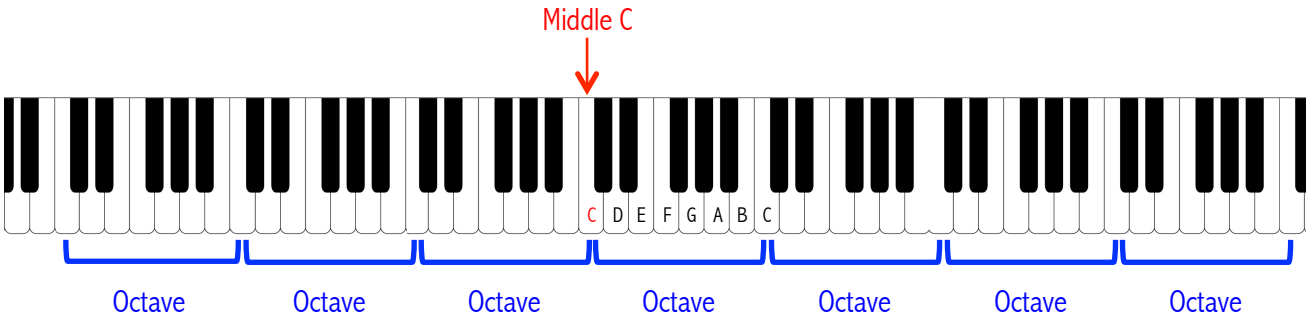
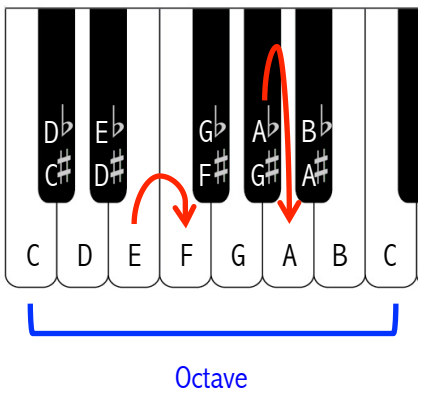
# Scale Theory

## Understanding the Octave and Basic Intervals

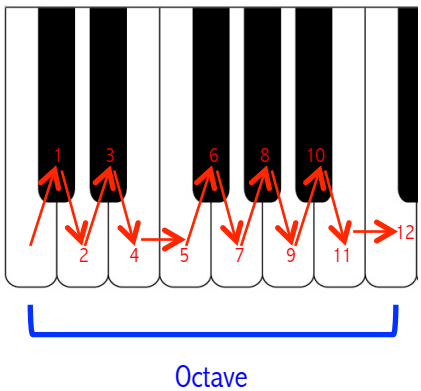
The easiest way to understand the position of notes in relation to each other is by visualizing the piano keyboard. The piano keyboard is made up of repeating patterns of notes called octaves (shown below).




A semitone is the smallest interval between two notes on the piano. Notes that are next to each other on the piano keyboard are semitones intervals. For example, A♭ to A is a semitone interval. Similarly, E to F is also a semitone interval



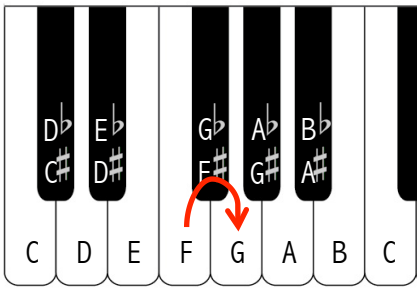

There are 12 semitones in an octave (see below).




Other musical intervals are defined by the number of semitones they contain:

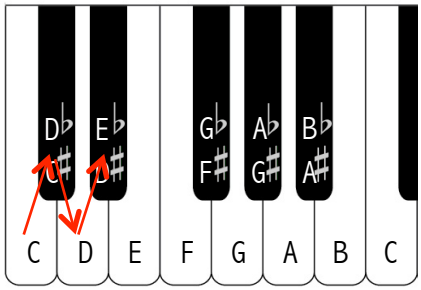
i. A **Whole Tone** is made up of two semitones
ii. A **Minor Third** is made up of three semitones
iii. A **Major Third** is made up of four semitones

i.



