Fifth Edition

Elementary Harmony

Theory and Practice

Robert W. Ottman

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Contents

1

Basics I

pitch on the staff and the keyboard; scales; key signatures

For many college-level students, most of Chapters 1 through 3 will constitute a review of basic materials already learned from previous musical experience. Additional practice is available in the Workbook, *where exercises correlate closely with the presentation in these three chapters. Most of these exercises include a section with answers given, followed by a section without answers. Students requiring more extensive and rigorous review are referred to either of two texts designed to precede* Elementary Harmony. *They are* Rudiments of Music, *third edition (Prentice Hall, 1995), and* Programmed Rudiments of Music, *second edition (Prentice Hall, 1994), both by Robert W. Ottman and Frank D. Mainous.*

Let us assume that you have just heard a single musical sound, perhaps a note on the piano or on some other instrument. What did you hear? Within this one sound, you should be able to distinguish four properties.

1. *Pitch:* How high or low is the sound?
2. *Duration:* How long is the sound held?
3. *Intensity:* How loud or soft is the sound?
4. *Timbre:* What is the quality of the sound; that is, does it sound like a piano, a trumpet, a violin, or what?

As you can see (or hear), even a single sound is complex; but in listening to music, we hear many sounds simultaneously and in rapid succession. For maximum comprehension of these combined musical events, we need to know how the pitches are grouped, how the durations are related to each other, and how these are combined with intensity and timbre to form a musical composition. To accomplish that, we must first know the symbols used to represent these four characteristics, how those symbols are placed on paper, and how they are interpreted.

Chapters 1 through 3 cover elementary considerations in the areas of *pitch* and *duration.* The *timbre* of a musical sound is a function of acoustics (see Appendix C). Terms indicating *intensity* and *tempo* can be found in the appendixes of each of the *Rudiments* texts listed at the beginning of this chapter, as well as in general music dictionaries and dictionaries of musical terms.

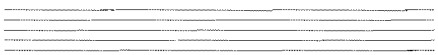
For the student of harmony, knowledge of the basics is essential. In regard to pitch, the student should be able to do the following with absolute accuracy and without hesitation:

1. Name both the major and the minor key for any key signature.
2. State the number of sharps or flats in the signature of a given key and spell these accidentals in their correct order on the staff.
3. Spell all the major scales and the three forms of each minor scale, ascending and descending.

Pitch on the Staff

To indicate pitch on paper, we use a *staff* (plural *staves*) consisting of five parallel horizontal lines and four intervening spaces.

FIGURE 1.1 *The Staff*



Lines and spaces are named using the letters A B C D E F G. Where on the staff these letter names are placed is determined by a *clef* sign. A clef sign is ordinarily placed at the beginning of each staff in a music composition.[1] See page 37 for the origin of the staff and the clefs.

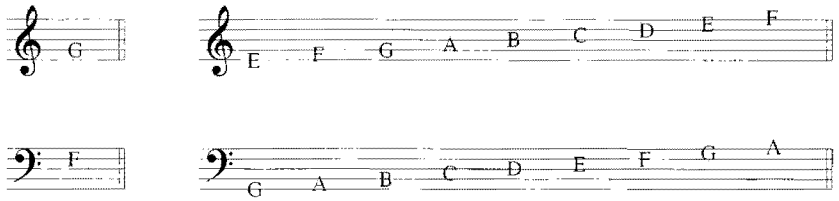
 = Treble or G clef (The line that the lower loop encircles is designated as G.)

 = Bass or F clef (The line between the two dots is designated as F.)

Once these pitches are established, adjacent lines and spaces use adjacent letter names.

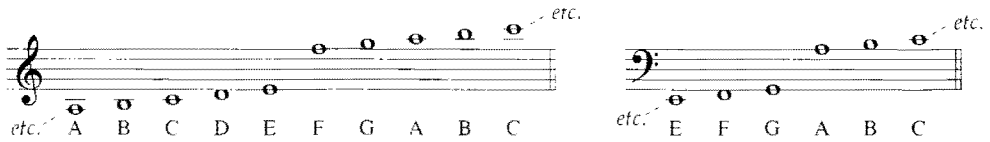
[1] The C clefs and their staff spellings are presented in Chapter 8.

FIGURE 1.2 *Staff Spellings*



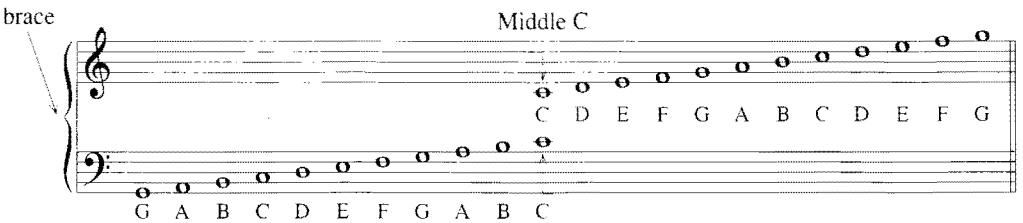
We can also place notes above or below the staff by using *ledger (leger) lines*, short lines equidistant from each other.

FIGURE 1.3 *Ledger Lines*



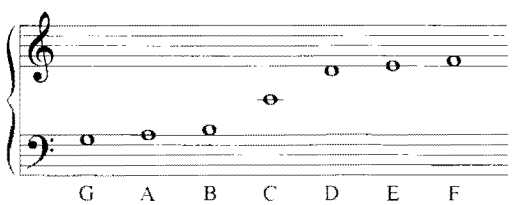
The treble and bass clefs can be joined together by a *brace* to produce a *grand staff (great staff, piano staff). Middle C* is a special name given to that C occuring between the staves.

FIGURE 1.4 *The Grand Staff*



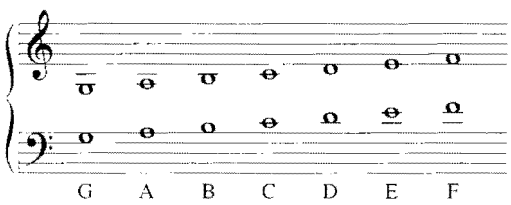
Observe that middle C occurs both above the bass staff and below the treble staff. Placing it midway between the staves, as in Figure 1.5, is incorrect.

FIGURE 1.5 *Incorrect Placement of Middle C*



The correct placement of middle C allows us to continue the ledger lines downward in the treble clef and upward in the bass clef. The two notes above each letter name in Figure 1.6 are identical in pitch.

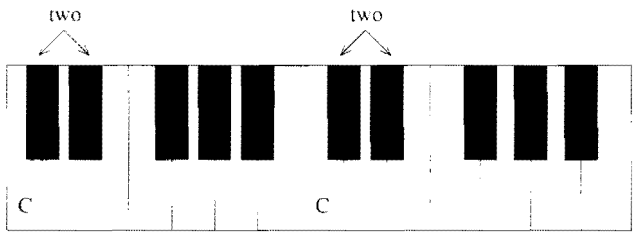
FIGURE 1.6 *Ledger Lines between Staves*



Pitch on the Keyboard

Pitch names for the keys on the keyboard are conveniently figured from the pitch C. You can easily find any C on the keyboard by finding the white key immediately to the left of any group of two black keys.

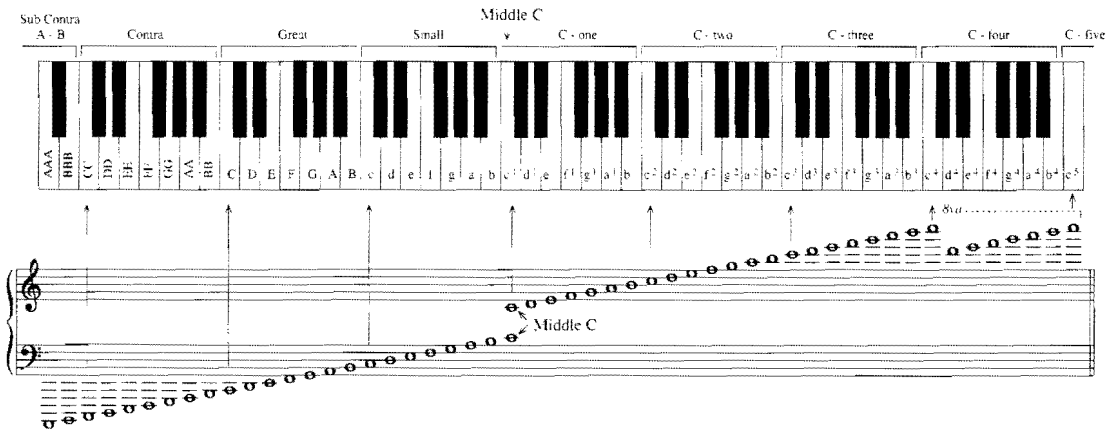
FIGURE 1.7 *Location of C on the Keyboard*



When you sit at the center of the keyboard, middle C is immediately before you. The keys to the right are named in alphabetical order ascending to the next C: C D E F G A B C. The distance from C to the next C, up or down, is called an *octave* (from the Latin *octo,* meaning "eight"), since eight letter names or keys are spanned. The same is true for any letter name and its repetition eight letter names away. A up to A, for example, is an octave.

In Figure 1.8, you see that there are eight C's (the sign *8va* means that these notes sound an octave higher than written). To the right of each C, the letters of the musical alphabet extend to the next C, except, of course, for the last C. In addition, there are two extra keys—A and B—at the left of the keyboard. How are these successive octaves, C to C, differentiated from each other? In a system known as *octave registers,* each C has its own designation and, to the right of any C, each of the other letter names carries the same designation. (There are several systems; the one shown here is the most widely used.)

FIGURE 1.8 *Names of the Keys on the Keyboard (Octave Registers)*



The octave register designations are spoken thus:

AAA = Sub Contra
CC = Contra
C = Great
c = small
c^1 = c-one
c^2 = c-two
c^3 = c-three
c^4 = c-four
c^5 = c-five

Intervals: Half Steps and Whole Steps

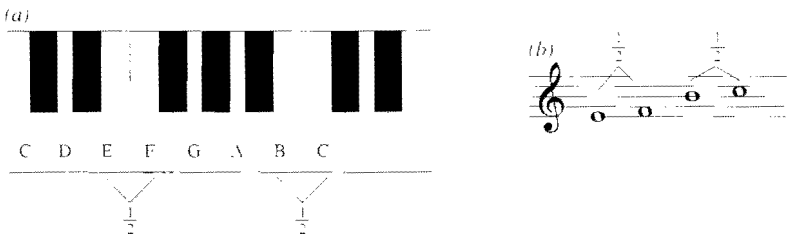
An interval is the distance between two pitches, either as heard or as represented by two notes on the staff or two keys on the keyboard. The octave described on page 4 is an interval. For the present, we will consider only the two intervals used in writing or playing a scale: the half step and the whole step.

