

## W9.02 KEY

using  $v_{\text{sound}} = 343 \text{ m/s}$

1. see notes.
2.  $v = \lambda f$
3. decreases, nothing
4. vibration
5. transverse = vibration in perpendicular direction as energy transfer  
longitudinal = vibration in same direction as energy transfer
6. constructive = waves in phase, greater amplitude  
destructive = waves out of phase, lower amplitude
7. frequency increases, wave speed remains the same
8. moving towards listener 518 Hz  
moving away from listener 483 Hz
9. 1.3 m/s
10. The sonic boom is the sound that the ear perceives when the shock wave created by an aircraft flying faster than the speed of sound passes over him.
11.  $L = 1.43 \text{ m}$ ;  $\lambda_2 = 1.43 \text{ m}$
12. 857.5 Hz
13. The vocal chords vibrate with the same wavelength, but wave speed is higher, therefore frequency must be higher.
14. 2, 4, 6 Hz
15. tighten
16. 343 m
17. The table vibrates which vibrates more air. The fork will not vibrate as long because energy from the fork has been used to vibrate the table.
18. Tighten the string.
19. A+B
20. 440 m/s
21. 270 cm
22. 2.5 m/s
23. every 4 s
24. loudness (volume)
25. move away from the speaker
26. 100000 ( $10^5$ )
27. 100 (i.e. 1/100<sup>th</sup> as intense)
28. 100
29. 50 dB
30. 20 dB, 20 m