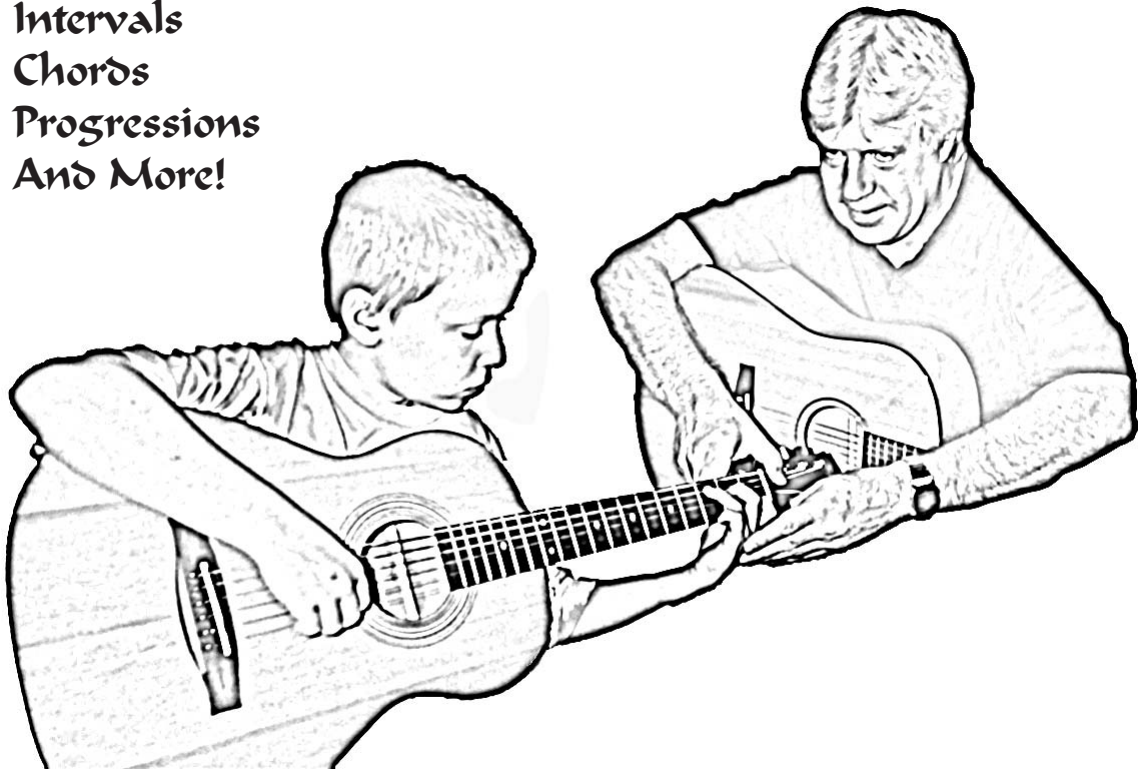


Theory Primer for Guitar

By Thom Gustafson

Scales
Intervals
Chords
Progressions
And More!



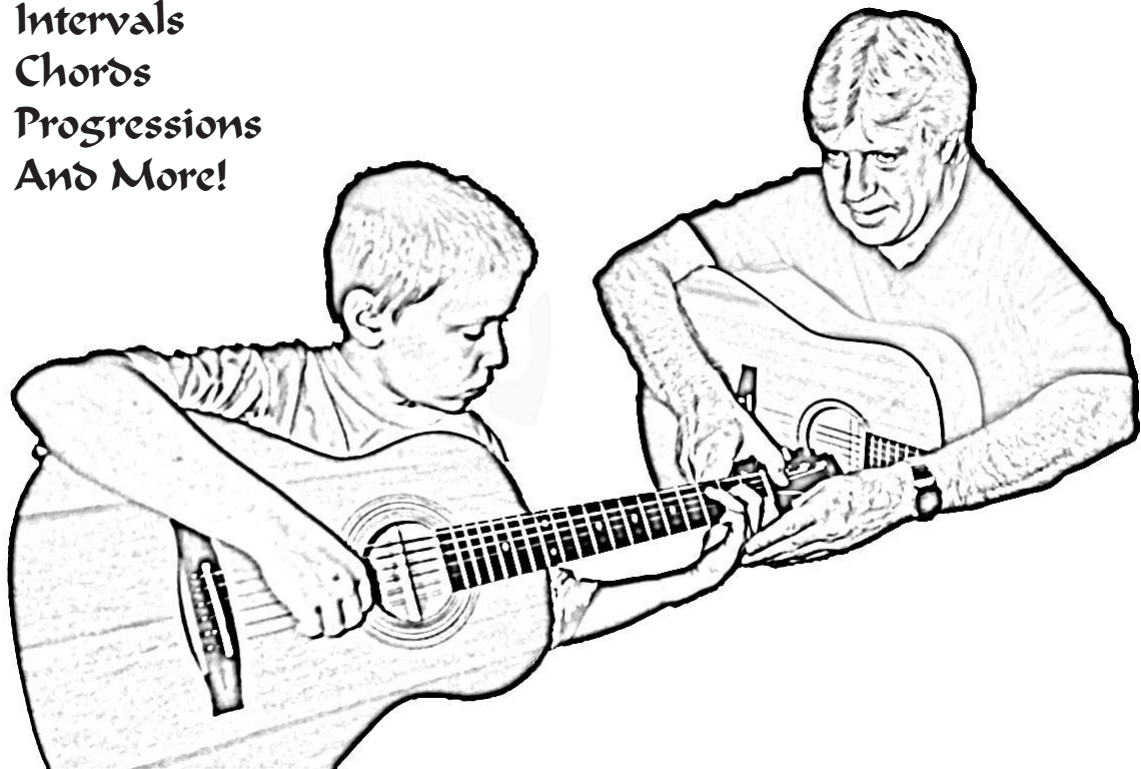
Northwest School of Guitar

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Introduction

The study of music theory is essential to a better understanding of music through the ages. Guitarists must have a thorough grasp of music theory if they desire to be regarded as complete musicians. This book was written specifically for guitarists, however the concepts presented herein can be applied to any instrument.

This book presents the fundamental concepts a student is likely to encounter but is by no means complete. There are many other elements of scales, chords and progressions left to the student to explore further.

I dedicate this work to my mother who encouraged me musically at an early age.

Regards,



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Scales

A scale may be defined as the arrangement of pitches a musical composition is based on. Scales are usually expressed as a series of notes ascending ladder-like through one octave of the musical alphabet.

The following C major scale ascends alphabetically through one octave:

There are many different types of scales used throughout the world. Most Western European and American music since the 1600's has been based on the *diatonic* major/minor system. Pentatonic (five tone) scales are also very commonly used.

The building blocks of scales are whole steps (whole-tones) and half steps (semi-tones). Half steps may be defined as two adjacent notes. For guitar, a half step can be formed by playing two notes on adjacent frets of the same string.

Whole steps may be defined as two notes with a single note between them. For guitar, a whole step can be formed by playing two notes two frets apart on the same string.

The following are examples of half steps:

The following are examples of whole steps:

G A E F# Eb F F G
 0 2 0 2 1 3 1 3

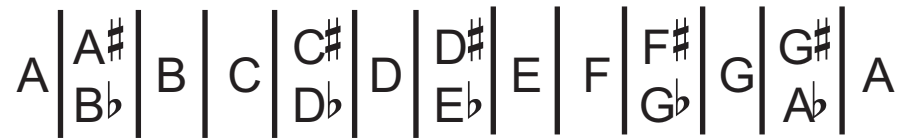
A **chromatic scale** is formed by playing a succession of half steps through a distance of one octave. A chromatic scale can be easily played on the guitar by starting with an open string and playing the note at each successive fret on that string until the octave is reached at fret 12.

The following is an example of a chromatic scale. For convenience, it is shown here using sharps for the ascending form and flats for the descending form, however the use of *accidentals* is more dependent on key than scale direction (more on this later).

A A# B C C# D D# E F F# G G# A
 0 1 2 3 4 0 1 2 3 4 0 1 2

A Ab G Gb F E Eb D Db C B Bb A
 2 1 0 4 3 2 1 0 4 3 2 1 0

It can also be helpful to view a chromatic scale as a row of notes. Notice that between the notes A and B is the note which could be called either A \sharp or B \flat . Two notes that are spelled differently but have the same pitch are called **enharmonic**. Notice also that the notes B and C as well as E and F have no sharp or flat between them.



Assignment 1: In each measure of the line of music below, place a second half note one half step above the first. In the first measure, the note D \flat was added which is one half step above the first note, C.

Assignment 2: In each measure of the line of music below, place a second half note one whole step above the first. In the first measure, the note D was added which is one whole step above the first note, C.

Major Scale

An example of a major scale can easily be formed by starting with a C note and proceeding in alphabetical order through one octave while playing no sharps or flats.

There are basically three ways to name the pitches or *scale degrees* of a major scale besides using the letter names of the notes:

1. Solfège - Solfège (or solfeggio) is the term for the commonly used musical syllables Do-Re-Mi-Fa-Sol-La-Si(orTi)-Do. In the example above, the note C would be Do.
2. Numerical - A major scale may be expressed as the sequence Root-2nd-3rd-4th-5th-6th-7th-Root. In the example above, the note C would be the Root.
3. Technical - A major scale may also be expressed as the sequence Tonic-Supertonic-Mediant-Subdominant-Dominant-Submediant-Leading Tone-Tonic. In the example above, the note C would be the Tonic.

A major scale has a specific arrangement of pitches. We can use our knowledge of whole and half steps to derive a major scale formula.

Root	2nd	3rd	4th	5th	6th	7th	Root
C	D	E	F	G	A	B	C
	whole step	whole step	half step	whole step	whole step	whole step	half step
	0	2	3	0	2	0	1
3							

Thus, the formula for a major scale starting from its root is:

whole step - whole step - half step - whole step - whole step - whole step - half step

which can be summarized as two successive whole steps, one half step, three successive whole steps, and one half step (2W, 1H, 3W, 1H where W=whole step, H=half step).

Note that half steps occur between the 3rd and 4th scale degrees and also between the 7th and the Root.

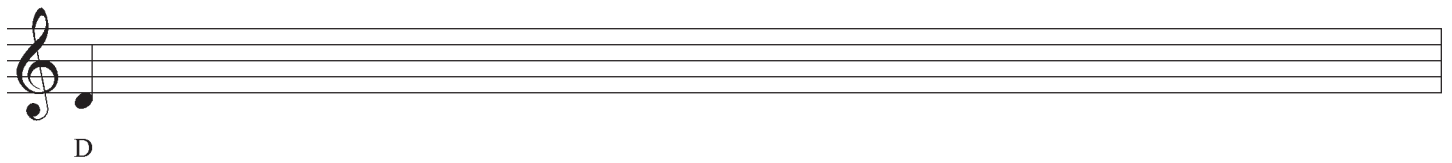
The notes of a major scale can therefore be derived by starting with the scale's root and applying the above formula to figure the rest of the tones. It is important to note that all major scales proceed in a consecutive alphabetical manner. In other words, the next note of the scale must use the next letter of the alphabet. The choice of using a sharp or a flat to name a tone will depend on what letter of the alphabet is next.

The following is an example of a G Major Scale and an F Major Scale:

G	A	B	C	D	E	F#	G
0	2	0	1	3	0	2	3

F	G	A	B \flat	C	D	E	F
3	0	2	3	1	3	0	1

Assignment 3: Write in the remaining notes of each scale. Remember, major scales ascend and descend in alphabetical order. Play each scale to make sure it sounds correct. Hint - each major scale has a unique number of sharp's or flats. For example, C is the only major scale with no sharps or flats, G is the only major scale with one sharp, etc..

<u>Root</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>	<u>5th</u>	<u>6th</u>	<u>7th</u>	<u>Root</u>	
 <p>C D E F G A B C</p>	 <p>G</p>	 <p>D</p>	 <p>A</p>	 <p>E</p>	 <p>B</p>	 <p>F#</p>	 <p>F</p>	 <p>B\flat</p>

Assignment 3 continued:

<u>Root</u>	<u>2nd</u>	<u>3rd</u>	<u>4th</u>	<u>5th</u>	<u>6th</u>	<u>7th</u>	<u>Root</u>
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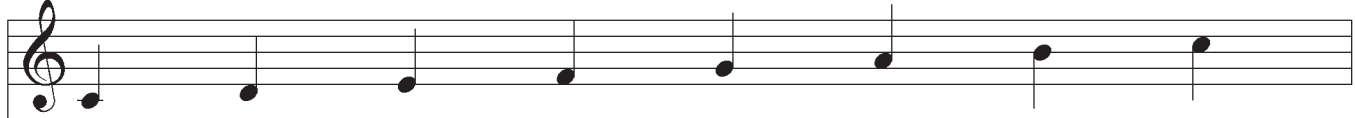
The image shows six musical staves, each in treble clef with a key signature of one flat (Bb). Each staff contains a single note on the first line (F4) with a label below it: Eb, Ab, Db, Gb, C#, and Cb.

Natural Minor Scale


If we consider the solfege method of naming scale tones (Do-Re-Mi-Fa-Sol-La-Si-Do), it becomes apparent that we could construct seven different sounding scales based on each successive solfege degree. Each scale would have half steps between Mi-Fa as well as Si-Do, however in each scale the half steps would be between different numbered scale degrees. For example, if we build a scale with Do as the root, the half step between Mi-Fa would be between the 3rd and 4th degrees of the scale and the half step between Si-Do would be between the 7th and the root. However, if we consider La the root (La-Si-Do-Re-Mi-Fa-Sol-La), the half step between Mi-Fa would be between the 5th and 6th degrees of the scale and the half step between Si-Do would be between the 2nd and 3rd degrees of the scale. This touches on the concept of *modes* (more on this later).

