Forward

I have been teaching guitar for over twenty years, a both university level and at several different music stores. Some of that time as been devoted to teaching group lessons and some of it has been devoted to private lessons. I have taught older and younger students, hobbyists and professionals. In that diversity of experiences, I have discovered a wide difference in the need and/or desire to gain knowledge of the fingerboard and its relationship to music theory.

A folk singer who uses the guitar for an accompaniment instrument requires a different degree of theoretical background and fingerboard proficiency than a jazz guitarist. He does, however, require some foundation of theory, if for no other reason than for transposing his accompaniment to the correct key for his vocal range.

There was a time when rock music was so simple that an amateur could throw together three or four chords and a simple five tone scale and have enough material for a hundred songs. Much of today's music has become sophisticated enough to require a pretty extensive knowledge of theory.

I recently saw a television interview with one of the country's most renowned pop and rock singer/songwriters. He stated in the interview that knew he was a little limited in his song writing ability because he composed at the guitar and he only knows seven chords. It makes me wonder how great he could be if he knew twice as much as he does. A good analogy of his situation would be writing a novel with a vocabulary of a couple of dozen words. The result would have to be pretty primitive.

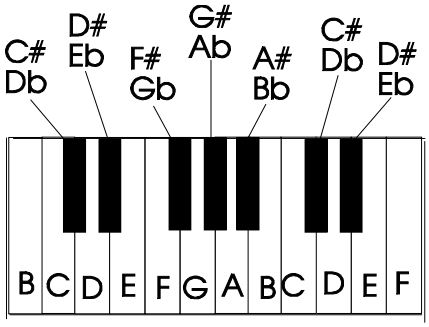
Over the years I have given out handouts and lectures on different on different aspects of the guitar fingerboard and its relationship to music theory. I have tried to explain the reason for using particular scales over certain chords and why chords are substituted for others and hundreds of other theoretical subjects. As a result of this "bits and pieces" approach to teaching theory, I am often asked is there is a book with all of this material together in one place. I was unable to find a book that contained all of the material I needed to teach, so at the advice and request of my students, I compiled my own.

I'm sure that not every guitar student will have a need for <u>all</u> of the material here, but I chose to take the risk of including too much in favor of not including enough. I believe that all students of the guitar can benefit from the material in this book. I hope it serves to make you more creative and independent. If it does, it will enable you to enjoy music even more.

Duane Langston

What is a Major Scale?

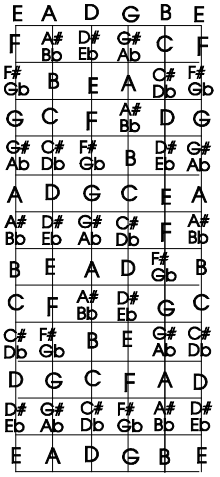
A major scale is a series of notes, a specific distance apart. The notes are named after the first seven letters of the alphabet. Each of these letter-named notes are spaced either a half step or a whole step apart. The distance between B and C is a half step, as is the distance between E and F. All of the other notes are a whole step apart. Understanding the concept of whole steps and half steps, is easier if applied to an instrument like the guitar or the piano. On a guitar, each fret represents a half step. Looking at the piano keyboard, you should observe that there are white keys and black keys. The white keys are the "natural" notes, or the first seven letters of the alphabet repeated again and again to the end of the keyboard. The black keys are the sharps (written #) and flats (written b).



Notice that there are places where there are no black keys between the white keys. Those are the half steps between E & F and B & C. All of the others have a black key between them. The note below any letter named note is called a Flat. (b) For example, the black key below an E note is an E flat. (written Eb) The black key above any letter named note is called a sharp. (written #) For example, the note above "D" is "D sharp." (written D#) Notice that a D# and an Eb are the same note. They are called enharmonic spellings. All letter named notes have a sharp or flat between them except E & F and B & C. The following is a chart showing this.

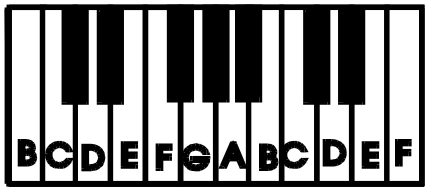
A A# Bb B C C# Db D D# Eb E F F# Gb G G# Ab A

At the right is an example of how this applies to the guitar. I have shown the notes on the guitar fingerboard. Observe that there are no sharps of flats between E & F and B & C. All others have a sharp and/or flat between them.

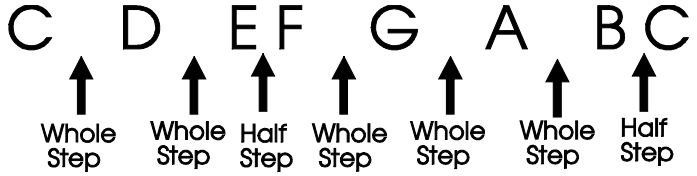


The C Major Scale

On the piano, the C major scale is easy to understand. It is simply the white keys only, from C to C.



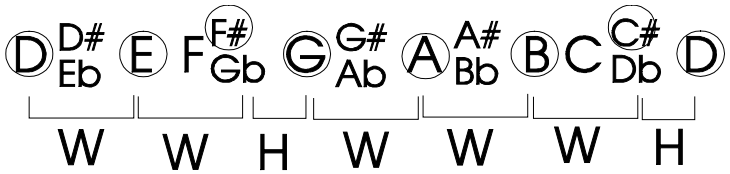
By looking at the keyboard, you can notice that all of the notes are not the same distance apart. Some are a whole step and others are only a half step. See the chart below.



