

# 1<sup>st</sup> Steps to Harmonic Experience – GENERAL TERMINOLOGY

1. JUST INTONATION refers to notes tuned to the low prime natural frequencies of the overtone series, and their reciprocals. EQUAL TEMPERAMENT is a system of tuning wherein the octave is divided into intervals of exactly equal size.
2. Our study will focus mainly on frequency ratios mathematically quantifiable by the LOW PRIME NUMBERS 2, 3 and 5 and their various combinations.
  - The ratio 2:1 – doublings – are heard as octaves.
  - The ratio 3:1 – triplings – are heard as perfect fifths.
  - The ratio 5:1 – quintuplings – are heard as major thirds.Harmony is generated by these low primes, the ways in which those numbers combine, and the ear's receptivity to those ratios.
3. Harmony that moves by perfect fifths is called PYTHAGOREAN.  
Harmony that moves by major thirds is called PENTAMEROUS.
4. In equal temperament, each half-step is divided, for convenience of measurement, into one hundred CENTS.
  - EXAMPLES: half-step = 100 cents, whole step = 200 cents,  
major third = 400 cents, perfect fifth = 700 cents, octave = 1,200 cents
5. Numerically, MELODY is additive or subtractive (i.e., moving typically by steps or small increments up or down). HARMONY is multiplicative, quantified by frequency ratios between the tones.
6. When an octave's frequency is doubled, the next octave higher is produced. This is called OCTAVE EXPANSION.
  - EXAMPLES: 1 becomes 2, then 4, then 8, then 16, etc.
  - 3 becomes 6, then 12, etc.
  - 5 becomes 10, then 20, etc.To make intervals easier to hear and work with, we remove lower octaves from compound intervals in a process called OCTAVE REDUCTION.
  - EXAMPLES: (from the overtone series)
    - The 12<sup>th</sup> becomes a 5<sup>th</sup>.
    - Two octaves and a major 3<sup>rd</sup>, simply become a major 3<sup>rd</sup>.

7.	<u>1</u>	2	3	4	5	6	7	<u>1</u>	Scale Degrees
	DO	RE	MI	FA	SOL	LA	TI	DO	Solfeggio
	SA	RE	GA	MA	PA	DHA	NI	SA	Sargam

8. RELATIVE TERMINOLOGY:

Perfect 5ths

Pythagorean

3<sup>rd</sup> partials

PA or PA-blooded

Major 3rds

Pentamorous

5<sup>th</sup> partials

GA or GA-blooded

Overtonal

North and East on the lattice

Dominant energy

Reciprocal

South and West on the lattice

Sub-dominant energy

9. A COMMA is a small interval between two tones near in pitch but different in harmonic generation.