



💡 Lesson Plan: Sound and Light Energy

Grade Level: 5

Subject: Physical Science

Duration: 45–60

NGSS 5-PS1-3: Make observations and measurements to identify materials based on their properties.

🎯 Learning Objectives

By the end of this lesson, students will be able to:

- **Identify** the characteristics of sound waves including pitch, volume, and frequency.
- **Describe** how sound and light travel through different mediums.
- **Explain** the concepts of reflection, absorption, and refraction of light.



PREVIEW

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- Printed copies of the Study Guide (<https://newpathworksheets.com/api/guide/study-guide-science-grade-5-sound-and-light-energy.pdf>)
- Activity Lesson: Sound & Light (<https://newpathworksheets.com/api/activity-lesson/activity-lesson-science-grade-5-sound-and-light-energy-sound-light-4.pdf>)
- Practice Worksheet 1 (<https://newpathworksheets.com/api/worksheet/worksheet-science-grade-5-sound-and-light-energy-0.pdf>)
- Practice Worksheet 2 (<https://newpathworksheets.com/api/worksheet/worksheet-science-grade-5-sound-and-light-energy-1.pdf>)



- Administer Practice Worksheet 1 as a short quiz evaluating knowledge of sound travel, frequency, and vibrations. (<https://newpathworksheets.com/api/worksheet/worksheet-science-grade-5-sound-and-light-energy-0.pdf>)
- Collect the quizzes to assess individual comprehension and plan for any necessary reteaching.

Differentiation Strategies

For advanced learners:

- Have students research the invisible parts of the electromagnetic spectrum (like x-rays or microwaves) and present their uses.
- Challenge students to measure and chart the decibel levels of different classroom environments using a kid-friendly decibel meter app.



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Complete List of Available Resources:

- NewPathWorksheets: Sound and Light Energy (<https://newpathworksheets.com/science/grade-5/sound-and-light-energy>)
- Study Guide (<https://newpathworksheets.com/api/guide/study-guide-science-grade-5-sound-and-light-energy.pdf>)
- Activity Lesson (<https://newpathworksheets.com/api/activity-lesson/activity-lesson-science-grade-5-sound-and-light-energy-sound-light-4.pdf>)



- Practice Worksheet 0 (<https://newpathworksheets.com/api/worksheet/worksheet-science-grade-5-sound-and-light-energy-0.pdf>)
- Practice Worksheet 1 (<https://newpathworksheets.com/api/worksheet/worksheet-science-grade-5-sound-and-light-energy-1.pdf>)
- Practice Worksheet 2 (<https://newpathworksheets.com/api/worksheet/worksheet-science-grade-5-sound-and-light-energy-2.pdf>)
- Practice Worksheet 3 (<https://newpathworksheets.com/api/worksheet/worksheet-science-grade-5-sound-and-light-energy-3.pdf>)
- Vocabulary Set 1 (<https://newpathworksheets.com/api/vocabulary/vocabulary-science-grade-5-sound-and-light-energy-1.pdf>)
- Vocabulary Set 2 (<https://newpathworksheets.com/api/vocabulary/vocabulary-science-grade-5-sound-and-light-energy-2.pdf>)



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NEW PATH LEARNING

SOUND AND LIGHT ENERGY

What Is Sound?

Sound is a type of energy that travels in waves which are caused by vibrations.

How Does Sound Travel?

Sound needs something in which to travel. Sound can travel through solids, liquids, and gases. Sound travels through solids the fastest.

Characteristics of Sound



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- **Pitch and Loudness:** the highness or lowness of a sound.
- **Frequency:** The number of vibrations in a period of time is called the **frequency** of a vibration. The faster the vibration, the higher the frequency. Frequency is measured in Hertz (Hz).
- **Volume:** The loudness or quietness of a sound is its **volume**. The loudness of a sound can be measured in units called **decibels**.

Measurement Examples of Various Sounds

- a whisper = 10 decibels
- normal conversation = 60 decibels
- a train = 100 decibels
- rock concert = 110-140 decibels

- **Reflection and Absorption:** Reflection is when sound bounces off an object. An echo is a reflected sound. **Absorption** is when sound is taken in by an object.

What is Light?

Light is a form of energy that travels in waves.



