The Whole Scale Thing

By
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With profoundest thanks to John Nicholas who has proofread, edited, occasionally ridiculed and overall been a tremendous friend and supporter as I've tried to put on paper some of the things I've learned in five decades of teaching guitar.

The Whole Scale Thing
Introduction

What is a scale? Is it the "*Do, a deer, a female deer; Re, a drop of golden sun"* stuff? (Have I just destroyed my street cred by quoting a Rogers and Hammerstein tune in the opening paragraph?) Why do guitarists get to a certain point in their development and start to obsess about these things?

A scale, according to the American Heritage Dictionary, is "an ascending or descending collection of pitches proceeding by a specified scheme of intervals". (Anyone who has survived a college ear-training class understands those scheming intervals.) So, a scale is indeed the *Do, a Deer* stuff, and it is much more. "Scheme of Intervals" just means an organized pattern of intervals, or musical spaces, which can repeat over several octaves. Guitarists, as well as some people who play *real* musical instruments, obsess over scales because blasting through a scale pattern at near relativistic speed is a great way to display one's technical superiority, humiliate the competition and attract a mate, thus ensuring the survival of the genetic line. The poor creatures have no choice – it's in their DNA.

Before we get to the serious fun, let's cover some basics , just to makes sure we have a common vocabulary.

Basic Theory

The space between two notes is called an *interval*. The smallest space you can have between two notes is a half-step, one fret on the guitar. I like to think about note relationships spatially. Start with the chart below listing the chromatic scale from C to C. Each box represents a single half-step.

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

To understand the way we name the intervals we must first look at a major scale. Below we've removed the sharps and flats and we're left with the notes of a C major scale.

C		D		E	F		G		A		B	C

Intervals are named with numbers. If we want to know the interval between a C and an E, we simply count: C, D, E; 1, 2, 3; the interval is a *third.* How far is it between C and A? C, D, E, F, G, A; 1, 2, 3, 4, 5, 6; This interval is a *sixth.* What is the interval between D and F? It's another third. But notice it's farther from C to E than from D to F.

C		D		E

D		E	F

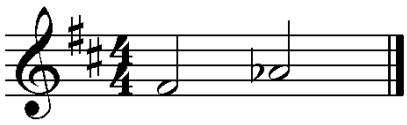
There are 4 half-steps between C and E and 3 half-steps between D and F. The larger interval is called a *major 3rd* and the smaller is a *minor 3rd.* The chart on the next page shows the interval names and the associated number of half-steps between C and all the notes in the octave above C.

C	Db	D	Eb	E	F	Gb	G	Ab	A	Bb	B	C
0	1	2	3	4	5	6	7	8	9	10	11	12
unison	Minor 2nd	Major 2nd	Minor 3rd	Major 3rd	Perfect 4th	dimin-ished 5th	Perfect 5th	Minor 6th	Major 6th	Minor 7th	Major 7th	Perfect octave

Notice that the sharps have been removed from the preceding chart. There are other considerations besides the number of half-steps when identifying intervals: C to D# is not the same as C to Eb. Yes, D# and Eb are the same pitch, *but* when identifying intervals you also have to consider the *letter names* of the notes. Count the letters from C to D# - it's still C, D; 1, 2 - a second of some kind even though it's a D#. We call that space an *augmented second.* The chart below uses the sharps and the alternate names of the intervals.

C	C#	D	D#	E	F	F#	G	G#	A	A#	B	C
0	1	2	3	4	5	6	7	8	9	10	11	12
unison	Aug-mented unison	Major 2nd	Aug 2nd	Major 3rd	Perfect 4th	Aug 4th	Perfect 5th	Aug5th	Major 6th	Aug 6th	Major 7th	Perfect octave

So, you've got this interval thing covered, right. Not quite. There is one (only one, I promise) more thing to consider when naming intervals: mixed accidentals - the use of sharps in a flat key signature (or vice-versa). Consider the following:



The first note is an F sharp (note the key signature) and the second is an A flat. That's a distance of 2 half-steps, or one whole step. But, again, we have to consider the *letter names* of the notes, F and A. That's F, G, A; 1, 2, 3, so the interval has to be a kind of third. A major third is 4 half-steps, a minor third is 3 half-steps. This new beast is called a ***diminished third***. I tend to relate this stuff back to the intervals derived from the major scale. In the C major scale, C to A is a major sixth; C to A flat is a minor sixth. We can make that interval smaller (diminished, get it?) by either raising the the C to a C sharp or lowering the A flat to an A double-flat. Either case would be called a diminished sixth. Will you need to understand diminished intervals to complete your knowledge of chords and scales? Not really - where it becomes relevant is in formal music theory study, generally around the second semester of college music theory. If that's not your path then consider it knowledge for knowledge's sake. Not a bad thing.

A Brief Word About Modes and Naming Scale Fingerings

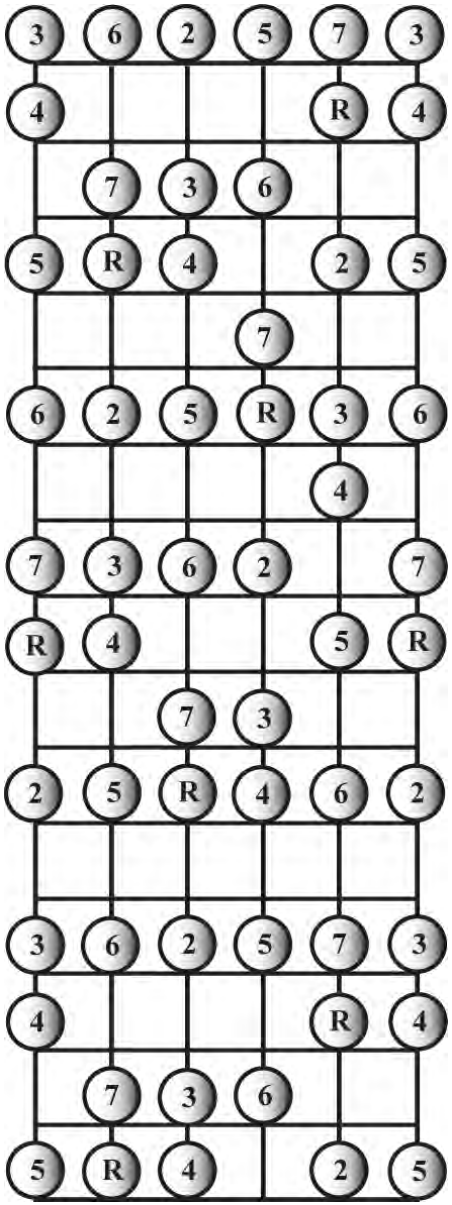
The reason most of you are embarking on this study of scales is to find some new, cool sounding things to play when you're soloing. When we start discussing the application of scales to chords we're talking about ***modes***. A veritable cottage industry has grown out of making the study of modes complex. **It's not**. Simply put, the same scale takes on a different sound when played against different chords. A C major scale can be used over a C major 7 or an F major 7. Even though the notes are the same, the effect of the C scale is different depending on which chord is being played. These effects are given names, sometimes exotic sounding like lydian, sometimes just a number, the 2 mode of a harmonic minor, for example.

One of the confusing thing about studying scales on the guitar is the lack of a standard set of names for the different fingerings. Many, many books try to solve this problem by applying modal names to fingerings, based on the first note of the scale shape. **This is stupid**. In improvisation, the modal designation is dependent upon the chord being played. A single fingering can be used against numerous chords, with a different modal name for each chord. So, **a fingering pattern is not a mode!**

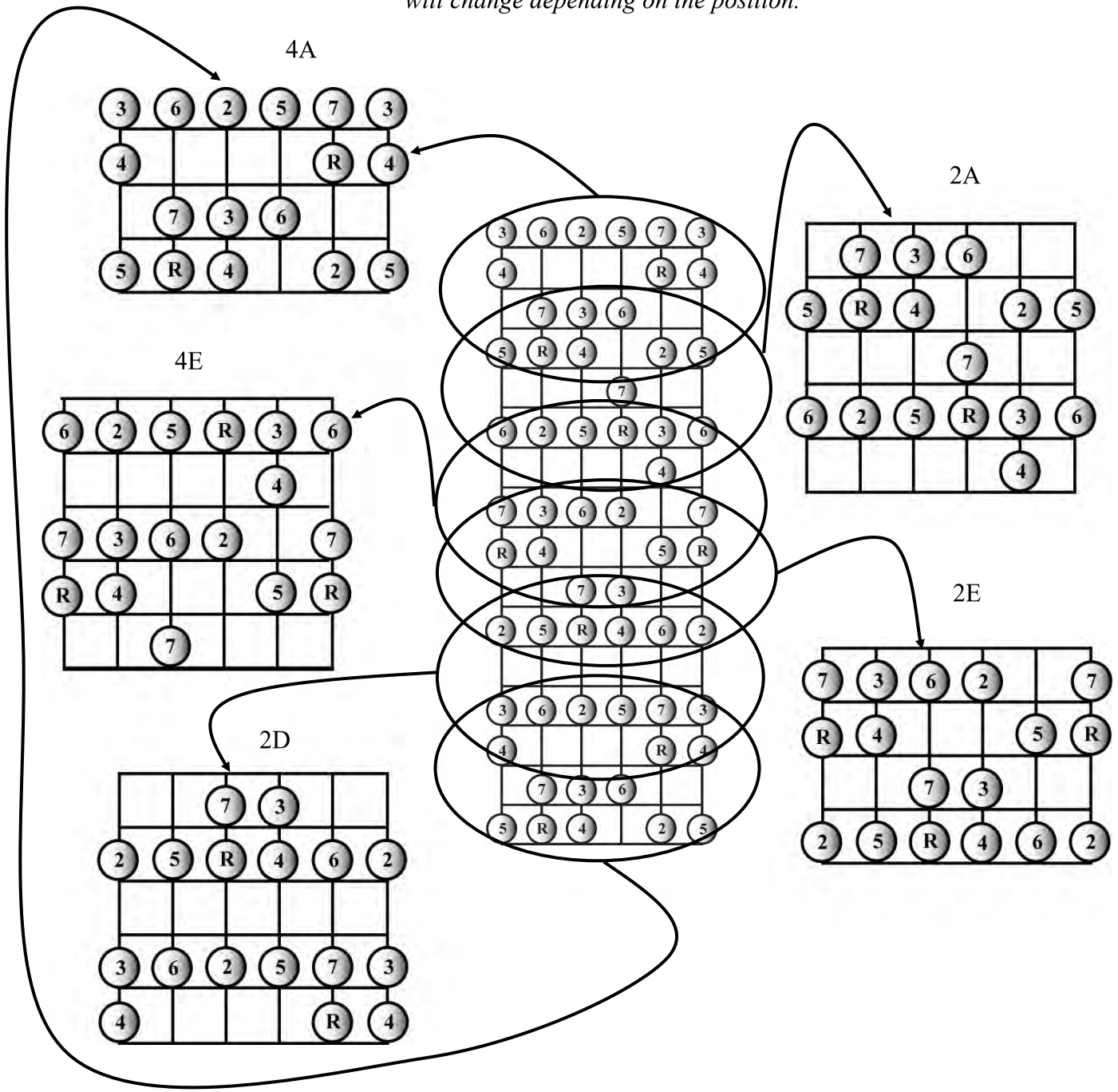
We will have a much more detailed discussion of modes when we talk about applying major scales at the end of the next section of this book.

I've applied a naming convention to the scale shapes (patterns) that is borrowed from Leon White in his excellent book on developing good reading skills, *Sight to Sound*. The pattern is named by the location of the lowest root note of the key; the number is the finger that plays the note and the letter is the string it's on.

All the notes of a C scale, from the nut to the 13th fret. Numbers are the scale degree.

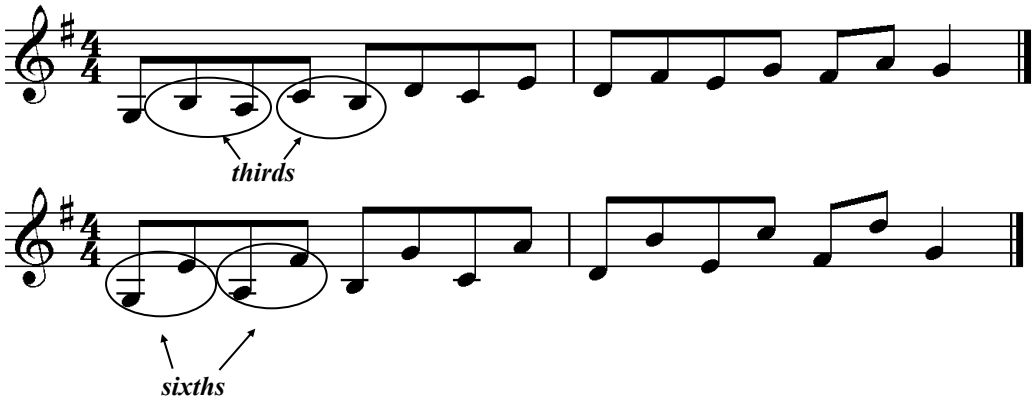


The Five basic major scale patterns derived from the chart at left. These shapes may be played anywhere on the guitar neck; the key will change depending on the position.



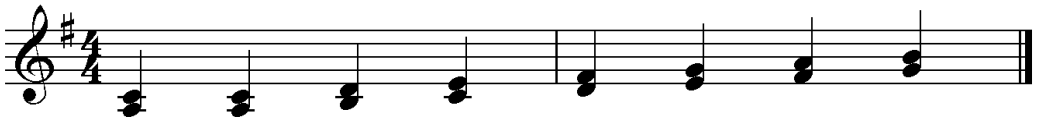
There are no shortcuts - you must simply take the time to memorize the material on the preceding page. Keep in mind as you learn a pattern, also learn how it overlaps the patterns above and below it. This will make it easier to move smoothly over the entire length of the neck. In this chapter we'll take each of the five shapes and apply a series of exercises to it.

Exercises are created by applying a repeated series of intervals to the scale fingering. Some of the exercises will be labeled by an interval name, thirds or sixths, for example.

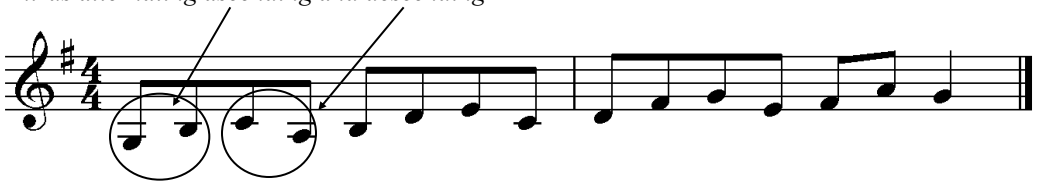


These interval based exercises can be played simply, as above, or they may have variations, as below.

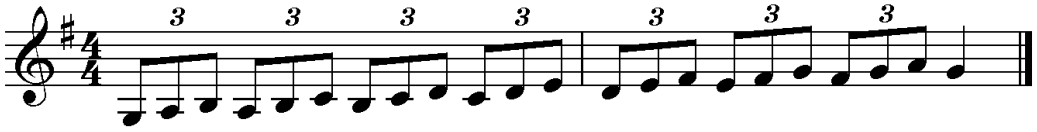
Thirds played together (harmonic intervals)

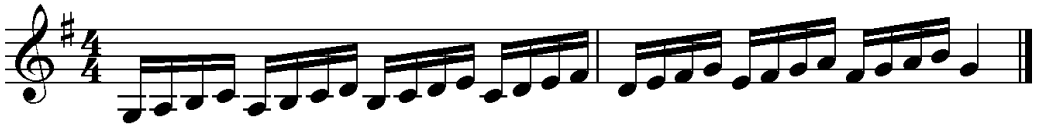


Thirds alternating ascending and descending



Exercises are also created by playing the scale in groups or 3 or 4.

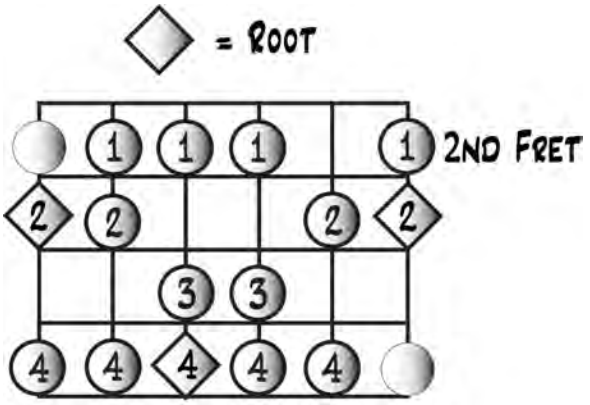


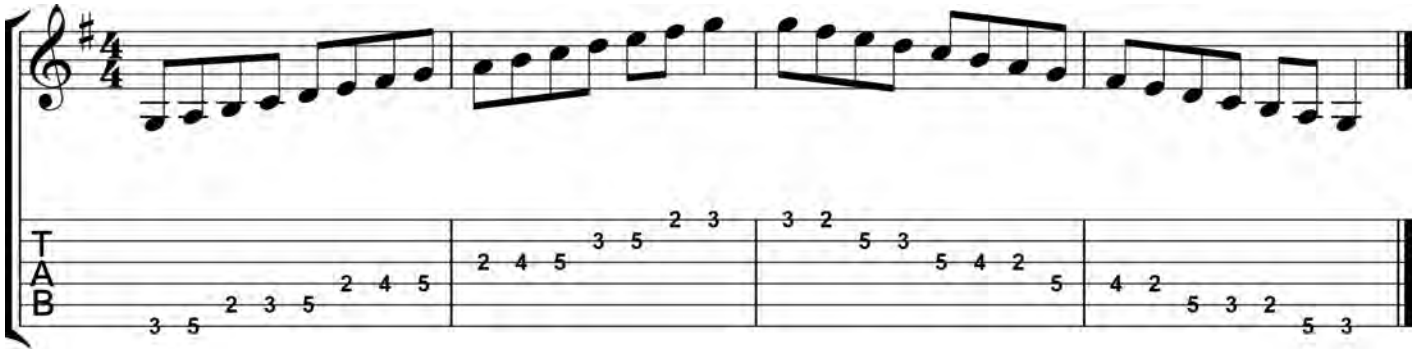


Scale Position Studies

Number one, Pattern 2E, Key of G

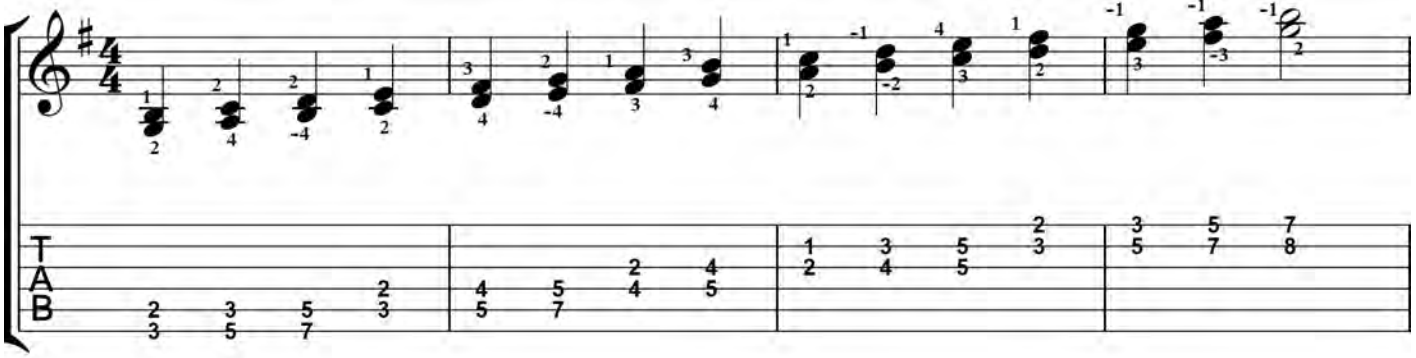
Numbers are left hand fingers.

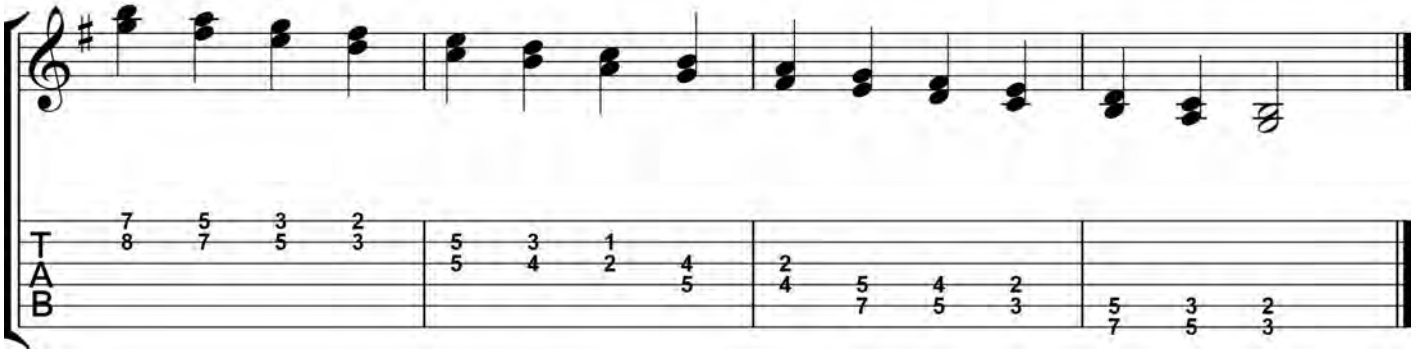




Thirds

Harmonic intervals





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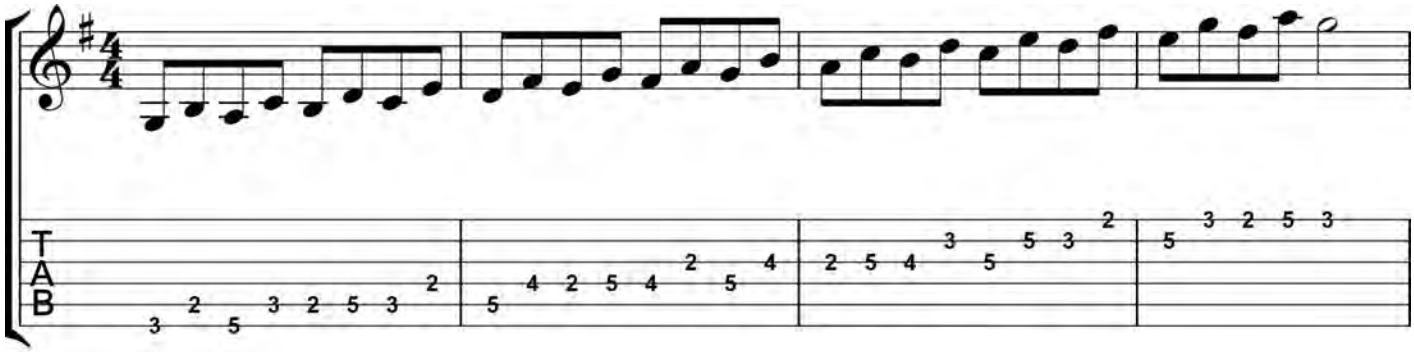

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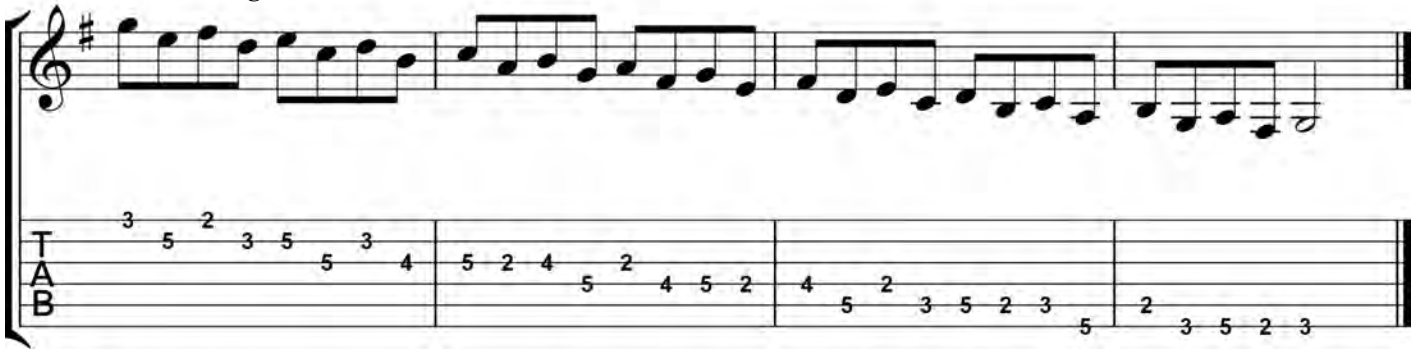
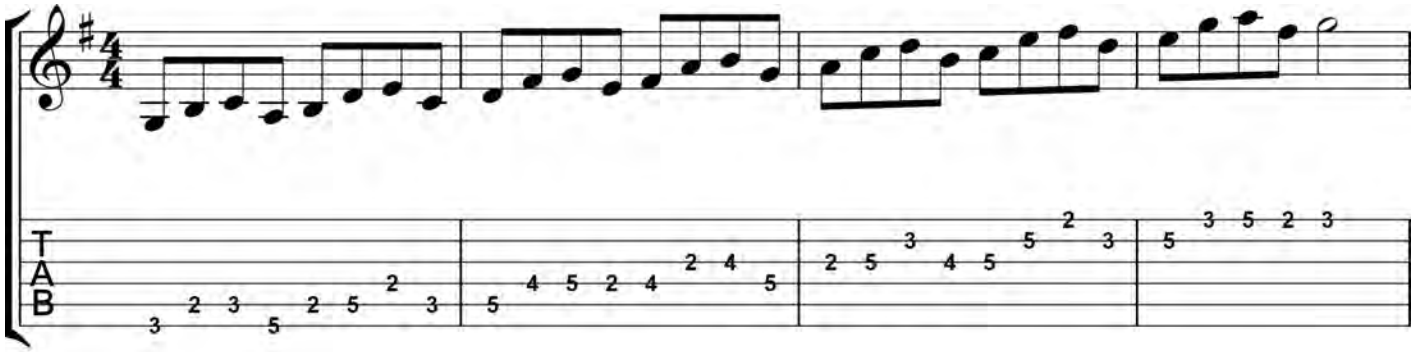
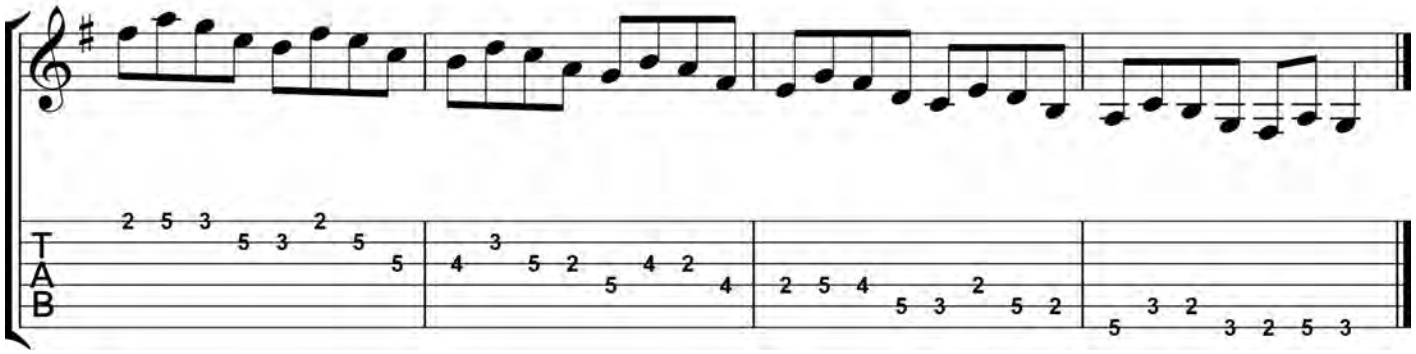


Alternating ascending and descending

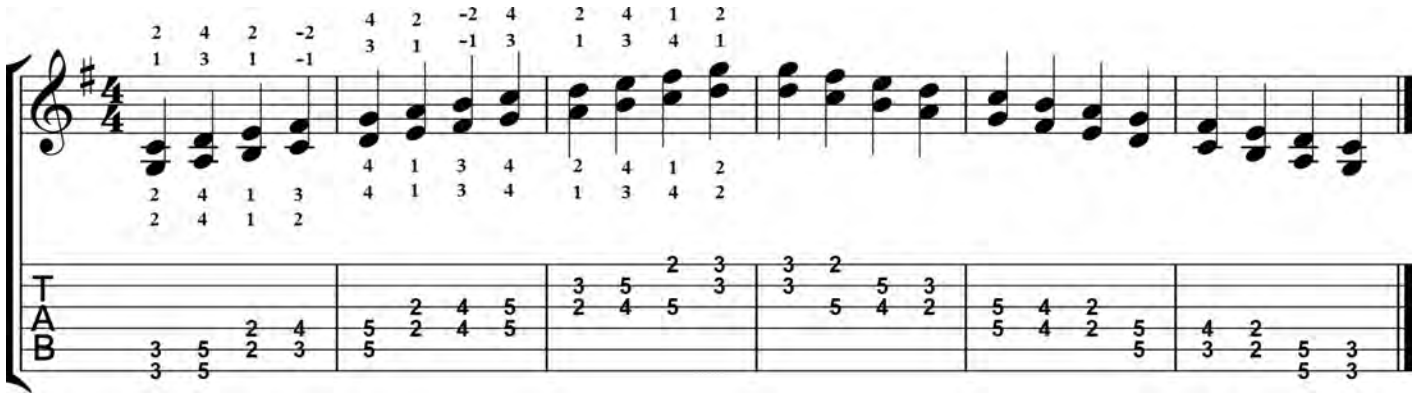




Fourths

Playing some harmonic intervals can present technical issues on the guitar. For this reason I've included two fingerings here, the first uses one left hand finger to cover two strings in a "mini bar", and the other which avoids that technique.

Harmonic intervals



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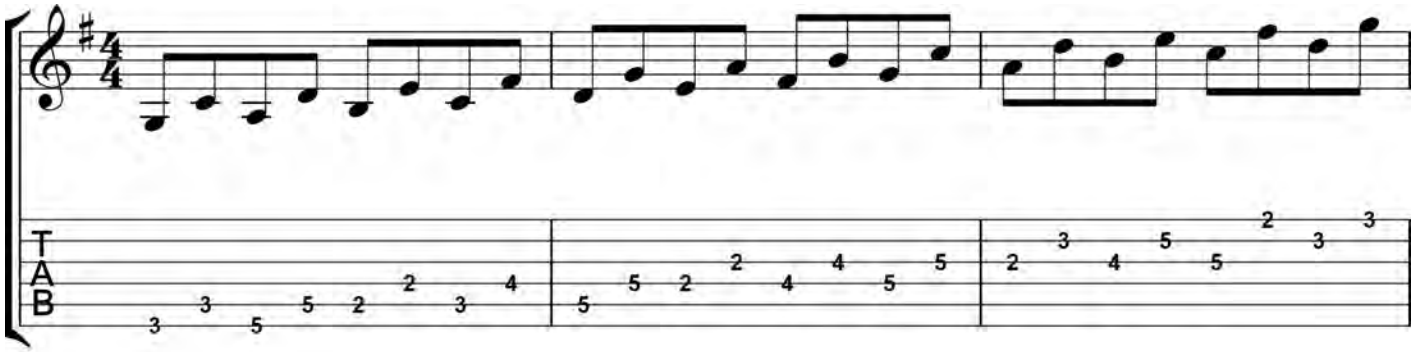

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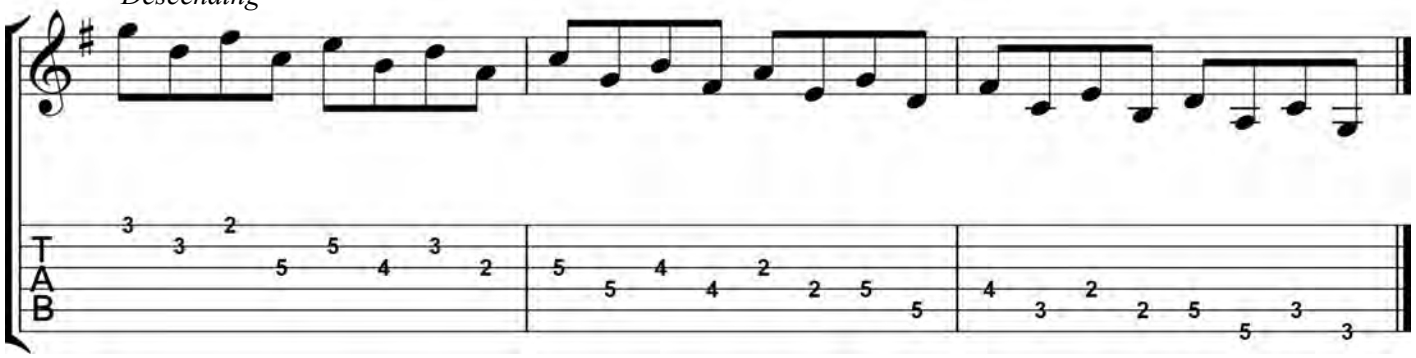
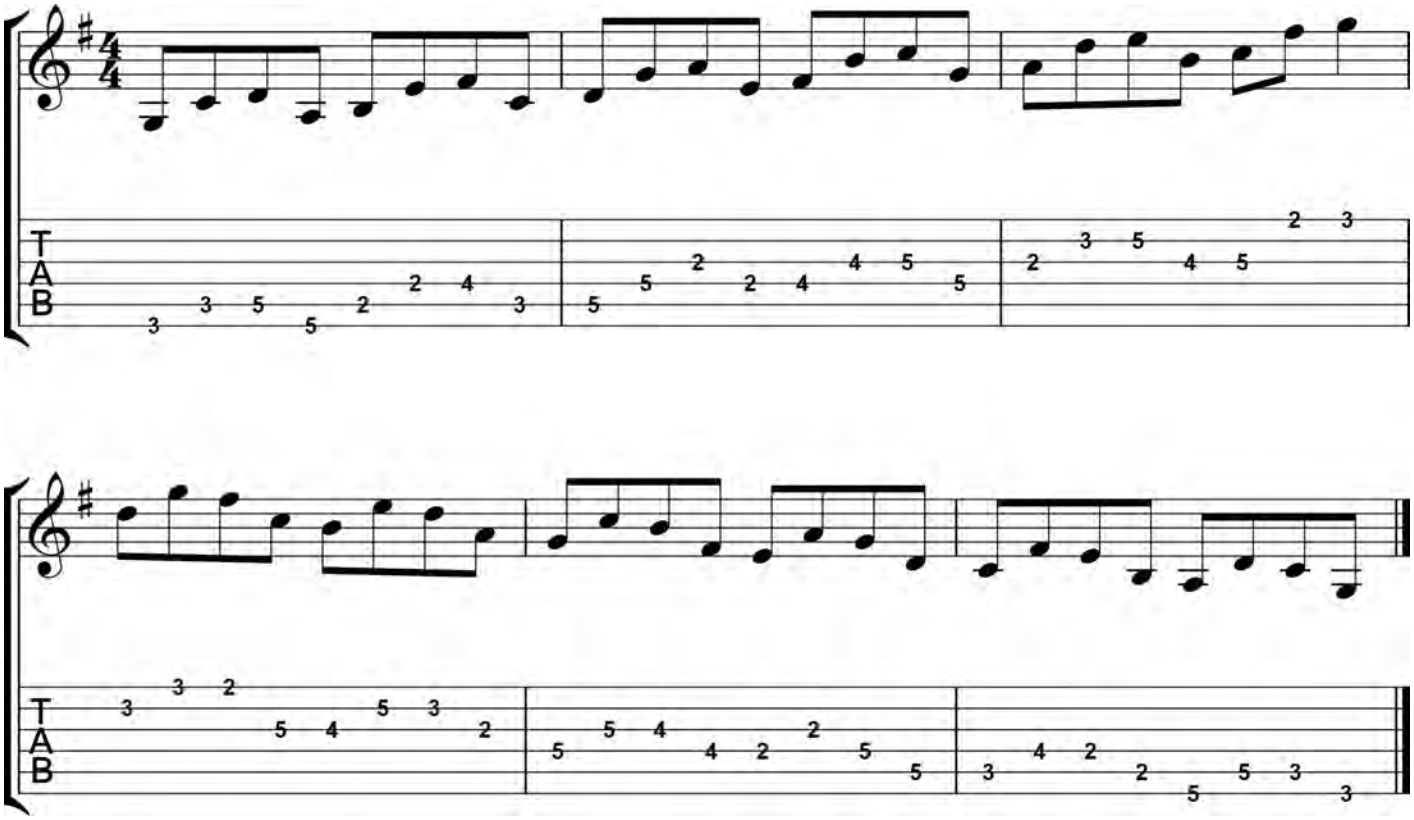


