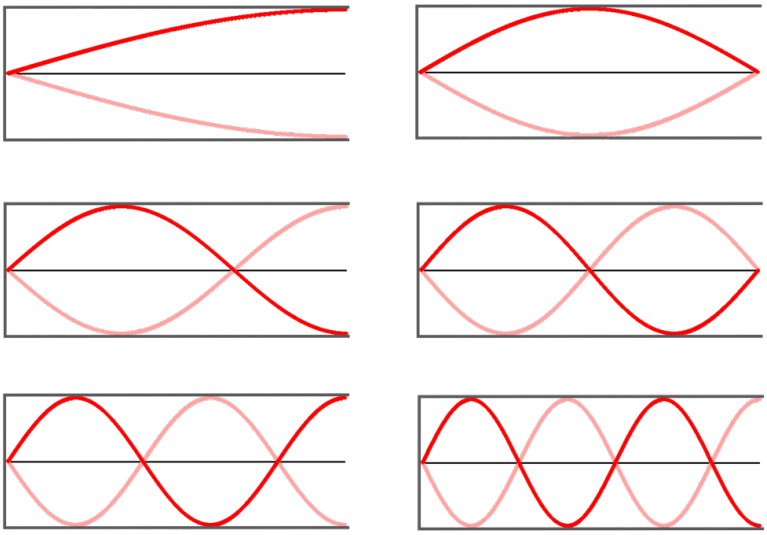
Name That Harmonic – Closed-End Air Columns

Activity 1: ID the Pattern

Question Group 1

Question 1

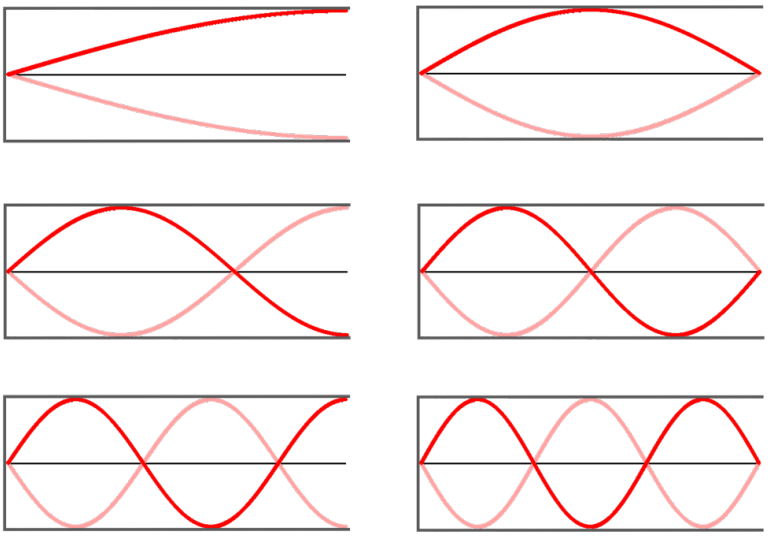
Identify the standing wave pattern for a closed-end air column that is vibrating with a first harmonic wave pattern.



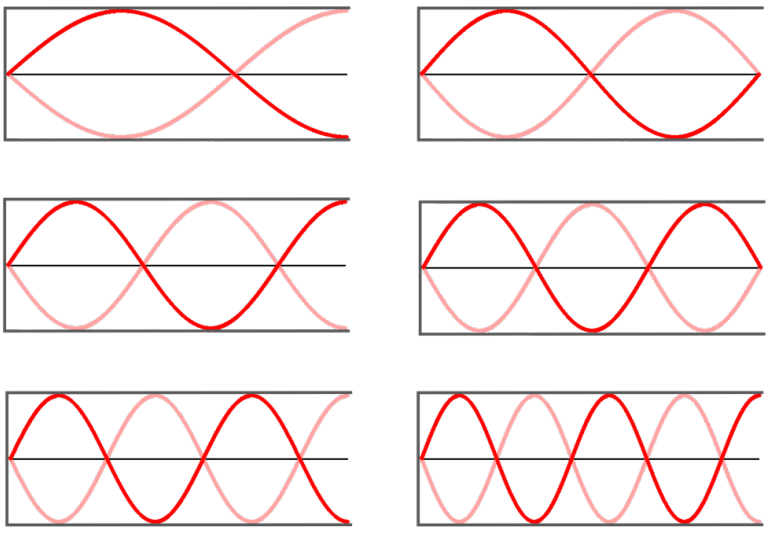
Question Group 2

Question 2

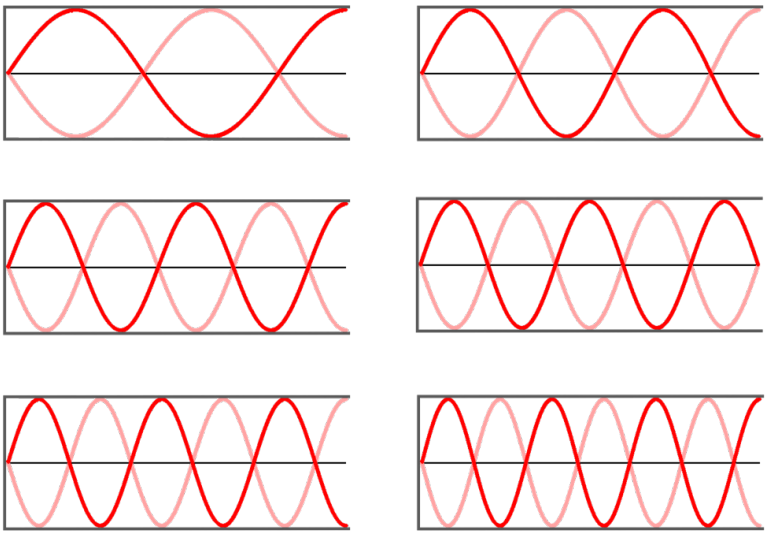
Identify the standing wave pattern for a closed-end air column that is vibrating with a third harmonic wave pattern.