For the purposes of understanding minor scales, we will concentrate on the scale formed by starting with the solfege pitch La.

In the key of C, the solfege pitch La is the note A.

Do	Re	Mi	Fa	Sol	La	Si	Do
							
C	D	E	F	G	A	B	C
Root	2nd	3rd	4th	5th	6th	7th	Root
3	0	2	3	0	2	0	1

If we step through an octave beginning with the note A, the following results:

La	Si	Do	Re	Mi	Fa	Sol	La
							
A	B	C	D	E	F	G	A
Root	2nd	3rd	4th	5th	6th	7th	Root
2	0	1	3	0	1	3	5

This particular scale would most commonly be known as *A natural minor*. It is also known as *A pure minor*.

Notice that a C scale and an A minor scale contain the same pitches. Neither scale has any sharps or flats. The key signatures for C major and A minor are the same. C Major and A Minor are therefore known as **relative keys**.

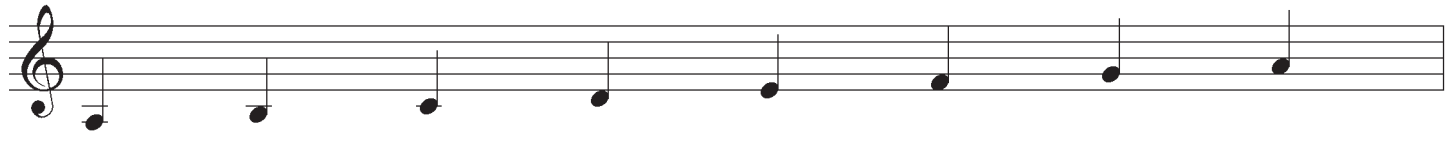
The sixth degree of a major scale is the root of its relative minor. The third degree of a minor scale is the root of its relative major. Do and La are roots of relative major and minor keys.

We can see that in the key of A minor the half steps occur between B and C (the 2nd and 3rd) and E and F (the 5th and 6th). Therefore, the formula for a natural minor scale is:

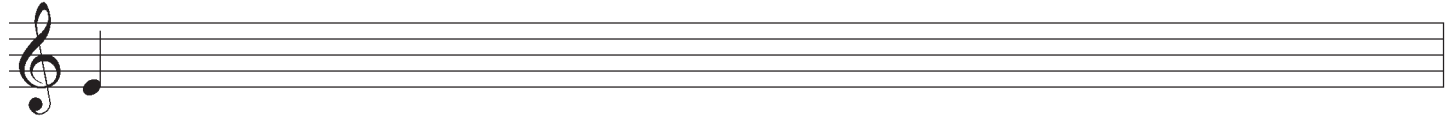
whole step - half step- whole step - whole step - half step - whole step - whole step

which can be summarized as W,H,2W,H,2W where W=whole step and H=half step.

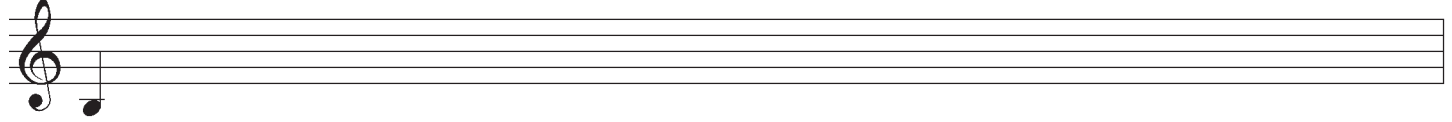
Assignment 4: Write in the remaining notes of each natural minor scale. Practice also thinking of and naming relative major keys.



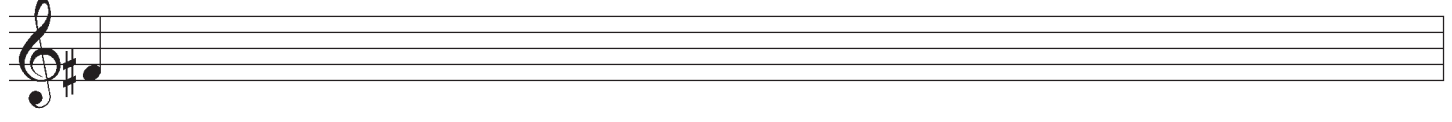
A B C D E F G A



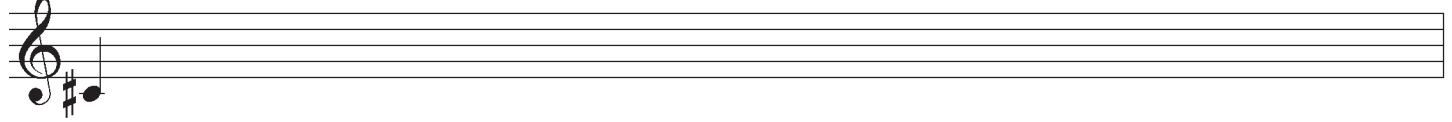
E



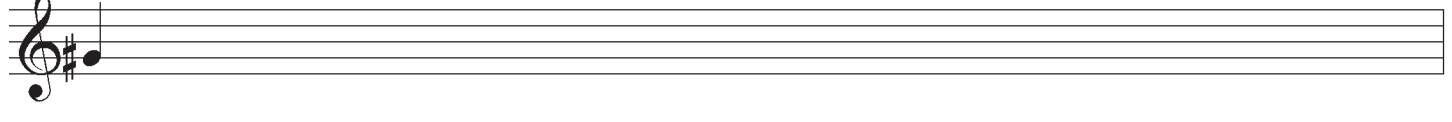
B



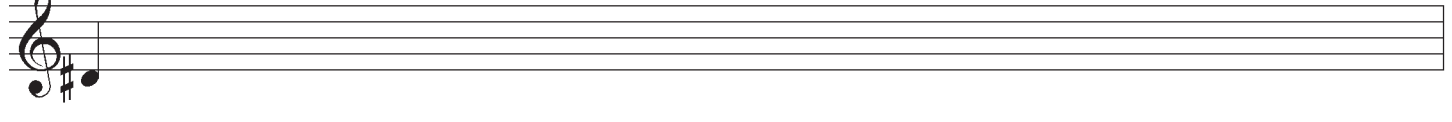
F#



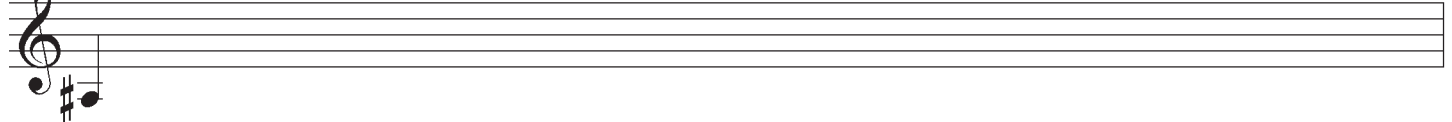
C#



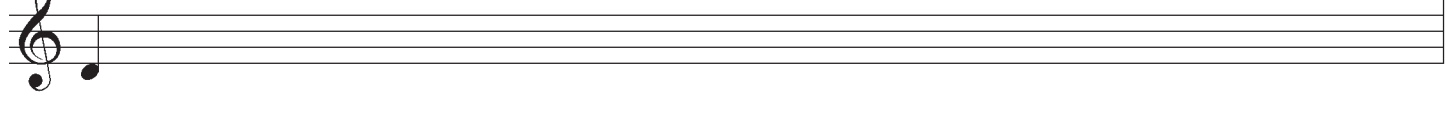
G#



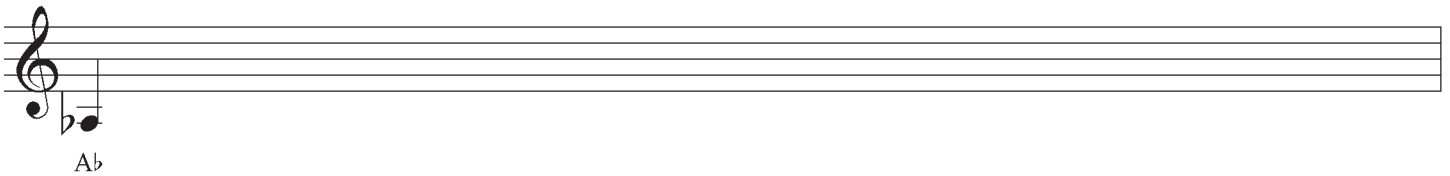
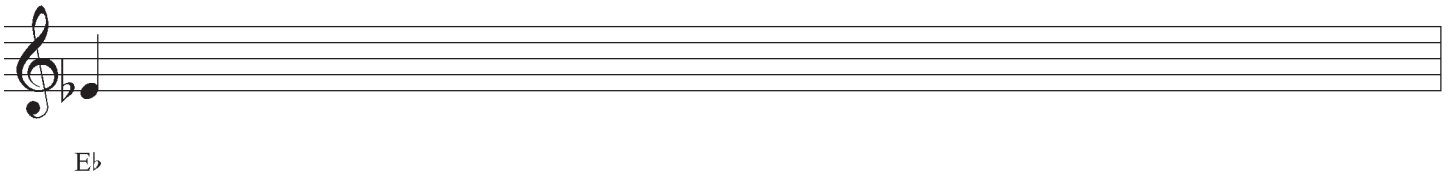
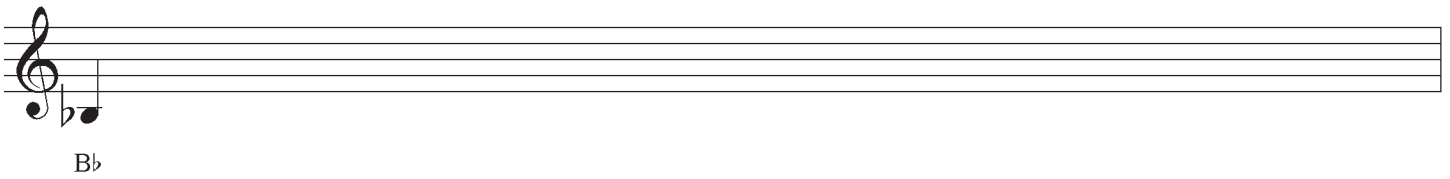
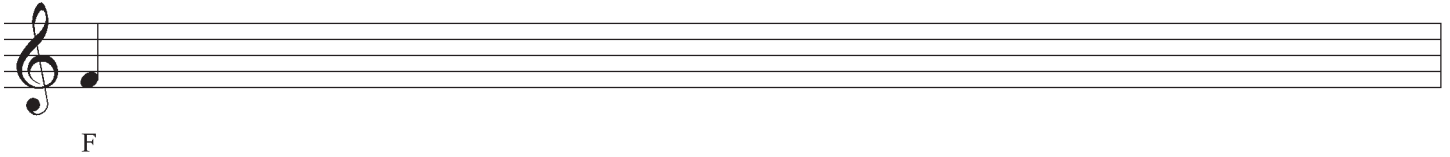
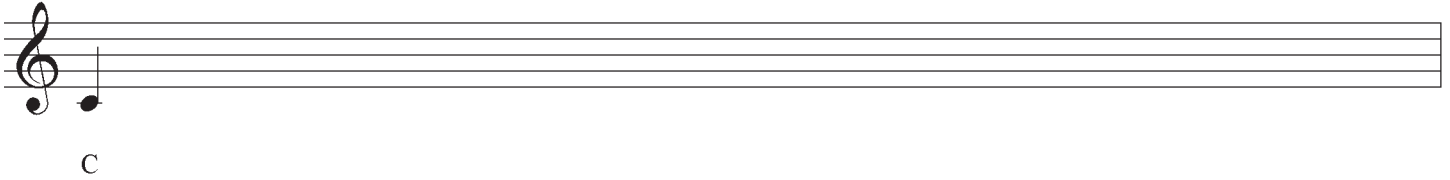
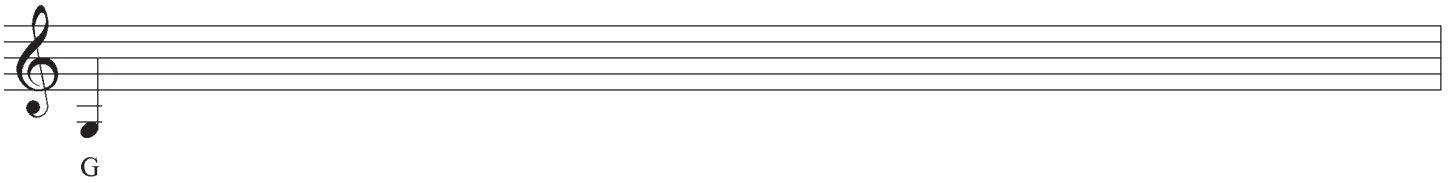
D#



A#



D

Assignment 4 continued:

There are other commonly used minor scale forms, principal of which would be harmonic minor and melodic minor. These scales will be explained later.

We have looked at scales with Do or La as the root, however scales can also be constructed starting on Re, Mi, Fa, Sol, or Si. These other modes will also be explained later.

Key Signatures

Since each major/minor key has a unique number of sharps or flats, the key of a piece of music can be indicated by the sharps or flats necessary to form a scale in that key. Remember, each key signature can indicate not only a major scale but also its relative minor.

On page 10 is a listing of major/minor key signatures.