This order of spacing comprises the formula used to create any major scale:
Whole step, Whole step, Half step, Whole step, Whole step. Whole step, Half step.
Determining the C major scale is easy since the location of the E & F and B & C is such that the half steps already occur between the 3rd & 4th and 7th & 8th tones of the scale. That isn't the case with the other scales.

To demonstrate this, the example below is another scale, the D scale. It contains the notes from D to D with all of the sharps and flats between them.

The next example has the notes that make up the D major scale circled. These notes were determined using the formula: W (Whole step), W, H (half step), W, W, W, H.



Notice that I chose "F#" instead of "Gb" and "C#" instead of "Db."I did that so that I wouldn't skip any letters of the alphabet. You can't have a G and a Gb in the same key. Instead use an G and an F#. The same procedure used to find the D major scale can be used to determine the notes in any major scale. As an exercise, you should try to locate the right notes for other scales. In the following chart, I have written out the correct notes for every major scale. Check your own work against the chart to see if you are calculating the scales correctly.

Same as as "F" natural. Called "E#" so that you don't skip a letter of the alphabet

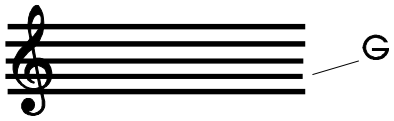
Same scale (enharmonic spelling)

Same as "B" natural. Called "Cb" so that you don't skip a letter of the alphabet.

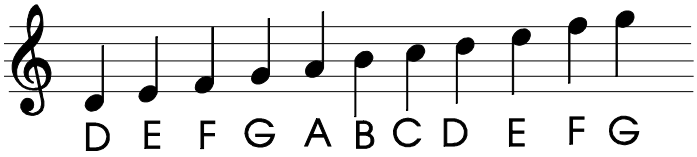
C	D	E	F	G	A	B	C
G	A	B	C	D	E	F#	G
D	E	F#	G	A	B	C#	D
A	B	C#	D	E	F#	G#	A
E	F#	G#	A	B	C#	D#	E
B	C#	D#	E	F#	G#	A#	B
F#	G#	A#	B	C#	D#	E#	F#
Gb	Ab	Bb	Cb	Db	Eb	F	Gb
Db	Eb	F	Gb	Ab	Bb	C	Db
Ab	Bb	C	Db	Eb	F	G	Ab
Eb	F	G	Ab	Bb	C	D	Eb
Bb	C	D	Eb	F	G	A	Bb
F	G	A	Bb	C	D	E	F

Some keys (Eb for example) are written in flats instead of sharps because they are easier to read. Eb has three flats in the key. If it were written as D#, it would have five sharps and two double sharps.

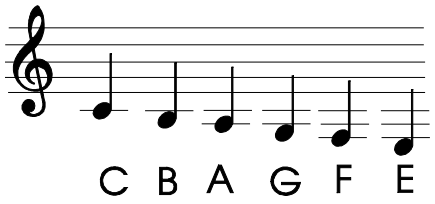
For the benefit of those who are not familiar with it, this is a musical staff with a treble clef at the beginning. The treble clef is also known as the "G clef" since the circle loops around the G line.

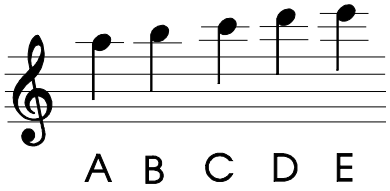


This is a chart of the a staff with the notes on the lines and spaces of the staff. Below it is the letter names of each of the notes.

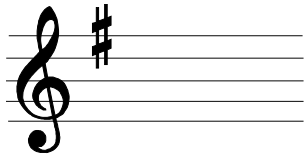


There may also be notes above and below the staff on "ledger lines."