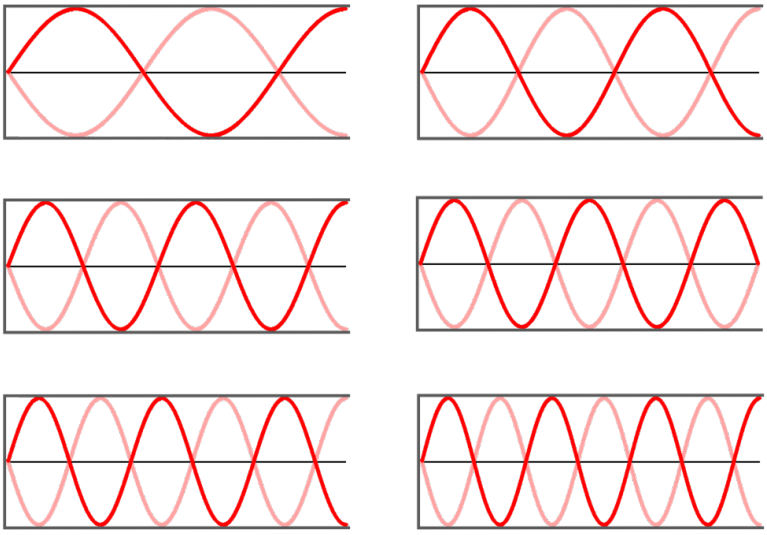
Question Group 3
Question 3
Identify the standing wave pattern for a closed-end air column that is vibrating with a fifth harmonic wave pattern.



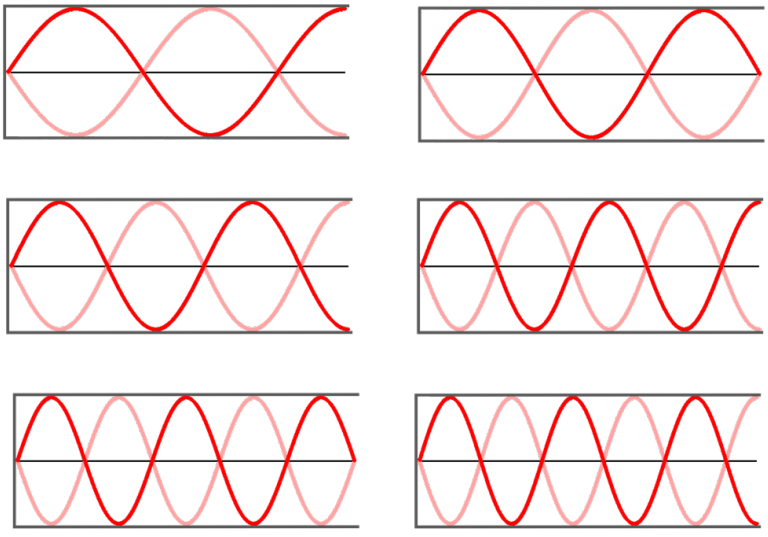
Question Group 4
Question 4
Identify the standing wave pattern for a closed-end air column that is vibrating with a seventh harmonic wave pattern.



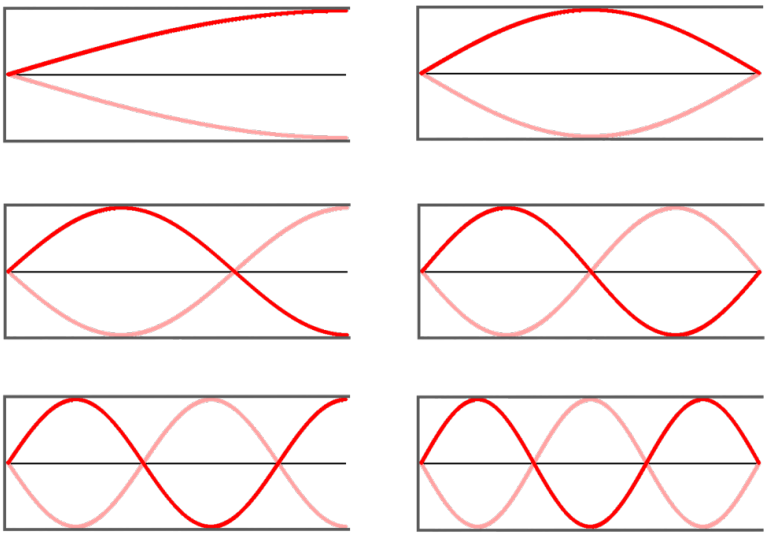
Question Group 5
Question 5
Identify the standing wave pattern for a closed-end air column that is vibrating with a ninth harmonic wave pattern.



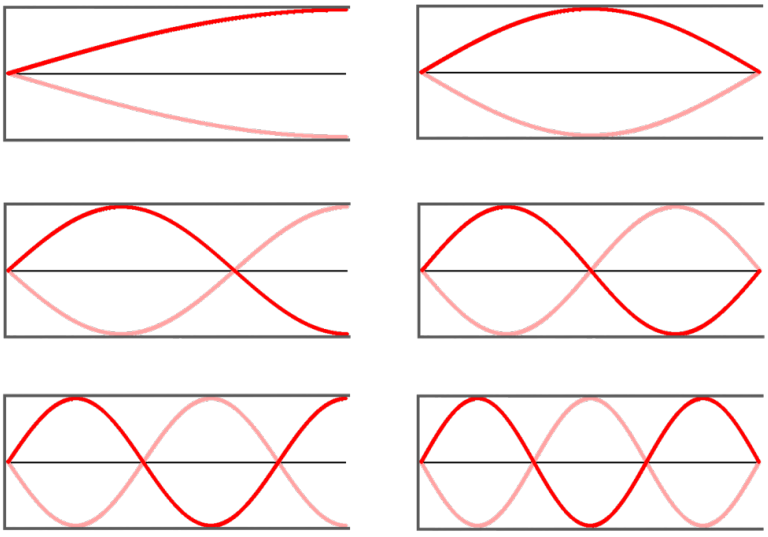
Question Group 6
Question 6
Identify the standing wave pattern for a closed-end air column that is vibrating with an eleventh harmonic wave pattern.



