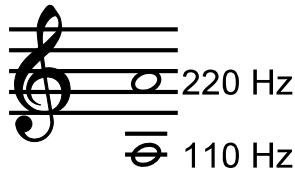


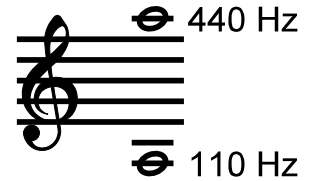
MAJOR SCALES

Octaves

An octave is the interval between two tones in which the vibratory rate of one is two times or half the vibratory rate of the other. Tones that are one or more octaves apart always have the same letter name.



The two A's on the left are one octave apart. Note that the higher A is vibrating twice as fast as the lower A*. The two A's on the right are two octaves apart. So, the top A is vibrating four times as fast as the lower one.



* The vibratory rates are given for the tones as they appear in guitar music. The tones in piano music are one octave higher. Hz = vibrations per second.

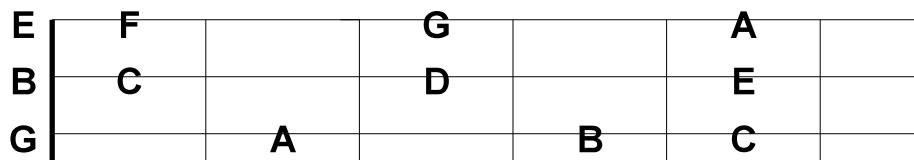
Semitones and Half Steps

Western music divides an octave into twelve semitones. The difference in pitch from one semitone to the one next to it is called a half step. This means that if twelve ascending half steps are taken from any tone, you will be playing the same tone that you started on only one octave higher. If twelve descending half steps are taken, you will be one octave lower.

Example:

<i>Name of the semitone:</i>	C	C# or Db	D	D# or Eb	E	F	F# or Gb	G	G# or Ab	A	A# or Ab	B	C
		⌢	⌢	⌢	⌢	⌢	⌢	⌢	⌢	⌢	⌢	⌢	
<i>Number of half steps taken</i>		1	2	3	4	5	6	7	8	9	10	11	12

On the guitar a pitch can be raised a half step by moving up the string one fret. To raise a pitch by a whole step, move up two frets. The spacing between the natural tones on the first three strings up to the fifth fret is shown in the following diagram



Notice that the only two pairs of natural tones with a half step between them are E to F and B to C. All of the other natural tones have a whole step between them.

Building the Major Scale

A scale is a series of tones within one octave ascending or descending in pitch. The most commonly used scale in modern music is the major scale. The major scale is composed of eight

tones that have the following sequence of whole steps (2 frets) and half steps (1 fret) between its members: 1, 1, $\frac{1}{2}$, 1, 1, 1, $\frac{1}{2}$.

Example:

	C	D	E	F	G	A	B	C
		⌒	⌒	⌒	⌒	⌒	⌒	⌒
Number of steps between the tones		1	1	$\frac{1}{2}$	1	1	1	$\frac{1}{2}$

The name of the scale is the same as the name of the tone on which it starts. In this case, it is called C major because it starts on C. The C scale is the only major scale which is composed of only natural tones. When starting on tones other than C, it is necessary to use sharped or flatted tones in order to maintain the proper sequence of whole steps and half steps given above.

The *Key Signature* is comprised of those tones that have to be sharped or flatted in order to achieve the proper order of whole steps and half steps. The key signature is always located at the beginning of each staff and eliminates the need of worrying about where the whole and half steps belong. The six most common keys that are used in guitar music are listed in the following diagram along with their name and key signature.

		<i>Arrangement of whole and half steps</i>							
<i>Name of Key</i>	<i>Key Signature</i>	1	1	$\frac{1}{2}$	1	1	1	$\frac{1}{2}$	
C	No #s or bs	C	D	E	F	G	A	B	C
G	1 #	G	A	B	C	D	E	F#	G
D	2 #s	D	E	F#	G	A	B	C#	D
A	3 #s	A	B	C#	D	E	F#	G#	A
E	4 #s	E	F#	G#	A	B	C#	D#	E
F	1 b	F	G	A	Bb	C	D	E	F

Music that uses a particular scale is said to be in the key of whatever the name of the scale is. For example, music that uses a C major scale is said to be in the key of C major. Since the major key is used the most, the "major" is often left off. This means that the key of C major is usually just called the key of C. Songs in a particular key usually end on the tone with the same name as the key. For example, when playing in the key of C the melody usually ends on C. This is one way to determine the key of a song when playing by ear.

I should be pointed out that the major scale is only one of several kinds of scales, each of which sounds different from the others. This difference in sound is mainly the result of rearranging the order of whole steps and half steps. Scales other than the major scale are presented in later

supplements.