A *half step* consists of two pitches as close together as possible. See Figure 1.9.

On the keyboard: Look at the white keys on the keyboard (Figure 1.9*a*), and you will see half steps between E and F and between B and C. A half step may also occur between any white key and an adjacent black key.

On the staff: The white-key half steps occur on the staff as shown in Figure 1.9*b*.

FIGURE 1.9 *Half Steps*



A *whole step* is made up of two half steps.

On the keyboard: Each pair of adjacent white keys, except E–F and B–C, is a whole step because there is a black key intervening. A whole step may also include a black key—white-to-black or black-to-white—provided that only two adjacent half steps are involved.

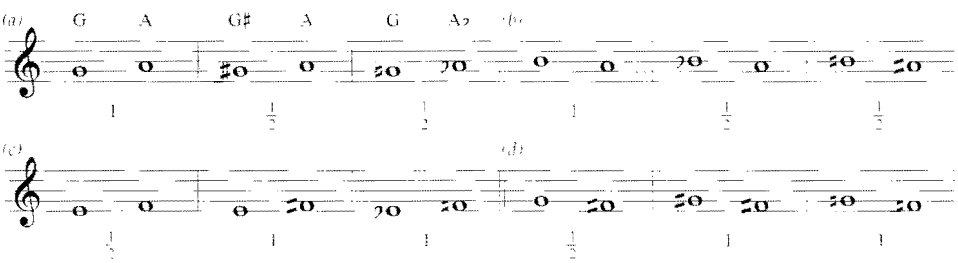
On the staff: Any adjacent line and space except E–F and B–C constitute a whole step. To create other half steps and whole steps—for example, a whole step above E—use *chromatic alterations* (also called *accidentals*) to raise or lower the pitch of a given note. Listed here are the accidentals and how each alters a pitch.

Sharp (♯)	Raises the pitch of a tone one half step (C♯ is one half step higher than C).
Flat (♭)	Lowers the pitch of a tone one half step.
Double sharp (𝄪)	Raises the pitch of a tone one whole step.
Double flat (𝄫)	Lowers the pitch of a tone one whole step.
Natural (♮)	Cancels a previously used accidental.

Figure 1.10 illustrates how accidentals are used. To change a whole step to a half step, shown in Figure 1.10*a*, raise the lower note one half step or lower the upper note one half step. Raising the lower note of the whole step G–A produces the half step G♯–A; lowering the upper note produces the half step G–A♭. In a similar manner, explain the intervals in Figure 1.10*b*.

To change a half step to a whole step, raise the upper note one half step or lower the lower note one half step. In Figure 1.10*c*, raising the upper note of the half step E–F produces the whole step E–F♯; lowering the lower note produces the whole step E♭–F. In a similar manner, explain Figure 1.10*d*.

FIGURE 1.10 *Use of Accidentals*

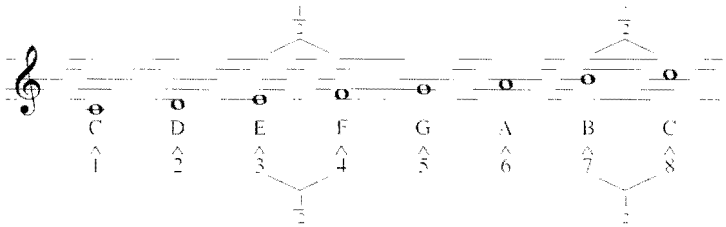


Major Scales

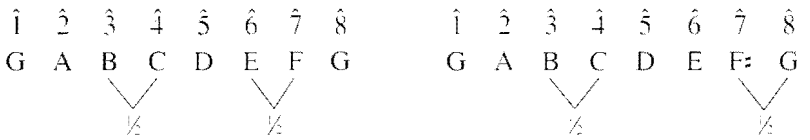
A *scale* is a series of eight pitches using eight consecutive letter names extending from a given pitch to its octave, ascending or descending. The series usually consists of whole steps and half steps, and it is the location of the half steps within the scale structure that determines the type of scale (major, minor, Dorian, Mixolydian,[2] and so forth). In the major scale, the half steps are located between $\hat{3}$ and $\hat{4}$ and between $\hat{7}$ and $\hat{8}$. (The symbol ˆ means *scale degree*. $\hat{3}$–$\hat{4}$ means *scale degrees three and four*. This designation of scale degrees will continue throughout the text.)

When a major scale begins on C, the half steps $\hat{3}$–$\hat{4}$ and between $\hat{7}$–$\hat{8}$ coincide with the half steps E–F and B–C on the keyboard (Figure 1.9*a*). Consequently, the C major scale uses only the white keys on the keyboard. On the staff, $\hat{3}$–$\hat{4}$ and $\hat{7}$–$\hat{8}$ in C mjaor also coincide with E–F and B–C (Figure 1.11).

FIGURE 1.11 *C Major Scale on the Staff*



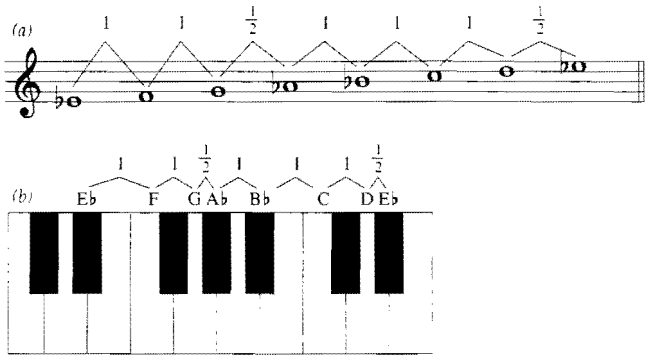
When a major scale begins on any other letter name, accidentals are necessary to provide the correct arrangement of half steps and whole steps. In a white-key scale starting on G, for example, there is a half step between $\hat{6}$ and $\hat{7}$ and a whole step between $\hat{7}$ and $\hat{8}$. If F is raised to F♯, $\hat{7}$–$\hat{8}$ becomes a half step, $\hat{6}$–$\hat{7}$ becomes a whole step, and the scale becomes major.



A scale can begin on a note with an accidental. Figure 1.12*a* shows the E♭ major scale on the staff, and in *b* we see the same scale on the keyboard.

[2]See page 15 for a Mixolydian scale and melody; see Appendix D for a discussion of modal scales.

FIGURE 1.12 *The E♭ Major Scale*



Scale-Degree Names

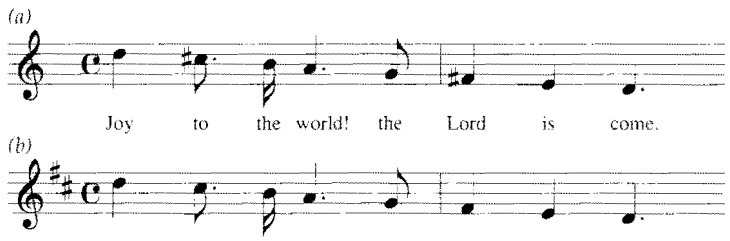
Scale degrees are known by name as well as by number. Instead of saying "first scale degree," we can say "tonic scale degree" or "tonic note."

Scale degree	*Name*	*Meaning*
$\hat{1}$	Tonic	The tone that identifies the key
$\hat{2}$	Supertonic	The tone a whole step above the tonic
$\hat{3}$	Mediant	The tone midway between the tonic and the dominant
$\hat{4}$	Subdominant	The tone five tones below the tonic
$\hat{5}$	Dominant	The tone five tones above the tonic
$\hat{6}$	Submediant	The tone halfway between the tonic and the subdominant (or five tones below the mediant)
$\hat{7}$	Leading tone	The tone that leads to the tonic

Major Key Signatures

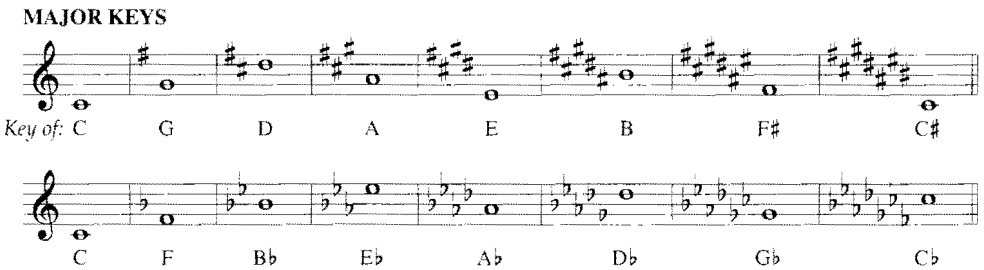
Music could be written with accidentals throughout the piece, placed as needed. The beginning of "Joy to the World," Figure 1.13*a*, consists of a descending D major scale, with sharps on F and C. Instead of putting a sharp before every F and C in the piece, we use a *key signature*, simplifying the problem by placing the accidentals at the beginning as in Figure 1.13*b*, thus indicating that all F's are F♯ and all C's are C♯.

FIGURE 1.13 *Use of a Key Signature*



Therefore, we say that two sharps in the key signature indicates the key of D major. In the same way, a system of fifteen key signatures will name each major key and identify its tonic note.

FIGURE 1.14 *Major Key Signatures*



In the bass clef, the accidentals are arranged in the same way.

FIGURE 1.15 *Key Signatures in the Bass Clef*

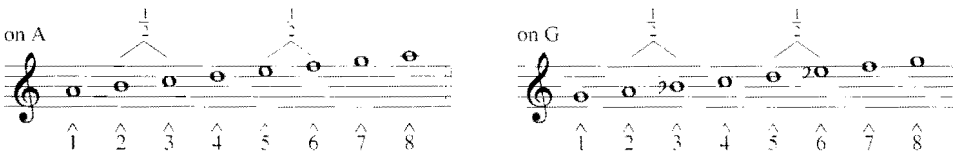
After the first sharp or flat, each additional accidental is added in a certain pattern. For sharps, it is down four lines and spaces, F–(E)–(D)–C, up five, C–(D)–(E)–(F)–G, down four, and so forth; for flats it is up four, down five, up four, and so forth. There is one exception: The fifth sharp, A♯, breaks the pattern by its placement a fourth down from D♯. That avoids placing sharps on ledger lines.