Question Group 7
Question 7
The fundamental or first harmonic frequency of a closed-end air column is 80 Hz. The same air column is capable of vibrating with several other standing wave patterns. Identify the standing wave pattern for the harmonic that has a frequency of 240 Hz.

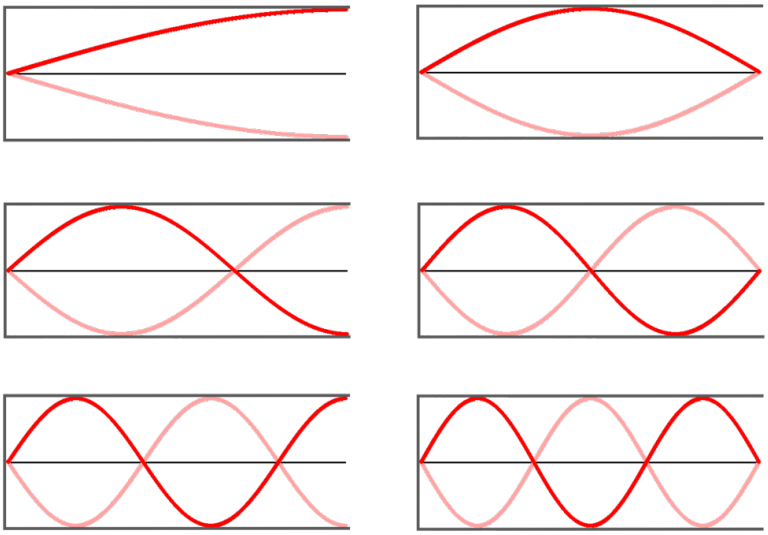


Question 8
The fundamental or first harmonic frequency of a closed-end air column is 60 Hz. The same air column is capable of vibrating with several other standing wave patterns. Identify the standing wave pattern for the harmonic that has a frequency of 180 Hz.



Question 9

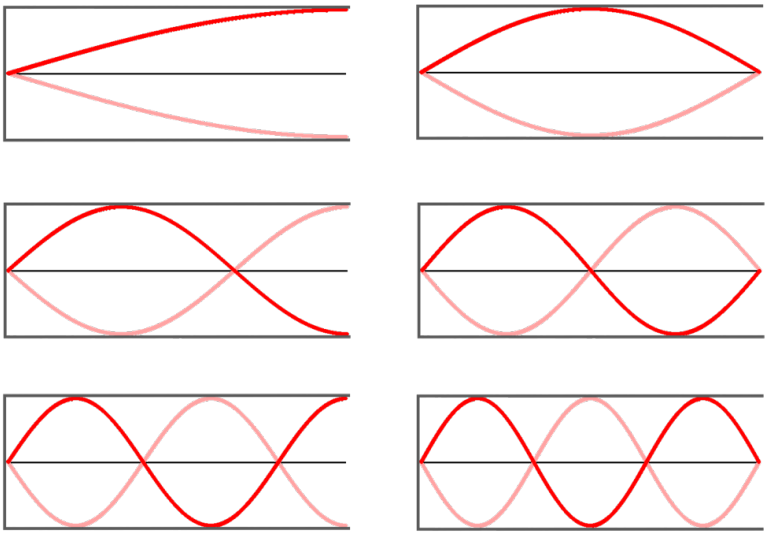
The fundamental or first harmonic frequency of a closed-end air column is 120 Hz. The same air column is capable of vibrating with several other standing wave patterns. Identify the standing wave pattern for the harmonic that has a frequency of 360 Hz.



Question Group 8

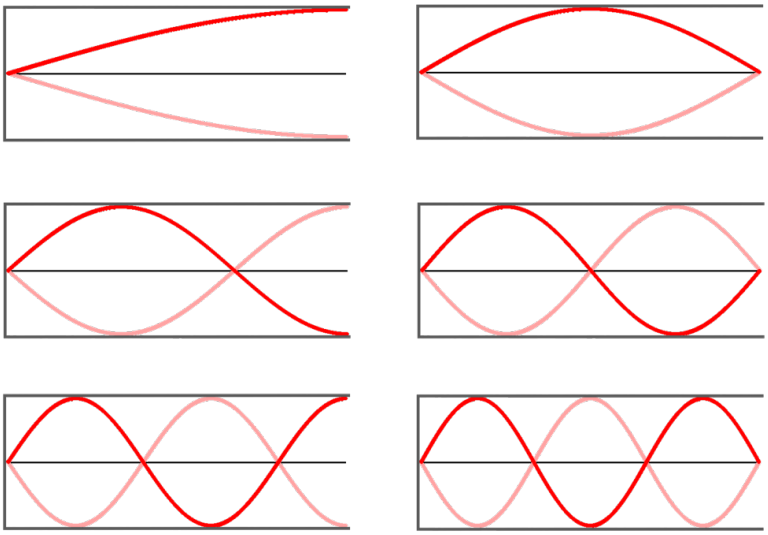
Question 10

The fundamental or first harmonic frequency of a closed-end air column is 80 Hz. The same air column is capable of vibrating with several other standing wave patterns. Identify the standing wave pattern for the harmonic that has a frequency of 400 Hz.