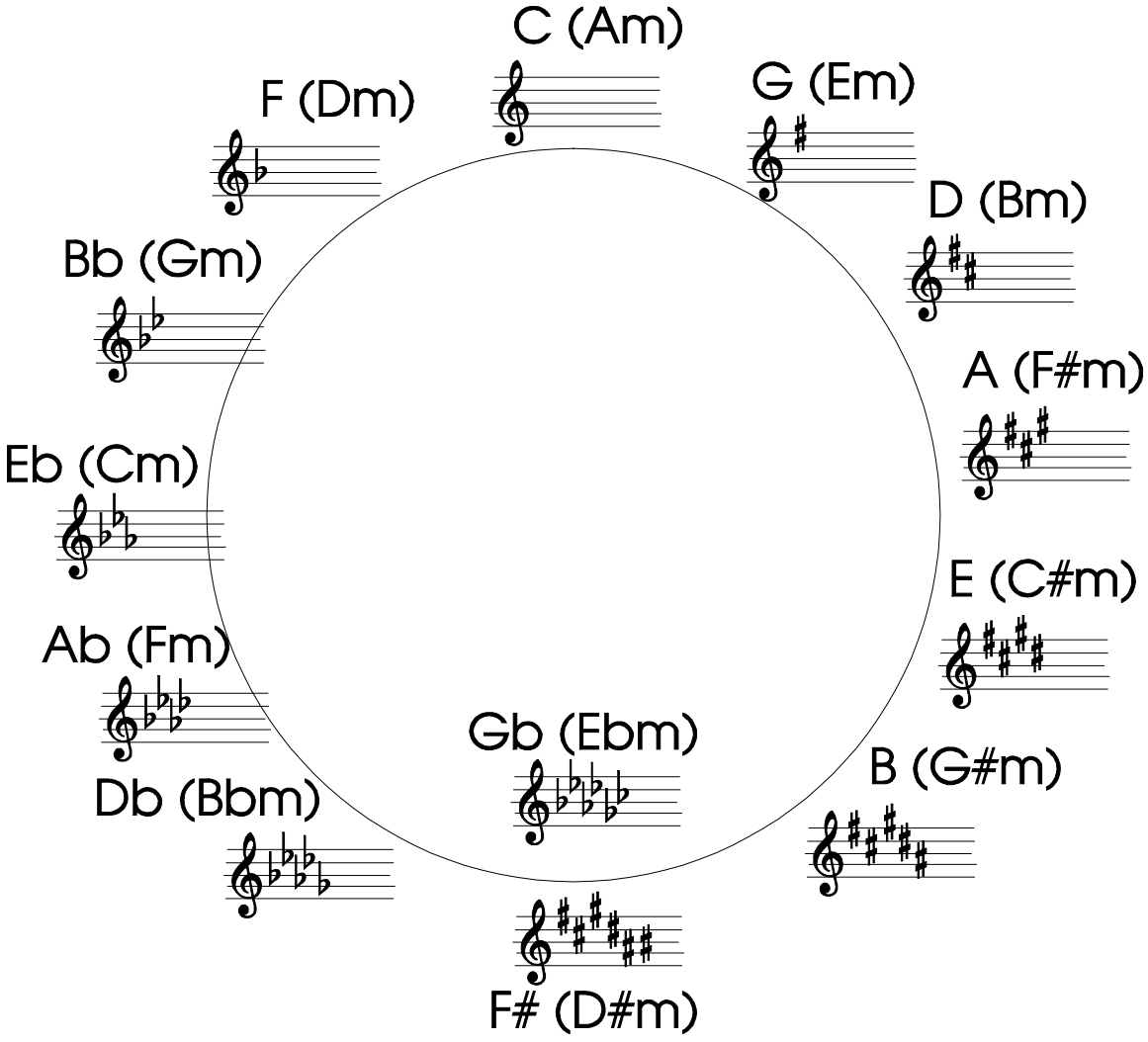
At the beginning of a song, next to the clef sign, some sharps or flats may appear. Instead of writing in all the sharps or flats throughout the piece, they are usually placed in one location at the beginning. Notice on the scale chart, that there is one sharp in the key of G. It is an F#. When a song is played in the key of G, the beginning of the song should look like this:



Observe that a sharp is placed on the top line. That is the line where an “F” note sits. When a sharp or flat is placed on a line or space at the beginning of a song, it indicates that all of that letter name are sharped or flatted throughout the entire song unless a natural sign appears:

This placement of sharps or flats at the beginning of a song is called the key signature. The number of sharps or flats in a key signature corresponds to the scale chart that was presented earlier.

Below is a diagram of the circle of 5ths. (Sometimes called the circle of 4ths)



At the top of the circle is the key of C and its key signature of no sharps or flats. In parenthesis is its relative minor, A minor. (Relative minor keys will be covered later.) Moving clockwise around the circle, the keys progress by intervals of fifths. The interval of a fifth is three and a half steps. From C to G is three and a half steps. Moving the same direction, the next key is the key of D. It is three and a half steps above G. Next is the key of A, three and a half steps above D. This progression of keys continues all the way around the circle. Each successive key adds one more sharp to the key signature. Half way around the circle we change from key signatures with sharps in them to key signatures with flats in them. As stated earlier, after a few sharps it becomes easier to read the notes in flats.

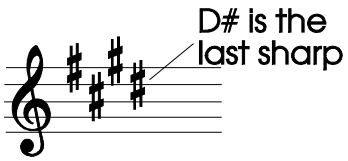
If we were to start at the key of C again, and this time, move counterclockwise, we would progress in fourths instead of fifths. The interval of a fourth is two and a half steps. The key of F is two and a half steps away from the key of C. Bb (B flat) is two and a half steps away from F. This key is called Bb, not A#, even though they are the same, because Bb has two flats in the key signature and A# would have ten sharps. (actually four sharps and three double sharps) It is easier to read: Bb C D Eb F G A Bb than it is to read: A# B# Cx(double sharp) D# E# Fx Gx A#.

Keys continue to progress by fourths counterclockwise around the circle, each successive key adding another flat, until the key of Gb, where it changes to F#. The keys of Gb and F# are both given (stacked one above the other) since they have either six sharps or six flats, and are equally difficult to read.

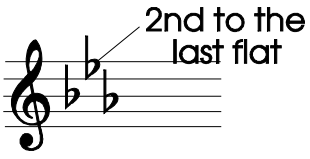
The order that flats appear in the key signature is by fourths as well. The first flat to appear in a key signature it a Bb, then Eb, Ab, Db, Gb, etc. Each is a fourth higher than the previous one.

The order that sharps appear in a key signature is by fifths. The first one is an F#, then C#, G#, D#, etc. Each is a fifth higher than the previous one.

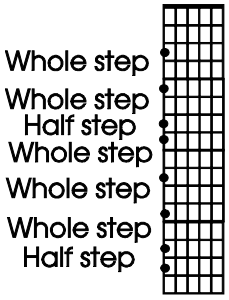
You can determine the key a song is in by looking at the key signature. It is best to just memorize all of the key signatures by sight, but there are shortcuts to make learning them easier. In the sharped keys, look at the last sharp to appear in the key signature, and go up a half step. That will tell you the name of the key. For example, the key signature shown here has four sharps in it. The last sharp to appear in the key signature is a D#. A half step above D# is E, so this is the key signature for the key of E.