Minor Scales

Like major scales, minor scales show a succession of eight scale steps. They differ from major scales in that (a) there are three forms of the minor scale in a given key; (b) the placement of half steps differs from that in major scales; and (c) the analysis symbols ♯$\hat{6}$ and ♯$\hat{7}$ each indicate that the natural tone of the scale has been raised one half step, such as G to G♯ or B♭ to B.

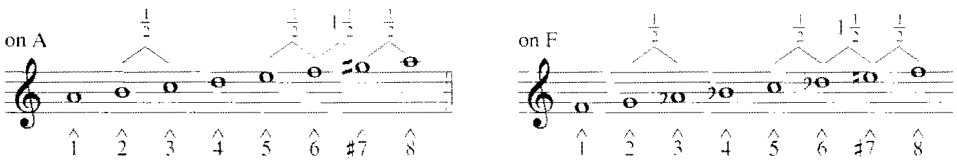
1. *Natural (pure) minor scale:* The half steps are between $\hat{2}$ and $\hat{3}$ and between $\hat{5}$ and $\hat{6}$. The natural minor scale with no accidentals starts on A.

FIGURE 1.16 *Natural Minor Scale*



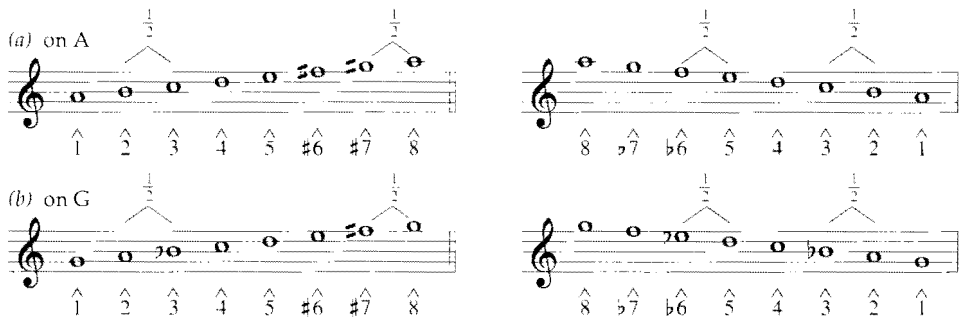
2. *Harmonic minor scale:* Raising $\hat{7}$ of the natural minor scale one half step (♯$\hat{7}$) supplies a leading tone not present in the natural minor scale. The half steps are now between $\hat{2}$ and $\hat{3}$, $\hat{5}$ and $\hat{6}$, and ♯$\hat{7}$ and $\hat{8}$. Note also that the interval from $\hat{6}$ to ♯$\hat{7}$ is a step and a half (called an augmented second).

FIGURE 1.17 *Harmonic Minor Scale*



3. *Melodic minor scale:* In the ascending form of this scale, both $\hat{6}$ and $\hat{7}$ are raised one half step, indicated as ♯$\hat{6}$ and ♯$\hat{7}$. The half steps are now between $\hat{2}$ and $\hat{3}$ and between ♯$\hat{7}$ and $\hat{8}$, and the awkward step and a half is eliminated. Descending, the form of the scale is the same as that of the natural minor scale. Though $\hat{7}$ and $\hat{6}$ descending are correct, ♭$\hat{7}$ and ♭$\hat{6}$ are commonly used to avoid confusion.

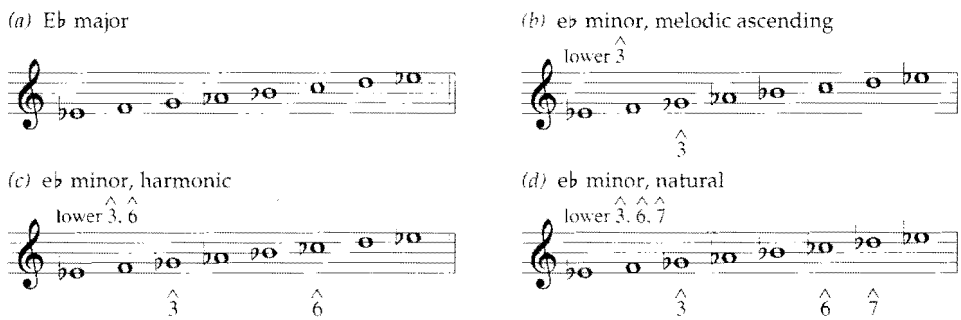
FIGURE 1.18 *Melodic Minor Scale*



Any minor scale with the same tonic as a major scale can easily be spelled as follows:

Minor scale	***To change from major scale***
Melodic minor	lower $\hat{3}$
Harmonic minor	lower $\hat{3}$ and $\hat{6}$
Natural minor	lower $\hat{3}$, $\hat{6}$, and $\hat{7}$

FIGURE 1.19 *Spelling Minor Scales on E♭*



Three minor scales, G♯, D♯, and A♯, must be spelled by whole steps and half steps, since no major scale has a tonic on these pitches. The leading tone in each requires a double sharp (×).

Scale-Degree Names in Minor

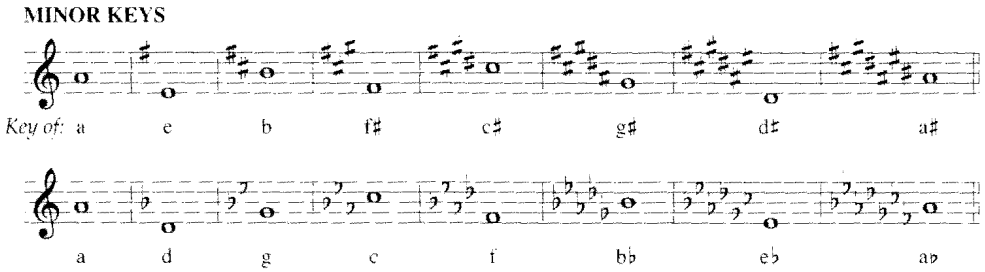
For $\hat{1}$ through $\hat{5}$, scale-degree names are the same in major and minor. These are names for $\hat{6}$ and $\hat{7}$:

Scale degree	*Name*
Lowered $\hat{6}$ (or $\flat\hat{6}$)	Submediant
Raised $\hat{6}$ ($\sharp\hat{6}$)	Raised submediant
Lowered $\hat{7}$ ($\flat\hat{7}$)	Subtonic
Raised $\hat{7}$ ($\sharp\hat{7}$)	Leading tone

Minor Key Signatures

Minor key signatures use the accidentals found in the natural minor scale. Thus, the key signature of the e♭ minor scale shown in Figure 1.19 is six flats. In Figure 1.20, note that lowercase letters are used for key names in minor (a minor, f♯ minor, and so forth).

FIGURE 1.20 *Minor Key Signatures*



The Circle of Fifths

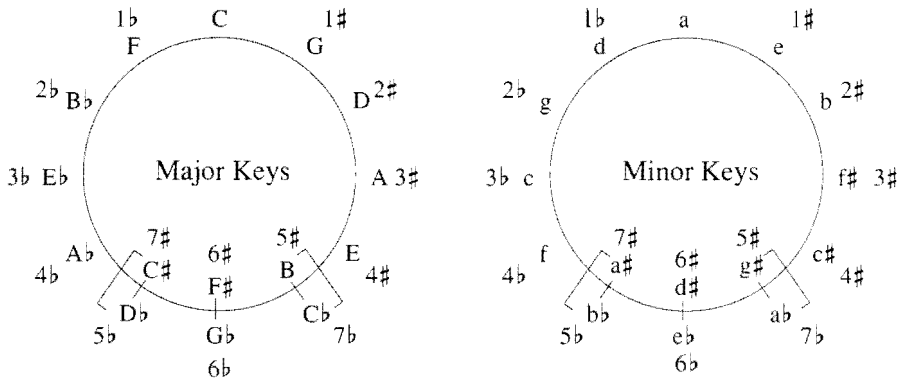
You may have observed in Figures 1.14 (major key signatures) and 1.20 (minor key signatures) that when you read the key names from left to right, $\hat{5}$ of any *sharp* key is $\hat{1}$ of the next key to the right; for example, $\hat{5}$ of G major is $\hat{1}$ of D major, and $\hat{5}$ of c♯ minor is $\hat{1}$ of g♯ minor.

Similarly, $\hat{4}$ of any *flat* key is $\hat{1}$ of the next key; for example, $\hat{4}$ of E♭ major is $\hat{1}$ of A♭ major, and $\hat{4}$ of d minor is $\hat{1}$ of g minor. This information is incorporated in a simple diagram called the *circle of fifths*, in which

reading clockwise:	Each tonic is the fifth scale step of the preceding tonic.

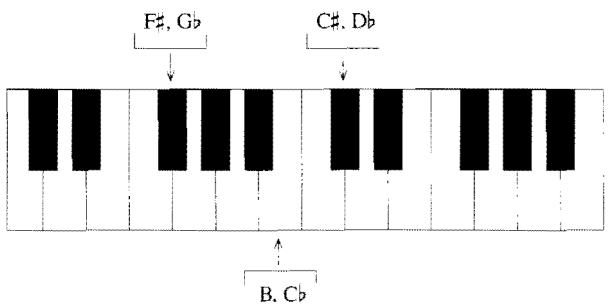
reading counterclockwise: Each tonic is the fourth scale step of the preceding tonic.

FIGURE 1.21 *The Circle of Fifths*



The bracketed keys are known as *enharmonic keys*. The two pitch names of a bracketed pair (for example, B and C♭) represent the same pitch and are the same key on the keyboard.