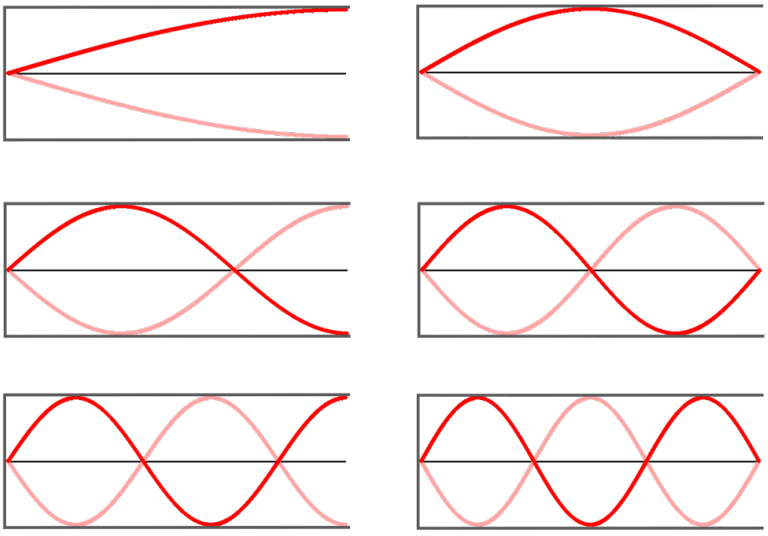
Question 11

The fundamental or first harmonic frequency of a closed-end air column is 100 Hz. The same air column is capable of vibrating with several other standing wave patterns. Identify the standing wave pattern for the harmonic that has a frequency of 500 Hz.

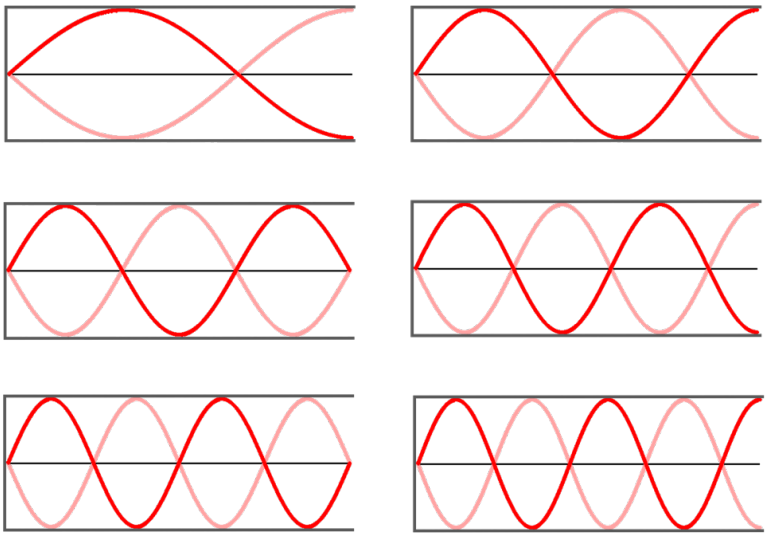


Question 12

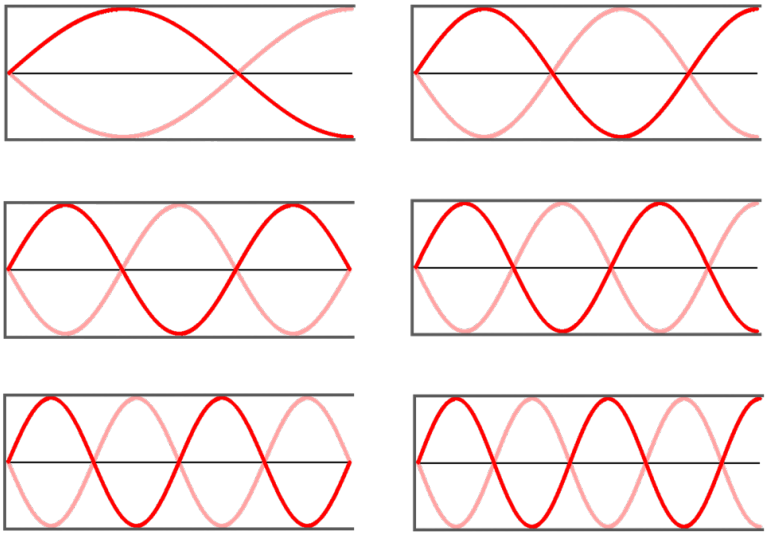
The fundamental or first harmonic frequency of a closed-end air column is 120 Hz. The same air column is capable of vibrating with several other standing wave patterns. Identify the standing wave pattern for the harmonic that has a frequency of 600 Hz.



Question Group 9
Question 13
The fundamental or first harmonic frequency of a closed-end air column is 60 Hz. The same air column is capable of vibrating with several other standing wave patterns. Identify the standing wave pattern for the harmonic that has a frequency of 420 Hz.

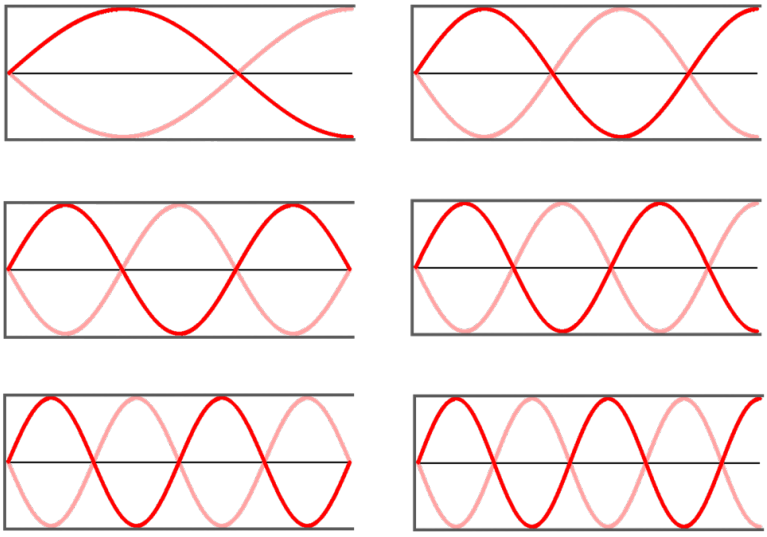


Question 14
The fundamental or first harmonic frequency of a closed-end air column is 80 Hz. The same air column is capable of vibrating with several other standing wave patterns. Identify the standing wave pattern for the harmonic that has a frequency of 560 Hz.



