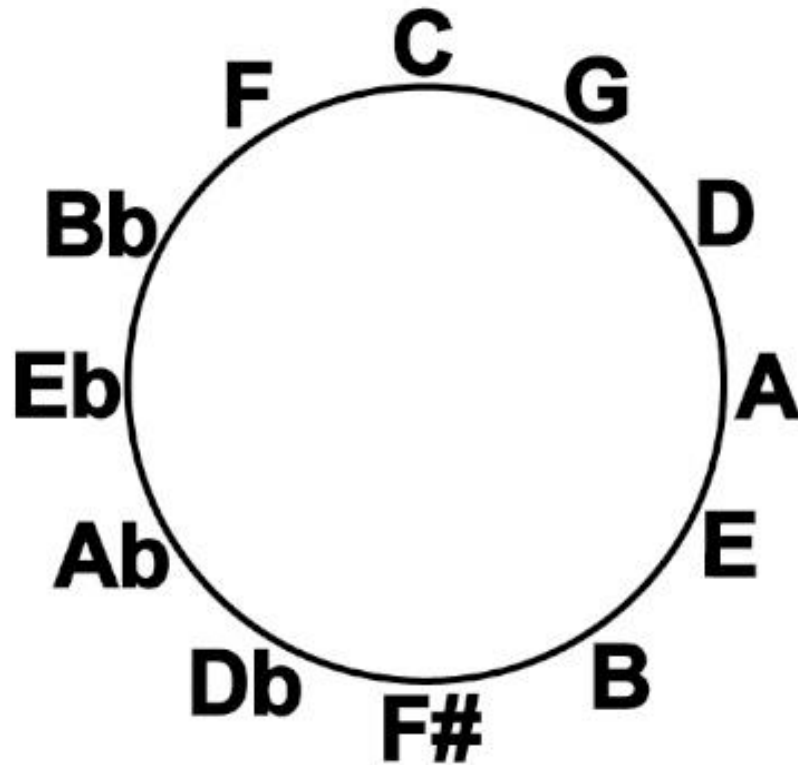


Charleston Hot Shots



Ukulele Class 4
Circle of 5ths

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Why Twelve Notes?

The standard scale or Chromatic scale is made up of 12 notes or tones - each note unique. These notes are the basis for every chord and melody in most Western music. To explain why we have 12 notes could take pages and pages. It may have something to do with our brain's psychoacoustical response, with a bit of math thrown in for good measure - but it's not really exactly clear why there are twelve notes.

It's always a possibility that there may be no mathematical explanation why there are 12 notes. In the same way that science can't explain what it 'feels' like to see the color 'red', perhaps the notes of the scale are beyond mathematics. Also the 12-note scale could just be an arbitrary cultural construct, with no special reason to choose 12 above 5 or 50 note scales.

These 12 notes are called the **Chromatic Scale**. Here are the 12 notes:

Count	1	2	3	4	5	6	7	8	9	10	11	12
Name	A	A#	B	C	C#	D	D#	E	F	F#	G	G#

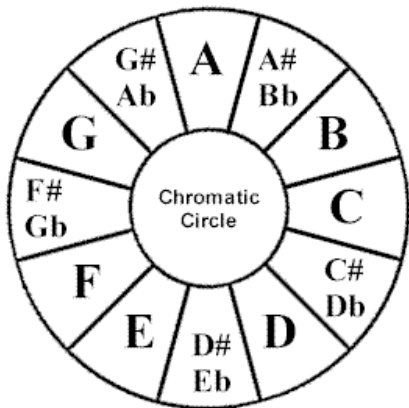
Sharps can be referred to as the next Note's Flat IE: A# = Bb, C# = Db, D# = Eb, F# = Gb, G# = Ab

Here are the 12 notes with the sharp and flat note names:

Count	1	2	3	4	5	6	7	8	9	10	11	12
Name	A	A#/Bb	B	C	C#/Db	D	D#/Eb	E	F	F#/Gb	G	G#/Ab

The note name letter is the name for the frequency that the sound vibrates at. The note **A** vibrates at 440 hz. (hz stands for hertz which means the number of cycles per second the sound vibrates at).

You can play the same 12 notes in different **Octaves**. Raising a note one octave means you have doubled the frequency. So there is an A note at 440hz, 880hz, 1,760hz, 3,520hz, etc. Lowering a note one octave halves the frequency. So there is an A note at 440hr, 220hz, 110hz, 55hz,



Since there are multiple octaves, it is best to represent the 12 notes in a circle, since it repeats as the octaves go up or down.