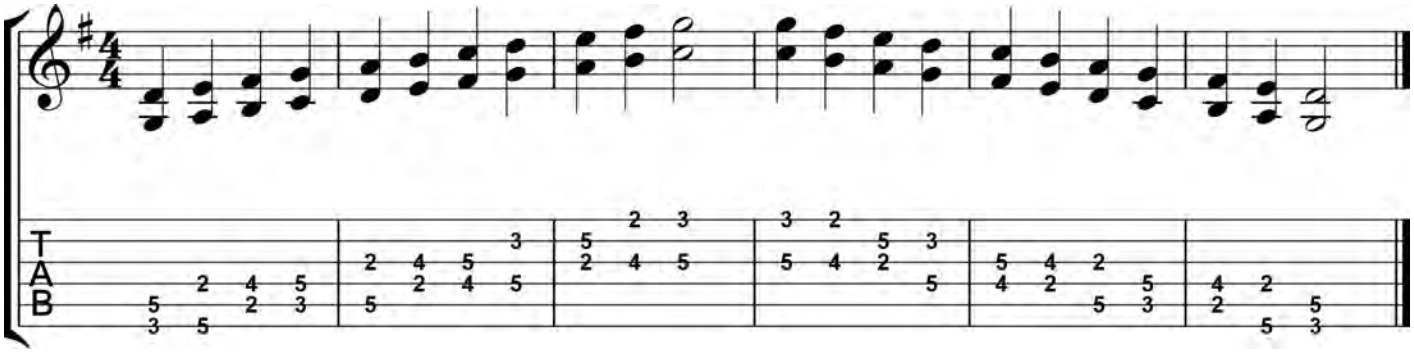
Alternating ascending and descending



Fifths

From this point forward, unless given alternate fingerings, try to use the same left hand fingering you used to play the scale

Harmonic intervals



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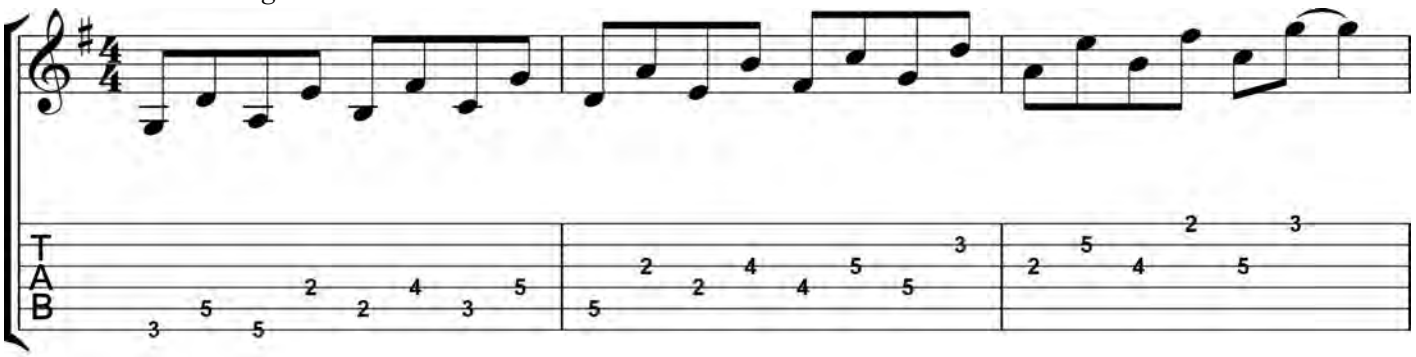

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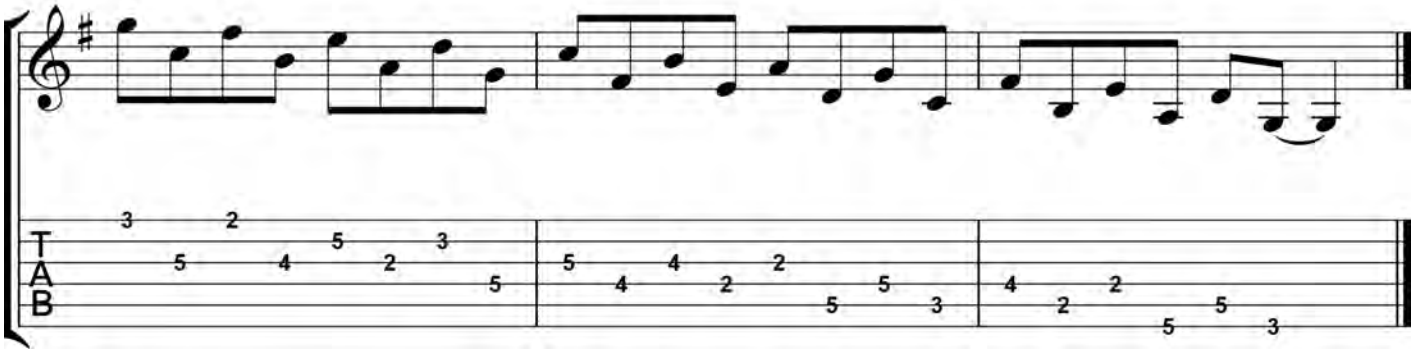
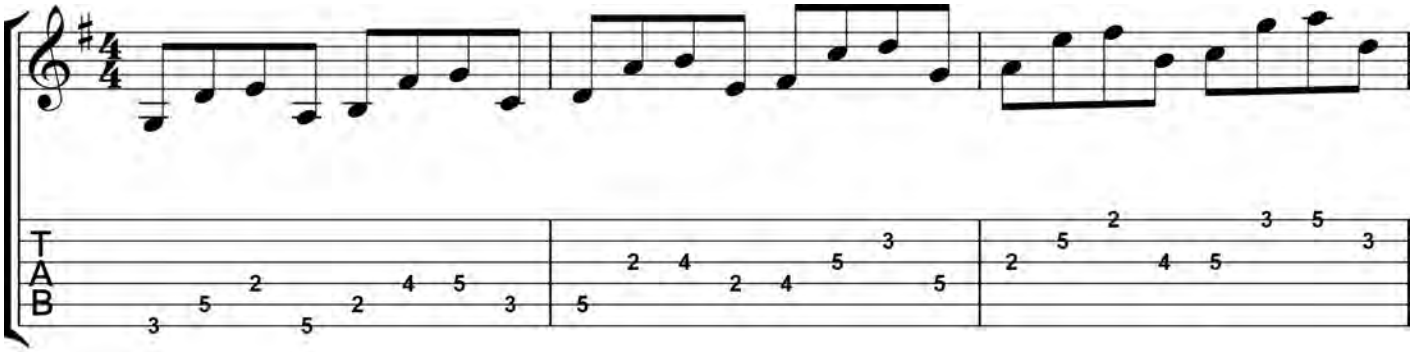
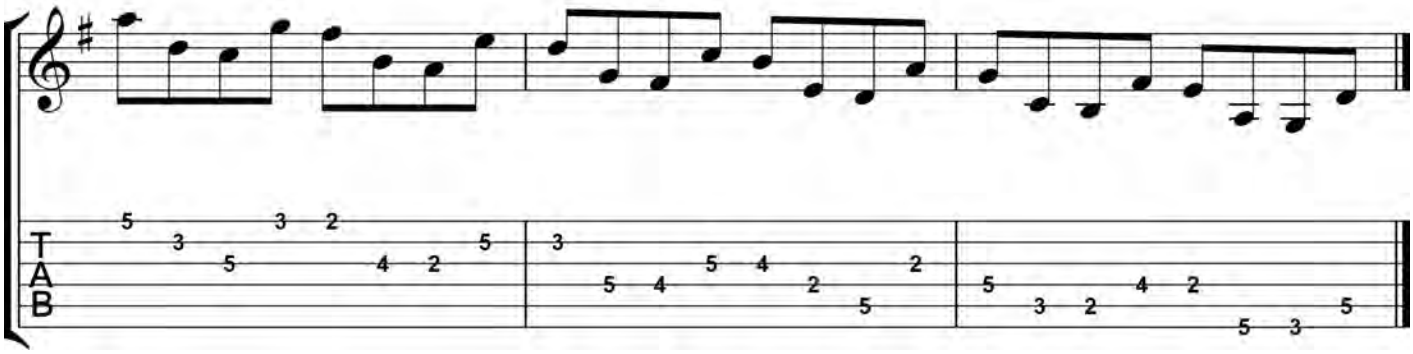


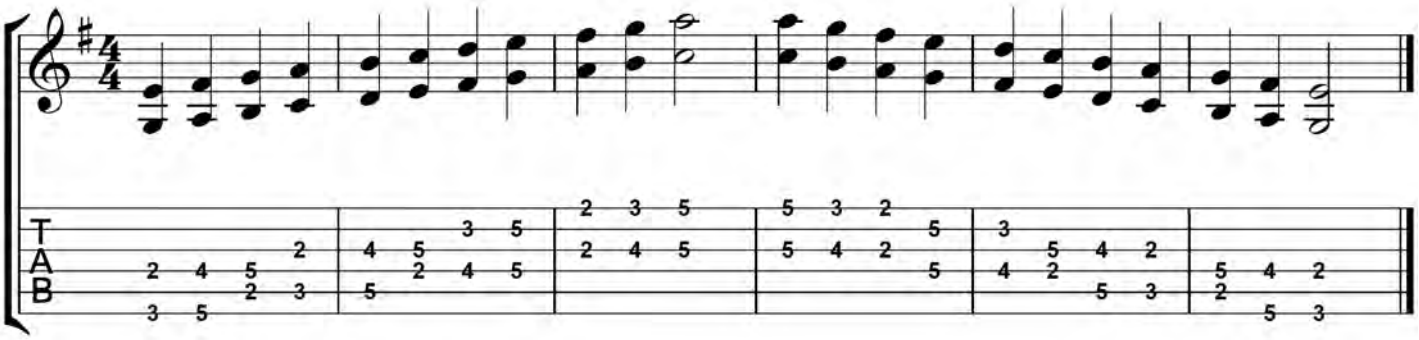
Alternating ascending and descending





Sixths

Harmonic intervals



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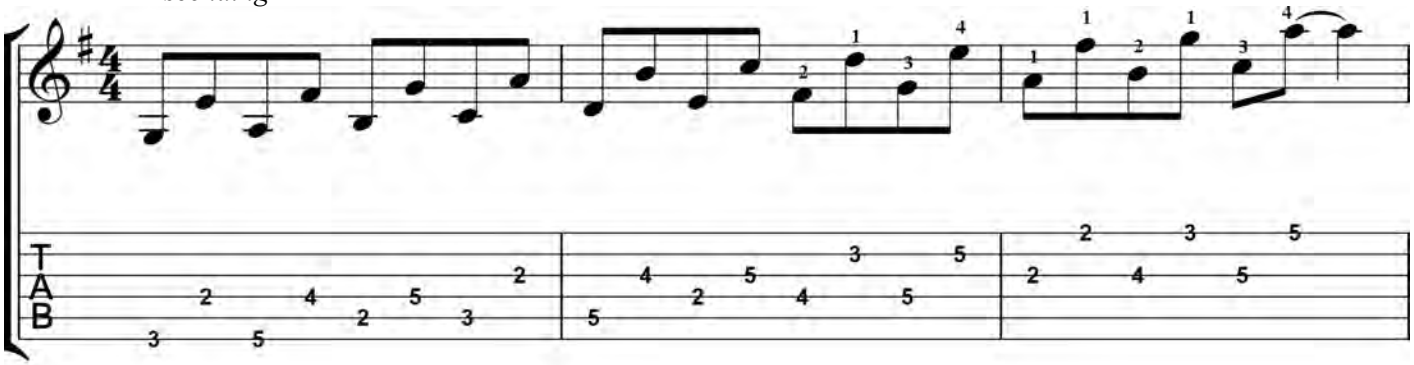

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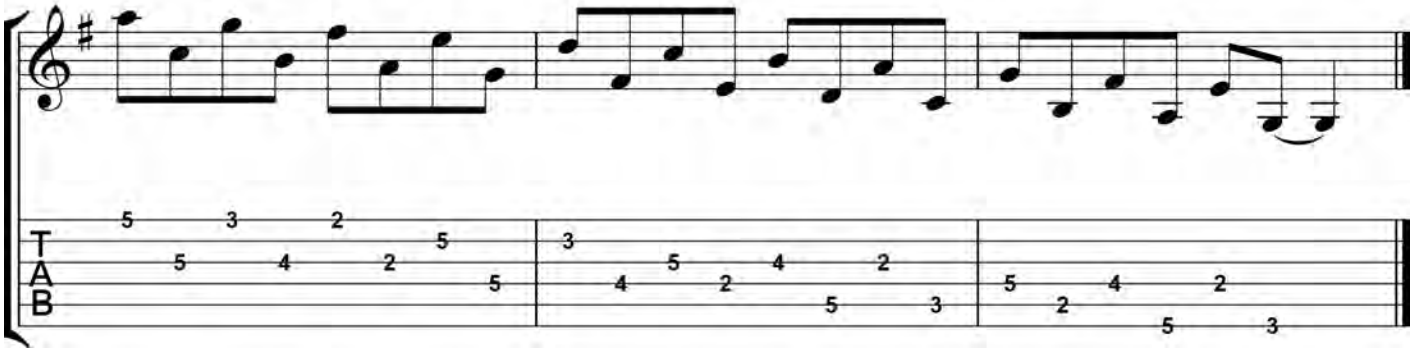
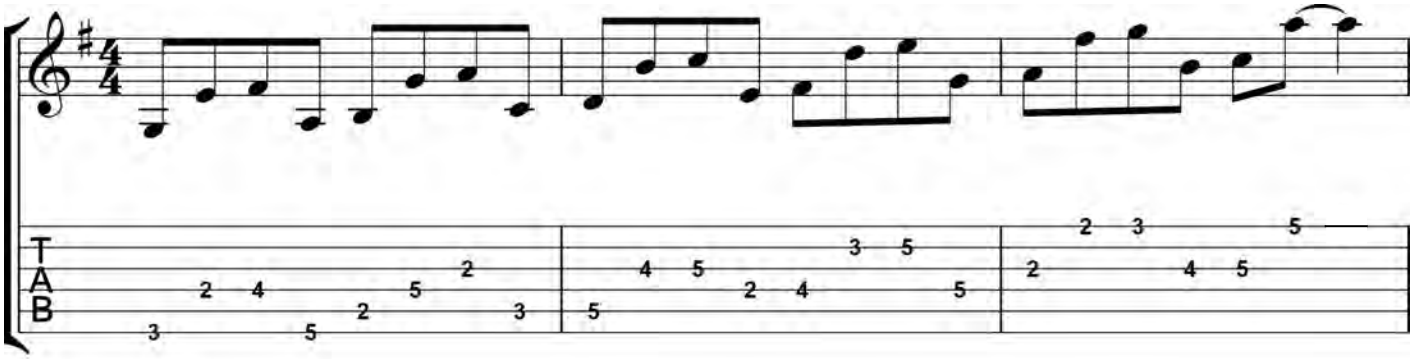
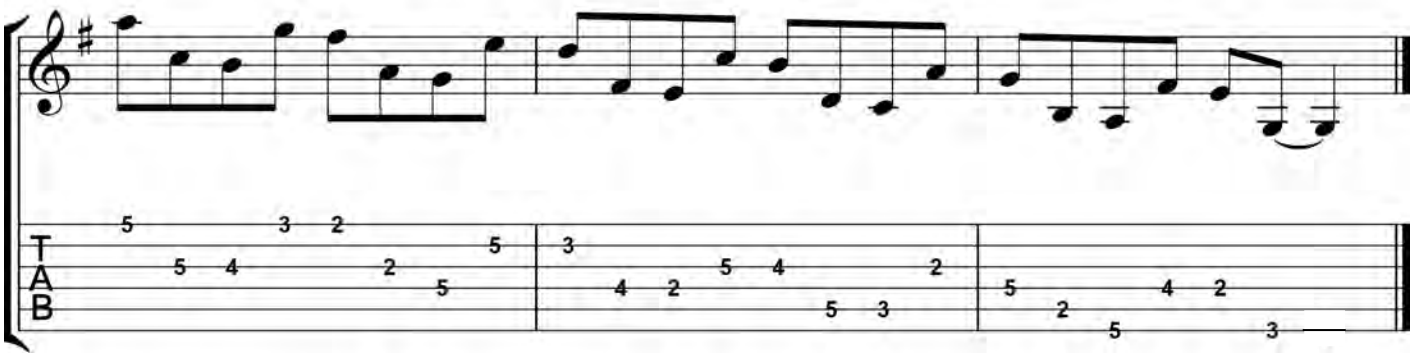


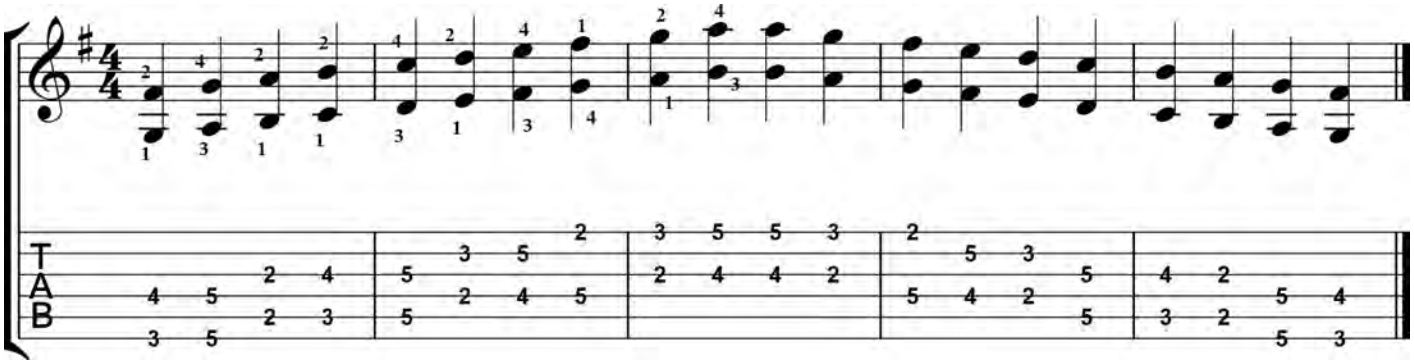
Alternating ascending and descending





Sevenths

Harmonic intervals



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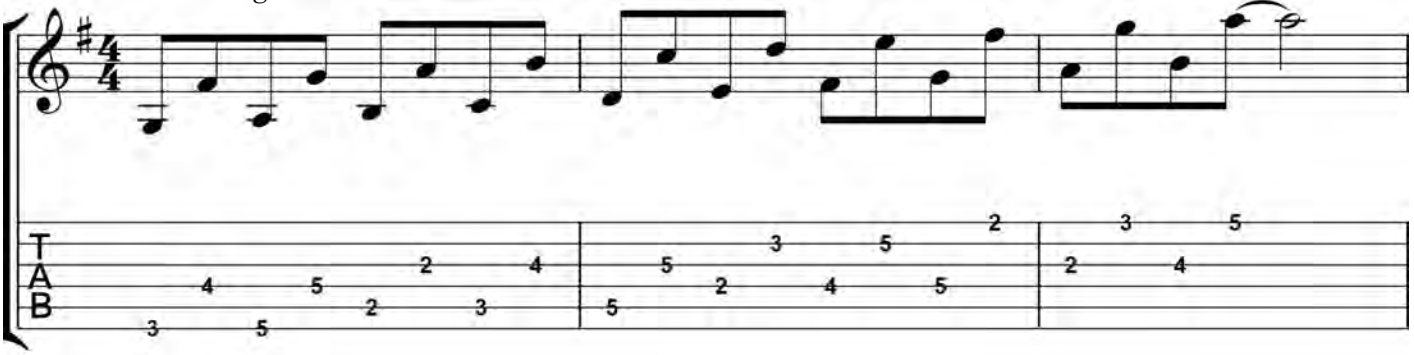

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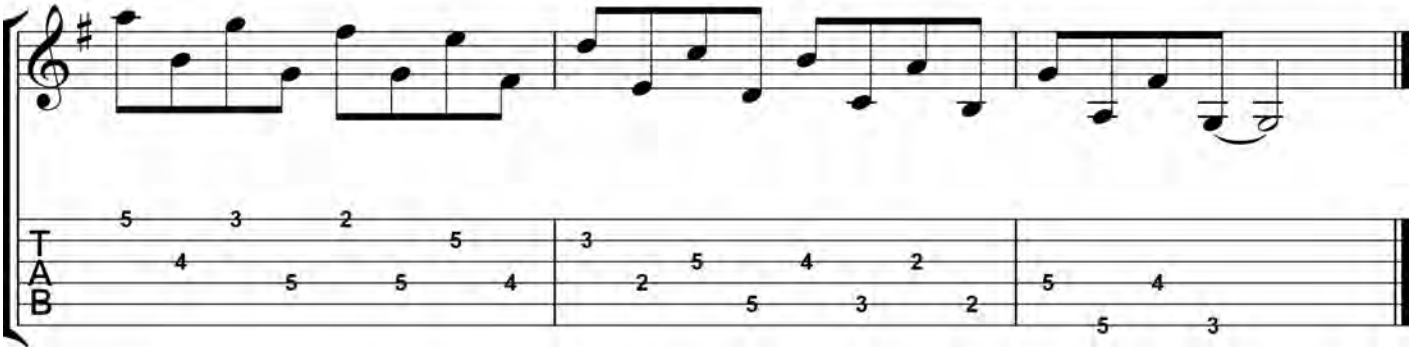

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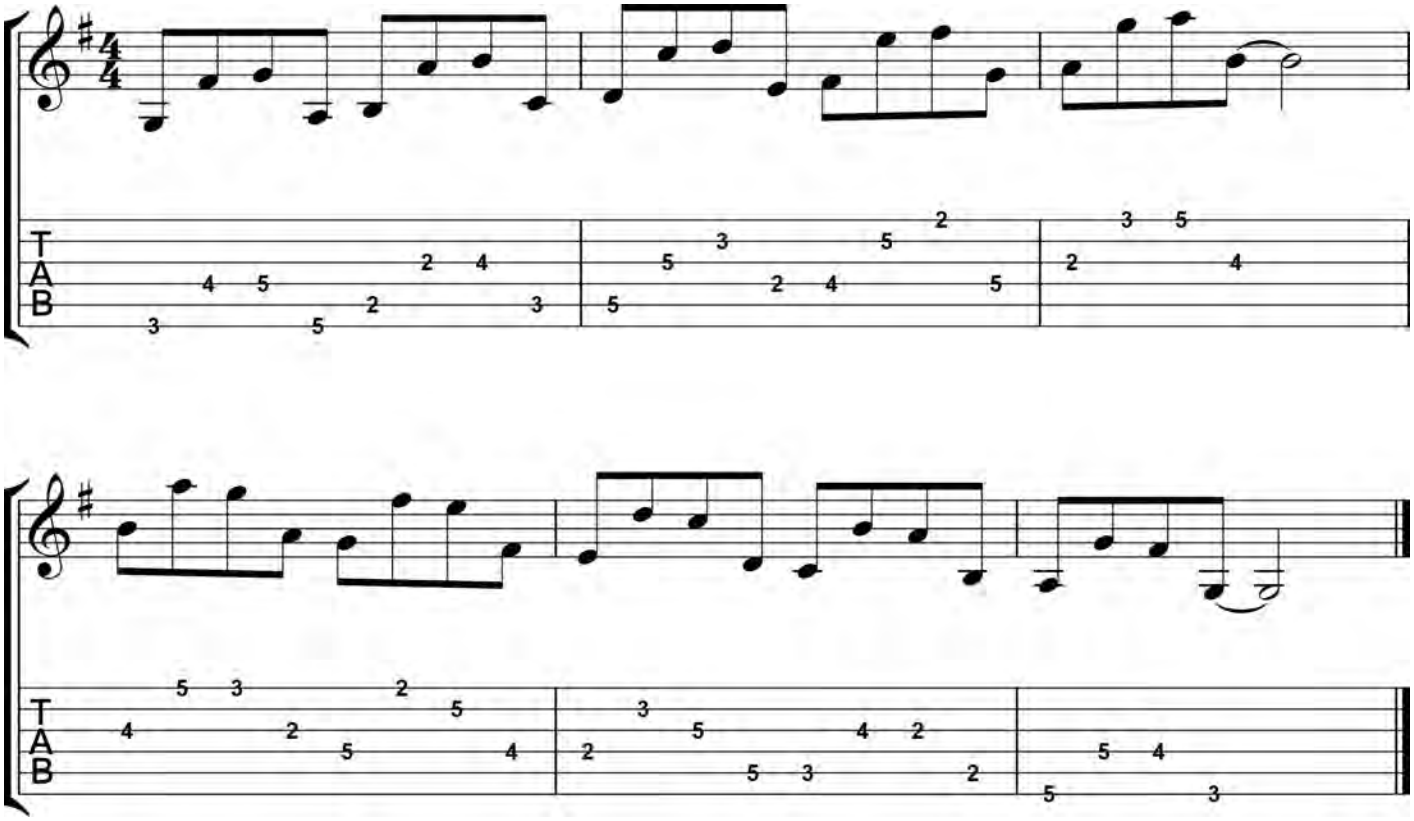
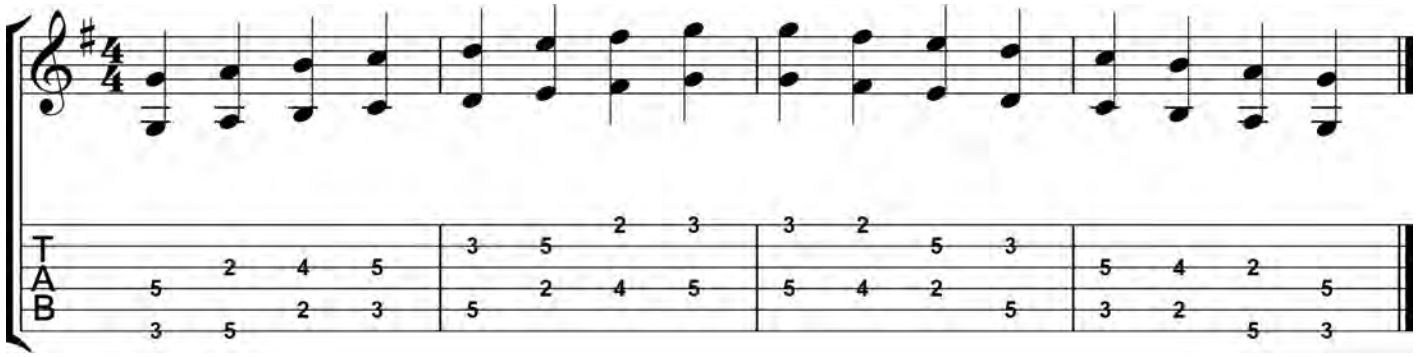


Octaves

Harmonic intervals



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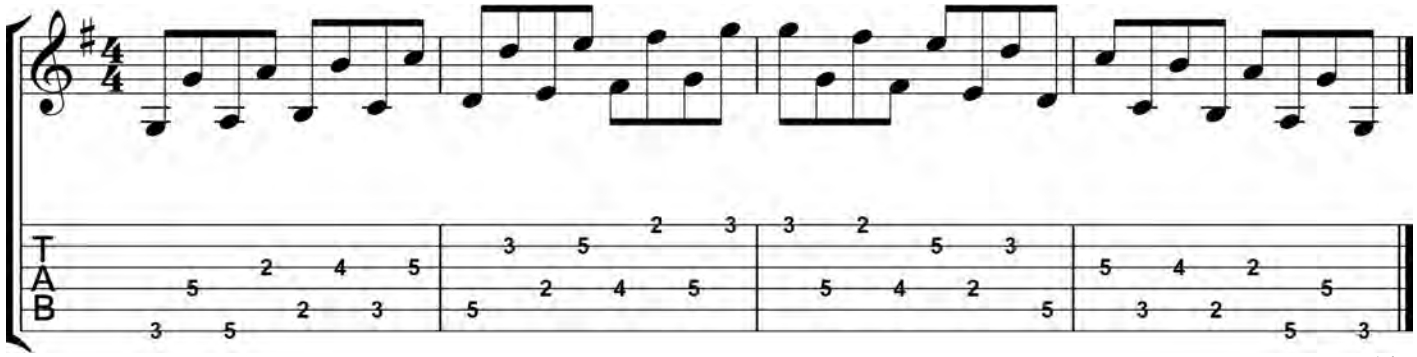
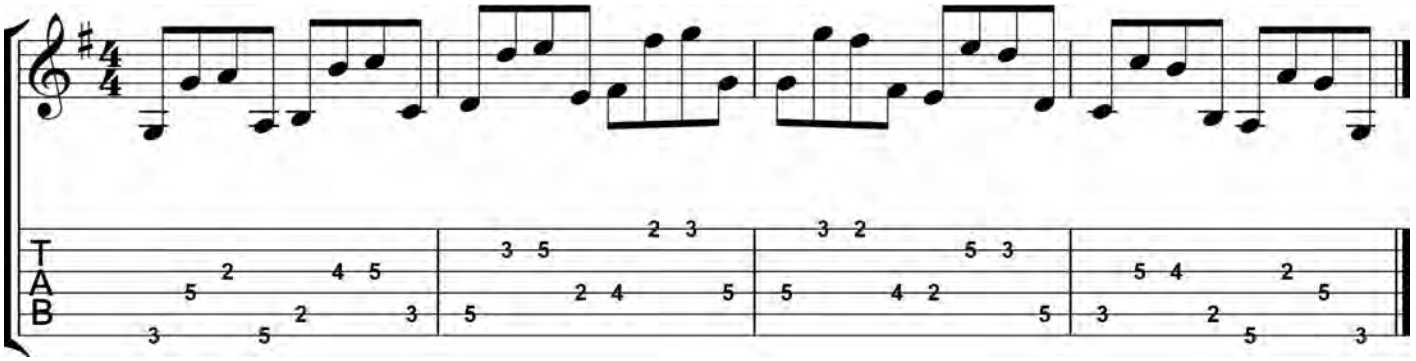
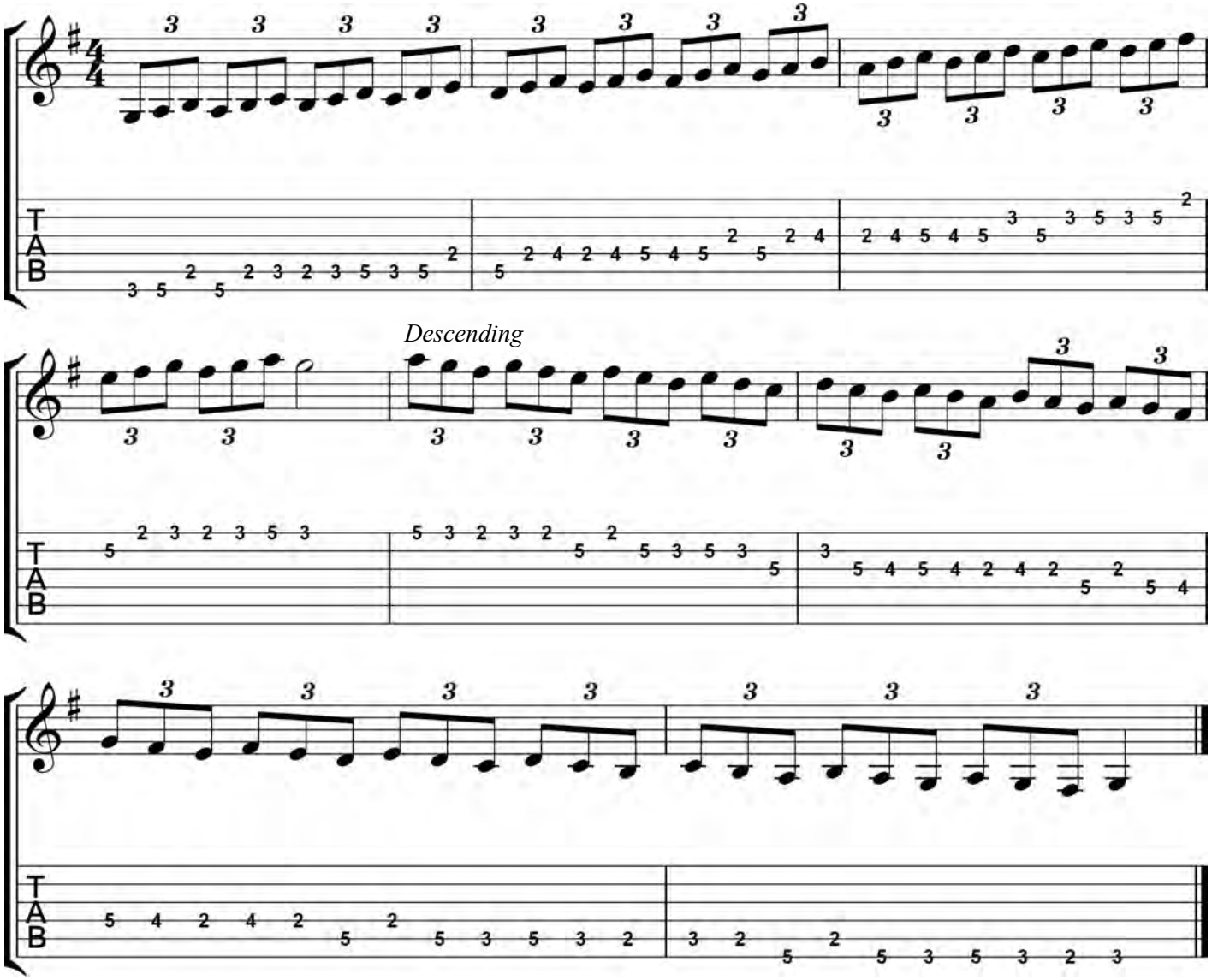