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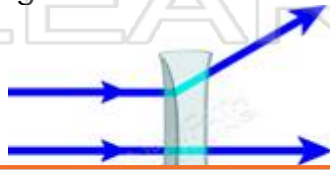


Invisible Waves

Most waves in the **electromagnetic spectrum** are invisible to our eyes. Xrays and waves in your microwave that cook your food are examples of electromagnetic waves.

What is a concave lens?

A **concave lens** is **thinner in the middle** than on its edges. We use a concave lens to make things look **smaller**.



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Transparent, Translucent and Opaque Materials

A **transparent** material allows light to pass through clearly without any effects, such as a window.

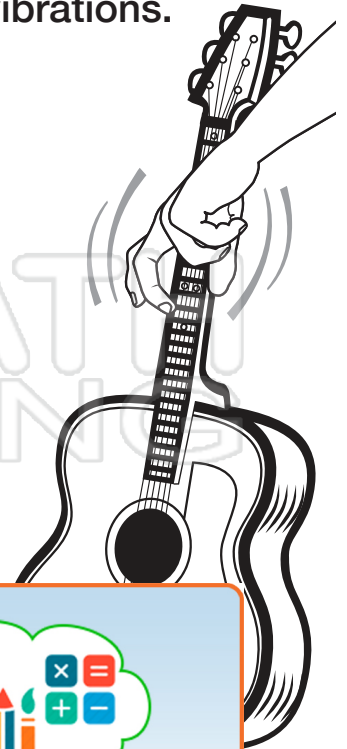
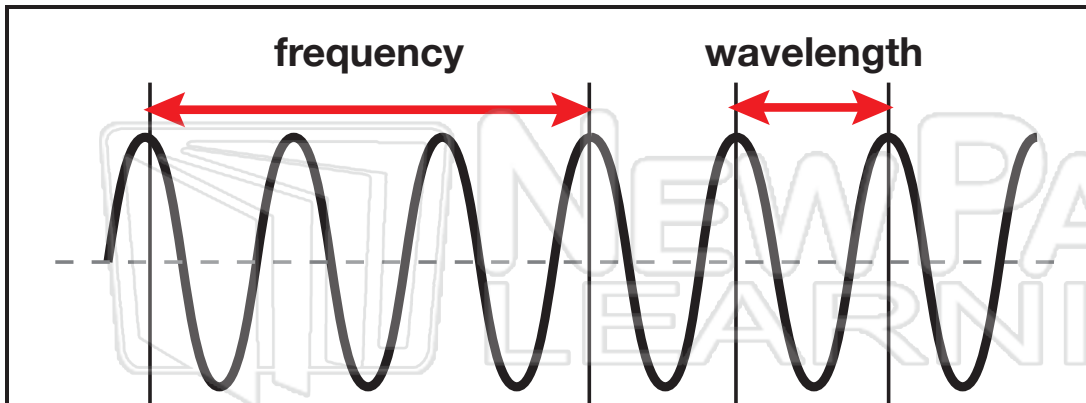
A **translucent** material allows light to pass through it, but it is not clear. Wax paper is translucent.

An **opaque** material does not allow any light to pass through at all, such as a brick wall.



Name _____ Class _____ Date _____

Sound is a type of energy that travels in waves caused by vibrations.
Vibrations are movements made rapidly back and forth.



Sound waves are an invisible transfer of sound energy.
A **wavelength** refers to the **distance** between a point on one