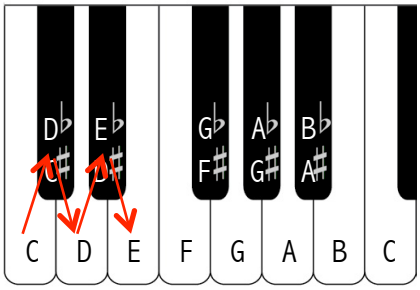

F to G is a whole tone interval (more commonly referred to as a "tone")

ii.



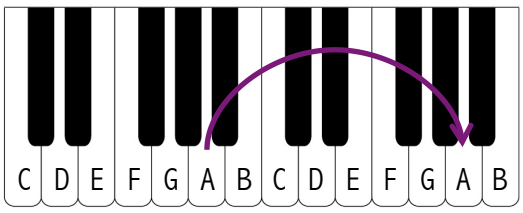

C to E♭ is a minor third interval

iii.



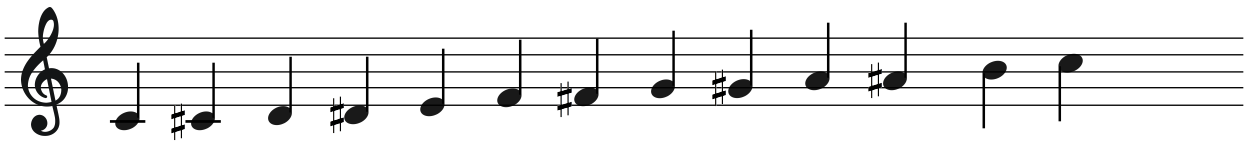

C to E is a major third interval

N.B: An octave is a 12 semitone interval. C to C is an octave interval, as is A to A (see below).




## Putting the Octave on the Stave

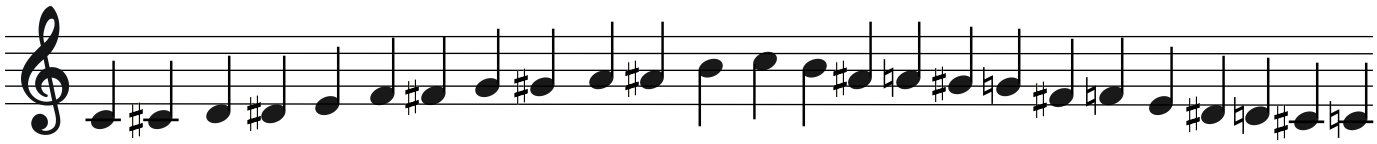
Notated below is an octave starting on C. This is also known as a **Chromatic Scale**, which is made up of ascending and descending semitone intervals.



CHROMATIC STARTING ON C

Scales are made up of patterns of intervals within octaves. The length of a scale is measured in octaves. To play a chromatic scale starting on C for one octave, you would start on a lower C, play up to a higher C and then come back down to the lower C.

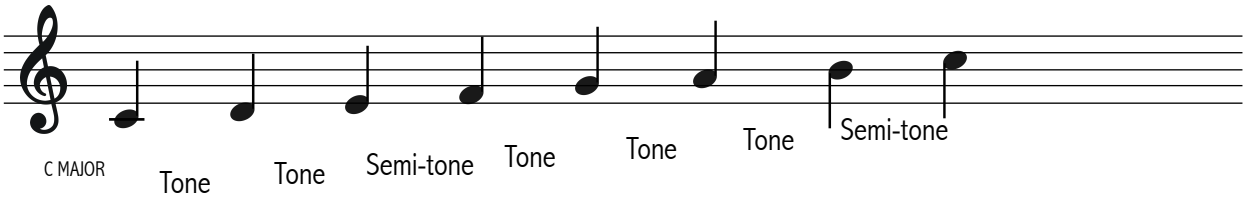
A one octave chromatic scale starting on C is fully notated below.