Groups of 3

Ascending

Descending



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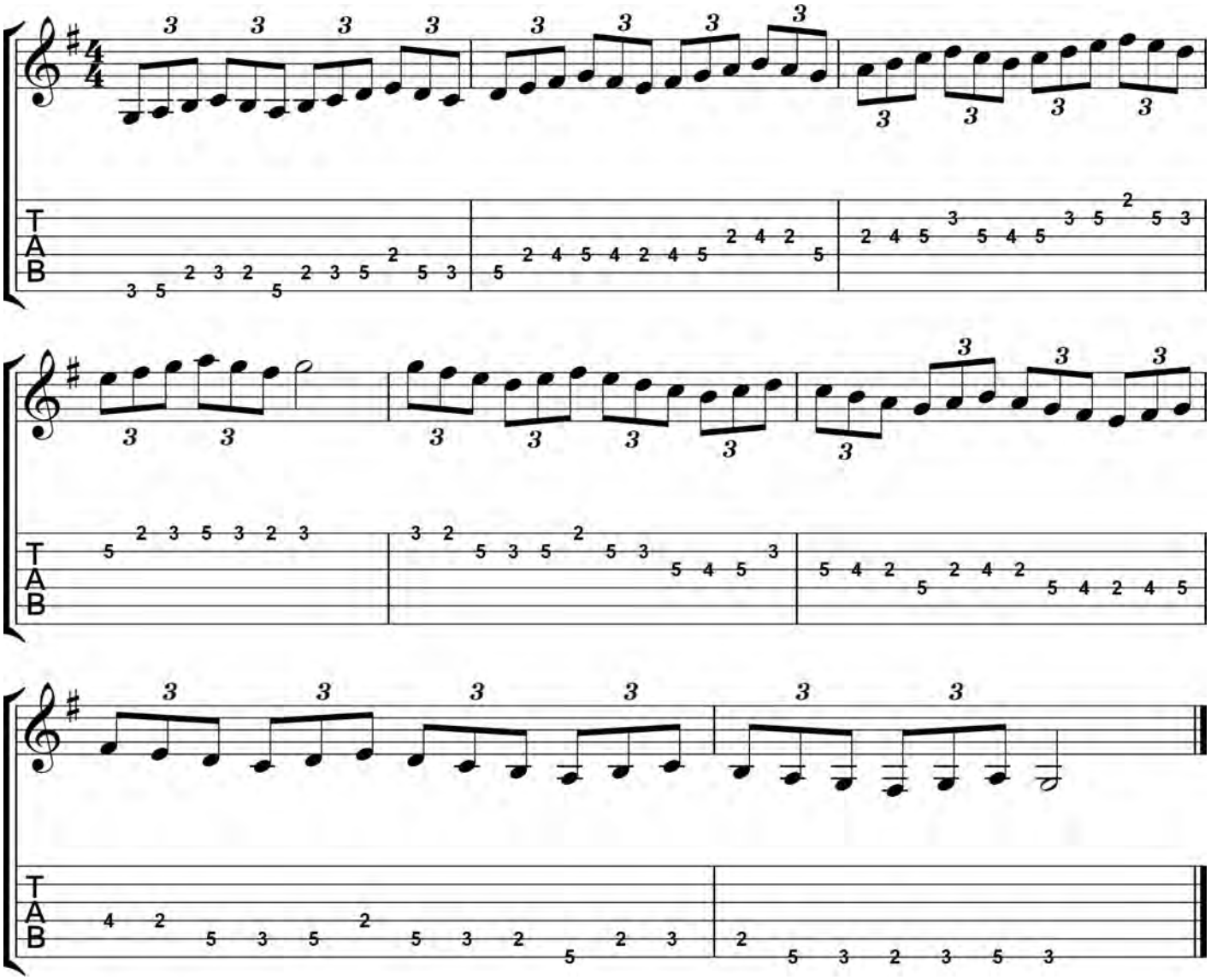

Groups of 4

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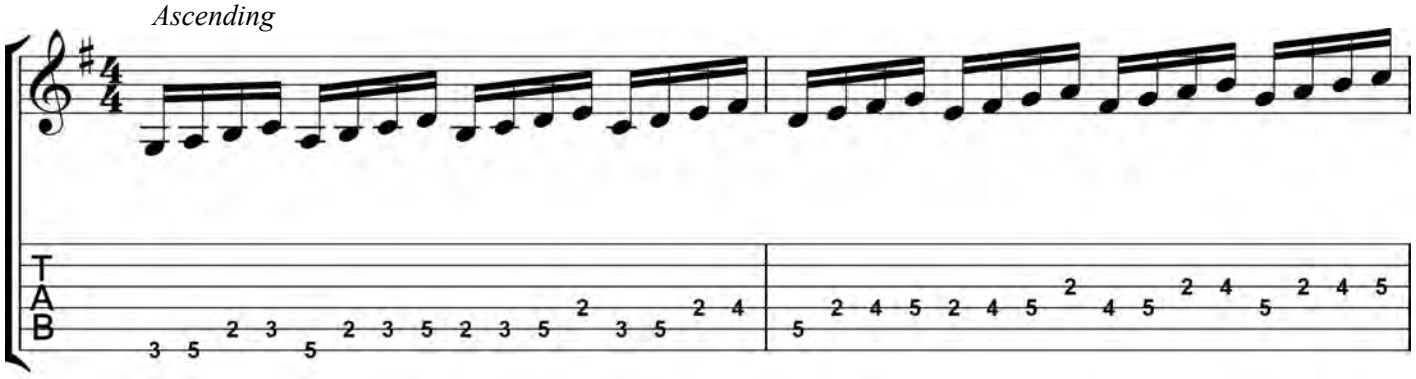

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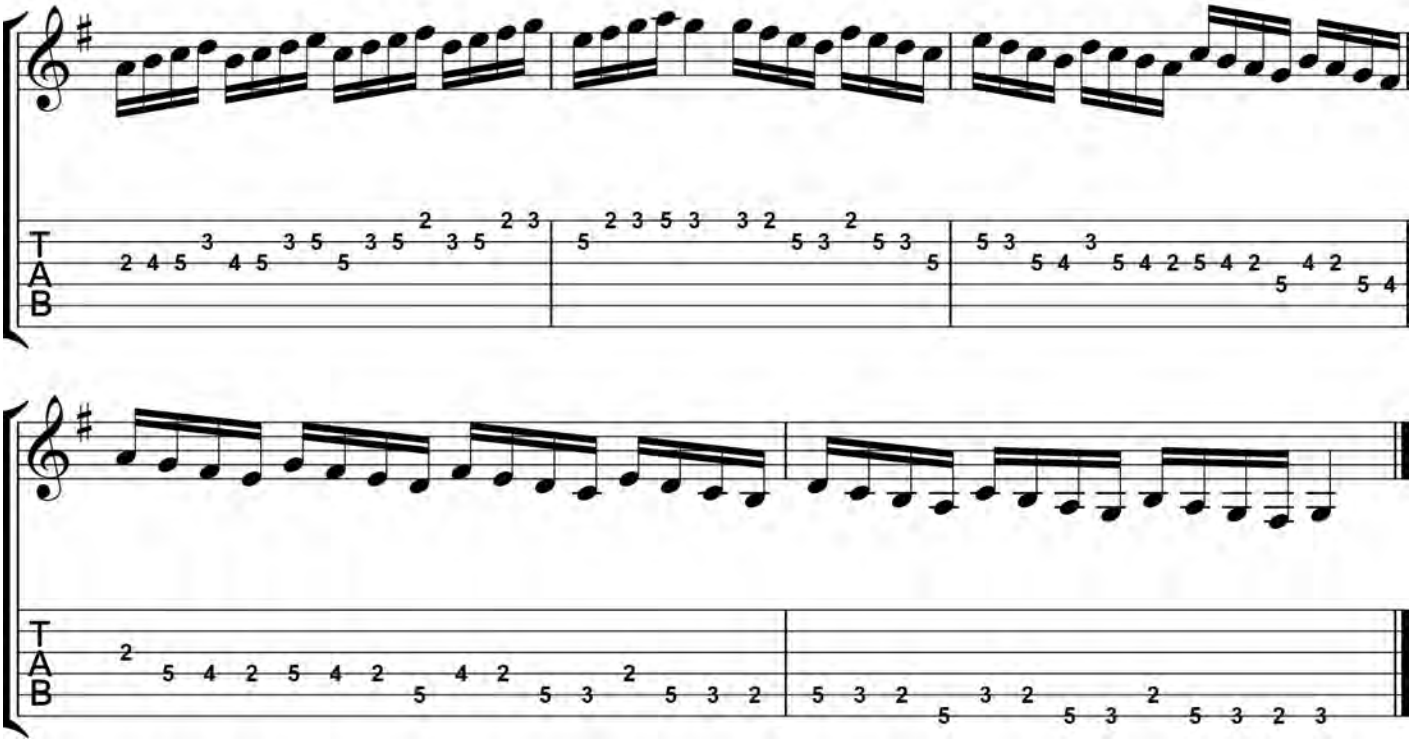

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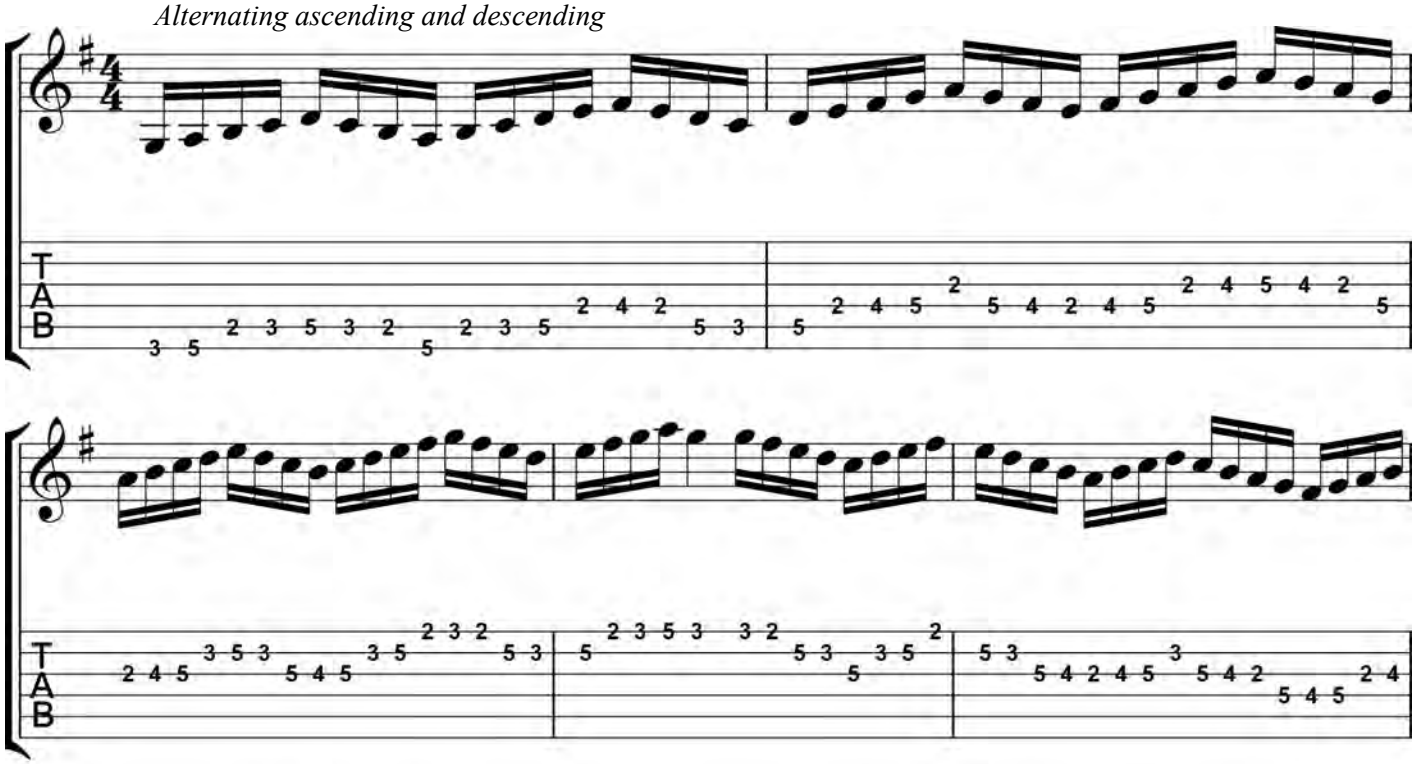
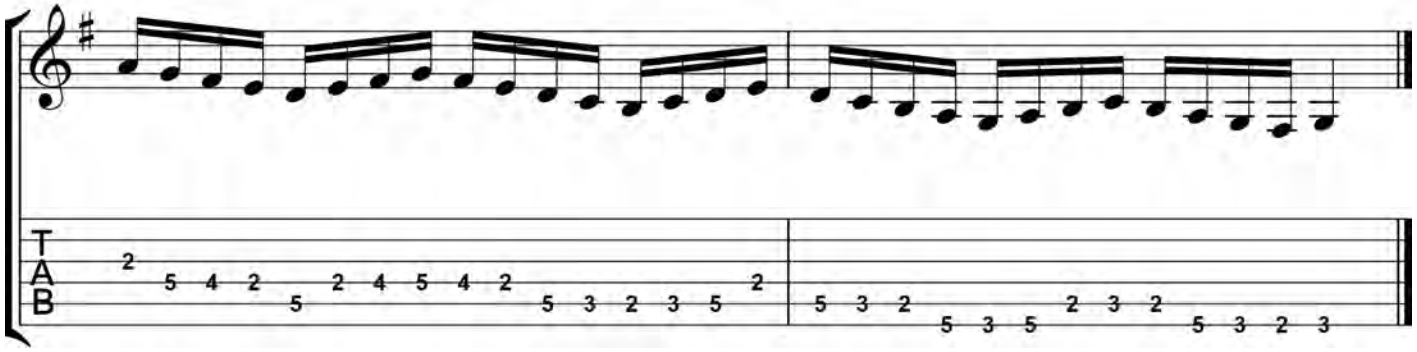
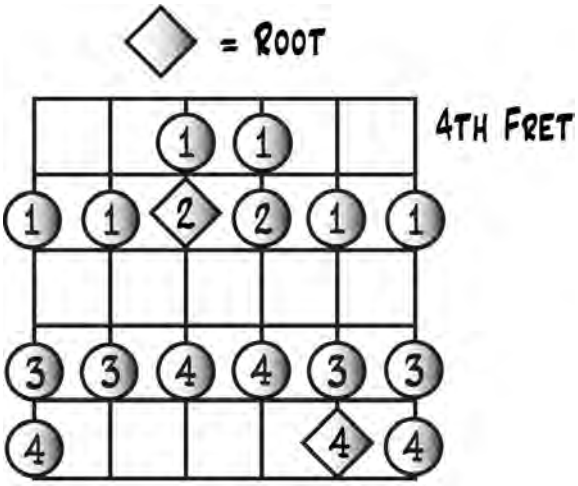
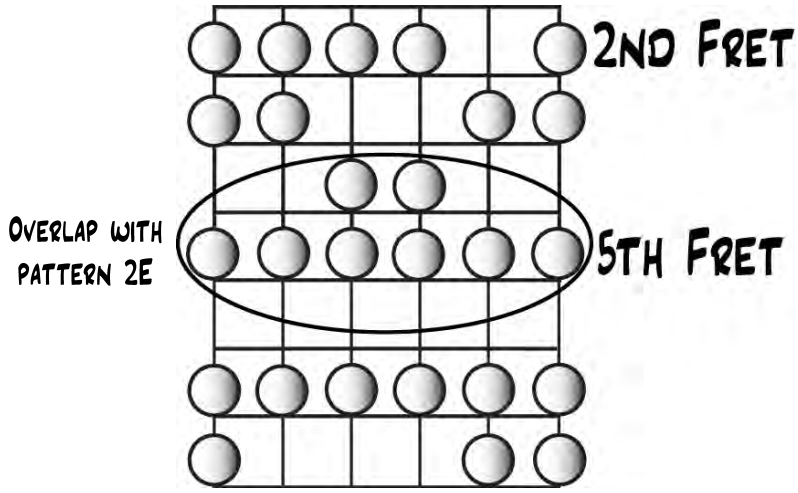



T
A
B
2 5 4 2 5 2 4 5 4 2 5 3 2 3 5 2
5 3 2 5 3 5 2 3 2 5 3 2 3

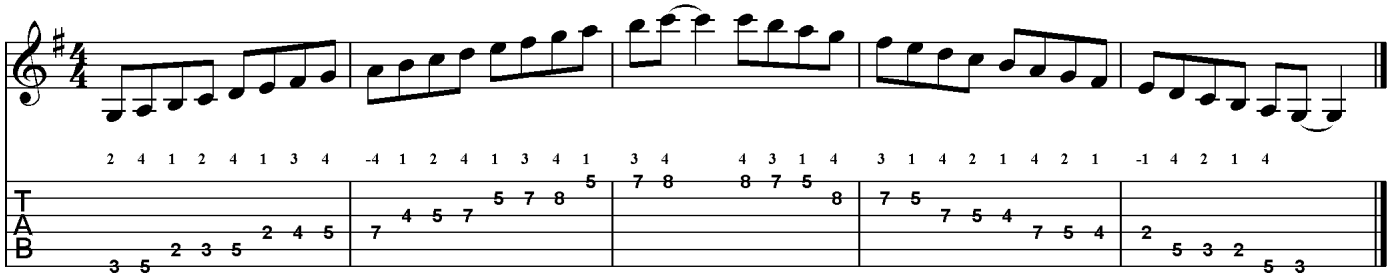
Pattern 2D

We're going to work up the neck, initially staying in the key of G. The next pattern will be 2D, starting at the fifth fret. Memorize the shape and pay attention to how this fingering and the first pattern, 2E, overlap.





Learning how the shapes overlap makes transitioning from one to another much easier. In this example, notice that on strings 5, 4 and 3, pattern 2D adds only one note to the pattern 2E. These make easy shift points. Try playing 2E through the 4th string. On the last note simply shift up a whole step with the little finger and you're in pattern 2D.

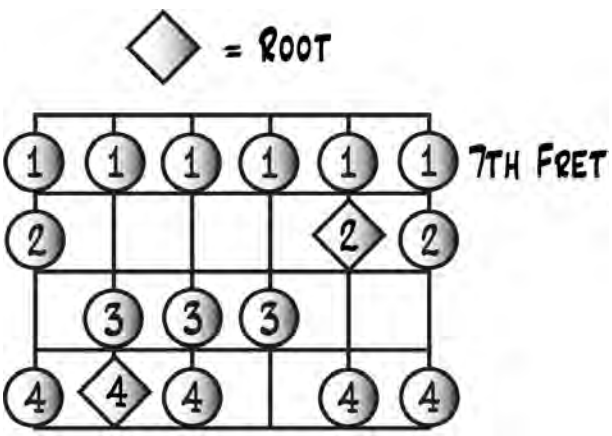


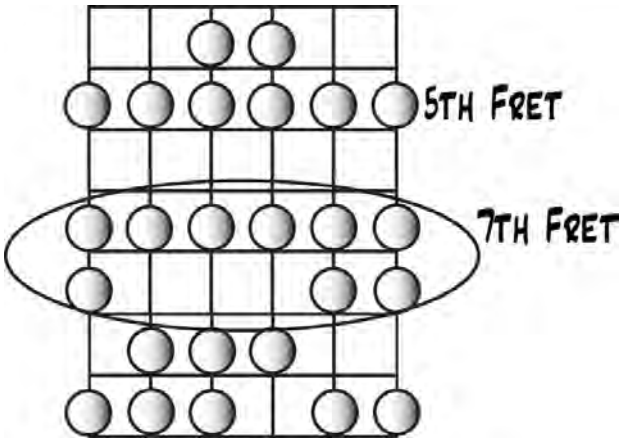
After you've memorized pattern 2D remember to work through all the exercises you did for the first shape. Here's a check list:

- ☐ Play the scale ascending and descending
- ☐ Play thirds ascending, descending, then alternate ascending and descending
- ☐ Play fourths ascending, descending, then alternate ascending and descending
- ☐ Play fifths ascending, descending, then alternate ascending and descending
- ☐ Play sixths ascending, descending, then alternate ascending and descending
- ☐ Play sevenths ascending, descending, then alternate ascending and descending
- ☐ Play octaves ascending, descending, then alternate ascending and descending
- ☐ Play groups of three
- ☐ Play groups of four

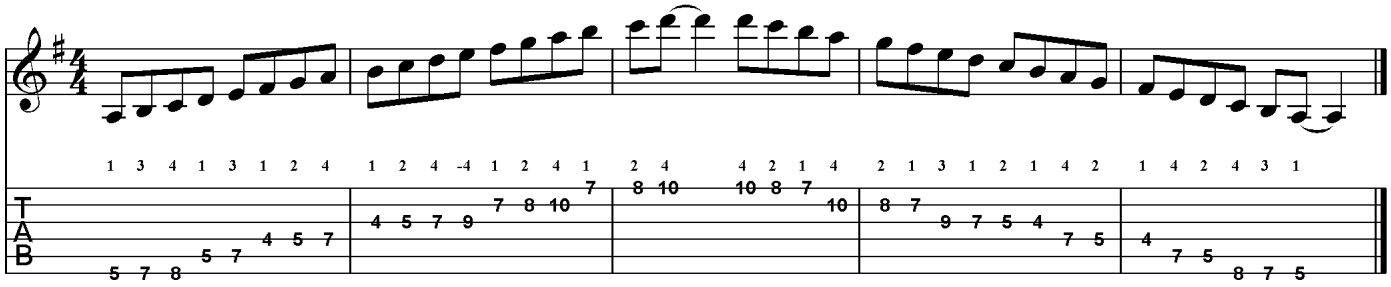
Pattern 4A

Again remaining in the key of G, for simplicity's sake, the next pattern will be 4A starting at the seventh fret. Remember to study the overlap between it and the preceding shape.





Using the same logic as the previous page, the best transition points from 2D to 4A are the 3rd, 2nd and 1st strings. For this example I chose the 3rd string - slightly more problematic than the other choices since it creates two position shifts. The first is the little finger moving up a whole step on the 3rd string and the second with the 1st finger moving to the seventh fret on the 2nd string.

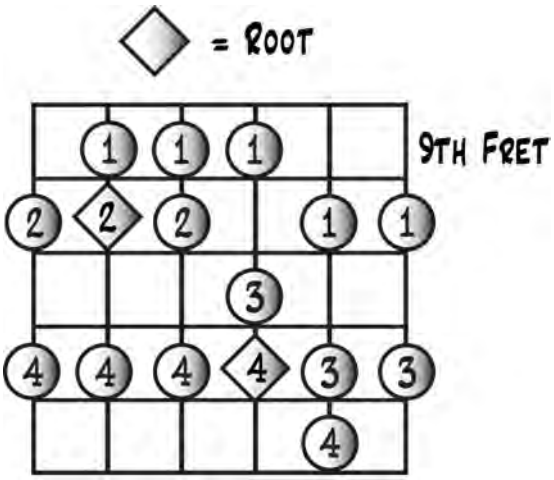


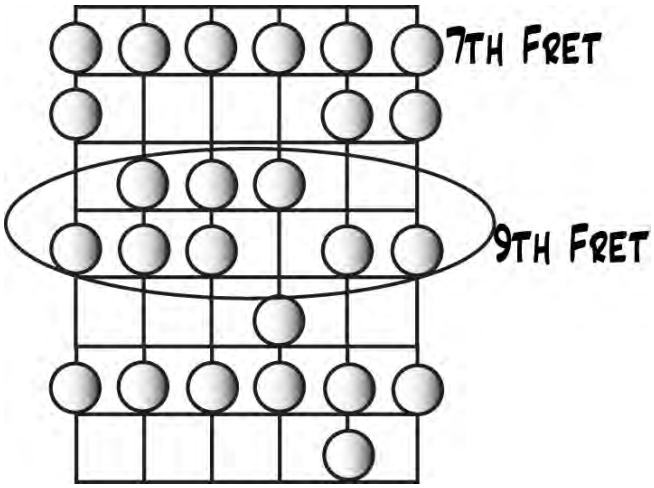
Here is your exercise check list for pattern 4A:

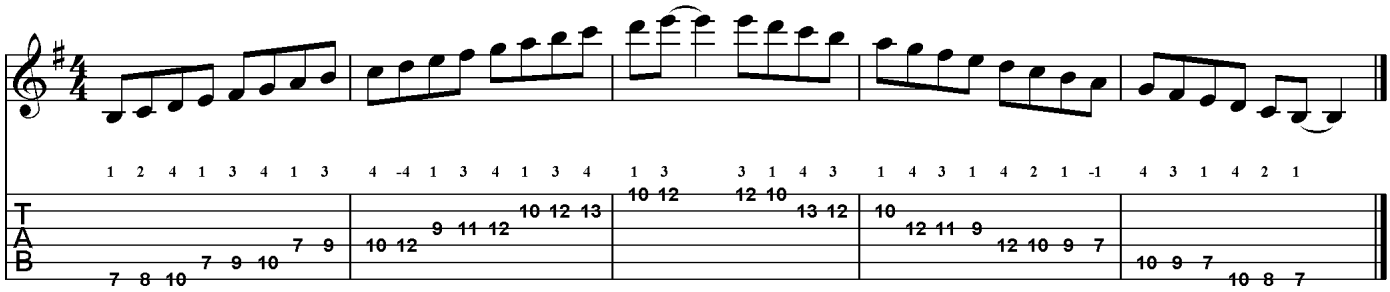
- ☐ Play the scale ascending and descending
- ☐ Play thirds ascending, descending, then alternate ascending and descending
- ☐ Play fourths ascending, descending, then alternate ascending and descending
- ☐ Play fifths ascending, descending, then alternate ascending and descending
- ☐ Play sixths ascending, descending, then alternate ascending and descending
- ☐ Play sevenths ascending, descending, then alternate ascending and descending
- ☐ Play octaves ascending, descending, then alternate ascending and descending
- ☐ Play groups of three
- ☐ Play groups of four

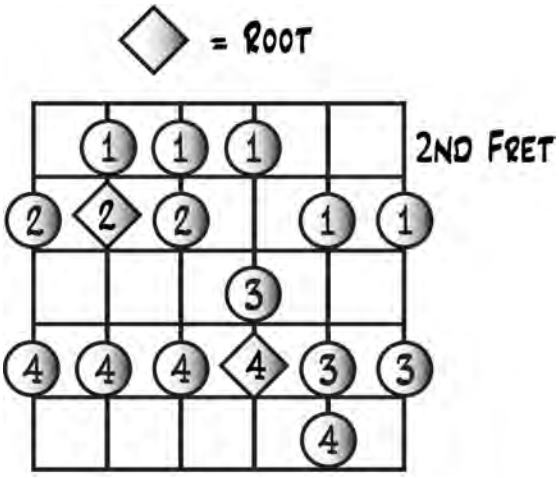
Pattern 2A

We'll stay in G for a minute, just to study the overlap, but we'll end up moving to the key of C to play the exercises.







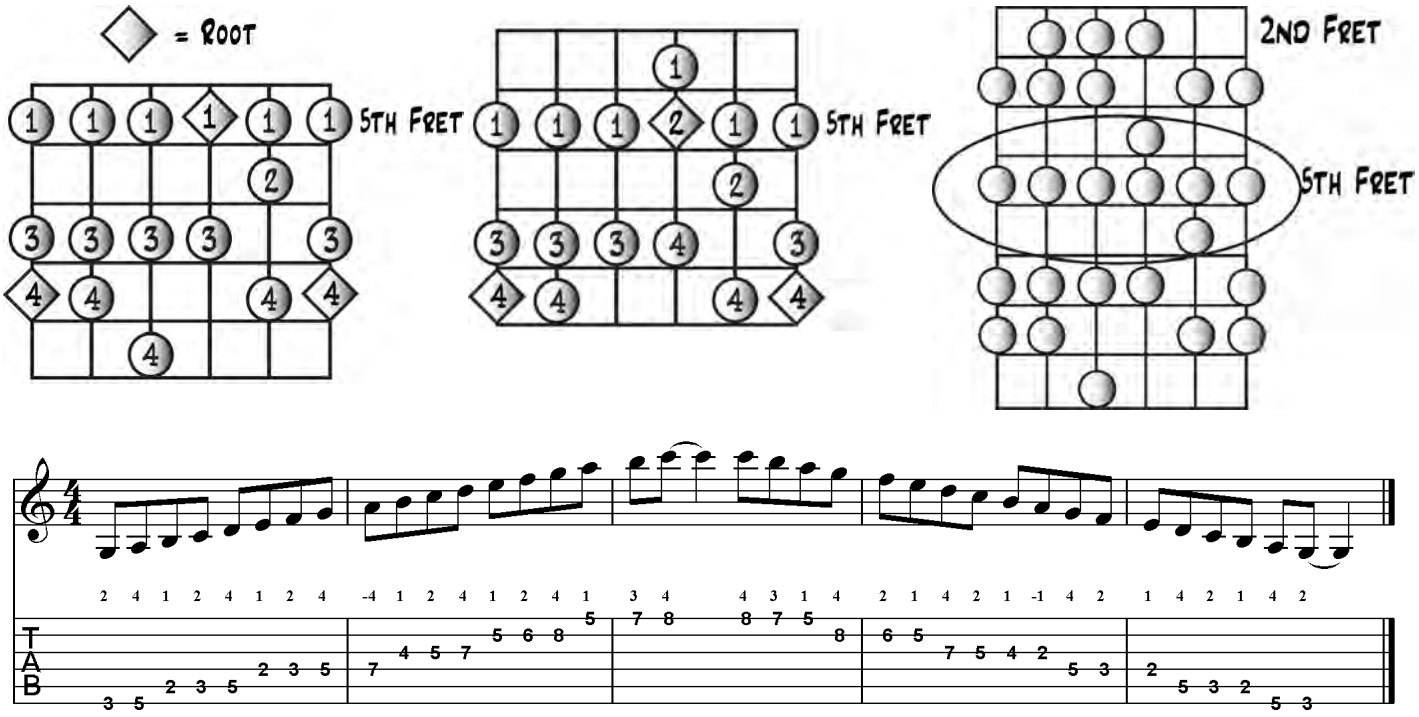


Before you proceed through the exercises, let's move the pattern to the second fret, changing the key to C. I have two reasons for this: 1) it allows this pattern and the next to be played down where the frets are farther apart and you're not squeezing your elbow next to your torso; 2) you need to start getting used to playing the patterns in different places.
Here's the checklist:

- ☐ Play the scale ascending and descending
- ☐ Play thirds ascending, descending, then alternate ascending and descending
- ☐ Play fourths ascending, descending, then alternate ascending and descending
- ☐ Play fifths ascending, descending, then alternate ascending and descending
- ☐ Play sixths ascending, descending, then alternate ascending and descending
- ☐ Play sevenths ascending, descending, then alternate ascending and descending
- ☐ Play octaves ascending, descending, then alternate ascending and descending
- ☐ Play groups of three
- ☐ Play groups of four

Pattern 4E

The last of the five basic shapes has two possible fingerings. Choose the one that feels most comfortable to you. I've kept this in the key of C.

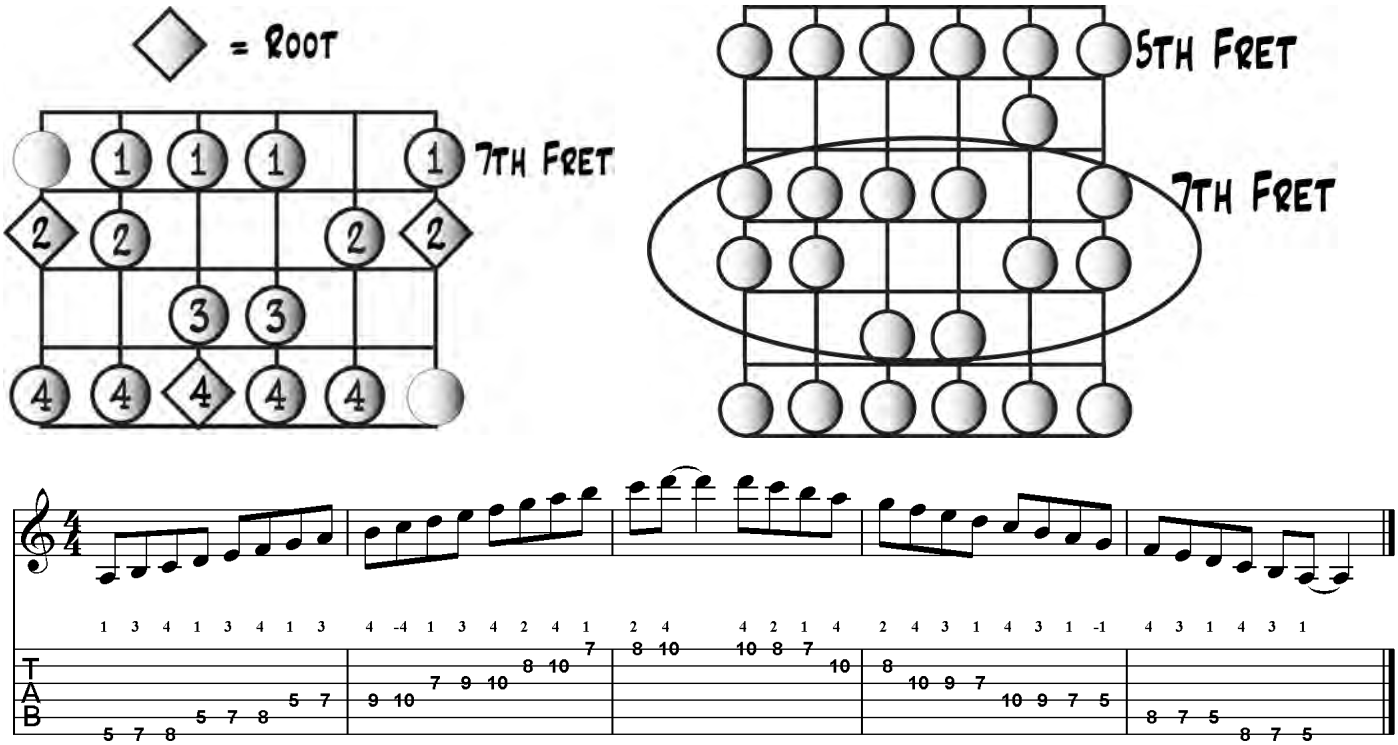


Here is your exercise check list for pattern 4E:

- ☐ Play the scale ascending and descending
- ☐ Play thirds ascending, descending, then alternate ascending and descending
- ☐ Play fourths ascending, descending, then alternate ascending and descending
- ☐ Play fifths ascending, descending, then alternate ascending and descending
- ☐ Play sixths ascending, descending, then alternate ascending and descending
- ☐ Play sevenths ascending, descending, then alternate ascending and descending
- ☐ Play octaves ascending, descending, then alternate ascending and descending
- ☐ Play groups of three
- ☐ Play groups of four

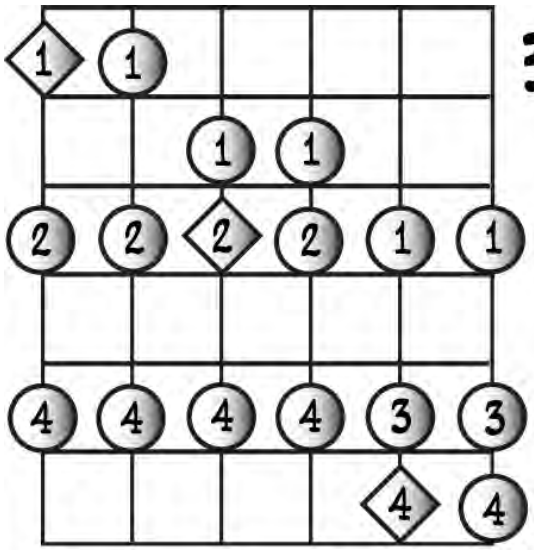
Pattern 2E revisited

To finish up let's return to the first pattern, 2E, this time at the 7th fret, the key of C. We can look at the overlap between 4E and 2E, completing a network of overlapping patterns that will cover the entire fretboard.

