**Waves and SHM: Sound and The Doppler Effect**

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**Make sure to INCLUDE UNITS!**

1. The buzzing of a honeybee’s wings in emitted at a frequency of 230 Hz. If you hear a bee buzzing at a frequency of 200 Hz while sitting in the garden, is the bee headed towards you or away from you?
2. While standing in the 42nd Street and Times Square subway station, Rodney hears the incoming screech, registering at 4.00x103 Hz, of an express train speeding through the station at 18 m/s. (vsound = 343 m/s)
   1. What is the frequency of the approaching train that is perceived by Rodney’s ears?
   2. What is the wavelength of the sound wave as perceived by Rodney’s ears?

**Answers**:

1. The buzzing of a honeybee’s wings in emitted at a frequency of 230 Hz. If you hear a bee buzzing at a frequency of 200 Hz while sitting in the garden, is the bee headed towards you or away from you?

Because the perceived pitch is lower than the actual pitch at that frequency, the bee must be ***flying away.***

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