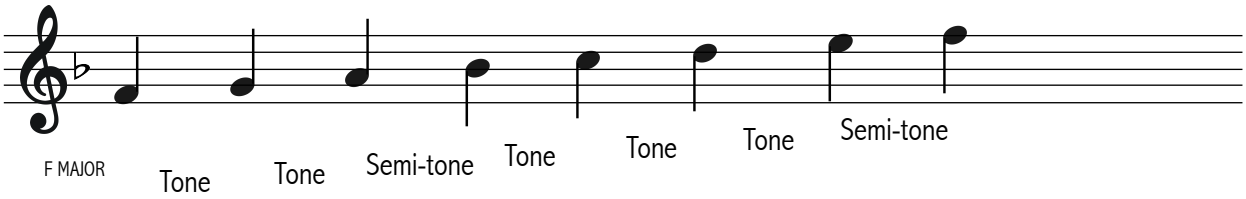
CHROMATIC STARTING ON C

## Major and Natural Minor Scales

Major scales are based on the following pattern of intervals;

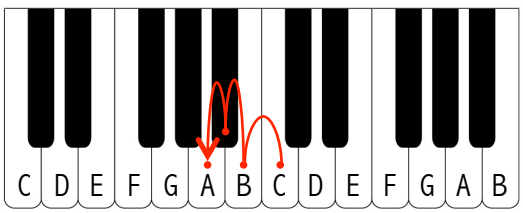



This pattern of intervals can start on any note to create a Major Scale. For example, F Major Scale is notated below.



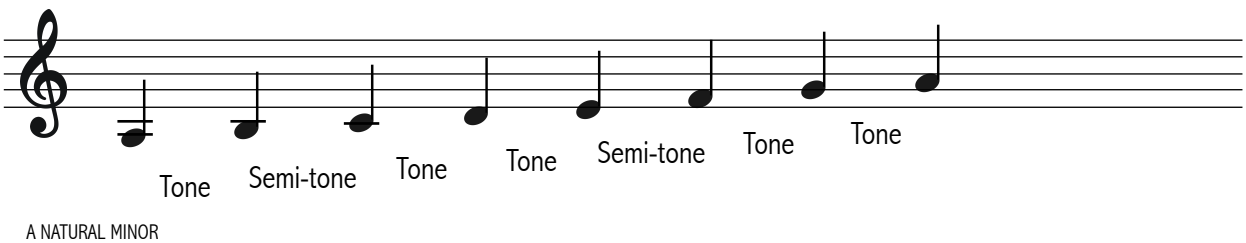

Every major scale has a relative minor scale. The minor scale uses the same notes as the major scale however starts three notes lower. This position can be found by moving three semi-tones down from the starting note of the major scale. Similarly, the relative major of a minor scale can be found by moving three semi-tones up from the starting note of the minor scale.

For example, the relative minor for C major is A minor.