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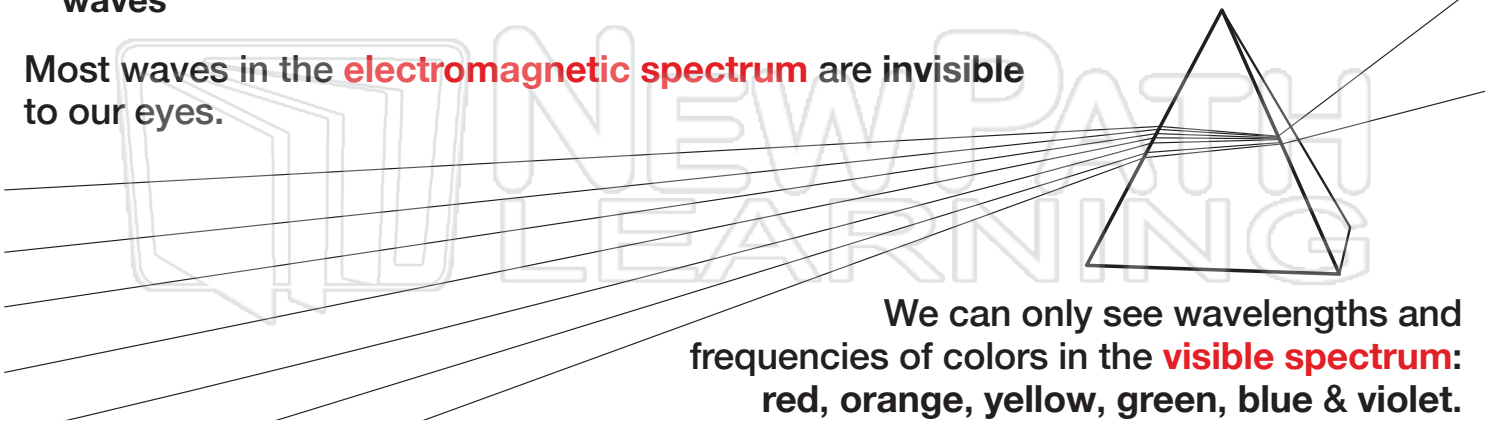
Light
is no
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light
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radio waves microwaves visible light ultraviolet x-rays gamma rays

Most waves in the **electromagnetic spectrum** are invisible to our eyes.



We can only see wavelengths and frequencies of colors in the **visible spectrum**: red, orange, yellow, green, blue & violet.

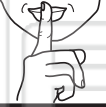




Name _____ Class _____ Date _____

The loudness or quietness of a sound is its **volume**. The loudness of a sound can be measured in units called **decibels**.

Use the chart to answer the questions. Fill in the blanks below.

Decibels of Sound

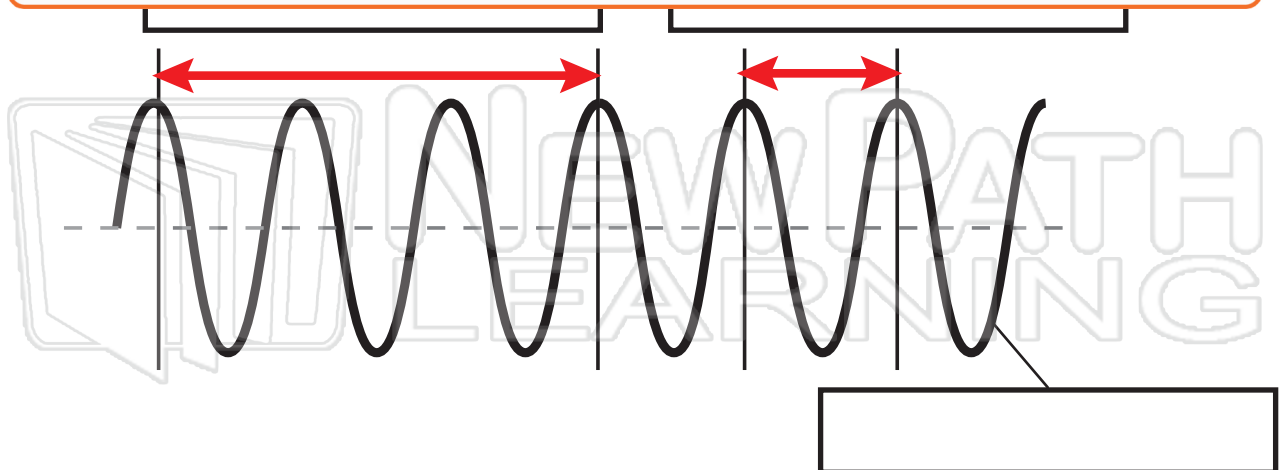
a whisper		10
normal voice		60
train horn		100