Key signatures for flatted keys are determined by looking at the second to the last flat to appear in the key signature. In the example given here, there are three flats. The second to the last flat is a Eb. Therefore, this is the key of Eb. To use this method, there obviously must be at least two flats in the key signature. The key of F has only one flat it is, so you must just memorize that key.

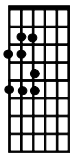


Major Scales On The Guitar



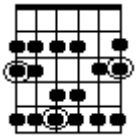
Finding a major scale on the guitar would be easy if you were only dealing with a single string. Each fret on the guitar represents a half step, and the formula for a major scale is: whole step, whole step, half step, whole step, whole step, whole step, half step. With no more than that information, you could start at any place on the fingerboard and create a major scale. The example shows how a major scale can be created using this method. I began this major scale on the third fret of the sixth string.

The problem with playing scale in this manner is, the amount of jumping up and down the fingerboard makes it slow and impractical. Guitarists play scales crossing over the strings. To understand and be able to do this, you may have to refer back to the fingerboard chart diagrammed earlier.

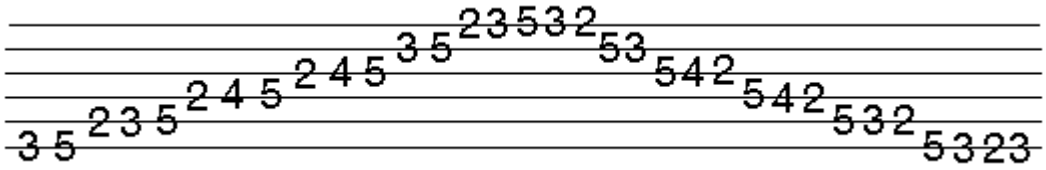


On the single string scale I diagrammed, I began on the G note, third fret on the sixth string. Next I went to the A, fifth fret on the sixth string, then to the B, 7th fret on the sixth string. It would have been easier to reach, had I chosen the B on the second fret of the fifth string. Using that concept, I have diagrammed an easier way to play the G scale, without moving up and down the fingerboard.

It is important to be able to play, not only the notes in a scale from the tonic (letter name of the key) to the tonic, but any notes above or below the tonic that belong to the key and can be reached within that position. Sometimes during improvising or arranging, you will need those additional notes. For that reason, guitarists have a unique way of playing scales, related to the positions. The example given is a G major scale that extends above and below the tonic. I have circled the tonic, G notes, within the scale.

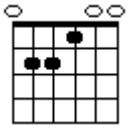


The correct way to play scales in positions, is to begin on the lowest tonic in a given position, ascend to the highest scale note that can be played in that position, descend down to the lowest scale note that can be played in that position, and ascend back to the tonic. The following is an example of the G scale played in that manner. I have written it in tablature. In reading tablature, each line represents a string on the guitar, and the numbers on the lines represent the fret numbers.

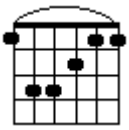


The scale diagrammed and tabbed is a “movable” scale. That means that it is a different scale on each fret. With the tonic (lowest circled pitch) located on the third fret, it would be a G scale. If it were to begin on the fourth fret, it would be a G# or Ab scale. On the fifth fret it would be an A scale. It continues in this manner, all the way up the fingerboard.

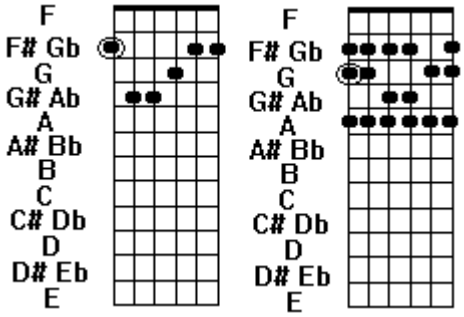
This particular movable scale form is called the “E form” scale because it is named after the open position E chord.



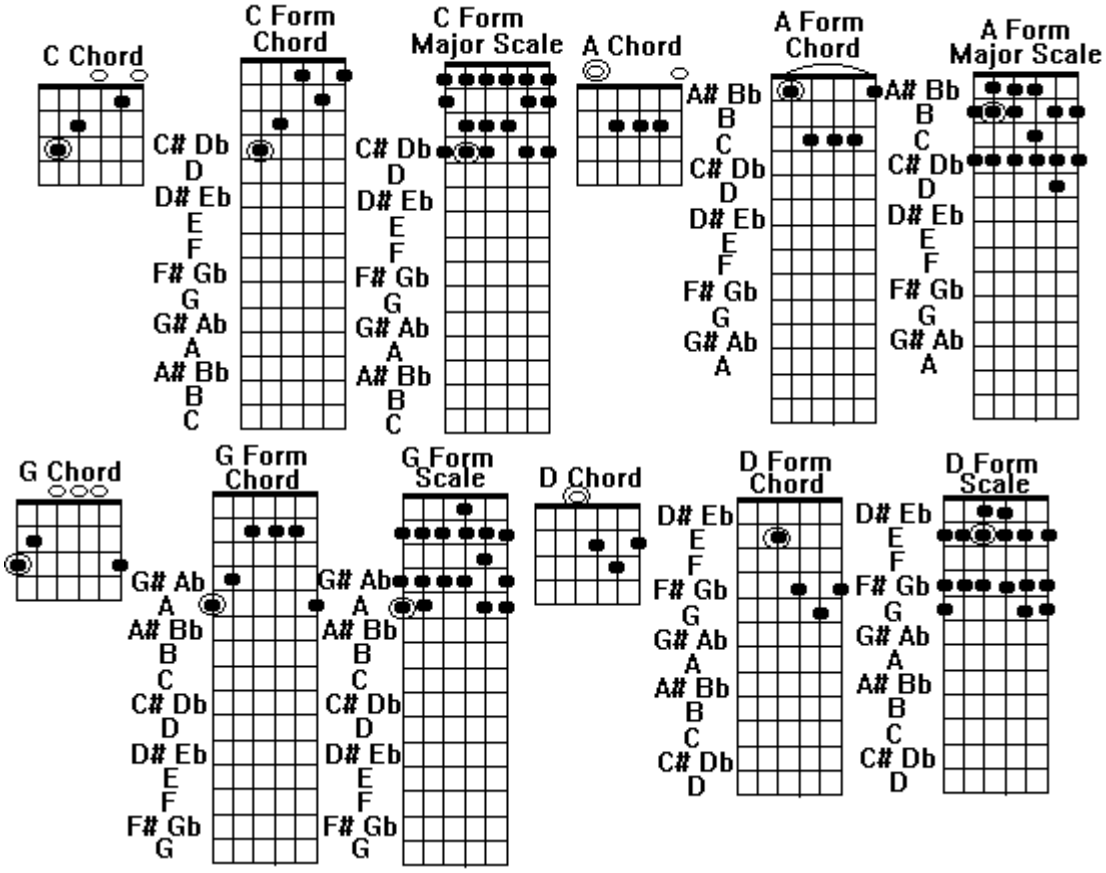
When the every note of the open E chord is raised by one fret, it becomes a movable chord form that looks like this:



That movable chord form is called the “E form chord.” This form becomes a different chord on each fret. The “E form major scale” corresponds to the “E form chord.” The root of the chord and the root of the scale are on the same fret. The following is a chart showing the chord and its letter name on each fret. Beside it is the scale that corresponds to it. You can see how they compare. The root of each is circled.

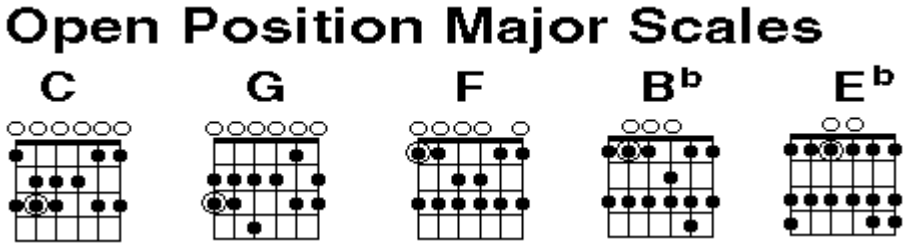


There are four other movable major scales in addition to the E form. The following diagrams show the other four forms. First is the open position chord, then the movable chord, then the movable scale.

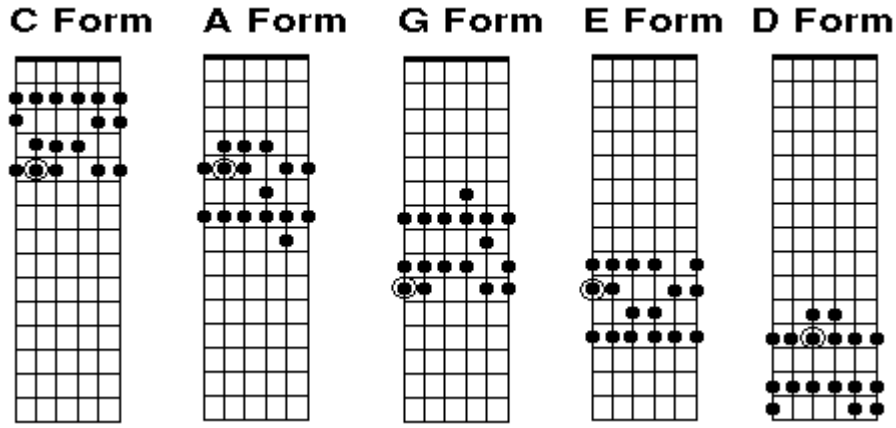


The CAGED System Of Organization

It is possible to play the major scales forms in open position, where there are actually open notes in the scale. These are not movable scales, since they have open notes in them, but they are the scales on which the movable scales are based. These five scales are diagrammed below.



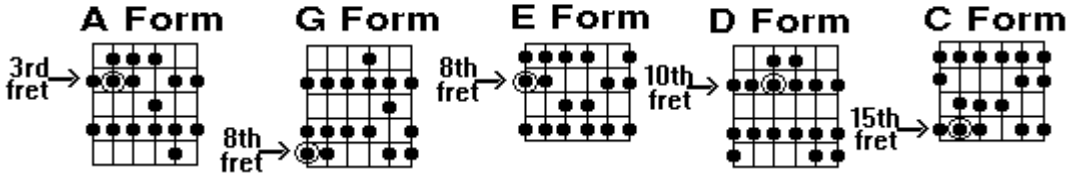
Each of the twelve major scales can be played five different ways on the guitar, once in each of the five scale forms. The following is an example of a D major scale played in each of the five forms.