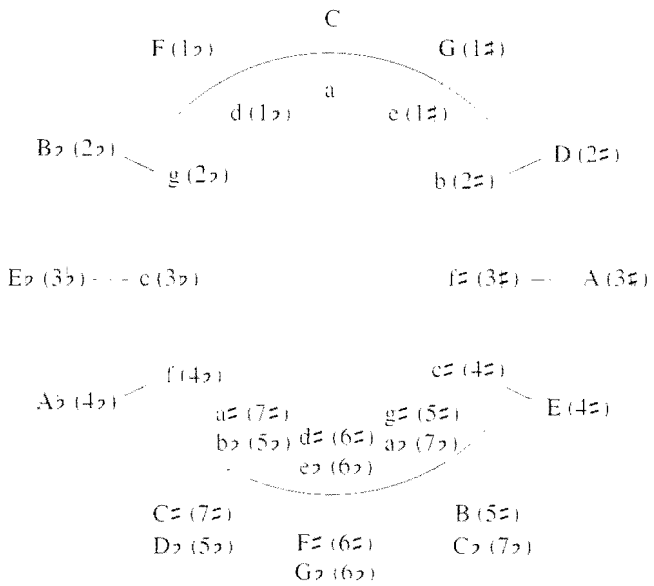
FIGURE 1.22 *Enharmonic Keys*



Relative and Parallel Keys

Relative Keys The two circles of fifths, major and minor, can be superimposed so that C major and A minor coincide (both have no ♯'s or ♭'s), with the other pairs of keys with the same key signatures also aligning. These coinciding keys are known as *relative keys*. B♭ major and g minor, for example, are relative keys, since both have a key signature of two flats.

FIGURE 1.23 *Circle of Fifths for Major and Minor Keys Together*



Parallel Keys Two keys employing the same tonic tone are known as *parallel keys*. B♭ major and B♭ minor are parallel keys.

Scales and Keys

With so much emphasis placed on the learning of scales in music lessons, one might be led to believe that music is derived from scales. Just the opposite is true. The scale is simply a pattern formed by an arrangement in alphabetical order of the pitches used in a composition. An obvious example is the Christmas hymn "Joy to the World" (Figure 1.13).

The first eight notes of the tune encompass all the pitch names and are in descending alphabetical order: D C♯ B A G F♯ E D. This is the descending form of the D major scale, usually stated in the ascending alphabetical form: D E F♯ G A B C♯ D. In most melodies, however, the scale structure is not so obvious, as in Figure 1.24.

FIGURE 1.24 *Scale: D E F♯ G A B C♯ D*

Mozart, Sonata for Piano, K. 284[3]

[3]K.: abbreviation for Köchel. Ludwig von Köchel in 1862 catalogued and assigned numbers to Mozart's works. Mozart did not number his compositions.

Here is the same D scale tones are present but in a more random order. Note that the Mozart example neither begins nor ends on D. Why, then, is this scale a D scale? Because all the notes seem to gravitate toward the single pitch D. Note the strength of the first D you hear and notice how the last note "wants" to continue to D (as it does in the sonata). A pitch with this quality of stability and finality is called the *tonic*, and it functions as the first note of a scale. It is usually found at or near the beginning of a composition and more often than not is also the last pitch. Music from which the scale is derived is said to be in the key of the tonic note. In the preceding two cases, it is in the key of D.

Whether the scale is major or minor depends on the arrangement of whole and half steps. The scale of the previous piece is major, whereas the scale in Figure 1.25 is minor.

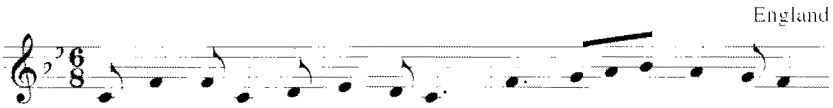
FIGURE 1.25 *Scale: G A B♭ C D E♭ F♯ G*

Bach, *English Suite*, III, Gigue, BWV 809[4]

Not all scales are major or minor. The note F in the melody of Figure 1.26 possesses the quality of tonic, but this F scale shows half steps between $\hat{3}$ and $\hat{4}$ and between $\hat{6}$ and $\hat{7}$. The effect is that of major but with a lowered $\hat{7}$. It is called a Mixolydian scale, one of several scales in common use in composed music before about 1650 and found universally in folk music. (See Appendix D.)

FIGURE 1.26 *Scale: F G A B♭ C D E♭ F*

England



A key signature is nothing more than the accidentals of the scale placed at the beginning of a composition. It does not determine the key; it merely reports the accidentals used, although for convenience we commonly do use the key signature to identify the key. A key signature of two flats, for example, usually indicates B♭ major or g minor, but in the preceding English folk song it indicates F Mixolydian.

The "Basics Quiz"

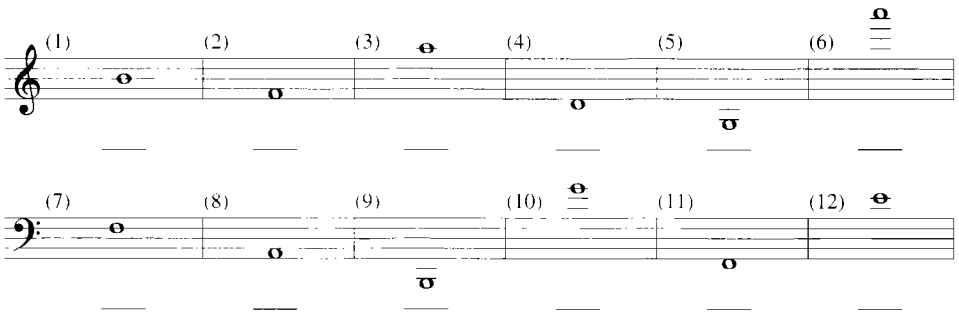
These short examinations are offered in Chapters 1–3. If you encounter any difficulty, review the problem thoroughly before proceeding to more advanced study.

[4]BWV: abbreviation for *Bach-Werke-Verzeichnis*, a compilation and numbering of Bach's works by Wolfgang Schmieder in 1950. Sometimes "S." (for "Schmieder") is used instead of BWV.

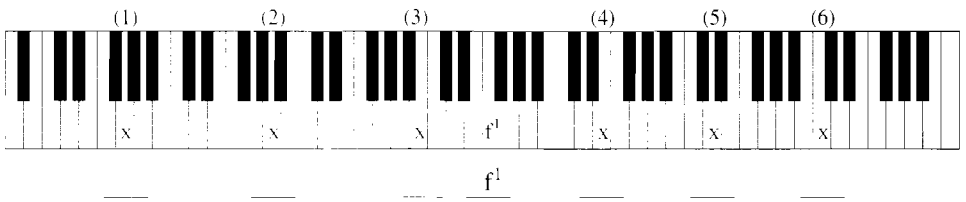
BASICS QUIZ #1

In Appendix E: Answers to all questions in this quiz are given.

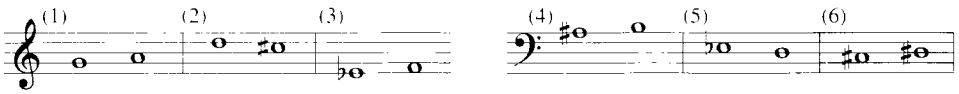
1. Name each of these pitches, using octave register symbols.



2. From this keyboard, identify each key name marked with an X, using octave register names. The letter name f^1 is already placed for you.

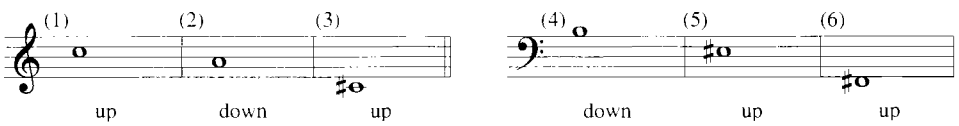


3. Identify each pair of pitches as a half step or a whole step.



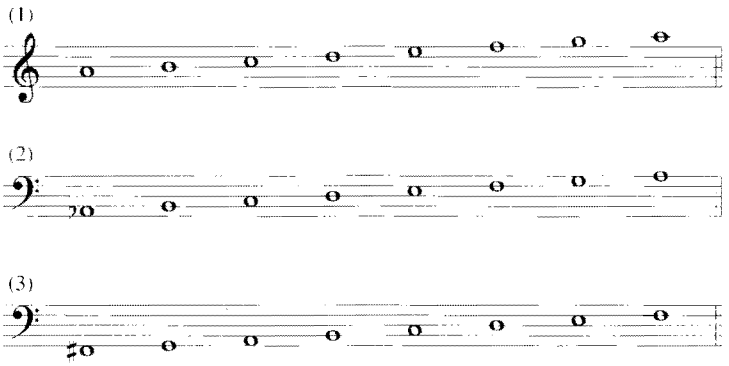
4. Write the second note of these half steps and whole steps. Always use an adjacent letter name.

a. Half steps

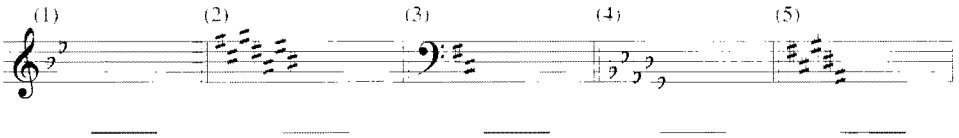


b. Whole steps

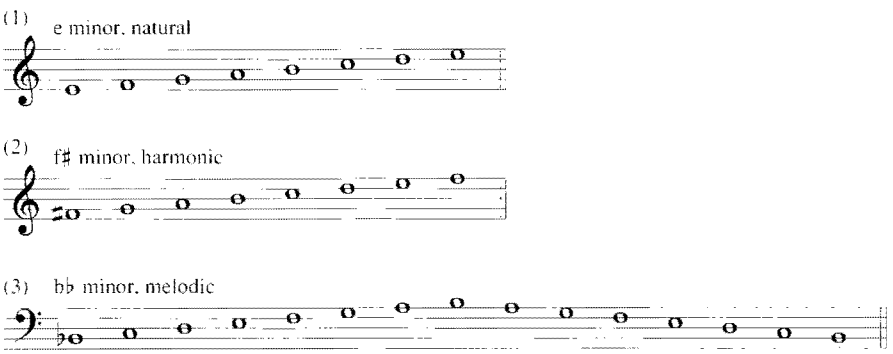
5. Add accidentals to convert these scales to major scales.



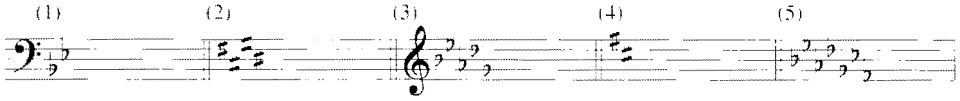
6. Name the major key for each of these key signatures.