Relative Major / Minor Key Signatures

C / Am	G / Em	D / Bm	A / F#m	E / C#m
B / G#m	F# / D#m	C# / A#m	F / Dm	Bb / Gm
Eb / Cm	Ab / Fm	Db / Bbm	Gb / Ebm	Cb / Abm

Intervals

Intervals can be defined as the distance between two notes. Intervals are expressed by a number which describes how many pitches are encompassed by the two notes. For example, if we think of the three successive pitches A, B and C the interval between A and C would be a third because three notes (A, B and C) are encompassed. The interval from C ascending to G would be a fifth because five notes (C, D, E, F and G) are encompassed.

Intervals can be described as either melodic (one note followed by another as in a melody) or harmonic (occurring simultaneously as in a chord).

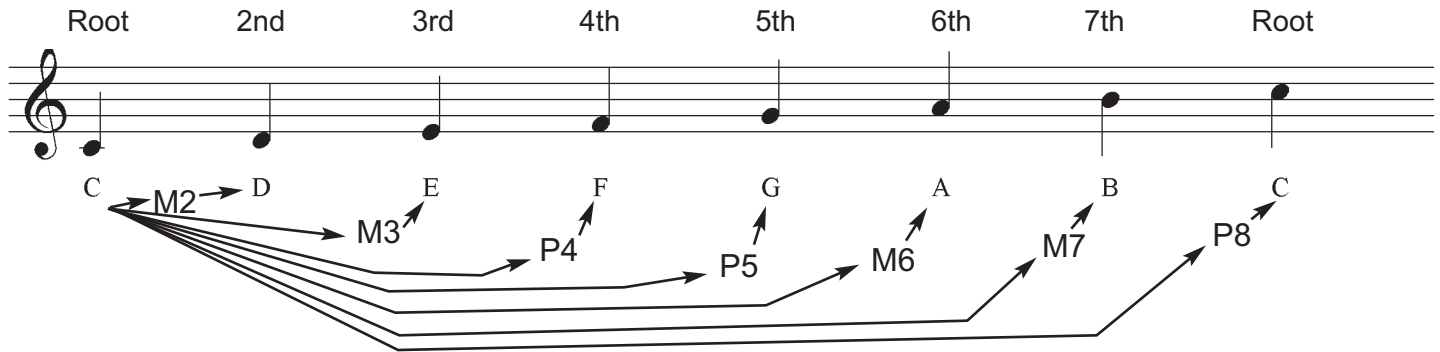
The following are examples of pairs of notes expressed as both a melodic and harmonic interval:

a. Third	b. Fourth	c. Seventh
D	E	A
F	A	G
melodic		
	harmonic	

Within a scale we can observe intervals between various scale degrees. Notice that each basic interval can come in several forms. For example, the interval from C ascending to E is a third because it encompasses three notes (C, D and E). However, the interval from C ascending to E \flat is also a third. Therefore we need to be more descriptive in order to differentiate between similarly numbered intervals.

The following terms are used to identify specific intervals: major, minor, perfect, diminished and augmented.

We will begin our definitions of specific intervals by once again looking at a major scale and the intervals formed between the root and each scale degree. The letter “M” will stand for major, the letter “P” will stand for perfect.



Notice that in major scales, the interval between the root and the 2nd, 3rd, 6th or 7th is defined as a Major interval. The interval between the root and the 4th, 5th or 8th (octave) is defined as a Perfect interval.

Using the above major scale intervals as a point of comparison, we can determine from them all other intervals.

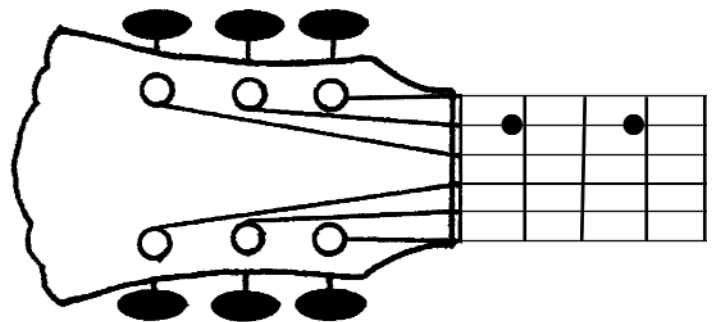
It is also possible to have *compound* intervals greater than one octave. For example, a M9 (“major 9th”) would consist of a P8 (“perfect octave”) plus one whole step. A M9 above the note C is D.

Following is a description of each of the intervals and exercises to practice building and hearing them.

Major 2nd (M2)

The interval from C up to D is a Major 2nd. This interval can also be viewed as a whole step. A major 2nd must encompass two letters of the musical alphabet.

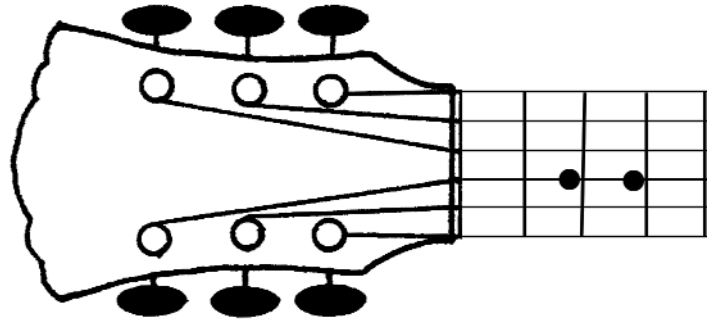
Below is a melodic and harmonic representation of a M2 and a melodic fingering example.



Minor 2nd (m2)

A major interval decreased one half step becomes minor. A lower case “m” stands for minor. If the interval from C up to D is a M2, the interval from C up to D \flat would be a m2, as would the interval from C \sharp up to D. This interval can also be viewed as a half step. A minor 2nd must encompass two letters of the musical alphabet. Below is a melodic and harmonic representation of a m2 and a melodic fingering example.

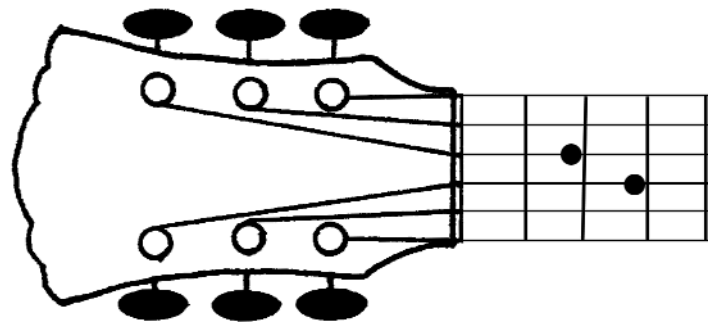
Musical notation for a minor 2nd interval. The top staff shows a treble clef with notes E and F. The bottom staff shows a bass clef with fingerings 2 and 3 for E and F, and a 3/7 chord for the harmonic representation.



Major 3rd (M3)

The interval from C up to E is a M3. This interval can also be viewed as two whole steps. A major 3rd must encompass three letters of the musical alphabet. Below is a melodic and harmonic representation of a M3 and a fingering example.

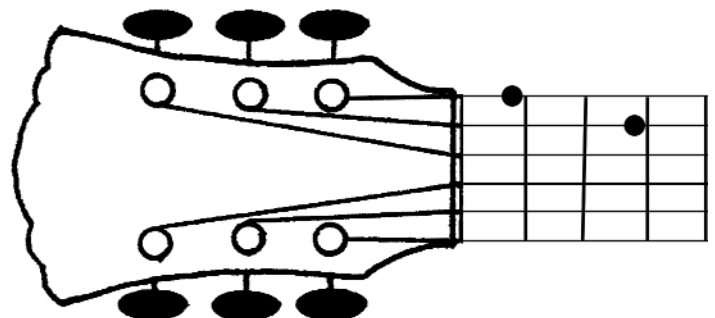
Musical notation for a major 3rd interval. The top staff shows a treble clef with notes F and A. The bottom staff shows a bass clef with fingerings 3 and 2 for F and A, and an 8 chord for the harmonic representation.



Minor 3rd (m3)

A M3 decreased one half step becomes a m3. Since a M3 is two whole steps, a m3 is one whole and one half step. A minor 3rd must encompass three letters of the musical alphabet. Below is a melodic and harmonic representation of a m3 and a fingering example.

Musical notation for a minor 3rd interval. The top staff shows a treble clef with notes D and F. The bottom staff shows a bass clef with fingerings 3 and 1 for D and F, and an 8 chord for the harmonic representation.



Assignment 5: In each measure of the line of music below, place a second half note that completes the melodic interval given above. Remember, a 2nd must encompass two letters of the alphabet and a 3rd must encompass three letters.

Staff 1: C, G, D, A, E, B

Staff 2: F#, C#, Ab, Eb, Bb, F

Perfect Intervals: 4ths, 5ths, Octaves (8ths), and Unisons are known as “perfect” intervals. These intervals have a very pure, yet musically hollow sound. Probably these intervals were the earliest form of harmony and quite likely occurred by accident. When people try to sing in *unison* they often incorrectly sing an octave, fourth, or fifth and this was likely the first sort of harmony sung by humans.

Perfect 4th (P4)

The interval from the root to the fourth of a major scale. This interval is comprised of two whole steps and one half step. A P4 must encompass four letters of the musical alphabet.

Notice that the guitar is tuned in perfect 4ths between each adjacent pair of strings except strings two and three, which are tuned to a major 3rd. Below is a melodic and harmonic representation of a P4 and a fingering example.

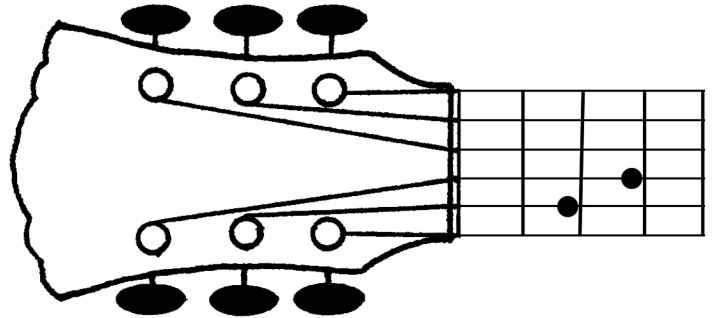
Perfect 5th (P5)

The interval from the root to the fifth of a major scale. This interval is comprised of three whole steps and one half step. A P5 must encompass five letters of the musical alphabet. On the following page is a melodic and harmonic representation of a P5 and a fingering example.

Tritone (+4, °5)

The interval between the P4 and P5. This interval is comprised of three whole steps. Notice that the interval can be described as either a +4 or a °5, depending on the range of pitches encompassed. An +4 must encompass four letters of the musical alphabet and a °5 must encompass five letters. Below is a melodic and harmonic representation of a tritone and a fingering example.

Musical notation for a tritone interval. The top staff shows a melodic line with notes B and F, followed by a chord of B and F. The bottom staff shows a fingering example with fingers 2 and 3 on the strings.



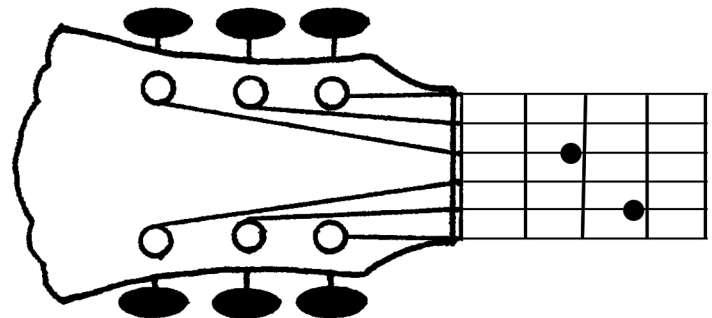
Assignment 6: In each measure of the music below, stack a second whole note that completes the harmonic interval given above.

Musical notation for Assignment 6. It consists of two staves with six measures each. The top staff shows intervals: P5 (C), P4 (F), +4 (B \flat), +3 (E \flat), P5 (A \flat), and P4 (D \flat). The bottom staff shows intervals: +5 (G \flat), °5 (B), °3 (E), +4 (A), P4 (D), and P5 (G).

Major 6th (M6)

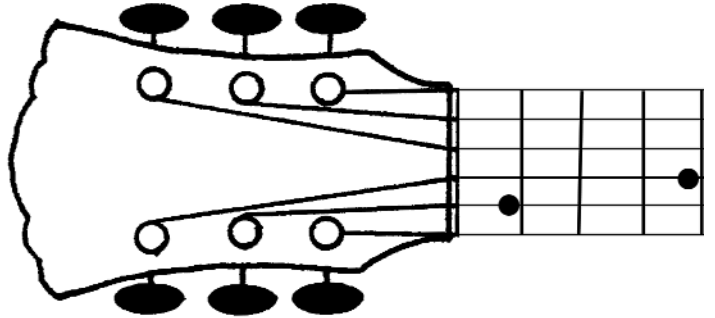
The interval from the root to the sixth of a major scale. This interval is comprised of four whole steps and one half step. A M6 can also be thought of as a P5 plus one whole step. A M6 must encompass six letters of the musical alphabet. Below is a melodic and harmonic representation of a M6 and a fingering example.

Musical notation for a Major 6th interval. The top staff shows a melodic line with notes C and A, followed by a chord of C and A. The bottom staff shows a fingering example with fingers 2 and 3 on the strings.



