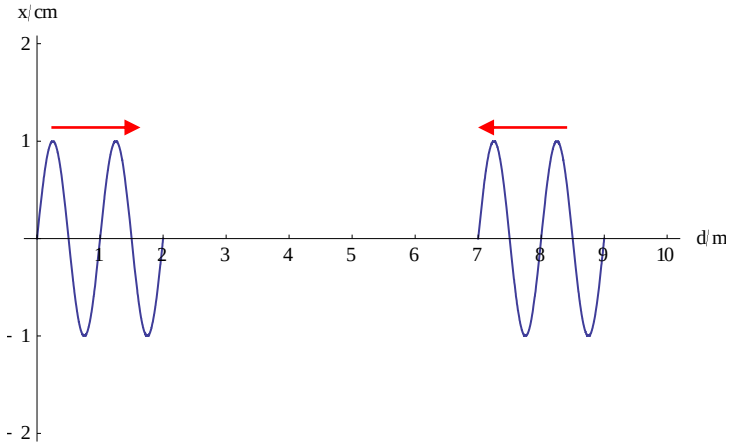
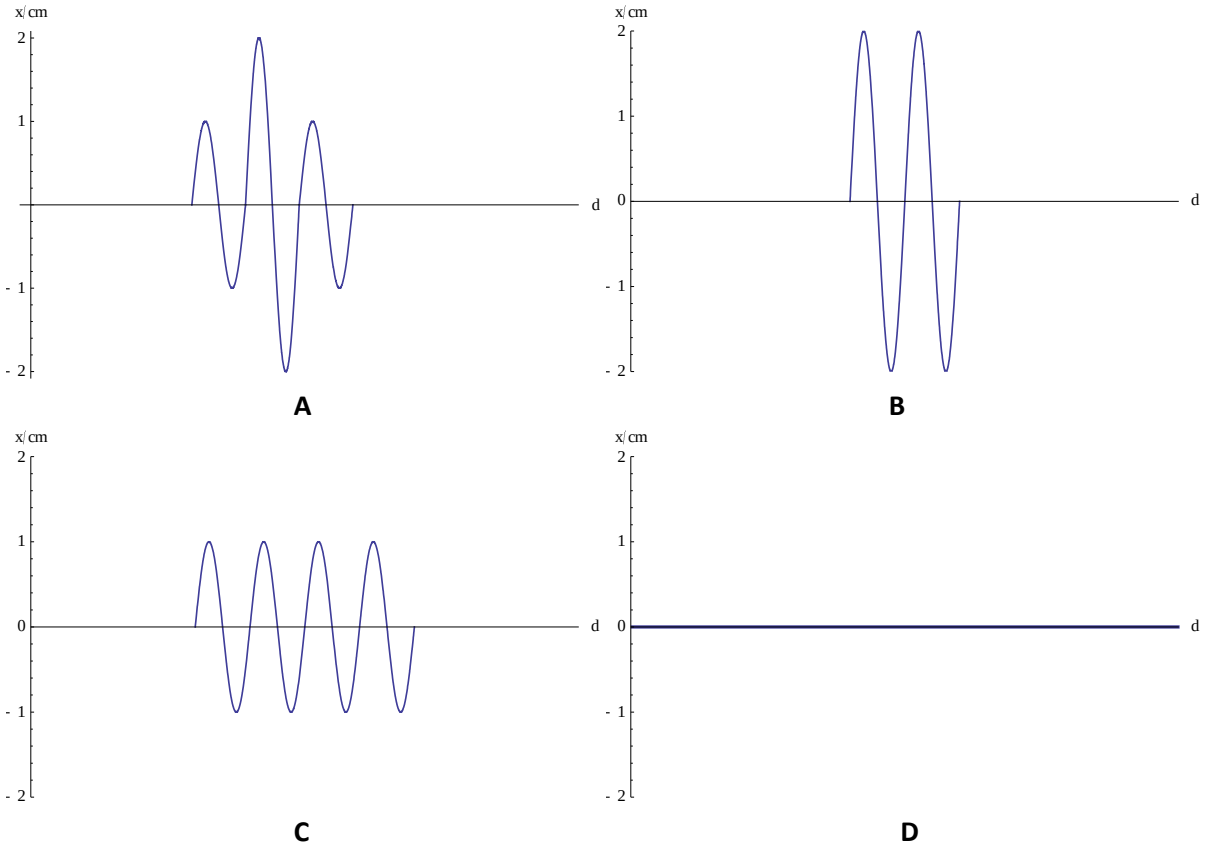
Quiz C14.1