Question 15

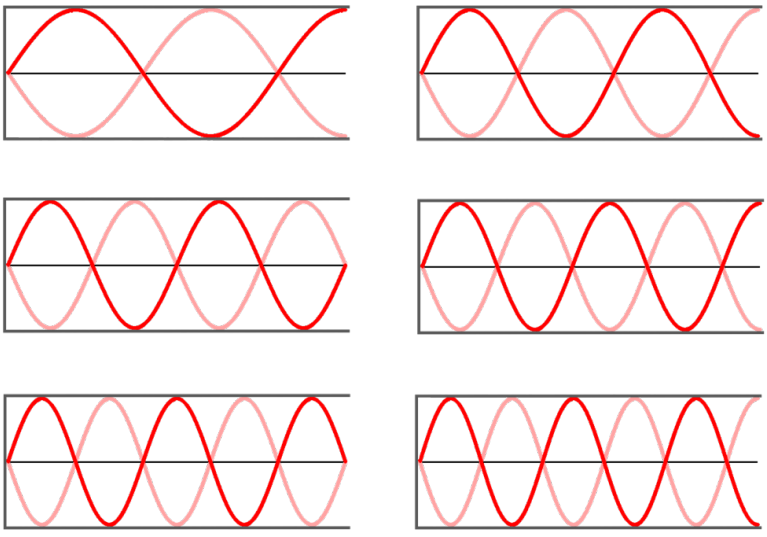
The fundamental or first harmonic frequency of a closed-end air column is 100 Hz. The same air column is capable of vibrating with several other standing wave patterns. Identify the standing wave pattern for the harmonic that has a frequency of 700 Hz.



Question Group 10

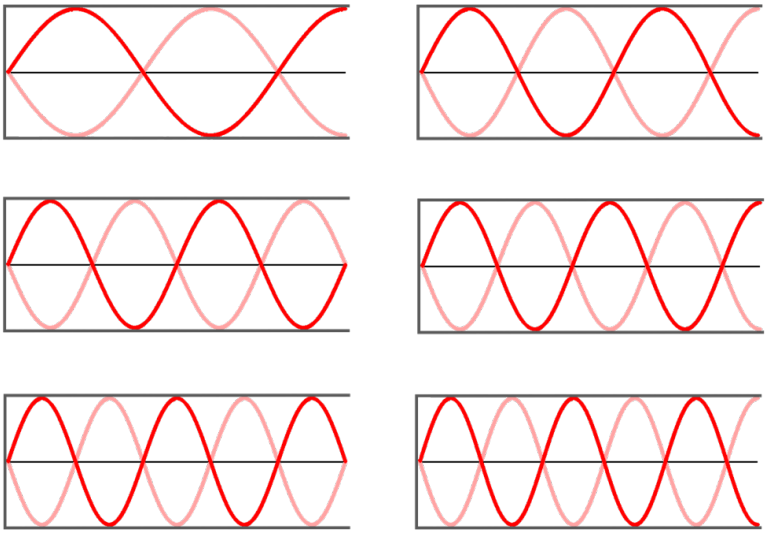
Question 16

The fundamental or first harmonic frequency of a closed-end air column is 60 Hz. The same air column is capable of vibrating with several other standing wave patterns. Identify the standing wave pattern for the harmonic that has a frequency of 540 Hz.



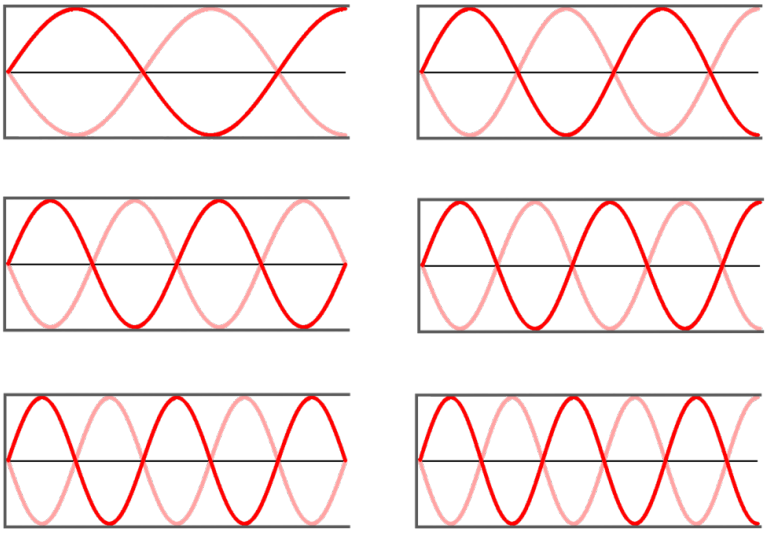
Question 17

The fundamental or first harmonic frequency of a closed-end air column is 80 Hz. The same air column is capable of vibrating with several other standing wave patterns. Identify the standing wave pattern for the harmonic that has a frequency of 720 Hz.