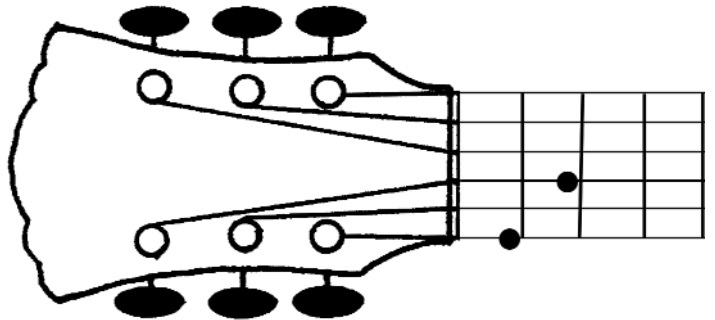
Minor 6th (m6)

A M6 decreased one half step becomes a m6. Since a M6 is four whole steps and one half step, a m6 is four whole steps. A m6 can also be thought of as a P5 plus one half step. A minor 6th must encompass six letters of the musical alphabet. Below is a melodic and harmonic representation of a m6 and a fingering example.



Major 7th (M7)

The interval from the root to the seventh of a major scale. This interval is comprised of five whole steps and one half step. A M7 can also be thought of as an octave minus one half step. A M7 must encompass seven letters of the musical alphabet. Below is a melodic and harmonic representation of a M7 and a fingering example.

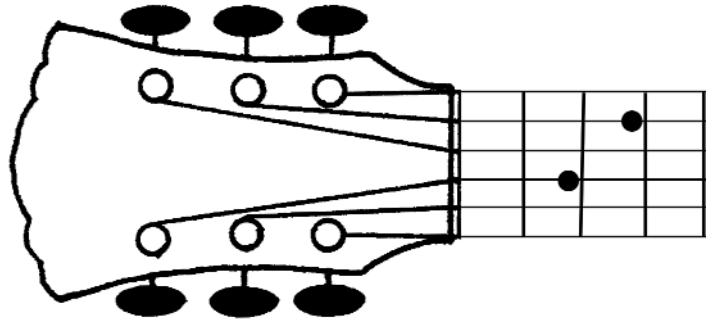


Minor 7th (m7)

A M7 decreased one half step becomes a m7. Since a M7 is five whole steps and one half step, a m7 is five whole steps. A m7 can also be thought of as an octave minus one whole step. A minor 7th must encompass seven letters of the musical alphabet. On the following page is a melodic and harmonic representation of a m7 and a fingering example.

Examples of a minor 7th (m7)

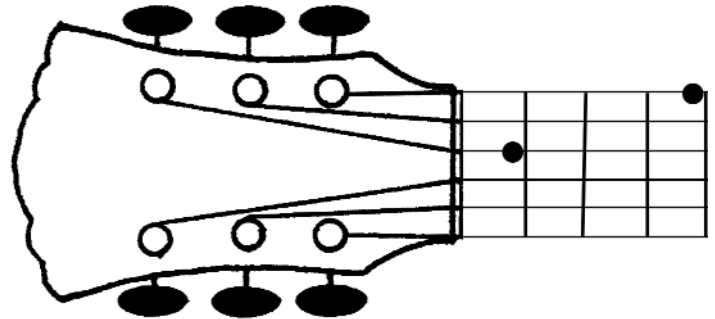
Musical notation showing a minor 7th interval between E and D. The treble clef staff shows a half note E on the first line and a half note D on the second space. The bass clef staff shows a half note E on the second space and a half note D on the first line. The interval is labeled with 'E' and 'D' below the notes. The bass clef staff also shows a '3' above the E and a '2' below the D, indicating a 3-finger fingering for the E and a 2-finger fingering for the D.



Perfect Octave (P8)

The interval from the root at the beginning to the root at the end of a major scale. This interval is comprised of six whole steps. A P8 must encompass eight letters of the musical alphabet. Below is a melodic and harmonic representation of a P8 and a fingering example.

Musical notation showing a perfect octave interval between G# and G#. The treble clef staff shows a half note G# on the second space and a half note G# on the second space of the next octave. The interval is labeled with 'G#' and 'G#' below the notes. The bass clef staff shows a half note G# on the second space and a half note G# on the second space of the next octave. The interval is labeled with '4' above the notes and '1' below the notes, indicating a 4-finger fingering for the G# and a 1-finger fingering for the G#.



Perfect Unison (PU)

The interval from any pitch to exactly the same pitch. A PU must encompass one letter of the musical alphabet. Because of the simplicity of this interval, no example is given.

Compound Intervals

Intervals greater than one octave are considered to be compound intervals. Included in these intervals are major and minor 9ths, major and minor 10ths, perfect 11ths, perfect 12ths, and major and minor 13ths. Like all other intervals, compound intervals can also be subject to augmentation and diminution.

A simplified method for determining the correct pitch for a compound interval is to subtract seven from the interval and figure the pitch within the first octave. For example, finding a major 9th above C could be simplified by subtracting 7 from 9 thus making a M9 identical in pitch name to a M2. Likewise, a P11 is identical in pitch name to a P4. After using this method to find the pitch name, add the extra octave in again so the pitch will be in the correct *register*.

Assignment 7: In each measure of the music below, add a second half note that completes the melodic interval given above.

Staff 1: M6 (F), m6 (B \flat), M7 (E \flat), m7 (A \flat), P8 (D \flat)

Staff 2: +6 (G \flat), \circ 7 (F \sharp), M9 (B), m9 (E), +11 (A)

Staff 3: M13 (D), +9 (G), PU (C), P11 (G \sharp), \circ 8 (D \sharp)

Triads

Chords are combinations of three or more notes sounded simultaneously. Chords usually may be viewed as a stack or superposition of thirds, although there are many exceptions. Chords may be thought of as *consonant* (agreeable to the ear) or *dissonant* (disagreeable to the ear).

A triad is a particular type of three note chord consisting of a root combined with a third and fifth above it. There are four triad types: **major**, **minor**, **diminished** and **augmented** with the first two types being consonant and the last two types being dissonant.

Major Triad

A major triad can be thought of as a combination of the root, third and fifth of a major scale. Below is an example of a C major scale and the C major triad derived from it.

Root Third Fifth C

When the intervals contained in a major triad are analyzed, it can be determined that a major third exists between the root and third and a minor third exists between the third and fifth. Also, the interval from the root to the fifth is a perfect fifth.

Root Third Fifth

M3 m3 P5

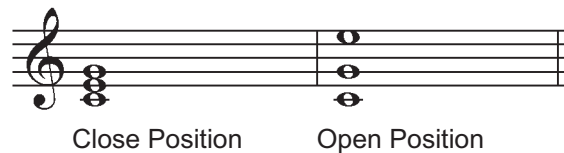
Triads can be *voiced* in many ways. When triads are voiced on guitar it is common for notes of the triad to be doubled or even tripled. Also, the sound of a triad is influenced by which of the three tones is lowest sounding or “in the bass”. The term **inversion** is used to describe a triad voiced with a pitch other than the root in the bass. A triad voiced with the root in the bass is said to be in **root position**. A triad with the third in the bass is said to be in **first inversion**. A triad with the fifth in the bass is said to be in **second inversion**.

Below are three voicings of a C major triad demonstrating root position, first inversion and second inversion.



A triad voiced with all pitches within the range of one octave is said to be in **close position**. A triad voiced with the pitches encompassing a range that is greater than one octave is said to be in **open position**.

Below are two voicings of a root position C major triad demonstrating close position and open position.



Assignment 8: In each measure of the music below stack two more whole notes which complete a root position, close position major triad above the given note. Beginning with this assignment, pitch names will no longer be included below each note.

The image shows two staves of musical notation. The first staff has six measures, each starting with a whole note: C4, E4, G4, F4, E4, and D4. The second staff has six measures, each starting with a whole note: B3, A3, G3, F3, E3, and D3. The task is to complete each measure by adding two more whole notes to form a root position or close position major triad.

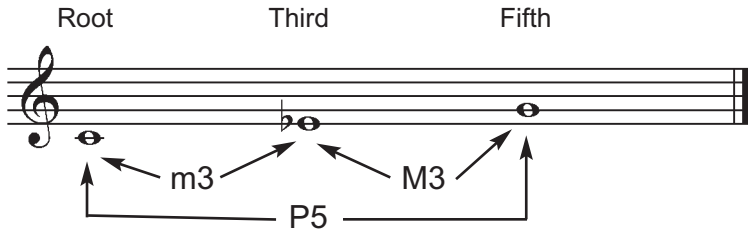
The chord symbol for a major triad is simply a chord root. For example, on a chord chart the symbol “B \flat ” means any voicing of a B \flat major triad could be played. While this symbol suggests the chord should be a root position triad, it is often not necessary for the guitarist to be bound solely to a root position triad. This is especially true if the guitarist is playing in combination with another instrument (bass guitar, upright bass, keyboard, tuba, etc.) that is responsible for the bass line.

Minor Triad

A minor triad can be thought of as a combination of the root, third and fifth of a minor scale. Below is an example of a C natural minor scale and the C minor triad derived from it.



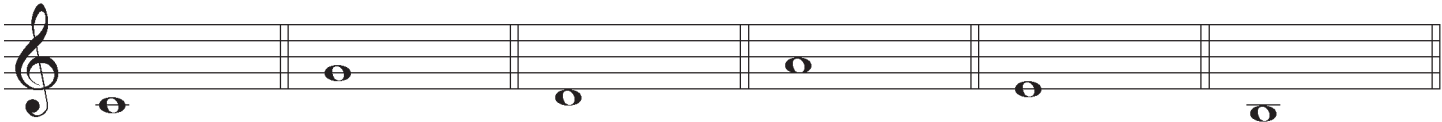
When the intervals contained in a minor triad are analyzed, it can be determined that a minor third exists between the root and third and a major third exists between the third and fifth. Like a major triad, the interval from the root to the fifth is also a perfect fifth.



When compared to a major triad, it can be seen that a minor triad's sequence of thirds (m3, M3) is the opposite of a major triad's sequence of thirds (M3, m3).

Also, a minor triad can simply be thought of as a major triad with a flatted third.

Assignment 9: In each measure of the music below stack two more whole notes which complete a root position, close position minor triad above the given note.

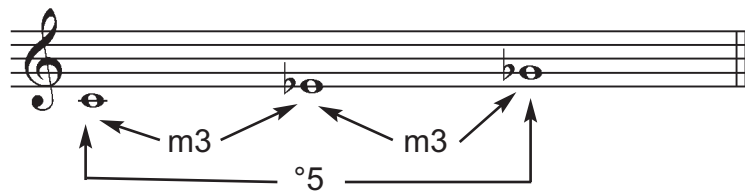


Diminished Triad

Major and minor triads are consonant triads. A diminished triad is a dissonant triad. The symbol for a diminished triad is the same as a diminished interval ($^{\circ}$). It is also common for a diminished triad to simply be labeled “dim”.

A diminished triad is formed by starting with a root and adding two successive minor thirds. Thus, the intervals from the root to the third and from the third to the fifth are both minor thirds. Unlike major or minor triads, the interval from the root to the fifth is a diminished fifth.

Shown below is a C° (C dim) triad and an analysis of its intervals.



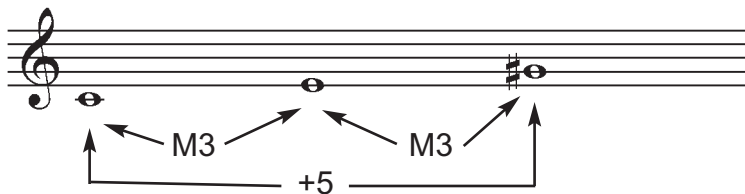
A diminished triad can be compared to a minor triad with a flatted fifth.

Augmented Triad

An augmented triad is also a dissonant triad. The symbol for an augmented triad is the same as an augmented interval (+). It is also common for an augmented triad to simply be labeled “aug”.

An augmented triad is formed by starting with a root and adding two successive major thirds. Thus, the intervals from the root to the third and from the third to the fifth are both major thirds. The interval from the root to the fifth is an augmented fifth.

Shown below is a C^+ (C aug) triad and an analysis of its intervals.



An augmented triad can be compared to a major triad with a sharped fifth.

Diminished intervals and triads can sometimes require the use of a double flat ($\flat\flat$). For example, the note a diminished fifth above $A\flat$ would have to be written as $E\flat\flat$.

Augmented intervals and triads can sometimes require the use of a double sharp (\times). For example, the note an augmented fifth above B would have to be written as $F\times$.

Assignment 10 below will require the use of some double flats and double sharps.

Assignment 10: In each measure of the music below stack two more whole notes which complete a root position, close position triad which satisfies the chord symbol given above each note.

Chord symbols for Assignment 10:

Staff 1: $C\#\circ$, $F+$, $B\flat\circ$, $E+$, $A\flat\circ$, $F\#\+$

Staff 2: $G\circ$, $B+$, $E\flat\circ$, $A\#\+$, $D\circ$, $G\flat+$

Diatonic Triads

Diatonic triads are formed by basing a triad on each successive scale degree and only using pitches contained within the respective scale.

Diatonic Triads in Major Keys

When harmonized into triads, a C major scale yields the following chords. Notice the use of upper case Roman numerals for major triads and lower case Roman numerals for minor and diminished triads.

Chord symbols and Roman numerals for diatonic triads in C major:

C (I), Dm (ii), Em (iii), F (IV), G (V), Am (vi), $B\circ$ ($vii\circ$), C (I)

From the example above, it can be seen that triads based on the root, fourth or fifth of a major scale are major while triads based on the second, third or sixth are minor. The triad based on the seventh is diminished.

Cadences

The melodic content of a piece of music can be subdivided into *phrases*. These phrases come to points of rest known as *cadences*. Therefore, cadences can be thought of as phrase endings.

