Geometric Optics: Wave Equations Review

⚠ This is a preview of the draft version of the quiz

Started: Nov 4 at 10:13am

Quiz Instructions

Question 1	**1 pts**

A(n) _____ wave requires a medium for propagation and its speed depends on _____.

○ electromagnetic, the medium through which its traveling

○ mechanical, the amount of energy in the wave

○ electromagnetic, the amount of energy in the wave

○ mechanical, the medium through which its traveling

Question 2	**1 pts**

In electromagnetic waves, the _____ of the wave shows how much energy it carries.

○ wave speed

⊙ amplitude

⊙ frequency

⊙ medium

Question 3

1 pts

A wave has a wavelength of 0.5 m and a frequency of 4 Hz. What is the speed of the wave?

⊙ 4 m/s

⊙ 2 m/s

⊙ 12 m/s

⊙ 8 m/s

Question 4

1 pts

For a wave moving through a given medium, as the frequency _____, the wavelength will _____.

⊙ increases, decrease

⊙ increases, increase

⊙ increases, not change

○ decreases, not change

Question 5   **1 pts**

Which of the following are the same for X-rays, FM radio waves, and gamma rays traveling through air?

○ The waves' wavelengths

○ All of the above

○ The waves' frequencies

○ The waves' speeds

Question 6   **1 pts**

Order the following EM waves from least (left) to greatest (right) frequency.

○ Visible Light < AM Raido < FM Radio < Ultraviolet Light < Microwaves

○ FM Radio < Ultraviolet Light < AM Radio < Microwaves < Visible Light

○ Microwaves < Ultraviolet Light < FM Radio < AM Radio < Visible Light

○ AM Radio < FM Radio < Microwaves < Visible Light < Ultraviolet Light

Question 7

1 pts

An EM Wave is made of a(n) _____ field and a(n) _____ field oscillating _____ to each other.

○ Magnetic | Mechanical | Perpendicular

○ Mechanical | Magnetic | Parallel

○ Electric | Magnetic | Parallel

○ Electric | Mechanical | Parallel

○ Magnetic | Electric | Perpendicular

Question 8

1 pts

The oscillation of a transverse wave is _____ to its direction of travel and the oscillation of a longitudinal wave is _____ to its direction of travel.

○ Parallel | Parallel

○ Perpendicular | Perpendicular

○ Perpendicular | Parallel

○ Parallel | Perpendicular

Question 9

1 pts

A certain wave has an amplitude of 1.5m and a frequency of 2Hz.

How long does it take in seconds for this wave to move six full wavelengths?

- ○ 3
- ○ 2
- ○ 1
- ○ 4

Question 10

1 pts

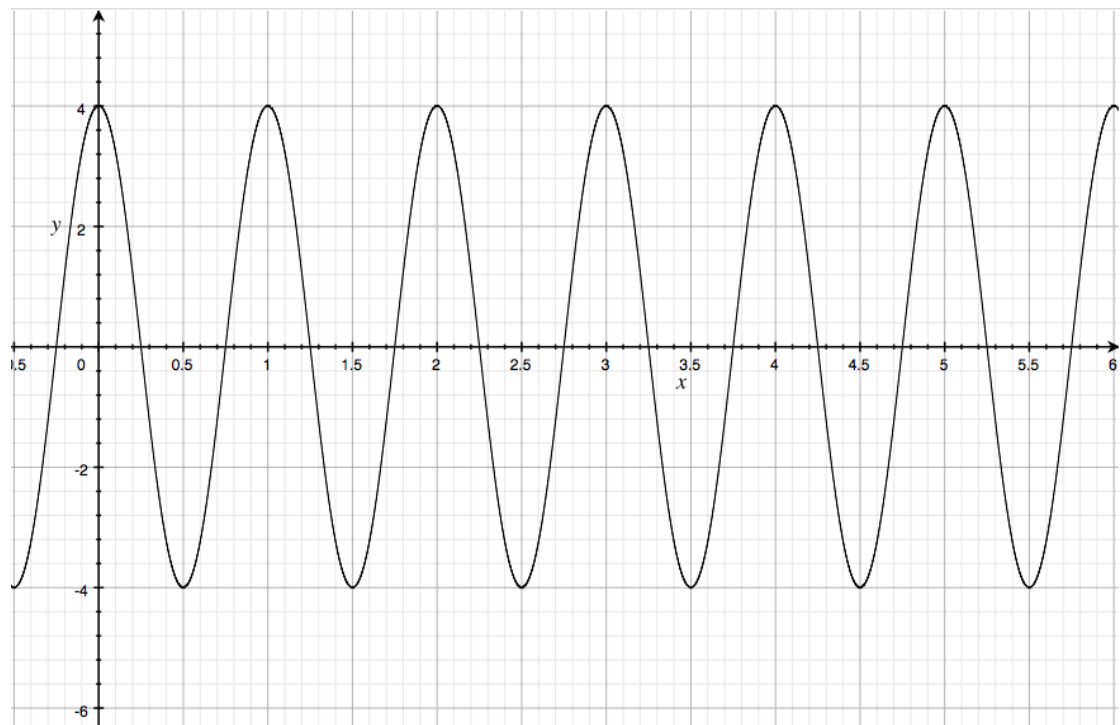A wave with frequency of 4Hz, an amplitude of 5.0cm, and is at max height (5.0cm) at time t=0.

