

Slide this drill set under Marteena 308's door any time *before* 7:50 AM Friday, March 24, or give me it in Marteena 312 *by* 8:00 AM that day. Each problem uses *one different* equation from the Block 9 objectives.

1. Table 16.1 (page 511) gives a value for the speed of sound in hydrogen at 20°C (= 68°F = 293 K). A mole of hydrogen has a mass of 2.016 g. Find the dimensionless ratio γ for hydrogen *if* this speed of sound is correct and *if* hydrogen behaves like an ideal gas.

ONE EQUATION USED

SOLUTION

ANSWER

$\gamma =$

2. How long is a stopped pipe if its seventh overtone has a wavelength of 0.990 m? (We ignore end corrections in this introductory course.)

ONE EQUATION USED

SOLUTION

ANSWER

3. You see a pipe in cross section. How long is it? The frequency of the harmonic shown is 250 Hz. The speed of sound is 342 m/s.

ONE EQUATION USED

SOLUTION

ANSWER

A N A N A N A N A N A N A N A N A N A N A

4. Use Table 16.2 (page 517) to find the intensity of a sound that is 3 dB below the threshold of pain.

ONE EQUATION USED

SOLUTION

ANSWER

5. The fundamental frequencies from a guitar string and a 440-Hz tuning fork *initially* give three beats per second. However, when the guitar string is loosened slightly, its fundamental frequency decreases by one hertz and the beat frequency increases by one hertz. Find the *initial* fundamental frequency of the guitar string.

ONE EQUATION USED

SOLUTION

ANSWER