7. Add accidentals to convert these scales to minor scales in the form given.



8. Name the minor key for each of these signatures. Place the tonic note on the staff.



_____ _____ _____ _____ _____

9. Name the relative and parallel keys of the given keys. Write "none" if there is no parallel key.

	Relative	***Parallel***
(1) D	_____	_____
(2) E♭	_____	_____
(3) d	_____	_____
(4) g♯	_____	_____
(5) b	_____	_____
(6) A♭	_____	_____

10. Enharmonic keys

a. The key enharmonic with F♯ is _____.

b. The key enharmonic with D♭ is _____.

c. The key enharmonic with B is _____.

2

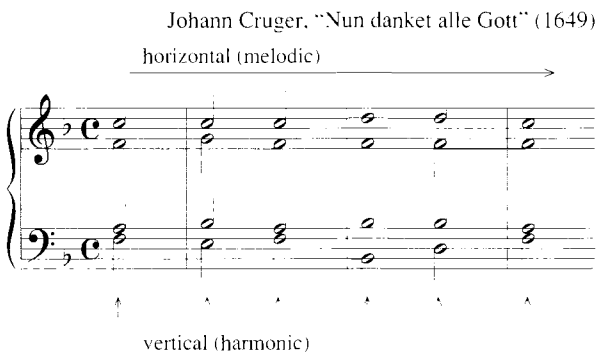
Basics II

intervals; chords; staff notation

When you listen to music, you are hearing, as it were, in two directions at once. You hear the melody, one note after another in an imaginary horizontal line, and you orient yourself at any given moment by relating the melody tone you are hearing to the one you have already heard, or even to what you expect to hear next. At the same time, you are hearing harmony, a vertical composite of several simultaneous sounds.

Figure 2.1 shows this concept graphically, using the opening of the well-known chorale "Now Thank We All Our God." The arrow over the soprano line indicates single pitches heard one after the other (melody), which in notation looks horizontal. (Where are the three other horizontal lines?) The arrows below the staff point to groups of notes heard simultaneously (harmony), which in notation looks vertical.

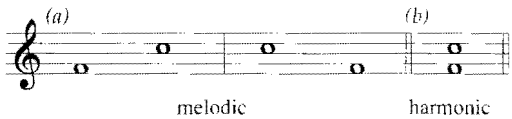
FIGURE 2.1 *Horizontal and Vertical Analysis*



Intervals

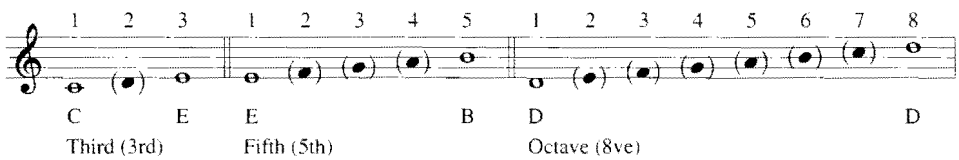
Both melody and harmony make constant use of intervals. In melody, the distance horizontally between each pair of notes is a *melodic interval* (Figure 2.2*a*). In harmony, the distance vertically between any two notes is a *harmonic interval* (Figure 2.2*b*). Combining two or more harmonic intervals produces a chord.

FIGURE 2.2 *Melodic and Harmonic Intervals*



An interval is described by its *quantity* and its *quality*. Its quantity is measured by the number of letter names encompassed. For example, C up to E is a *third* because three letter names (C, D, and E) are encompassed. C♯ up to E is also a third, since only letter names determine quantity.

FIGURE 2.3 *Measurement of Intervals*

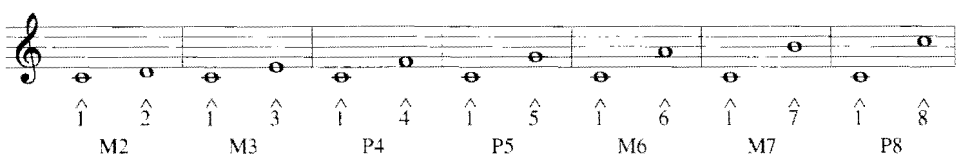


Since the distance between two letter names may vary, as in C–E and C♯–E, numerical size is qualified by terms indicating the quality of the interval: *perfect* (P), *major* (M), *minor* (m), *diminished* (d), and *augmented* (A).

Spelling Ascending Intervals[1]

Perfect and Major Intervals Any interval above the tonic note will be a perfect or a major interval, as shown in the key of C in Figure 2.4. A P5 (perfect fifth) above C, for example, is $\hat{5}$, or G, from the C major scale.

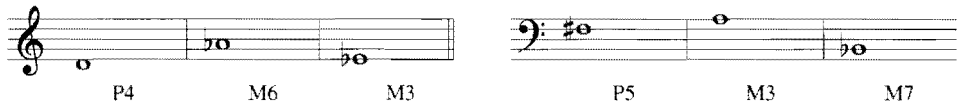
FIGURE 2.4 *Perfect and Major Intervals*



[1]Descending intervals will be easier to work with once you have studied "Inversion of Intervals," page 24.

Here is another example: Calculate a M6 above E. Call E the tonic of a major scale and count up to the sixth scale step, C♯. E up to C♯ is a M6.

DRILL #1 (INTERVALS) Place the second note of the interval above the given note.



In Appendix E: Answers to Drill #1 are given.

The other intervals, minor (m), diminished (d), and augmented (A), can be calculated and identified by comparing them with perfect (P) or major (M) intervals. For example, "M" reduced by one half step becomes "m"—as shown in the following chart:

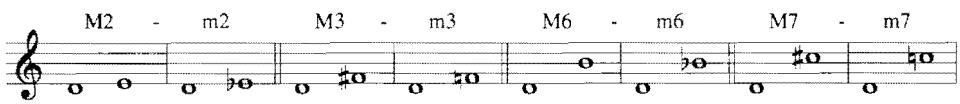
Reduce by	P	M	m
one half step	d	m	d
two half steps	–	d	–

Increase by	P	M	m
one half step	A	A	M
two half steps	–	–	A

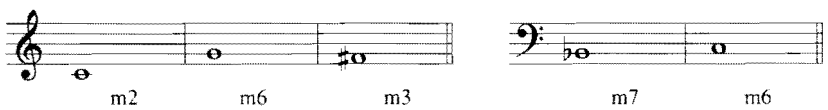
Minor Intervals These are one half step smaller than major intervals. The decrease is accomplished when the upper note of a major interval is lowered one half step or the lower note is raised one half step, *using the same letter names.* Altering the M3 C–E, for example, will produce the minor third C–E♭ or C♯–E. Spelling C–D♯ instead of C–E♭ produces an augmented second (A2), since only two letter names are involved.

Note that the half step and the whole step described in Chapter 1 have the numerical names of m2 and M2, respectively, as seen in Figure 2.5.

FIGURE 2.5



DRILL #2 (INTERVALS) Place the second note of the interval above the given note.

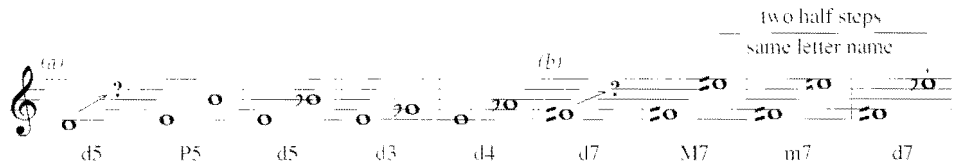


In Appendix E: Answers to Drill #2 are given.

Diminished Intervals These are one half step smaller than minor or perfect intervals; they are accomplished by lowering the upper note or raising the lower note, but

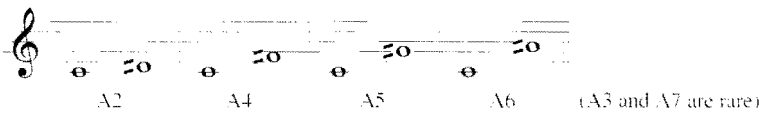
always using the same letter names. When you compute a d interval from a M interval, be sure to reduce the M interval by *two half steps (same letter names),* M to m, then m to d, as in Figure 2.6*b*.

FIGURE 2.6 *Diminished Intervals*

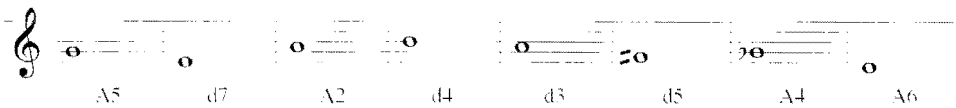


Augmented Intervals These are one half step larger than perfect or major intervals, *using the same letter names.* If the C to F♯ in Figure 2.7 were changed to C♭ to F, an A4 would also be produced.

FIGURE 2.7 *Augmented Intervals*



DRILL #3 (INTERVALS) Place the second note of the interval above the given note.

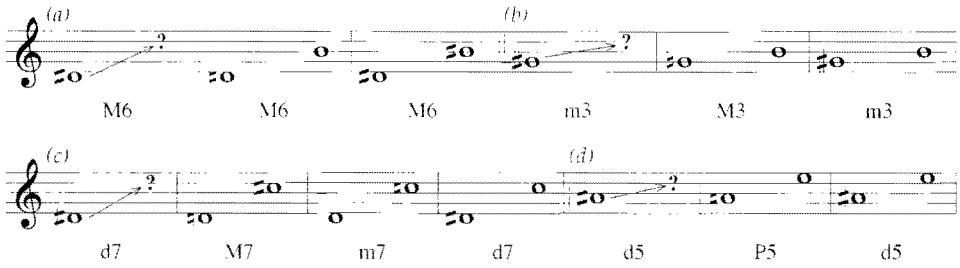


In Appendix E: Answers to Drill #3 are given.

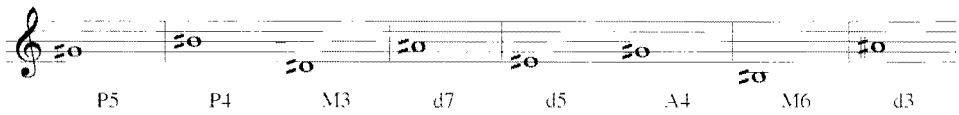
Some letter names with an accidental are not the tonic of any major scale. These are G♯, D♯, A♯, E♯, and B♯. (Only one flatted note, F♭, cannot be tonic. Its use is not common.) To spell intervals above the sharped notes:

1. For P, M, and A intervals, remove the ♯, spell the interval, then raise both notes one half step (Figure 2.8*a*).
2. For m intervals, remove the ♯, spell a M interval, then restore the ♯ to the lower note (Figure 2.8*b*).
3. For d intervals, remove the ♯, spell a P or m interval, then restore the ♯ to the lower note (Figure 2.8*c*).