Wave phenomena

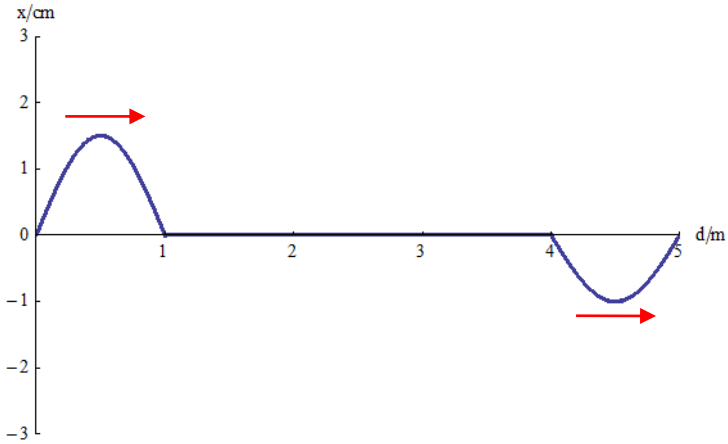
1. The diagram shows, at t =0, two pulses on a string approaching each other. The speed of each pulse is 1.5 m s^{-1}.



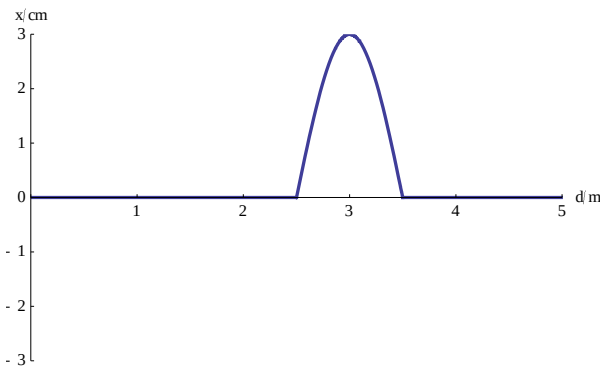
What is the shape of the string at t = 2 s?



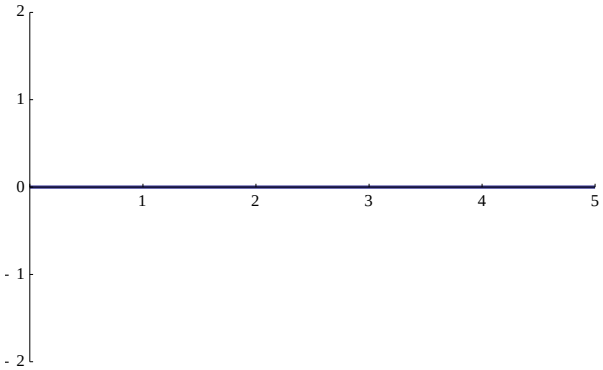
2. Two pulses travel on a string towards a **free** right end at 5 m. The pulses are shown at $t = 0$.



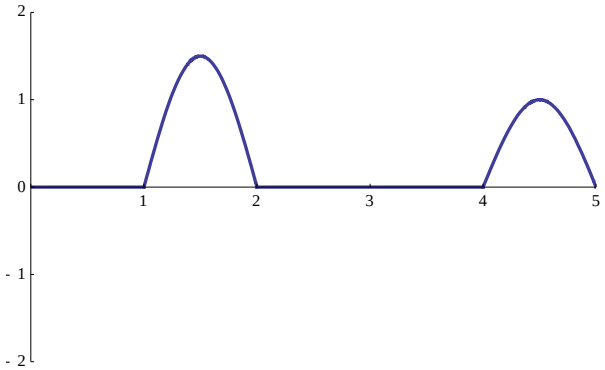
What is a possible shape of the string for $t > 0$?



