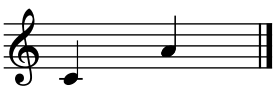
Theory I: Intervals

Intervals play an important role in understanding the use of pitch in music. Whether melody or chords, intervals provide the characteristics that make music make sense.

An ***Interval*** is the distance between two notes. Below is an example of the interval of a *sixth*.



The numeric value of the interval is determined by counting from the bottom note (it counts as 1) to the upper note, which we also count. This means that the interval is a sixth (C D E F G A). Including both the first and last notes, we have 6 notes. It doesn't matter whether there are sharp or flat notes in between.

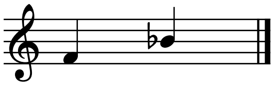
The numeric value is only the first half of figuring out intervals. The second half is figuring out the quality of the interval. There are 5 qualities of interval, the most common are Major, Minor and Perfect. There are also Diminished and Augmented intervals, but the most common ones are the first three.

There are 2 ways you can figure out intervals. The slow way, and least efficient, is to count intervals. This leads to having to count accurately, and remembering how many half notes are in each interval. In the above interval there is 9 half steps, and that would make it a Major 6th (M6).

The better way involves something you already know: key signatures. Using key signatures, even just the major key signatures, we can figure out any quality of intervals above the second (this method doesn't work for seconds, but closer intervals are more obvious). If the upper note is in the major key of the bottom, it is a major or perfect interval. If it isn't, and is less than the major or perfect interval, it may be minor. or diminished. Check then against whether the note is in the natural minor key. The in the above example, the bottom note is C. It's key has no sharps or flats, so any note above that without an accidental is going to be Major or Perfect. The A above it makes this a major 6th.

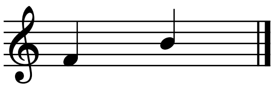
For the moment, we will concentrate on Major, Minor and Perfect intervals. Intervals from the bottom note of the interval will always be one of these three if the upper note is in the major or minor key of the bottom note.
Different numeric intervals will always be one of these three types:
M or m: 2nds, 3rds, 6ths, and 7ths.
P: unisons (1), 4ths, 5ths, and 8ths (octaves).

There are never major or minor 4ths or 5ths, there are never perfect 3rds, 6ths, etc. Any interval can be augmented or diminished.

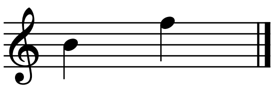


Looking at the two examples to the left, the top one (F to B♭), B♭ is a note in the key of F, the bottom note (ignore the key signature at the begining if there is one, except when it affects one or both of the notes of the interval). The numeric value is 4 (F G A B), the quality would be perfect, since B♭ is in the key of F, and 4ths are perfect.

The second example has D up to C. The numeric value is 7, but is C in the key of D major? No, it would be C♯ in the key of D. This is C♮. Is that in the key of D minor (remember to use the natural minor)? Yes, so this would be a minor seventh.



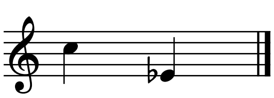
The third example down doesn't fit with either method. B is higher than the note in either F major or minor. Because of this we call it an ***augmented fourth***. It is a half step larger than a perfect fourth.



The fourth example inverts the notes (more on this later). It's still B and F, but this time the B is the lowest note. The numeric value becomes a 5th. In the key of B, we should have an F♯, but this is a half step smaller. this interval is called a ***diminished fifth***.

Diminished and Augmented intervals have a very special place and usage in common practice music, especially when used between the 4th and 7th scale degrees. This brings us to the subject of consonance and dissonance. Most music is made of consonances, or sounds that seem stable and, for lack of a better term, pleasant (in Theory IV you'll learn why this is extremely judgemental). Dissonances, sounds that seem more harsh, have a valuable place in music, too, and we'll see that when we start talking about harmony.

Other intervals are less common, such as the diminished octave and the augmented unison. On the subject of unisons, keeping in mind that the unison is the smallest interval possible, can you have a diminished unison? The answer is that the diminished unison, is really an augmented unison going the other direction! If somehthing is the smallest it can be, you can't make it smaller.



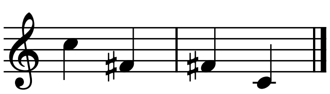
A quick note about descending melodic intervals: When figuring out a descending interval, make sure you still calculate from the bottom note. Trying to figure out the interval from the top note will likely lead to the wrong interval.

In the interval to the left, the C down to Eb is a sixth. The distance going up or down is going to be the same. But if you use the top note as the key signature, then you will see that E♭ is not in the key of C and you will likely think it needs to be lowered to make it an major sixth, or call it a minor or augmented sixth. In reality, it is already a major sixth, as C is in the key of Eb. Watch out for problems like this.

Intervals can be ***inverted***, meaning flipped. For instance, the inversion of the interval created by C up to E would become E up to C. The first interval would be a M3, and the second a m6. This shows us a basic principle in inversion: the numbers will always add up to 9, and the quality, if major, minor, augmented or diminished will flip as well. Perfect intervals invert to perfect intervals.

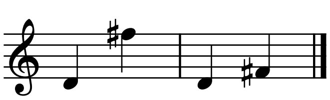
So, we can then look at a P5, let's say from C up to G, and it will then invert to G up to C, which is a P4. 5+4 is 9, and both intervals are perfect. A couple of notated intervals are below.

In this example of an interval going up, a m6, we raise the first note up an octave. This makes the second interval a M3. 6+3=9, and m becomes M.



These examples show a descending d5 being inverted by lowering the first note an octave. The resulting interval we can see is an A4. 5+4=9, d becomes A.

Compound intervals are intervals that are more than an octave. Generally, when an interval is above a 10th, we reduce it and call it by the reduced name. Do do this, subtract 7 from the interval. Yes, I know that the octave is 8 notes, but this is musical math. The octave is a repeated note! So if you have a 10th, it's equivalent reduced interval is a 3rd (10-7). A 12 reduces to a 5th (12-7=5). The quality is unaffected. To demonstrate there is an example below.



In this example, we've taken the F♯ and lowered it an octave (reduced it by 7). Counting the distance in the first interval we see it's a 10th, so the reduced value is a 3rd. Both are Major.

In this example, we do the reverse. We have a major second and we want to make it compound. Here, we add 7, making the interval a M9 (2+7=9). Remember that you don't change the quality.