FIGURE 2.8 *Spelling Intervals above Notes That Cannot Be Tonic in a Major Key*



DRILL #4 (INTERVALS) Place the second note of the interval above the given note.



In Appendix E: Answers to Drill #4 are given.

Terminology for Other Intervals

In addition to the terms just discussed, the following are also used.

Unison (P1) or *perfect prime* (PP): Two identical pitches sounding simultaneously (such as a flute and a clarinet playing the same pitch).

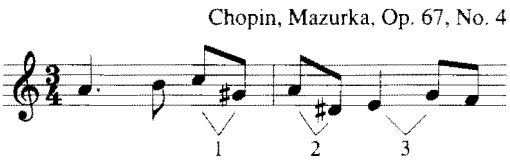
Diatonic and chromatic half steps: In a diatonic half step, the two tones are spelled with adjacent letter names, such as C to D♭. In a chromatic half step, the two tones are spelled with the same letter name, such as C to C♯. The term *diatonic* refers to those tones as spelled in the scale of a given key.

Tritone: Refers to each of the enharmonic intervals of the augmented fourth and the diminished fifth. Each interval includes three whole steps (discussed further in Chapter 10).

Identifying Intervals

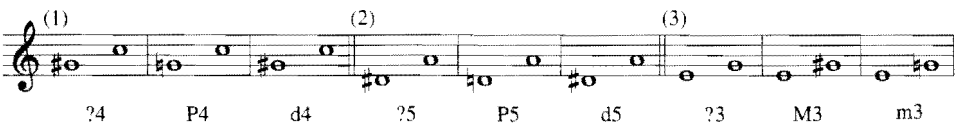
You should now be able to identify almost any interval you may find in a music score, using procedures similar to the preceding. Here are two measures of a melody by Chopin. What are the names of the marked intervals?

FIGURE 2.9 *Intervals in a Score*

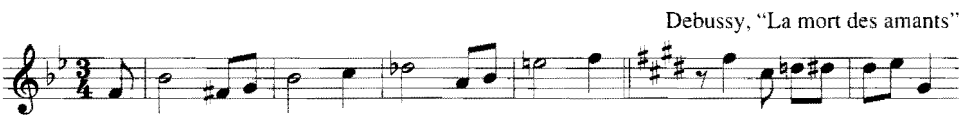


Work from the lower note of each interval: (1) G♯ up to C, (2) D♯ up to A, and (3) E up to G. In (1) the given interval is G♯–C. Lower G♯ to G; the result is G–C, a P4. Since a d4 is a half step smaller than a P4, raising G to G♯ creates a d4.

FIGURE 2.10 *Calculating Intervals from Figure 2.9*



DRILL #5 (INTERVALS) Name each interval in this melodic line. Note the change of key signature. Look for the use of a chromatic half step.

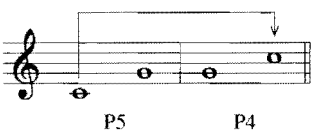


In Appendix E: Answers to Drill #5 are given.

Inversion of Intervals

By inversion of an interval, we mean that we have moved the lower note up an octave or the upper note down an octave. In the process, no pitch names have been changed, but the size of the interval is different. In Figure 2.11, each interval is composed of the pitches C and G, but the octave displacement changes the P5 (C to G) to a P4 (G to C).

FIGURE 2.11 *Interval Inversion*



When inverted, any interval will have a different quantity numerical measurement. The quality of a perfect interval when inverted, however, always remains perfect (hence the name "perfect"); major and minor intervals reverse their designations (P5 inverts to P4, but M3 inverts to m6).

FIGURE 2.12 *Table of Inversions*

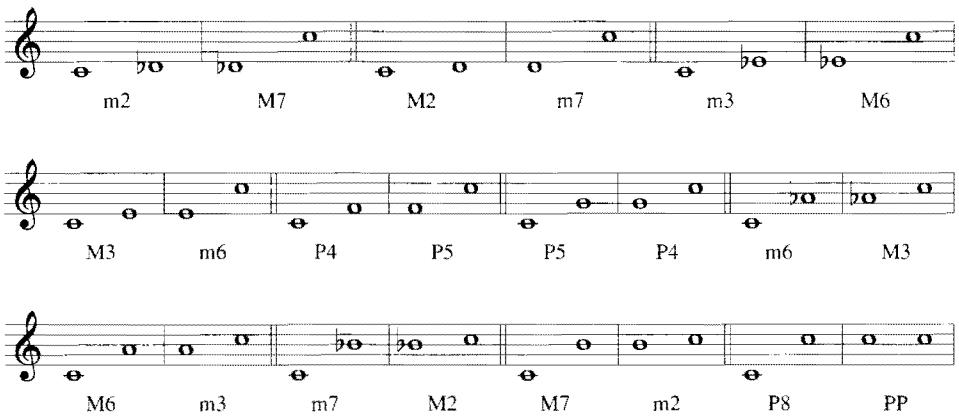
	Quantity (interval size)								*Quality*				
Original	1	2	3	4	5	6	7	8	P	M	m	d	A
Inversion	8	7	6	5	4	3	2	1	P	m	M	A	d

1 = unison; 8 = octave

You will notice that when any interval is inverted, the sum of the two numbers is always 9; for example, P5 + P4 = 9. You might have expected 8 because there is an octave (8) between the lowest and highest notes, but the number is 9 because one note is counted twice, as in Figure 2.11 where the G of C–G (P5) and G–C (P4) is counted twice. Thus, to find the numerical inversion of an interval, subtract its number from 9: The inversion of a third is 9 minus 3—a sixth.

Figure 2.13 shows inversions of P, M and m intervals only. Other intervals invert in the same way (A2–d7, d4–A5, and so forth).

FIGURE 2.13 Inversions of Intervals



Spelling Descending Intervals

The principle of inversion is helpful in spelling descending intervals.

To spell descending perfect and minor intervals: Example: m6 below E♭ (Figure 2.14*a*).

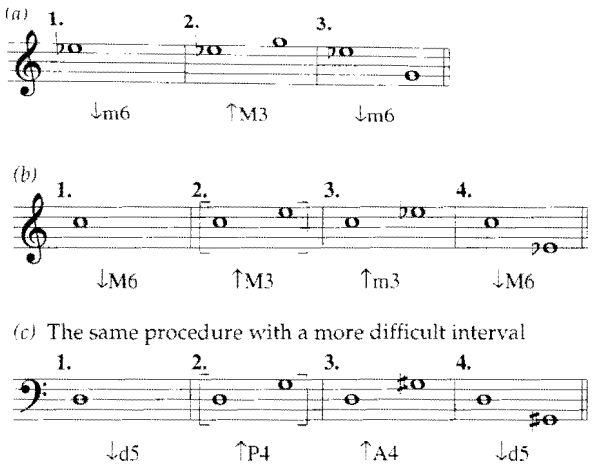
1. Find the inversion of a m6: 9 minus m6 down = M3 up.

2. Spell a M3: M3 above E♭ is G.
3. Place the upper note an octave lower: m6 below E♭ is G.

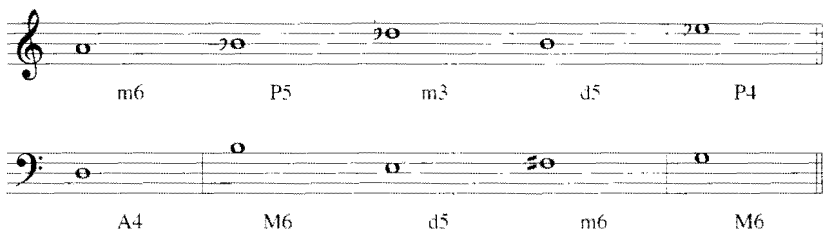
To spell descending major, diminished, and augmented intervals: An extra step (step 2) is required for these. Example: M6 below C (Figure 2.14*b*).

1. 9 minus M6 down = m3 up.
2. To find a m3 up, first spell a M3 up. M3 above C is E.
3. m3 above C is E♭.
4. M6 below C is E♭.

FIGURE 2.14 *Finding the Lower Note of an Interval*



DRILL #6 (INTERVALS) Place the second note of each interval, all descending, on the staff.



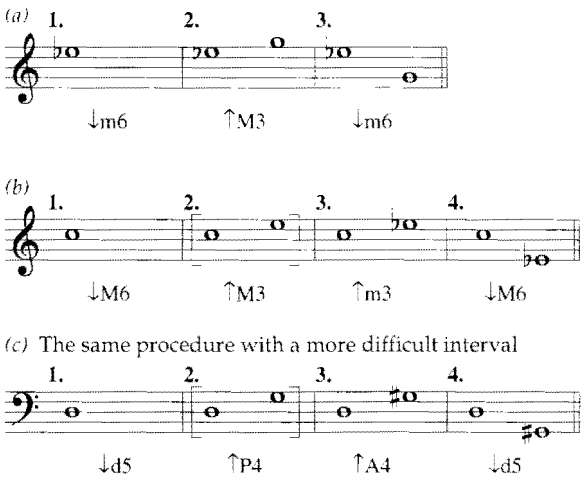
In Appendix E: Answers to Drill #6 are given.

2. Spell a M3: M3 above E♭ is G.
3. Place the upper note an octave lower: m6 below E♭ is G.

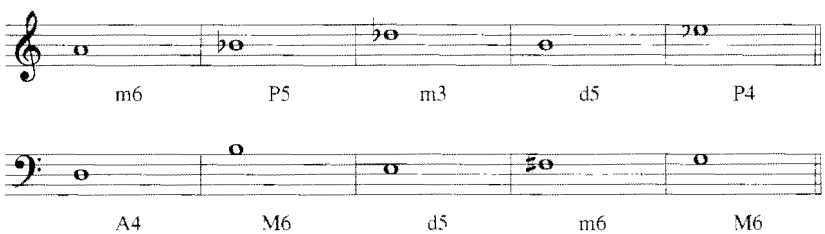
To spell descending major, diminished, and augmented intervals: An extra step (step 2) is required for these. Example: M6 below C (Figure 2.14*b*).