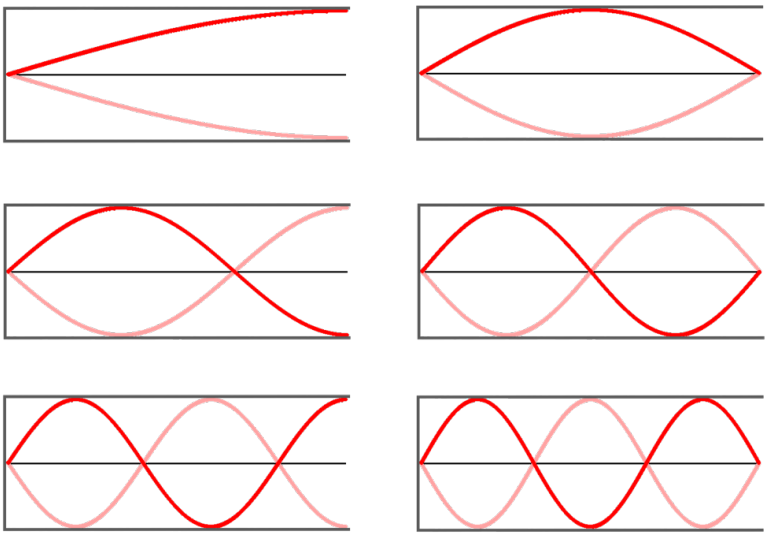


Question 18

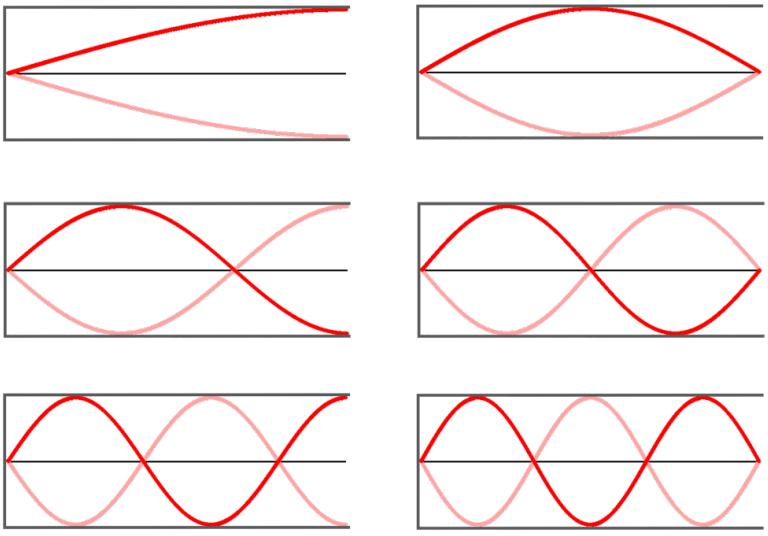
The fundamental or first harmonic frequency of a closed-end air column is 100 Hz. The same air column is capable of vibrating with several other standing wave patterns. Identify the standing wave pattern for the harmonic that has a frequency of 900 Hz.



Activity 3
Question Group 11
Question 19
A closed-end air column has a length of 30 cm. Identify the standing wave pattern for the harmonic that has a wavelength of 120 cm.

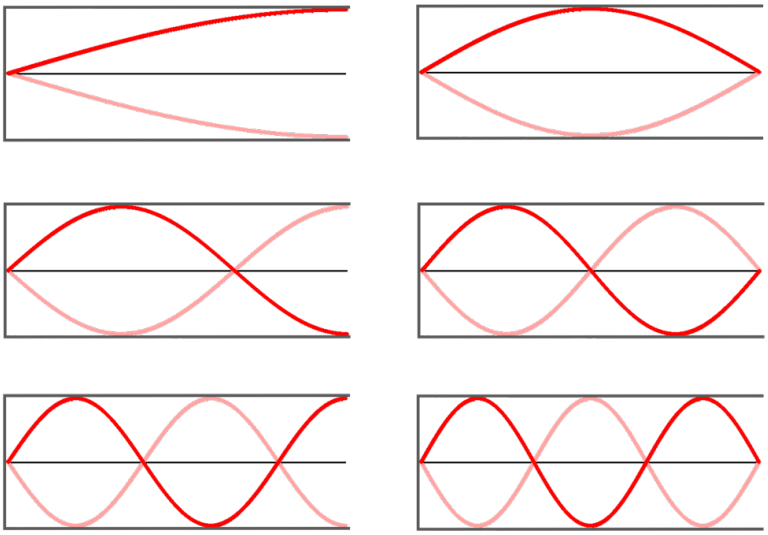


Question 20
A closed-end air column has a length of 25 cm. Identify the standing wave pattern for the harmonic that has a wavelength of 100 cm.



Question 21

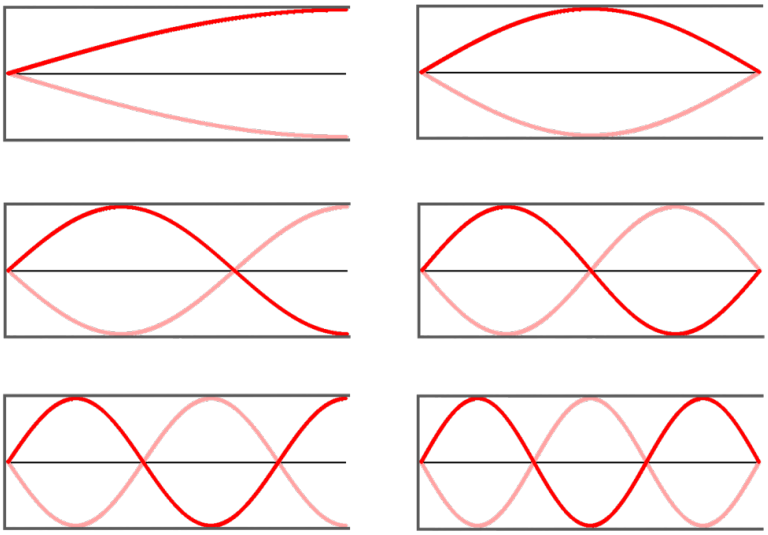
A closed-end air column has a length of 20 cm. Identify the standing wave pattern for the harmonic that has a wavelength of 80 cm.