The most often used cadential forms are based on harmonic formulas. These forms include the authentic cadence, half cadence, plagal cadence and deceptive cadence.

An **authentic cadence** is based on the harmonic formula V-I. As the phrase nears its end, the chord progression leads to a V chord which is followed by a I chord as the phrase concludes. An authentic cadence adds finality to a phrase and is the most common cadence found at the end of a piece of music, although it can also be used to end any phrase. An authentic cadence is also known as a **full cadence**.

A **half cadence** is formed when a phrase ends on a V chord. This cadence does not have the finality of an authentic cadence and is usually used as a means to transition from one phrase into the next.

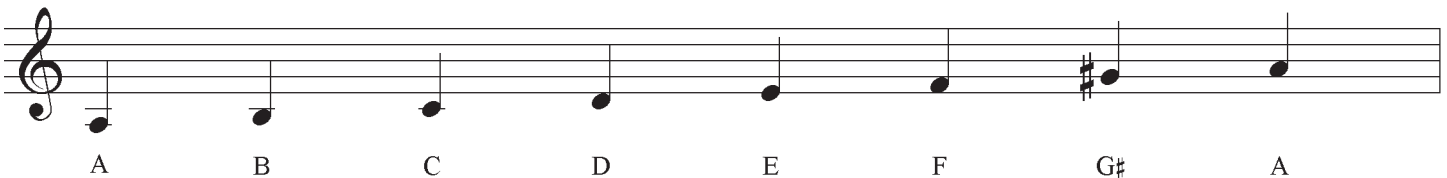
A **plagal cadence** is based on the harmonic formula IV-I. Among its most frequent uses is during the “Amen” at the end of a hymn.

A **deceptive cadence** mimics the sound of an authentic cadence, however the V chord is followed by a chord other than I. The most common deceptive cadence uses the progression V-vi. This cadence is often used as a means to extend a piece of music before it ends.

More Scales

Harmonic Minor

A harmonic minor scale can be thought of as a natural minor scale with its seventh raised one half step. Below is an example of an A harmonic minor scale.



The name *harmonic* minor implies that the reason for adjusting the seventh is based on how this pitch will change minor harmony. Below are triads in A harmonic minor.

Triads in A harmonic minor: Am (i), B° (ii°), C+ (III+), Dm (iv), E (V), F (VI), G#° (vii°), Am (i)

Notice that the raised seventh, G#, has caused the triad based on the third to become augmented, the triad based on the fifth to become major, and the triad based on the seventh to become diminished.

The authentic cadence in natural minor, v-i, sounds weak compared to the V-I cadence of a major key. This is due to the minor “v” chord not including the leading tone, that is the note one half step below the root of the “i” chord. Harmonic minor adds the leading tone and thereby causes the authentic cadence to be a much stronger sounding V-i.

Assignment 15: Below are two chord progressions in harmonic minor keys with the chords only listed by their numerical representations. Each progression is to be transposed to all harmonic minor keys.

1. i iv V

2. i VI V

The interval between the sixth and seventh of a harmonic minor scale is an augmented second (+2). This interval gives the scale a peculiar sound and the elimination of this interval is the reason for the development of melodic minor.

Melodic Minor

A melodic minor scale combines together an ascending and descending form. The ascending form, when compared to natural minor, includes both a raised sixth and seventh. The descending form is identical to natural minor. The two forms of the scale hold particularly true when a melody ascends or descends in a purely step-wise manner between the fifth and root.

As implied by its name, melodic minor is a melodic adjustment to harmonic minor which eliminates the augmented second between the sixth and seventh.

Shown below is an A melodic minor scale in its ascending and descending form. Notice that there is no interval greater than a major second between successive scale degrees.

Ascending Melodic Minor Descending Melodic Minor

An ascending melodic minor scale can be compared to a major scale with a flatted third.

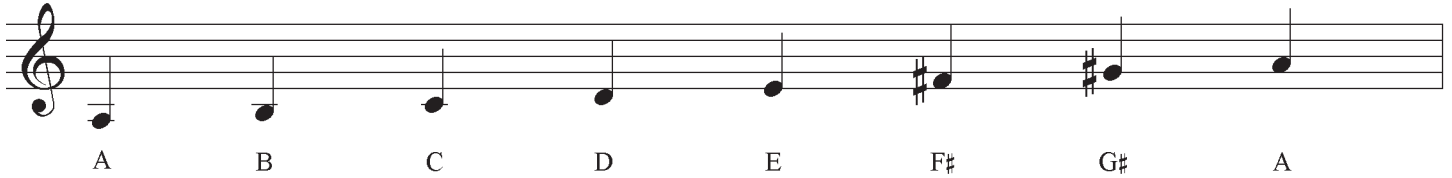
There are more possibilities for triads in melodic minor since both raised and natural sixths and sevenths can be used for harmonization. Below are triads in A melodic minor.

A m B° B m C C+ D m D E m E F F#° G G#° A m

i ii° ii III III+ iv IV v V VI vi° VII vii° i

Jazz Minor

A jazz minor scale compares to ascending melodic minor, however the same scale is also used when descending. When compared to natural minor, jazz minor includes both a raised sixth and a raised seventh. Below is an example of an A jazz minor scale.



Below are triads in A jazz minor.

A m B m C+ D E F#° G#° A m

i ii III+ IV V vi° vii° i

While jazz minor can be used as a minor or modal substitute for effect, its use is sometimes mandated especially during the *secondary dominant* V7/ii. The use of secondary dominants and their effect on tonality will be explained later.

Jazz minor can be compared to a major scale with a lowered third.

Pentatonic Scales

Pentatonic scales are literally *five tone* scales. The two most common forms are major pentatonic and minor pentatonic.

A major pentatonic scale compares to a major scale with no fourth and no seventh. Removing these pitches also removes half steps from the scale.

Below is an example of a C major pentatonic scale and the pitch intervals relative to the root.

Root M2 M3 P5 M6 P8

Since major pentatonic scales discard the fourth and seventh of a major scale, they also discard the potentially dissonant interval (augmented fourth) formed between those pitches.

Major pentatonic scales can be used to substitute for a major scale or any major mode. Modes will be discussed later.

A minor pentatonic scale compares to a natural minor scale with no second and no sixth.

Below is an example of an A minor pentatonic scale and the pitch intervals relative to the root.



Minor pentatonic scales can be used to substitute for a minor scale or any minor mode. Minor Pentatonic scales are also especially useful as a blues scale substitute. The blues scale will be discussed in the next section.

Blues Scale

A Blues scale compares to a minor pentatonic scale with the addition of a pitch a diminished fifth above the root. Below is an example of an A Blues scale and the pitch intervals relative to the root.



As the name implies, a blues scale is particularly useful in the context of a blues progression. A blues scale can also be inserted into other progressions when a somewhat dissonant, “bluesy” feel is desired.

Blues progressions will be discussed in a later section.

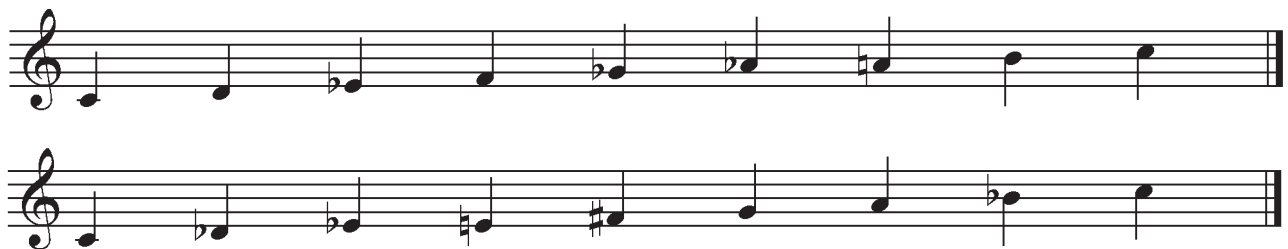
Whole Tone Scale

A whole tone scale is a scale built exclusively from whole steps. Below is an example of a C Whole Tone scale. Whole tone scales were especially popular during the impressionist period of music and are useful when playing against an augmented triad or a major triad with a flatted fifth.



Diminished Scales

Diminished scales are built from alternating whole steps and half steps. Below are examples of two C diminished scales, one beginning with a whole step and one beginning with a half step



Church Modes

The major/minor system of tonality was developed during the early 1600's. Western music before that time leading back to the early Greek civilization was dominated by the use of modes.

There are two modal systems, Greek Modes and Church Modes. The basics of each system are the same with only the naming of the modes being different.

The modal system is a means to extract seven different sounding scales from each key. If we consider the solfege method for naming pitches (see page 3), each key could produce a scale with a root of Do, Re, Mi, Fa, Sol, La or Si. Each of these modes would have a different formula and a different sound. Each mode would also have a different sequence of harmonized triads when viewed from a modern perspective.

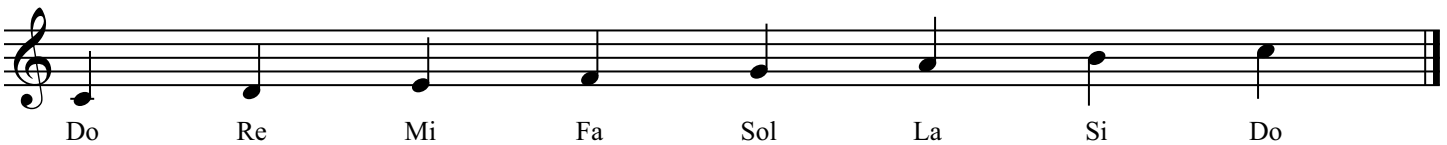
Modes were originally constructed out of a scale with Do being C. Later, *transposed* modes were introduced where Do could be G, F or any other pitch.

Our study of modes will begin with C being Do and will discuss each mode according to the solfege root sequence.

Ionian Mode

What we now call a major scale was known in Church Mode terminology as Ionian mode. The root of Ionian Mode is the solfege pitch Do.

Below is shown an example of Ionian Mode where Do is C and the remaining pitches are named according to the solfege system.

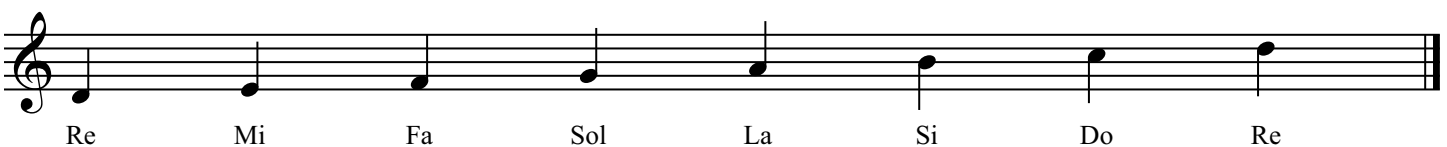


Since Ionian mode uses the same pitch sequence as a major scale, it follows that Ionian mode would also harmonize into triads in a like manner. Therefore, triads in C Ionian are the same as C major (see page 22). Since the triad based on the root of the mode is major, Ionian mode is considered to be a **major mode**.

Dorian Mode

The root of Dorian mode is the solfege pitch Re. Half steps in all modes occur between mi-fa and si-do. It can therefore be seen that half steps in Dorian mode occur between the second and third and between the sixth and seventh.

Below is shown D Dorian mode.

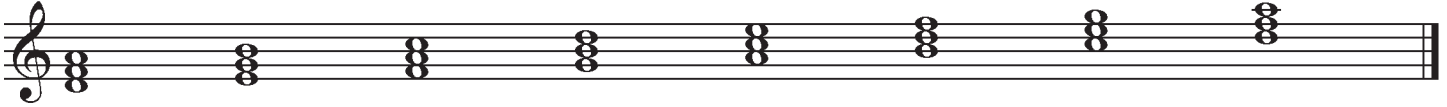


Dorian mode compares to natural minor with the sixth raised one half step.

When Dorian mode is harmonized into triads, it follows that the sequence of triads would be the same as the Ionian mode it is relative to, however with the triad based on Re now being a “i” chord. Since D Dorian is relative to C Ionian, it also follows that the triad sequence would be the same with Dm now being “i”.

Below is D Dorian mode harmonized into triads.

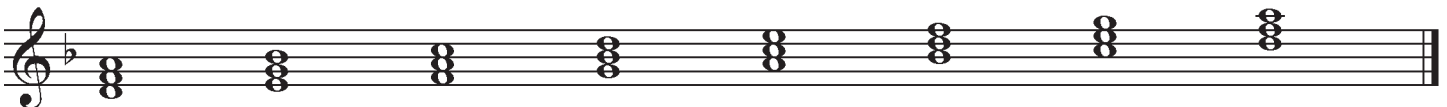
D m	E m	F	G	A m	B [°]	C	D m
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i	ii	III	IV	v	vi [°]	VII	i
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For comparative purposes, below are triads in D natural minor.

D m	E [°]	F	G m	A m	B ^b	C	D m
-----	----------------	---	-----	-----	----------------	---	-----




i	ii [°]	III	iv	v	VI	VII	i
---	-----------------	-----	----	---	----	-----	---

When compared to triads in natural minor, it can be seen that Dorian mode differs with the ii chord being minor instead of diminished, the IV chord being major instead of minor, and the chord based on the sixth being raised a half step and diminished instead of major.


Since the triad based on the root of the mode is minor, Dorian mode is considered to be a **minor mode**.

Assignment 16: Below are two chord progressions in Dorian mode with the chords only listed by their numerical representations. Each progression is to be transposed to all keys.