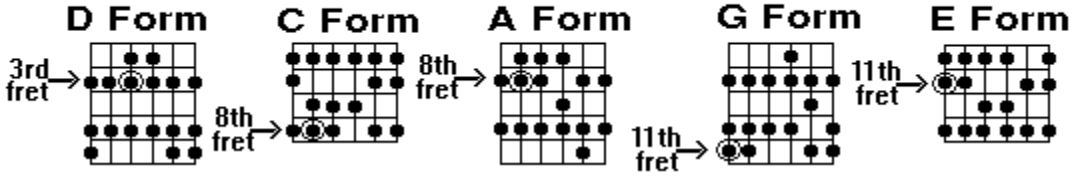
I started from the lowest position I could play a D major scale (the C form) and worked my way up the neck. They followed the order of C form, A form, G form, A form and D form. This order spells the word, CAGED. That is a helpful tool to help you remember the order the forms follow. Had I chosen a chord that began a different form, the order of forms would remain the same, except the starting form would change. For example, the F# scale begins on the E form. That is the lowest place on the neck that an F# scale can be played. The D form follows the E form, then the C form, then the A form, then the G form. So the order of forms is EDCAG. Each form still follows the same form it followed in the D scale example. The only difference is the starting chord.

The following is a chart showing the positions of all five forms of major scales in each of the twelve keys. Beside each of the form is the fret number where the tonic, or circled note is located.

