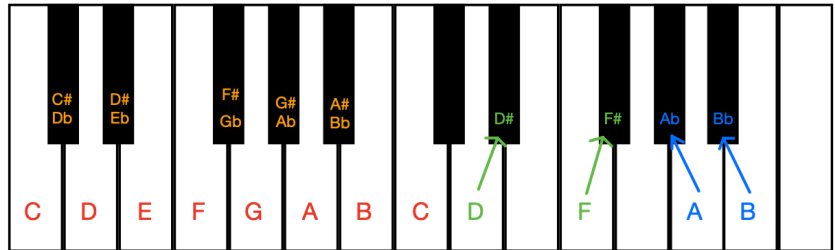


BASICS OF MUSIC THEORY

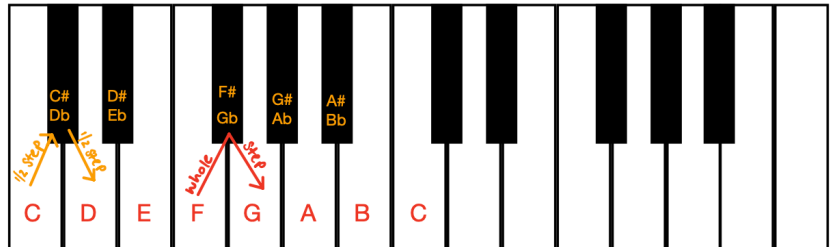
As you begin using this book, you'll need a basic understanding of how to use a piano, and how to visually and aurally identify musical intervals.

HOW TO USE A PIANO

- The white keys of the piano are for the **natural notes**.
- The black keys of the piano are for **sharp and flat notes**.
 - When you go from a white key to the black key above it, **keep the note name and add a sharp**.
 - When you go from a white key to the black key below it, **keep the note name and add a flat**.



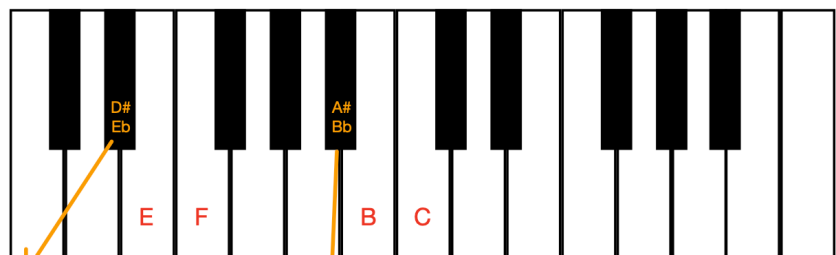
- **Half steps:** Half steps occur between every note on the piano (like in a chromatic scales).
- **Whole steps:** Whole steps occur every two keys on the piano (think: “key - skip a key - key”)



C - C# is one half step
C# - D is one half step

F - G is 2 half steps, AKA
one whole step

- The distance between B-C and E-F is a **half step**. (There are no black keys between these notes).
- **Enharmonic:** two notes that have the same sound, but different names.



D# is enharmonic to Eb.
They sound the same but
have two different names.

1/2 Step

1/2 Step

A# is enharmonic to Bb.
They sound the same but
have two different names.


MUSICAL INTERVALS

Interval: The distance between two notes, which is measured in **quantity** and **quality**.


Quantity: The number of notes in the musical alphabet between the low note and high note in an interval. How to identify the **quantity** of an interval:

1. Label the low note of the interval as "1" (the low note may not always be the first note)
 2. Count the following notes in the musical alphabet until you get to the high note in the interval
 3. The number assigned to the high note in the interval is the **quantity** of that interval.
- *When identifying **quantity**, ignore all accidentals.

Example:



1. D = 1
2. D E F G A B **C** D
1 2 3 4 5 6 **7** 8
3. This interval is a 7th.

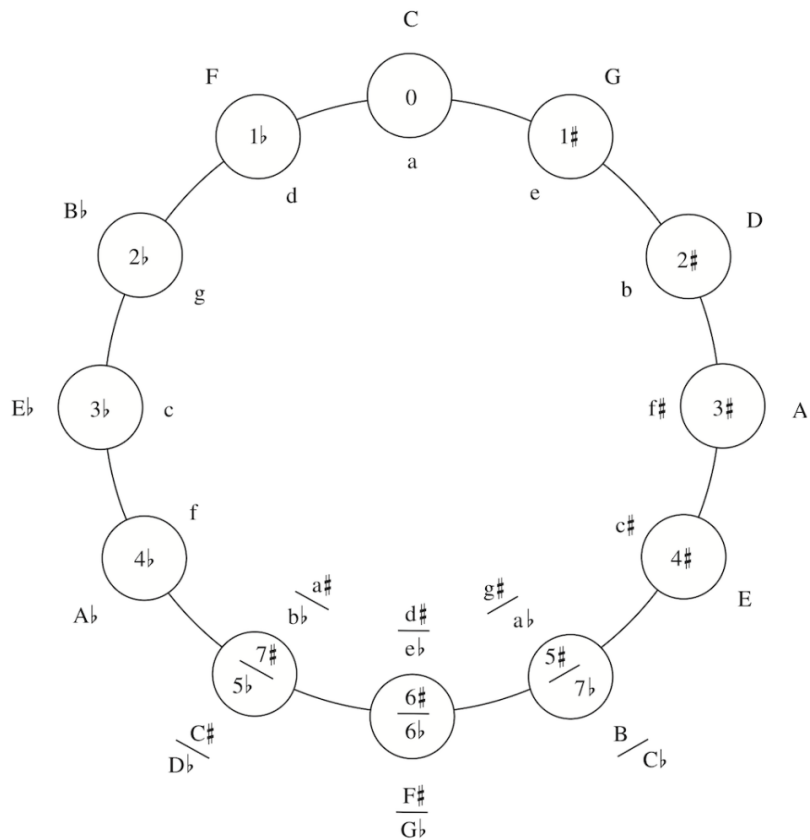


1. G = 1
2. G A B **C** D E F G
1 2 3 **4** 5 6 7 8
3. This interval is a 4th.



Unison (1) 2nd 3rd 4th 5th 6th 7th Octave (8)

CIRCLE OF 5THS



MUSICAL INTERVALS

Quality: The type of interval based on the key signature. How to identify the **quality** of an interval:

For unisons (1), 4ths, 5ths, and octaves (8ths)

1. Use the Circle of 5ths to identify the number of sharps and flats in the key of the low note of the interval. (Remember that the low note may not always be the first note).
2. Identify the quantity of that interval.
3. Ask: Is the high note in the key that you identified in step 1?
 1. If yes: The interval is a **perfect** interval.
 2. If no: And the note is lowered by a half step from the key signature, it is a **diminished** interval.
 3. If no: And the note is raised by a half step from the key signature, it is an **augmented** interval.

Example:



1. G has 1 F#
2. G A B C D E F#
1 2 3 4 5 6 7
This interval is a 5th
3. Is the top note (D) in the key above? Yes.
This interval is a **perfect 5th.**



1. G has 1 F#
2. G A B C D E F#
1 2 3 4 5 6 7
This interval is a 5th
3. Is the top note (Db) in the key above? No. It's lowered by a half step.
This interval is a **diminished 5th.**



1. G has 1 F#
2. G A B C D E F#
1 2 3 4 5 6 7
This interval is a 5th
3. Is the top note (D#) in the key above? No. It's raised by a half step.
This interval is an **augmented 5th.**

For 2nds, 3rds, 6ths, and 7ths

1. Use the Circle of 5ths to identify the number of sharps and flats in the key of the low note of the interval. (Remember that the low note may not always be the first note).
2. Identify the quantity of that interval.
3. Ask: Is the high note in the key that you identified in step 1?
 1. If yes: The interval is a major interval.
 2. If no: And the note is raised by a half step, it is an augmented interval.
 3. If no: And the note is lowered by a half step, it is a minor interval.
 4. If no: And the note is lowered by a whole step (or 2 half steps), it is a diminished interval.

Example



1. C has no accidentals
2. C D E F G A B
1 2 3 4 5 6 7
This interval is a 6th
3. Is the top note (A) in the key above? Yes.
This interval is a **major 6th.**



1. C has no accidentals
2. C D E F G A B
1 2 3 4 5 6 7
This interval is a 6th
3. Is the top note (A#) in the key above? No. It's raised by a half step.
This interval is an **augmented 6th.**



1. C has no accidentals
2. C D E F G A B
1 2 3 4 5 6 7
This interval is a 6th
3. Is the top note (Ab) in the key above? No. It's lowered by a half step.
This interval is a **minor 6th.**



