

The Chord Numbering System

<https://www.guitar-chords.org.uk/chord-theory/chord-numbering.html>

Chord Numbers

Just like diatonic scale notes are numbered from one to seven, we also use numbers to denote the position of a chord relative to its key (scale). Roman numerals are used to label chord positions. Using the previous example, the [chords belonging to C major](#) would be labelled from one to seven like this:

- I - C Major
- ii - D Minor
- iii - E Minor
- IV - F Major
- V - G Major
- vi - A Minor
- vii - B Dim

Note the use of lower case characters used for minor chords and upper case for major. This is common practice to write them this way.

By thinking about chords in terms of scale note positions, it becomes a much easier job to remember, or quickly figure out what chords belong to what key. All we need to know is the scale notes and a simple chord order. For instance, we have used C major for our example but it doesn't really matter what scale is used, the order of chords remains the same. We can use this to create a simple formula for any major key. So from one to seven, the chord types are ...

I ii iii IV V vi vii
Maj Min Min Maj Maj Min Dim

Using this idea it becomes a simple task to find the chords in any major key. Let's say we want to know what chords belong to the [key of A major](#). All we need to know are the notes in the [A major scale](#), then we find the chords like so ...

A major scale notes are A - B - C# - D - E - F# - G#

A	B	C#	D	E	F#	G#
I	ii	iii	IV	V	vi	vii
A maj	B min	C# min	D maj	E maj	F# min	G# dim

Extended chords In Key

The same idea is applied to extended chords. The chart below shows how.

I	ii	iii	IV	V	vi	vii
Maj	Min	Min	Maj	Maj	Min	Dim

Maj 7 Min 7 Min 7 Maj 7 Dom 7 Min 7 min7b5
 Maj 9 Min 9 Min7 b9 Maj 9 Dom 9 Min 9 *
 Maj 11 Min 11 **** **** Dom 11 Min 11 **
 Maj 13 Min 13 1**** **** Dom 13 **** ***

Notes

**** Sometimes chords can become very complicated, sound horrible and are hard to name accurately. It can also cause some controversy between musicians. For instance, the 5th chord in the sequence for E (1****) could be named Emin11b9b13. You could probably also name it something else but it all becomes very complicated and hard to define, it can also change with context.

The vii chords are not very common in their extended forms. These will be mostly used in jazz and will often use any form of [diminished](#). Technically speaking the order of these chords after the min7b5 will be ...

- * half diminished ninth
- ** half diminished eleventh
- *** half diminished thirteenth

Chord Progressions

Chord numbering is a very effective way to communicate common chord progressions. When you hear terms like "one four five in G" or "two five one in B flat" these phrases are simply referring to the chords used relative to the scale position. For instance, as you can see from the diagrams below, a one four five in G would mean the chords G, C and D and a two five one in B flat would be Cm, F, Bb.

G	A	B	C	D	E	F#
I	ii	iii	IV	V	vi	vii
maj	min	min	maj	maj	min	dim

Bb	C	D	Eb	F	G	A
I	ii	iii	IV	V	vi	vii
maj	min	min	maj	maj	min	dim

You can of course use the extended chord versions so in Bb for example it would probably be more common to use the chords [Cmin7](#), [F7](#), [Bbmaj7](#)

Minor Keys

<https://www.guitar-chords.org.uk/chord-theory/minor-key-theory.html>

Minor keys aren't quite so straightforward as [major keys](#). Two reasons for this, firstly, there are three minor scale types, [natural minor](#), [melodic minor](#) and [harmonic minor](#). Secondly, in modern music they are often mixed together. Because of this, minor keys can be ambiguous in terms of strict theory. To get our head around all of this we need to first understand the natural minor.

Natural minor

The scale formula for the natural minor scale is **1 2 b3 4 5 b6 b7**.

The natural minor scale just so happens to share the same notes as the major scale three semitones (half steps) above. We call this the relative major, or from the major scale's perspective, the relative minor. Let's take a look at the scale notes to get a clearer picture.

[A major scale](#): **A B C# D E F# G#**

To make this a natural minor we need to flatten the third, sixth and seventh scale degree which gives us the following.

