

Intervals

Interval Size

What makes one chord or scale different from another is the intervals contained within it. An interval is the distance between two notes and is measured by two things; first, the number of letter names it spans, and second, the number of semitones between the two notes. C to G, therefore, is a fifth because it spans five letter names, C, D, E, F, and G (five letters = a 5th). What kind of fifth we will leave for later.



There are two kinds of interval; **Melodic**: one note after another, and **Harmonic**: two notes at the same time.

Here are all the intervals up to an octave (8ve)

	<u>Melodic</u>	<u>Harmonic</u>
Unison	<p>C - C</p>	<p>or</p>
Second (2nd)	<p>C - D</p>	
Third (3rd)	<p>C - d - E</p>	
Fourth (4th)	<p>C - d - e - F</p>	
Fifth (5th)	<p>C - d - e - f - G</p>	
Sixth (6th)	<p>C - d - e - f - g - A</p>	
Seventh (7th)	<p>C - d - e - f - g - a - B</p>	
Octave (8ve)	<p>C - d - e - f - g - a - b - C</p>	

Interval Quality

Basic intervals, like those just outlined, are often grouped as follows;

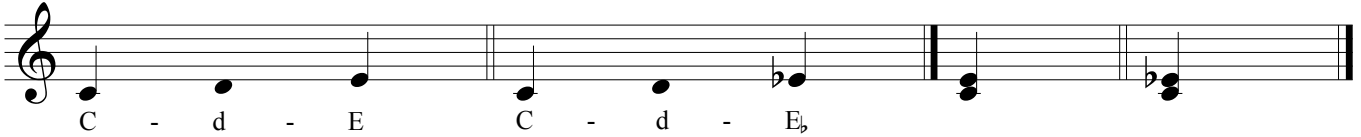
"Perfect consonant" - unisons, 4ths, 5ths, and 8ves,

"Imperfect consonant" - 3rds and 6ths,

"Dissonant" - 2nds and 7ths.

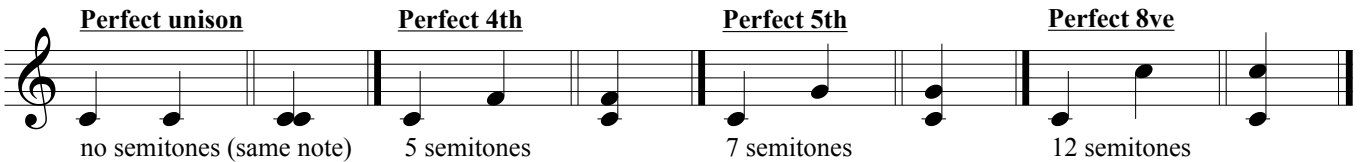
(see section on consonance and dissonance below)

When accidentals - sharps (♯) and flats (♭) - are introduced, intervals may span the same number of letter names yet still be a different size. For example; C - E and C to E flat:

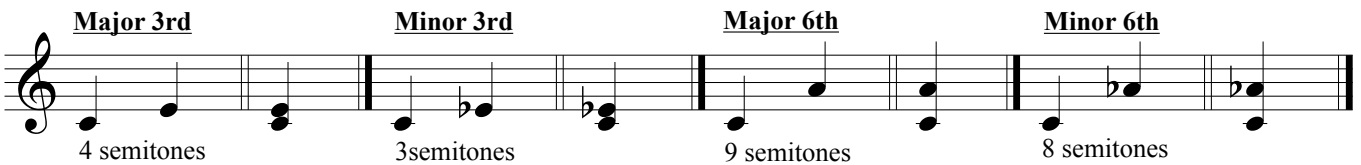


Both the intervals above are 3rds because they cover the same number of letter names. However, since the number of semitones between each of the intervals is different we need a qualifying term in order to define them accurately.

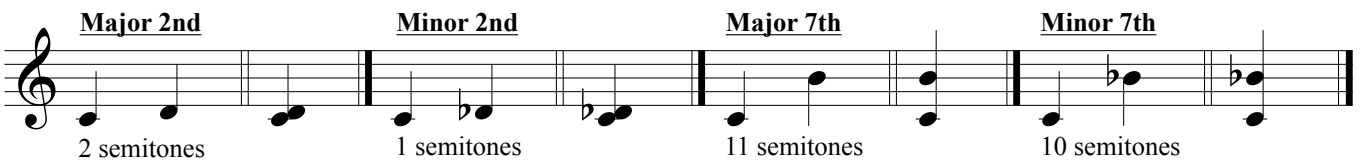
Here is how we do it (You may wish to compare these intervals to the intervals above the tonic in the major and minor scales); Perfect consonances are "perfect", i.e.