1. i IV



2. i ii



Phrygian Mode

The root of Phrygian mode is the solfège pitch Mi. Half steps in Phrygian mode occur between the root and second and the fifth and sixth.

Below is shown E Phrygian mode.



Mi Fa Sol La Si Do Re Mi

Phrygian mode compares to natural minor with the second lowered one half step.

When Phrygian mode is harmonized into triads, it follows that the sequence of triads would be the same as the Ionian mode it is relative to, however with the triad based on Mi now being a “i” chord. Since E Phrygian is relative to C Ionian, it also follows that the triad sequence would be the same with Em now being “i”.

Below is E Phrygian mode harmonized into triads.

Em F G Am B° C Dm Em
i II III iv v° VI VII i

For comparative purposes, below are triads in E natural minor.

Em F#° G Am Bm C D Em
i ii° III iv v VI VII i

When compared to triads in natural minor, it can be seen that Phrygian mode differs with the chord based on the second being lowered one half step and major instead of diminished, the v° being diminished instead of minor, and the vii chord being minor instead of major.

Since the triad based on the root of the mode is minor, Phrygian mode is considered to be a minor mode.

Assignment 17: Below are two chord progressions in Phrygian Mode with the chords only listed by their numerical representations. Each progression is to be transposed to all keys.

1. i II i

2. i vii II i

Lydian Mode

The root of Lydian mode is the solfege pitch Fa. Half steps in Lydian mode occur between the fourth and fifth and the seventh and root.

Below is shown F Lydian mode.

Fa Sol La Si Do Re Mi Fa

Lydian mode compares to a major scale with the fourth raised one half step.

When Lydian mode is harmonized into triads, it follows that the sequence of triads would be the same as the Ionian mode it is relative to, however with the triad based on Fa now being a "I" chord. Since F Lydian is relative to C Ionian, it also follows that the triad sequence would be the same with F now being "I".

Below is F Lydian mode harmonized into triads.

Triads for F Lydian mode:

F	G	A m	B°	C	D m	E m	F
I	II	iii	iv°	V	vi	vii	I

For comparative purposes, below are triads in F major.

Triads for F major:

F	G m	A m	B ^b	C	D m	E°	F
I	ii	iii	IV	V	vi	vii°	I

When compared to triads in a major key, it can be seen that Lydian mode differs with the II chord being major instead of minor, the chord based on the fourth being raised one half step and diminished, and the vii chord being minor.

Since the triad based on the root of the mode is major, Lydian mode is considered to be a major mode.

Assignment 18: Below are two chord progressions in Lydian mode with the chords only listed by their numerical representations. Each progression is to be transposed to all keys.

1. I II

2. I vi vii I

Mixolydian Mode

The root of Mixolydian mode is the solfege pitch Sol. Half steps in Mixolydian mode occur between the third and fourth and the sixth and seventh.

Below is shown G Mixolydian mode.

Sol La Si Do Re Mi Fa Sol

Mixolydian mode compares to a major scale with the seventh lowered one half step.

When Mixolydian mode is harmonized into triads, it follows that the sequence of triads would be the same as the Ionian mode it is relative to, however with the triad based on Sol now being a "I" chord. Since G Mixolydian is relative to C Ionian, it also follows that the triad sequence would be the same with G now being "I".

Below is G Mixolydian mode harmonized into triads.

A musical staff in G Mixolydian mode showing triads for each scale degree. The notes are G, A, B, C, D, E, F, G. The triads are: I (G), ii (Am), iii° (B°), IV (C), v (Dm), vi (Em), VII (F), and I (G).

For comparative purposes, below are triads in G major.

A musical staff in G major showing triads for each scale degree. The notes are G, A, B, C, D, E, F#, G. The triads are: I (G), ii (Am), iii (Bm), IV (C), V (D), vi (Em), vii° (F#°), and I (G).

When compared to triads in a major key, it can be seen that Mixolydian mode differs with the chord based on the third being diminished instead of minor, the v chord being minor instead of major, and the chord based on the seventh being lowered one half step and major instead of diminished.

Since the triad based on the root of the mode is major, Mixolydian mode is considered to be a major mode.

Assignment 19: Below are two chord progressions in Mixolydian mode with the chords only listed by their numerical representations. Each progression is to be transposed to all keys.

1. I VII IV

A musical staff with four measures, each containing a slash (/) to indicate a placeholder for a chord. The progression is I, VII, IV.

2. I IV I v

A musical staff with four measures, each containing a slash (/) to indicate a placeholder for a chord. The progression is I, IV, I, v.

Aeolian Mode

The root of Aeolian mode is the solfege pitch La. Aeolian mode is identical to what we now call natural minor. The natural minor scale and triads in natural minor have previously been discussed.

Below is shown A Aeolian mode.

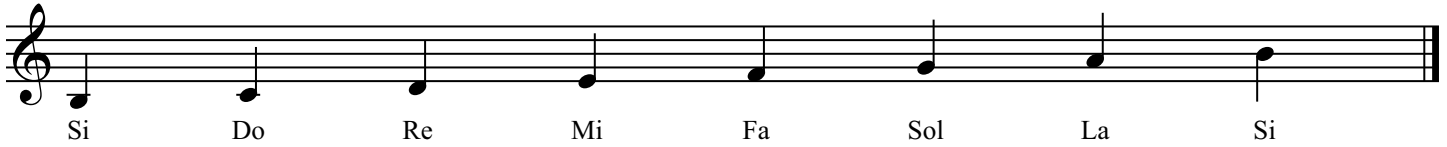
A musical staff in A Aeolian mode showing the notes: La, Si, Do, Re, Mi, Fa, Sol, La.

Since the triad based on the root of the mode is minor, Aeolian mode is considered to be a minor mode.

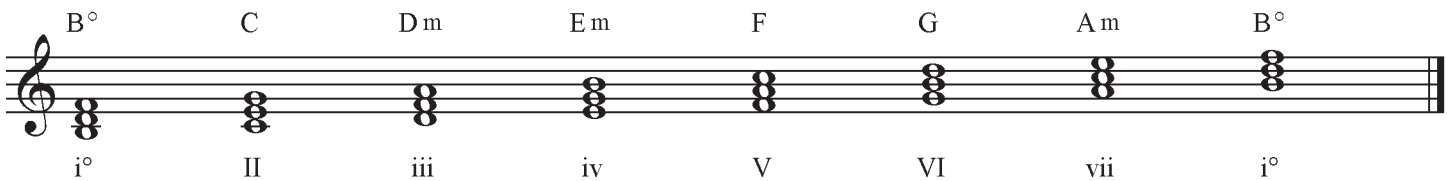
Locrian Mode

The root of Locrian mode is the solfege pitch Si. Half steps in Locrian mode occur between the root and second and the fourth and fifth.

Below is shown B Locrian mode.



Below is B Locrian harmonized into triads.



Building a triad on the root Si results in the formation of a B° chord. Since Locrian mode does not have a consonant triad built on its root, it was unused for music composed during the modal period and its use for later music has been very limited or even nonexistent.

Church Mode Summary: In review, it can be seen the pitches of C Ionian mode (C major) can also be used to form six other relative modes: D Dorian, E Phrygian, F Lydian, G Mixolydian, A Aeolian and B Locrian. Likewise, Ionian mode with a root other than C can also be the basis for six other modes. For example, the pitches of G Ionian mode (G major) can be used to form the relative modes A Dorian, B Phrygian, C Lydian, D Mixolydian, E Aeolian and F# Locrian.

Assignment 20: Fill in the blanks below with the correct answers.

1. What is a IV chord in G Dorian? _____
2. What is a II chord in F# Phrygian? _____
3. What is a vii chord in E \flat Lydian? _____
4. What is a v chord in E Mixolydian? _____
5. What is a III chord in C Aeolian? _____
6. What is a VI chord in F# Locrian? _____

Seventh Chords

Seventh chords are formed by adding another interval of a third to a triad. This added third can also be viewed as forming an interval of a seventh between itself and the root of the triad. Thus, seventh chords are composed of four pitches including a root, a third, a fifth and a seventh.

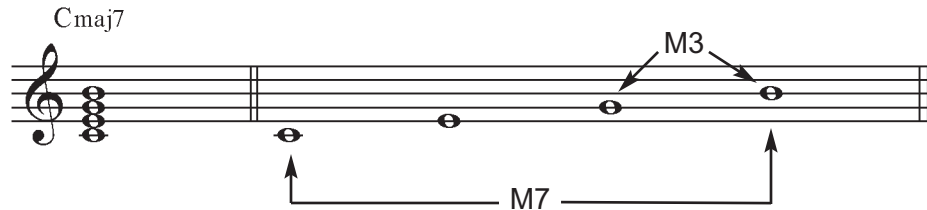
Below are shown examples of two triads, C and Dm, and the resulting seventh chords formed by stacking another m3 on top of each triad.



Major Seventh Chord

Major seventh chords are formed by stacking a M3 on top of a major triad. This added pitch can also be viewed as being a M7 above the root of the triad. Major seventh chords are sometimes described as “major-major” chords, that is a major triad to which a note a major seventh above the root is added.

Below is shown a Cmaj7 chord and an analysis of the added seventh.

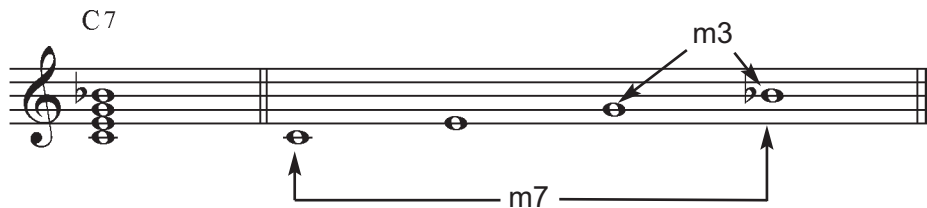


The chord symbol for Cmaj7 can also be Cma7 or CΔ7.

Dominant Seventh Chord

Dominant seventh chords are formed by stacking a m3 on top of a major triad. This added pitch can also be viewed as being a m7 above the root of the triad. Dominant seventh chords are sometimes described as “major-minor” chords, that is a major triad to which a note a minor seventh above the root is added.

Below is shown a C7 chord and an analysis of the added seventh.



As the name implies, Dominant Seventh chords are formed on the dominant (see p.3) or fifth scale degree.

Minor Seventh Chord

Minor seventh chords are formed by stacking a m3 on top of a minor triad. This added pitch can also be viewed as being a m7 above the root of the triad. Minor seventh chords are sometimes described as “minor-minor” chords, that is a minor triad to which a note a minor seventh above the root is added.

Below is shown a Cm7 chord and an analysis of the added seventh.

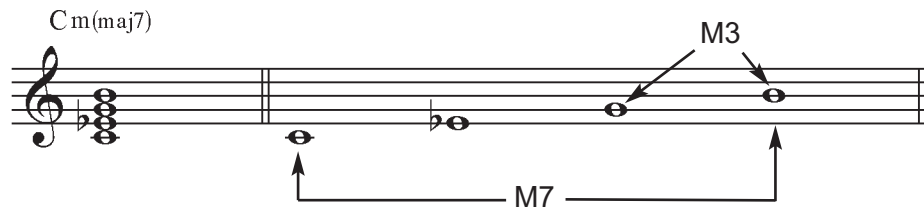


The chord symbol for Cm7 can also be Cmi7 or C-7.

Minor Major Seventh Chord

Minor major seventh chords are formed by stacking a M3 on top of a minor triad. This added pitch can also be viewed as being a M7 above the root of the triad. Minor major seventh chords are sometimes described as “minor-major” chords, that is a minor triad to which a note a major seventh above the root is added.

Below is shown a Cm(maj7) chord and an analysis of the added seventh.

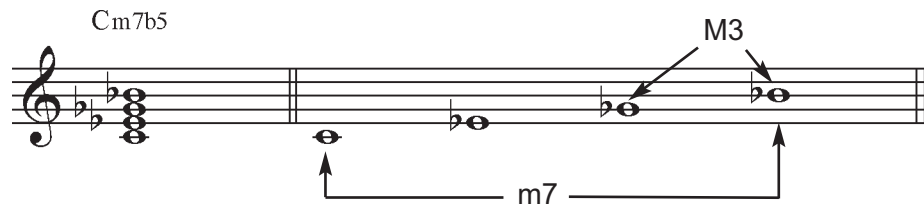


Half Diminished Seventh Chord

Half diminished seventh chords are formed by stacking a M3 on top of a diminished triad. This added pitch can also be viewed as being a m7 above the root of the triad. Half diminished seventh chords are sometimes described as “diminished-minor” chords, that is a diminished triad to which a note a minor seventh above the root is added.

The chord symbol for a half diminished seventh chord is “ø” or more commonly “m7b5”.

Below is shown a Cm7b5 (Cø) chord and an analysis of the added seventh.



Fully Diminished Seventh Chord

Fully diminished seventh chords are formed by stacking a m3 on top of a diminished triad. This added pitch can also be viewed as being a °7 above the root of the triad. Fully diminished seventh chords are sometimes described as “diminished-diminished” chords, that is a diminished triad to which a note a diminished seventh above the root is added.

The chord symbol for a fully diminished seventh chord is “°7” or “dim7”.

Below is shown a C°7 chord and an analysis of the added seventh.



It is standard practice when playing chords to substitute a °7 chord for a “ø” or “dim” triad.

Assignment 21: In each measure of the music below stack three more whole notes which complete a root position, close position seventh chord which satisfies the chord symbol given above each note.