[A natural minor scale](#). **A B C D E F G**

You can see that these are the same notes as we find in [C major](#) (C D E F G A B), the only difference is the starting note. From this it's easy to see why they relate to each other. The relative minor of C major is A and the relative major of A minor is therefore C.

This similarity between the relative scales also means they happen to share the same chords. Chords belonging to the key of C major will be the same set of chords that belong to the [key of A minor](#). The only difference is the order they are presented. As we've discussed already, in [major keys](#) the chord order is maj min min maj maj min dim. In the minor key the order becomes min dim maj min min maj maj. So even though both keys share the same set of chords, the chord progressions will be different. For instance, a I IV V progression in C major is C F G. In A minor it becomes [Am Dm Em](#). You can see this by comparing the charts below.

C Major						
I	ii	iii	IV	V	vi	vii
C Maj	D Min	E Min	F Maj	G Maj	A Min	B Dim
A Minor						
i	ii	III	iv	v	VI	VII
A Min	B Dim	C Maj	D Min	E Min	F Maj	G

C Major

maj

The Cadence

We need to divert our attention a little for a moment before we can understand the why the [harmonic minor](#) and [melodic minor scales](#) came about in the first place. I'm not going to give a detailed explanation about cadences, we'll just brush over the main points. More information can be found at wikipedia about the [cadence](#).

Generally speaking, the cadence is what reinforces the home key and mostly refers to the V-I transition in a chord progression. In the [major scale](#), the last note is one semitone below the root and it's called the leading tone, as the name suggests, it leads nicely into the tonic (root note). In the [key of C major](#) it is the B note. The "five chord" in a major key contains this leading tone and has a strong pull back to the tonic. This strengthens and highlights the key. In the key of C, the G sounds like it wants to resolve back to C. If we make the five chord dominant (G7) then this "pull" becomes even stronger.

The leading tone in the [natural minor scale](#) however is a whole tone below the root and it doesn't have such a strong pull. For composers this makes it a bit harder to really establish the key. The five chord in a minor key doesn't have the same effect as it does in a major key because the leading tone is not as close to the tonic. You can easily try this yourself. Play a i iv v progression in the [key of A minor](#). The chords are [Amin](#) [Dmin](#) and [Emin](#). The five chord (Emin) sounds Ok and resolves reasonably well back to the A minor but it's still fairly weak sounding.

Harmonic minor

The solution to improving this weaker sounding cadence in minor keys is to raise the leading tone of the natural minor by a half step which results in a stronger pull back to the tonic. Using A natural minor as an example, this would mean making the G become G# which in turn will make the E minor chord, or the V chord, become E major. This raised seventh gives us a new scale formula **1 2 b3 4 5 b6 7** and we call it the [harmonic minor scale](#).

It's now that things start to get a little bit complicated. This raised seventh creates a three semitone interval from the sixth scale degree. Although this might not be a problem in modern music, years ago it was considered unnatural and non melodic.

Melodic minor

The answer to the above problem was to also raise the sixth scale degree to eliminate the large interval created by raising the seventh. This led to a smoother sounding scale, making it easier to create natural flowing melodies. The scale formula for the [melodic minor](#) is therefore **1 2 b3 4 5 6 7**.

This whole idea came about so as to make the leading tone have a stronger pull back to the tonic. This means that it's only important when the melody was ascending

in pitch, when descending it doesn't have the same effect. The end result was to use the melodic minor while ascending and then revert back to the natural minor when descending.

Minor Keys In Modern Music

As usual things adapt over time and these days our ears are more used to hearing music in many different flavours. Minor keys now tend to be a bit of a mix, anything goes really and all three of the minor scales can get used in the same piece of music. The melodic minor doesn't see a lot of use in average popular music, mostly jazz. The [natural minor](#) is still the most commonly used for minor keys and you will often hear the harmonic minor used for the V - I cadence.

For an example, a very common minor chord progression is the i - bVII - bVI - V. In the key of A minor you might recognise these chords used in many songs, A min, G maj, F maj, E maj. This chord progression is all in natural minor except for the V chord (E maj) which temporarily switched to harmonic minor for the V-i cadence. If you were to solo or create melodies for this progression then you would use the [harmonic minor scale](#) over the E chord and natural minor for the rest.