AGENDA

- Pitches and Notes
- Intervals
- Scales
- Keys and Key Signatures
Pitches and Notes
Pitch vs Note

- **Pitch: A particular frequency of sound.**
  - Ex: 440 Hz
  - Pitch is subjective due to excess noises you hear (overtones, sound pressure level (volume), white noise, etc.) It is based on the perception of frequency of vibration.

- **Note: A named pitch.**
  - Ex: 440 Hz is generally considered A4.
  - Can also be referred to by number of occurrences of such pitch (ie. playing A4 twice can be referred to as “playing a note twice”).
  - Notes that are multiples share the same name.
    - Ex: 880 Hz is A5.
  - Notes also hold rhythmical information (ie. how long to hold said pitch).
12 Note Names, Infinite Octaves!

- Octave: The interval between one musical pitch and another with double its frequency.

- Every octave has 12 notes.

- With notes, we refer to octaves by number to know where they should be played.

- While octaves are technically infinite, we can’t hear all of them (or even necessarily create them).
What 12 notes make up an octave?

This is also called a **one octave chromatic scale**. More on this later.
Sharps and Flats

- In the previous slide, you may have noticed there were # (sharps) and b (flats). These represent raising or lowering of pitch (respectively).

- Example:
  - Ab4 = 415.30 Hz
  - A4 = 440 Hz
  - A#4 = 466.16 Hz
A sharp and B flat?

- What’s the difference between raising one note and lowering the note above it?
  - Example: A#4 and Bb4

- Short answer: Nothing. :)  
  - Pitch-wise, A#4 and Bb4 are both 466.16 Hz.  
  - We differentiate between the two with regards to scales and intervals.
Intervals
**What is an interval?**

- **Interval**: The difference in pitch between two sounds.

- In musical terms, we have intervals that describe distance between two notes.

- **Some examples:**
  - Perfect fourth/fifth
  - Major third
  - Minor sixth
Intervals - Basic Concept

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

Augmented 3rd
Augmented 2nd
Major 2nd
Perfect unison
Minor 2nd
Major 3rd
Minor 3rd
Perfect 4th
Augmented 4th
Perfect 5th
Augmented 5th
Major 6th
Minor 6th
Minor 7th
Major 7th
Perfect octave
Diminished 2nd
Augmented unison
Diminished octave
Augmented 7th
Diminished 3rd
Diminished 4th
Diminished 5th
Diminished 6th
Diminished 7th

Widened by a half step
Narrowed by a half step
What do these intervals sound like?

- A lot of times when learning intervals, we associate them with songs we know to understand what they should sound like.

- Click here to listen to intervals and associate songs with them!
Some common terms

- When we talk about intervals in melodic lines, sometimes we refer to half steps and whole steps.
  - We also define how to build some common scales this way.

- Half step: the neighboring note to any note. (ex: A and A#)
- Whole step: two notes away from any note. (ex: A and B)
Why do we care about spacing between pitches?

- Intervals are everywhere! We use them in:
  - Melodic content
  - Chords
  - Harmonization
  - Speaking (intervals of overtones, inflexion, etc.)

- Intervals allow us to discern pitches relative to other pitches. Intervals make a huge difference as to how a note feels.
  - We’ll cover this more with harmonization/chords in future lectures.
Scales
What is a scale?

- **Scale**: any set of musical notes ordered by fundamental frequency or pitch.

- In simpler terms, a scale is a collection of notes that are appropriately spaced for the type of scale. The notes are contained within one octave.

- Example: **C Major Scale**
There are many types of scales

The four basic types of scales are:

- Major
- Natural Minor
- Harmonic Minor
- Melodic Minor

There's also some other common, useful scales:

- Chromatic
- Blues
- Pentatonic
What is a chromatic scale?

- Chromatic Scale: A scale that is built with the following pattern:
  H H H H H H H H H H H H
- Example: C Chromatic:
  C C# D D# E F F# G G# A A# B C
What is a major scale?

- Major Scale: A scale that is built with the following pattern:
  
  W W H W W W H

- Example: C Major:
  
  C D E F G A B C
Try this on your own

List the notes for the F Major scale and D Major scale.

Answer: F G A Bb C D E F
D E F# G A B C# D
What is a natural minor scale?

