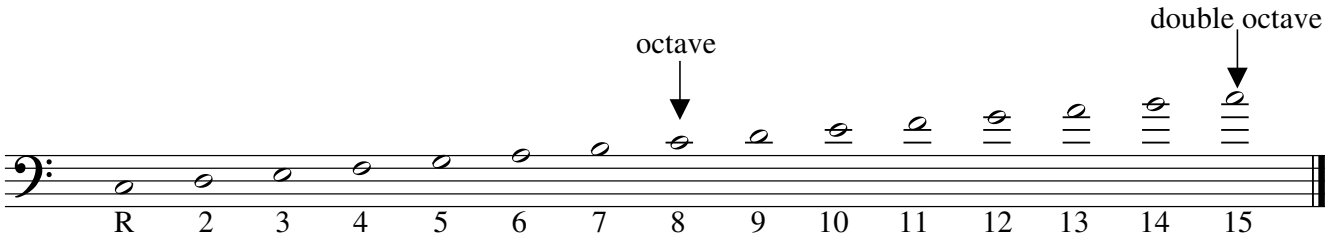
Understanding Intervals

Any study of harmony must begin with intervals. Intervals are the musical unit of measurement between two notes. In the same way that we have inches, feet and yards to determine the exact distance from one point to another, intervals define the exact distance from one note to another.

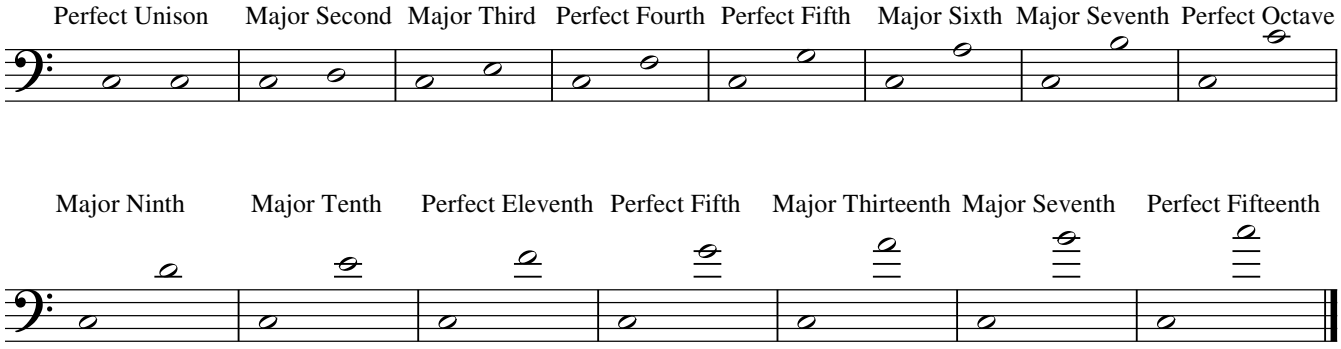
The Diatonic Intervals

Diatonic means notes that belong to a scale or stay within the restrictions of a specific scale such as the major scale.

If we write out the C major scale in two octaves we will have:



By measuring the distance from C to every scale degree, we would come up with the following intervals:



Notice that fifths and sevenths are usually called the same thing in any octave.