Which
Which
Which
How

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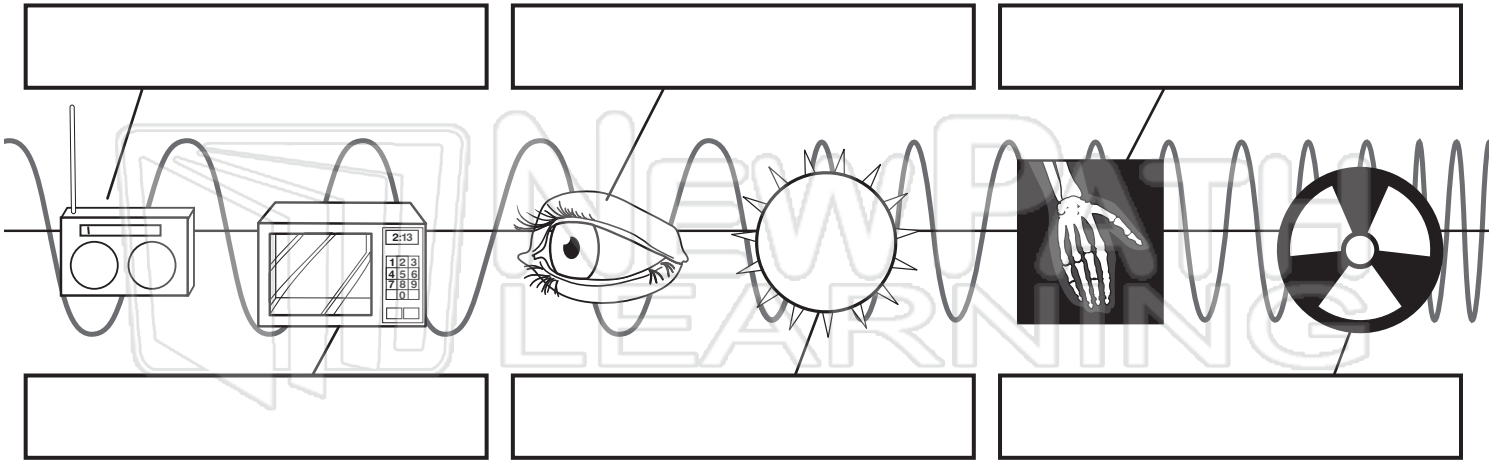


Sound & Light

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Name _____ Class _____ Date _____

Label the different wavelengths on the **electromagnetic spectrum**.



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Answer Key

The loudness or quietness of a sound is its **volume**. The loudness of a sound can be measured in units called **decibels**.

Use the chart to answer the questions. Fill in the blanks below.

Decibels of Sound

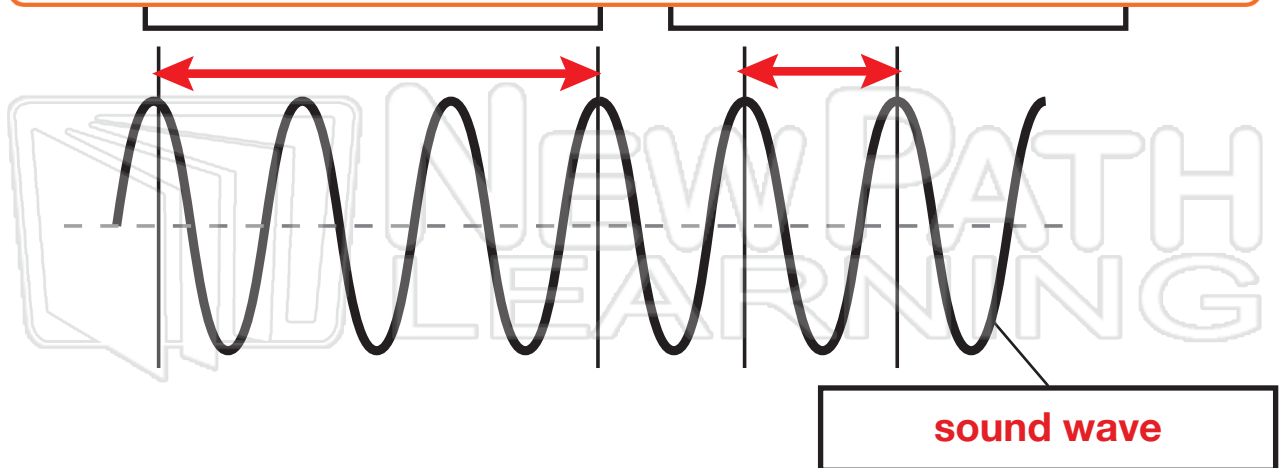
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normal voice		60
train horn		100