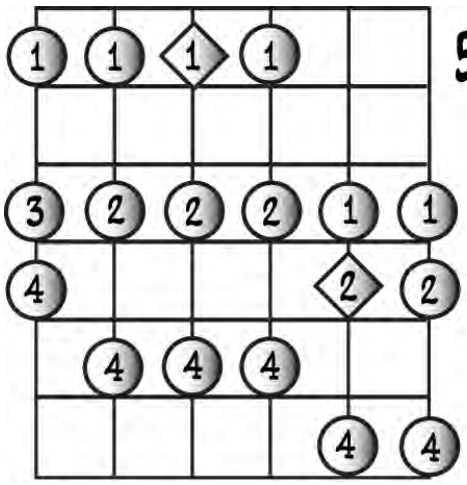


✽ ✽ ✽

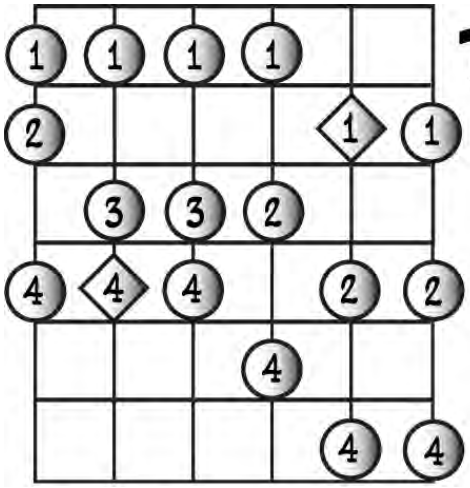
There is another organizational schema for constructing scale fingerings: keeping an equal number of notes on each string. The usual number for major scales is 3 notes per string. As you look at these patterns, note how they are nothing but combinations of the five patterns you've already learned.



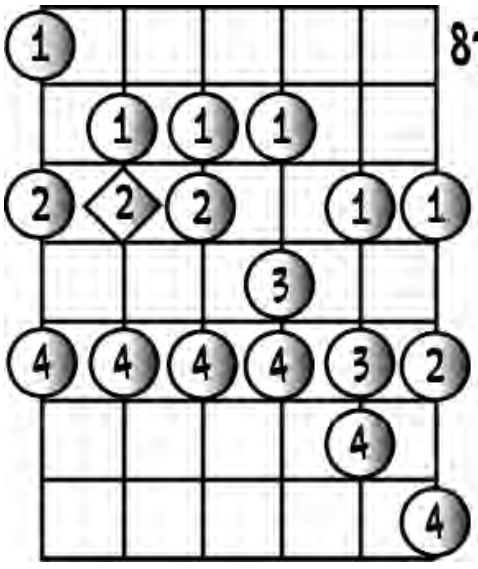
Combines patterns 2E and 2D.



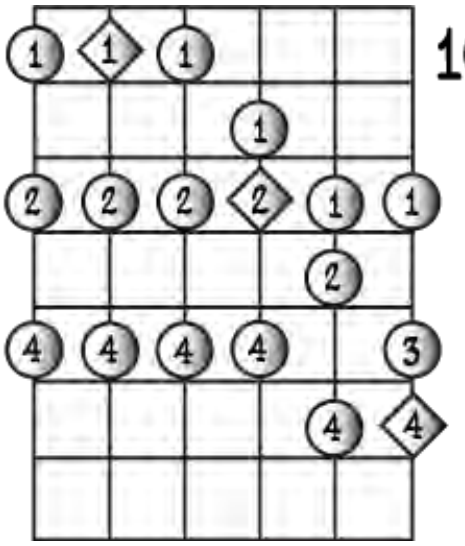
Combines patterns 2D and 4A.



Combines patterns 4A and 2A.

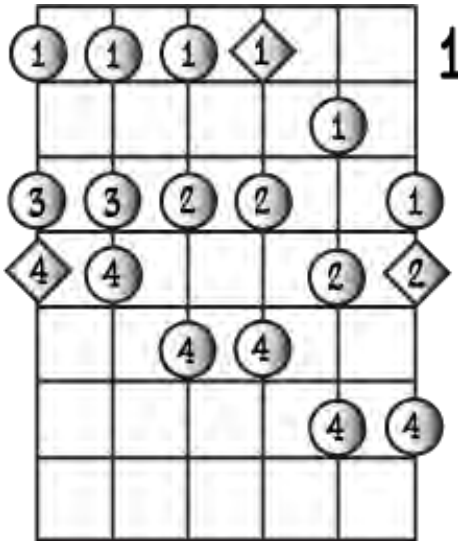


Combines patterns 4A, 2A and 4E.



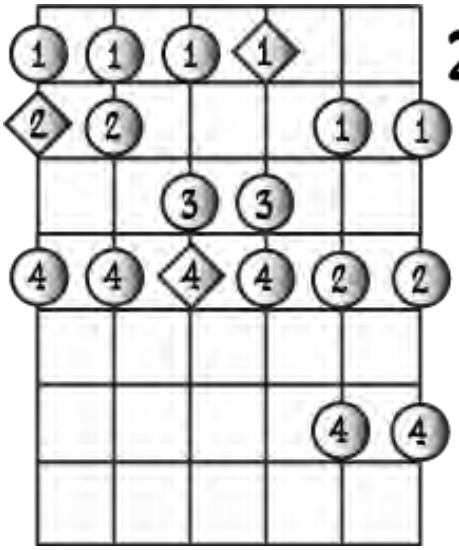
10th Fret

Combines patterns 2A and 4E.



12th Fret

Combines patterns 4E and 2E.

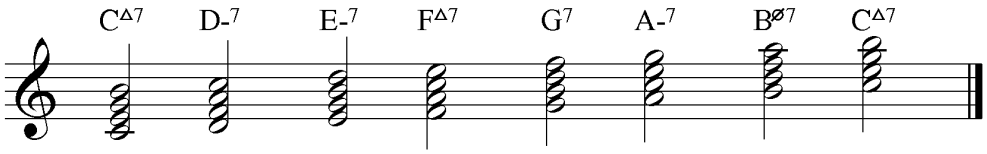


2nd Fret

Combines patterns 2E and 2D.

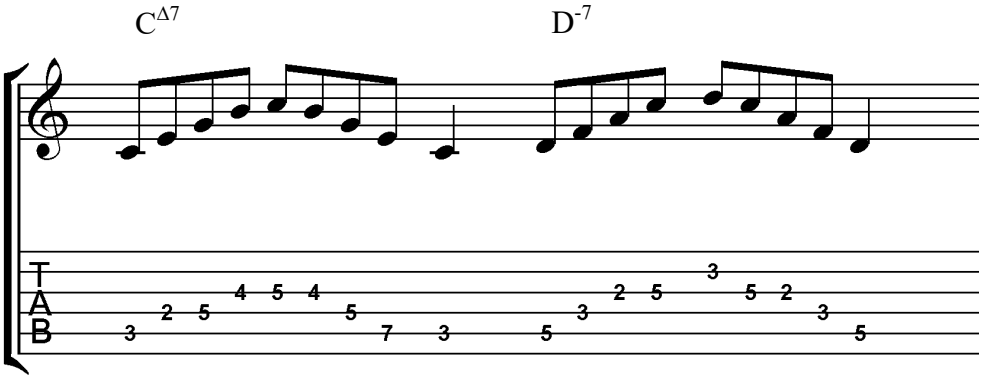
Applying Major Scales: Scale/Chord Connections and Modes

No one spends the hours of practice time mastering the scales and exercises presented so far just so they might boast about how well they can play a scale. The goal here is to use the scales to create some cool-sounding lines when improvising. How do you know what scale to use? The starting point is this: ***any scale can be used to create a melodic line over a given chord if the scale contains the notes of the chord***.
Scales are *harmonized* to find out what chords they contain. That is accomplished by stacking thirds on each scale degree. The illustration below shows four-note chords built on each degree of a C major scale.



As mentioned in the note about modes, in the beginning of this book, the C major scale will take on a different sound if it is played against the various chords above.

Before we go on you need to know a few terms. An arpeggio is the notes of a chord in series instead of together.



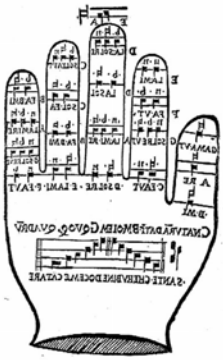
When you play the example above you have played every note of a C major scale, but it doesn't sound like you're playing a scale, does it? Arpeggios are not only a great source for melodic ideas, they are an important part of creating an aural link between scales and chords. One of your jobs as a student trying to learn how to put this stuff together and improvise is to build that link between scales and chords. The next exercises are designed to help you do that. Starting on page 28, each of the first 5 fingerings we looked at will be presented on a different page. I've changed keys from fingering to fingering to keep the scales in the 2nd or 3rd positions. On each page the 7 chords in the given key are presented, followed by the scale, starting on the root of the chord and ascending through the 9th, then descending down the chord tones, 9, 7, 5, 3, root.
But before we do that it's time to talk about *modes.*

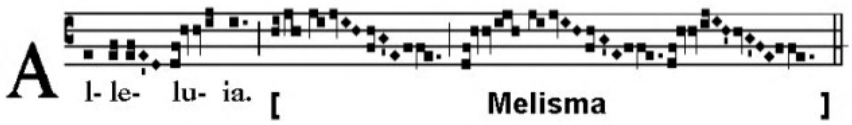
Most discussions of musical improvisation end up at least touching on *modes.* Before we get to particulars let's look at that word: 'mode' shares a root with 'mood' and that's a useful idea to hang on to as we progress. In music, different moods are created by different types of sounds. Here's another useful idea to keep in mind: human beings love to name things; we love to hang labels on things that are tangible and things that aren't. So it's good to not get distracted by the label we put on something - it's the something that's important. You'll understand this digression momentarily.

So you know that each major scale builds 7 chords. Try this experiment. Have a friend play a Cmaj7 chord in a nice easy tempo (or if, like me, friends are either in short supply or they have selfishly not learned to play guitar, record yourself playing said chord) and you play up and down a C major scale. Listen to how they fit. Don't be fancy, just *noodle* (a musical doodle). Now have your friend (or your recorded self) switch to an Fmaj7 chord but continue to play a C major scale. It still fits but it sounds a little different. That B natural against the F creates a different effect, a different *mood*, a different ***mode***.

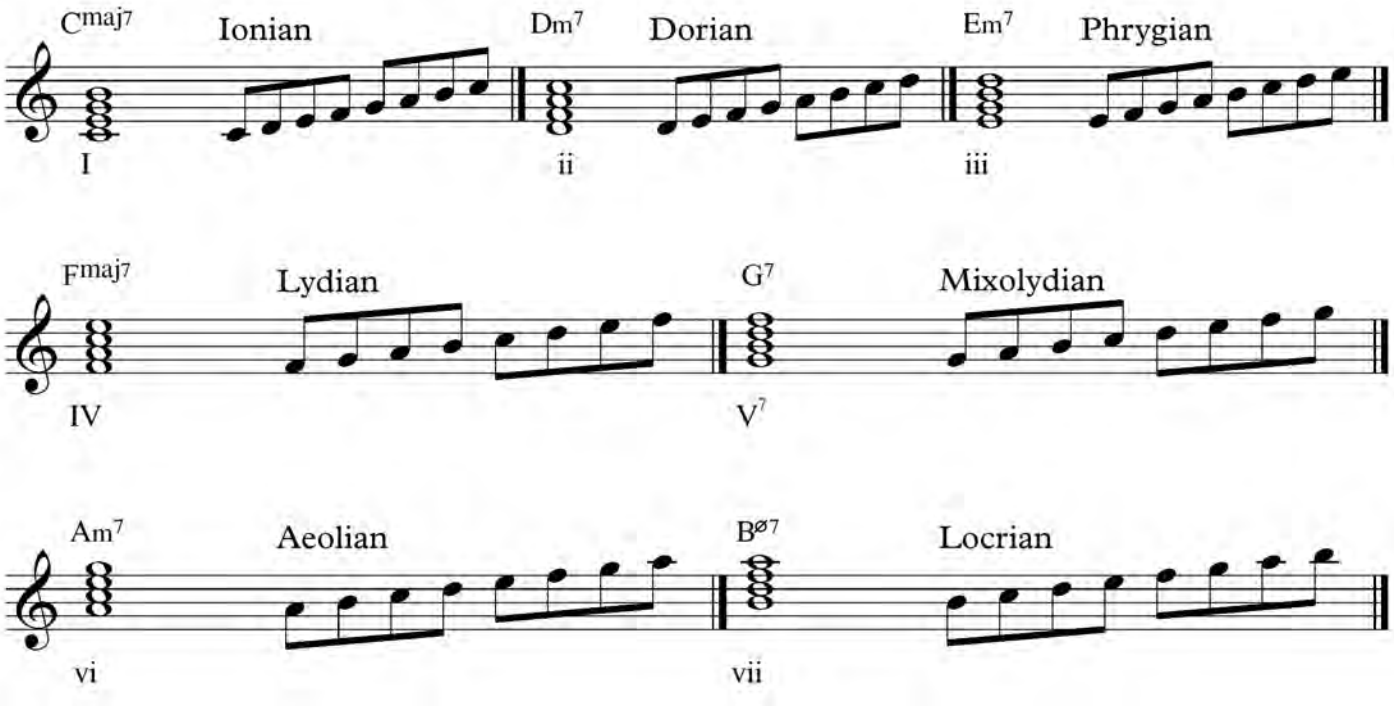
Modes are labels we use to describe the different sounds that happen when we play a scale against the various chords contained in that scale.

The names of the modes come from ancient Greek tribes. Why? Because all this theory evolved in the Middle Ages, in a musical culture that also gave us the Guidonian Hand and melismatic organum. Using long-dead tribal names is among the least arcane of their pedagogic foibles.

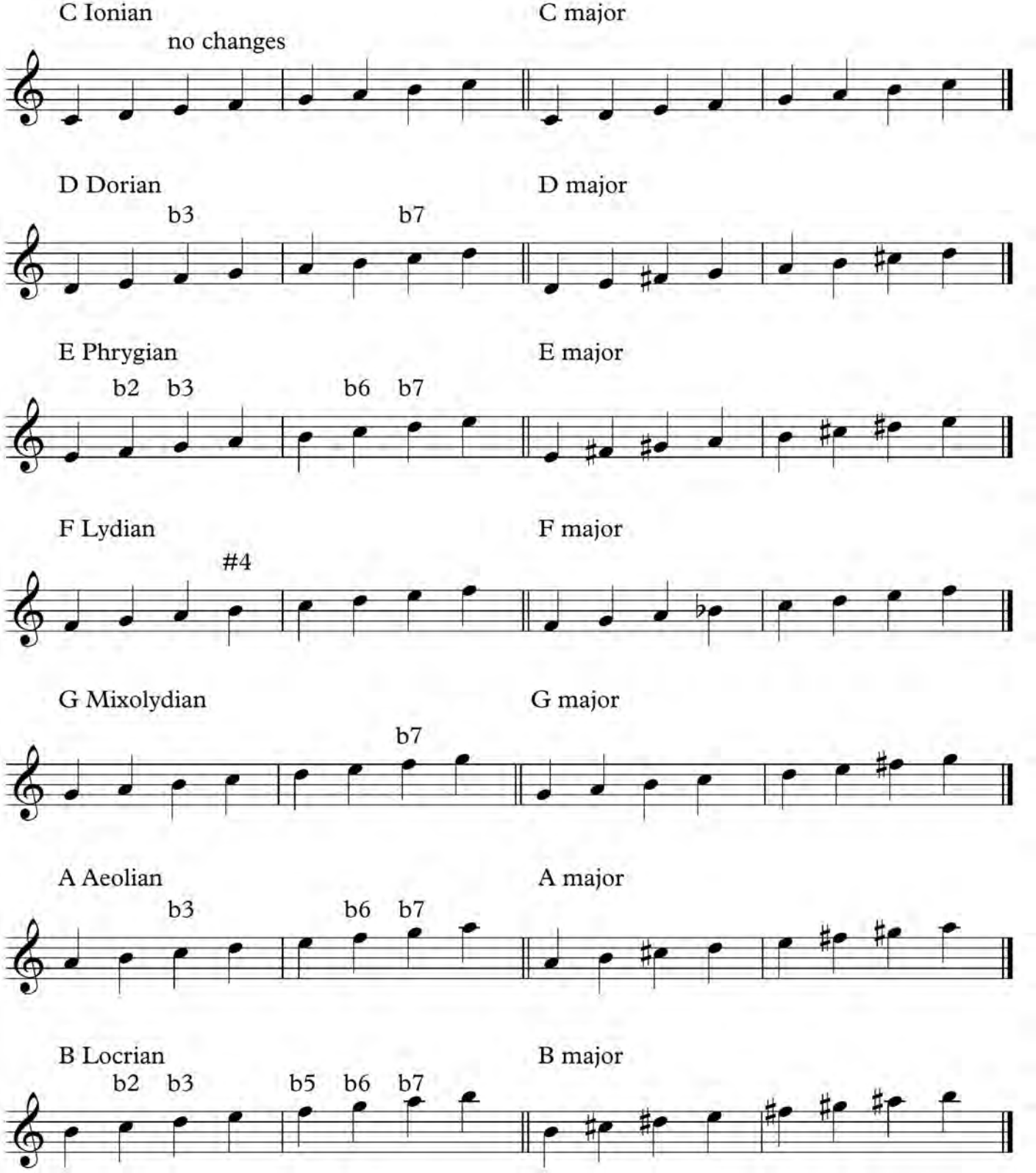




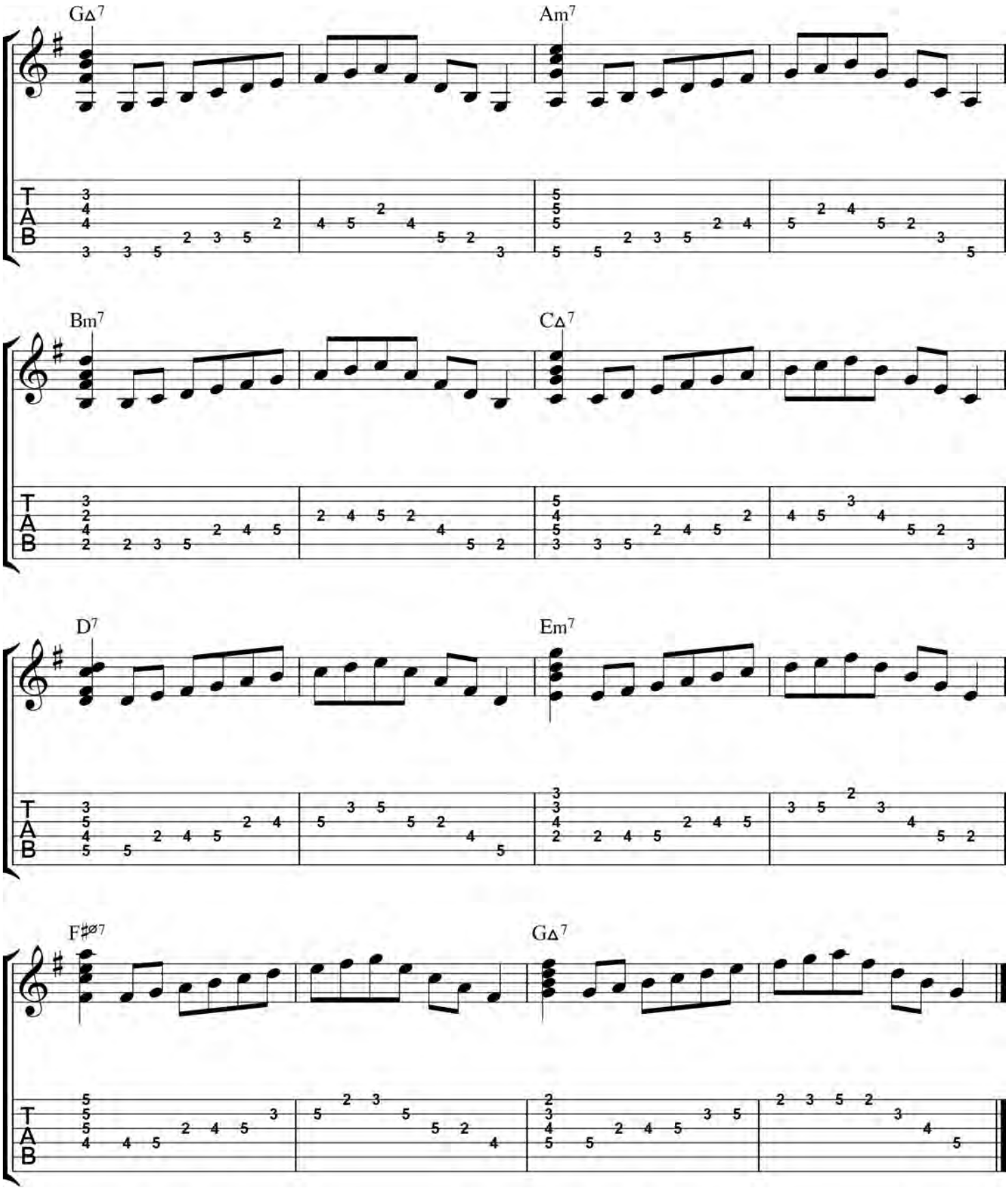
Below is an illustration showing the modes. Pay attention to the Roman numerals under each chord. I tend to think of modes relative to these numbers. So, rather than Dorian, I'll think "two-mode". This has the advantage of conveying useful information. If I think "four-mode", that just means starting on the 4th note of a particular scale. Here's an example: Given an Em7, and I want to employ the Aeolian mode, I think "six-mode" - meaning Em7 is the 6th chord. E is the 6th note of a G major scale. So I'd use a G scale over the given chord.



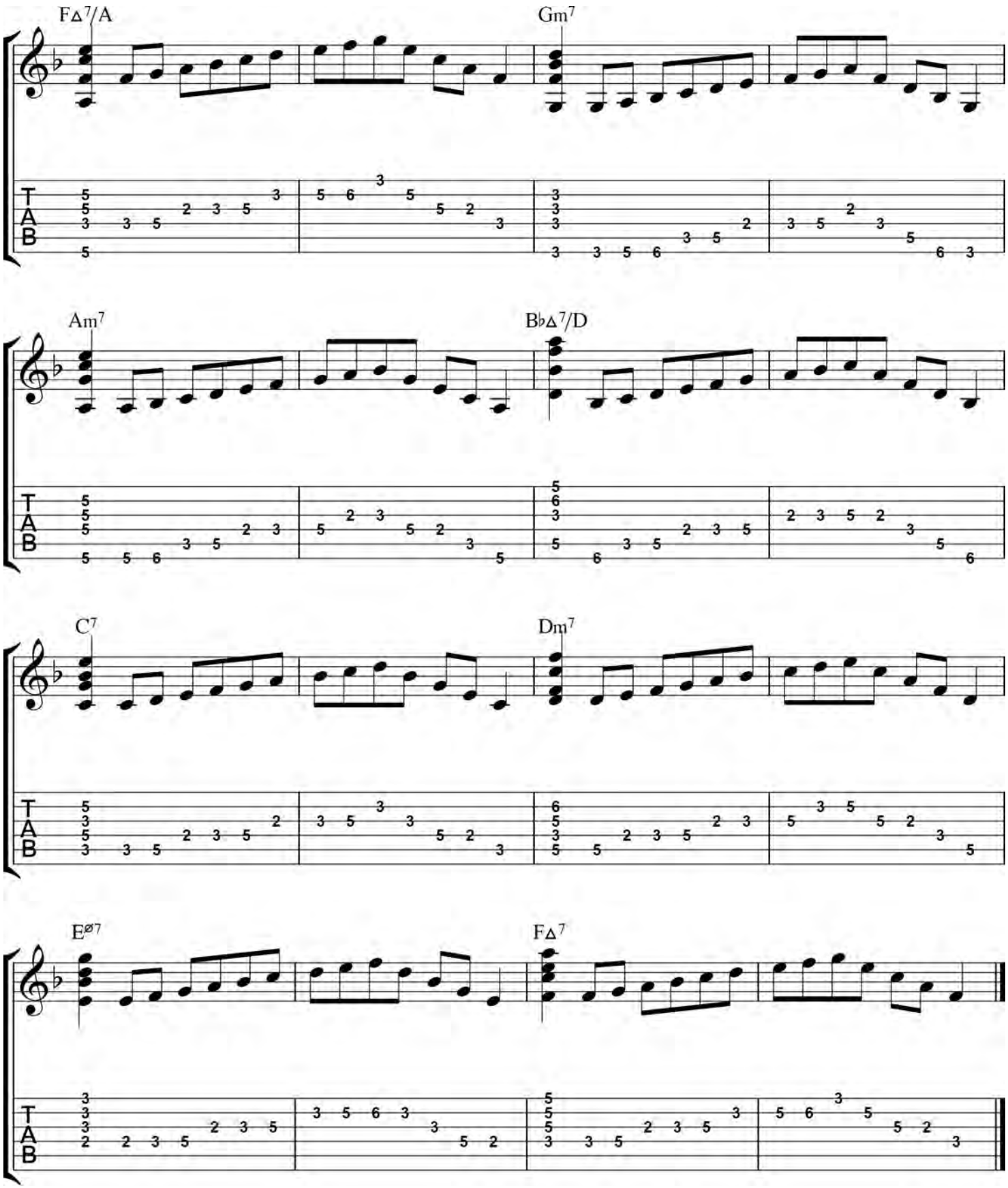
In music, major scales give us a reference point from which to understand most things. If I want to explain how to build a chord I'll give it's *formula* based on the major scale. For example an Am7b5 is the 1st, b3rd, b5th and b7th of the A scale. By knowing formulas and the scales you can quickly name the notes in any chord. It's useful to know these formulas as they relate to the modes as well. The illustration below shows the modes compared to their parallel major scale and the changes that have occurred.