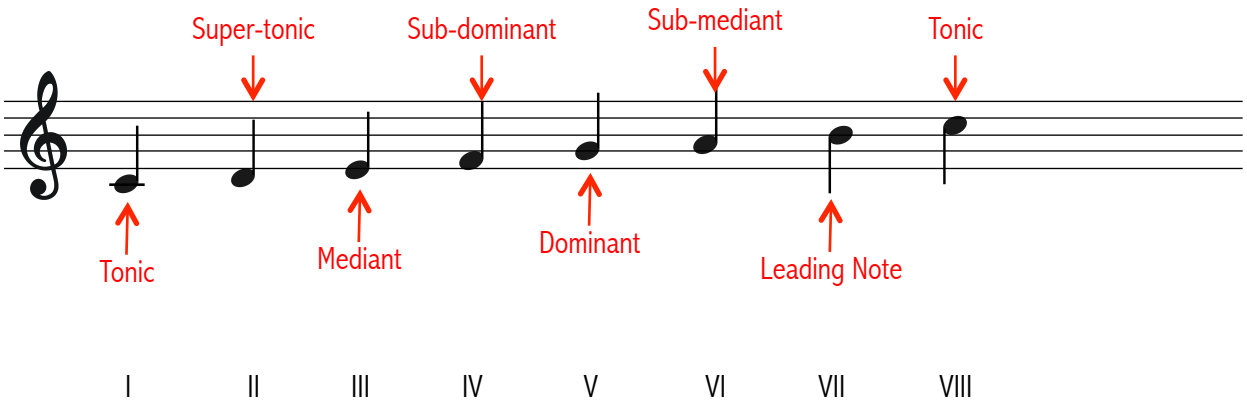



Major scales share a key signature with their relative minor. For example, C major and A minor both have no sharps or flats in their key signature. Similarly, F major (notated above) and its relative minor, D minor, both have one flat in their key signature.

Playing A minor without adding in any accidentals would give you a **Natural Minor Scale.** Natural minors are based on the following pattern of intervals;

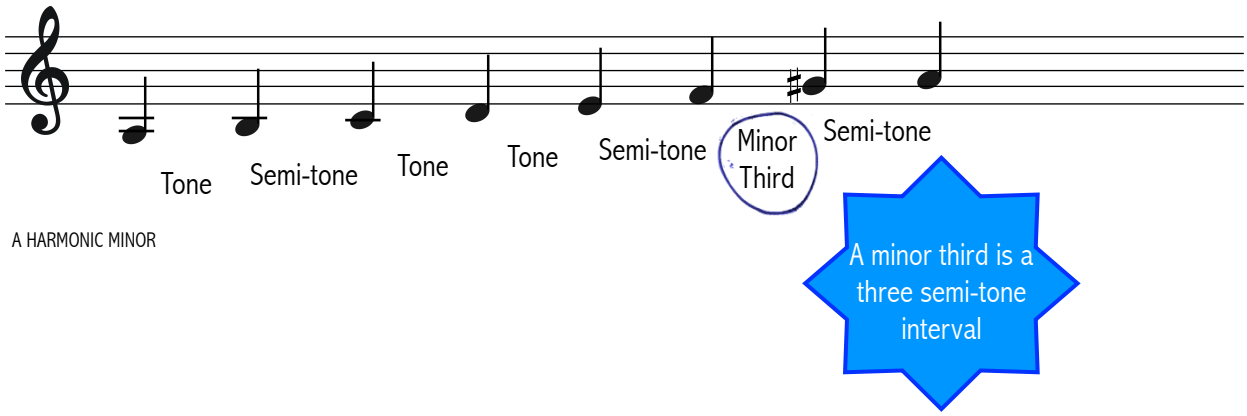



Common to both major and minor scales is the fact that they are both composed of 8 notes in an octave. In Western harmony these notes have names which relate to their position within the octave. Notes are, however, more commonly referred to using numbers which relate to their position within the octave (for example, the Dominant would be the 5$^{th}$)



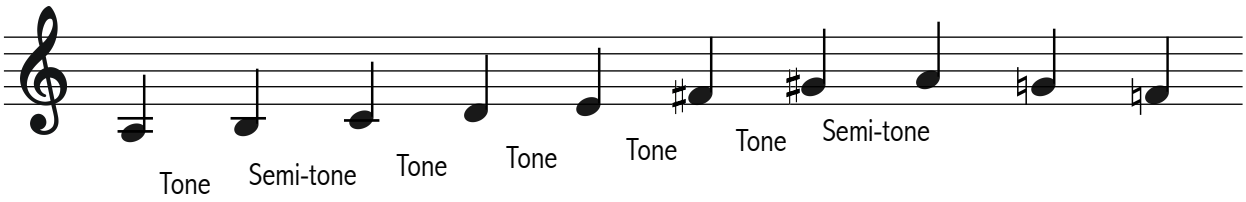

## Harmonic and Melodic Minors

Raising the 7th note (the Leading Note) of a natural minor scale would give you a **Harmonic Minor Scale.** Harmonic minors are based on the following pattern of intervals;




