

Theory Placement Exam Study Help

This document is being sent to help you pass the Placement Exam. Maybe you're not sure of the logic of some of the concepts. Let me supply some of the logic behind several of the concepts that you might have not understood. This will be comprehensive, so it may include things that you already understand well.

1. **Intervals.** An interval is the distance between any two notes. This distance is named according to two parameters, the numerical value of the distance and the quality of the distance. Intervals an octave (8 letter names) or smaller are called *simple* intervals. Intervals larger than an octave are called *compound* intervals. This discussion will be restricted to simple intervals.

a) The numerical value is ALWAYS the inclusive number of letter names involved. So C up to E (C-D-E) is always a third. C up to E flat is also a third, because it involves three letter names. Even C# up to Eb is a third, though it looks weird. C up to D is ALWAYS a second. And C up to D sharp is also a second, even though, on the keyboard, D sharp and E flat are the same black note. If you CALL it a second, it involves only two letter names, if you call it a third, it involves 3 letter names.

b) Qualitative values are a little more complicated. To begin with, it is useful to define the smallest interval, which is the distance from any note to its closest neighbor. It is called a *Half-Step*. Examples: C to C sharp; D sharp to E; E to F; B to C. A whole step is comprised of two half-steps. Examples: C up to D; C sharp up to D sharp; E up to F sharp.

There are five different qualities: *Diminished*, *Minor*, *Major*, *Augmented* and *Perfect*. The Perfect intervals are reserved for only four kinds of intervals, the Perfect 5th, the Perfect 4th and the Perfect Octave (8th) and the Perfect Unison.

The Perfect 5th (e.g., C up to G, or B flat up to F) always includes five letter names and spans the distance of 3 whole steps and 1 half step. Example, C up to G: C w D w E ½ F w G.

The Perfect 4th always includes four letter names and spans the distance of 2 whole steps and 1 half-step. Example: G w A w B ½ C.

A short cut to recognizing P5ths & P4ths using the layout of the keyboard:

P 5ths and 4ths ALWAYS go white key to white key or black key to black key UNLESS the notes B and F are involved.

Examples: C up to G = P5th; C down to G = P4th. C# up to G# = P5th. C# down to G# = P4th. BUT B up to F# = P5th; B down to F# = P4th.

Major and minor intervals are associated only with the intervals of a 2nd, a 3rd, a 6th and a 7th. In all cases the major intervals are ALWAYS ½ step larger than the minor intervals.

You can determine the major intervals easily by relating them to a major scale, thus, in the key of C major:

- C-D (a whole step) is a major 2nd
- C-E (2 whole steps) is a major 3rd
- C-A (a whole step larger than a P 5th) is a major 6th
- C-B (one half-step short of an octave) is a major 7th.

The minor intervals are always one ½ step smaller than major intervals, and all but the min 2nd can be related to the natural minor scale. Thus, in the key of c minor:

- C-D flat (a half-step) is a minor 2nd (NOT in the scale!)
- C-E flat (one and one ½ step) is a minor 3rd
- C-A flat (1/2 step larger than a P 5th) is a minor 6th
- C-B flat (a whole step short of an octave) is a minor 7th.

A short cut to recognizing the larger intervals (7ths and 6ths) is to relate them to the P8 (octave) and P5 intervals.

- a) The M7th is always ½ step short of being an octave (G up to F#)
The mi7th is always a whole step short of being an octave (D up to C)
- b) The mi6th is always ½ step larger than a P5th (C up to Ab)
The M6th is always a whole step larger than a P5th (D up to B)

To *Augment* means to make larger; to *diminish* means to make smaller. Thus:

- An augmented interval is ½ step larger than either a major or a perfect interval
- A diminished interval is ½ step smaller than either a minor or a perfect interval

- Examples: C to D is a major 2nd; C to D sharp is an augmented 2nd
C to F is a Perfect 4th; C to F sharp is an augmented 4th
C to Fb would be a dim. 4th, but is rarely encountered since it sounds so much like a Major 3rd.
C to G is a Perfect 5th; C to G flat is a diminished 5th
C to G sharp is an augmented 5th
C to A is a major 6th; C to A sharp is an augmented 6th
C to A flat is a minor 6th
C sharp to A flat is a diminished 6th.
C to B is a major 7th; C to B sharp is an augmented 7th (!!!)
C to B flat is a minor 7th
C sharp to B flat is a diminished 7th.