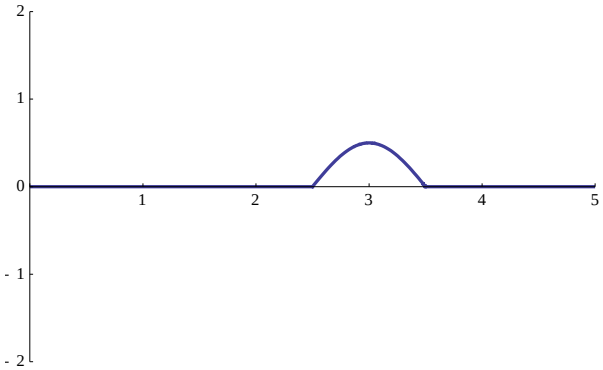
A



B

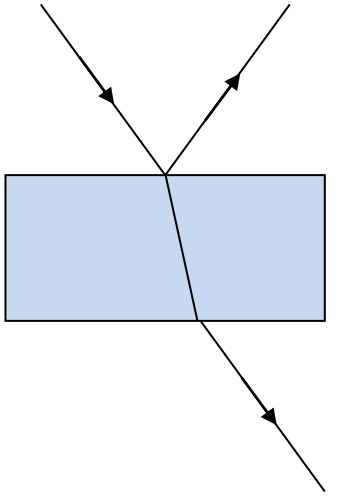


C

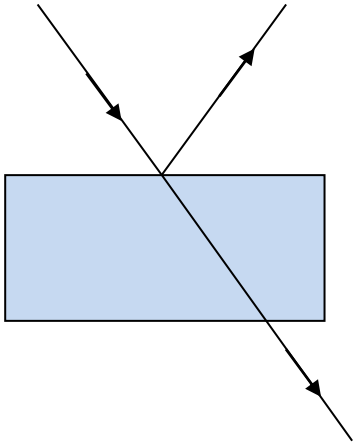


D

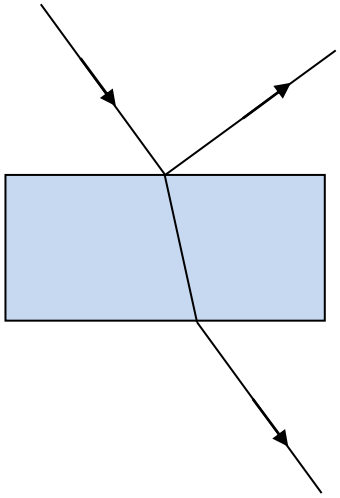
3. Which is a possible diagram for a ray of light incident on a rectangular block of glass in air?



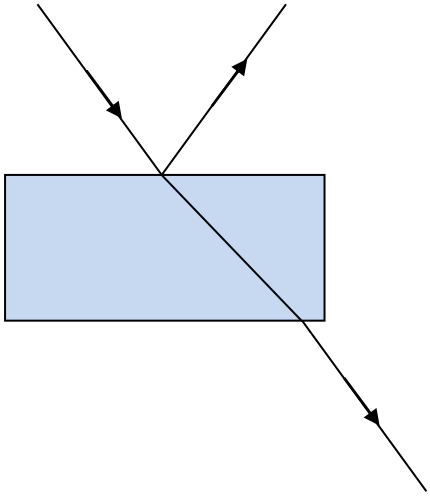
A



B



C

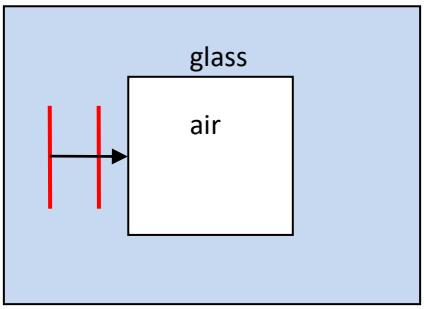


D

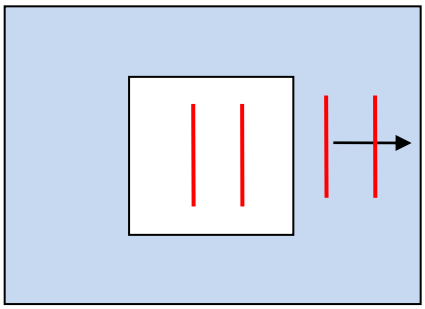
4. Waves of wavelength λ are incident on a rectangular slit of width b. In which case will the amount of diffraction through the slit be the least?

