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:

![Image of C major scale]

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

![Image of intervals in C major scale]

Notice that thirds, fifths and sevenths are called the same thing in any octave (more on this later).

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 2\textsuperscript{nd} 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 3\textsuperscript{rd}, while C up to D\# is an augmented 2\textsuperscript{nd}) the most common way of relating to the twelve possible chromatic tones is like this:
Interval Construction in Half-Steps

<table>
<thead>
<tr>
<th>Number of Half-Steps</th>
<th>Interval Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Perfect Unison</td>
</tr>
<tr>
<td>1</td>
<td>Minor Second</td>
</tr>
<tr>
<td>2</td>
<td>Major Second</td>
</tr>
<tr>
<td>3</td>
<td>Minor Third</td>
</tr>
<tr>
<td>4</td>
<td>Major Third</td>
</tr>
<tr>
<td>5</td>
<td>Perfect Fourth</td>
</tr>
<tr>
<td>6</td>
<td>Augmented Fourth or Diminished Fifth</td>
</tr>
<tr>
<td>7</td>
<td>Perfect Fifth</td>
</tr>
<tr>
<td>8</td>
<td>Augmented Fifth or Minor Sixth</td>
</tr>
<tr>
<td>9</td>
<td>Major 6th or Diminished Seventh</td>
</tr>
<tr>
<td>10</td>
<td>Minor Seventh</td>
</tr>
<tr>
<td>11</td>
<td>Major Seventh</td>
</tr>
<tr>
<td>12</td>
<td>Perfect Octave</td>
</tr>
</tbody>
</table>

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
Inverting Intervals

Minor 2nd

Major 3rd

Major 2nd

Minor 7th

Minor 3rd

Major 6th

Major 3rd

Minor 6th

Perfect 4th

Perfect 5th

Augmented 4th

Diminished 5th

Perfect 5th

Perfect 4th

Minor 6th

Major 3rd

Major 6th

Minor 3rd

Minor 7th

Major 2nd

Major 7th

Minor 2nd