Acoustic Beats

The frequency resolution of the ear is 3.6 Hz within the octave of 1000 – 2000 Hz. In other words, our brains cannot detect the difference between tones that are spaced more closely than the adjacent white and black keys on the piano.

In this activity, you observe that when two sounds with nearly identical frequencies are produced at the same time, the sound waves interfere with each other in a surprising way. The result is a rhythmic ‘woo woo woo woo woo woo’ or beat sound. Adding a third sound with a nearly identical frequency causes an even more complex interference pattern.

If you have access to a musical instrument, try playing the two lowest notes simultaneously and you can witness these acoustic beats yourself.