

Questions

1. Describe the following terms as they apply to waves.

a) Principle of superposition

b) Longitudinal waves

c) Node of a standing wave

2. Define or describe each of the following wave properties and give an example of how you would demonstrate the effect.

a) Refraction

b) Interference

c) Diffraction

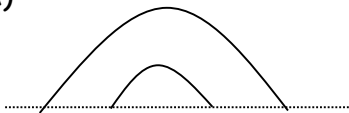
d) Doppler shift

3. Give one application of destructive interference.

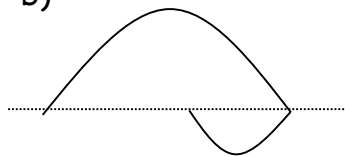
4. Suppose the horns of all cars emitted sound at the same pitch or frequency. What would be the change in the frequency of the horn of a car moving toward you?

5. Use the principle of superposition to make a sketch of the resultant wave produced by the two waves below. (2 marks)

a)

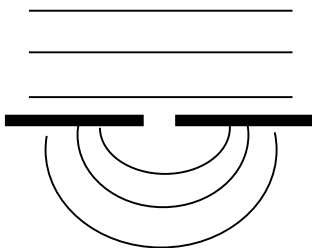


b)

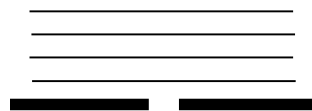


6. Make a sketch of the diffraction pattern formed in diagram B as compared to that shown in A. (1 mark)

A



B



Problems

7. A sound wave with a frequency of 300 Hz has a wavelength of 1.35 m.

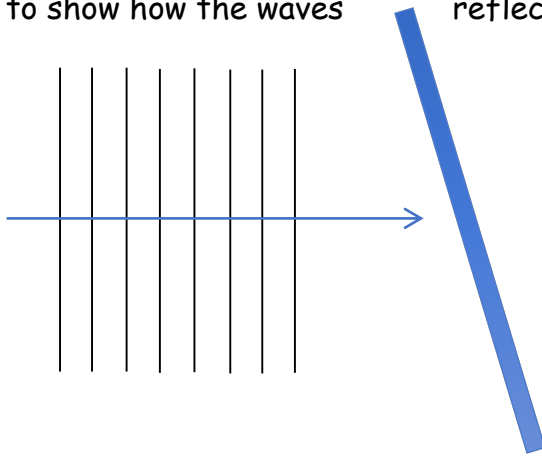
a) What is the speed of the sound waves?

b) What is the period of the sound waves?

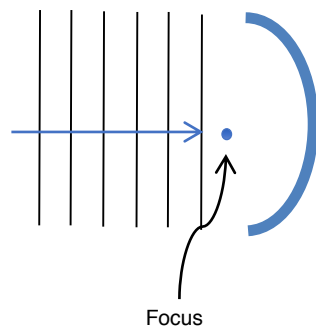
8. A wave has a period of 0.25 seconds. What is its frequency?

9. A person's vocal cords vibrate at 400 times in 0.25 seconds. What is the frequency of sound from the vocal cords?

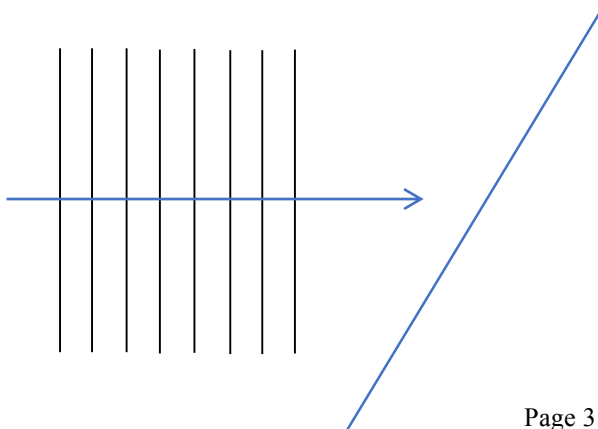
10. The diagram below shows straight waves approaching a straight boundary. Complete the diagram to show how the waves reflect.



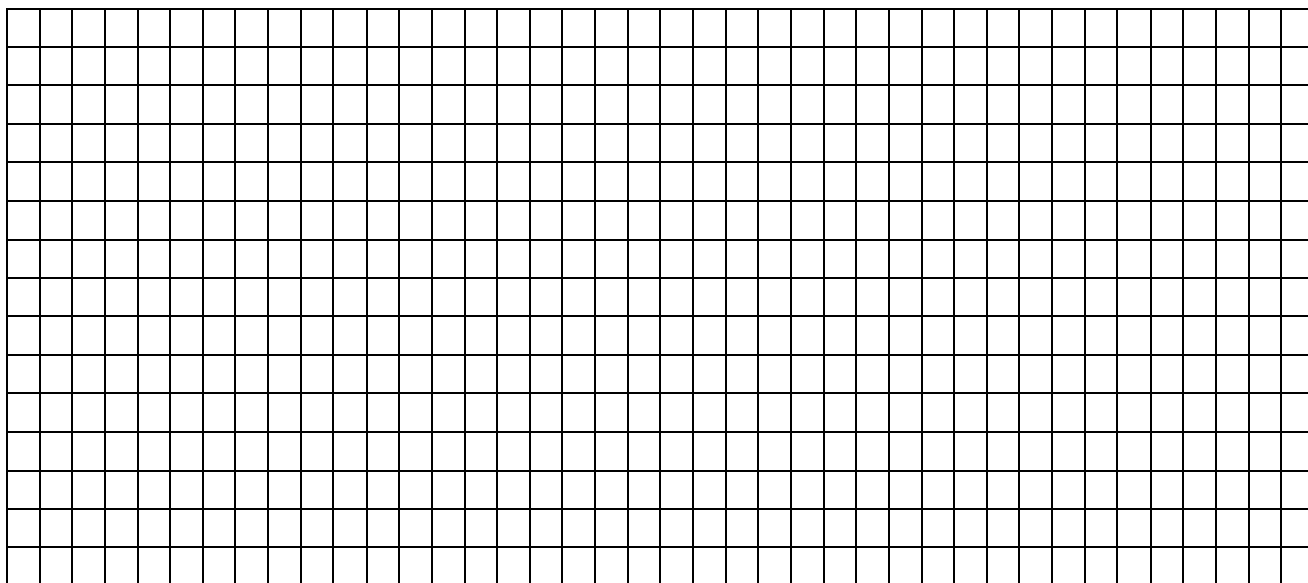
11. The diagram below shows straight waves approaching a parabolic reflector. Complete the diagram to show how the waves reflect.



12. The diagram below shows straight waves approaching a region in which the waves travel more *quickly*. Complete the diagram to show how the waves refract.



13. The diagram below shows two waves that have moved together and are now occupying the same space at the same time. According to the Law of Superposition, draw the shape of the resultant wave at this instant in time.



14. The diagram below shows waves approaching a gap in a barrier. Draw the waves after they pass through the gap.