The Chromatic Intervals

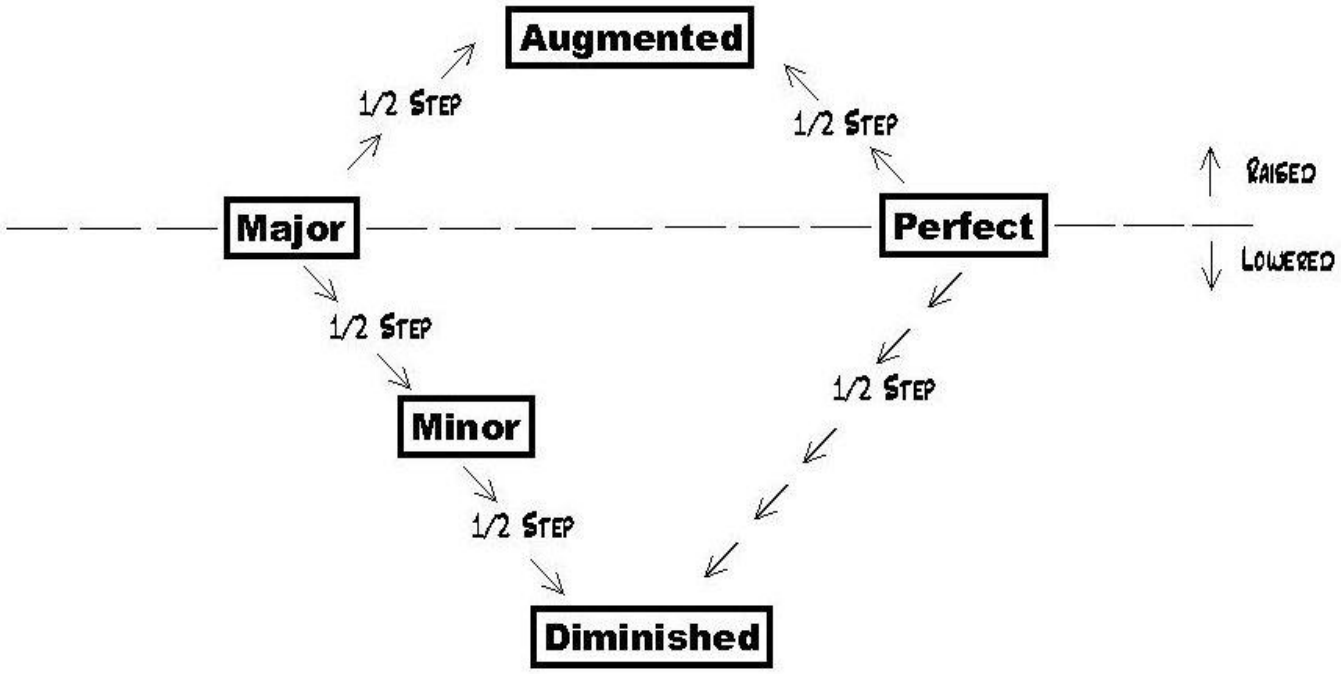
The next area of classification involves chromatic notes. Notice that all of the previous intervals – the perfect and major – relate directly to the diatonic notes of the major scale.

Any interval we name could contain notes written many ways enharmonically. The specific way a note is written is critical when figuring the name of the corresponding interval.

Chromatic intervals are determined by raising or lowering the diatonic notes of a major scale by a half-step, which is the distance of one fret on the bass guitar. Here's an example:

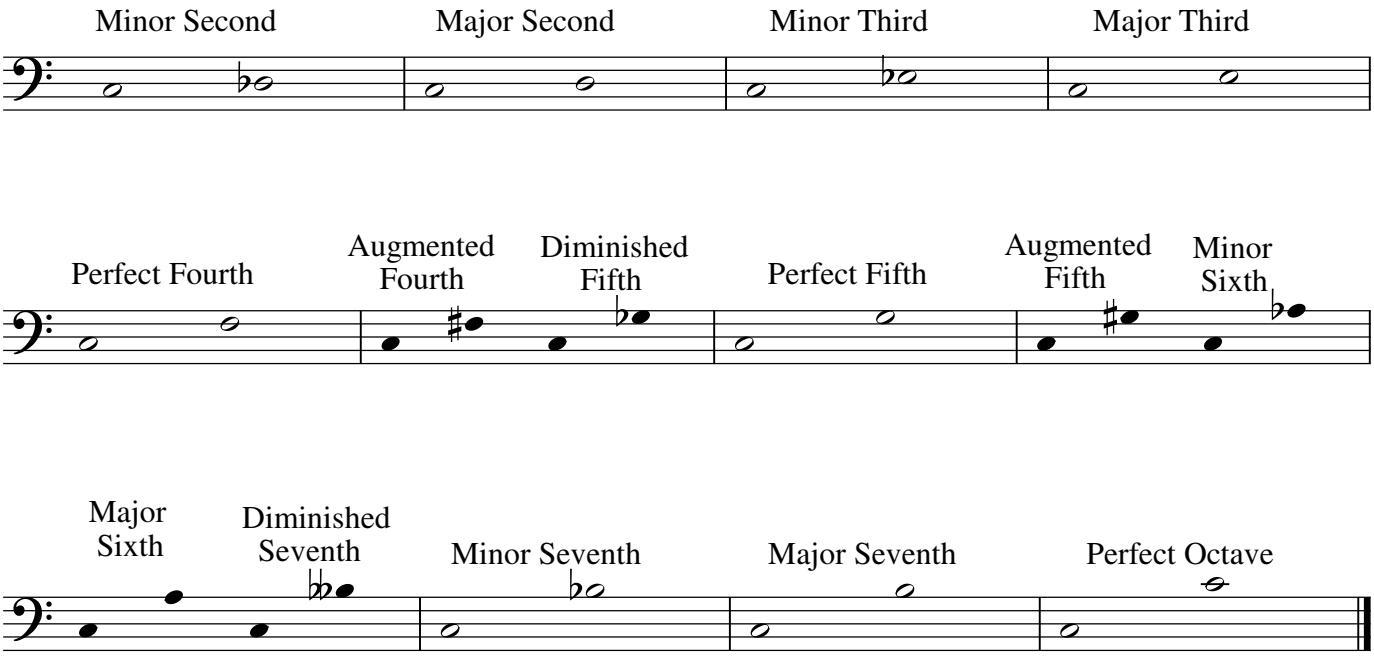
> *Look at the diatonic interval chart and notice the major second interval. Because we've established that C going up to D is a major second, this means that if we have C going up to any kind of a D (sharp or flat), it will become some kind of a 2nd interval. The only difference is that we will use a different adjective to describe what kind of second it will be.*

The following diagram will outline a visual overview of how the diatonic scale degrees of a major scale can be raised or lowered and which adjective is used in each instance:



Although many possibilities exist (for example: the interval of C up to Eb is a minor 3rd, while C up to D# is an augmented 2nd) the most common way of relating to the twelve possible chromatic tones is like this:

Chromatic Intervals Master Chart



Interval Construction in Half-Steps

Number of Half-Steps	Interval Name
0	Perfect Unison
1	Minor Second
2	Major Second
3	Minor Third
4	Major Third
5	Perfect Fourth
6	Augmented Fourth or Diminished Fifth
7	Perfect Fifth
8	Augmented Fifth or Minor Sixth
9	Major Sixth or Diminished Seventh
10	Minor Seventh
11	Major Seventh
12	Perfect Octave

To construct intervals using half steps, visualise your fretboard and start by counting the first note as zero (0). From there count in half steps until you reach the correct number for the interval that you want. For example, to find a minor 6th interval above D, count D as zero (0), Eb as 1, E as 2, F as 3, F# as 4, G as 5, Ab as 6, A as 7 and Bb as 8. Check with the half step chart above and you will discover that there are 8 half steps in a minor 6th interval. You will also notice that the augmented 5th has 8 half steps. The procedure to check for the correct letter name is by relating to the diatonic notes of the major scale. Because D to B is a major 6th, D to Bb will become a minor 6th. Similarly, D to A is a perfect 5th, which indicates that D to A# will become an augmented fifth. The way in which we count scale degrees is different to the way that we count half steps. When counting half steps the starting note is referred to as zero (0), whereas when counting scale degrees the starting note is counted as one (1).

Inverting Intervals

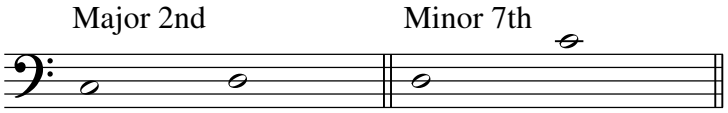
When you invert an interval:

- Major becomes Minor
- Minor becomes Major
- Augmented becomes Diminished
- Diminished becomes Augmented
- Perfect remains Perfect