Gmaj7 D7 Am7 Em(maj7) Bm7b5 F#°7 Gbmaj7 Db7

A^bm7 Ebm(maj7) Bbm7b5 F°7 Cmaj7 G#m7 D#m(maj7) Gbm7b5

The image shows two musical staves. The first staff contains eight measures, each with a single whole note and a chord symbol above it: Gmaj7, D7, Am7, Em(maj7), Bm7b5, F#°7, Gbmaj7, and Db7. The second staff contains eight measures, each with a single whole note and a chord symbol above it: A^bm7, Ebm(maj7), Bbm7b5, F°7, Cmaj7, G#m7, D#m(maj7), and Gbm7b5.

Diatonic Seventh Chords in Major Keys

Diatonic seventh chords are formed by basing a seventh chord on each successive scale degree and only using pitches contained within the respective scale.

Below is an example of a C major scale harmonized into seventh chords.

Cmaj7 Dm7 Em7 Fmaj7 G7 Am7 Bm7b5 Cmaj7

I7 ii7 iii7 IV7 V7 vi7 viiø I7

The image shows a musical staff with eight measures, each containing a diatonic seventh chord for the C major scale. Above each chord is its name: Cmaj7, Dm7, Em7, Fmaj7, G7, Am7, Bm7b5, and Cmaj7. Below each chord is its Roman numeral representation: I7, ii7, iii7, IV7, V7, vi7, viiø, and I7.

Assignment 22: Below are two chord progressions in major keys with the chords only listed by their numerical representations. Each progression is to be transposed to all major keys.

1. I7 IV7 ii7 V7

2. I7 vi7 iii7 IV7

The image shows two musical staves, each with four measures. The first staff is labeled '1.' and has Roman numerals I7, IV7, ii7, and V7 above each measure. The second staff is labeled '2.' and has Roman numerals I7, vi7, iii7, and IV7 above each measure. The notes in the staves are represented by diagonal lines, indicating that the student should transcribe these progressions into a specific key.

Diatonic seventh chords can similarly be determined for other minor scale forms and Church Modes.

Seventh chords derived from scales using altered tones such as occurs in Harmonic Minor, Melodic Minor and Jazz Minor can include *altered fifths*. For example, the seventh chord based on the third tone of A Harmonic Minor would include the notes C-E-G#-B which results in the chord Cmaj7#5 (Cmaj7+).

Seventh chords also introduce the possibility of **third inversion** chords, that is chords with the seventh in the bass.

Secondary Dominants

One of the most common ways to enrich harmony and introduce accidentals (itches not in the original key) is through the use of secondary dominants. Secondary dominants are major or dominant seventh chords that are dominant to a scale tone other than the root. For example, the dominant seventh chord in the key of C is G7 (V7). However, including dominants of other C scale pitches D, E, F, G or A would allow the introduction respectively of the chords A7, B7, C7, D7 or E7. The seventh degree of the C scale, B, is excluded from the list because the root of its dominant, F#7, is not a scale tone in the key of C.

Secondary dominants are usually followed by a chord with a root a fifth lower. For example, in the key of C the secondary dominant D7 would usually be followed by a chord with a root of G. In other words, secondary dominants usually lead to a chord of *resolution*.

While secondary dominants can introduce accidentals without causing a true change of key, or *modulation*, the temporary effect of a secondary dominant is to alter tonality for the duration of the chord.

Following is an explanation of **secondary dominants in major keys** in order of common useage and how each affects tonality. With the exception of V7/IV, all secondary dominants could be simplified to major triads.

V7/V

The most commonly used Secondary Dominant is V7/V (pronounced “five seven of five”). The fifth in the key of C is G. The dominant to G is D7, therefore a D7 chord in the key of C is V7/V. A D7 chord includes the pitch F# which causes a temporary change of tonality for the duration of the chord.

Below is shown a D7 chord and the change of tonality to a C scale that results.



Since D7 is dominant to G, tonality of the above example can be determined by rearranging the scale with G as the root.

Below is shown the resulting scale, as modified by V7/V, with the fifth G considered the root.



Upon analysis it can be determined the above scale is a G major scale. Therefore, the V7/V chord D7 in the key of C has caused a temporary change of key to G.

In summary, the chord V7/V causes a temporary modulation to a major scale with the fifth of the original key as its root. In other words, V7/V temporarily changes tonality to the key of V major.

Assignment 23: Below is a progression including V7/V which is to be transposed to all keys.



V7/IV

The fourth in the key of C is F. The dominant to F is C7, therefore a C7 chord in the key of C is V7/IV. A C7 chord includes the pitch B \flat which causes a temporary change of tonality for the duration of the chord.

Below is shown a C7 chord and the change of tonality to a C scale that results.



Since C7 is dominant to F, tonality of the above example can be determined by rearranging the scale with F as the root.

Below is shown the resulting scale, as modified by V7/IV, with the fourth F considered the root.



Upon analysis it can be determined the above scale is an F major scale. Therefore, the V7/IV chord C7 in the key of C has caused a temporary change of key to F.

In summary, the chord V7/IV causes a temporary modulation to a major scale with the fourth of the original key as its root. In other words, V7/IV temporarily changes tonality to the key of IV major.

Assignment 24: Below is a progression including V7/IV which is to be transposed to all keys.



V7/ii

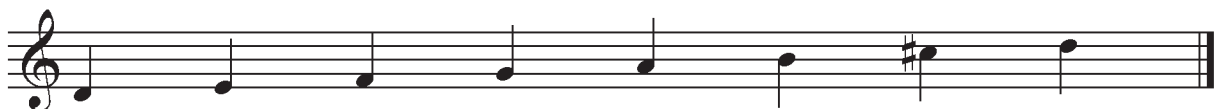
The second in the key of C is D. The dominant to D is A7, therefore an A7 chord in the key of C is V7/ii. An A7 chord includes the pitch C \sharp which causes a temporary change of tonality for the duration of the chord.

Below is shown an A7 chord and the change of tonality to a C scale that results.



Since A7 is dominant to D, tonality of the above example can be determined by rearranging the scale with D as the root.

Below is shown the resulting scale, as modified by V7/ii, with the second D considered the root.



Upon analysis it can be determined the previous scale is a D jazz minor scale. Therefore, the V7/ii chord A7 in the key of C has caused a temporary change of key to D jazz minor.

In summary, the chord V7/ii causes a temporary modulation to a jazz minor scale with the second of the original key as its root. In other words, V7/ii temporarily changes tonality to the key of ii jazz minor. For simplicity this scale can also be thought of as the result of sharpening the root of the original major key.

Assignment 25: Below is a progression including V7/ii which is to be transposed to all keys.



V7/vi

The sixth in the key of C is A. The dominant to A is E7, therefore an E7 chord in the key of C is V7/vi. An E7 chord includes the pitch G# which causes a temporary change of tonality for the duration of the chord.

Below is shown an E7 chord and the change of tonality to a C scale that results.



Since E7 is dominant to A, tonality of the above example can be determined by rearranging the scale with A as the root.

Below is shown the resulting scale, as modified by V7/vi, with the sixth A considered the root.



Upon analysis it can be determined the above scale is an A harmonic minor scale. Therefore, the V7/vi chord E7 in the key of C has caused a temporary change of key to A harmonic minor.

In summary, the chord V7/vi causes a temporary modulation to a harmonic minor scale with the sixth of the original key as its root. In other words, V7/vi temporarily changes tonality to the key of vi harmonic minor. For simplicity this scale can also be thought of as the result of sharpening the fifth of the original major key.

Assignment 26: Below is a progression including V7/vi which is to be transposed to all keys.



Chaining Secondary Dominants: It is common for one secondary dominant to lead to another in a *cycle of fifths*, that is a sequence of chords with the root of each being a fifth above the following chord. Usually this cycle will eventually lead to the authentic cadence V7-I.

Assignment 27: Below is a progression featuring a secondary dominant chain which is to be transposed to all keys.

I IV I V7/vi

V7/ii V7/V V7 I

V7/iii

The third in the key of C is E. The dominant to E is B7, therefore a B7 chord in the key of C is V7/iii. A B7 chord includes the pitches D# and F# which causes a temporary change of tonality for the duration of the chord.

Below is shown a B7 chord and the change of tonality to a C scale that results.

B7

Since B7 is dominant to E, tonality of the above example can be determined by rearranging the scale with E as the root.

Below is shown the resulting scale, as modified by V7/iii, with the third E considered the root.

Upon analysis it can be determined the above scale is an E harmonic minor scale. Therefore, the V7/iii chord B7 in the key of C has caused a temporary change of key to E harmonic minor.

In summary, the chord V7/iii causes a temporary modulation to a harmonic minor scale with the third of the original key as its root. In other words, V7/iii temporarily changes tonality to the key of iii harmonic minor.

Assignment 28: Below is a progression including V7/iii which is to be transposed to all keys.

I V7/iii iii V7

Secondary dominants can also occur in minor keys. Due to the variety of minor scale forms (natural, harmonic, melodic and jazz minor) the effect a secondary dominant has on tonality depends on the minor scale form being considered. For simplicity, only the natural minor scale form will be considered as the basis for pitch alteration.

Following is a description of **Secondary Dominants in Minor keys**.

V7/v

The fifth in the key of Am is E. The dominant to E is B7, therefore a B7 chord in the key of Am is V7/v. A B7 chord includes the pitches D# and F# which causes a temporary change of tonality for the duration of the chord.

Below is shown a B7 chord and the change of tonality to an A natural minor scale that results.



Since B7 is dominant to E, tonality of the above example can be determined by rearranging the scale with E as the root.

Below is shown the resulting scale, as modified by V7/v, with the fifth E considered the root.



Upon analysis it can be determined the above scale is an E harmonic minor scale. Therefore, the V7/v chord B7 in the key of A natural minor has caused a temporary change of key to E harmonic minor.

In summary, the chord V7/v causes a temporary modulation to a harmonic minor scale with the fifth of the original key as its root. In other words, V7/v temporarily changes tonality to the key of v harmonic minor.

Assignment 29: Below is a progression including V7/v which is to be transposed to all keys. Note the use of the dominant seventh chord V7 in the fourth measure.



V7/iv

The fourth in the key of Am is D. The dominant to D is A7, therefore an A7 chord in the key of Am is V7/iv. An A7 chord includes the pitch C# which causes a temporary change of tonality for the duration of the chord.

Below is shown an A7 chord and the change of tonality to an A natural minor scale that results.



Since A7 is dominant to D, tonality of the above example can be determined by rearranging the scale with D as the root.

Below is shown the resulting scale, as modified by V7/iv, with the fourth D considered the root.



Upon analysis it can be determined the above scale is a D jazz minor scale. Therefore, in this example the V7/iv chord A7 in the key of A natural minor has caused a temporary change of key to D jazz minor.

In summary, the chord V7/iv causes a temporary modulation to a jazz minor scale with the fourth of the original key as its root. In other words, V7/iv temporarily changes tonality to the key of iv jazz minor.

Assignment 30: Below is a progression including V7/iv which is to be transposed to all keys.



V7/VI

The sixth in the key of A natural minor is F. The dominant to F is C7, therefore a C7 chord in the key of Am is V7/VI. A C7 chord includes the pitch Bb which causes a temporary change of tonality for the duration of the chord.

Below is shown a C7 chord and the change of tonality to an A natural minor scale that results.



Since C7 is dominant to F, tonality of the above example can be determined by rearranging the scale with F as the root.

Below is shown the resulting scale, as modified by V7/VI, with the sixth F considered the root.



Upon analysis it can be determined the above scale is an F major scale. Therefore, in this example the V7/VI chord C7 in the key of A natural minor has caused a temporary change of key to F major.

In summary, the chord V7/VI causes a temporary modulation to a major scale with the sixth of the original key as its root. In other words, V7/VI temporarily changes tonality to the key of VI major.

Assignment 31: Below is a progression including V7/VI which is to be transposed to all keys.



V7/VII

The seventh in the key of A natural minor is G. The dominant to G is D7, therefore a D7 chord in the key of Am is V7/VII. A D7 chord includes the pitch F# which causes a temporary change of tonality for the duration of the chord.

Below is shown a D7 chord and the change of tonality to an A natural minor scale that results.



Since D7 is dominant to G, tonality of the above example can be determined by rearranging the scale with G as the root.

Below is shown the resulting scale, as modified by V7/VII, with the seventh G considered the root.



Upon analysis it can be determined the above scale is a G major scale. Therefore, in this example the V7/VII chord D7 in the key of A natural minor has caused a temporary change of key to G major.

In summary, the chord V7/VII causes a temporary modulation to a major scale with the seventh of the original key as its root. In other words, V7/VII temporarily changes tonality to the key of VII major.

Assignment 32: Below is a progression including V7/VII which is to be transposed to all keys.



V7/III

The third in the key of A natural minor is C. The dominant to C is G7, therefore a G7 chord in the key of Am is V7/III. A G7 chord includes no accidentals relative to A natural minor, and therefore does not in itself cause a temporary change of key.

The use of V7/III might imply a change of key to the relative major (III) and therefore must be used carefully when the integrity of the minor tonality is at stake.

As in other secondary dominants in minor keys, the resulting tonality varies according to the minor scale form being considered and whether sharped or natural sixths and sevenths are included. It is suggested that the student examine these other tonal possibilities created by the various minor scale forms.

More Chord Types

Extended Chords

Ninth chords, eleventh chords and thirteenth chords are formed by continuing to stack thirds on top of seventh chords. A seventh chord with a third stacked on top becomes a ninth chord. A ninth chord with a third stacked on top becomes an eleventh chord. An eleventh chord with a third stacked on top becomes a thirteenth chord. Below are shown examples of the most common extended chords and the sequences of thirds being added to form them.