A $\lambda << b$ **B** $\lambda < b$ **C** $\lambda \approx b$ **D** $\lambda > b$

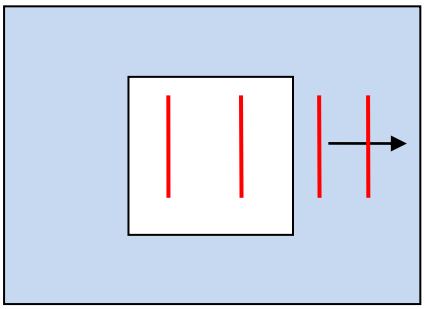
5. Light is travelling in a glass block that has an enclosure of air.



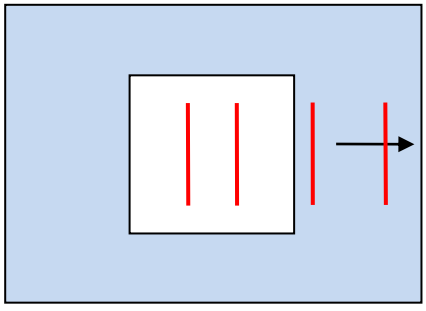
Which diagram correctly shows two wavefronts in glass and two in the air?



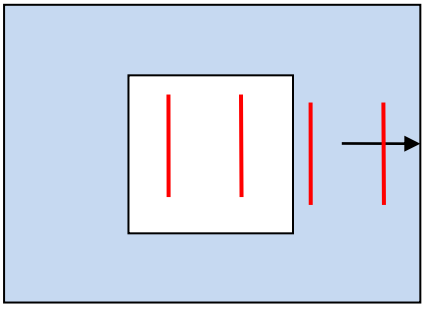
A



B

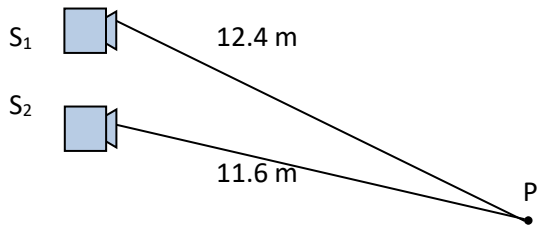


C



D

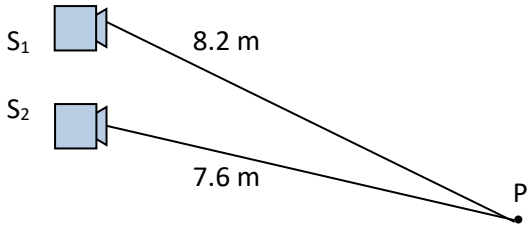
6. S_1 and S_2 are sources of sound of wavelength 0.80 m. The two sources emit waves in phase. The amplitude of each source separately at P is x_0.



What is the amplitude at P?

