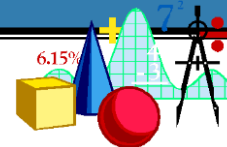


Mathematics, Algebra I

Unit VII: Lesson 3

Application: **The Key to Music**



Today, pianos are usually tuned so that the ratios of frequencies of consecutive notes are constant. Research the frequencies of the two end notes of an octave chosen from the center of the piano keyboard.

Determine an equation describing the frequency of each of the 13 notes in the octave as a function of the lower note and the common ratio between adjacent notes. Then solve for the common ratio. Find the frequencies for all 13 notes in the octave.

Make a keyboard of at least two octaves with the frequency of each note matched with the key. Invite a piano tuner to explain the mathematics of the piano using your model and/or have a friend who plays a stringed instrument help you demonstrate to the class the principle of overtones and harmonics.