1. 9 minus M6 down = m3 up.
2. To find a m3 up, first spell a M3 up. M3 above C is E.
3. m3 above C is E♭.
4. M6 below C is E♭.

FIGURE 2.14 *Finding the Lower Note of an Interval*



DRILL #6 (INTERVALS) Place the second note of each interval, all descending, on the staff.

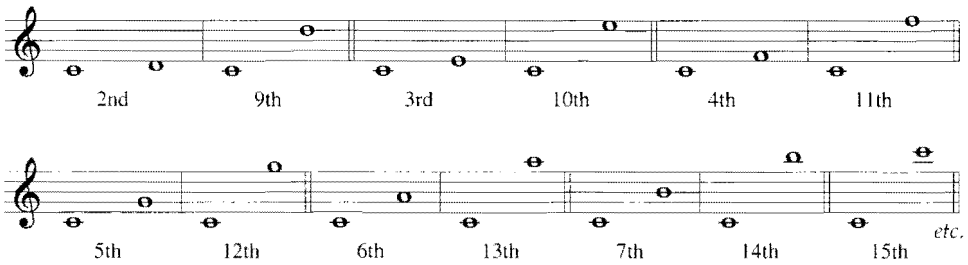


In Appendix E: Answers to Drill #6 are given.

Compound Intervals

Intervals larger than an octave are known as *compound intervals.* Except when the distinction is necessary, a compound interval is usually referred to by the name of its simple form; for example, a tenth is a third plus an octave but is often simply called a third.

FIGURE 2.15 *Compound Intervals*



Consonance and Dissonance

These are subjective terms. *Consonance* is supposed to mean a "pleasant sound," and *dissonance* is supposed to mean an "unpleasant sound." Theorists have argued about which sounds are which as long as there has been music in two or more voices. About 1300, Franco of Cologne described the M6 and the m6 as dissonances, and M and m thirds were at best imperfect consonances.

By commonly accepted definition, consonances in the Baroque, Classical, and Romantic periods (ca. 1600–ca. 1900) are the perfect intervals and their inversions, and the major and minor thirds and their inversions (except for one particular use of the P4, described in Chapter 9). All other intervals are dissonances, though in our century many hardly seem to sound that way. Still, this is a valuable distinction for study because it provides reasons for the ways some chord tones are handled as well as an explanation of any tones that are not part of a chord. A chord containing only the "consonant" intervals above its root (see the following section entitled "Chords") is considered to be a consonant chord. All other vertical structures are termed "dissonant."

A more liberal interpretation avoids placing intervals or chords in specific categories. Intervals can be listed linearly, where any given interval is more consonant than the one to its right, or more dissonant than the one to its left, but no interval is specifically consonant or dissonant.

More consonant ⟵ More dissonant

P8 P5 P4 M3 m6 m3 M6 M2 m7 m2 M7 tritone

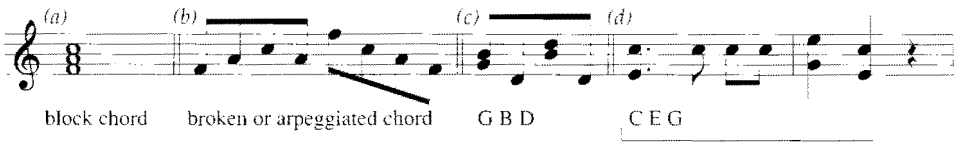
Music of the twentieth century generally disregards any distinction between consonance and dissonance, except perhaps in a relative way as above.

Chords

A *chord* is a group of notes sounding simultaneously or in close succession. In our study of harmony, we will be particularly interested in those chords built in thirds. Such chords are called *tertian chords,* and music based on tertian chords is known as *tertian harmony.*

When chord members sound simultaneously, a *block chord* is produced. Chord members may also sound in succession, resulting in a *broken* or *arpeggiated chord.* In addition, a limitless variety of configurations can occur, two of which are shown in Figure 2.16*c* and *d.*

FIGURE 2.16 *Chord Configurations*



Triads

The simplest chord is the *triad,* a three-note group formed by two consecutive thirds. The lowest note is called the *root,* above which are the *third* and the *fifth.* Since both major and minor thirds exist, four different combinations are possible.

1. A *major triad* consists of a major third and a perfect fifth above the root, or a major third and a minor third from the root upward.
2. A *minor triad* consists of a minor third and a perfect fifth above the root, or a minor third and a major third from the root upward.
3. A *diminished triad* consists of a minor third and a diminished fifth above the root, or two minor thirds from the root upward.
4. An *augmented triad* consists of a major third and an augmented fifth above the root, or two major thirds from the root upward.

FIGURE 2.17 *Triad Types*

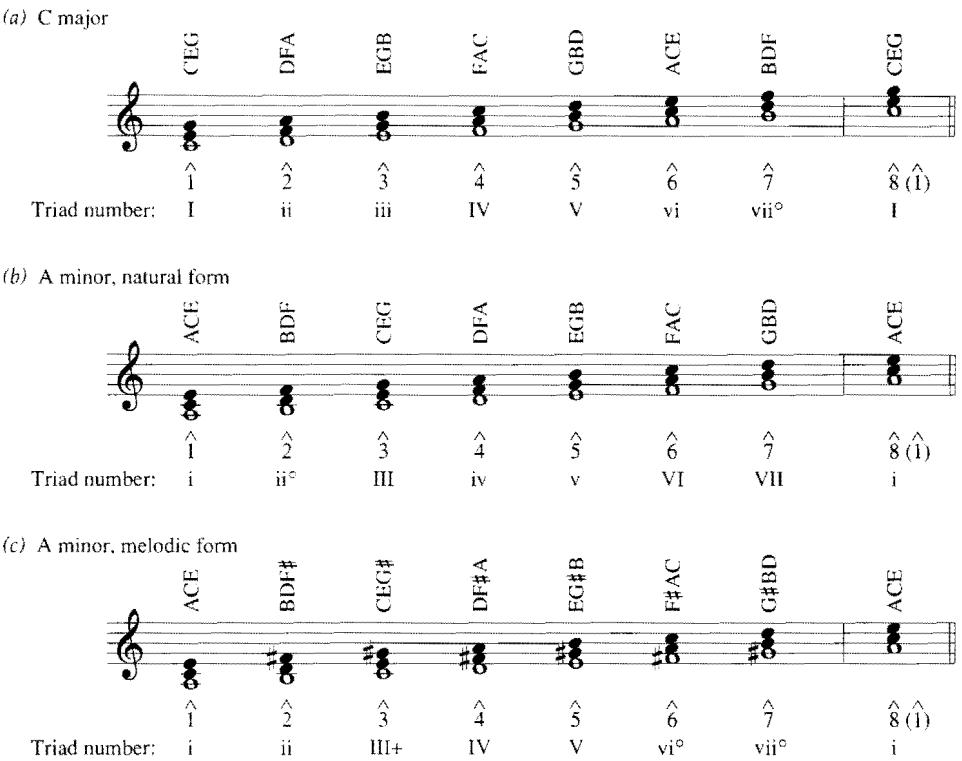
Triads in a Key

Triads can be built above each note of any major or minor scale. When only scale tones are used, any note or combination of notes, including triads, is called *diatonic.*

When a tone of a scale is modified by an accidental, it becomes an *altered tone,* and the chord in which it is found is an *altered chord,* except that $\sharp\hat{6}$ and $\sharp\hat{7}$ in minor are considered diatonic.

A triad in a key is identified by the scale-step number of its root and expressed by a roman numeral.

FIGURE 2.18 *Triad Identification*



The roman numeral not only designates the scale-step location of the root of the triad but also indicates triad construction.

Large numeral = major triad (I in C major = C E G)

Small numeral = minor triad (ii in C major = D F A)

Small numeral with small ° = diminished triad (vii° in C major = B D F)

Large numeral with + = augmented triad (III+ in A minor = C E G♯)

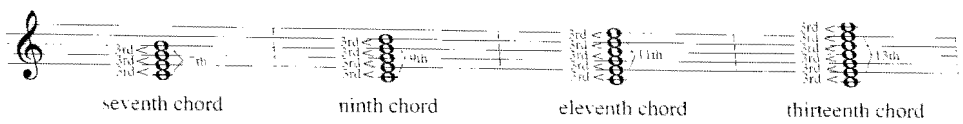
Thus, IV indicates a major triad built on the fourth scale degree, and iv indicates a minor triad built on the fourth scale degree. A triad in a key may also be designated by the name of the scale step on which it is built; for example: I = tonic triad; V = dominant triad.

Chords Larger Than a Triad

The presentation of these chords at this time is meant only for reference. Of the chords listed, the V^7 in major and minor, the ii^7 in major, and the $ii^{\emptyset 7}$ in minor are included for study in *Elementary Harmony*. The remaining chords will be found in *Advanced Harmony*.

Like triads, these chords are built in thirds. They are named according to the interval from the root to the final note in the series of thirds. Figure 2.19 shows all the possibilities above C. The thirteenth chord is the largest possible diatonic chord, since the next third higher is the same pitch as the root.

FIGURE 2.19 *Chords Larger Than a Triad*



Seventh Chords

Of the chords in Figure 2.19, only the seventh chord is commonly used. The use of seventh chords is important because the "dissonant" interval of the seventh provides a necessary contrast to the "purity" of the triads. Seventh chords are identified by the type of triad plus the quality of the seventh above the root. For example, a major triad plus a minor seventh is called a major–minor seventh chord. But shorter names are commonly used. Commonly used names, followed by the full name in parentheses, are listed in Figure 2.20.

FIGURE 2.20 *Names of Seventh Chords*

Triad type	*Interval (root to 7th)*	*Seventh chord name (Abbr.)*	*Example in C*
Major	m7	Major–minor seventh chord[1] (Mm7)	V^7 G B D F
Minor	m7	Minor seventh chord (m7) (Minor–minor seventh chord)	ii^7 D F A C
Major	M7	Major seventh chord (M7) (Major–major seventh chord)	I^7 C E G B
Diminished	d7	Diminished seventh chord ($^\circ 7$) (Diminished–diminished seventh chord)	$vii^{\circ 7}$ B D F A♭
Diminished	m7	Half-diminished seventh chord ($^\emptyset 7$) (Diminished–minor seventh chord)	$vii^{\emptyset 7}$ B D F A
Augmented		[rare]	

[1]The major–minor seventh chord is often casually called a "dominant seventh" because it is frequently built on the dominant of the key or used as a "secondary dominant," the same chord relationship as that between dominant and tonic, but applied to chords other than the tonic (see Chapter 18).

