MUSIC
FUNDAMENTALS
The Language of Music
### Basic Elements

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<th>Pitch</th>
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<td>Texture</td>
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</table>
MUSIC FUNDAMENTALS

PITCH

= “Frequency”
MUSIC FUNDAMENTALS

What does sound look like?

https://www.youtube.com/watch?v=px3oVGXr4mo
MUSIC FUNDAMENTALS

PITCH

“Indefinite” Pitch = “Noises”

“Definite” Pitch = Musical Notes
Tan Dun’s *Ghost Opera* is a piece using both “definite” pitches—instruments playing what we conventionally think of as “notes”—and “indefinite” pitches, such as the sound of water.

https://www.youtube.com/watch?v=U-loqQ1JzME
PITCH
“Definite” Pitch
Pitch = Vibrations per second
The note “Concert A” vibrates 440 times per second
Symphony Orchestra tuning to “Concert A”

https://www.youtube.com/watch?v=KfSH1ezevjM
MUSIC FUNDAMENTALS

PITCH

“Concert A” agreed on as a standard in the U.S.A. in 1936 and around the world in 1955
MUSIC FUNDAMENTALS

PITCH

C D E F G A B C

Do Re Mi Fa So La Ti Do
MUSIC FUNDAMENTALS

PITCH

Musicians use LETTERS or SYLLABLES to identify these specific pitches
MUSIC FUNDAMENTALS

PITCH

C major scale
C major scale

C is the **home pitch** or **KEY** for “C major”

“Major” is the **mode** (or quality) of the scale
MUSIC FUNDAMENTALS

PITCH

C major scale

MAJOR Mode = “Happy”
MUSIC FUNDAMENTALS

PITCH

C minor scale

C is the home pitch or KEY for “C minor”

“Minor” is the MODE (or quality) of the scale
MUSIC FUNDAMENTALS

PITCH

C minor scale

MINOR Mode = “Sad” or “Serious”
MUSIC FUNDAMENTALS

PITCH

C major scale

Where do these pitches come from?
MUSIC FUNDAMENTALS

PITCH

THE

OVERTONE SERIES
How a string vibrates to the Overtone Series
How a string vibrates to the Overtone Series

= the fundamental pitch (the one we hear)
OVERTONE SERIES as MUSICAL NOTES

Fundamental Pitch
While many musics derive their notes from the overtone series, Greek theorists, such as the mathematician Pythagoras (570-c. 495 BC) discovered and explored a numeric system for generating pitches.
Legend has it that Pythagoras walked by a forge and noticed different tones emanating from anvils of different sizes as they were struck by the blacksmiths.
Pythagoras conjectured that the **different tones** of the anvils had to do with the **different sizes** of the anvils and the **ratios** between their sizes.
Pythagoras transfers this idea to strings of different lengths.
A string length that is divided in half (1:1) produces and octave

Using whole-number ratios, Pythagoras generates a series of intervals or pitches

The octave, second, fourth, and fifth
Octave
Fifth
Fourth
Second
These intervals get their names from the number of intervallic steps between pitches:

5 interval steps = a “fifth”

8 steps = octave [8 steps]
OCTAVE
FIFTH
FOURTH
With the whole-number ratio of $2 : 1$ we can generate a tone and an octave.
From those two pitches we can move up and down a fifth \((3 : 2)\) and generate two more pitches.
From those two pitches we can move tune up and down a perfect fourth (4 : 3) and generate two new pitches.
Pentatonic [Five-note] Scale

D E G A C [D]
Pentatonic [Five-note] Scale

D  E  G  A  C  [D]
Continuing up and down by a fifth (3 : 2) we create the last two notes of an eight-note scale
“Do Re Mi” from *The Sound of Music*

https://www.youtube.com/watch?v=31v13ukJknE
MUSIC FUNDAMENTALS

DURATION

Time in Music
MUSIC FUNDAMENTALS

DURATION

Time in Music

The length of a sounds
The length of silences
MUSIC FUNDAMENTALS

DURATION

Time in Music

Long Durations : Short Durations
DURATION

Time in Music

Patterns of Durations

**METRICAL** = Patterns of Durations

**NON-METRICAL** = No Patterns
BATUCADA ACAMPADA ZARAG
Metrical (Rhythmic) Music

https://www.youtube.com/watch?v=JWDIsmm8lyw
MUSIC FUNDAMENTALS

METRICAL PATTERN

SAMBA
in duple meter
(2 or 4 beat pattern)

“1 – 2, 1 – 2”
NUNS OF NÔTRE-DAME de L’ANNONCIATION, AVIGNON
Un-metrical music (Chant)

https://www.youtube.com/watch?v=GXqrjhZHUIE
MUSIC FUNDAMENTALS

DURATION

METER
MUSIC FUNDAMENTALS

DURATION

WHOLE NOTE
“Whole” Note = 0
MUSIC FUNDAMENTALS

DURATION

half \( \frac{1}{2} \)
MUSIC FUNDAMENTALS

DURATION

“Half” Note

Equals half the duration of a “Whole” note
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DURATION

one quarter $\frac{1}{4}$
MUSIC FUNDAMENTALS

DURATION

“Quarter” Note

Equals a quarter of the duration of a “Whole” note
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DURATION
Rather than dividing into halves or quarters,
We can also divide into “3s”
MUSIC FUNDAMENTALS

