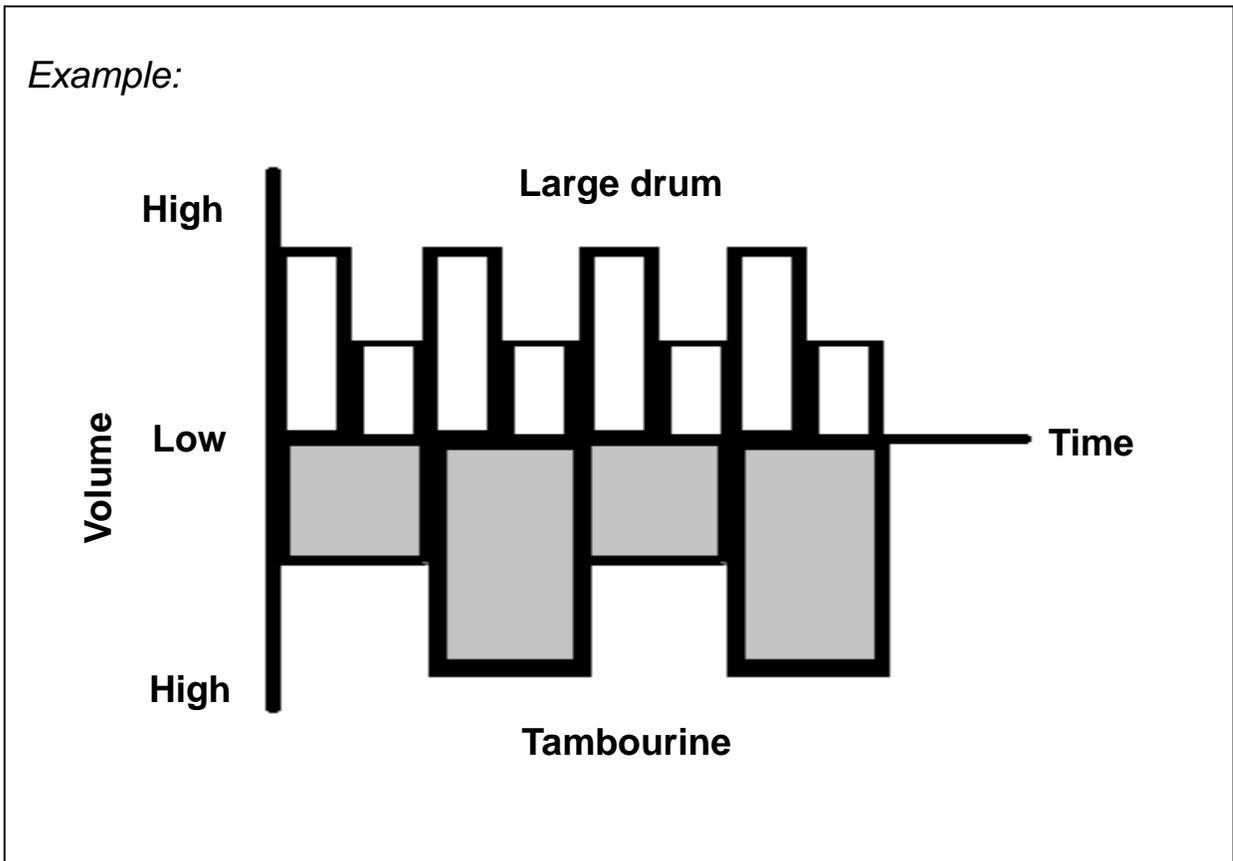


tambourine

What properties of sound will you represent?

The answer should include pitch, volume, and/or duration.

Draw your final song representation in the box below. Label the parts.



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Answer Key

Directions: Make up and represent a song for at least 1 person using at least 1 of the instruments listed below. You can sketch some ideas on the back of this page, but draw your final design in the box below.



large drum



small drum



triangle



rhythm sticks



clappers



tambourine

What properties of sound will you represent?

The answer should include pitch, volume, and/or duration.

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