What is the height in cm of the wave at time t=0.5 seconds?

- ○ 5
- ○ 3.75
- ○ 1.25
- ○ 0

Question 11

1 pts

What is the equation of the wave shown below?

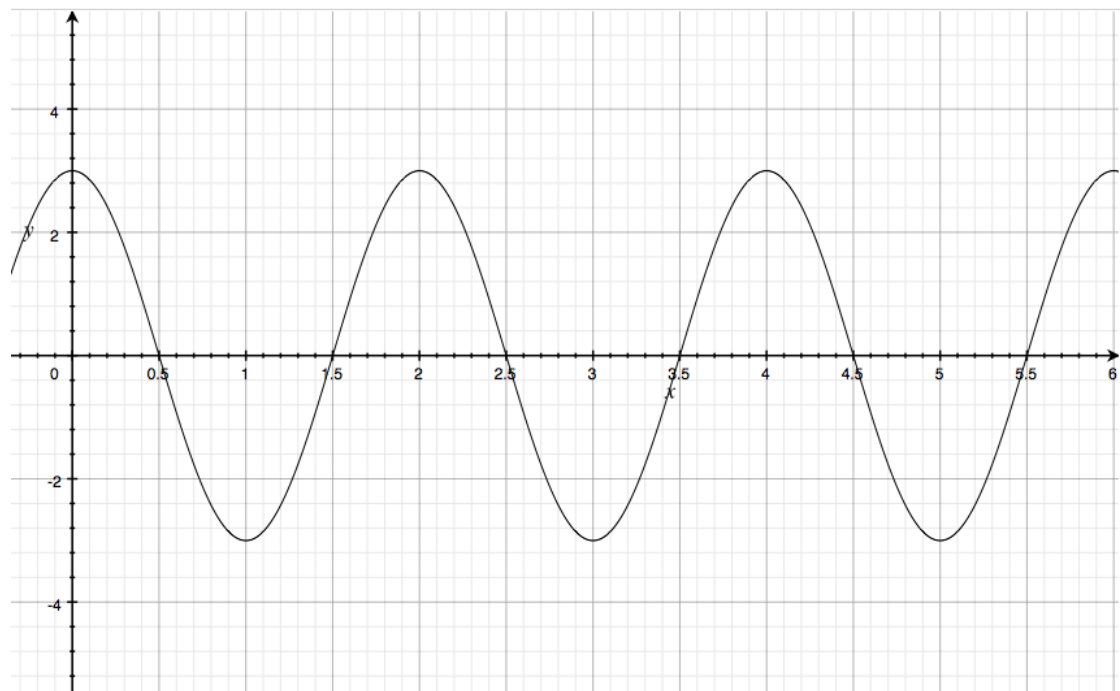- ○ y(t)=4cos(2πt)

- ○ y(t)=8cos(4πt)

- ○ y(t)=4cos(4πt)

- ○ y(t)=8cos(2πt)

Question 12   1 pts

What is the equation of the wave shown below?

○ y(t)=3cos(2πt)

○ y(t)=6cos(πt)

○ y(t)=6cos(2πt)

○ y(t)=3cos(πt)

Question 13   **1 pts**

The trough-to-trough or crest-to-crest distance along a wave is called the _____ and is measured in _____.

○ Wavelength | Meters

○ Wavelength | Seconds

○ Period | Meters

○ Period | Seconds

Question 14   **1 pts**

Wave 1 has a frequency of 2 Hz, an amplitude of 10 cm, and is at max height at time t = 0.

Wave 2 has a frequency of 1 Hz, an amplitude of 20 cm, and is at max height at time t = 0.

What is the the difference in wave heights in cm between the two waves at time t = 0.5 seconds?

○ 20

○ 0

○ 30

○ 10

Not saved

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