DURATION

0 =  \(\text{quarter note}\)  \(\text{eighth note}\)
MUSIC FUNDAMENTALS

DURATION

\[\text{quarter note} = \text{half note} = \text{whole note}\]
MUSIC FUNDAMENTALS

DURATION
Music Notation

HOW do we WRITE MUSIC DOWN?
STAFF

The music staff is written as **five lines** with **four spaces** in between.
Pitches (“notes”) are written on the lines and in the spaces to indicate which notes are to be performed. The clef sign helps the performer know what notes are assigned to each line and space.
The **time signature** tells the performer the rhythmic structure of the piece.
“GRAND STAFF” which combines two staves, is used by instruments with very wide ranges, like the piano.
A piano piece written using a Grand Staff.
MUSIC FUNDAMENTALS

DYNAMICS

AMPLITUDE

Loud : Soft
in Italian
Forte : Piano
MUSIC FUNDAMENTALS

ITALIAN

is the language for many Musical terms

such as “forte” and “piano”
The PIANO—whose full name is the fortepiano—is called such because it can play both loud and soft (forte-piano)
MUSIC FUNDAMENTALS

DYNAMICS

Amplitude

Very Loud
Loud
Medium Loud
Medium Soft
Soft
Very Soft
MUSIC FUNDAMENTALS

DYNAMICS

Very Loud  Fortissimo
Loud        Forte
Medium Loud  Mezzo Forte
Medium Soft  Mezzo Piano
Soft        Piano
Very Soft      Pianissimo
## MUSIC FUNDAMENTALS

### DYNAMICS

<table>
<thead>
<tr>
<th>Dynamics</th>
<th>Italian Equivalent</th>
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<tr>
<td>ff</td>
<td>Fortissimo</td>
</tr>
<tr>
<td>f</td>
<td>Forte</td>
</tr>
<tr>
<td>mf</td>
<td>Mezzo Forte</td>
</tr>
<tr>
<td>ms</td>
<td>Mezzo Piano</td>
</tr>
<tr>
<td>p</td>
<td>Piano</td>
</tr>
<tr>
<td>pp</td>
<td>Pianissimo</td>
</tr>
</tbody>
</table>

- **ff**: Fortissimo
- **f**: Forte
- **mf**: Mezzo Forte
- **ms**: Mezzo Piano
- **p**: Piano
- **pp**: Pianissimo
DYNAMICS

AMPLITUDE

Loud---------------------------Soft

Decrescendo (to get softer)

Crescendo (to get louder)
We can write out the instruction “crescendo” or indicate it with a graphic sign.

Crescendo sign (get louder)

Decrescendo sign (get softer)
MUSIC FUNDAMENTALS

METER
METER

“Building Block” durations
in
Patterns of 2s or 4s

“Common” Time
Duple Meter (2s or 4s)
MUSIC FUNDAMENTALS

METER

“Building Block” durations in Patterns of 3s

Triple Meter (3s)
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METER

A “building block” or segment of METER

= 

a “MEASURE” or a “BAR”
MUSIC FUNDAMENTALS

METER

This ruler is a representation of Duple Meter
MUSIC FUNDAMENTALS

METER

A measure is like an inch (the “building block”)

1 2 3 4 5
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METER

Which is made up of 4 quarters
MUSIC FUNDAMENTALS

METER

1 2 3 4 1 2 3 4 1 2 3 4 etc.

1 2 3 4 5
MUSIC FUNDAMENTALS

METER

DUPLE meter usually stresses the first beat

“1 - 2 - 3 - 4”
MUSIC FUNDAMENTALS

METER

DUPLE meter usually stresses the first beat

“1 – 2 – 3 – 4”

“This is called the “Down Beat”"
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DURATION

“SYNCOPATION”

= Stressing the Offbeat
MUSIC FUNDAMENTALS

METER

“SYNCOPATION”

= Stressing the Offbeat

“1 – 2 – 3 – 4”

It’s also called the “Back Beat”
MUSIC FUNDAMENTALS

METER

SAMBA PATTERN

in duple meter
(2 or 4 beat pattern)

“1 – 2, 1 – 2″
METER

WALTZ PATTERN

in **triple** meter
(3 beat pattern)

“1 – 2 – 3, 1 – 2 – 3”
Conducting Patterns

Duple (2)  Triple (3)  Duple (4)

"Common Time"
MUSIC FUNDAMENTALS

TERMS to KNOW

Pitch (Frequency), Duration, Dynamics (Amplitude), Major Mode (happy), Minor Mode (sad), Overtone Series, Pythagorean Ratios, Metrical, Unmetrical, Measure or Bar, Staff, Grand Staff, Clef, Duple Meter, Triple meter, Rhythm, Down Beat, Up Beat, Syncopation, Forte (loud), Piano (soft), Crescendo (get louder), Decrescendo (get softer)