1. C has no accidentals
2. C D E F G A B
1 2 3 4 5 6 7
This interval is a 6th
3. Is the top note (Abb) in the key above? No. It's lowered by two half steps.
This interval is a **diminished 6th.**

MUSICAL INTERVALS

Songs that Use Each Interval (Typically in the opening two notes of the song) Look up a recording online to hear the interval associated with each song.	
Interval	Songs
Unison (P1)	Jingle Bells - James Lord Pierpont
Minor 2nd	Jaws Theme - John Williams White Christmas - Irving Berlin Fly Me to the Moon - Frank Sinatra
Major 2nd	Happy Birthday to You - Mildred Hill Silent Night - Franz Xaver Gruber Frere Jacques - Traditional Mary Had a Little Lamb - Traditional
Minor 3rd	Greensleeves - Traditional O Canada - Caliza Lavallee The Star Spangled Banner - Francis Key
Major 3rd	Oh, When the Saints - Traditional What a Wonderful World - George Douglas Swing Low, Sweet Chariot - Traditional
Perfect 4th	We Wish You a Merry Christmas - Traditional Bridal Chorus ("Here Comes the Bride") - Richard Wagner Amazing Grace - John Newton I've Been Working on the Railroad - Traditional
Tritone (A4 or D5)	Maria (from West Side Story) - Leonard Bernstein The Simpsons Theme - Danny Elfman Blue 7 - Sonny Rollins
Perfect 5th	Star Wars Theme - John Williams Scarborough Fair - Traditional Top Gun Anthem - Harold Faltermeyer Flinstones Theme - Hoyt Curtin
Minor 6th	In my Life (Intro) - Beatles Close Every Door (Joseph and the Amazing Technicolor Dream Coat) - Andrew Lloyd Webber You're Everything - Chick Corea
Major 6th	My Bonny Lies Over the Ocean - Traditional NBC Chimes - from 1927 The Music of the Night (Phantom of the Opera) - Andrew Lloyd Webber
Minor 7th	Somewhere (West Side Story) - Leonard Bernstein Theme from Star Trek - Alexander Courage An American in Paris - George Gershwin
Major 7th	Take on Me (chorus) - A-ha I Love You - Cole Porter
Octave (P8)	Over the Rainbow - Harold Arlen The Christmas Song - Robert Wells Singin' in the Rain - Nacio Brown Willow Weep for Me - Ann Ronell

THE HARMONIC SERIES

The harmonic (or overtone) series is the sequence of pitches whose frequency is an integer multiple of a fundamental frequency. In other words, each fingering on the horn has a fundamental pitch. The notes that can be played above the fundamental pitch (using the same fingering) ascend in the same pattern for each fingering. The pattern of the harmonic series is the same for all brass instruments, but each instrument's fundamental pitches are different depending on the length of tubing.

This staff shows the harmonic series for the open fingering on the F horn. The fundamental pitch is "C." The rest of the harmonic series follows, and the intervals from one note to the next are noted. The same intervals are used to create the harmonic series above the fundamental pitch on each fingering of the horn.

The image shows a musical staff with two staves (treble and bass clef) representing the harmonic series for the open fingering on the F horn. The fundamental pitch is C. The notes are: C (bass), G (bass), C2 (bass), E (bass), G (bass), A (bass), B (bass), C (treble), D (treble), E (treble), F (treble), G (treble), A (treble), B (treble), C (treble). Intervals are labeled: P8 (C to G), P5 (C to G), P4 (C to E), M3 (E to G), m3 (G to A), M2 (A to B), M2 (B to C), m2 (C to D), m2 (D to E), m2 (E to F), m2 (F to G), m2 (G to A), m2 (A to B), m2 (B to C). A red circle highlights the C note with an arrow pointing to 'C' below it.

Horn players need to understand the harmonic series because they need to know which notes exist on each partial. Horn partials are notoriously challenging to settle into because they are close together, but the more a player knows about the series, the easier it will be to play the notes with accuracy.

Horn players also need to understand the harmonic series in order to play in tune. Certain partials tend to be sharp or flat. In addition, certain valve combinations tend to be sharp or flat. When the player is aware of these tendencies, he/she is able to correct the pitch either with the embouchure or the right hand in the bell.

The following chart shows horn fingerings along the Y axis, and partial numbers along the X axis. The pitch tendencies of each fingering and partial are color coded. Some notes have a pitch tendency that is exaggerated by the fingering and the partial both having the same pitch tendency. These notes need to be corrected more than the others.