

# Good Vibrations and Major Scales

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## Notes

If you pluck or hit a taut string, it vibrates. How fast it vibrates is called the frequency. If this frequency is in the range the ear can detect then we hear a sound. Certain sounds have a frequency that is said to be a "note" in western music. For example, a string vibrating at 440 cycles in a second is producing a note called "A".

## Octaves

If we then shorten the length of our string to exactly half its original length, it will then produce a frequency of exactly double that of before. Our ear recognises that very basic relationship between the two notes. The new note (of 880 cycles per sec) is thus said to be an octave higher and is given the same name ("A" in this example). On the Ukulele (or guitar) holding down any string at the 12<sup>th</sup> fret will make it half its original length and so the note you play will be an octave higher than the open string. (Feel free to take a tape measure and check out the distance from the bridge to the 12<sup>th</sup> fret and from the 12<sup>th</sup> fret to the nut)

## Scales & Tones

In Western music a major scale is made up of eight notes which repeat in sequence through the octaves. But we have 12 frets between octaves on our Ukes, not 8! The musical distance between each fret is known as a semitone (or half-tone) Two semitones make a whole tone (usually just called a tone). To make a major scale, we pick 8 out of the 12 semitones according to a cunning plan - well not that cunning actually, it just follows the rule that the scale should proceed in the following steps:

Tone – Tone – Semitone – Tone – Tone – Tone – Semitone.

Before we see how this works, what are the 12 semitones called? Starting at C we get

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

Two points:

- 1) The sharps and flats are the same note. (Yeah, I know it's obvious, as we put our finger on the same string, same fret to make the note of C# or Db. What name we decide to call it, well that depends on the scale it is used in, and examples will be given below.
- 2) The interval between B and C and the interval between E and F is only a semitone. All the others are a whole tone apart. So, for example, there is no such note as B#! Very strange. I don't know why this should be – anybody???

## Scale of C Major

Here is the scale of C major, built using the rule above:

Tone	C – D
Tone	D – E
Semitone	E – F (fits nicely, because there is only a semitone between E and F anyway)
Tone	F – G
Tone	G – A
Tone	A – B
Semitone	B – C (fits nicely again, as there is only a semitone between B and C)

To make our C major scale we didn't have to use any sharps or flats, so it is simply C,D,E,F,G,A,B,C

## Scale of G Major

Applying the same rule, but starting on G:

Tone            G - A  
Tone            A - B  
Semitone       B - C (only a semitone between B and C anyway)  
Tone            C - D  
Tone            D - E  
Tone            E – F# (E – F is a semitone only, so we need to add a further semitone to conform to the rule)  
Semitone       F# – G (is only a semitone)  
The scale of G major is thus, G,A,B,C,D,E,F#,G

## Scale of F Major

Take one more example. Some of the songs we do are “in F”, so the scale of F major is:

Tone            F - G  
Tone            G - A  
Semitone       A – Bb (We need a B in the scale. The jump from A to B is a whole tone, but the major scale rule says we want only a semitone here. To fit the rule, the B is taken down one semitone to Bb)  
Tone            Bb – C (We are jumping a whole tone as per the rule. Bb to B is a semitone and B to C is another semitone)  
Tone            C - D  
Tone            D - E  
Semitone       E – F (fits nicely, because there is only a semitone between E and F anyway)

The scale of F major is, F,G,A,Bb,C,D,E,F

When we are playing a song such “Memories are made of this” in F, no surprise then that the chord of Bb crops up regularly in the progression.