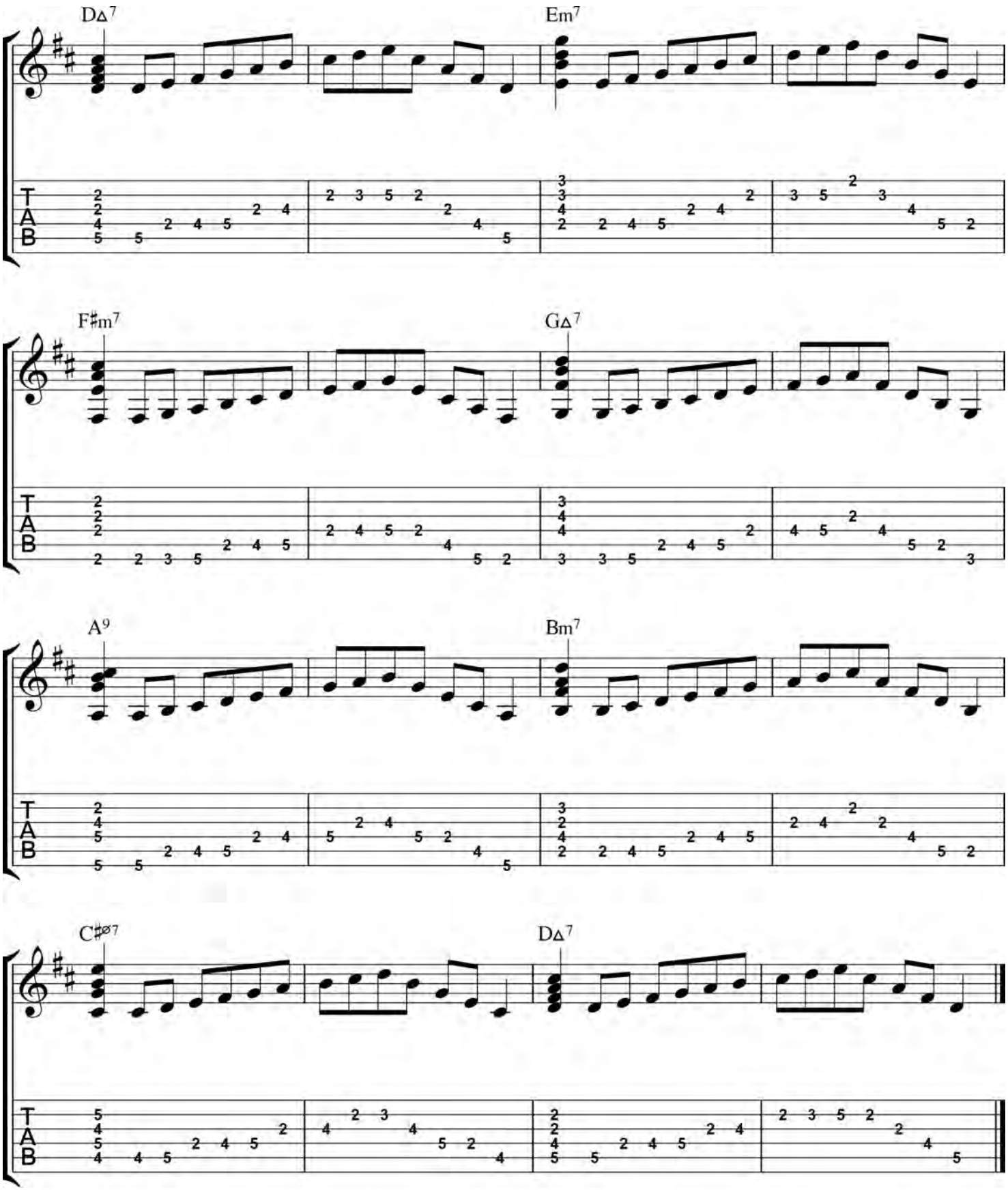
Pattern 2E, second position
Key of G



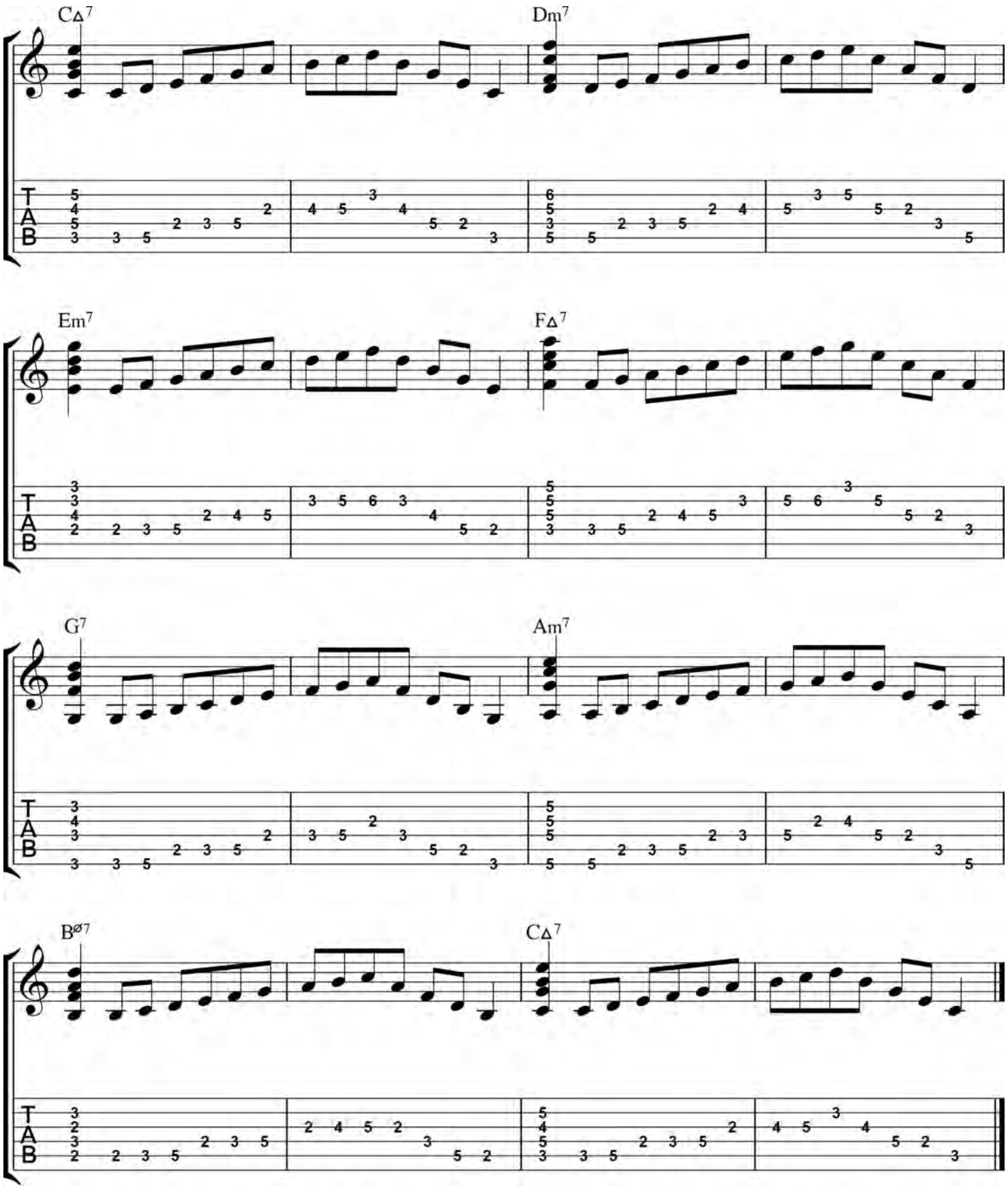
Pattern 2D, third position
Key of F



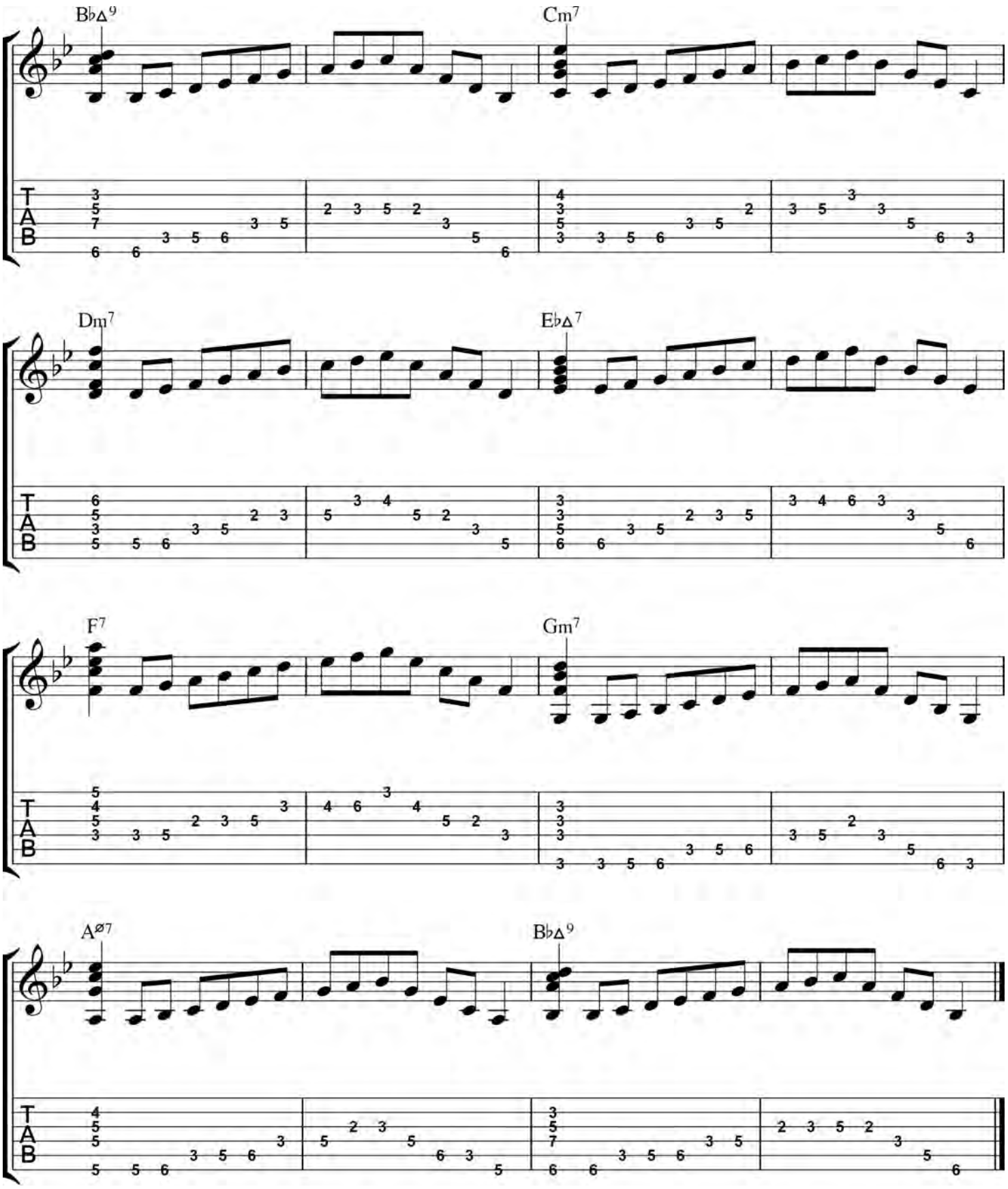
Pattern 4A, second position
Key of D



Pattern 2A, second position
Key of C



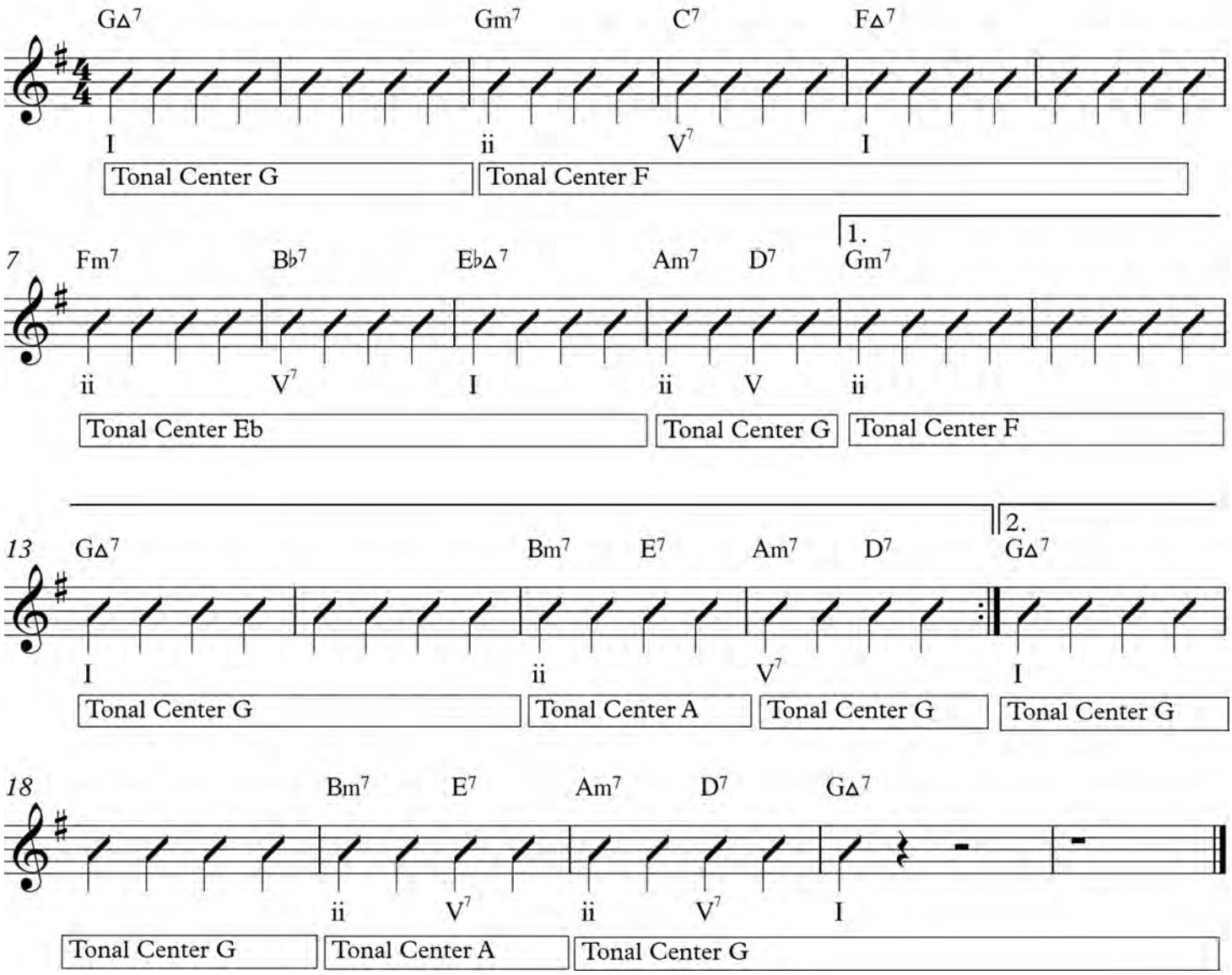
Pattern 4E, third position
Key of Bb



Applying Major Scales
To Chord Changes

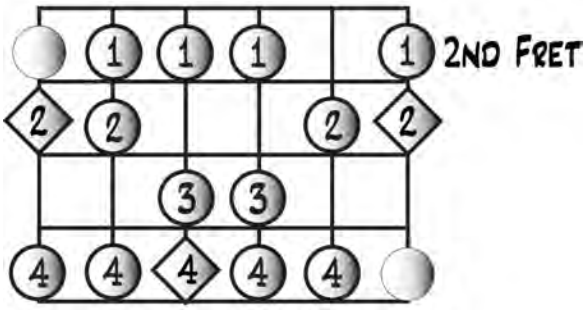
Using the chord changes to the standard “How High the Moon”, a series of exercises is presented below to help students develop the skills to improvise over changes. The first thing we have to do is analyze the chord progression so we can decide which scales to use.

How High the Moon - changes

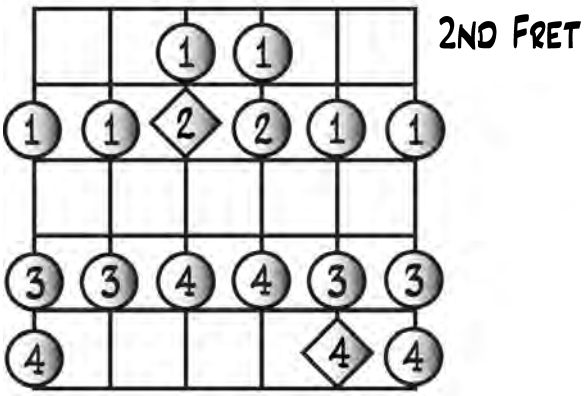


The first thing to do is decide which scale fingering to use. We need fingerings for G, F, Eb, and A. For the purposes of this exercise we'll chose fingerings that stay close to the same position.

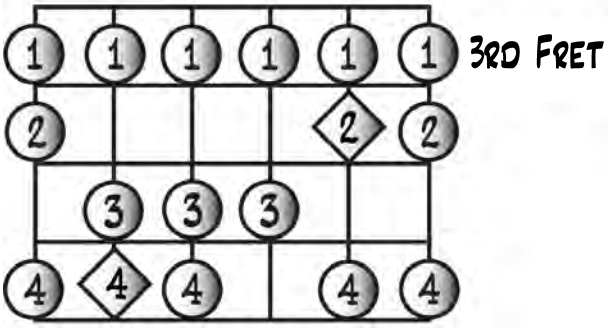
G Scale



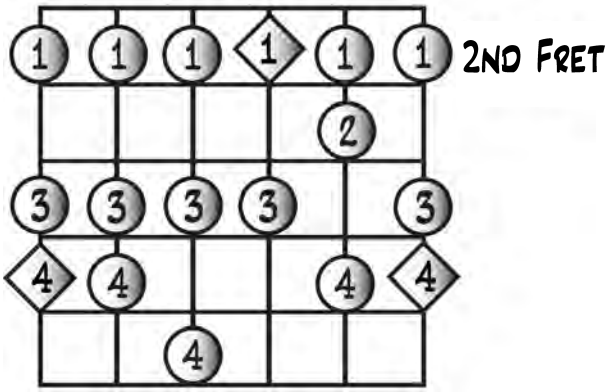
F Scale



E flat Scale



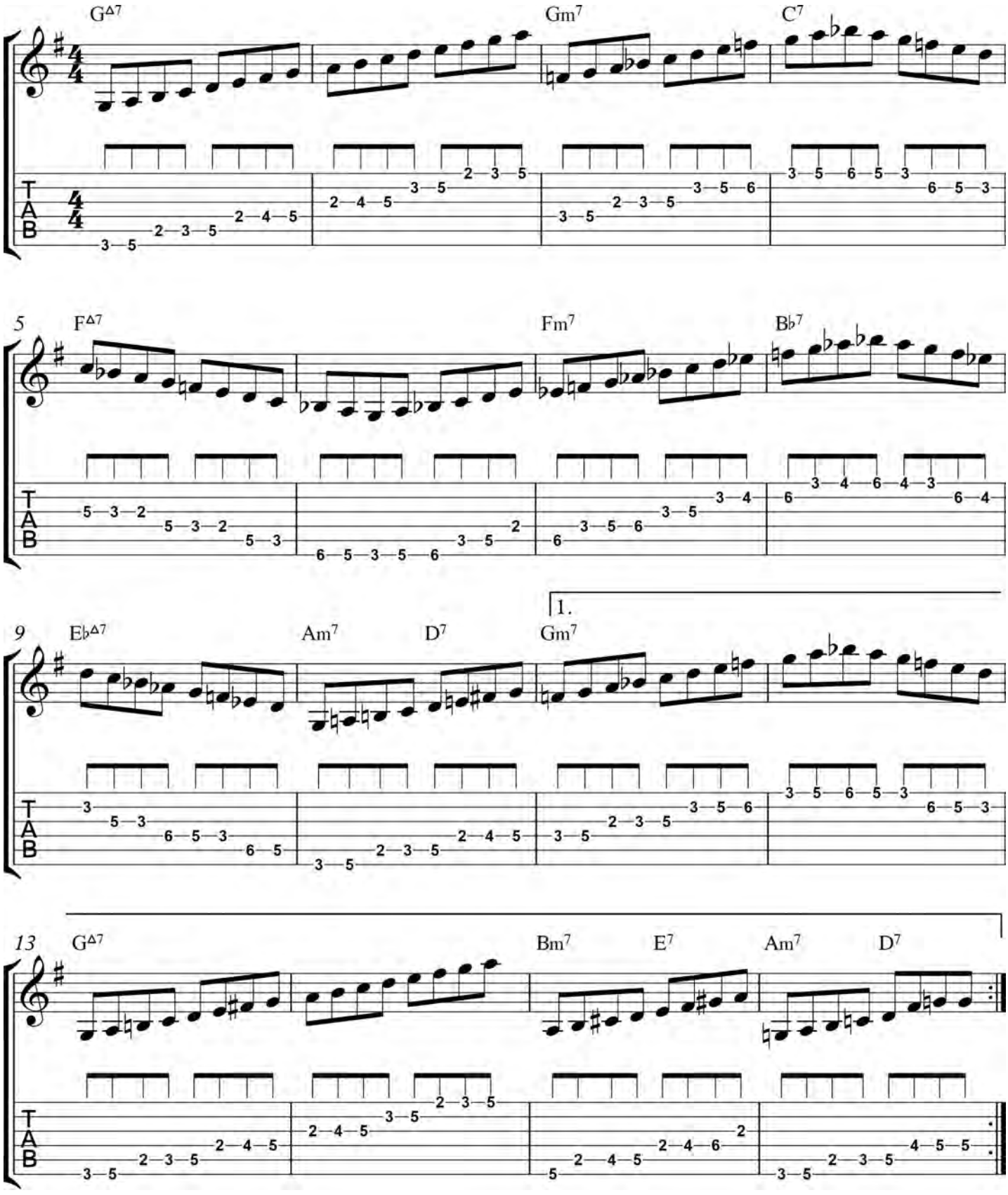
A Scale

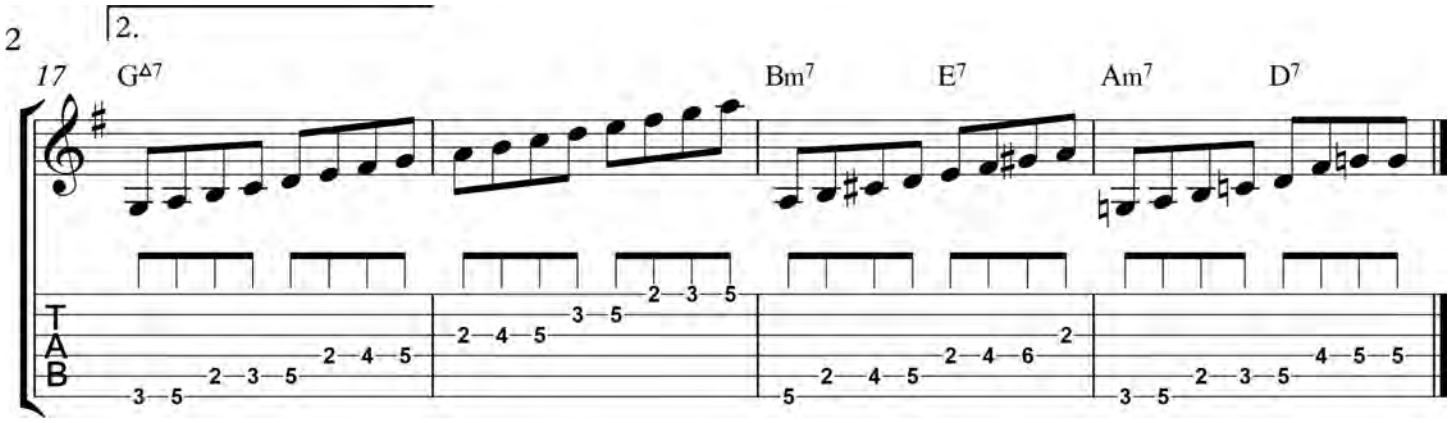


Here are the steps followed in the following exercises:

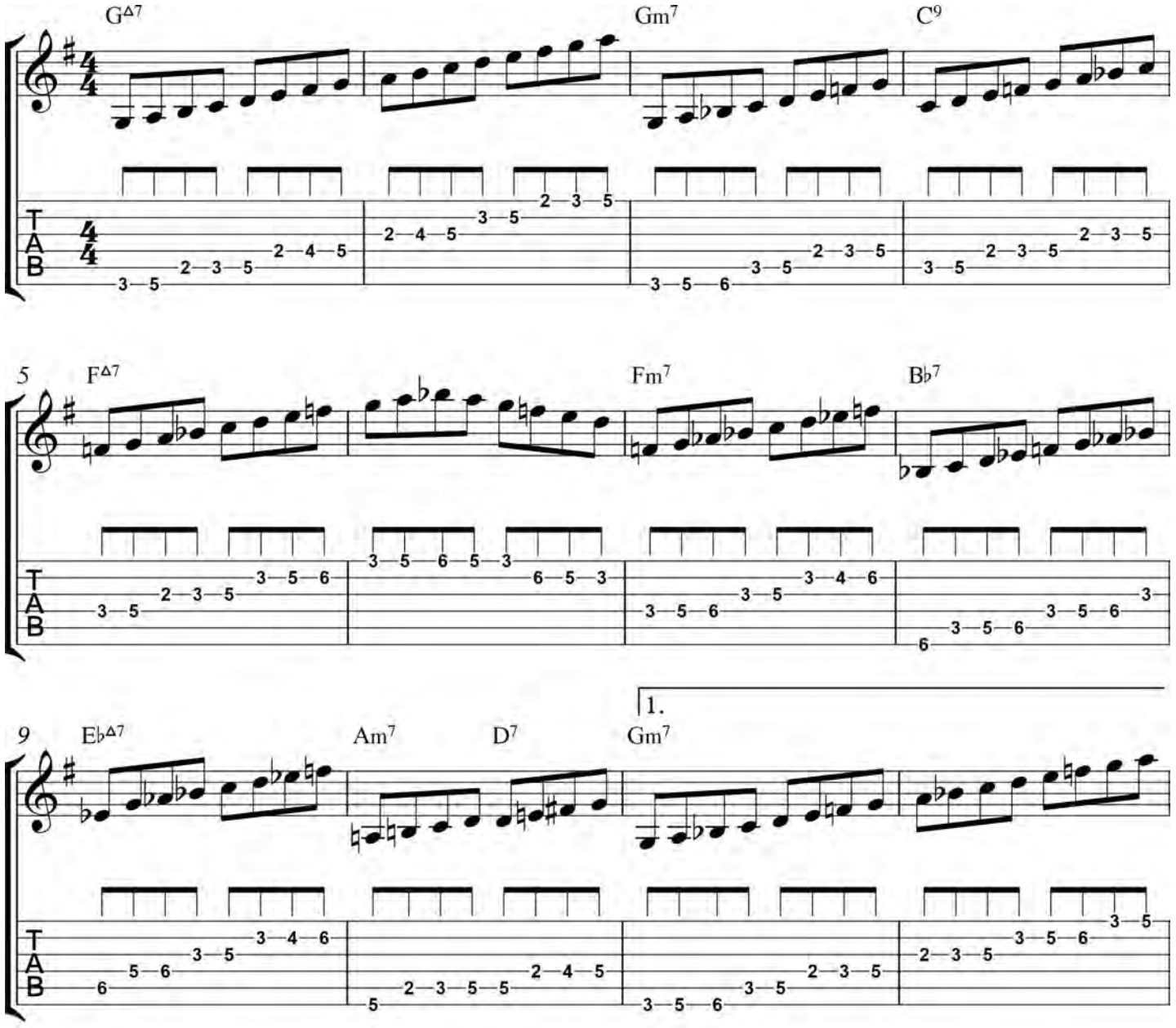
1. Play the scale in 8th notes from the root of the *scale* for the proper number of beats.
2. Play the scale in 8th notes from the root of the *chord* for the proper number of beats.
3. Play the arpeggios.
4. Play the scale in 3rds. When the scales change, *start with the note nearest to the last note played in the previous scale.*

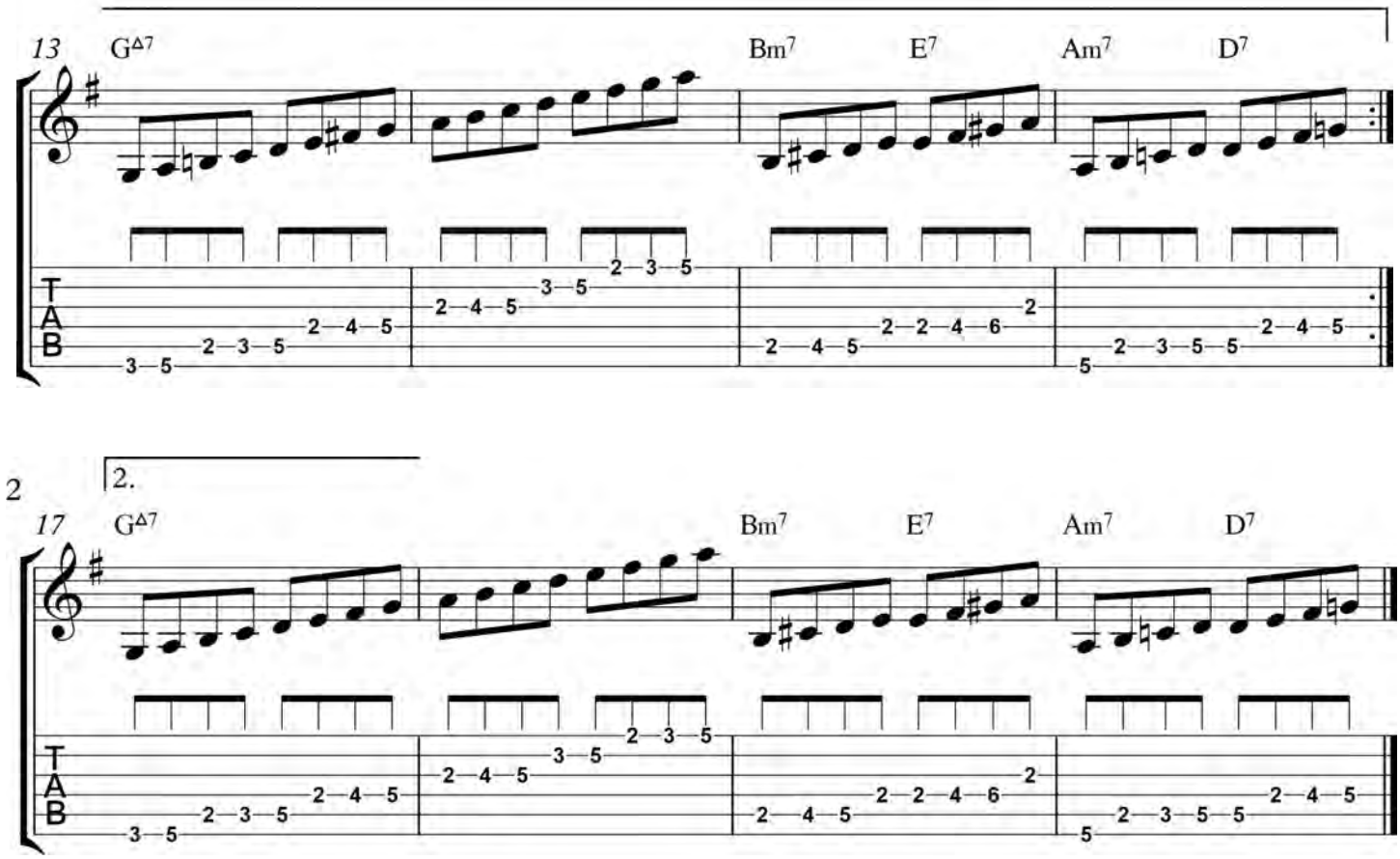
Exercise 1



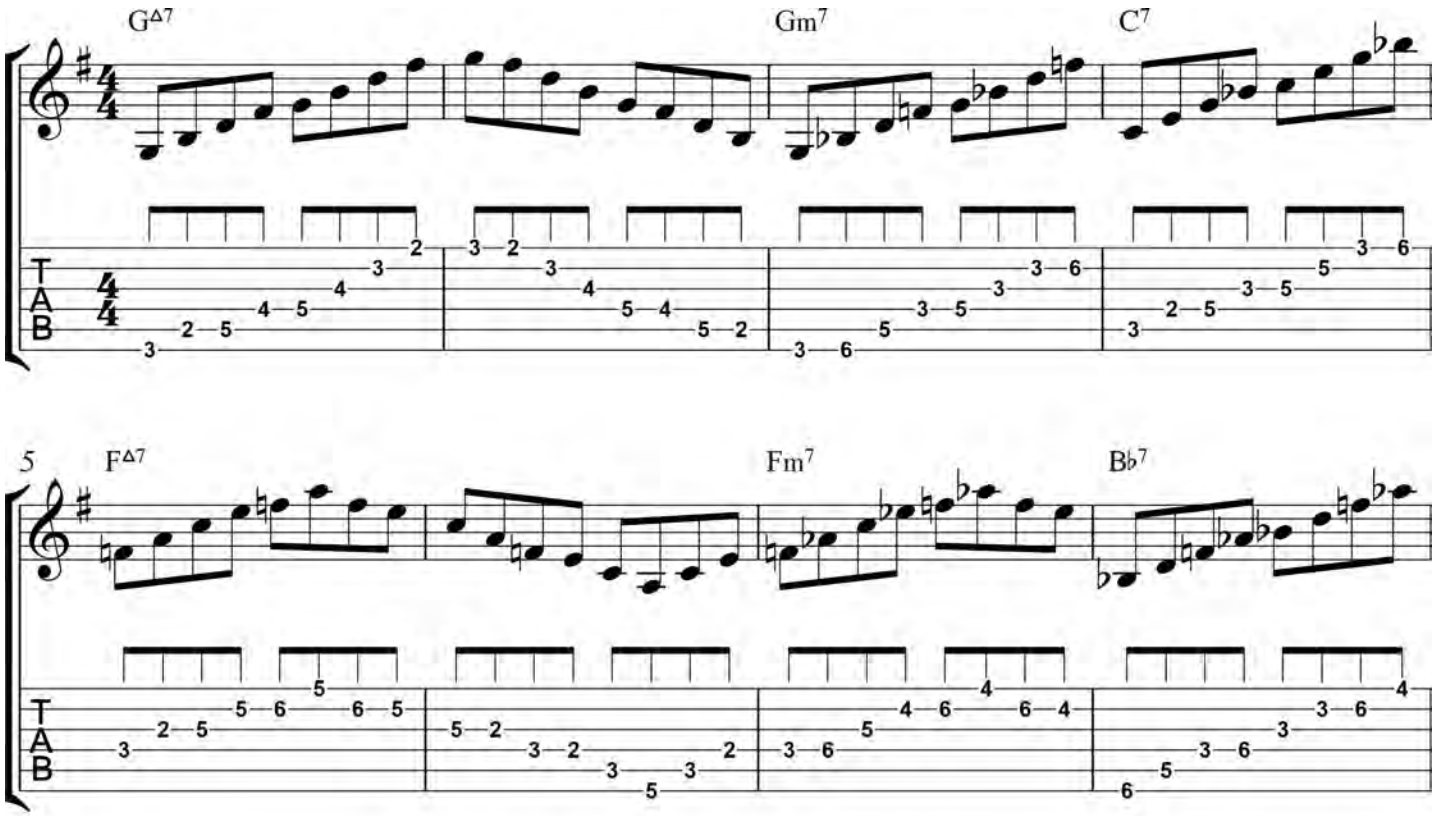


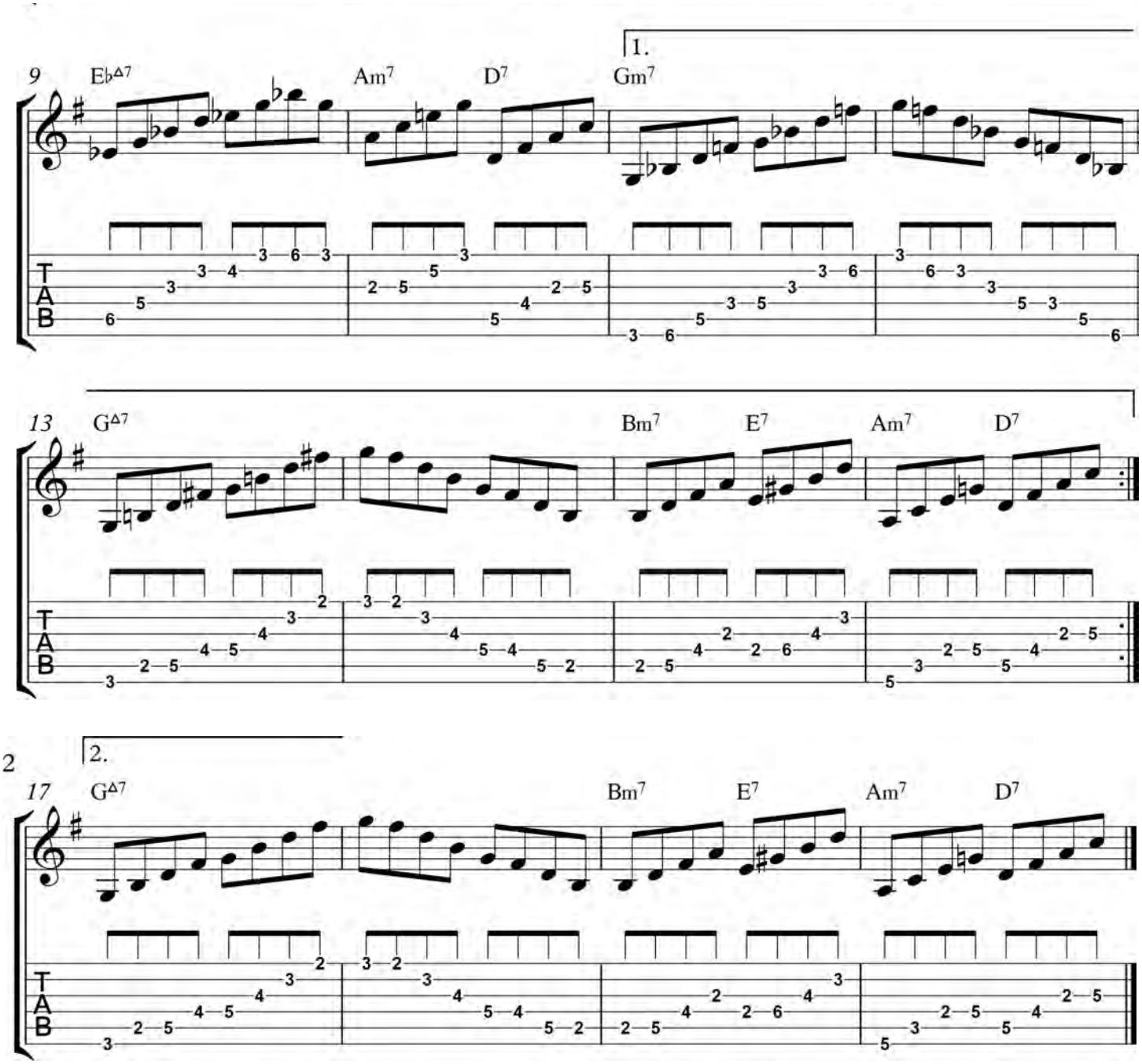
Exercise 2



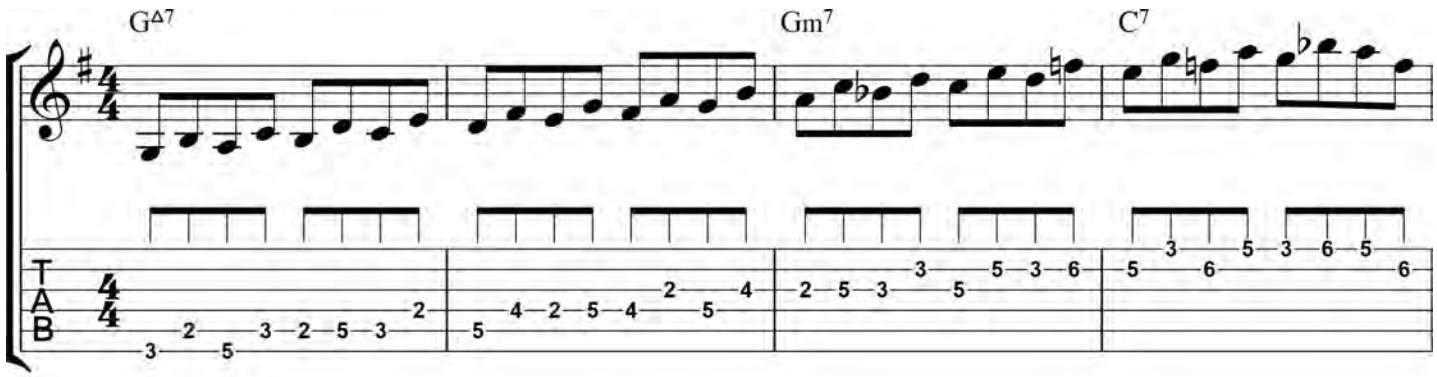


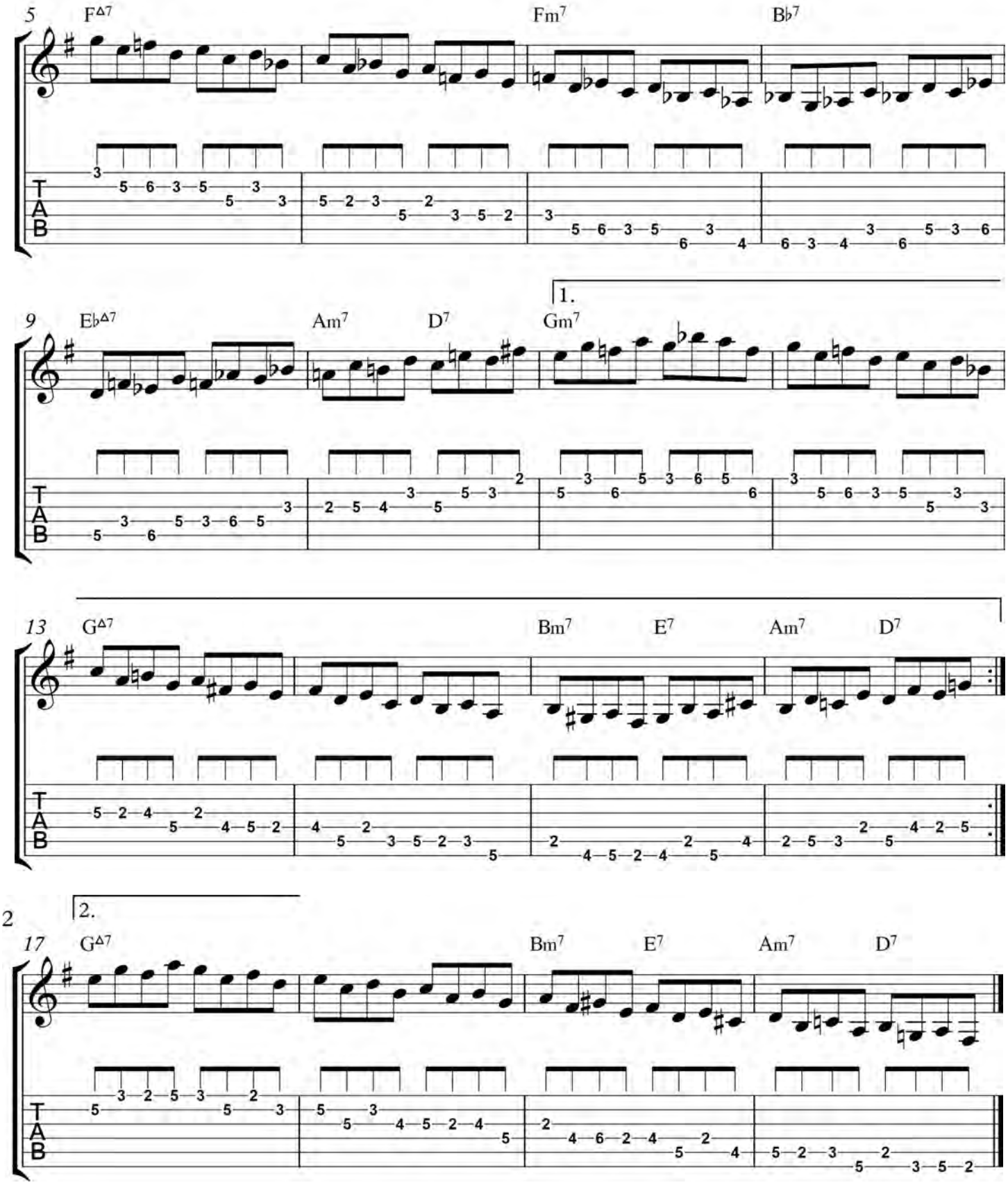
Exercise 3




9
E♭Δ7
Am7
D7
1.
Gm7
13
GΔ7
Bm7
E7
Am7
D7
2
2.
17
GΔ7
Bm7
E7
Am7
D7

Exercise 4

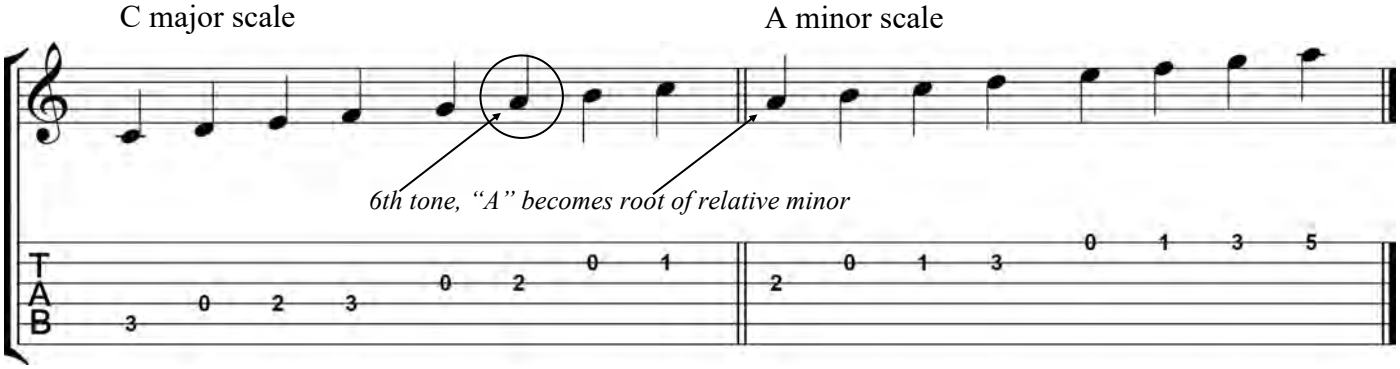

GΔ7
Gm7
C7


5
F△7
Fm7
B♭7
9
E♭△7
Am7
D7
Gm7
1.
13
G△7
Bm7
E7
Am7
D7
2
17
G△7
Bm7
E7
Am7
D7
2.

Minor Scales

Here's the good news: you already know the fingerings for minor scales! Here's the bad news: there are three forms of the minor scale, two of which require alterations to the fingerings you have already learned.