A HARMONIC MINOR

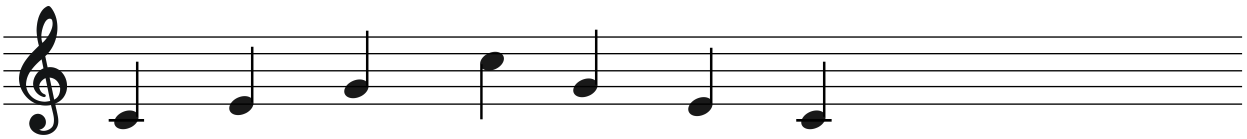
A **Melodic Minor Scale** can be formed by raising the 6th (the sub-mediant) and the 7th (the leading note) notes of a natural minor scale on the way up but not on the way down. Melodic minors are based on the pattern of intervals shown below while ascending. A descending melodic minor is based on the same pattern of intervals as a natural minor.




A MELODIC MINOR

## Arpeggios

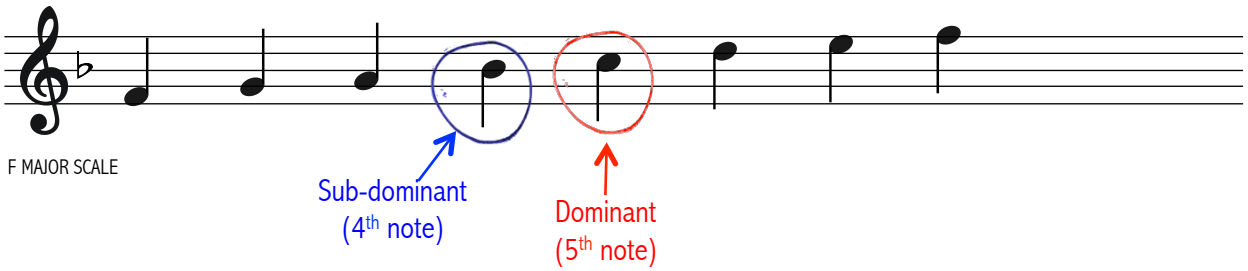
Arpeggios are formed by using the 1st (Tonic), 3rd (Mediant), 5th (Dominant) and 8th (Tonic) notes of a scale. C major arpeggio is shown below.