Which
Which
Which
How

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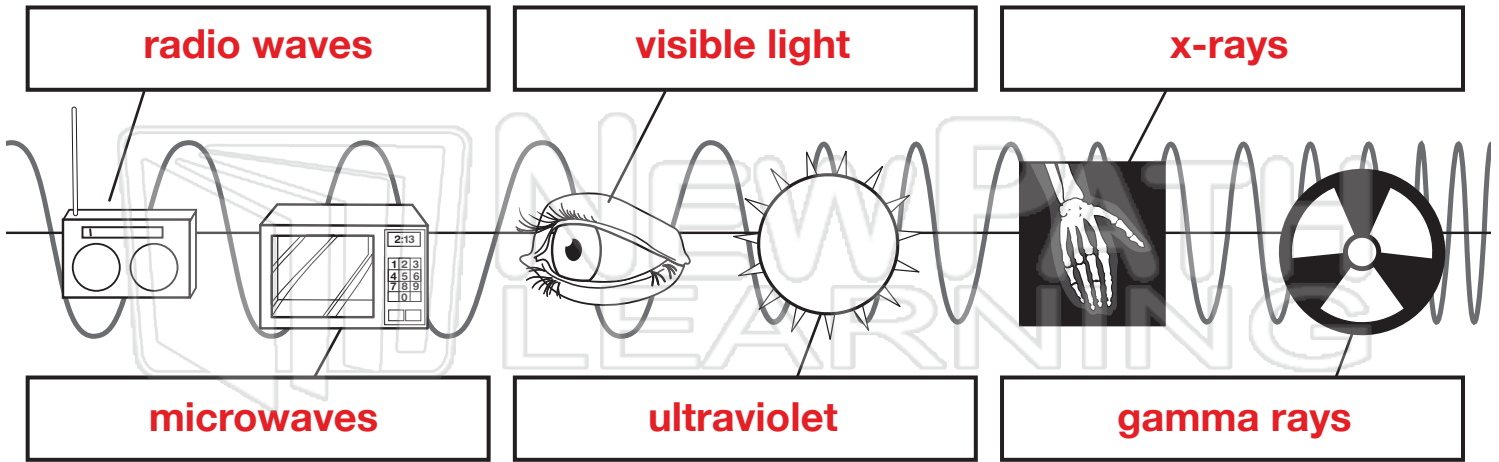
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Answer Key

Label the different wavelengths on the **electromagnetic spectrum**.



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Name _____ Class _____ Date _____

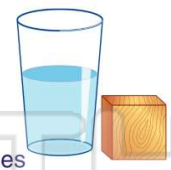
1 **Sound** is a type of **energy** that travels in **waves** that are caused by _____.

A ears
B frequencies
C decibels
D vibrations



2 Sound cannot travel through a vacuum and needs something in which to travel. Which of the following can sound travel through?

A gases only
B solids only
C liquids and gases only
D solids, liquids, and gases



3 Through which material can sound waves travel the **fastest**?

A solids
B liquids
C gases



4 _____ is the rapid **back-and-forth movement** of an object.

A Decibel
B Frequency



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D vibration

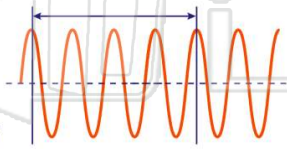


C both diagram A and B
D neither diagram



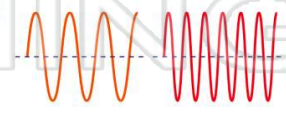
9 The **number of vibrations in a period of time** is called the _____ of a sound wave.

A volume
B pitch
C timing
D frequency



10 Look at the diagram below. This shows that the **slower** the vibration, the **higher** the frequency.

True or false?
A true
B false





Name _____ Class _____ Date _____

1 **Sound** is a type of **energy** that travels in **waves** that are caused by _____.

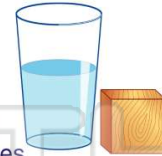
- A ears
- B frequencies
- C decibels
- D vibrations



(D)

2 Sound cannot travel through a vacuum and needs something in which to travel. Which of the following can sound travel through?

- A gases only
- B solids only
- C liquids and gases only
- D solids, liquids, and gases



(D)

3 Through which material can sound waves travel the **fastest**?

- A solids
- B liquids
- C gases



(A)

4 _____ is the rapid **back-and-forth movement** of an object.

- A Decibel
- B Frequency



(C)

5



(C)

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(B)

D vibration



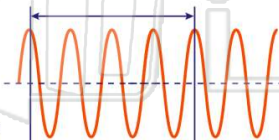
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The **number of vibrations in a period of time** is called the _____ of a sound wave.

