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Unit 6E
Standing Waves and Resonance
Note-Taking Guide

Name:

Date:

Main Ideas, Key Points, Questions:

After watching the video segment, write down key points, main ideas, and big questions.

Objective(s):

- *Understand what affects an object's natural frequency, and what is necessary for resonance to occur.*
- *Recognize how standing waves are created, and understand the similarities and differences between standing waves on a string, in an open-ended tube, and in a closed-ended tube.*

Notes:

During the video segment, use words, phrases, or drawings to take notes.

Summary:

After watching the video segment, write at least three sentences explaining what you learned. You may ask yourself: "If I was going to explain this to someone else, what would I say?"

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Questions to Consider

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Answer the following.

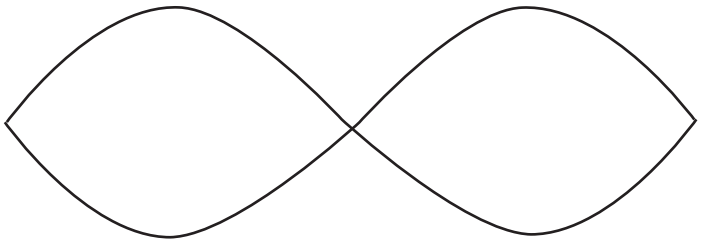
1. When are standing waves produced?

2. What does an object's resonant frequency depend upon?

3. What has to happen in order for resonance to occur?

4. How do incident and reflected waves differ?

5. On the standing wave below, label the nodes and anti-nodes:



6. How does the frequency of the standing wave change as the harmonic number changes?

questions continued on next page

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Answer the following.

7. What must be present on each end of a string in order for a standing wave to be created?

_____

8. Complete the equation for the possible wavelengths of standing waves on a string in terms of the length of the string and the harmonic numbers:

$$\lambda = \text{————}$$

9. What does the speed of a wave on a string depend upon?

_____

_____

10. What must be present on each end of an open-ended tube in order for a standing wave to be created?

_____

11. Complete the equation for the possible wavelengths of standing waves in an open-ended tube in terms of the length of the tube and the harmonic numbers:

$$\lambda = \text{————}$$

12. What must be present on each end of a closed-ended tube in order for a standing wave to be created?

_____

_____

13. Complete the equation for the possible wavelengths of standing waves in a closed-ended tube in terms of the length of the tube and the harmonic numbers:

$$\lambda = \text{————}$$