Imperfect consonances are "major" or "minor", i.e.



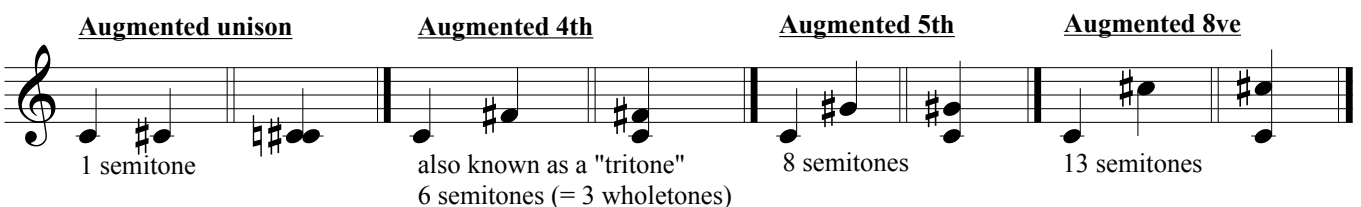
Dissonances are "major" or "minor", i.e.



Augmented and Diminished Intervals

These descriptions are adequate for describing intervals above the tonic in a major or minor scale but what about intervals between notes within the scale? If you are observant you may have noticed that in the list of intervals above there is no description for an interval of six semitones. If you count the number of semitones between F and B (♮4 and ♮7 in C major and C harmonic minor), however, 6 is exactly what you get.

Here are the rules for augmented and diminished intervals; Perfect intervals plus a semitone become "augmented", i.e.



Perfect intervals minus a semitone become "diminished", i.e.

Diminished 4th **Diminished 5th** **Diminished 8ve**

4 semitones also known as a "tritone"
6 semitones (= 3 wholetones) 11 semitones

If you are wondering why there is no "diminished unison" it is because intervals are always measured from the bottom note. C to C flat, therefore, automatically becomes an augmented unison because C flat is the lower of the two notes and C is one semitone above it, just as C sharp is one semitone above C.

Major intervals plus a semitone become "augmented", i.e.

Augmented 2nd **Augmented 3rd** **Augmented 6th** **Augmented 7th**

3 semitones 5 semitones 10 semitones 12 semitones

Minor intervals minus a semitone become "diminished", i.e.

Diminished 2nd **Diminished 3rd** **Diminished 6th** **Diminished 7th**

no semitones (same note) 2 semitones 7 semitones 9 semitones

♭♭ = double flat (lowers a note two semitones)

Lastly, in case you didn't notice already, major intervals minus a semitone become minor (see the list of major and minor intervals above).

Spelling of Intervals

You may have noticed that we now have several descriptions for intervals that cover the same number of semitones. If you are wondering why, consider the interval F to B. It spans four letter names - F, G, A, and B - and six semitones. This makes it an augmented 4th.;

Augmented 4th

F - g - a - B 1 - 2 - 3 - 4 - 5 - 6

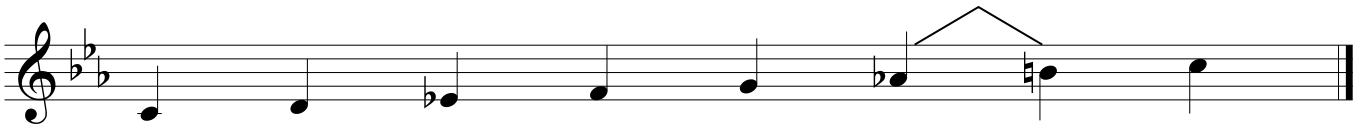
But what about the interval B to F. This interval spans five letter names - B, C, D, E, and F - which makes it a 5th, but it still includes the same number of semitones;

Diminished 5th

B - c - d - e - F 1 - 2 - 3 - 4 - 5 - 6

You will have noticed that in the list of intervals above there were two spanning six semitones, both referred to as a "tritone". One of these intervals was the augmented 4th, the other a diminished 5th. B to F therefore is a diminished 5th.

Consider also the 6th and 7th degree of the harmonic minor scale;



This forms an augmented 2nd (two letter names and 3 semitones) but what if one or both of the notes were spelled differently?