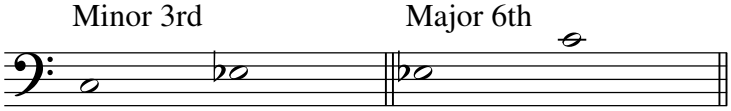
- 2nds become 7ths
- 7ths become 2nds
- 3rds become 6ths
- 6ths become 3rds
- 4ths become 5ths
- 5ths become 4ths

Minor 2nd Major 7th

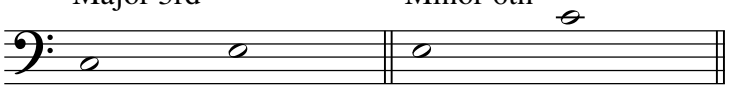
Major 2nd Minor 7th



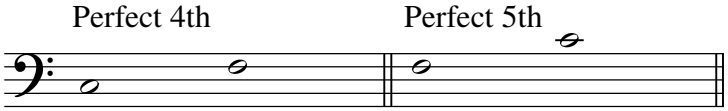
Minor 3rd Major 6th



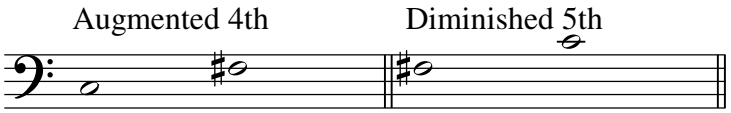
Major 3rd Minor 6th



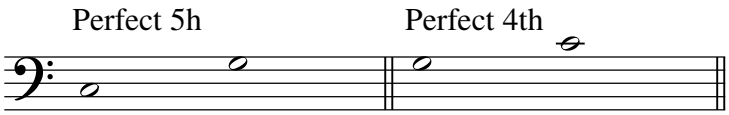
Perfect 4th Perfect 5th



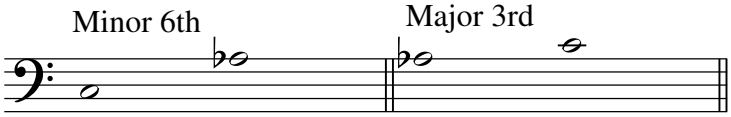
Augmented 4th Diminished 5th



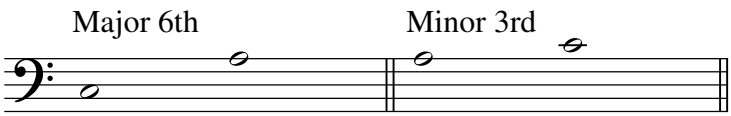
Perfect 5h Perfect 4th



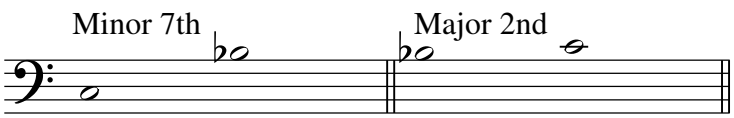
Minor 6th Major 3rd



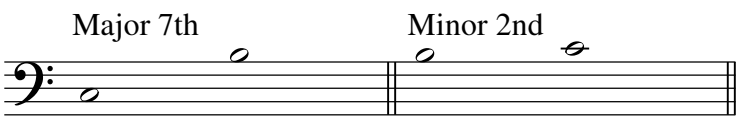
Major 6th Minor 3rd



Minor 7th Major 2nd

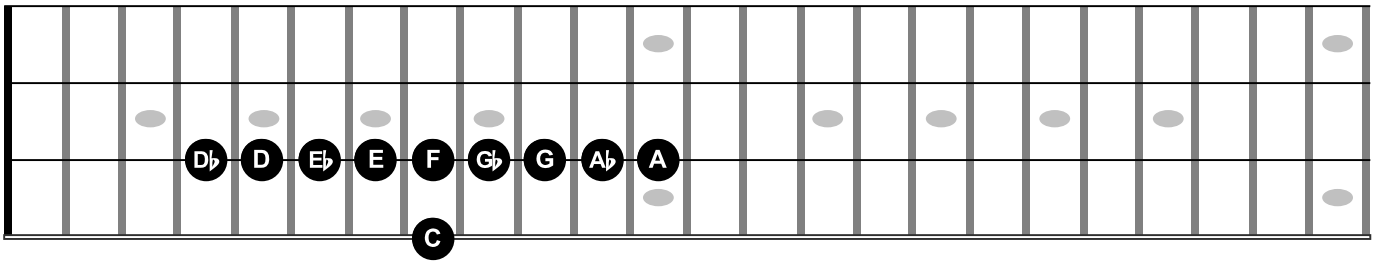


Major 7th Minor 2nd

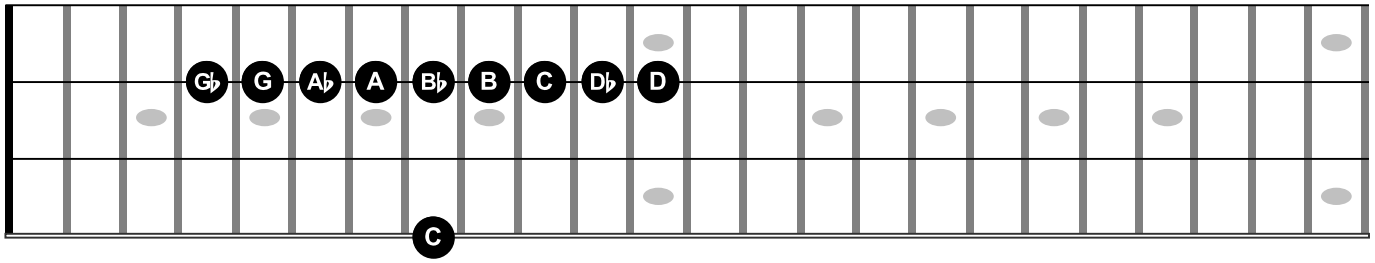


Interval Fretboard Studies

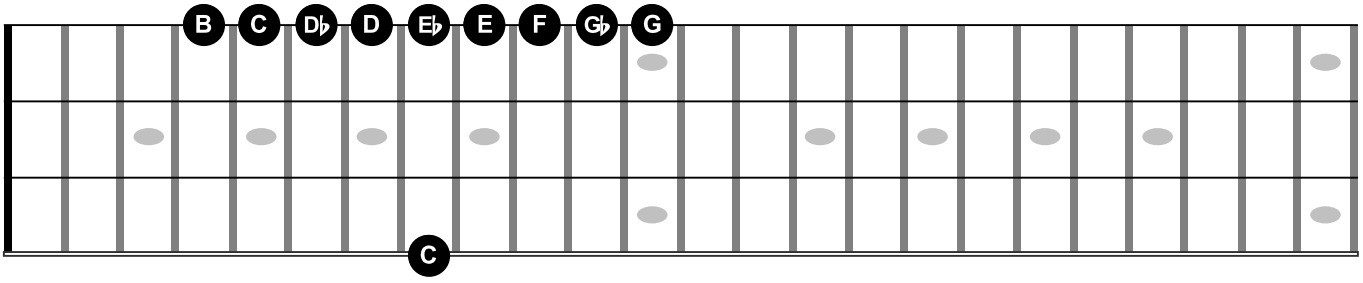
All intervals up to a perfect 5th above the octave can be found within a five fret span either side of a given note. In the following example we can measure the distance from C to every note in this sequence. This covers the distance between the root (C) on the E-string to the minor 2nd (Db) on the A-string moving up to the major 6th (A).



In the next example we cover the distance from the root (C) on the E-string to the diminished 5th (Gb) on the D-string moving up to the major 9th (D).



This next exercise covers the distance from the root (C) on the E-string to the major 7th (B) on the G-string moving up to the perfect 5th (G) above the octave. Please note that Db will be a minor 9th; D will be a major 9th; Eb a minor 10th; E a major 10th and F a perfect 11th. 5ths and 7ths usually are called 5ths and 7ths in any octave.



Write out the Chromatic Intervals Master Chart in every key! Mentally practice these intervallic relationships
away from your instrument. Then practice fretboard intervallic relationships in all keys. All Music Theory problems will bring you back to intervals, so with that in mind it is essential that you know this information like you know your own name!

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