

# Why do we care about p-tuning??

**BECAUSE WE WANT TO LOCK AND RING CHORDS—WE WANT OVERTONES!!!**

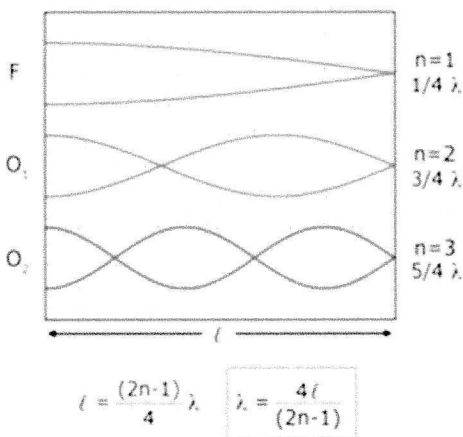
**What is an overtone? From the Internet (so it must be right)**

Overtone, known also as harmonics, were first discovered in the West by Pythagoras some 2,600 years ago. The famous Greek philosopher and mathematician was also a musician, and spent years studying sound and vibration. He found, after studying the monochord, a single stringed instrument, that all sounds were composed of multiple vibrations or frequencies, not just one, as our ears generally perceive. Just as white light is made up of a wide spectrum of colors, which become visible when the light is refracted through a prism, sound too can be refracted so that its constituent parts can be perceived. Just as the rainbow is made up of the colors that the human eye sees as white light, overtones (harmonics) are the colors of sound.

In barbershop music, the word *overtone* refers to a psychoacoustic effect in which a listener hears an audible pitch that is higher than, and different from, the fundamentals of the four pitches being sung by the quartet. The barbershop singer's "overtone" is created by the interactions of the upper partial tones in each singer's note.

WHAT THIS MEANS: EVERY PART CONTRIBUTES TO THE OVERTONE—especially: re, mi, la, ti

**If we could see an overtone, it might look like this:**



**OK I'M NOT A MATH PERSON. WHAT IS THE BOTTOM LINE????**

When we tune our 3rds, 7ths, 6ths, and 2nds high, WE HELP LINE UP THE WAVE ENERGY OF EACH PART, AND THAT INTERACTION CREATES THE OVERTONES!!! AND OUR CHORDS LOCK AND RING!!! AND WE SCORE POINTS and thrill our audience. (Note: we also have to match our vowels and create the same "resonant instrument" from part to part. But that's another class!!)

## Pythagorean Tuning... Why Should I Care!

In an even-tempered scale (as on a piano), each note is the same distance

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>A</b>	<b>B</b>	<b>C</b>

Certain notes of the Pythagorean scales are sung higher in Barbershop. In order of degree's of highness 7,3,6,2.

Key	1	2	3	4	5	6	7	8
<b>C</b> No flats or sharps	C	<b>D</b>	<b>E</b>	F	G	<b>A</b>	<b>B</b>	C
<b>F</b> 1 Flat	F	<b>G</b>	<b>A</b>	Bb	C	<b>D</b>	<b>E</b>	F
<b>Bb</b> 2 Flats	Bb	<b>C</b>	<b>D</b>	Eb	F	<b>G</b>	<b>A</b>	Bb
<b>Eb</b> 3 flats	Eb	<b>F</b>	<b>G</b>	Ab	Bb	<b>C</b>	<b>D</b>	Eb
<b>Ab</b> 4 flats	Ab	<b>Bb</b>	<b>C</b>	Db	Eb	<b>F</b>	<b>G</b>	Ab
<b>Db</b> 5 flats	Db	<b>Eb</b>	<b>F</b>	Gb	Ab	<b>Bb</b>	<b>C</b>	Db
<b>Gb</b> 6 flats	Gb	<b>Ab</b>	<b>Bb</b>	Cb	Db	<b>Eb</b>	<b>F</b>	Gb
<b>Cb</b> 7 flats	Cb	<b>Db</b>	<b>Eb</b>	Fb	Gb	<b>Ab</b>	<b>Bb</b>	Cb
<b>G</b> 1 sharp	G	<b>A</b>	<b>B</b>	C	D	<b>E</b>	<b>F#</b>	G
<b>D</b> 2 sharps	D	<b>E</b>	<b>F#</b>	G	A	<b>B</b>	<b>C#</b>	D
<b>A</b> 3 sharps	A	<b>B</b>	<b>C#</b>	D	E	<b>F#</b>	<b>G#</b>	A
<b>E</b> 4 sharps	E	<b>F#</b>	<b>G#</b>	A	B	<b>C#</b>	<b>D#</b>	E
<b>B</b> 5 sharps	B	<b>C#</b>	<b>D#</b>	E	F#	<b>G#</b>	<b>A#</b>	B
<b>F #</b> 6 sharps	F#	<b>G#</b>	<b>A#</b>	B	C#	<b>D#</b>	<b>E#</b>	F#
<b>C#</b> 7 sharps	C#	<b>D#</b>	<b>E#</b>	F#	G#	<b>A#</b>	<b>B#</b>	C#