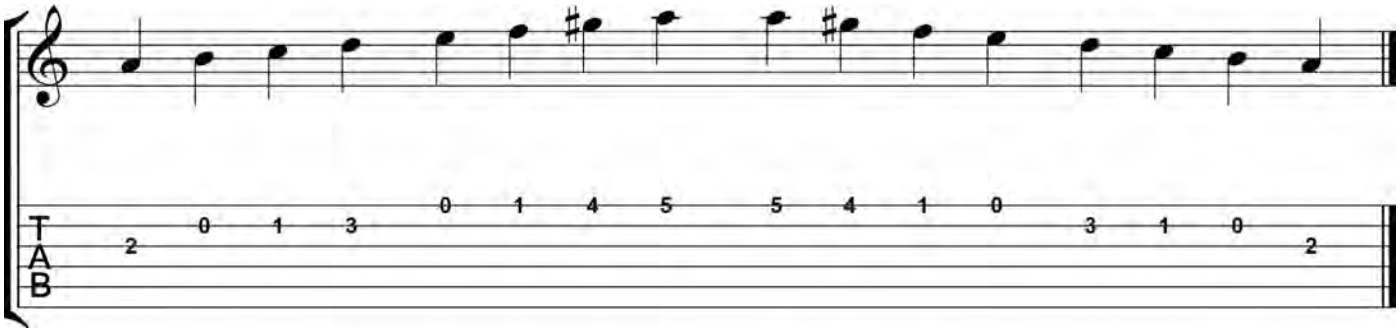
The theory in a nutshell: every major scale has a *relative minor*. The relative minor contains the same notes as the major scale but starts on its sixth note. Think of a C major scale. Its sixth tone is an A. Play the C scale starting on A and you have an A minor scale.



We're guitar players so let's act like it and find a shortcut to make this easier. The root of a minor scale is three frets lower than the root of its relative major. Conversely, to find the relative major scale for a given minor, simply play the notes of the major scale that starts 3 frets higher.

The relative minor as we've discussed it is named the *pure* or *natural* minor scale. There are two other forms, the *harmonic* and *melodic*. Harmonic minors start with the notes of the pure minor but raises the seventh tone one half-step. Making this change results in the V chord changing from a minor 7th to a dominant 7th, maintaining the V/I, tension/release found in the major scale. Raising the seventh creates an oddity, though. The scales we've studied so far all progress by half-steps and whole-steps. Look at the space between the sixth and seventh tones—it's a step-and-a-half. That interval is what gives the harmonic minor its distinctive flavor.

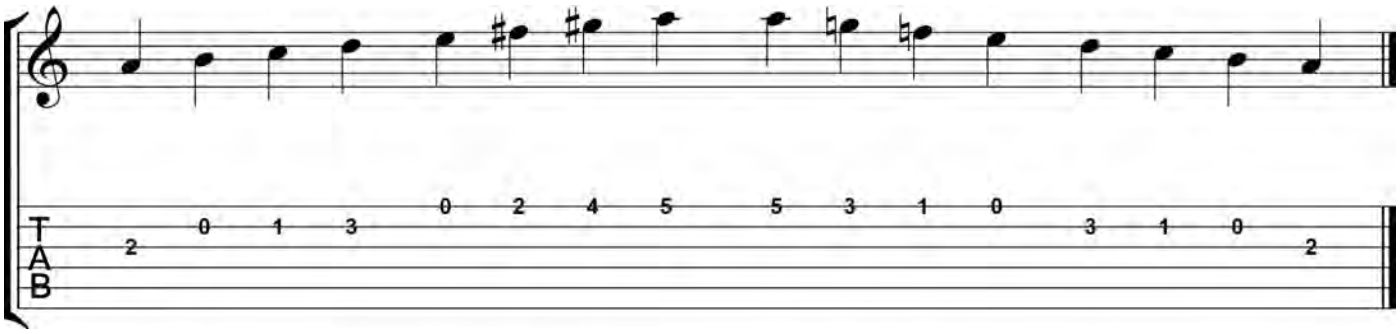
A harmonic minor



The melodic minor eliminates that odd interval by raising the sixth tone as well as the seventh. The melodic minor is unique because it's the only scale in Western music that contains different notes when it descends. There's an easy explanation for that: try singing the ascending form of the melodic minor

backwards. When you get to the third, what note does your ear take you to? ***C#*** not the C natural, right. That's because the notes you've played/sung up to that point are identical to the A major scale, which contains a C#.

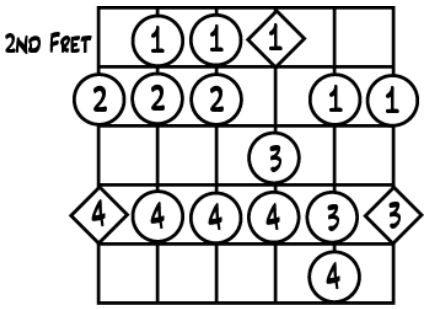
A melodic minor



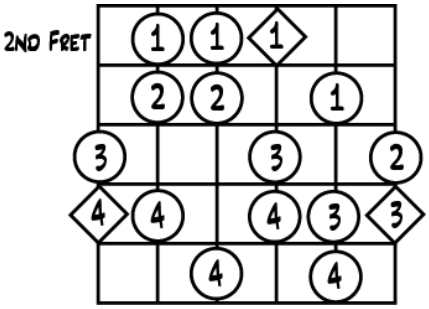
Creating Fingerings for Harmonic and Melodic Minor Scales

How do we modify the fingerings we already know to get fingering for the harmonic minor? We know that C major and A natural minor contain the same notes. To change that to harmonic minor we raise the G to G#. G is the fifth note of the C major scale. So, simply go through all the major scale fingerings we've already learned, in the key of C, and raise the fifth. Voila, as many fingerings for A harmonic minor as you could possibly want.

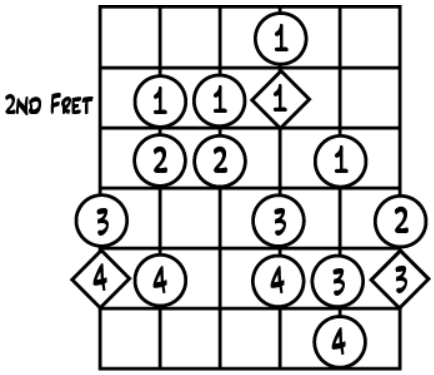
We learned this fingering as **2A,** in this position a C major. I've changed the root indicator (diamond shape) to an A note to reflect I'm thinking of this now as an A natural minor scale.



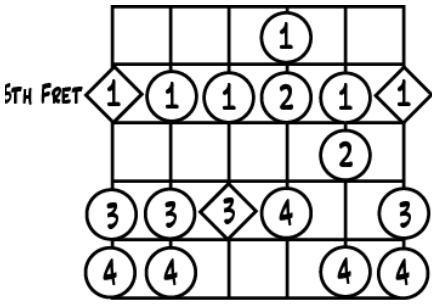
Here's the most straightforward conversion to the harmonic minor. I have simply moved all the G notes up one fret. Using the same naming convention, this is harmonic minor fingering 4E



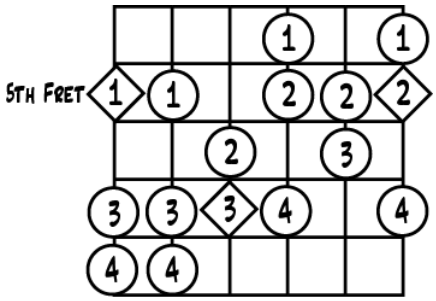
As you can imagine, various alternate fingerings can be devised to deal with the awkwardness on the 4th string; here is one example.



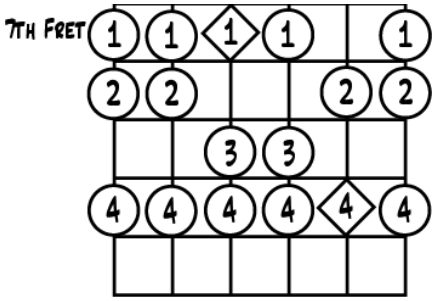
Major scale fingering **4E**, root shown here for natural minor.



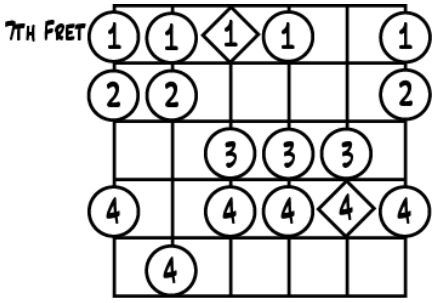
Harmonic minor fingering 1E.



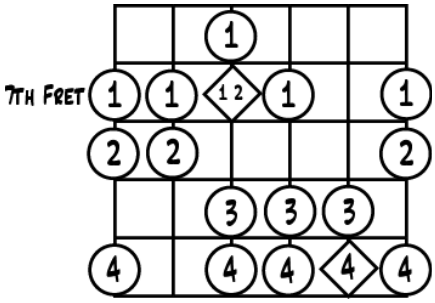
Major scale fingering **2E**, root shown here for natural minor.



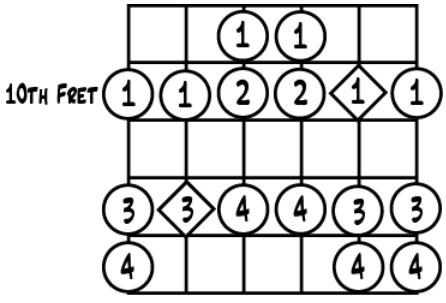
Harmonic minor fingering 1D.



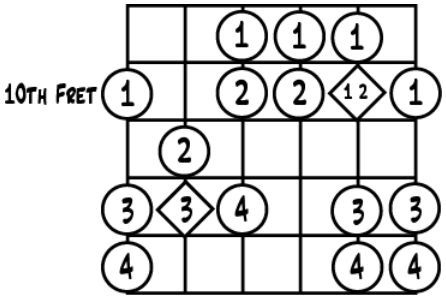
Alternate fingering. The "1 2" indicates that either finger can be used.



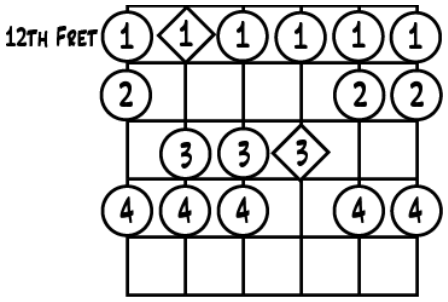
Major scale fingering **2D**, root shown here for natural minor.



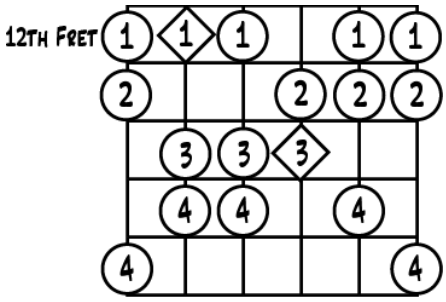
Harmonic minor fingering 3A



Major scale fingering **4A**, root shown here for natural minor.

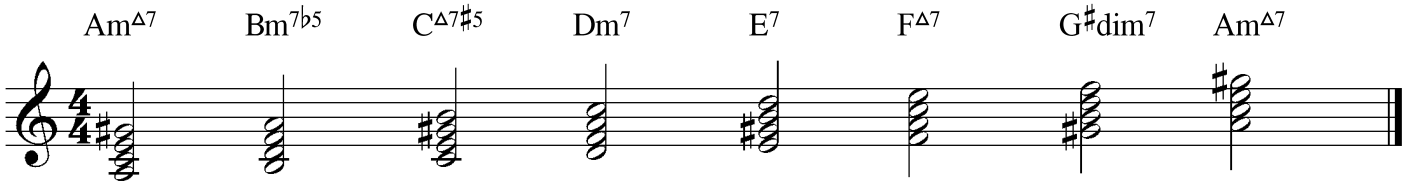


Harmonic minor fingering 1A.



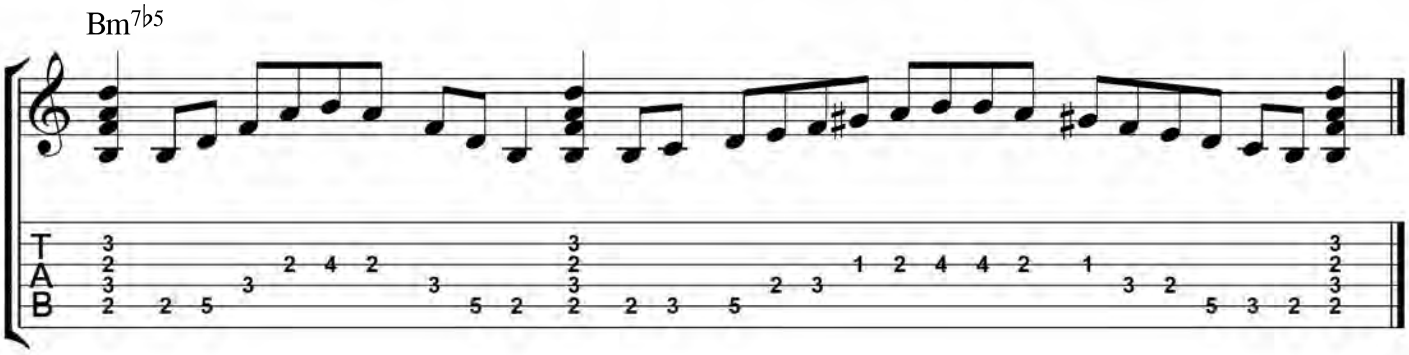
There you are. Now what good are they? Other than the obvious "let's play some sucky sounding, fake flamenco!" Seriously, though, if you really are going to play some sucky-sounding-fake-flamenco music, unless you're John McLaughlin, and I'm willing to bet you're not, DO NOT play stupid fast scale things on a nylon string guitar with a pick. It's cheating.

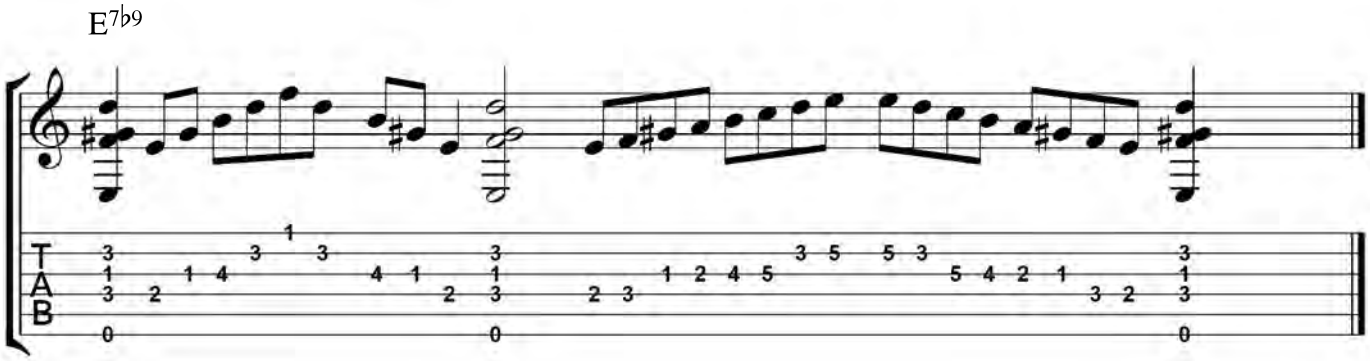
Where was I? Oh yes, harmonic minor scales, what good are they? Here's the starting point, the chords



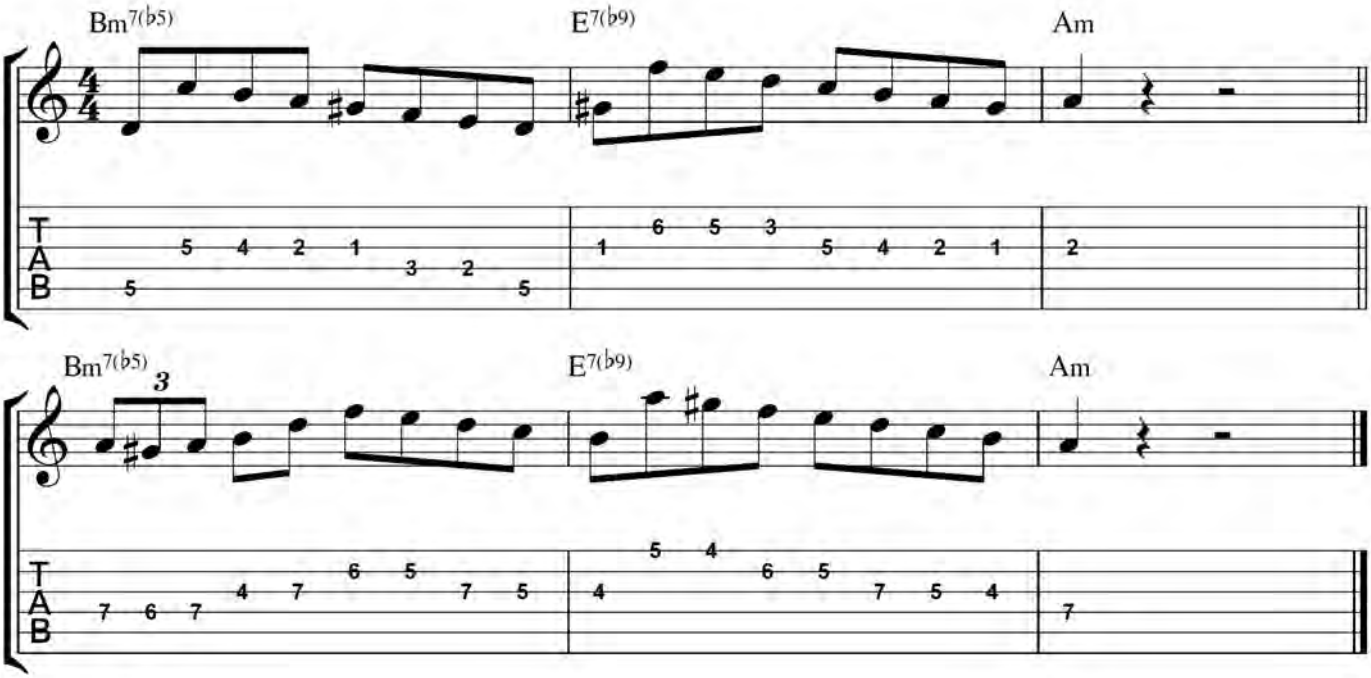
built from an A harmonic minor scale. We know from previous explorations that we can use a scale to create a melodic line on any chord whose notes are present in it. So you can use the A harmonic minor on any of the chords listed above. But there is one basic application that any aspiring improviser needs to internalize, the minor ii V. In this example, Bm^{7b5} and E7.

Let's start by building a connection between the sound of the chords and the sound of the scale. I use an idea presented in the old *Joe Pass Guitar Style* book; play the chord, play the arpeggio, play the chord, play the scale starting on the root of the chord and finally, play the chord again.

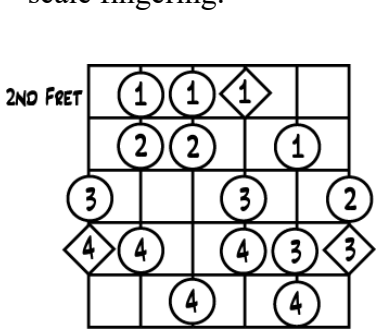




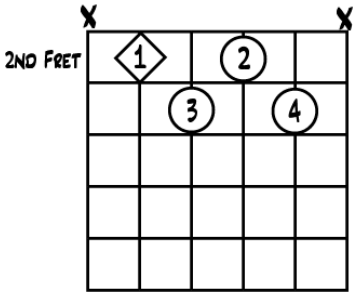
Here are a couple of examples in context. I'm employing an old melodic device here, start on a chord tone, skip up a 7th and return down the scale to the original note.



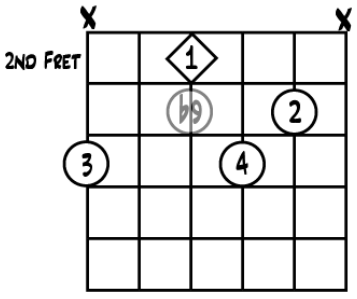
Another key, for me, to help with the usability of these patterns is to visualize the chords within the scale fingering:

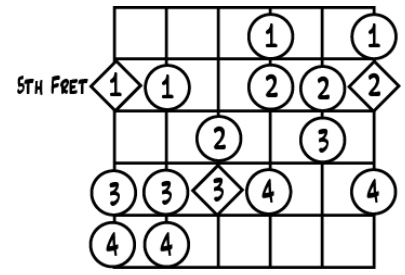


Bm7♭5

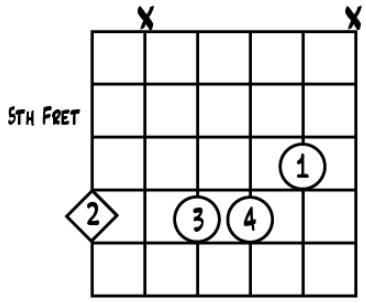


E7

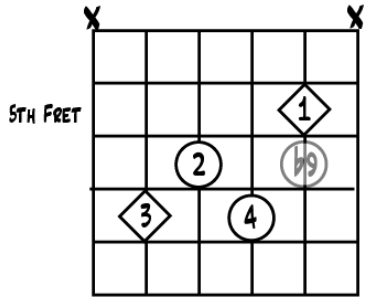


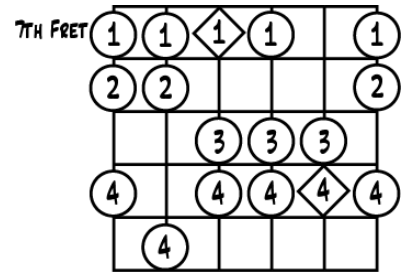


$Bm^{7\flat5}$

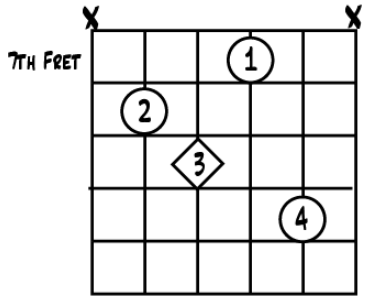


E^{7}

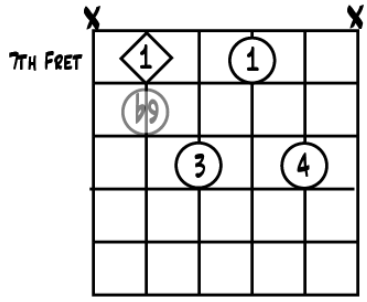


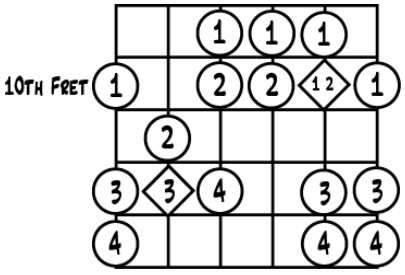


$Bm^{7\flat5}/F$

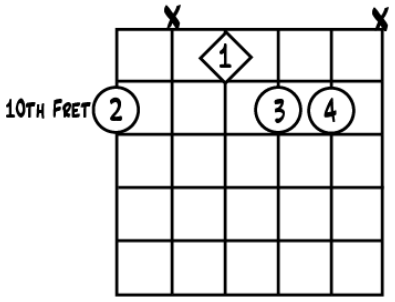


E^{7}

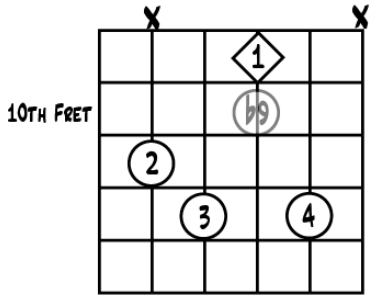


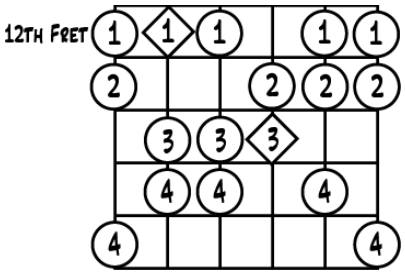


$Bm^{7\flat5}/D$

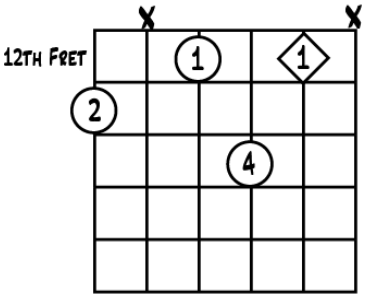


$E^{7}/G^{\sharp}$

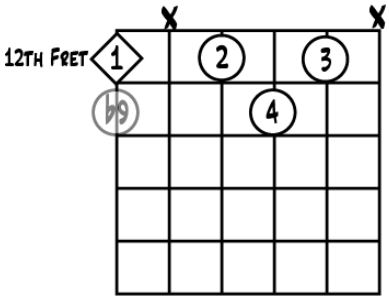




$Bm^{7\flat5}/F$



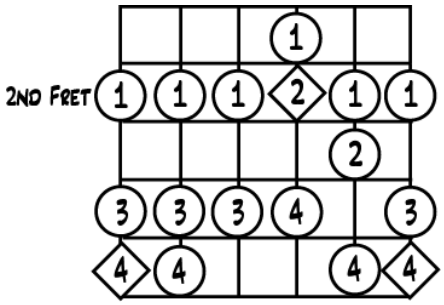
E^{7}



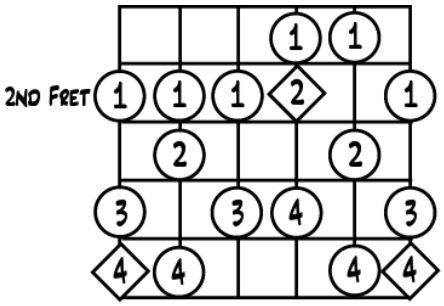
You should go through each of these fingerings and play the chord/arpeggio/scale exercise laid out on pages 43 and 44.

We can apply the same process used for the harmonic minor fingerings to create forms for the melodic minor. I should say that here I'm thinking of the "jazz" melodic minor which forgoes reverting to the natural minor when it descends. The melodic minor is the same as a major scale with a lowered 3rd. So, again, start with the major scales and simply flat the third.

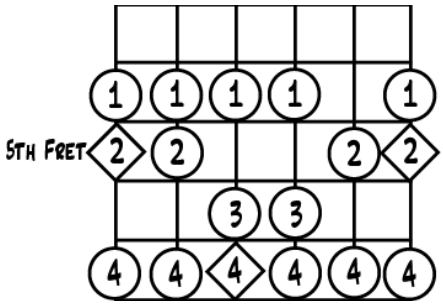
Major scale fingering 4E, key of A.



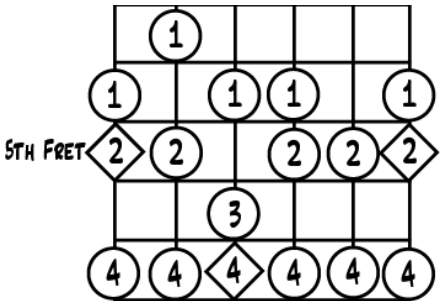
Melodic minor scale fingering 4E, key of A minor. Notice the 2 C#s in the major form have been lowered one fret.



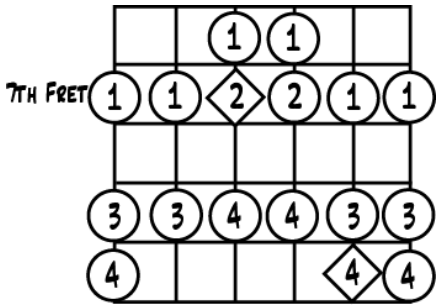
Major scale fingering 2E, key of A.



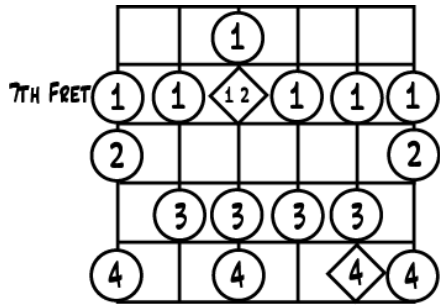
Melodic minor scale fingering 2E, key of A minor



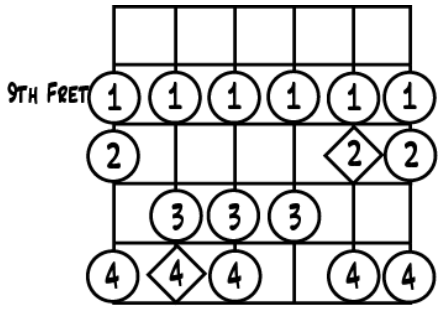
Major scale fingering 2D, key of A.



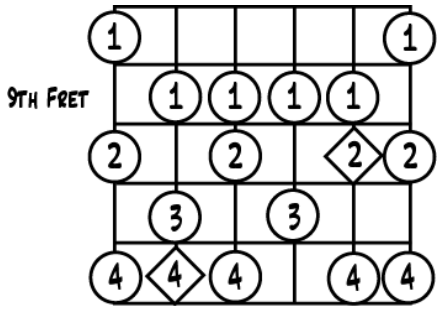
Melodic minor scale fingering 2D, key of A minor



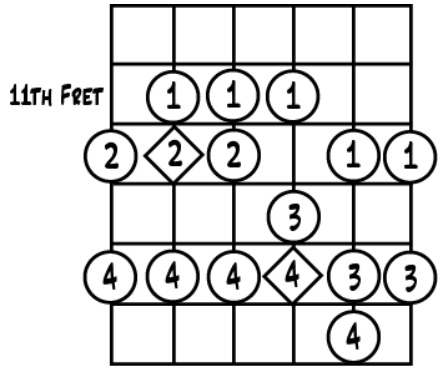
Major scale fingering 4A, key of A.



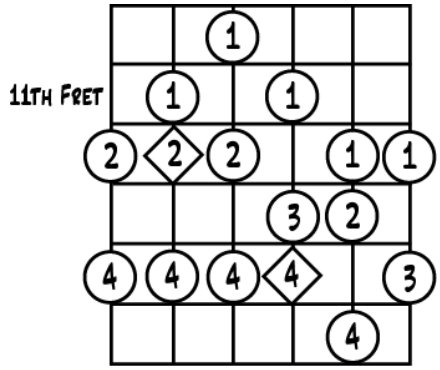
Melodic minor scale fingering 4A, key of A minor



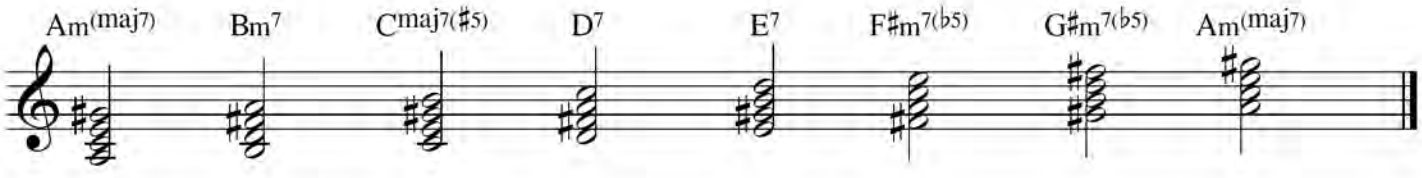
Major scale fingering 2A, key of A.



Melodic minor scale fingering 2A, key of A minor

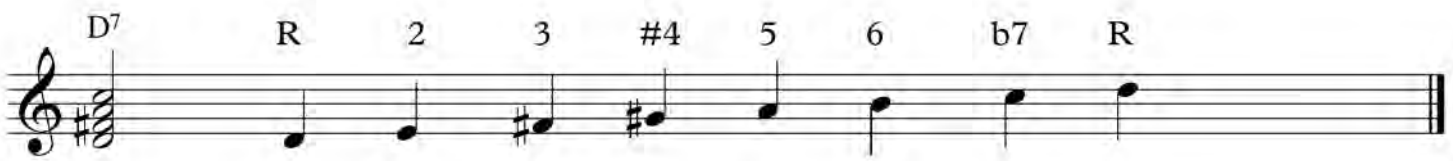


Time for the same question asked earlier: I've got the fingerings, how do I apply them? The answer starts the same, with the chords built in the traditional manner from the notes of the scale. It's going to get a little weirder though. Just hang on.