Thing to remember about the Chromatic Scale

1. Western music is based on the Chromatic Scale.
2. The 12 notes in the Chromatic scale are A, A#,B, C, C#, D, D#, E, F, F#, G, G#
3. The spacing for the Chromatic scale is called a semitone or half step
4. A# = Bb, C# = Db, D# = Eb, F# = Gb, G# = Ab
5. There is **no** B#/Cb or E#/Fb
6. Playing a note an octave higher/lower means you are playing is so it vibrates the air twice/half as fast.

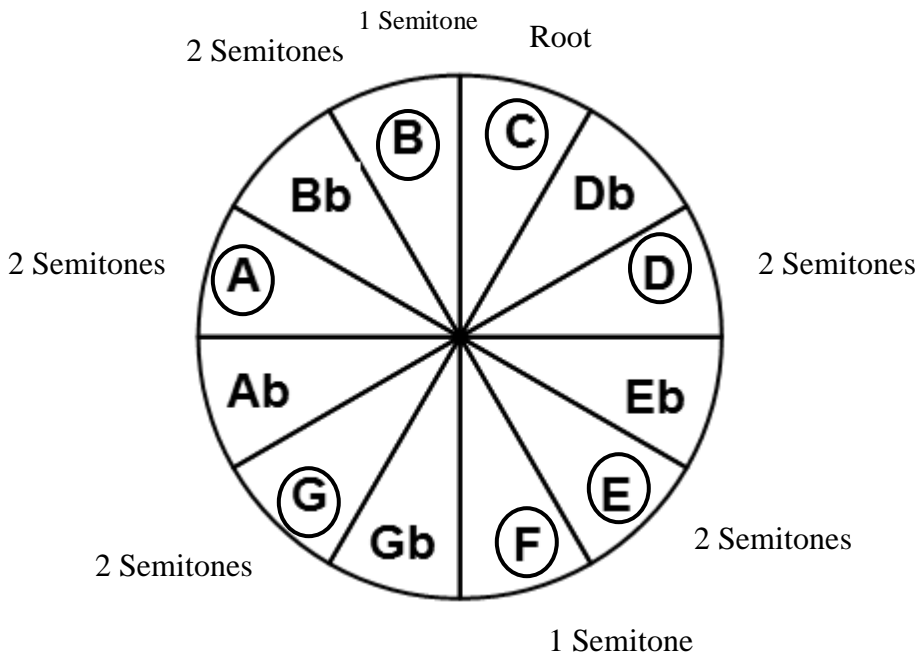
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The Major Scale is widely used in western music. It is one of the Diatonic scales and has 7 notes. You can represent the Major scale with **Do Re Mi Fa Sol La Ti Do**. The second **Do** is an Octave.

Steps between Notes	1	1	½	1	1	1	½
Semitones between Notes	2	2	1	2	2	2	1

A half step is the same thing as a semitone, A whole step is 2 semitones. Each fret on your chromatic instrument (Guitar, Bass, ukulele) represents a halfstep or semitone (1 Note).

A C Major Scale consists of the notes C, D, E, F, G, A and B. So how did we get those notes? Look at the Chromatic scale below and start with the first note (**Root**) in the Scale, C in this case. (Note the first note is the name of the scale and is referred to as the Root). From the Root following the spacing pattern outlined above 2 2 1 2 2 2 1. The last 1 semitone spacing brings you back to the Root, but one octave higher.



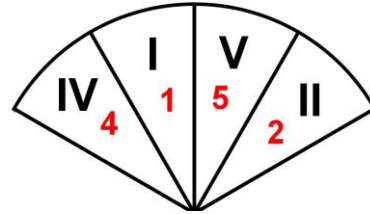
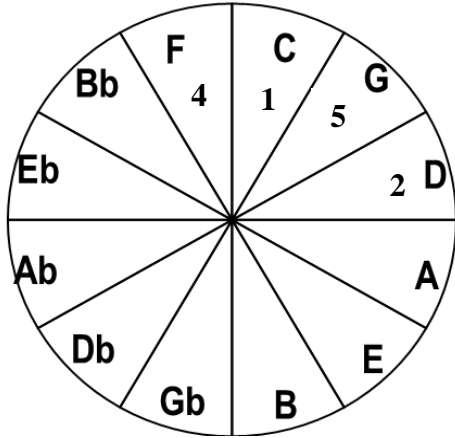
12 Major Keys															
	1	2	3	4	5	6	7		1	2	3	4	5	6	7
1	C	D	E	F	G	A	B	7	Gb	Ab	Bb	B	Db	Eb	F
2	Db	Eb	F	Gb	Ab	Bb	C	8	G	A	B	C	D	E	F#
3	D	E	F#	G	A	B	C#	9	Ab	Bb	C	Db	Eb	F	G
4	Eb	F	G	Ab	Bb	C	D	10	A	B	C#	D	E	F#	G#
5	E	F#	G#	A	B	C#	D#	11	Bb	C	D	Eb	F	G	A
6	F	G	A	Bb	C	D	E	12	B	C#	D#	E	F#	G#	A#
	Root	2nd		4th	5th				Root	2nd		4th	5th		

It is estimated that over 75% of western hemisphere music is based on the 1st 4th and 5th notes of the key the music is played in. There is an easy way to represent this relationship. It is called the circle of 5ths.