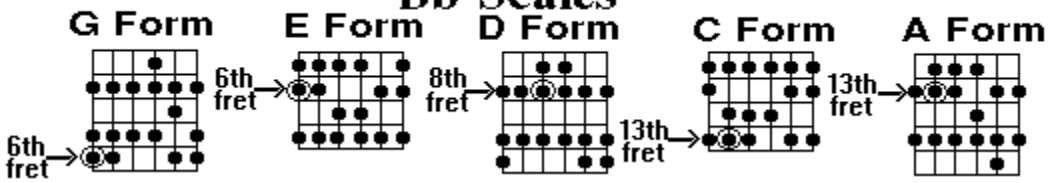
C Scales



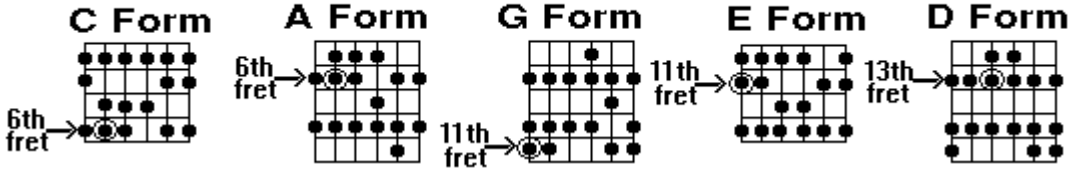
F Scales



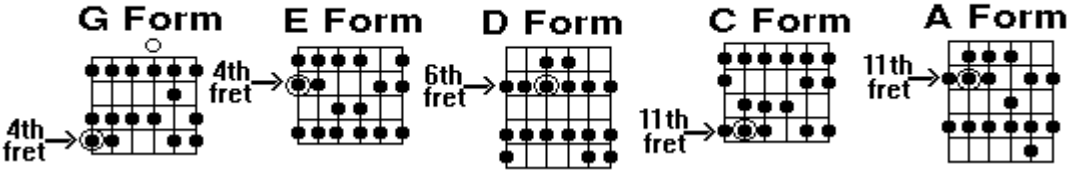
Bb Scales



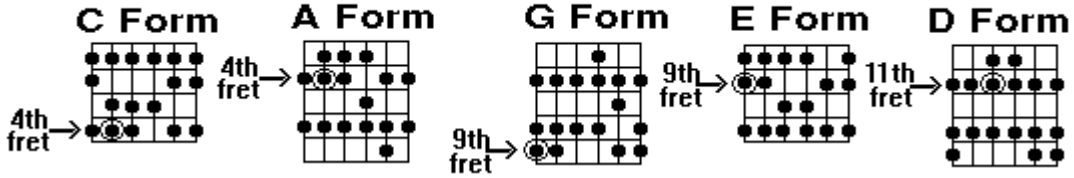
Eb Scales



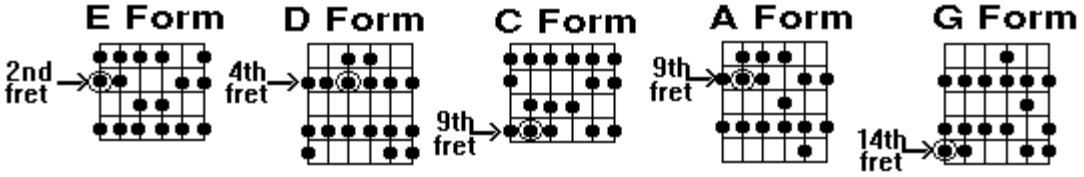
Ab Scales



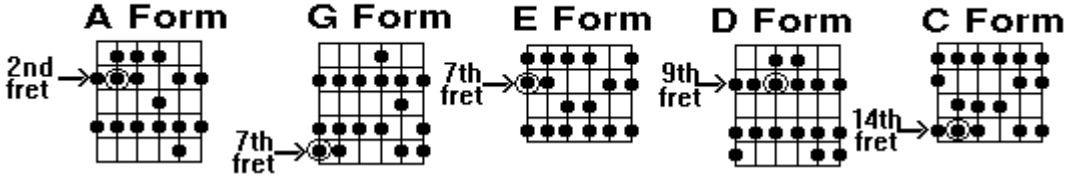
Db Scales



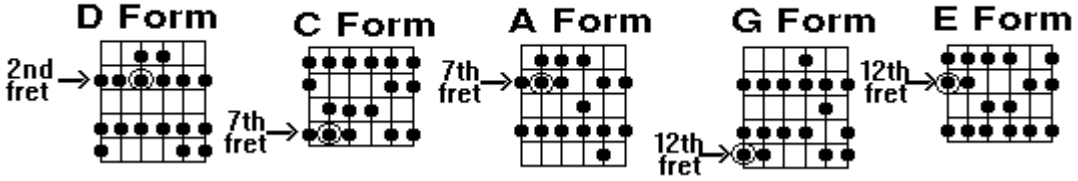
Gb or F# Scales



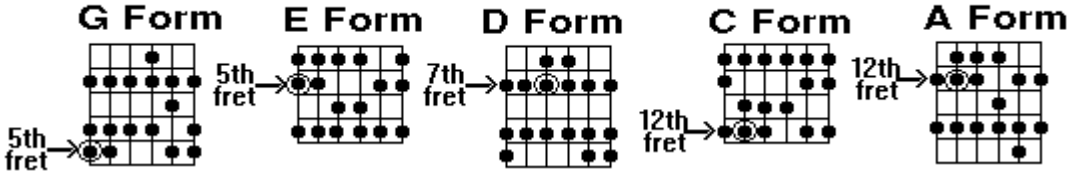
B Scales



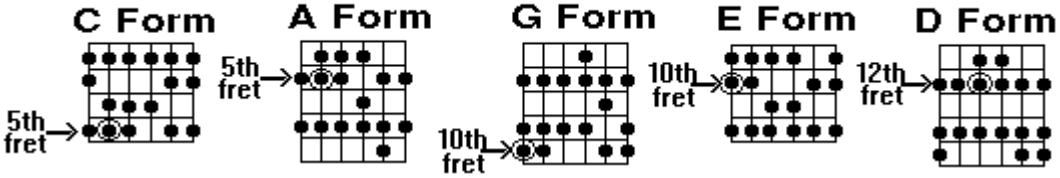
E Scales



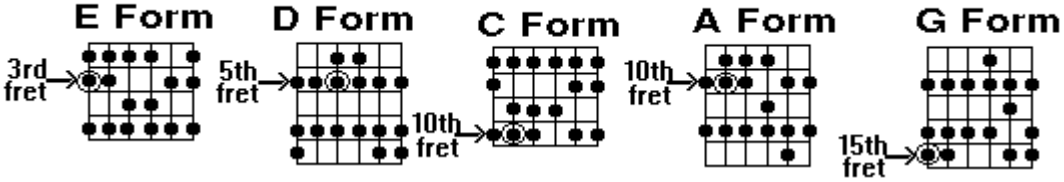
A Scales



D Scales



G Scales

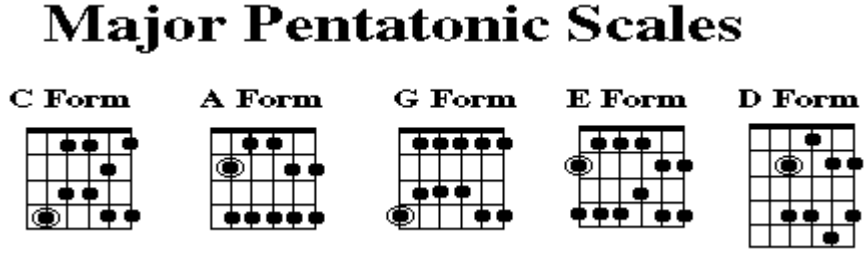


Major Pentatonic Scales

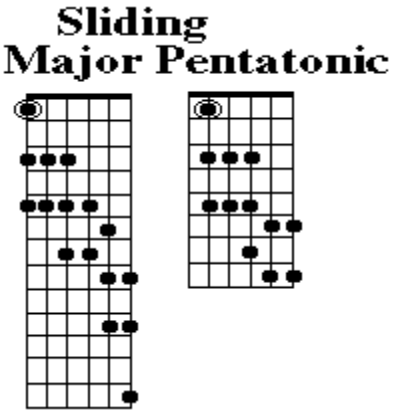
The major pentatonic scale is a five tone scale. It contains five of the seven tones of the major scale, and drops the other two. When improvising over a specific chord, the "safest" notes to use are, obviously, the chord tones themselves. For example, the C chord contains the notes C, E, and G. If one person were to play the C chord, it would be safe to play those three tones, since none of them will "clash" with the chord. The closer to a note, without actually playing the same note, the more likely it is that the note will clash. Because of this, notes that are a half step away from chord tones do not harmonize well with the chord tones. These tones are said to be "dissonant." The scale tones that are a whole step away are less harsh sounding than the half step. Tones that are not as harsh are said to be more "consonant."

In the C scale, the F note is a half step away from the chord tone, E. The B note is a half step away from the chord tone, C. Both the D and the A notes are at least a whole step away from any C chord tones. If the F and the B tones are dropped, we are left with a scale that is consonant to the C chord. The scale that remains is a C major pentatonic scale, containing the notes C, D, E, G and A. A major pentatonic scale is composed of the 1st, 2nd, 3rd, 5th and 6th tones of a major scale.

On the guitar, the major pentatonic scale can be played in five different forms, just as the major scales. The following diagrams show the five forms of the major pentatonic scales. The "root," or letter name of the scale is circled in each of the forms. The scales are movable, so they become different letter names by moving them up or down the fingerboard, as was done with the major scales.