Same rules - since the notes of these chords are contained in the scale, you can use the melodic minor to create melodies for any of them. The applications I use most are the 4th, 6th and 7th tones of the scale, in this key, D7, F#7m7b5 and G#... we'll discuss that in a moment.

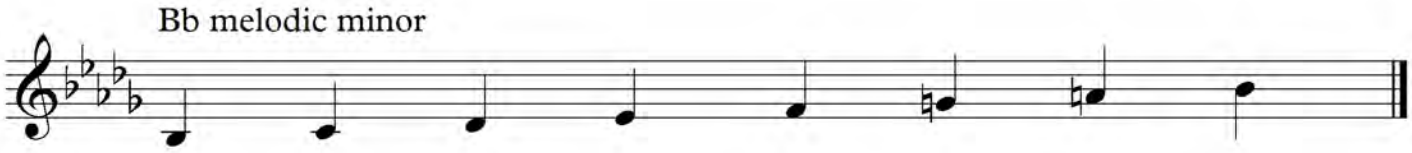
The application against vi^{ø} is straight forward - say you have a Bm7b5 (B^{ø}). Ask yourself, "B is the 6th tone of what?" Well D, of course. So use a D melodic minor to create some undying melodic statement over the B half-dim chord. And yes, I have used three different names for the same chord. A chord built with a root, b3, b5 and b7 can be named using either m7b5, half-dim or the symbol ^{ø}. Get used to it. Let's look at the other two in more detail.



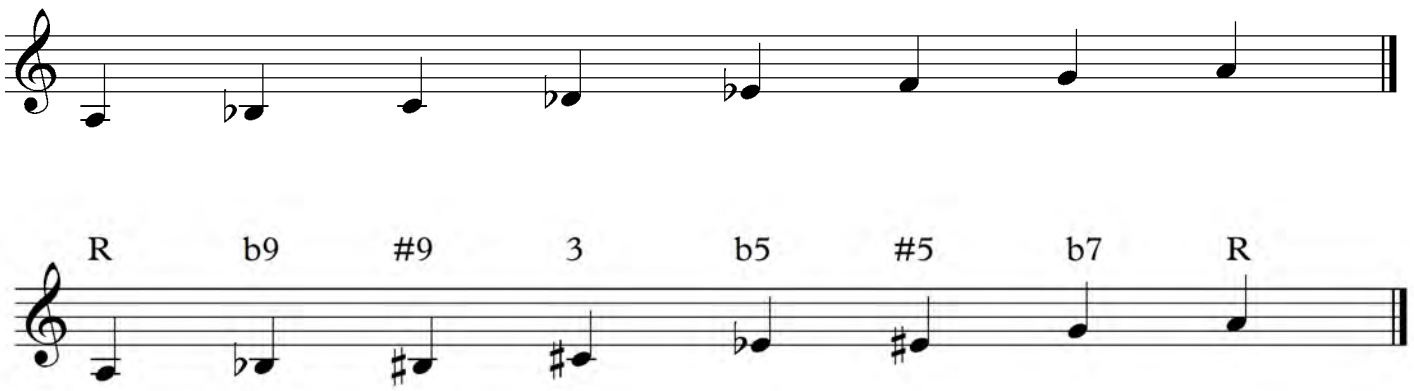
Here's the D7 chord followed by the notes of the A melodic minor starting on D with how each note functions against the Tonic (D). The thing to notice here is the #4. If you were to add this note to a D7 chord you wouldn't call it a #4, you'd call it a #11 (the same note up an octave) and if you want to know why you're in the wrong book - go check out *The Whole Chord Thing.* Okay, a little more info. This is one of those things that separate keyboard players from guitarists. It's easy for them to voice dominant chords that contain both the natural 5th and the #4 - not so much for guitarists. Nine times out of ten when I see a C7#11 in a chart, I grab a C7b5, in essence replacing the 5th with the #11 (b5). Guitarists tend to play fewer notes in their chords than pianists; it's the nature of the beast, so some sacrifices in harmonic density are inevitable.

All that by way of trying to save the reader some time. For years, since I played a C7b5 instead of a C7#11 in my comping, when it came time to solo I treated the chord in that manner. I overlooked the very neat solution of the IV mode of the melodic minor. Remember all those mode names I made fun of earlier - well this one has a silly name too, Lydian dominant. File the name away so you can use it later to impress the unwashed but remember, practice and internalize the application.

For our next discussion I'm going to move the scale up a half step so we can look at how the notes lay against an A instead of a G# (too many accidentals).



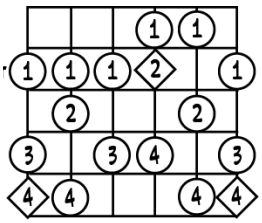
So, you're looking at this and saying - what the …. I thought you said you were getting rid of accicdentals and look at this!. Well…. why don't you just shut up for a little while. No, that's not what I meant. Here's the thing: we want to look at the function of each note against the seventh note of the scale. If I'd stayed in A minor that would be a G#. Which means our reference would be against a G# major scale where every note is sharped except the F, which is double sharped. As opposed to the Bb minor where our reference is an A - a mere 3 sharps. Easier to think about. Trust me - So here it is, and for clarity's sake, no key signature, just the relevant accidentals.



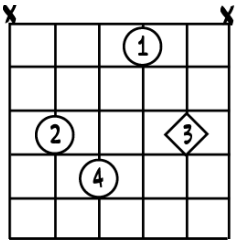
The first staff above contains the notes of the Bb melodic minor as we'd normally see them, starting on the 7th, A. In the second staff I have the same pitches but some of the notes are named enharmonically to indicate how they function against that A note. Notice that there is the root, 3rd and b7th, the basic notes of a dominant 7 chord, along with all the usual altered tones. That makes this a formidable tool for dealing with altered dominant chords when improvising. This scale has a modal name as well - the Super Locrian. I love that. Ironically. It's also called the altered dominant scale (for obvious reasons), and the diminished whole-tone scale, for reasons you will understand after the next section of this text (foreshadowing). It's a pretty easy application to get in your head (if not your ears). If you have any crazy altered dominant chord, say an Ab7#5b9, just play the melodic minor a half step higher, an A in this example.

Just like the harmonic minor applications, I find it easiest to visualize the chords within the scale fingering and then do that Joe Pass thing (see page 43). Maybe that should be my next book - *That Joe Pass Thing.*

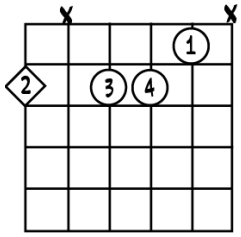
4E Mel. Min



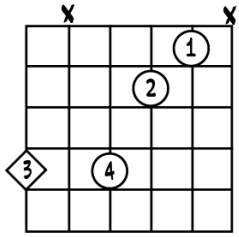
IV mode, 7#11, 7th in bass



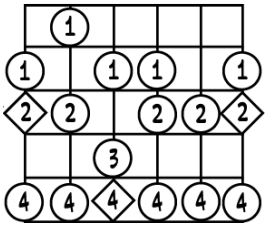
vi mode, m7b5



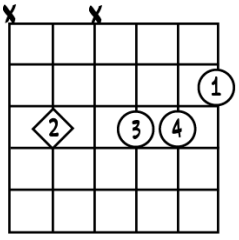
VII mode, 7b9



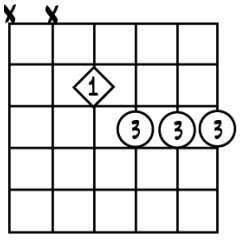
2E Mel. Min



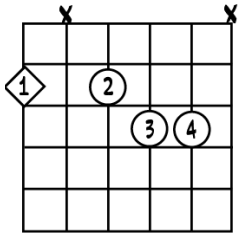
IV mode, 9#11



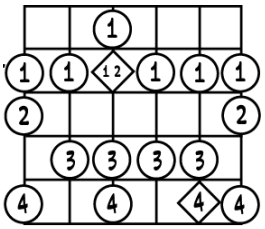
vi mode, m7b5



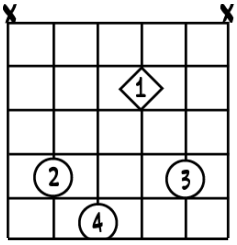
VII mode, 7#5



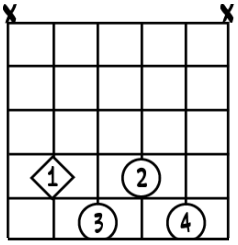
2D Mel. Min



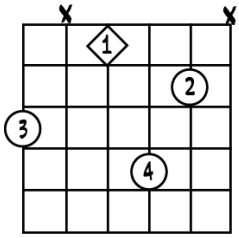
IV mode, 7#11, 3rd in bass



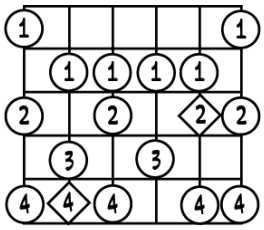
vi mode, m7b5



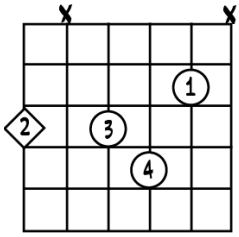
VII mode, 7#5, 3rd in bass



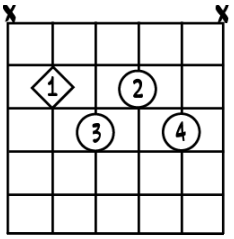
4A Mel. Min



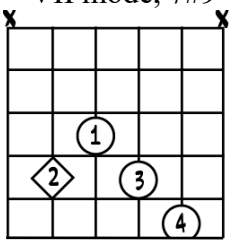
IV mode, 7#11



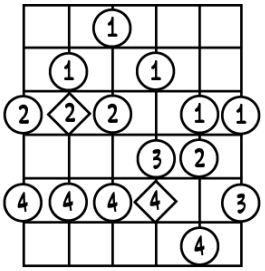
vi mode, m7b5



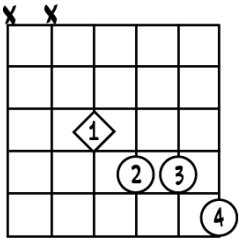
VII mode, 7#9



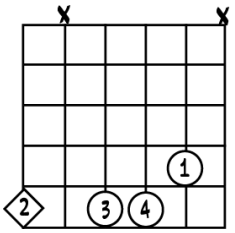
2A Mel. Min



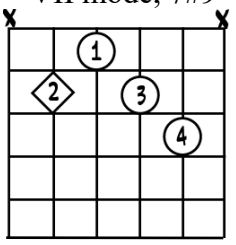
IV mode, 7#11



vi mode, m7b5



VII mode, 7#9

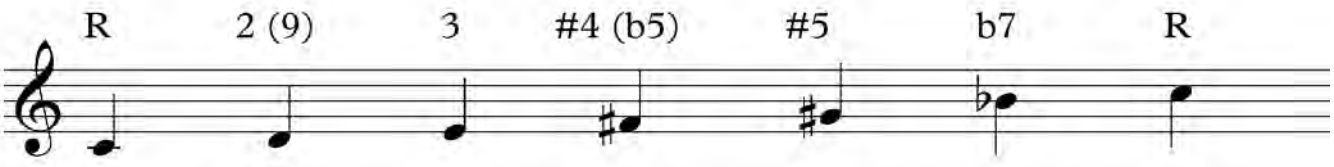


This concludes the section on diatonic major and minor scales. Make sure you have a good handle on the concepts presented so far before you proceed. I've played for over fifty years and still practice this material all the time. When I think I'm getting pretty good I just set a metronome on 160 and try to play all the fingerings of the melodic and harmonic minors in 16th notes. Then I listen to Frank Vignola, utter a few remarks questioning his character and his parentage, and start practicing some more.

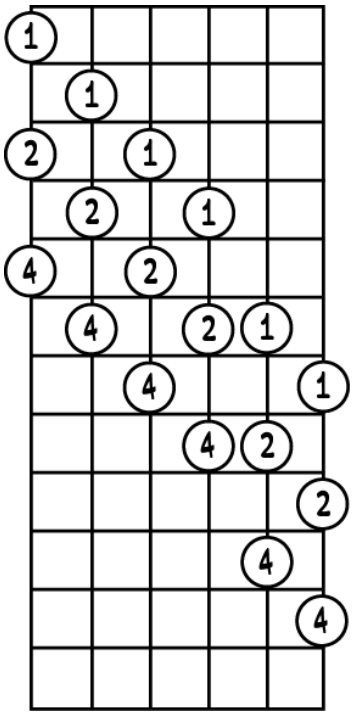
Non-Diatonic Scales

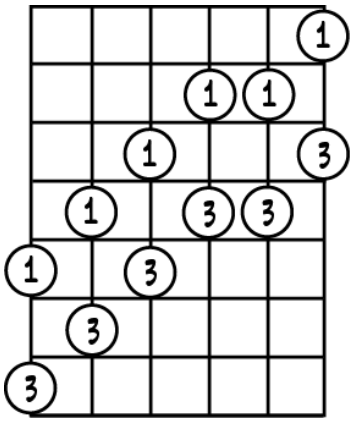
I. The Whole Tone scale

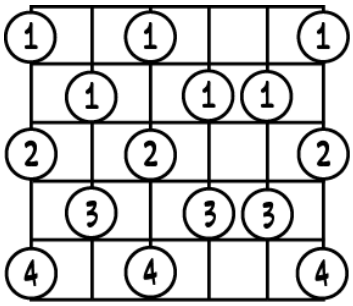
The name, 'whole tone scale' sort of tells you what you need to know. Pick a note and keep going up in whole steps until you hit the octave. As you see it contains R, 3 and b7 - the basic tones of the Dominant



7 chord, with the addition of the 9 and the raised and lowered 5. This gives you the easiest application for the whole tone scale, the Dominant chord with an altered 5th. There are 3 basic fingerings for the scale.



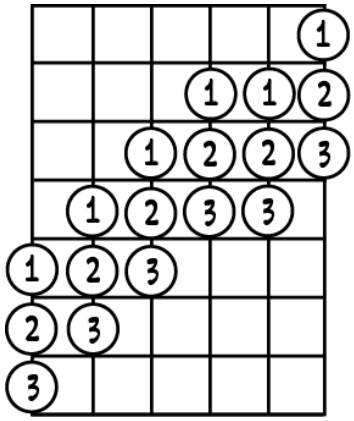




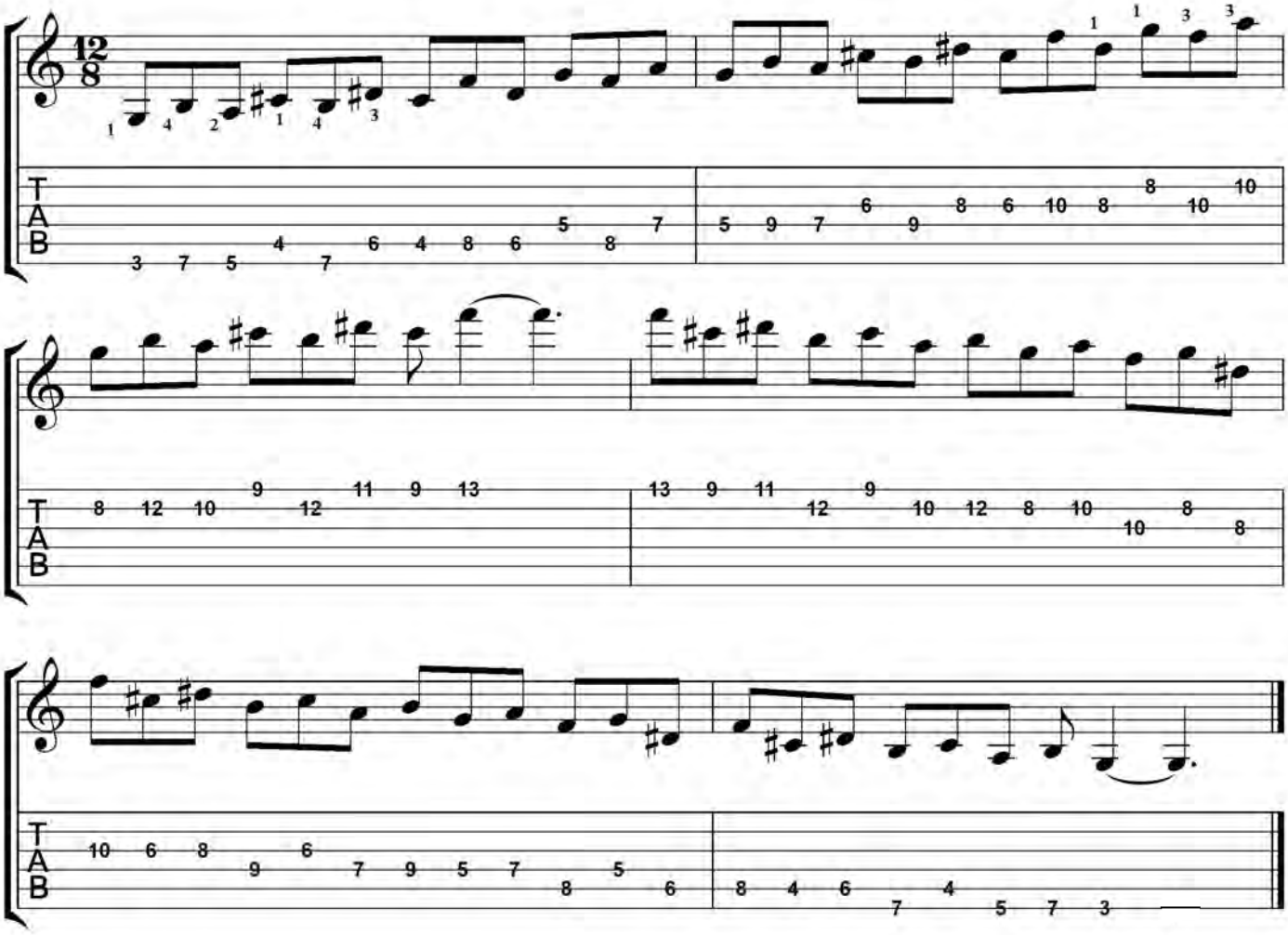
Here are a couple of things to ponder while you practice these fingerings: Notice I didn't use the diamond, root shape indicator anywhere here. That's because any note in the scale could be the root. How many unique whole tone scales are there? Two. The one that contains a C and the one that contains a C#. You should practice these scales the same way you practiced the diatonic scales. Play them in thirds, in groups of 3 and 4, etc.

In improvisation I find that students beginning to use the whole tone tend to announce its presence. They're playing along and the chords change to a 7#5 and all of a sudden it's, "Hey everybody. I'm playing a whole tone scale now!" To avoid that I often use a variation of the scale that I'm sure has a name but I just can't find it in me to plow through Nicholas Slonimsky's Thesaurus of Scales and Melodic Patterns right now and find it. All you do is take the middle fingering above and add the chromatic between the 1st and 3rd fingers on each string.

The I-don’t-know-what-to-call-this-but-it-functions-like-a-whole-tone-without-being-so-damn-obvious scale

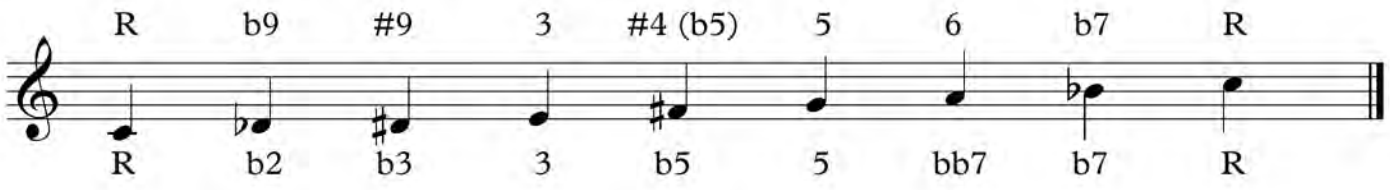


This is one of my favorite whole tone scale exercises - it’s just the 3-note-per-string fingering played in thirds but with a triple rhythm to make things a little more interesting.

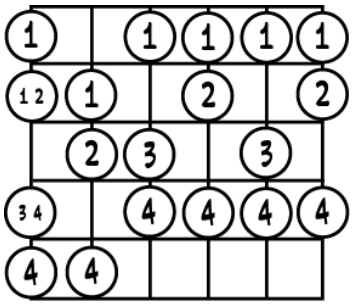


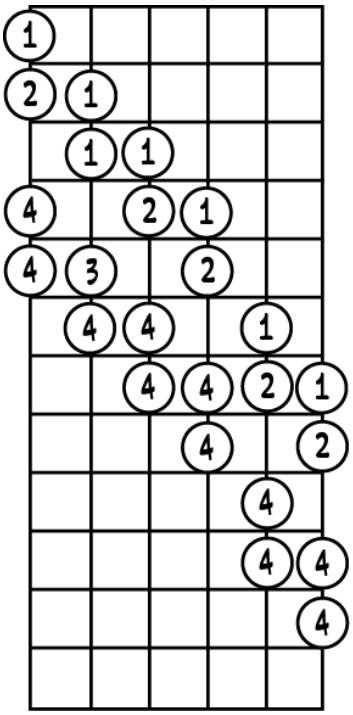
II. The Diminished scale

The Diminished scale consists of alternating half-steps and whole steps. You can create a diminished scale with either interval as the first and then just alternate, so it's important to specify which form of the scale you're discussing, the whole-half or the half-whole. In most improv contexts the half-whole is the one that's used and the one in the staff below. In applying the scale look at the illustration below and you'll see

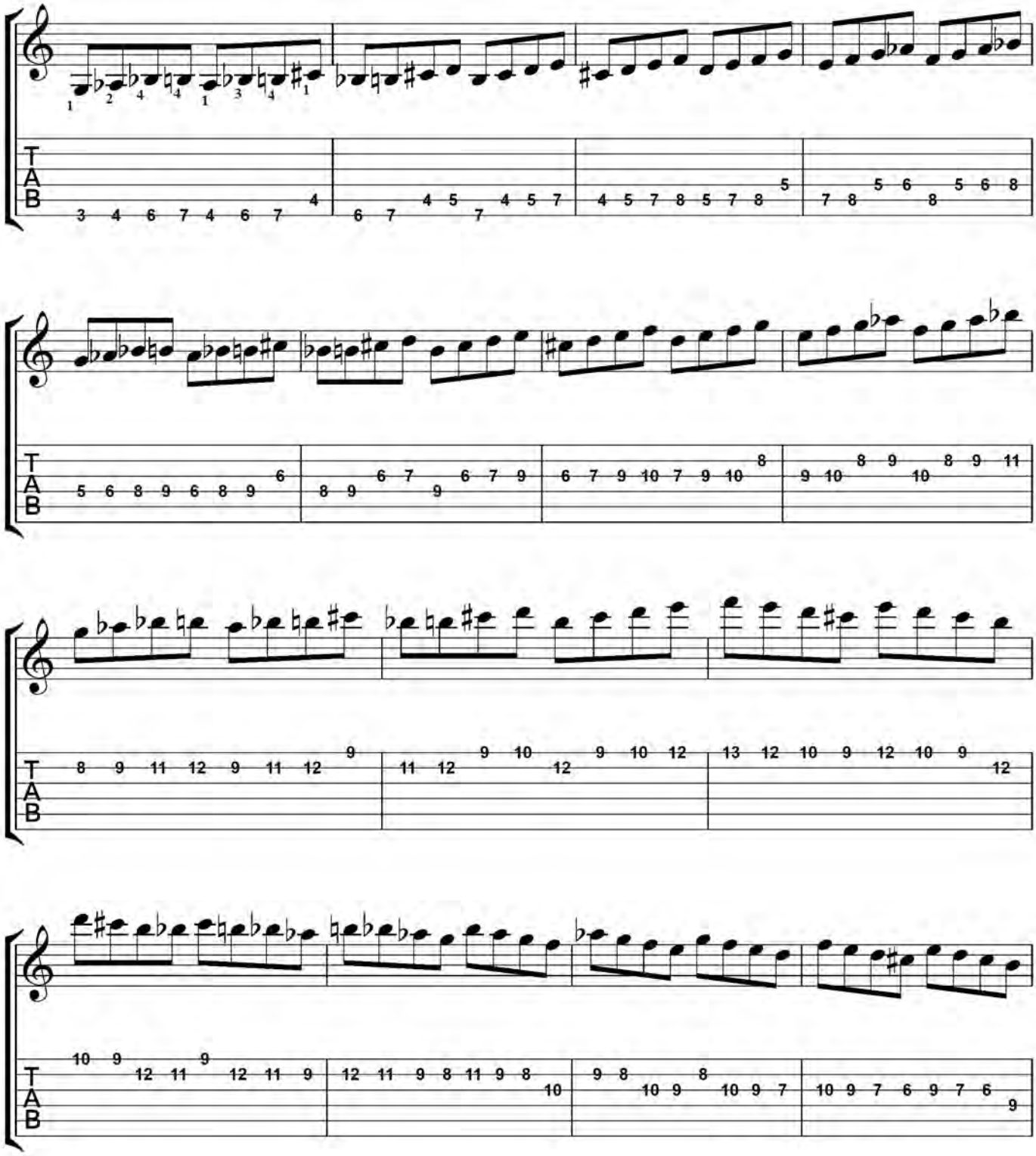


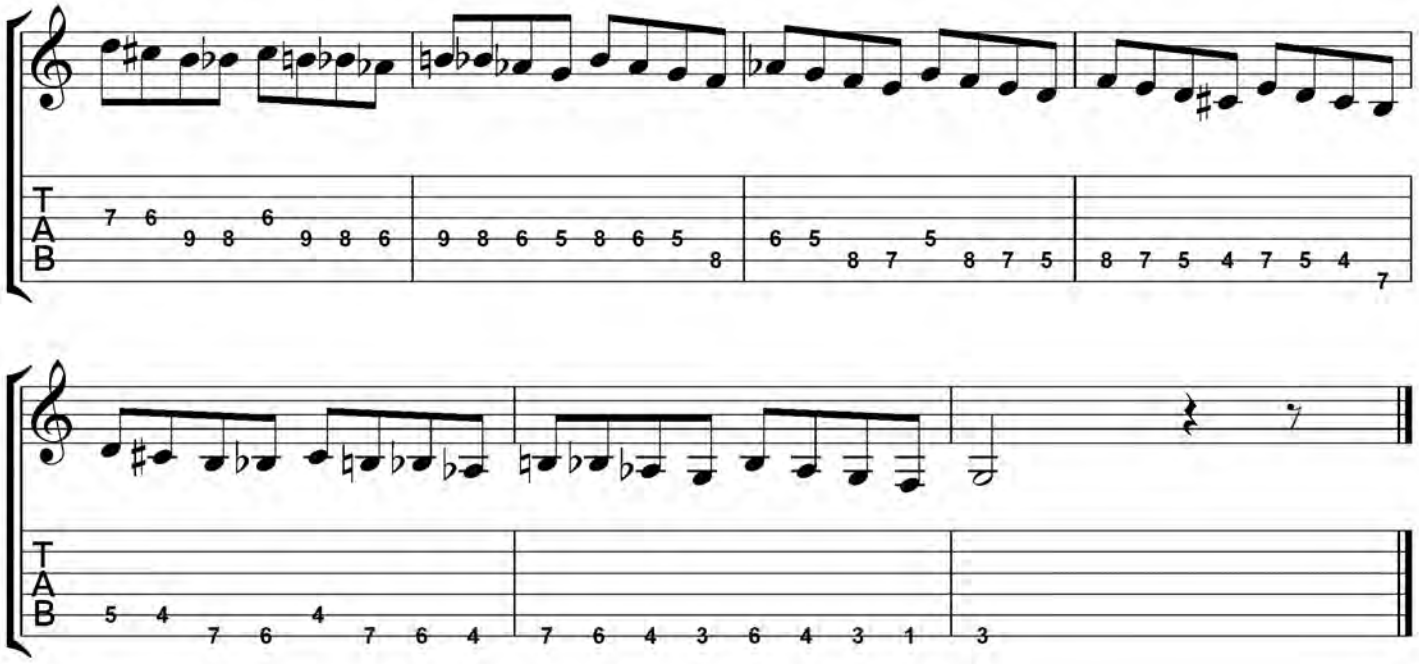
the top analysis makes clear how the scale fits a dominant chord and includes the altered 9ths. The lower analysis is provided just to show how this scale also fits either a diminished or half-diminished 7th chord. There are two common fingerings for diminished scale. Again notice the lack of any root indication - any note that is the lowest note in a half-step pair can be the root. The second fingering for this scale is a new one for this book, a 4-note per string shape. There are a few ways to deal with the fingering of this scale and I have presented the two I prefer. Both involve using one finger to play two consecutive notes by using a position shift. That shift will be with either the 1st finger or the 4th. I've chosen the fourth finger shift but just for illustration showed the other fingering on the 5th string. Try both and decide which works best for you.





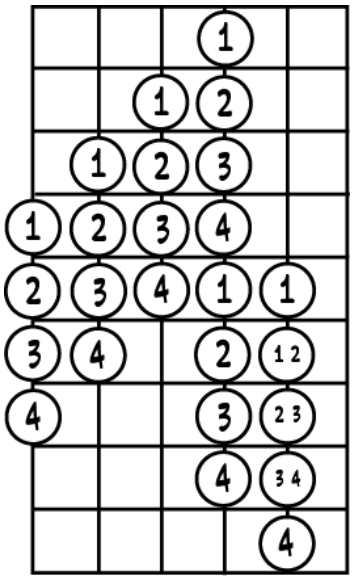
Here's a nice little exercise - it's the long form of the diminished scale in tetrachords. This one and the previous whole tone exercise are designed to get you moving all over the neck so go slow at first and work on making the position shifts absolutely smooth.

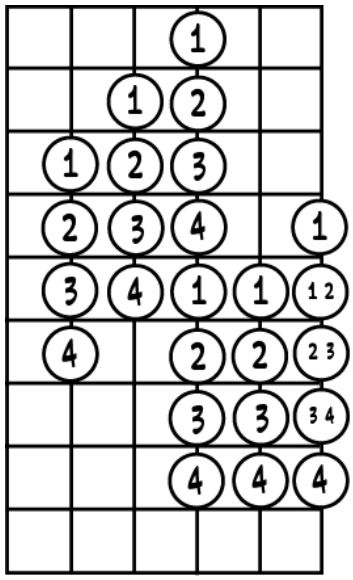




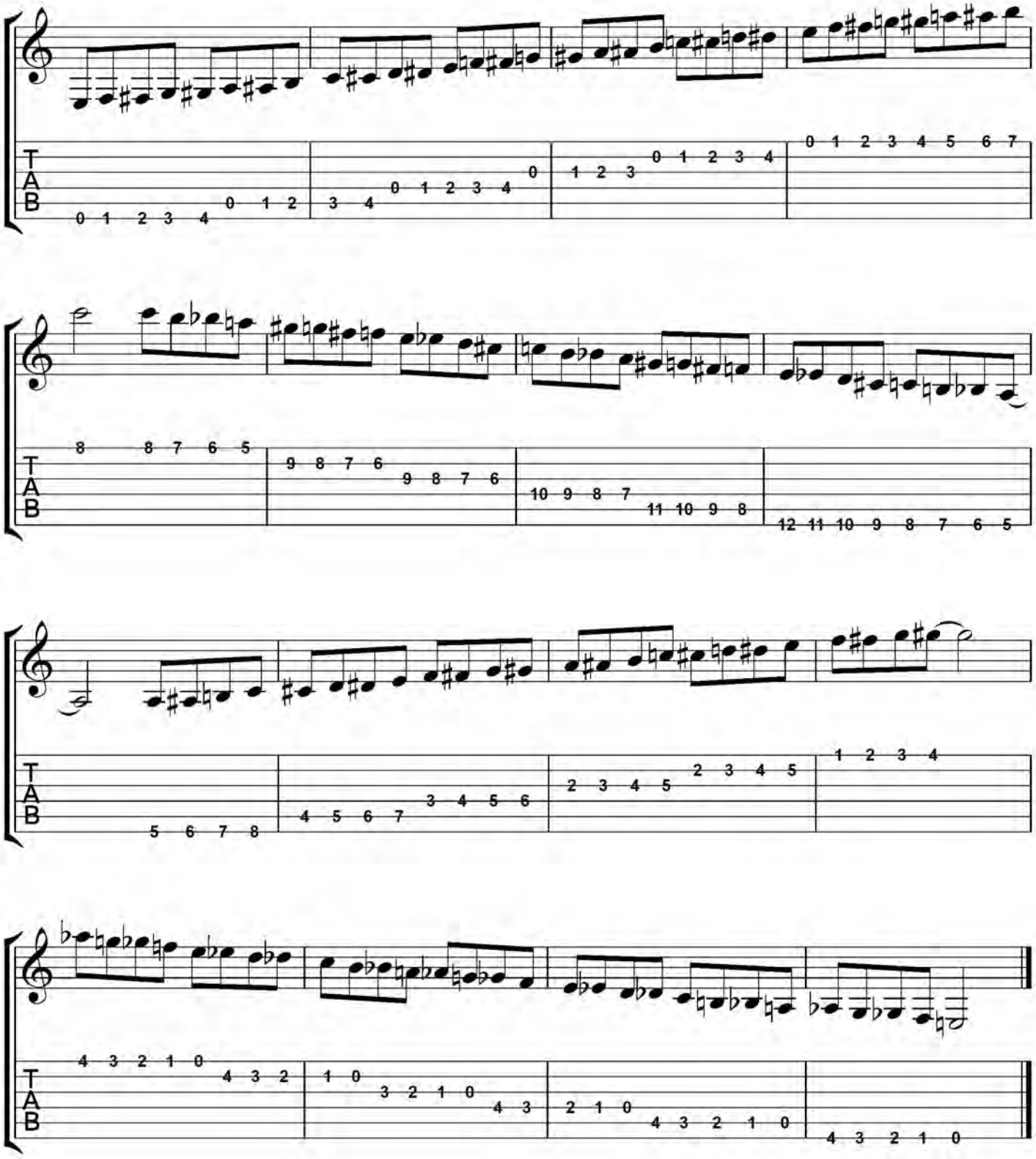
III. The Chromatic scale

Chromatic scales play every half-step. I use chromatic scales extensively in technical practice but they pop up surprisingly often in improvisation as well. I present here the 2 two-octave fingerings that I use and a longer exercise that has been part of my warm-up routine since I was a teenager.

