SOUND MODULE HINTS & TIPS

SUBLEVEL 1

- Sound is a mechanical, longitudinal wave
- Sound is a pressure wave (air molecules—high pressure and low pressure while they vibrate back and forth)
- compressions versus rarefactions
- one cycle = one wavelength = compression to compression or rarefaction to rarefaction

SUBLEVEL 2

- If you double f ==> wavelength halves
- speed depends on the medium only
- If the frequency is high, the period is small (they are inverses of each other)
- high amplitude = loud sound
- low pitch sound = low frequency (long wavelength)

SUBLEVEL 5

- resonance occurs when one object causes a second object to vibrate at its natural frequency (a standing wave is produced with very high amplitude)

examples: pushing someone in a swing, walking on a bridge, opera singer shattering glass, Takoma Narrows Bridge collapse

- harmonic: one of the frequencies at which an instrument naturally vibrates at
- harmonic # = # of antinodes
- fundamental frequency = 1st harmonic
- 2nd harmonic = 2 x fundamental frequency
  ex: A frequency of an instrument is 600 Hz when it vibrates in the 5th harmonic. What is the intrument's fundamental frequency? (Since 600 Hz = 5f ==> f = 120 Hz)

GOT RID OF A COUPLE OF PROBLEMS FROM SUBLEVEL 5==> Must use this **start code**: ZLT

SUBLEVEL 6

- *example*: If the 3rd harmonic = 480 Hz; what is the vibrational frequency that would be required of the same guitar string to produce the 5th harmonic?
  (Find the fundamental frequency first: 480 Hz = 3f ==> f = 160 Hz.
  Then the 5th harmonic = 5f = 5 x 160 Hz = **800 Hz**)

- know how to determine the wavelength from the length of the string and its standing wave pattern. (This is just like Waves sublevel 8)