Note: this logic works even if it sometimes looks weird! For example, an *augmented* interval is always a half step wider than either a major or a perfect interval, even with the perfect unison. So C up to C# would be called an augmented unison, which sounds like a contradiction (and is!).

2. **Key signatures.** You've got to develop a reflex about knowing the right number of flats and sharps in all keys. As with any developed reflex, that happens only with lots of repetitions. But here's an easy way to check to see if you have the right number and the right accidentals.

Major keys:

- a) Keys with Sharps: C major scale has no sharps. As you go UP with consecutive perfect 5ths, each new scale adds a sharp, so the G scale has one, D has two, A has three, E has four, B has five, F# has six, C# has seven. And to make it nice and easy to remember, the sharps also get added in turn, each a Perfect 5th higher than the previous: F# is the first, C# the second, G# the 3rd, etc.
- b) And as you go DOWN from C in consecutive perfect 5ths, each one adds a flat. SO, C has none, F has one, Bb has two, Eb has three, Ab has four. Db has five, Gb has six and Cb has seven. And the flats also get added in turn, each one a P5th lower than the last: Bb is the first flat, then Eb, then Ab, etc.

With this logic in place, there's no reason ever to miss one of these questions.

As **for minor key signatures**, every minor scale shares a key signature with a major scale. Knowing the relationship of the major and minor scales that have the same key signature is critical. It's pretty easy: think of the relationship between C major and A minor. Neither has any accidentals (so they share the same key signature), and C is a minor third above A. SO, any minor scale has the same key signature as the major scale that lies a minor third above it. Example: A minor has same key signature as C major, F minor same as Ab major, etc. The reverse is also true: any major scale has the same key signature as the minor scale that lies a minor 3rd below it. Example: D major has the same key signature as B minor; G major has the same key signature as E minor. To miss any of these relationships with this logic known is just carelessness.

3. Triads (three-note chords).

A. Triads are composed of two consecutive ascending thirds (going up). Another way to describe them is to look at the top two notes in terms of their intervals from the lowest note: the middle note is a 3rd above the bottom note, the top note is a 5th above the bottom note. The notes of the triad are often identified by this relationship, the middle note of the triad is called the "third" of the chord, and the top note of the triad is called the "fifth" of the chord. However, for this discussion, which has the purpose of figuring out how to describe the different kinds of triads, we'll use the first way, looking at the triad as composed of two consecutive ascending thirds. Also, for the rest of this discussion, assume that whenever a series of notes is presented, they are assumed to be in ascending order.

B. Triads are identified by whatever is the Root note, the lowest note when in consecutive third order. So C-E-G is called a C chord, A flat -C-E flat is called an A flat chord, F sharp-A-C sharp is called an F sharp chord.

C. There are only two kinds of thirds used in making up triads: a large (Major) third (two whole steps) and a small (minor) third (1 & 1/2 steps).

C. To AUGMENT means to make bigger; to DIMINISH means to make smaller.

Thus: a) An Augmented triad has two consecutive BIG (Major) thirds, e.g.,

F - A - C#, or Bb - D - F# and

b) A Diminished triad has two consecutive SMALL (minor) thirds, e.g.,

F - Ab - Cb, or Bb - Db - Fb

D. Major and minor triads both have one of each, a big (major) third and a small (minor) third. And the 1st (lower) third gives the name of the triad. Thus:

- a) Major triad = First a major 3rd, then a minor 3rd, e.g., Eb - G - Bb, or E - G# - B
- b) minor triad = First a minor 3rd, then a major 3rd, e.g., Eb - Gb - Bb, or E - G - B.

Hint: When looking at triads, if there is an accidental on each note, if you take away the accidental from each note, the intervals remain the same, and the chord can be easier to recognize. For example, Cb-Eb-Gb can be confusing, but if you take away the flats from each note, resulting in C - E - G, you'll probably have no problem recognizing it as a C major chord, so Cb-Eb-Gb is also a major chord.