- A volume
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- D frequency

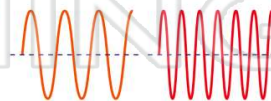


(D)

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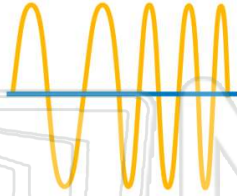
(B)



Name _____ Class _____ Date _____

1 What is the **unit of measure** used for **frequency**?

- A a gram
- B volume
- C a decibel
- D a hertz



2 Notice where the two fingers are placed on the strings of the violins. With fingers in these positions, **which violin would play the higher-pitched sound?**

- A violin A
- B violin B
- C both play same high sound
- D both play same low sound



3 The **loudness or quietness** of a sound is its _____.

- A pitch
- B frequency
- C volume



4 Doctors recommend avoiding sounds that are louder than **110 decibels**. **Which sound is harmful to human ears?**

- A a whisper
- B normal conversation

Decibels of Sound		
a whisper		10
normal conversation		60

5



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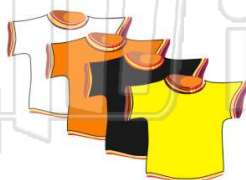
D light

- B see something larger than it really is
- C see through a dark lens
- D see an image in a mirror

9

Which colored t-shirt would **absorb** the Sun's rays the **most**?

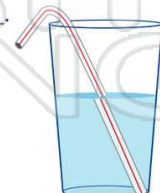
- A white
- B yellow
- C black
- D orange



10

When looking **through water**, light rays can **appear bent**. This picture is an example of _____.

- A reflection
- B refraction
- C a spectrum
- D frequency

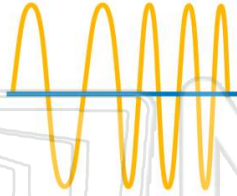




Name _____ Class _____ Date _____

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D

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- D both play same low sound



A

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- B frequency
- C volume



C

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- A a whisper
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Decibels of Sound	
a whisper	10
normal conversation	60

D

5



A

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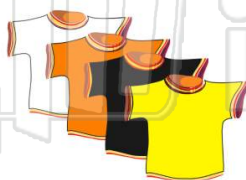
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D

9

Which colored t-shirt would **absorb** the Sun's rays the **most**?

- A white
- B yellow
- C black
- D orange



C

10 When looking **through water**, light rays can **appear bent**. This picture is an example of _____.

- A reflection
- B refraction
- C a spectrum
- D frequency



B



Name _____ Class _____ Date _____

Match each of the following terms to its definition:

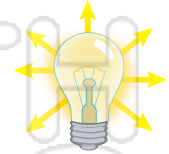
Reflection
Light

Concave lens
Opaque

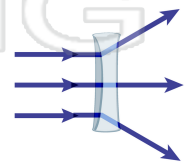
Convex lens
Pitch

Echo
Frequency

1. - a form of energy that travels in waves; brightness that comes from an object such as the sun, a fire, a flashlight, or a lamp



2. - type of lens which is thinner in the middle than on its edges and makes things look smaller



3. makes



4. back;

5. time

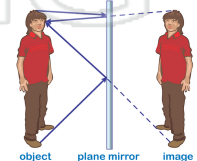
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6. through

7. - the perceived frequency of sound



8. - the deflection of a wave off the surface of an object





Name _____ Class _____ Date _____

Match each of the following terms to its definition:

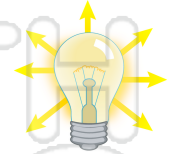
Reflection
Light

Concave lens
Opaque

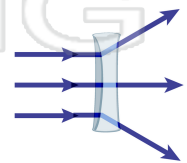
Convex lens
Pitch

Echo
Frequency

1. **light** - a form of energy that travels in waves; brightness that comes from an object such as the sun, a fire, a flashlight, or a lamp



2. **concave lens** - type of lens which is thinner in the middle than on its edges and makes things look smaller



3. **convex lens** - type of lens which is thicker in the middle than on its edges and makes things look larger



4. **echo** - sound that is reflected back to the listener

5. **frequency** - the number of vibrations per second

6. **opaque** - does not allow light to pass through

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7. **pitch** - the perceived frequency of sound



8. **reflection** - the deflection of a wave off the surface of an object