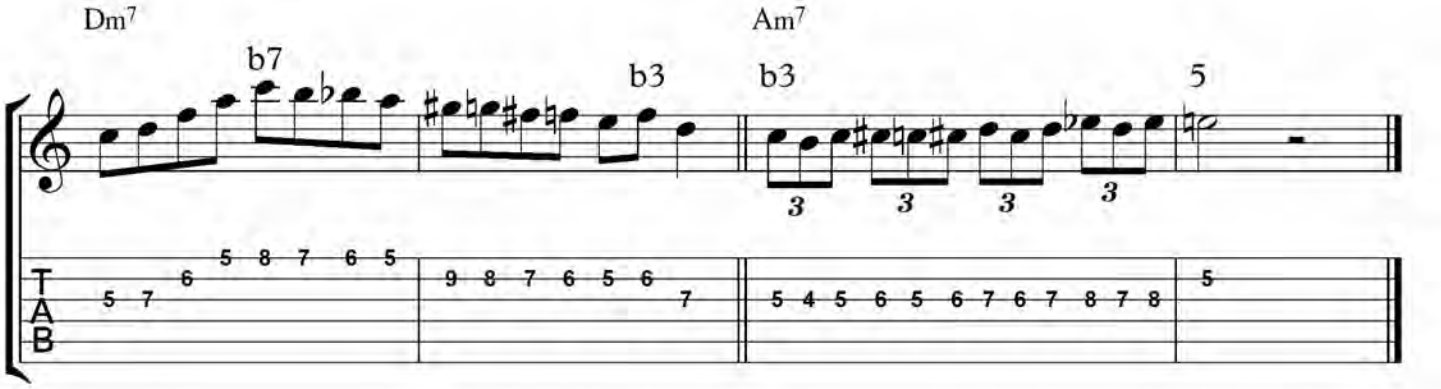




Chromatic Scale exercise



A common use of chromatic passages in improvisation is to connect two notes of an arpeggio. Of



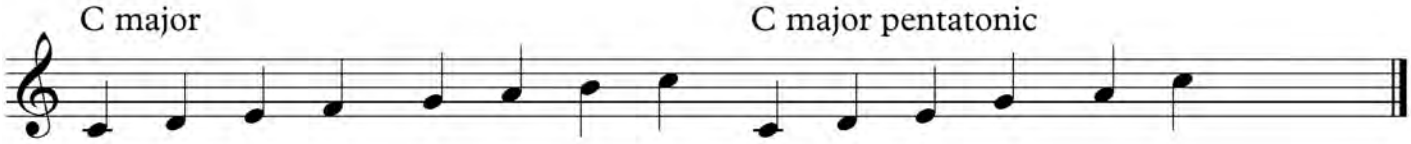
course if you listen to Django you'll hear little chromatic flourishes all the time. Try his patented one-finger chromatic sometime - you just slide your 1st finger up one fret at time, picking each note… in 16ths at 140BPM. Let me know when you've got that mastered.

IV. The Pentatonic scale

You already know these. I know you do. If you don't then you shouldn't be at this point in the book unless you're just reading the last sections first to see how it all turns out. I'll tell you… Jimmy did it. With a cleaver (Ward?). And he enjoyed it.

Now, where was I. Oh yeah, you already know these so why am I taking up time and space with them. For two reasons. One, I want this book to be thorough; and, two, I'm willing to bet you don't know everything I'm going to tell you about them.

Okay, again *pentatonic* - the name tells you most of what you need to know. A pentatonic scale contains five pitches. *Any* scale which contains five pitches can correctly be classified as a pentatonic scale, but conventional use of the term has come to mean a major or minor pentatonic. For simplicity's sake let's start with the major pentatonic. It contains the Root, 2nd, 3rd, 5th and 6th tones of the diatonic major scale.

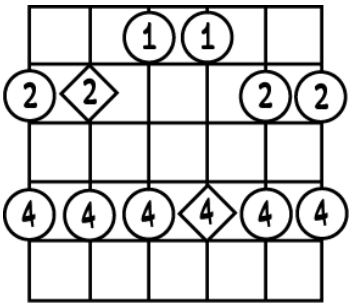
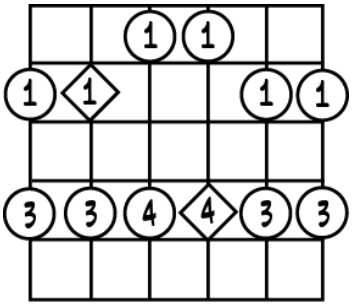
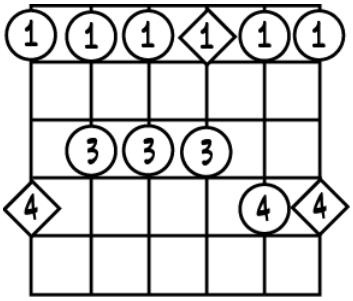
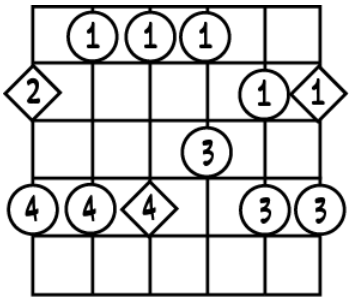
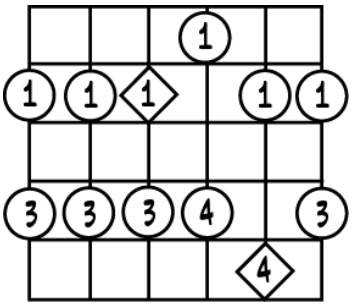
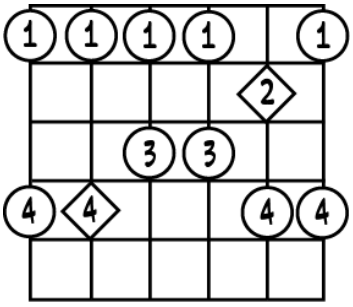


Stop for minute and think about what notes have been left out, the 4th and the 7th. Where are the half-steps in a major scale? Between the 3rd and 4th and the 7th and Root. Half-steps create dissonance and by eliminating those 2 notes the half-steps (and dissonance) have been removed from the scale, leaving a set of notes that I like to describe as bullet proof - stick with these notes baby and you'll never hit a clunker. It's why pentatonics have been the melodic source material for blues, gospel, folk and other genres for generations.

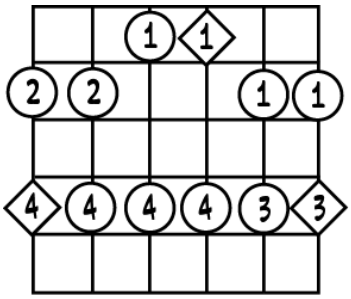
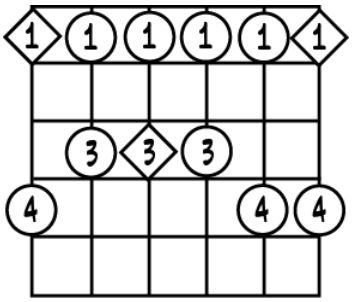
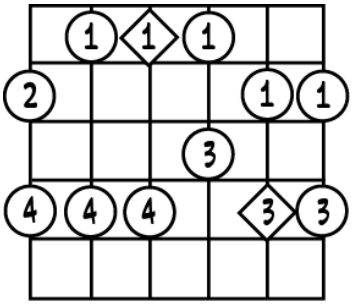
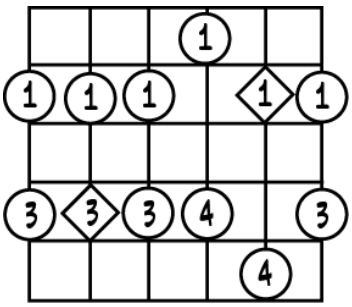
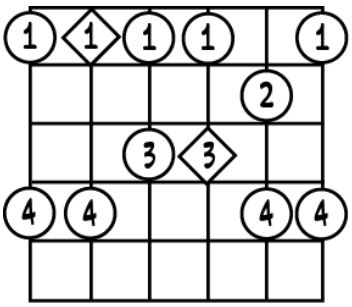
Major and minor pentatonic scales have the same relationship as their diatonic counterparts. So an A minor pentatonic scale contains the same notes as a C major. So, relative to their tonic notes, a C major pentatonic contains the root, 2nd, 3rd, 5th and 6th; the A minor pentatonic contains the root, b3rd, 4th, 5th and b7th. On the following page I present the five usual suspects, the pentatonic scale fingerings that you probably already know. And I'm doing it twice. One showing the roots for the major scale and the other showing the roots for the minor scale.

Major

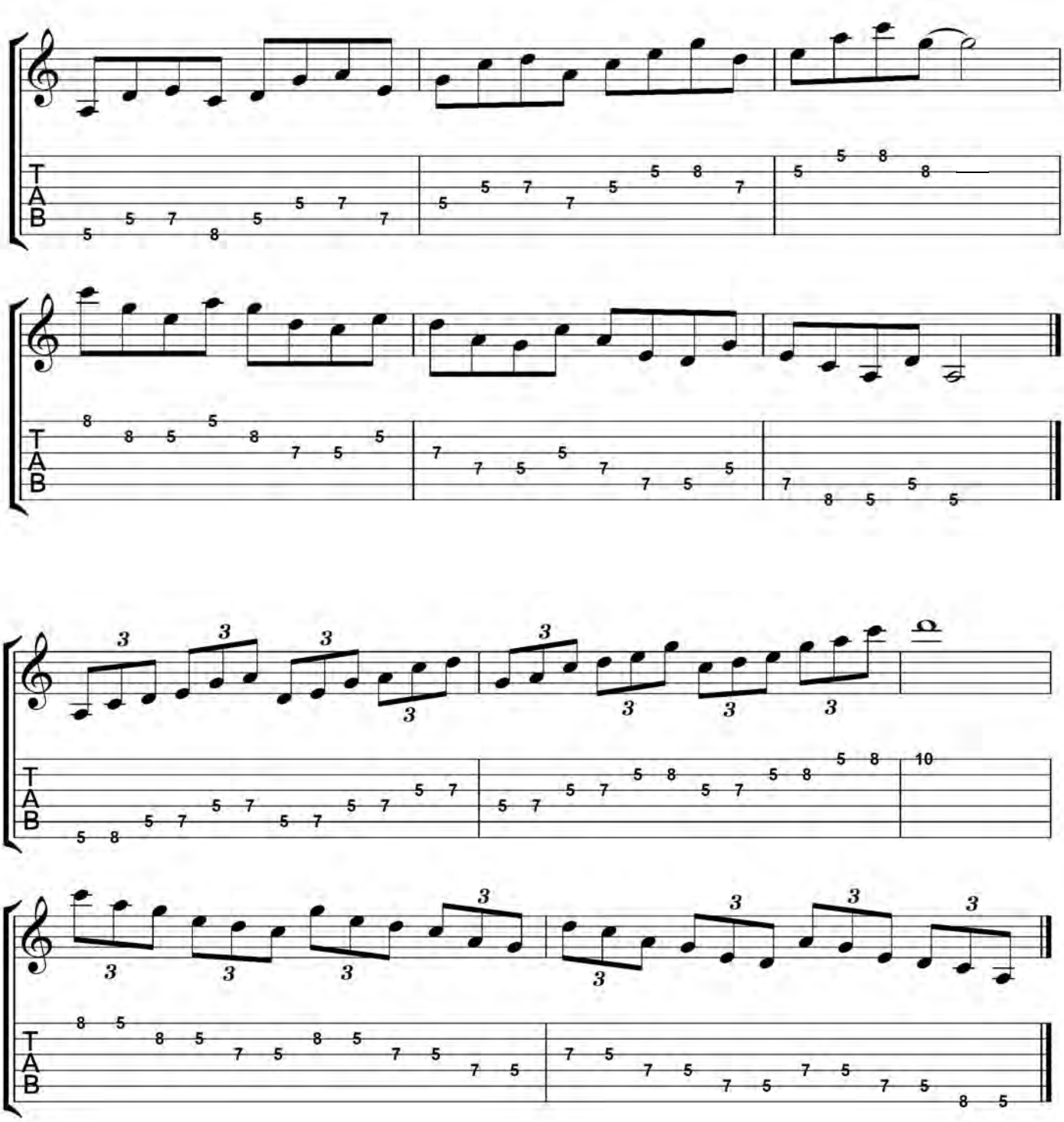
(alternate fingering)

Minor

Because I feel morally obliged to provide exercises for all this stuff, here are a couple of pentatonic drills that I really like and are not the ordinary technique builders everyone on YouTube tells you to do. Of course you should apply these to all the pentatonic fingerings.

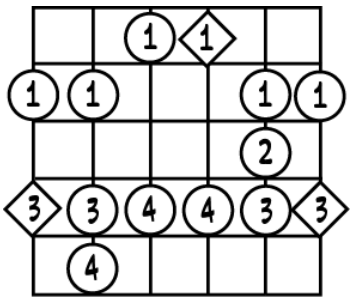


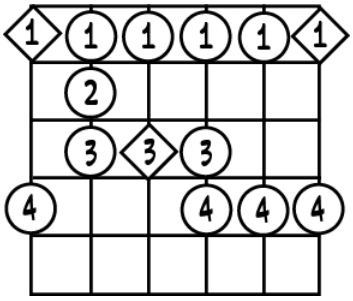
If you've progressed in anything close to the normal path guitarists take you have probably already built a fairly substantial arsenal of "licks" that use the pentatonic scale. Here's where I get to show you some new possibilities for those aging tricks. (Looking desperately for an old dogs witticism but am coming up laughingly short).

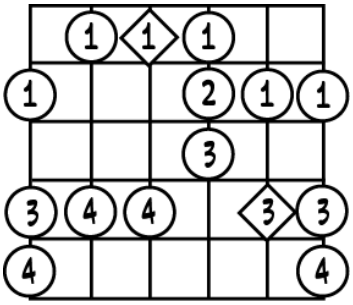
I'm going to borrow a math term. Don't run away. It's like grade school math. You can think of a pentatonic scale as a *subset* of the major scale. C major is {C, D, E, F, G, A, B}. C major pentatonic is {C, D, E, G, A}. If you look at it C major pentatonic is also a subset of F major {F, G, A, Bb, C, D, E} and G major {G, A, B, C, D, E, F#}. So, in theory, you could use the C major (A minor) pentatonic over any chord in those three keys: Cmaj7, C7, Dm7, D7, Em7, Em7b5, Fmaj7, F#m7b5, Gmaj7, G7, Gm7, Am7, Bb maj7, Bm7, Bm7b5. Some of these will appeal to you and others won't but it's great fun to figure out what you like. To get you started, find that friend who doesn't mind strumming chords for you or fire up the recorder and try this: Strum an F#m7b5 and play A minor pentatonic; Switch to Bb maj7 and stay on the A minor pentatonic. Pretty cool. If you can't think of any licks to play use the exercises on the preceding page.

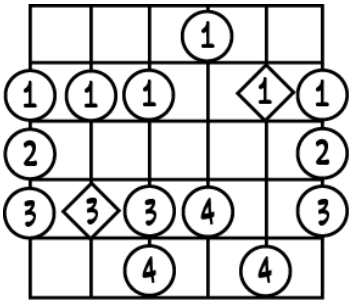
Modifications of the Pentatonic Scale

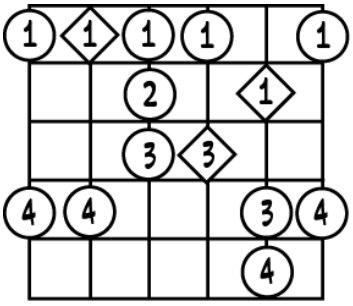
The most common modification of the pentatonic is the Blues scale, a minor pentatonic with the addition of the b5. Here are the standard fingerings for the blues scale.



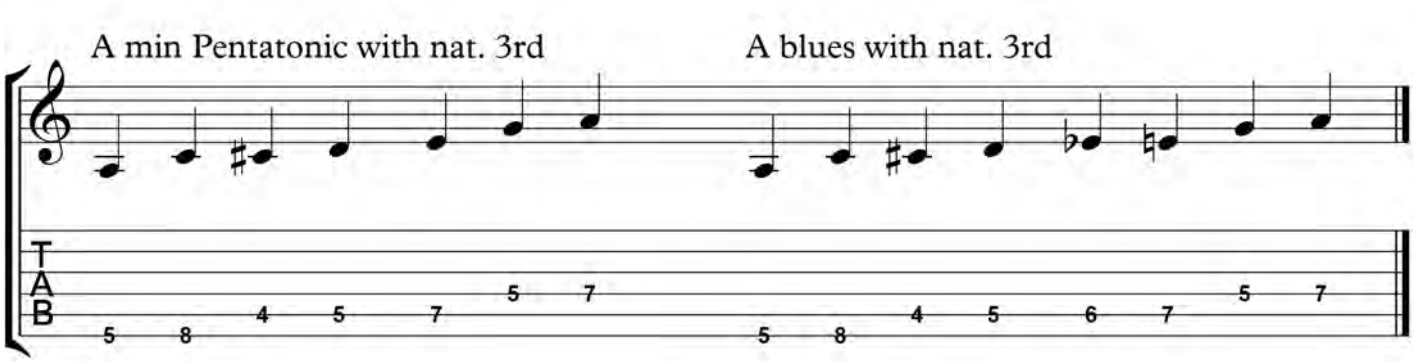




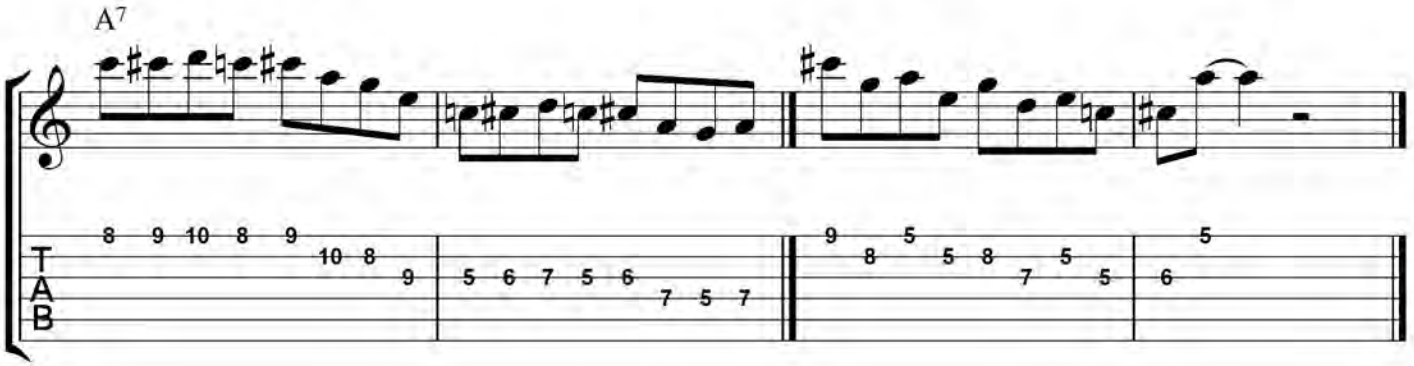




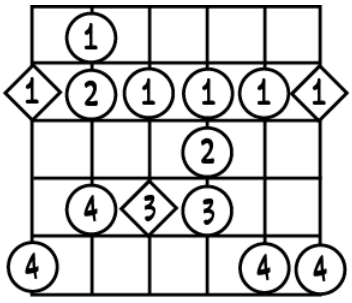
Here's an oddity: The chords in a standard 12 bar blues are almost always dominant 7ths. Pentatonics (and blues scales) are the most common things to use in soloing over a blues. AND YET no pentatonic or modification thereof we've looked at so far actually fits a dominant 7 chord. My favorite way to address this deficit is to add a natural 3rd to the minor pentatonic.



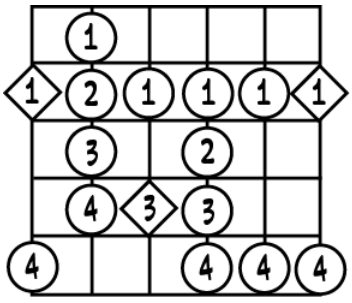
Below are a couple of ideas illustrating how this idea can be used in a line.



Minor pentatonic with natural 3rd

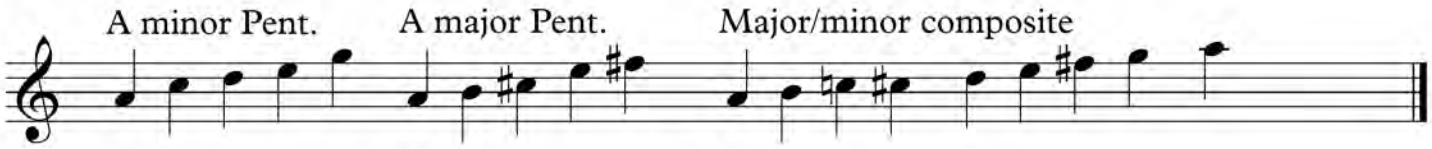


Blues scale with natural 3rd

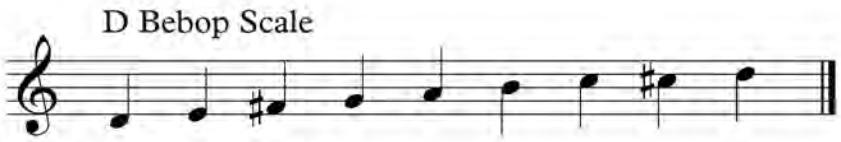


Composite Scales

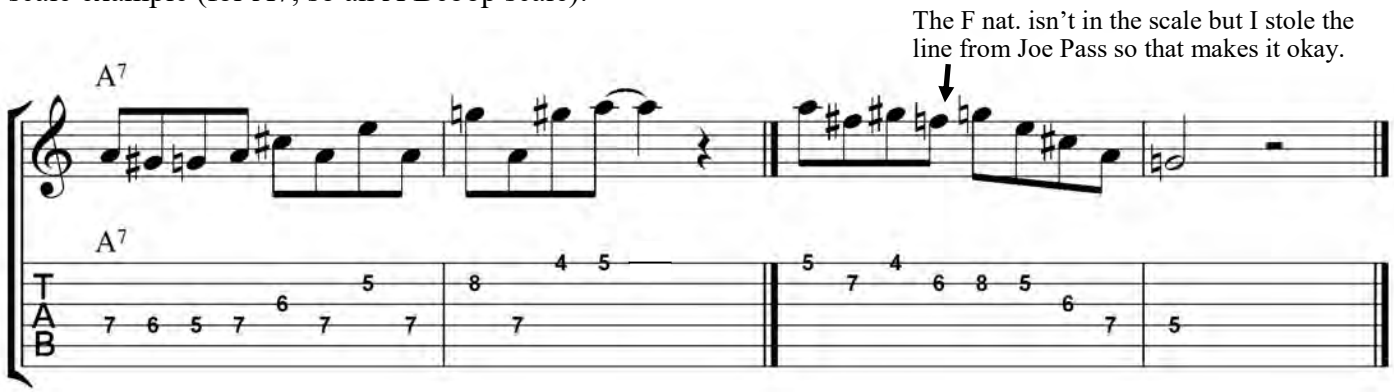
Composite scales simply combine the notes of 2 or more scales. A fairly common occurrence of this idea is to combine the major and minor pentatonics. Why? Well, consider how the different ways major and minor pentatonic scales are used. Majors tend to give a country/southern rock flavor to a line and they also tend to follow chords. So if you're in the key of A, when the chords change to D, most likely you'll switch to a D major pentatonic (if you want to stay within the norms of the genre, and I wouldn't blame you if you didn't). Minor pentatonic scales give a blues/classic rock feel to a line and they tend to blanket changes. So when that D7 comes around in an A blues, we don't really care. We just keep blasting through that A minor (A blues) scale. What if you want to be a little bit country *and* a little bit rock and roll (*...Oh you foul shades of Donnie and Marie. Back, back into the smoldering hellscape from which you were spawned).* You might just combine the two and see what happens.



Those of you who are paying attention will notice that this is another vehicle for dominant chords. Those of you who are really paying attention will note that this is the same as the V-mode (Mixolydian) of the D major scale with the addition of a C natural (b3 of the A, or b7 of the D, if you'd prefer). Which leads us to another composite scale, The Bebop scale. The Bebop scale is a major scale with the addition of the b7. Sound familiar? If not, take some NoDoze and re-read the first half of this paragraph. Look closely, the A maj/min pentatonic composite contains the same notes as the D Bebop scale. No big revelations here, just pointing out that often you can arrive at the same place in practice from different places in theory.



Once again, a bit of a guilty confession. I'd never heard of a Bebop scale until I was in my 40s. I used it all the time but I learned it from, you guessed it, the old Joe Pass book. (I love that book, non-ironically). Somewhere in the section of the book where Joe starts to talk about creating melodies he says, "sometimes the natural and b7 are both used to heighten the 'dominant' feeling." That's what I love about it… there is an amazingly low quotient of BS. Oh well, Joe lived in a time when getting a college degree in Jazz Studies was not a reality. And remember about that well known human trait of needing to name things. What would those Jazz Studies kids get tested on if we didn't have things like super locrian and such. Here's a Bebop scale example (for A7, so an A Bebop scale):

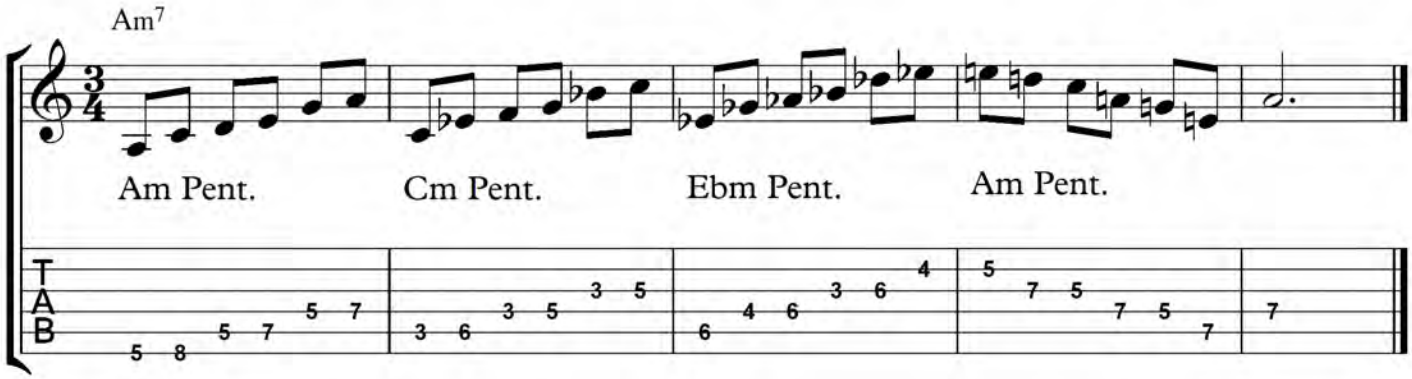


Scale Application: *Playing Inside/Outside*

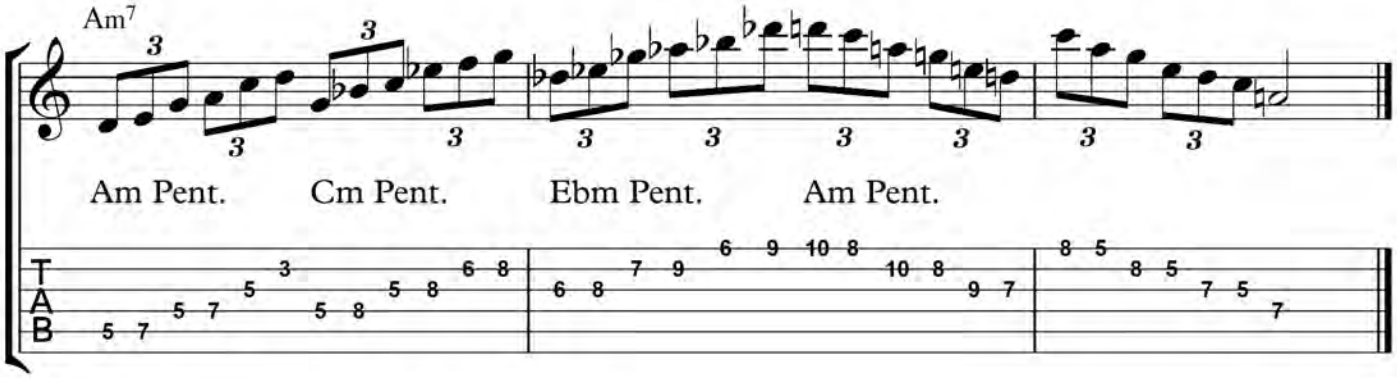
As you progress in your studies and as you begin to listen to a wider variety of players you'll start to hear lines that sound, for lack of a better term, stranger. Jazz players often use the term 'outside' to describe lines that, in isolation, don't seem to work against the given chords. There is a real art to being able to 'step outside' and then back in and not lose your listeners. And knowledgeable musicians will disagree about how well Player A pulls it off vs. Player B.

Two concepts help me make sense of all this: 1). Sometimes the internal logic of a line is so strong that it transcends the fact that the actual notes of the line may clash with the supporting chords; 2). It's possible to arrange the possible melodic sources in a hierarchy from "most inside" to "most outside". I'll conclude this book with examples of each of these ideas.

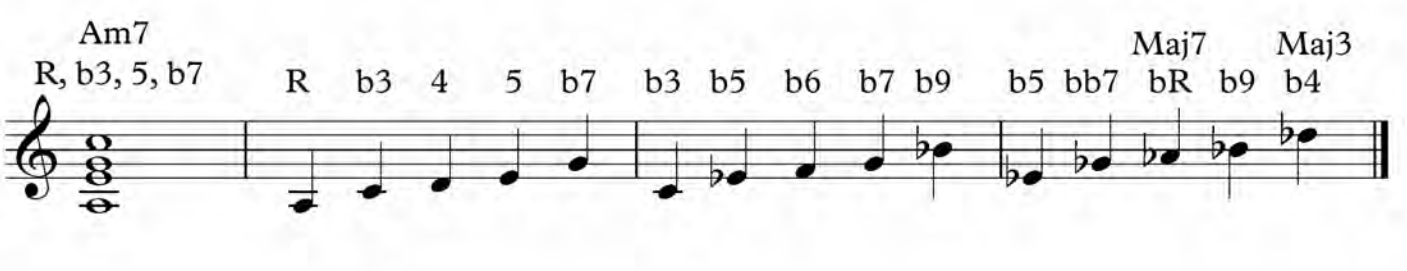
Planing is a harmonic device where a chord, or series of intervals, moves in a parallel fashion, ignoring the given key. That's a fairly natural device on guitar. Play a bar chord F, move it to Ab and then to B - that's planing. I use that melodically like this:



This is pretty straightforward; I've just taken a minor pentatonic, starting on the tonic, and moved it up in minor 3rds. Now, in practice I do this somewhat differently and it almost borders on the idea of composite scales again, but if I take the above example as a guide for melodic sources as opposed to a guide for interval structure I might arrive at a line like this:



I can use this line to illustrate the second idea as well. I have 3 melodic sources here, the 3 pentatonic scales. I can look at each one and analyze the notes against the given chord, Am7.



The Am7 and the Am pentatonic are a perfect fit. When we look at the Cm pentatonic the b5 takes us outside of the chord tones and the b6 and b9 create some tension against the 5th and root of the chord. But every note of the Ebm pentatonic creates discord against the Am7, particularly the Major 3rd and 7th.

I could go on like this but that's really beyond the scope of what I'm trying to accomplish here. There are many fine books on improvisation and I have no intention of adding to that oeuvre. My purpose here is to demonstrate some applications of the pentatonic scale that you may have missed.

Conclusion

Most students who tackle this material do so to become a lead guitar player. There are many valid approaches to follow (and even more doubtful ones) but they all take time so the first characteristic of a successful lead player is patience, leavened with that other p-word, perseverance. I'm going to present you with a couple of caveats before I get into the real work you have to do: First, what I mean by a successful player may differ from your goals so read what follows with that filter; Second, I really believe, after many, many, *many,* years of teaching/studying this subject that the closest analog to learning how to improvise is the acquisition of language.

How does an infant start talking? They're surrounded by all these large creatures making unintelligible sounds with that orifice where they stuff food. Eventually the child realizes it can make sounds with its orifice too and starts to imitate what it hears. After time meanings become attached to those sounds and communication, primitive at first, starts to occur between the large and small creatures. Here's the takeaway – ***imitation and repetition precedes meaning and communication.***

That leads you to your first task. Choose what you want to imitate. Choose wisely. Babies don't start off quoting Shakespeare (well, most don't); they usually come out with "Dada" or "Mama" or, in my case, "bastard". Start simple. Old blues guys are good places to start: B. B. King, Muddy Waters, John Lee Hooker – these guys understood at a gut level that an economy of notes can be very effective. There are excellent examples in old school rock and roll as well: Don't overlook Chuck Berry; Link Ray was the grand-daddy of what we think of as rock lead guitar; James Burton, Elvis' lead player, played some great, accessible lead guitar; There's a lot to recommend some of the early classic rock players in this regard as well, George Harrison and Neil Young come to mind. Don't jump to Stevie Ray Vaughn or Eddie Van Halen. You'll just frustrate yourself and make the process take longer. Keep it simple.

Don't take a shotgun approach. Choose a couple of players/styles that you want to start with. Again, use the linguistic model. Babies can grow up bi-lingual but that's about it. You don't hear of children acquiring 4 or 5 languages at once. Get comfortable with some Chuck Berry stuff before you move on to some Bluegrass players. At this point, don't dilute your focus (that comes later).

While you're listening to a lot of examples of the kind of music you want to play, make sure you memorize all 5 pentatonic scale shapes and work through various exercises with them. Make sure you include a healthy dose of slurs (hammers and pulls) in your practice. Get some software that allows you to isolate a section of a recording and loop it and slow it down. There are many to choose from, some app based some PC based. I use and recommend one called Transcribe by Seventh String Software.

The absolute best thing to do now is isolate a measure or 2 of the solo you want to learn in the software and let it loop for a while. Once it's in your head pick up your guitar and, using your knowledge of the pentatonic scales, try to pick out the lead. This will not be easy. It may or may not be enjoyable. It may take you an hour to find 5 notes. And that's okay – that's better than okay, that's normal. Remember patience and perseverance. Play those 5 notes until they're burned in so far that your children will be born knowing how to play them. Then move on to the next measure. There is no substitute for what skills you develop during this mind numbing process. This is a crucible (look it up) that every successful player has to experience.

There is an alternative. It's basically becoming a Turing machine. In common usage, a Turing machine is a form of artificial intelligence that can mimic a human being. Well hell, you say, I'm already a human being so I'm ahead of the game. Well, no. Because I've changed the rules of the game and my new definition of a human being is one who can improvise a guitar solo. So at the moment, no, you're not quite human. Essentially your task in this scenario is to do what we described above but instead of learning the material the hard way you watch a YouTube video on how to play it. You teach you fingers to play the part. Then you

move on and teach your fingers to play the next lead; and so on. If you do this approach the right way you'll move the lead parts to different keys and you'll study how they fit into the chords of the song. After a while you'll acquire a "data base" of licks so when you're playing a country tune in G your fingers will have a set of "licks" that can be triggered on cue. A Turing machine can respond to a series of questions in a way that may fool us into thinking it's a person. But the machine doesn't understand it's responses in the way a human being does. Someone who plays like this, and it's the majority of people out there who play lead, hasn't built the connections between the fingers and the ear (and the mind/heart/soul, take your pick) that the person who has experienced the crucible has. I think you can tell where my preference is but sometimes it's a matter of time. The Turing machine approach is faster.

One final observation, learned over time: a successful solo isn't measured by technical proficiency; neither is it measured by its cleverness or note density. A successful solo connects with its intended audience and complements the rest of the music being played. While you're learning all this stuff don't forget to listen to yourself as thoughtfully as you listen to other music and strive to serve the music instead of having the music serve your ego.