4. Triad Inversions:

a) When in original, *root* position, you will ALWAYS see two consecutive thirds. On the staff, either those notes are on three consecutive lines or three consecutive spaces, e.g., C-E-G: is on three consecutive spaces in treble clef, starting on the third space, but three consecutive lines, starting on the ledger line below the staff (middle C).

b) Sometime in the early 18th-Century theorists made note of the fact that the notes of the triad still retained at least some of the identifying sonority of the root position triad even if the notes were presented in a different order, i.e., with the middle note of the original triad (the “third” of the triad) as the lowest note, or, more rarely, with the top note (it’s “fifth”) as the lowest note (rather than the root note being the lowest note).

i. The triad with the third presented as the lowest note is noted as being in *first inversion*.

ii. The triad with the fifth presented as the lowest note is notes as being in *second inversion*.

What position the other notes take above the lowest note doesn’t matter; it’s which note of the triad is heard or presented as the lowest note that determines the position of the chord as being in root position, or first or second inversion. Thus a C major chord in root position has the notes C-E-G (or C-G-E) with C as the lowest note, the other notes played above it. The C major chord in first inversion will be presented or played as E-G-C (or E-C-G) with E as the lowest note, the other notes played above it. The C major chord in second inversion will be present or played G-C-E (or G-E-C), with G as the lowest note, the other notes played above it.

c) Although you can “unscramble” the notes of a chord to see which is the lowest when the notes appear as consecutive thirds (to find the root), here’s a much easier way to identify the position of a chord. When a triad is in an inversion in close position (with all the notes of the triad in the same octave register), you will ALWAYS see either

i. An ascending third, then a fourth, e.g., E - G - C, OR

ii. An ascending fourth then a third, e.g., G - C - E.

When the third is 1st (going up) and the fourth is next, it is ALWAYS in 1st inversion
When the fourth is 1st (going up) and the third is next, it is ALWAYS in 2nd inversion

Another shortcut:

- i. When the notes appear as two consecutive thirds, the lowest note is ALWAYS the identifying root of the chord.
- ii. When in inversion in close position, the root is ALWAYS the top note of the interval of the fourth. Thus, E-G-C (1st inversion), G-C is an ascending 4th, thus C is the root of the chord, and it's a C chord.

“Figures” and triads and inversions. In the Baroque period a kind of shorthand way of indicating harmonies came into use, called “*figured bass*.” This took the form of numbers written below bass line notes.

- a) No numbers under a bass note implies numbers 5 and 3, meaning that the pitches a 5th above the bass note and a 3rd above the bass note are implied. This is equivalent to a triad in root position. The reason these numbers are chosen is because we tend to hear notes above the bass primarily in terms of their relationship to the bass note, rather than between the inner voices, e.g., the alto and soprano notes in a SATB texture.
- b) If there is a “6” written under a bass note, it implies both “6” and “3”, or the notes that lie a 6th and a 3rd above the bass note. This is equivalent to a triad in first inversion.
- c) If there is a “6” and a “4” written a bass note, it implies that the pitches a 6th and a 4th above the bass note. This is equivalent to a triad in 2nd inversion. Note that although the numbers represent pitches above the bass as simple intervals, they could be played in any register, e.g., an octave or even two octaves above the bass—but ALWAYS above the bass (or lowest) note, never below it.
- d) If there are no numbers, but an accidental is written, that accidental is applied to the 3rd above the bass
- e) All other accidentals will be located in front of the number of the note to be changed. Example: #6 = raise the 6th above the bass by ½ step

5. Dominant seventh chord (a four-note chord).

The dominant seventh chord is built on the dominant note of the scale, the 5th scale step (see the section below on scale step names). The dominant seventh chord is ALWAYS a major triad (see below) plus a minor 7th (a minor third above the 5th of the major triad).

Examples:

- a) an E dominant 7th chord (E G# B D) is the dominant 7th of the key A Major,
- b) a Bb dominant seventh (Bb D F AB) is the dominant 7th in Eb,
- c) a D dominant 7th (D F# A C) is the dominant 7th in G major, etc.

In a minor key you have to raise the 3rd of the dominant 7th to make it a major chord. For example, in C minor, the dominant 7th is G B natural D F, in spite of the Bb in the key signature. This has the effect of using the leading tone instead of the subtonic scale step (see scale step names, #7 below), usually employed in a cadential chord progression, V – i.