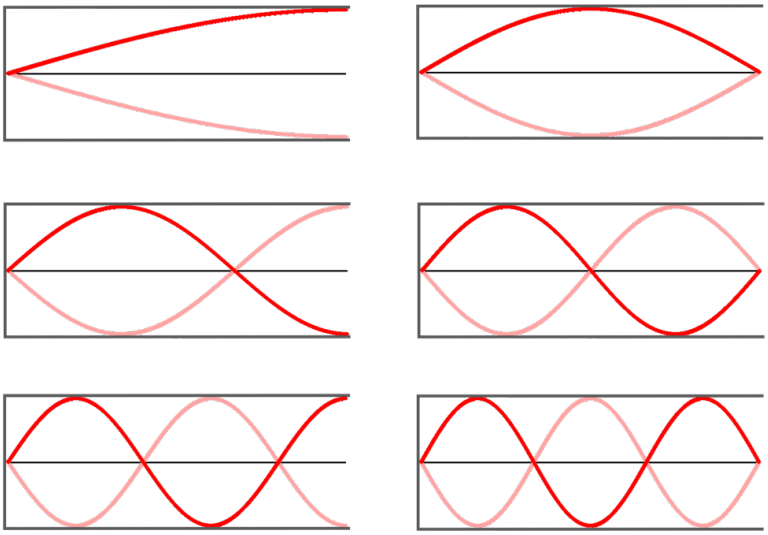
Question Group 12

Question 22

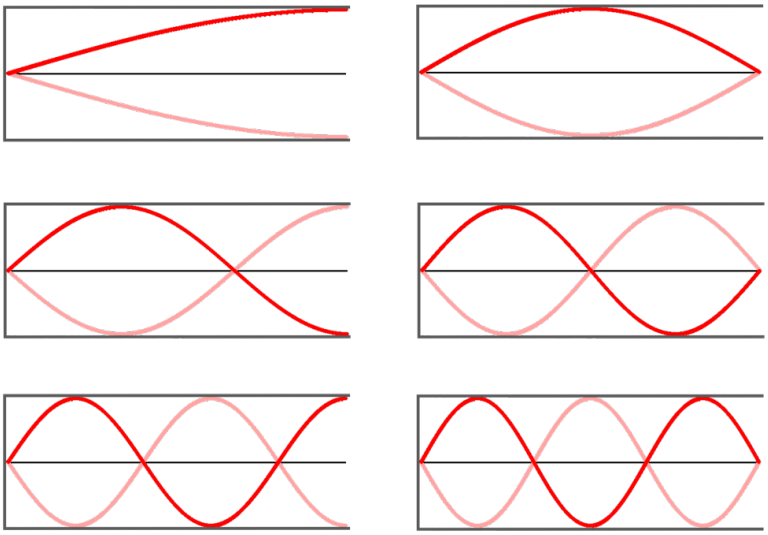
A closed-end air column has a length of 30 cm. Identify the standing wave pattern for the harmonic that has a wavelength of 40 cm.



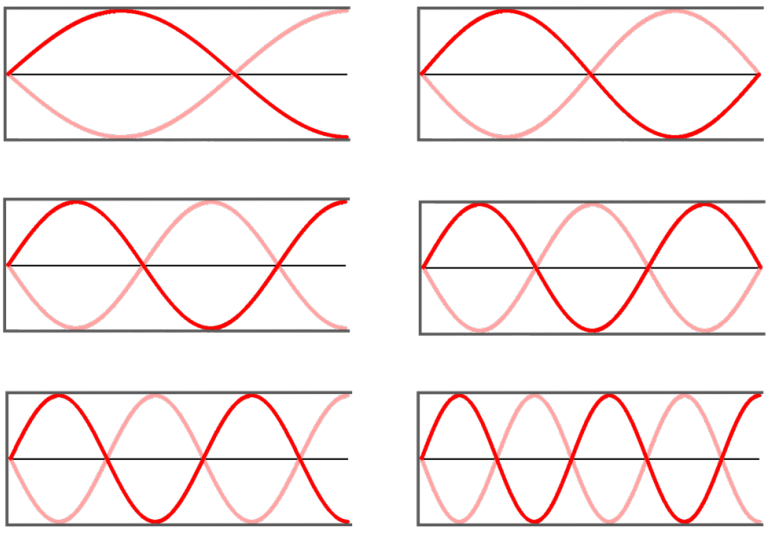
Question 23
A closed-end air column has a length of 24 cm. Identify the standing wave pattern for the harmonic that has a wavelength of 32 cm.



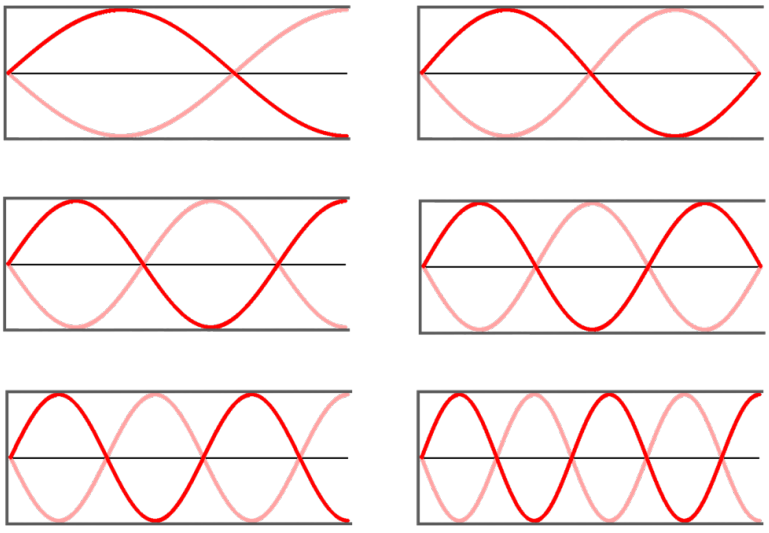
Question 24
A closed-end air column has a length of 36 cm. Identify the standing wave pattern for the harmonic that has a wavelength of 48 cm.



