Standing Waves Practice

   

1. Draw the first four harmonics of a standing wave on a string, and determine their wavelengths if the total length of the string is 6 m.
2. Draw the first four harmonics of a standing wave in an open-ended pipe, and determine their wavelengths if the total length of the pipe is 8 m.
3. Draw the first, third, fifth, and seventh harmonics of a standing wave in a closed-ended pipe, and determine their wavelengths if the total length of the pipe is 10 m.
4. What are the first four possible standing wavelengths on a string that is 4 m long?
5. What are the first four possible standing wavelengths in an open-ended pipe that is 3 m long?
6. If the waves in the previous question are sound waves in a room that is 20 ˚C, what are the resonant frequencies that go along with the wavelengths?
7. What are the first four possible standing wavelengths in a closed-ended pipe that is 12 m long?
8. If the waves in the previous question are sound waves in a room that is 20 ˚C, what are the resonant frequencies that go along with the wavelengths?
9. An observer hears the fundamental frequency in an open-ended tube that has a length of 32 cm. If the frequency of the tuning fork used in the experiment is 512 Hz, what is the experimental speed of sound for this trial?
10. An observer hears the fundamental frequency in a closed-ended tube that has a length of 20 cm. If the frequency of the tuning fork used in the experiment is 427 Hz, what is the experimental speed of sound for this trial?

Standing Waves Practice

   

1. Draw the first four harmonics of a standing wave on a string, and determine their wavelengths if the total length of the string is 6 m.
2. Draw the first four harmonics of a standing wave in an open-ended pipe, and determine their wavelengths if the total length of the pipe is 8 m.
3. Draw the first, third, fifth, and seventh harmonics of a standing wave in a closed-ended pipe, and determine their wavelengths if the total length of the pipe is 10 m.
4. What are the first four possible standing wavelengths on a string that is 4 m long?
5. What are the first four possible standing wavelengths in an open-ended pipe that is 3 m long?
6. If the waves in the previous question are sound waves in a room that is 20 ˚C, what are the resonant frequencies that go along with the wavelengths?
7. What are the first four possible standing wavelengths in a closed-ended pipe that is 12 m long?
8. If the waves in the previous question are sound waves in a room that is 20 ˚C, what are the resonant frequencies that go along with the wavelengths?
9. An observer hears the fundamental frequency in an open-ended tube that has a length of 32 cm. If the frequency of the tuning fork used in the experiment is 512 Hz, what is the experimental speed of sound for this trial?
10. An observer hears the fundamental frequency in a closed-ended tube that has a length of 20 cm. If the frequency of the tuning fork used in the experiment is 427 Hz, what is the experimental speed of sound for this trial?