Name: Date: Period:

Acoustical Phenomena

Doppler Effect (*review*)

1. You are in a convertible traveling at 45 m/s. The car in front of you is only traveling at 30 m/s. It has a broken muffler and emits a sound with a frequency of 200 Hz. What frequency do you hear?

Resonance

2. Define the following terms:
   (a) natural frequency

   (b) resonance

3. Explain how resonance relates to a kid on a swing.

4. Explain how the Mythbusters used the concept of resonance to shatter the glass.

5. Why was Jaime Vendera flicking the glass before he sang at it?

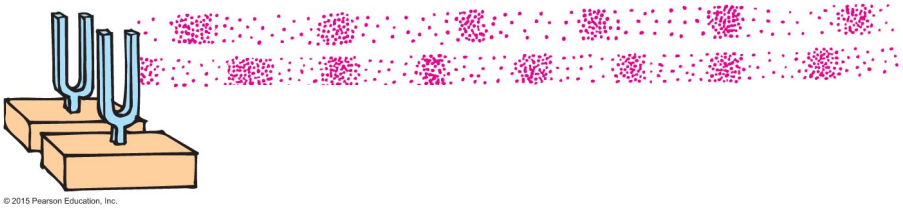
Name: Date: Period:

Beats

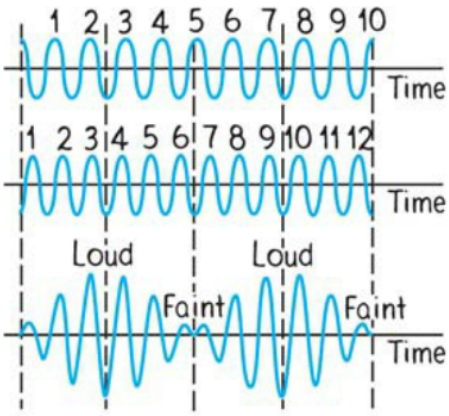
6. What are "*beats*"?

7. What has to be true about the two tones that are being sounded together in order for beats to occur?

8. Look at the diagram below (Figure 20.21 from the textbook). Label the regions of constructive and destructive interference.



9. Take a look at the illustration below that refers to a wave of frequency 10 Hz being played at the same time as a wave of frequency 12 Hz.



(a) Label the regions of constructive and destructive interference.

(b) What is the frequency of the tone being produced?

(c) What is the beat frequency?

10. Draw your own beats! Draw two bugs jumping on the water. One bug jumps forward 3 cm each hop; the other bug jumps forward 4 cm each hop.

11. Using all that we've talked about, come up with your own description of the cause of beats.