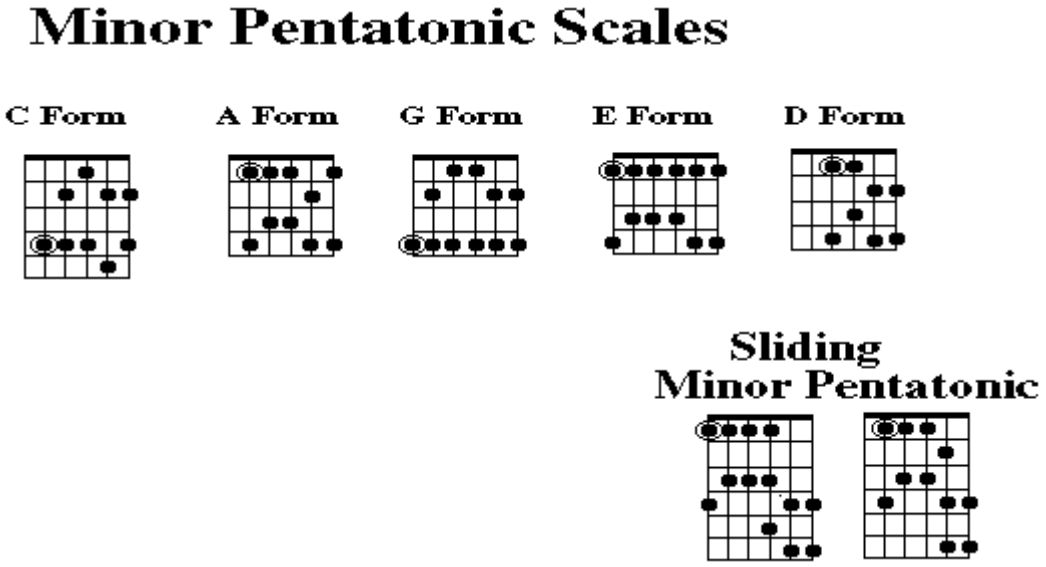
It is possible, and common practice to shift from one position to another by sliding a finger. The examples are two possible scales created by shifting from one form to another. You can try to invent others. There are many different possibilities.



Minor Pentatonic Scales

The minor pentatonic scale has a bit of a “bluesy” sound and has often been referred to as “The Blues Scale.” I do not call it that in this book, since I do make a distinction between this scale and another that I call the blues scale. The minor pentatonic has a bluesy sound because it has the third and seventh tones flatted from the major scale. In the key of C, that would be an Eb and a Bb. There are three other notes in the minor pentatonic scale. One is the C, and the other two notes are the notes a whole step away from C, Eb and Bb. These notes are F and G. The result is a scale consisting of the notes C, Eb, F, G, and Bb. The formula for finding any minor pentatonic scale is: the 1st, flatted 3rd, 4th, 5th and flatted 7th tones of any major scale.

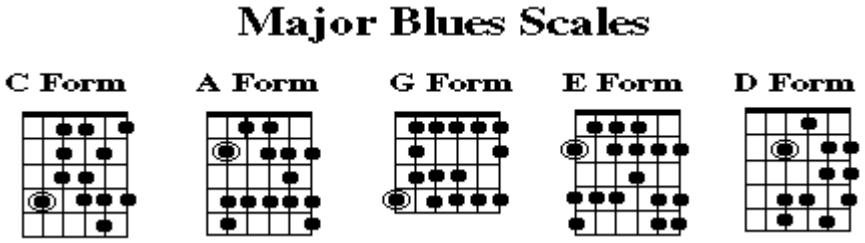
As with all scales have covered thus far, the minor pentatonic scales can be played on the guitar in the same five positions used for the major scale. The following is a diagram of the five forms. The location of the root in each scale is circled. These scales may be moved up and down the fingerboard to form any letter name minor pentatonic scale.



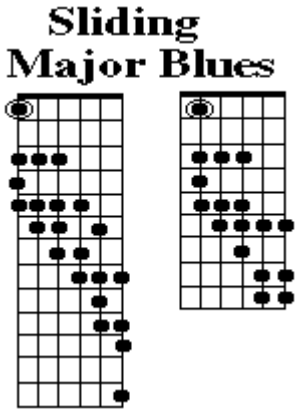
It is also possible to create shifting forms of the minor pentatonic scale. The following examples are a couple of the many possibilities.

Major Blues Scale

The major blues scale is a major pentatonic scale with a flatted third and a flatted seventh tone added to it. The formula is: root, 2nd, b3rd, 3rd, 5th and b7th. These are the five forms of the major blues scale.

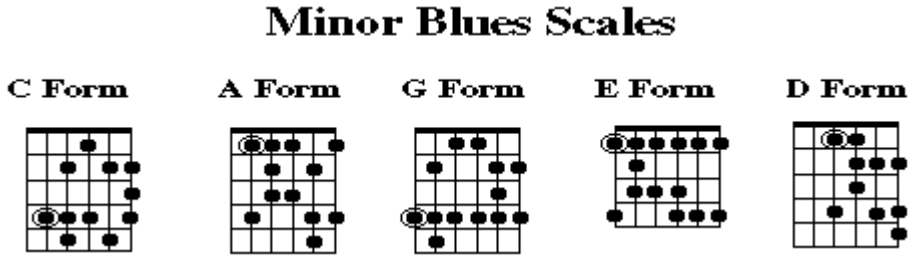


As with the minor pentatonic scales, it is possible to create shifting forms. These are two of the many possible combinations.



Minor Blues

The minor blues scale is constructed from the minor pentatonic scale. It has one more note added to the scale. The formula for the minor pentatonic is: root, b3rd, 4th, 5th and b7th. The minor blues includes the flatted 5th tone. The formula for the minor blues is: root, b3rd, 4th, b5th, 5th and b7th. These are the five forms of the minor blues scale.



These many also be combined to create many other possible forms. Here are two of the possibilities.