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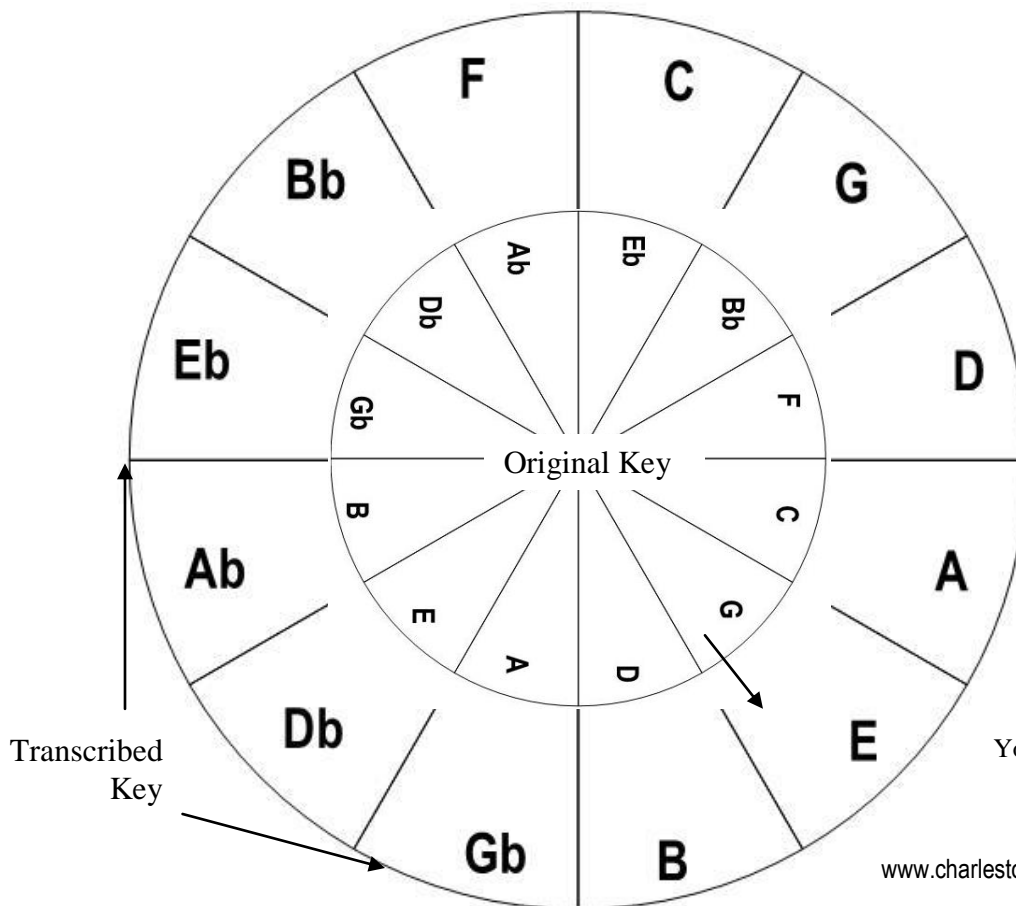
The circle of fifths, first described in 1728 by Johann David Heinichen in his book *Der General-bass*, has been used ever since as a means of illustrating the relative harmonic distance between musical keys.

Starting at any Root (1) note, the note to the right of it is the 5th, the note to the left it the 4th and the note 2 to the right of the root is the 2nd. At a glance you can tell where the 1, 4, 5 and 2 is in any key



These 4 pie slices represent the relationship between 1, 4, 5, and 2 of a Major scale in the circle of 5^{ths}.

If you add an inner wheel to the circle of 5ths you can make a quick transposing aid. For example the inner wheel represents the original key. In this example a song in the key of G is being transcribed to key of E. If you have a song with 4 chords; G, C, D7, Cm, you would use the notes from the outer wheel that are in the same pie slice. The transcribed chords are now E, A, B7, Am



You can download a circle of 5ths and transposer template at:

www.charlestonhotshots.com/Links/beginners-corner