Question Group 13
Question 25
A closed-end air column has a length of 25 cm. Identify the standing wave pattern for the harmonic that has a wavelength of 20 cm.

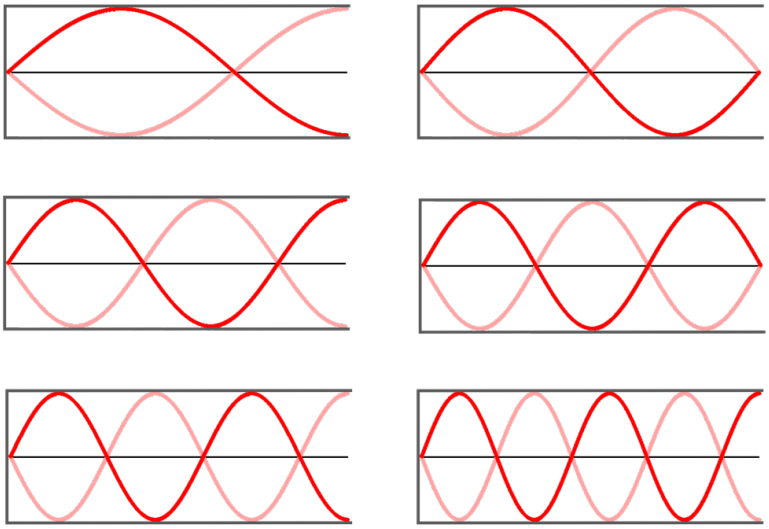


Question 26
A closed-end air column has a length of 40 cm. Identify the standing wave pattern for the harmonic that has a wavelength of 32 cm.



Question 27

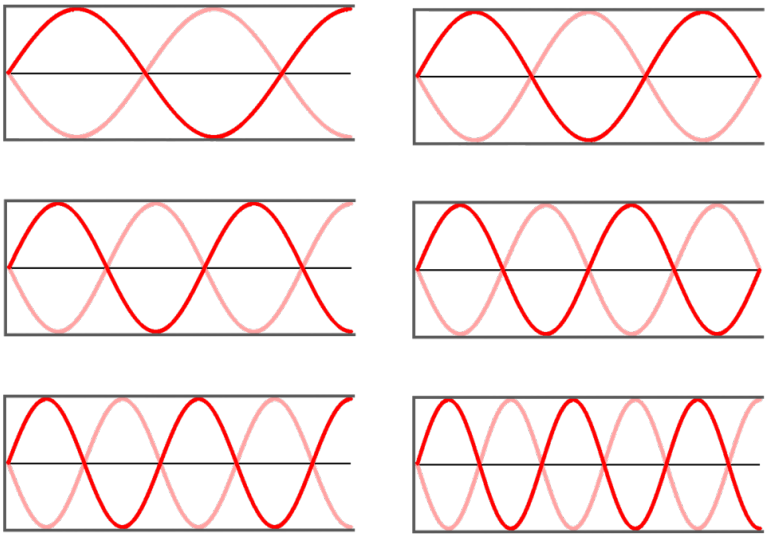
A closed-end air column has a length of 50 cm. Identify the standing wave pattern for the harmonic that has a wavelength of 40 cm.



Question Group 14

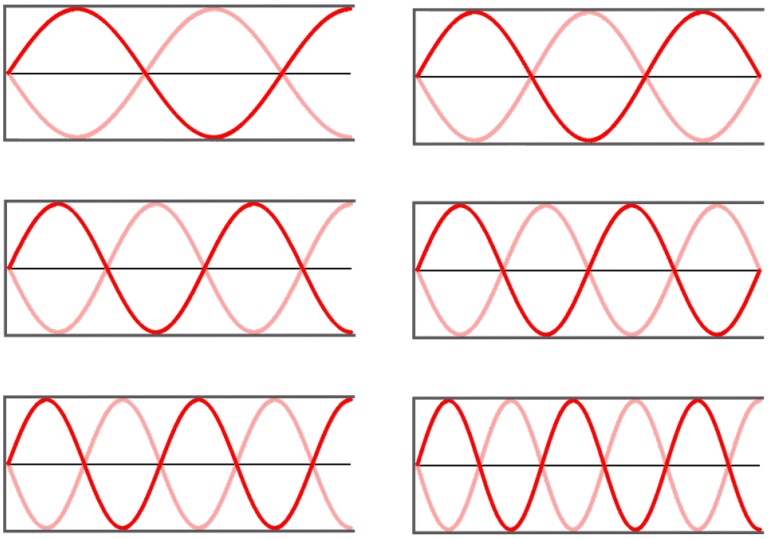
Question 28

A closed-end air column has a length of 35 cm. Identify the standing wave pattern for the harmonic that has a wavelength of 20 cm.



Question 29

A closed-end air column has a length of 42 cm. Identify the standing wave pattern for the harmonic that has a wavelength of 24 cm.



Question 30

A closed-end air column has a length of 70 cm. Identify the standing wave pattern for the harmonic that has a wavelength of 40 cm.