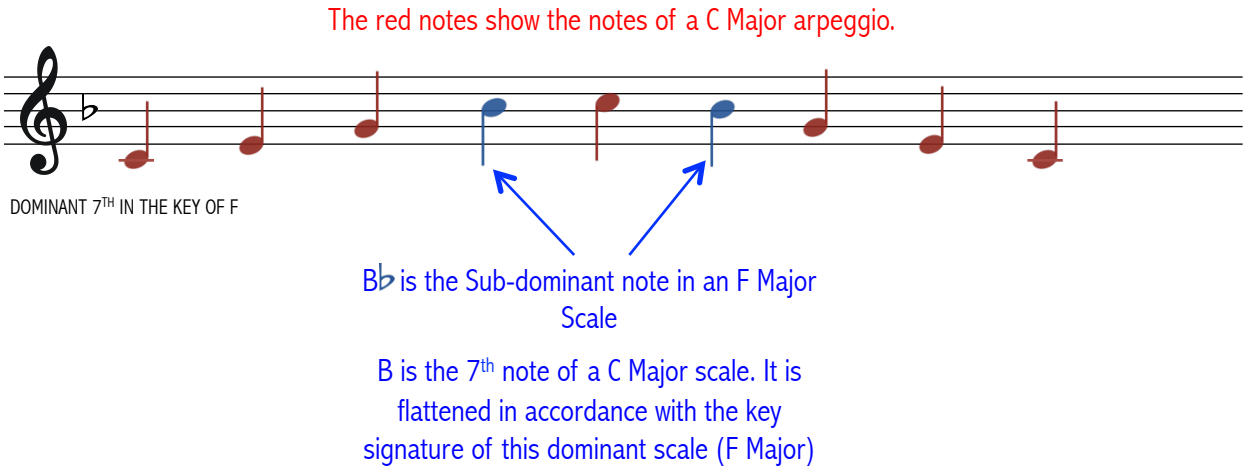
C MAJOR ARPEGGIO

## Dominant 7th

A dominant 7th is similar to an arpeggio. Dominant 7th's start on the dominant note (5th note) of the scale of the key they are in. For example, a Dominant 7th in the key of F would start on C as C is the dominant note in an F major scale (see below).

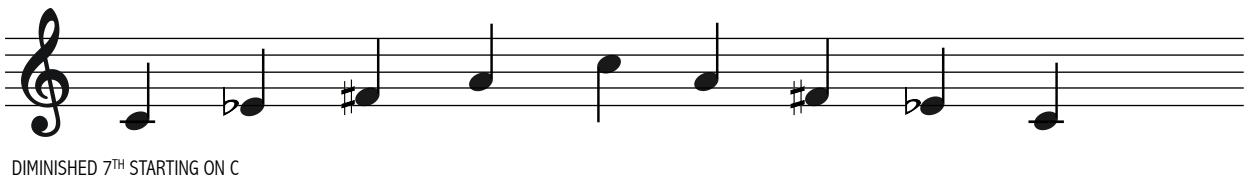



Dominant 7th's use the same pattern of notes as arpeggios however they also include an additional note. This note is the sub-dominant (4th note) of the key of the dominant 7th (see above), however it can also be thought of as the 7th note of the scale on which the arpeggio is based. A dominant 7th in the key of F is shown below.




## Diminished 7th

Diminished 7th's can be thought of as "piles of minor thirds" as they are made up of minor third (three semi-tone) intervals. A diminished 7th starting on C is shown below.




There are only three different combinations of diminished 7th. They are as follows;

C E♭ F♯ A C

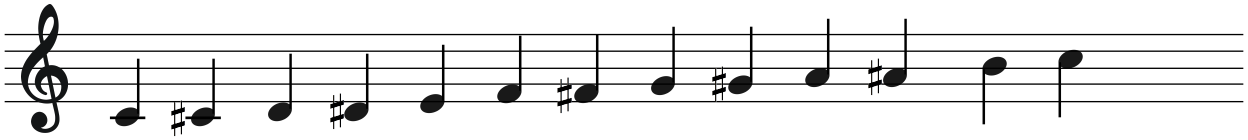
C♯ E G B♭ C♯

D F G♯ B D

Diminished 7th's can start at any point in any of these combinations however learning the patterns of notes in the three combinations will make learning diminished 7th's much easier!

## Chromatic Scales

A chromatic scale is made up of semi-tone intervals. A chromatic scale starting on C is shown below.