6. Time signatures: A Compound time signature is one in which both the number of beats per measure is given, and also, by implication, the number of sub-beats per beat, normally a triple subdivision. Think of it this way: In a march in 2/4 time, there are two beats per measure, and each beat (a quarter-note) is normally sensed as being divided into two subdivisions (two eighth-notes). But what if the beat is normally divided into threes, rather than twos, like in the song, 'It Came Upon a Midnight Clear', or "When Johnny Comes Marching Home" (A Civil War song)? There would be two ways to indicate this, either:

- a) Write it in 2/4, and write all the subdivisions (8th-notes in triplets, OR
- b) Acknowledge the normality of the triplet subdivision in the time signature, with a 6/8 time. In this case, it would imply two beats per measure, with each beat being divided into 3 eighth-notes, thus amounting to 6 eighth-notes per measure, or 6/8 time.
- c) And in Compound Time signatures, the value of each beat is three of something: in 6/8 or 9/8 time a beat is equal to three eighth-notes, or its equivalent, a dotted quarter-note. In 6/16 time, a beat is equal to three sixteenth-notes or its equivalent, a dotted eighth-note.

And if a song is in 3/4 time, with each beat normally divided into three 8th-notes, then the compound time signature would be 9/8.

Both 6/8 and 9/8 time signatures are called "Compound" time signatures. But the one with TWO beat (6/8) is called a "duple" compound time signature, and the one with THREE beats (9/8) is called a "triple" compound time signature.

7. Scale Steps:

Scale step names can be confusing because they are named with three different kinds of logic.

First logic: The Dominant logic

Perfect 5ths above and below the tonic, and halfway between each one.

A. The Dominant note is so named because it is the first different pitch class note of the overtone series. It is ALWAYS a perfect 5th ABOVE the Tonic, or key-note, or first notes of the scale.

B. The Mediant is so named because it's about half-way between the Tonic and Dominant notes, the third note of the scale. Example, in the key of C, ascending notes: C = tonic, E = Mediant, G = Dominant

C. The Subdominant note is so named NOT because it's a step below the Dominant note, but because it's a perfect 5th BELOW the Tonic note. In the key of C, F lies a P5th below C, so F is the subdominant note--and it happens to be the 4th note of the scale, if you look at the note as it lies in an ascending order.

D. The Submediant note is so called because it's about half-way between the Tonic and the Subdominant note (descending). Example, in the key of C, descending notes: C = Tonic, A = Submediant, F = Subdominant

Second logic: your psychological response.

E. The leading tone is so called because it give you the feeling, when hearing it in the context of the scale as "Leading up to" the tonic note. It's ALWAYS a half-step below the Tonic.

Third logic: The proximity of the note to its neighbor.

F. The 2d note of the scale is called the supertonic because it lies immediately above (super) the tonic.

G. The minor 7th is called the subtonic, because it lies immediately below (but a WHOLE step, not a Half-step, that would be a leading tone), below (sub) the Tonic.

That covers all the notes of the scales, with two names given for the 7th scale step, the leading tone (half-step below the tonic), and the subtonic (whole step below the tonic).

8. Major and Minor Scales.

A. We can think of the **Major Scale** as derived from the notes of the Major chords based on the three primary chords, triads built on the 1st (tonic), 4th (Subdominant) and 5th (Dominant) notes of the scale.

B. Likewise, we can think of the **Natural Minor** scales as derived from notes of the minor chords based on the three primary chords: Tonic, Dominant and Subdominant. Thus in C Major: C-E-G G-B-D, F-A-C; and in C minor, C-Eb-G, G-Bb-D, F-Ab-C. Another way to look at it is to observe that in the minor scales, the 3rd, 6th and 7th scale steps are lowered by a half-step.

C. Why is the **Harmonic Minor Scale** so called? Because when we use the key defining chord progression, I - V - I, we don't sense the concluding, key defining effect of the V chord with the subtonic note (Bb as the third of the V chord), to be nearly as satisfying as when using the leading tone (B natural) as the third of the V chord. So when we are assuming a harmonic utilization of the scale steps, as in the I - V - I chord progression or cadence, we want to use the leading tone rather than the subtonic. Thus, in C: C - D - Eb - F - B - Ab - B nat - C.

D. Why is the **Melodic Minor Scale** so called? Because the succession "Ab - B nat" is melodically discontinuous. Ab has a tendency to relate down to G, while B nat has a tendency to relate up to C. And the join between them, the aug. 2nd Ab-B nat. is a melodic bump in the road. To smooth out that melodic bump, we still need the B nat as a leading tone, so we raised the Ab to A nat. Thus: C - D - Eb - F - G - A nat - B - C. But on the way down, the B is no longer acting as a leading tone, so we can revert back to the "minorness" of the scale, and use the lowered 7th and 6th scale as we go down: C - Bb- Ab - G - F - Eb - D - C.

