TERMS
Be able to define or discuss the following terms with their SI units, if any.

1. normal mode
2. harmonic
3. fundamental frequency
4. overtone
5. sound
6. ultrasonic
7. infrasonic
8. intensity I
9. sound intensity level β
10. forced oscillation
11. resonance
12. beats

EQUATIONS
Understand the meaning and know the SI units of all the symbols in these equations—and be able to use the equations to solve problems.

1. $v = \lambda_n f_n$
2. Eq. (15.35)
3. Eq. (16.10)
4. Eq. (16.15), where $I_0 \equiv 10^{-12}$ W/m^2. This equation solves to $I = I_0\ 10^{(\beta/10\ \text{dB})}$.
5. Eq. (16.17)
6. Eqs. (16.16), (16.18), and (16.19) (three versions)
7. Eq. (16.21)
8. Eqs. (16.20), (16.22), and (16.23) (three versions)
9. Eq. (16.24)

SKILLS
Use the material in these sections to be able to:

1. state, for a standing wave, that nodes and antinodes alternate, that the distance from a node to its nearest antinode is one-quarter wavelength, and that the distance from a node to its nearest node (or from an antinode to its nearest antinode) (if they exist) is one-half wavelength.
2. distinguish between harmonics and overtones, realizing that n is the harmonic number.
3. sketch representations of transverse standing waves on strings (or wires or ropes or …) fixed at both ends, showing the nodes at the fixed ends and the central antinode for the fundamental frequency (first harmonic) as well as the nodes (N's) and antinodes (A's) for the overtones (the other harmonics).
4. understand that a displacement node is always a pressure antinode and a displacement antinode is always a pressure node for standing sound waves.
5. locate the displacement node or nodes (N's) and displacement antinode or antinodes (A's) for standing sound waves in both open and stopped pipes for the fundamental frequency (first harmonic) and for overtones (the other allowed harmonics).
6. determine the harmonic and overtone from a sketch of a transverse standing wave or from a cross section of an open or stopped pipe that shows the displacement node or nodes (N's) and antinode or antinodes (A's).
7. determine the normal mode frequencies and wavelengths for strings (or wires or ropes or …) fixed at both ends as well as for both open and stopped pipes.

Page 513, EVALUATE: Add "(See Table 16.1.)"
Page 516, Example 16.7, SOLUTION: Since the intensity is the *average* power per perpendicular area, insert "average" six times.
Page 516, four lines below Eq. (16.15): The bel is *not* "inconveniently large for most purposes" (see Table 16.2), so change "most purposes" to "many changes".
Page 523, Fig. 16.20: This figure seems to be an artistic interpretation of the event.

Do not look forward to what might happen tomorrow. The same everlasting Father who cares for you today will take care of you tomorrow and every day. Either He will shield you from suffering or He will give you unfailing strength to bear it. Be at peace then and put aside all anxious thoughts and imaginations.   Saint Francis de Sale