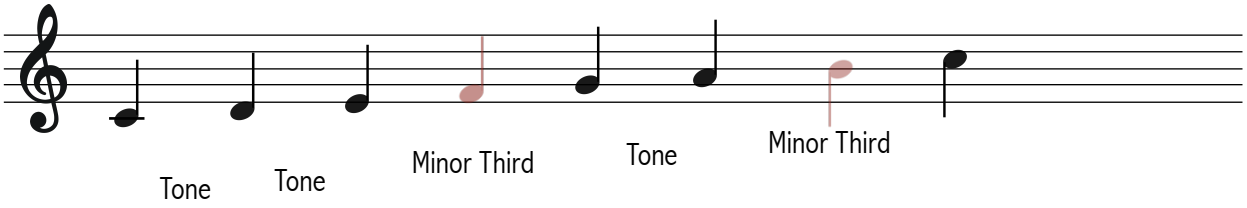


CHROMATIC STARTING ON C

## Pentatonic Scales

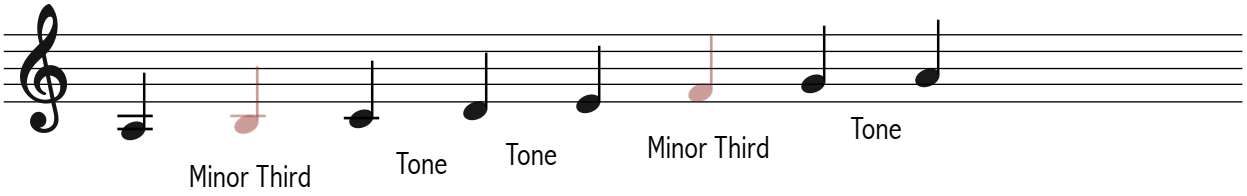
A pentatonic scale removes the semitone intervals. This is different for major and minor scales as their intervals follow different patterns (as discussed above).

For a major scale this means removing the 4th (sub-dominant) and 7th (leading note) notes. C major pentatonic is shown below.




PENTATONIC MAJOR STARTING ON C

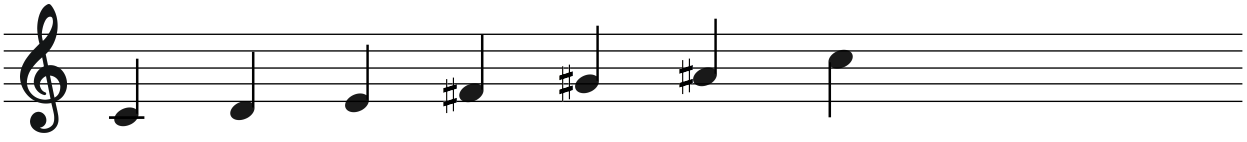
For a minor scale this means removing the 2nd (super-tonic) and 6th (sub-mediant) notes. A minor pentatonic is shown below.



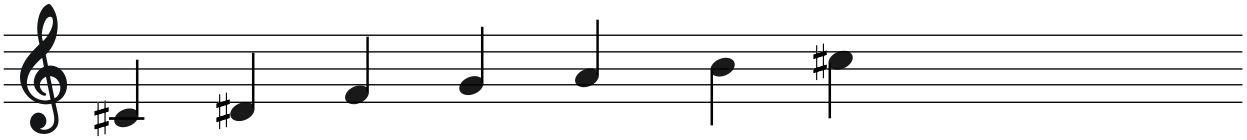

PENTATONIC MINOR STARTNG ON A

## Whole Tone Scale

A whole tone scale does what it says on the tin! It is made up of whole tone intervals. There are two whole tone scales, both are shown below.



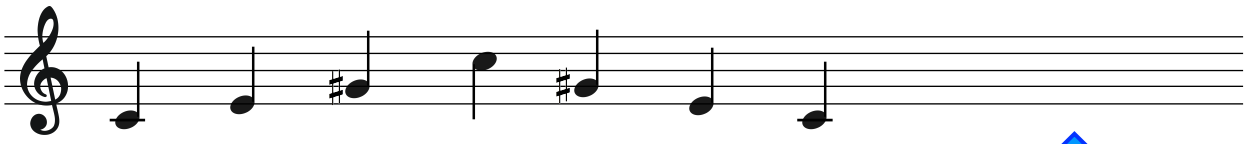
WHOLE TONE SCALE STARTING ON C



WHOLE TONE SCALE STARTING ON C♯

## Augmented Arpeggios

Augmented arpeggios are made up of major thirds. An augmented arpeggio starting on C is shown below.



AUGMENTED ARPEGGIO STARTING ON C

A major third is a four semi-tone interval