9. Cadences

So what's a cadence. That is, how do YOU know when a cadence happens? What in the music causes you to know that a cadence has happened?

A cadence is a point in music where we sense a stopping point, a point of repose, a resting place, a place where we sense something has finished. There are various qualities of this point of repose, and the names of the cadences reflect these qualities.

Harmonic qualities of cadences

Harmonically, the chords of a cadence usually let you know what key you're in, otherwise your sense of repose would not be achieved. This is accomplished by having the last chord of a cadence either be the V (dominant) chord or the I (tonic) chord, A third kind is when the last chord is a substitute for the final tonic, usually a VI chord. Taking these in turn:

A. The "authentic" cadence is when the last chord is the I chord (tonic), and it's preceded immediately by the V (dominant) chord. This combination of chords, especially when the V7 is used, is the most key-defining and conclusive cadence; it "authentically" defines the key and concludes a phrase. The reason it so conclusively defines a key is that it uses all but one of the notes of the scale. In the key of C: V7 = G-B-D-F; I = C-E-G. The notes of the scale = C-D-E-F-G-A-B-C. The missing note is A, and this is included when the V is preceded either by IV or ii, as most cadences are.

B. The "plagal" cadence is very infrequently used to define or conclude a phrase. The last two chords of this cadence are IV-I. This cadence leaves out the leading tone of the scale, and the succession of notes: "leading tone" to "tonic" is one of the most powerful key-defining melodic progressions. Indeed, the plagal cadence is often used as a kind of afterthought cadence, utilized AFTER an authentic cadence has been presented, as in the "A-men" that acts as a little coda after an authentic cadence has concluded a hymn.

C. The "half" cadence is when the last chord of the cadences is V, the dominant. Very often a section of music can be sensed in two halves. We hear a phrase ending on the dominant, then the music repeats, but this time ends with the tonic. So the dominant-ending cadence is kind of "half-way" through a section of music, and you can remember the name that way. A good example of this two-phrase, half-cadence-then authentic cadence structure can be heard in the first two phrases of "It Came Upon a Midnight Clear."

It came upon a midnight clear, that glorious song of old (Half cadence)

From Angels bending near the earth, to touch their harps of gold (full, authentic cadence)

D. The cadence in which the VI (or vi) is substituted for the final I, preceded by the V, is called, aptly, a "deceptive" cadence. You are led to expect one thing to happen, V-I, instead, you hear V-vi., so your expectations is "deceived."

The melodic qualities of cadences:

The melodic qualities of cadences are referred to when using the terms “perfect” and “imperfect.” When the melody (soprano voice) and the bass note of the final chord of an authentic cadence are both on the tonic note of the scale, we sense this as the most perfect and reposeful of endings. Thus we call this situation a “perfect” cadence, most often a perfect authentic cadence, V-I. When the melody note, OR the bass note ends on the third note of the scale, (also the third of the I chord), this kind of ending is not nearly so conclusive, so we call this an “imperfect” cadence. Another way to look at this:

- a) When both the melody and bass notes of the final tonic chord are on the tonic, the interval between them, the octave, is a “perfect consonance.”
- b) When the bass is on the tonic and the melody is on the third, that interval, the third, is called an “imperfect consonance.” (Whether or not the intervals are one, two or even three octaves apart is immaterial for this discussion). Or when the melody is on the tonic but the bass note is on the third, the interval is a sixth, also an imperfect consonance.

The qualities of these consonant intervals can be said to give rise to the names of the cadences, “perfect” and “imperfect.” Thus, a V-I cadence that ends with both melody and bass notes on the tonic note is called a Perfect Authentic Cadence (PAC) and when a V-I cadence that ends with either the bass or melody notes NOT on the tonic is called an Imperfect Authentic Cadence (IAC)

Another point: since we tend to associate a rising melody with an increase of tension and a falling melody with a release of tension, the PAC in which the melody ends “ti-do” is less conclusive than the melody that ends, “re-do.” Our choice of chord inversion for the V chord can be influenced by this factor.