- Natural Minor Scale: A scale that is built with the following pattern:
  
  W H W W H W W

- Example: A Natural Minor:
  
  A B C D E F G A
Try this on your own

List the notes for the E Natural Minor scale and C Natural Minor scale.

Answer: E F# G A B C D E
       C D Eb F G Ab Bb C
**What is a harmonic minor scale?**

- Harmonic Minor Scale: A scale that is built with the following pattern:
  
  \[
  W \ H \ W \ W \ H \ W+H \ H 
  \]

- Example: A Harmonic Minor:
  
  A B C D E F G# A
Note: Easier way to think of it: Natural minor with the 7th raised a half step!
Try this on your own

List the notes for the E Harmonic Minor scale and C Harmonic Minor scale.

Answer: E F# G A B C D# E
       C D Eb F G Ab B C
What is a melodic minor scale?

- Harmonic Minor Scale: A scale that is built with the following pattern:
  
  Ascending:  W H W W W W W H
  Descending: W W H W W H W
- Example: A Melodic Minor: A B C D E F# G# A G F E D C B A
Note: Easier way to think of it:

**Ascending:** Natural minor with the 6th and 7th raised a half step

**Descending:** Natural Minor
Try this on your own

List the notes for the E Melodic Minor scale and C Melodic Minor scale.

Answer: E F# G A B C# D# E D C B A G F# E C D Eb F G A B C Bb Ab G F Eb D C
HMMMM

THAT SEEMS COMPLICATED
In real time, musicians don’t think like this

- While thinking of interval spacing is easy when you are trying to decipher notes, it’s much easier to think about the major scales and how they are altered.

- We often refer to notes of the scale as 1-7 (or sometimes 1-8) and raising or lowering them.

- This will also correspond to chordal names when we get to that portion of class.
Some examples

- **Natural Minor:**
  - Major Scale with a flatted 3, 6, and 7

- **Harmonic Minor:**
  - Major Scale with a flatted 3 and 6, Natural Minor with a raised 7th

- **Melodic Minor:**
  - Ascending: Harmonic Minor with a raised 6th, Major with a flat 3
  - Descending: Natural Minor

- **Chromatic:**
  - Every note possible!
How many scales are there?

- With each of the four types, there are 12 unique variations on that type.
  - This is because we can do the same thing starting at any note within the octave and do the same thing.

- That means for these four types alone there are 48 scales to learn!

- There needs to be an easier way to learn all of these...but how? This is where keys come in!
Keys and Key Signatures
**What is a key?**

- **Key**: the group of pitches, or scale, that forms the basis of a music composition.

- For example: We can be in the key of A Major, C# Minor, F Blues, etc.
  - In some new music, a key can be just a set of notes!

- We can identify the key of a piece by a number of factors, from chordal progressions and harmonization to the actual printed key signature on each line of the piece!
What is a key signature?

- Key Signature: A collection of sharps, flats, and (rarely) naturals placed together on the staff by the clef to designate the key of the piece.
Some more terminology
Back to keys and key signatures

- How do we easily know what notes are in a key? Further, how do we know what the key signature looks like?

- Fortunately, we have a handy circle that gives us all the information we need to play any major or natural minor scale!
  - This is called the circle of fourths/fifths.
Circle of 4ths and 5ths

Order of Flats: B E A D G C F

Order of Sharps: F C G D A E B
Try this on your own

What is the key signature for Bb Major?

Order of Flats:
B E A D G C F

Order of Sharps:
F C G D A E B
What is the key signature for Bb Major?
Sharps or flats? Flats
How many? 2
What are they? B E
So, what’s the scale? Bb C D Eb F G A Bb
What’s the key signature?
Try this on your own

What is the key signature for Bb Natural Minor, C# Natural Minor, C# Major, and Gb Major?

Order of Flats:
B E A D G C F

Order of Sharps:
F C G D A E B
What is the key signature for Bb Natural Minor, C# Natural Minor, C# Major, and Gb Major?

**Answer:**

**Bb Natural Minor:** Bb C Db Eb F Gb Ab Bb

**C# Natural Minor:** C# D# E F# G# A B C#

**C# Major:** C# D# E# F# G# A# B# C#

**Gb Major:** Gb Ab Bb Cb Db Eb F Gb