The diagram shows the construction of extended chords from a C major triad. The sequence of chords is: Cmaj7, Cmaj9, C7, C9, C11, C13, C7, C7b9, Cm7, Cm9, Cm11. Each chord is represented by a stack of notes on a treble clef staff, showing the addition of thirds to the previous chord.

For the purpose of guitar fingerings, extended chords will often be reduced to the most important notes. These notes include in order of importance:

1. The third - determines major or minor tonality. A dominant eleventh chord voicing will not include a third.
2. The seventh - the extended chord's function depends on the type of seventh used.
3. The farthest extended tone, for example the thirteenth of a C13 chord.
4. The root - gives the chord a solid foundation, but is often voiced by another instrument.
5. The fifth - much more important if the fifth is altered, for example G7+ or D7^b5.
6. Any other extended tone.

Add Chords

Add chords are major or minor triads with a sixth, ninth or combination added to them. Below are four examples of add chords.

The diagram shows four examples of add chords: C6, Fadd9, Am6, and G9. Each chord is represented by a stack of notes on a treble clef staff.

Suspensions

Suspensions occur when a chord tone is raised or lowered a step. The resulting dissonance created by the suspended tone is often resolved by the tone returning to a chord tone with the next chord change.

While there are several types of suspensions the most commonly used involve the third of a major triad being raised a half step to a fourth or lowered a whole step to a second. For example the chord Dsus (or Dsus4) includes the suspended tone G which might likely resolve to the chord tone F# if the following chord is D.

Below are examples of suspended chords with each followed by its usual chord of resolution.

The diagram shows examples of suspended chords and their resolutions: Dsus to D, G2 to G, and C7sus to C7. Each chord is represented by a stack of notes on a treble clef staff.

Altered Chords

In general a chord is altered if one of its tones is raised or lowered one half step. In common practice the chord being altered is usually a dominant chord type with the fifth and/or ninth being raised or lowered one half step. The tone being altered will introduce increased tension which is often resolved by the chord immediately following it. Below are examples of altered chords.

Musical notation showing eight altered dominant chords on a treble clef staff in C major: C7^{b5}, G7^{#5}, F7^{b9}, B^b7^{#9}, E^b7^{#9}, E^b7^{#5}, D7(^{b5}^{b9}), and A7(^{b5}^{#9}).

Passing Chords

Passing chords serve to connect one chord to another. Passing chords cannot be analyzed as being part of the naturally occurring (diatonic) harmony of a key. Passing chords have at least one tone that chromatically connects a tone of the previous chord to a tone of the following chord. Below are examples of passing chords.

Musical notation showing a sequence of four chords: C^{major}7, C[#]dim7, Dm7, and G7. Arrows indicate chromatic movement between notes. Labels below the staff identify them as I⁷, P.C., ii⁷, and V⁷.

In the example above the passing chord C[#]dim7 connects the chord C^{major}7 to the chord Dm7 by the use of two chromatic tones.

Musical notation showing a sequence of four chords: C^{major}7, F^{major}7, A^b7, and G7. Arrows indicate chromatic movement between notes. Labels below the staff identify them as I⁷, IV⁷, P.C., and V⁷.

In the example above the passing chord A^b7 connects the chord F^{major}7 to the chord G7 by the use of two chromatic tones. If the A^b7 chord had been voiced as a third inversion chord with G^b in the bass, a third chromatic passing tone would be added. This is demonstrated below.

Musical notation showing a sequence of four chords: C^{major}7, F^{major}7, A^b/G^b, and G7. Arrows indicate chromatic movement between notes. Labels below the staff identify them as I⁷, IV⁷, P.C., and V⁷.

Tritone Substitution

Especially in jazz it is common to substitute for a dominant seventh chord another dominant seventh chord with a root a tritone higher (or lower). Assuming the chord following the original dominant seventh chord is a chord of resolution based on a root a fifth lower, the substituted chord would have a root one half step above the following chord of resolution. This can best be demonstrated by the following example.

The first example shows a progression of three chords: Dm7, G7, and Cmaj7. Below the notes, the analysis is: C: ii7, V7, I7.

The second example shows a progression of three chords: Dm7, Db7, and Cmaj7. Below the notes, the analysis is: C: ii7, Tritone Sub., I7.

In the example above the V7 chord G7 is substituted with a chord whose root is a tritone higher, Db7. Notice the substituted chord is one half step above the following chord Cmaj7.

Modulation

Modulation is simply another term for change of key. There are four ways commonly used to cause a piece of music to modulate. These include **direct modulation**, **pivot chord modulation**, **pivot tone modulation** and **mutation**.

Direct Modulation

Direct modulation is a form of modulation that uses no chord or tone common to both keys as a means to smooth the tonal transition. Direct modulation causes a sudden change of mood to a piece of music. Below is an example of a direct modulation with a *harmonic analysis* included.

The example shows a progression of six chords: C, Dm, G, Db, Ebm, and Ab. Below the notes, the analysis is: C: I, ii, V, Db: I, ii, V.

One of the most common ways to achieve a direct modulation is to first use the V7 chord of the new key. Below is an example.

The example shows a progression of five chords: Gm, C7, F, D7, and G. Below the notes, the analysis is: F: ii, V7, I, G: V7, I.

Here is another example modulating from G to the relative minor Em.

Musical notation showing a modulation from G major to E minor. The sequence is: D7 (G: V7), G (I), B7 (Em: V7), and Em (i). The key signature changes from one sharp (G major) to no sharps or flats (E minor).

It is also common, especially in jazz, to modulate using the sequence ii-V-I. Below is an example.

Musical notation showing a modulation from Bb major to Ab major. The sequence is: Cm7 (Bb: ii7), F7 (V7), Bbmaj7 (I7), Bbm7 (Ab: ii7), Eb7 (V7), and Abmaj7 (I7). The key signature changes from two flats (Bb major) to three flats (Ab major).

Pivot Chord Modulation

Pivot chord modulation results from using a chord common to both keys to smooth the transition from one key to the other. This form most often requires modulating to a *nearby key*, that is a key whose signature is within one sharp or flat of the original key. Below is an example of a pivot chord modulation. Notice that the pivot chord can be analyzed in both keys.

Musical notation showing a pivot chord modulation from D major to G major. The sequence is: D (D: I), Bm (G: iii), Am (ii), D7 (V7), and G (I). The pivot chord Bm is common to both keys.

Pivot Tone Modulation

Pivot tone modulation results from using a note common to both keys to smooth the transition from one key to the other. Below is an example of a pivot tone modulation. Notice the F note in measure two is the root of the F chord and the third of the Db7 chord.

Musical notation showing a pivot tone modulation from C major to Gb major. The sequence is: C (C: I), F (IV), Db7 (Gb: V7), Gb (I), Db7 (V7), and Gb (I). The pivot tone F is common to both keys.

Mutation

Mutation occurs when a piece of music modulates to a parallel (same root note) key. For example, modulating from the key of C to the key of C minor would be a mutation. Below is an example of a piece of music showing a mutation to the parallel major.

Chord progression for mutation from C minor to C major:

- Bar 1: Cm7 (Cm: i7)
- Bar 2: G7 (V7)
- Bar 3: Dm7 (C: ii7)
- Bar 4: G7 (V7)
- Bar 5: C (I)
- Bar 6: C (I)

Blues

Dissonance is a key aspect of blues harmony. A blues scale includes notes which will be quite dissonant against the chord being played at the time. Also, the use of *blue notes* (notes that are *bent* approximately $\frac{1}{4}$ step higher than a scale tone by instruments capable of doing so) adds a unique, mournful quality to blues music.

A blues scale has a minor quality because the scale contains a minor third. Blues progressions, however, are usually major in nature. The resultant dissonance created by the minor third of the blues scale being sounded against the major third of the tonic chord is one example of blues dissonance.

Below is an example of a typical 12 bar blues progression in the key of C. Notice the use of all dominant 7th chords. Refer to p.37 to see how this differs from diatonic 7th chords in C major.

12 Bar Blues

Chord progression for 12 Bar Blues:

- Bar 1: C7 (I7)
- Bar 2: F7 (IV7)
- Bar 3: C7 (I7)
- Bar 4: F7 (IV7)
- Bar 5: C7 (I7)
- Bar 6: G7 (V7)
- Bar 7: F7 (IV7)
- Bar 8: C7 (I7)
- Bar 9: G7 (V7)
- Bar 10: C7 (I7)
- Bar 11: F7 (IV7)
- Bar 12: G7 (V7)

Below is a C blues scale and a C7 chord. Notice that the C blues scale includes the note E \flat while the C7 chord contains the note E. The dissonance created between these notes is essential to the blues sound.

C Blues Scale: C D E \flat F G \flat A B

C7 Chord: C E G B \flat

Notice also the potential dissonance between the note G \flat of the scale and the note G of the C7 chord.

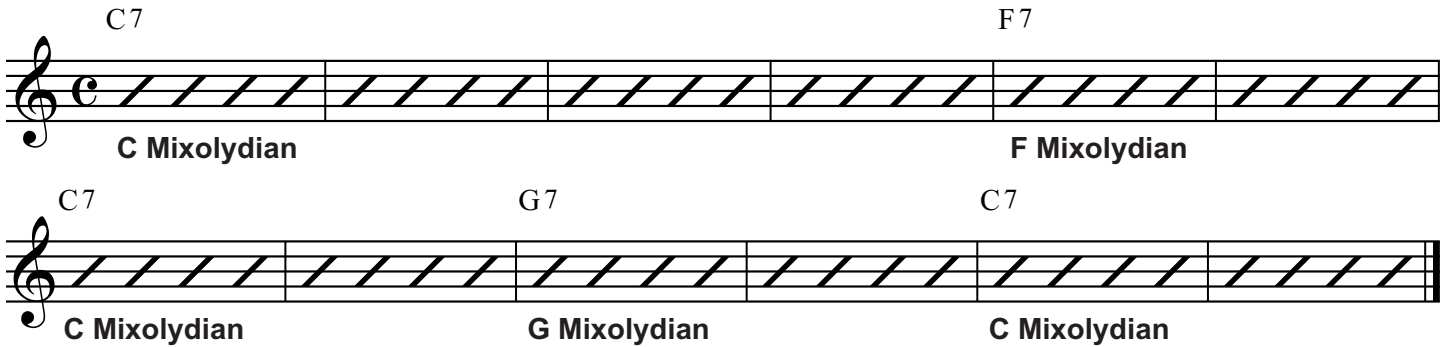
The IV7 and V7 chords of the previous 12 Bar Blues progression create other dissonances with the C blues scale. Below is shown a C blues scale and the chords F7 and G7.



Dissonances created above include the G♭ note of the scale and the F note of the F7 chord as well as the B♭ note of the scale and the B note of the G7 chord.

When playing a blues other notes besides a blues scale can be used. Chord tones are always appropriate. For example the thirds of the chords C7 (E), F7 (A) and G7 (B) can be used at least while that chord is being sounded.

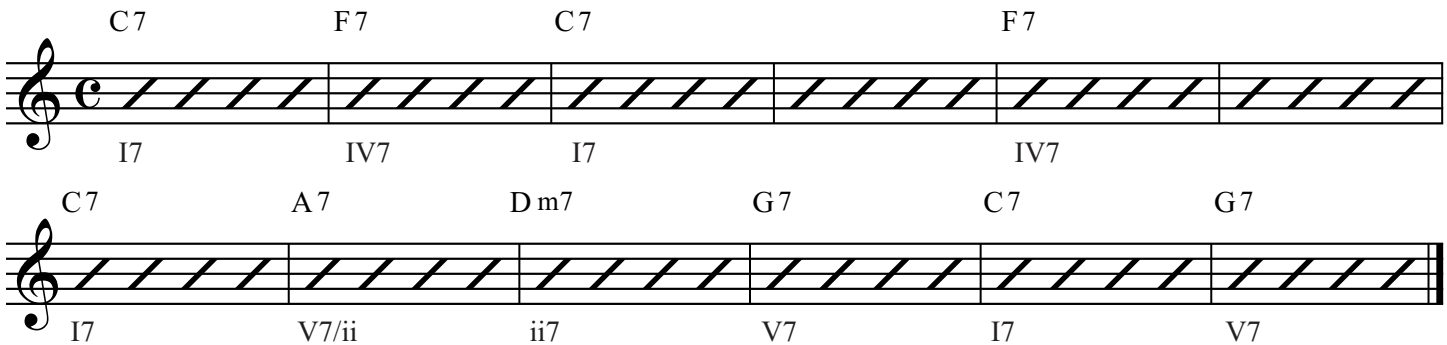
Mixolydian mode (aka major ♭7) can also be used with the possibility of changing keys as the chords change. Below is an example of another blues progression and how a performer might use Mixolydian mode fingerings as the chords change.



A blues scale can be thought of as a minor pentatonic scale with an added ♭5th. It follows then that a minor pentatonic scale can be used as a substitute for a blues scale.

A major pentatonic scale can be thought of as a simplified form (no 4th or 7th) of a major scale or Mixolydian mode. It follows then that a major pentatonic scale might also be used as a substitute for Mixolydian mode.

It is common, especially in jazz, for a blues progression to use chords native to a progression in a purely major key. For example, the progression below includes the chords V7/ii, ii7 and V7 suggesting a shift of tonality to C major during measures nine and ten and perhaps a shift to D jazz minor (see pp.39-40) during measure eight.



Blues harmony, while relatively simple, opens the door to many possibilities for musical interpretation and improvisation.