All of the following intervals are spelled differently but on the keyboard are played with exactly the same keys.



There are historical, practical, and technical reasons why composers might choose one spelling over another. That is quite a large topic in itself. For a simpler explanation look at the following passages in G sharp minor;



Which is easier to read? If you played both of these on the keyboard you will have noticed that they are actually identical. Obviously in terms of reading the the first example is preferable.

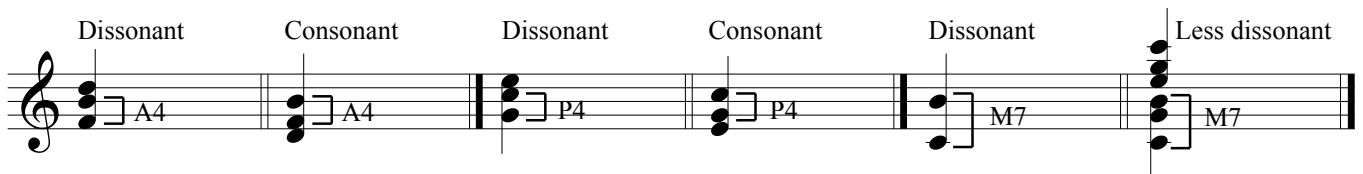
What if you wanted to transpose this passage into a different key, say, G minor or B minor?



If you compare the shape of each of these passages in the different keys you will appreciate why intervals are spelled a particular way. In the first example of each of the three keys the notes move from line to space in exactly the same pattern. Their shape is identical. In each of the second examples the shape of the passage is different.

Consonance or Dissonance?

Although we talk about certain intervals being consonant (intervals that sound stable and whose notes go well together) or dissonant (intervals that want to be "resolved" and whose notes clash), in real music it is largely a matter of context. For example, while all augmented and diminished intervals are normally considered dissonant, an augmented 4th is consonant when a minor 3rd is added below it, making a diminished triad in first inversion (see Chords). Similarly, the perfect 4th is considered consonant only when the lower note of the interval is not the bass note. A major 7th on its own may sound very dissonant but when part of a major 7th chord can sound quite sweet. In reality intervals are neither consonant nor dissonant but occur within a spectrum of consonance and dissonance which is very much dependent on context.



Interval Inversion

Inverting an interval means reversing the order of notes in an interval so that the lower note of the interval becomes the upper note, and the upper note becomes the lower note. Neither note changes its name.

C-D D-C C-E E-C C-F F-C C-G G-C C-A A-C C-B B-C

A simple principle can be applied to all interval inversions to save you re-measuring an interval that has been inverted. The size of an interval and its inversion will always add up to nine, i.e.

Unisons (1) become 8ves (8) and 8ves become unisons,
 2nds (2) become 7ths (7) and 7ths become 2nds,
 3rds (3) become 6ths (6) and 6ths become 3rds,
 4ths (4) become 5ths (5) and 5ths become 4ths.

In addition;

Major intervals become minor and minor intervals become major,
 Augmented intervals become diminished and diminished intervals become augmented,
 Perfect intervals remain perfect.

The following graph summarises these points;

1 ↔ 8	Major ↔ Minor
2 ↔ 7	Augmented ↔ Diminished
3 ↔ 6	Perfect ↔ Perfect
4 ↔ 5	

Compound intervals

Compound interval is the term given to intervals that stretch more than an octave. Everything that applies to intervals an octave or smaller also applies to compound intervals. A compound major 3rd (major 10th) is treated no differently to a regular major 3rd.

To measure a compound interval, determine what the interval would be if it were within an 8ve, then add 7. C to E is a 3rd, therefore C to the E an 8ve above the first E is a 10th. C to A is a 6th, therefore C to the A an 8ve above the first A is a 13th.

Major 3rd Major 10th Minor 6th Minor 13th

Where it becomes important to distinguish, for example, between a 9th and a compound 2nd (both of which use the same notes) is in the construction and analysis of chords, especially where notes not belonging to a chord are used to embellish it. For example;

This passage outlines a F minor triad and although it contains both a G (9th above F) and a E (7th above F) neither of these are part of the F minor chord and are therefore considered non-chord, or non-essential tones.

This passage, however, outlines F minor 9th chord (albeit a less common variety) and although it may not be immediately apparent why, given that the previous passage contained exactly the same notes, when you listen to each passage the difference becomes quite clear.