

Questions of the Day

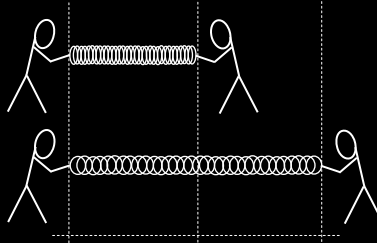
1 Dimensional Waves

Question of the Day



- Describe what happens to a pulse as it travels a greater and greater distance. What changes (if anything), what stays the same (if anything)?
- Answer: *amplitude decreases, speed stays constant*

Question of the Day

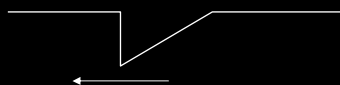


- A Slinky is stretched twice as far.
 - What system properties are affected?
 - As a result of these changes, would pulse speed increase, decrease, or stay the same?
- Answer: *tension* \rightarrow *twice as much*, *linear density* \rightarrow $\frac{1}{2}$ *as much*; both changes cause pulse speed to increase

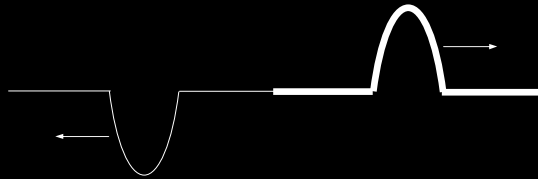
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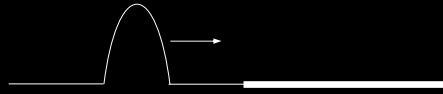
- Draw the pulse as it would appear after reflecting from a fixed end.
- Answer: *the flat leading edge of the pulse is still in front.*



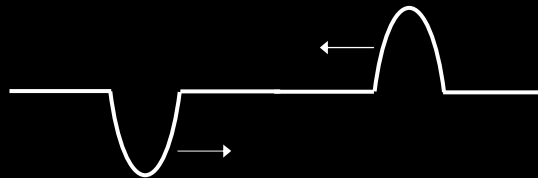
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- What single, initial pulse would have resulted in the pulse pattern seen above?
- Answer: *see below*



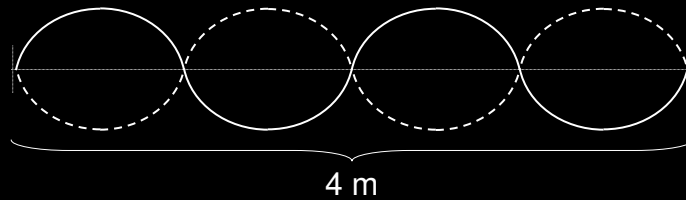
Question of the Day



- Draw the resultant of the two pulses when they pass through each other.
- This is an example of destructive interference.
- Answer: *flat line, they cancel out*



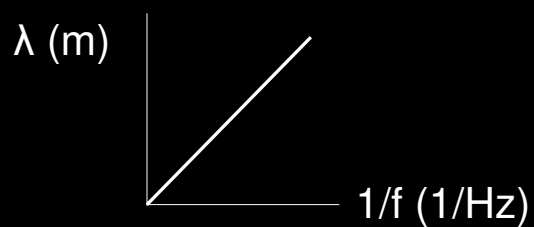
Question of the Day



- Mode: ____
- Nodes: ____
- Antinodes: ____
- Wavelength: ____

- Answer: 4, 5, 4, 2 m

Question of the Day



- What is the physical significance of this line's slope?
- Answer: *wave velocity, units are $m / (1/Hz)$
 $= m/s$*

Question of the Day



- An observant physics student lounging by a lake notices that the waves are exactly 1.5 m apart. Two waves pass by the dock every 5 s. What is the wave velocity?
- Answer: $\lambda = v \cdot 1/f \rightarrow v = f \cdot \lambda = (2/5 \text{ s}) \cdot (1.5 \text{ m}) = 0.60 \text{ m/s}$

Question of the Day



- Your lab partner is sending waves through a slinky at a frequency of 3 Hz. Your partner then doubles the frequency to 6 Hz. The resulting wavelength will change by a factor of...?
- Answer: *since f and λ are inversely proportional, any change in f is an inverted change in λ ; if f changes by $\times 2$, then λ changes by $\times 1/2$*