

Sound

Name _____ Class _____ Date _____

1

A boat is anchored at sea. What does the **up and down** motion of the boat show?



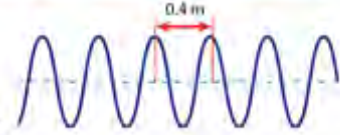
- A The molecules of water only move up and down while the energy moves forward.
- B The ocean is standing still.
- C The boat's motor is on.
- D The molecules of water move side to side while the energy moves forward.

2

What is the **frequency** of a wave with a **speed of 20 m/s** and a **wavelength of 0.4 m**?

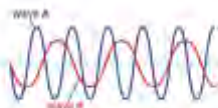
wave speed = wavelength x frequency

- A 8 Hz
- B 0.2 Hz
- C 50 Hz
- D 20.4 Hz



3

Which statement about **wave A** and **wave B** is **correct**?



- A Wave A has a greater amplitude and a greater wavelength.
- B Wave B has a greater amplitude and a greater wavelength.
- C Wave A has a greater amplitude and a shorter wavelength.
- D Wave B has a greater amplitude and a shorter wavelength.

4

Speed of sound changes due to the medium in which sound waves travel. Based on this chart, what is the **overall trend** from the **slowest to the fastest** medium?

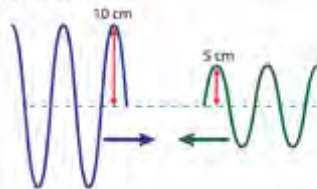
- A solids, liquids, gases
- B gases, liquids, solids
- C liquids, solids, gases
- D all the same speed

Speed of Sound		
Medium	Speed (m/s)	Notes
Air (20°C)	343	
Water (20°C)	1482	
Steel	5960	
Aluminum	5100	
Glass	5600	
Concrete	3200	
Brick	3700	
Wood	3300	
Ice	3200	

5

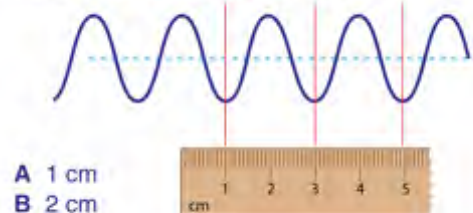
Two waves are moving in **opposite directions** through a medium. The waves will **interfere constructively**. What is the **amplitude** of the wave produced when wave A and B meet?

- A 0
- B 15
- C 5
- D 20



6

What is the **wavelength** of the wave?



- A 1 cm
- B 2 cm
- C 3 cm
- D 4 cm

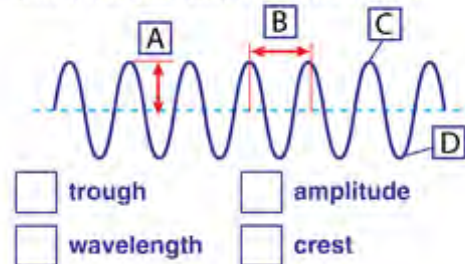
7

When you sit in a certain seat in an auditorium you notice the sound is actually **softer** than it is a few seats forward. Which **wave interaction** explains this problem?

- A reflection
- B interference
- C diffraction
- D refraction

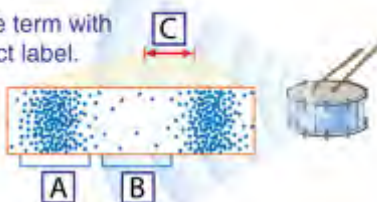
8

Match the term with the correct label.



9

Match the term with the correct label.



- ☐ compression ☐ wavelength
- ☐ rarefaction

10

Match the term with the correct definition.

- ☐ music A. sound that produces pleasing patterns
- ☐ overtones B. distinct sound of an instrument
- ☐ resonance C. natural vibrational frequency
- ☐ quality of sound

Sound

ANSWER KEY

A boat is anchored at sea.
What does the **up and down** motion of the boat show?



- A** The molecules of water only move up and down while the energy moves forward.
- B** The ocean is standing still.
- C** The boat's motor is on.
- D** The molecules of water move side to side while the energy moves forward.

(a)

ANSWER

C

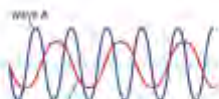
50 Hz

$$\text{speed} = \text{wavelength} \times \text{frequency}$$

$$20 \text{ m/s} = 0.4 \text{ m} \times \text{frequency}$$

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Which statement about **wave A** and **wave B** is **correct**?



- A** Wave A has a greater amplitude and a greater wavelength.
- B** Wave B has a greater amplitude and a greater wavelength.
- C** Wave A has a greater amplitude and a shorter wavelength.
- D** Wave B has a greater amplitude and a shorter wavelength.

(c)

Speed of sound changes due to the medium in which sound waves travel. Based on this chart, what is the **overall trend** from the **slowest to the fastest** medium?

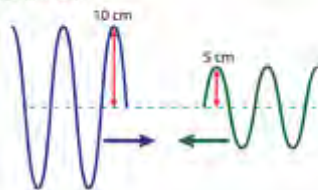
Medium	Speed (m/s)
Solids	330
Liquids	1500
Gases	340

- A** solids, liquids, gases
- B** gases, liquids, solids
- C** liquids, solids, gases
- D** all the same speed

(b)

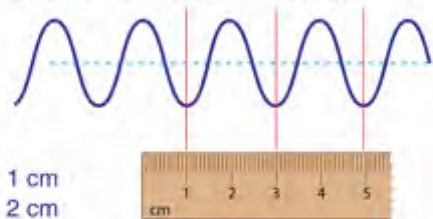
Two waves are moving in **opposite directions** through a medium. The waves will **interfere constructively**. What is the **amplitude** of the wave produced when wave A and B meet?

- A** 0
- B** 15
- C** 5
- D** 20



(b)

What is the **wavelength** of the wave?



- A** 1 cm
- B** 2 cm
- C** 3 cm
- D** 4 cm

(b)

When you sit in a certain seat in an auditorium you notice the sound is actually **softer** than it is a few seats forward. Which **wave interaction** explains this problem?

- A** reflection
- B** interference
- C** diffraction
- D** refraction

(b)

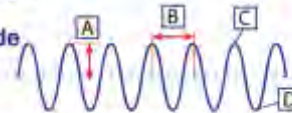
ANSWER

D trough

B wavelength

A amplitude

C crest



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ANSWER

A compression

B rarefaction

C wavelength



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ANSWER

A **music**: sound that produces pleasing patterns

C **resonance**: natural vibrational frequency

B **quality of sound**: distinct sound of an instrument

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