A 0 **B** $\frac{x_0}{2}$ **C** x_0 **D** $2x_0$

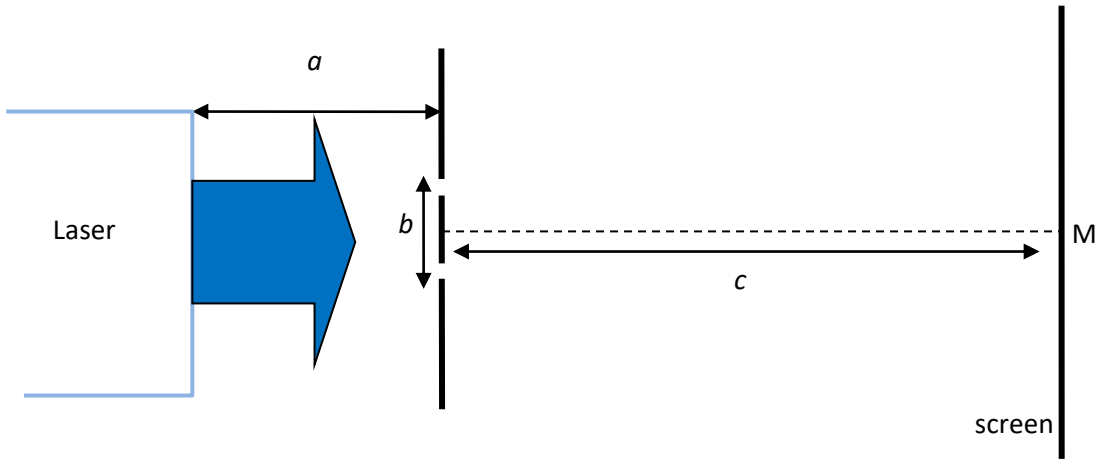
7. S_1 and S_2 are two sources of sound that emit waves that have a phase difference of π. A maximum intensity of sound is heard at P.



What is a possible wavelength of sound in this experiment?

A 0.20 m **B** 0.30 m **C** 0.60 m **D** 1.20 m

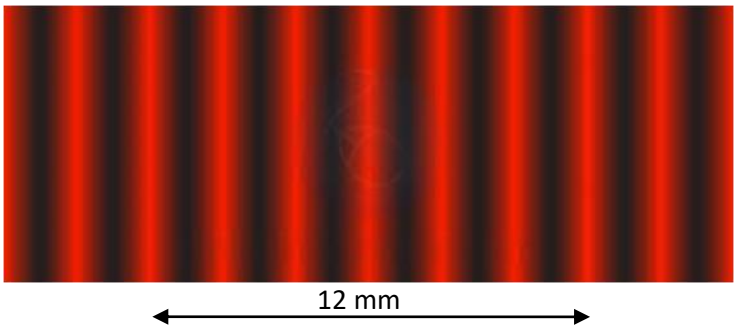
8. A laser is placed a distance *a* from two very narrow parallel slits that are separated by a distance *b*. A series of bright and dark fringes forms on a screen a distance *c* away. M is the point on the screen directly across from the midpoint of the slits. The wavelength of light is λ.



What change will increase the separation between the central bright fringe at M and the next bright fringe?

A Decreasing *a*.
B Increasing *b*.
C Increasing λ.
D Decreasing *c*.

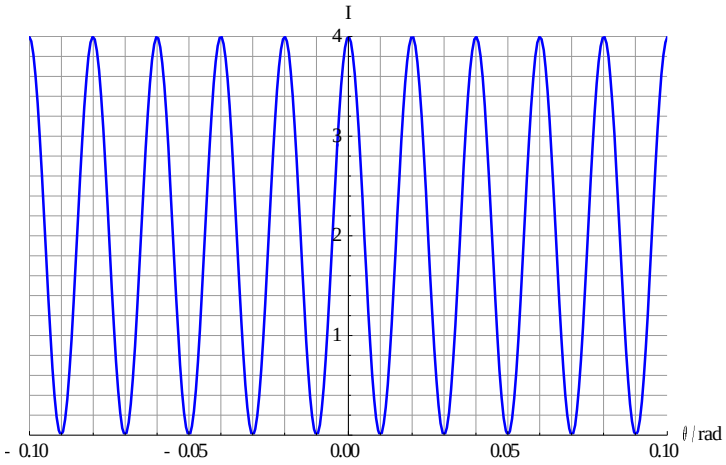
9. In a two slit experiment the fringe pattern shown was obtained.



The separation of the slits is 1.5 mm and the distance to the screen 5.0 m. What is the wavelength of light used in this experiment?

A 3.6 μm **B** 360 nm **C** 60 μm **D** 600 nm

10. The graph shows the intensity pattern in a two slit experiment. The units on the vertical axis are arbitrary.



The wavelength of light used was 680 nm. What was the separation of the two slits?

A 3.4 μm **B** 34 μm **C** 6.8 μm **D** 68 μm

Quiz C14.1 Answers	
1	A
2	D
3	A
4	A
5	B
6	D
7	D
8	C
9	D
10	B