

Subject: Physics

Topic: Interference of wave

Level: S.4

Learning objective:

1. Content:

Students should be able to

- i. explain the formation of different types of interference of waves
- ii. explain different patterns of nodal and antinodal lines.

Language

Students should be able to

- i. write a short paragraph to explain the formation of different types of interference of waves using the following text pattern:
When the crest of a wave meets the crest of the other wave, they reinforce each other and form a crest with maximum amplitude. This is called constructive interference.
- ii. write a short paragraph to explain different patterns of nodal and antinodal lines using the following text pattern:
*If the wavelength of the sources _____, the number of nodal lines or antinodal lines will _____.
Consequently, the distance between successive nodal lines / antinodal lines will _____.*

Physics
Interference of Waves
The nodal and antinodal line
Worksheet 2

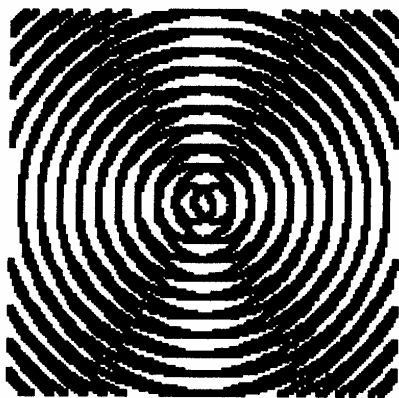
Name: _____ Class: _____ No _____ Date: _____



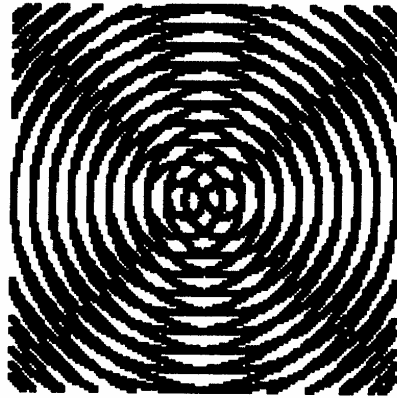
Writing

(a) Drawing nodal and antinodal lines

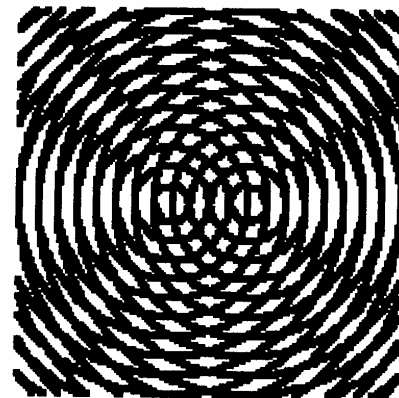
- (i) The following figures show the nodal (N) and antinodal (AN) line patterns in three different situations. Using the symbols N and AN, locate the position of one nodal and one antinodal line in each figure.



Source separation:
One wavelength



Source separation:
Two wavelengths

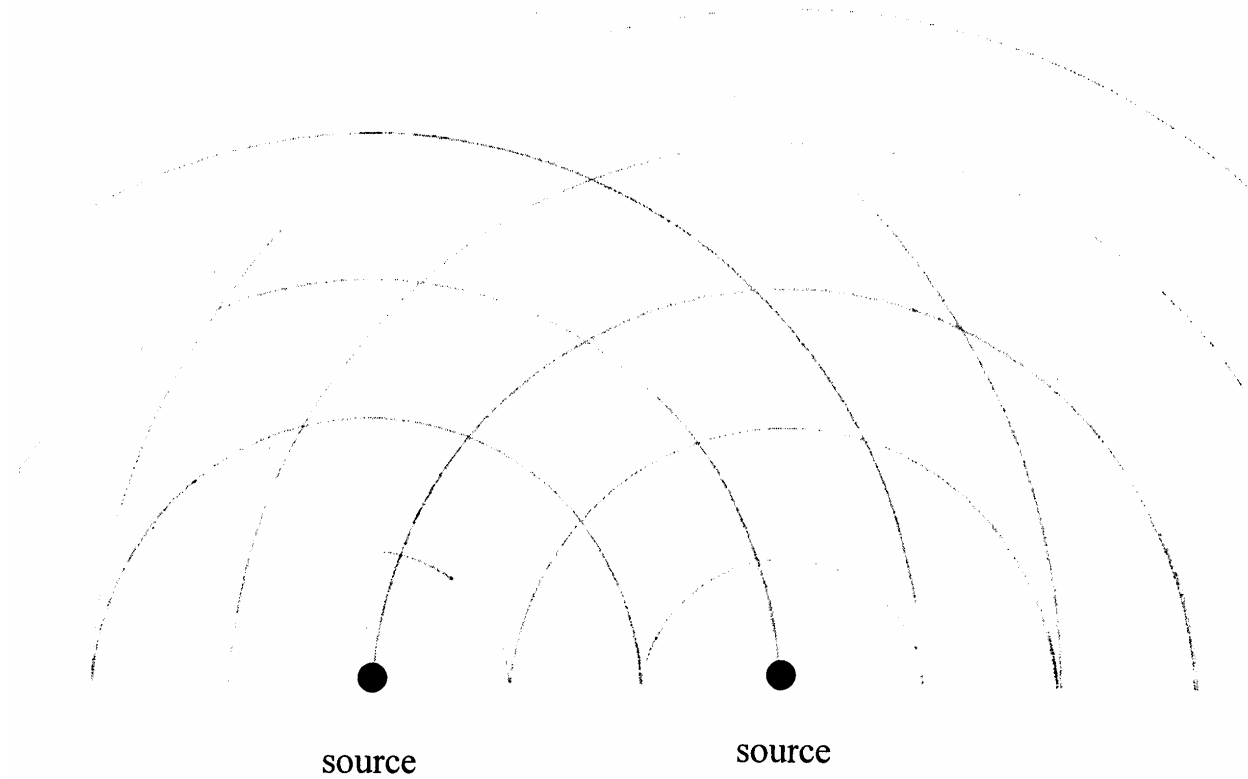


Source separation:
Four wavelengths

(The above figures are downloaded from the following website:

<http://www.csupomona.edu/~ajm/materials/animations/interference.html>)

- (ii) Use a red pen to draw the nodal lines and use a blue pen to draw the antinodal lines in the following diagram.



(b) Table filling

The website <http://www.ngsir.netfirms.com/englishhtm/Interference.htm> has a simulation about interference patterns. After browsing the website, complete the following table using ↑ to mean ‘increases’ and ↓ to mean ‘decreases’.

	No. of nodal lines or antinodal lines	Distance between successive nodal lines or antinodal lines
(i) Wavelength ↑		
(ii) Wavelength ↓		
(iii) Source separation ↑		
(iv) Source separation ↓		

(c) Sentence writing

Write a short paragraph to describe changes in the pattern of nodal lines for each row of the table in (b).

- (i) If the wavelength of the sources _____, the number of nodal lines or antinodal lines will _____.
Consequently, the distance between successive nodal lines / antinodal lines will _____.
- (ii) If _____, _____ will _____.
Consequently, _____ will _____.
- (iii) If the source separation _____, _____ will _____.
Consequently, _____ will _____.
- (iv) _____

_____.