Chords Larger Than a Triad

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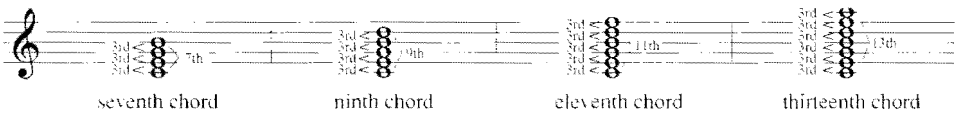

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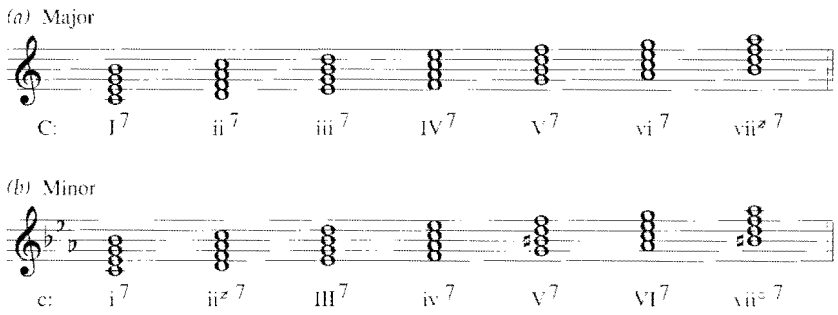
FIGURE 2.20 *Names of Seventh Chords*

Triad type	***Interval (root to 7th)***	***Seventh chord name (Abbr.)***	***Example in C***
Major	m7	Major–minor seventh chord[2] (Mm7)	V^7 G B D F
Minor	m7	Minor seventh chord (m7) (Minor–minor seventh chord)	ii^7 D F A C
Major	M7	Major seventh chord (M7) (Major–major seventh chord)	I^7 C E G B
Diminished	d7	Diminished seventh chord ($\circ 7$) (Diminished–diminished seventh chord)	$vii^{\circ 7}$ B D F A♭
Diminished	m7	Half-diminished seventh chord ($\circ 7$) (Diminished–minor seventh chord)	$vii^{\emptyset 7}$ B D F A
Augmented		[rare]	

[2]The major–minor seventh chord is often casually called a "dominant seventh" because it is frequently built on the dominant of the key or used as a "secondary dominant," the same chord relationship as that between dominant and tonic, but applied to chords other than the tonic (see Chapter 18).

FIGURE 2.21 *Diatonic Seventh Chords*



Other seventh chords in minor caused by the variable sixth and seventh scale degrees are used only infrequently and will be discussed when the need arises.

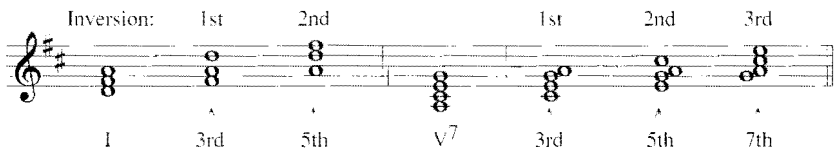
Inversion of Chords

Chords, like intervals, can be inverted, changing their intervallic content and the way they sound but without changing their spellings.

Lowest note	*Inversion*
1	(Root position)
3	First
5	Second
7	Third (seventh chords only)

Figure 2.22 shows the inversions of the D major triad and the A dominant seventh chord (I and V^7) in D major.

FIGURE 2.22 *Chords in Inversion*

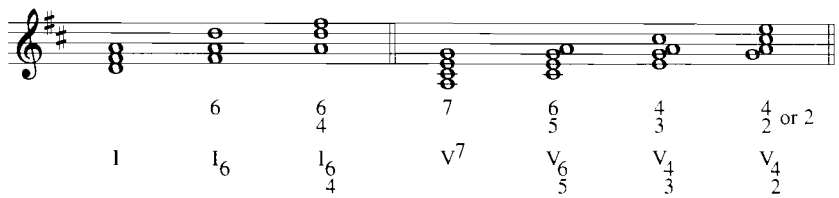


Figured Bass

A symbol indicating the inversion of a chord can be included with its roman numeral. Although "1" for first inversion, "2" for second inversion, and so forth, would seem logical, we use instead figured bass symbols. These are arabic numbers which, in a music score, appear below the lowest note to indicate the intervals above it. Thus, if

we see $\frac{6}{4}$ below the note G, we know that above G is a sixth (E) and a fourth (C). The complete chord, therefore, is C E G in second inversion. Its complete symbol in C major is I^6_4.

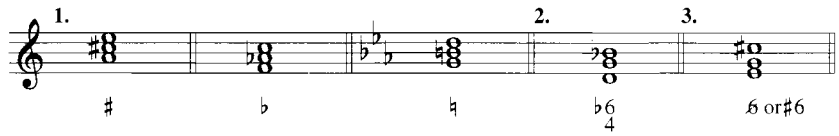
FIGURE 2.23 *Figured Bass Symbols*[3]



When chord members are chromatically altered, alterations are indicated in these ways:

1. A ♯, ♭, or ♮ standing alone refers to the third above the bass note.
2. A number preceded by a ♭ lowers the note one half step.
3. A number preceded by a ♯ (such as ♯6) or found with a slash (such as ø) indicates that the interval above the bass is to be raised one half step.

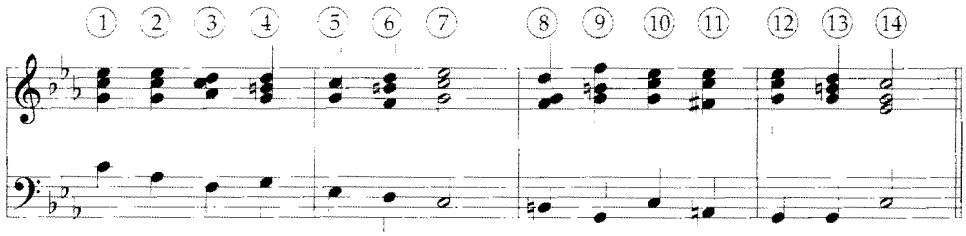
FIGURE 2.24



Performance of music using figured bass was a common practice in the Baroque period (ca. 1600–1750). A fuller description of figured bass with examples in music score will be found in an article on page 202. In the study of harmony, we will encounter frequent use of figured bass as a valuable pedagogical tool.

DRILL #7 (CHORD IDENTIFICATION) From the following music example: (*a*) find a chord that matches the symbol and place its number in the blank, and (*b*) find the chord that requires the given figured bass symbol and place its number in the blank.

[3]A complete figured bass symbol would account for all the notes above the lowest note. The shortened symbols in Figure 2.23 are generally used, with the remaining numbers being understood. For triads, the complete numbers are (used vertically): root in bass—5, 3; first inversion—6, 3; second inversion—6, 4. For seventh chords: root in bass—7, 5, 3; first inversion—6, 5, 3; second inversion—6, 4, 3; third inversion—6, 4, 2. When used under a bass line, any of these numbers may appear as circumstances dictate, as discussed in later chapters.

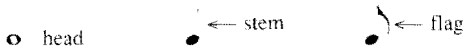


(a)		*(b)*	
M		6	
m		$\frac{6}{3}$	
Mm7		:	
ø7		$\frac{6}{4}$	
°7		$\frac{6}{5}$	
°		$\frac{\sharp}{5}$	
M7		$\frac{7}{5}$	
		7	

Staff Notation

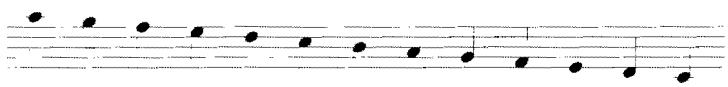
For clear and legible notation, certain practices are universally used. To become completely proficient, make it a habit to carefully observe how music is notated in the scores you are studying and practicing. The following list presents the most common notational practices.

1. *The Single Note.* A note is drawn with one, two, or three parts:

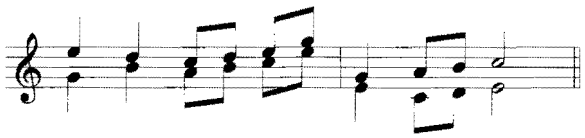


An ascending stem is found on the right side of the head:
A descending stem is found on the left side of the head:

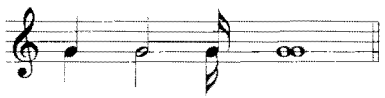
2. *Notes on the Staff.*
   a. When writing notes for a single part (one voice or one instrument) on the staff, place descending stems on notes found on the middle line or above and ascending stems on notes below the middle line.



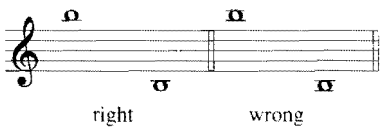
b. When writing for two parts on a single staff, place ascending stems on notes for the upper part and descending stems on notes for the lower part, regardless of their location on the staff.



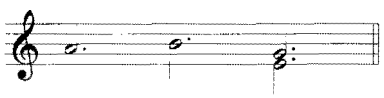
c. To indicate two parts performing the same pitch on a single staff (unisons), use a single note head with both ascending and descending stems. For two whole notes in unison, use two overlapping whole notes.



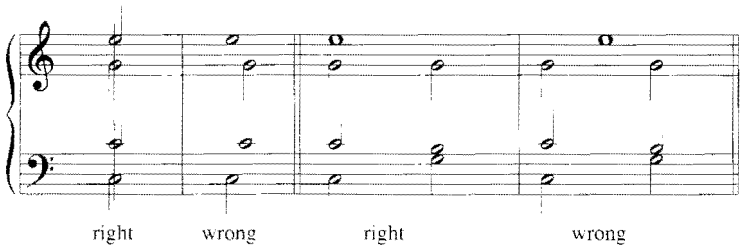
3. *Notes Using Ledger Lines or Spaces.* Above the staff, do not write ledger lines above the highest note. Below the staff, do not write ledger lines below the lowest note.

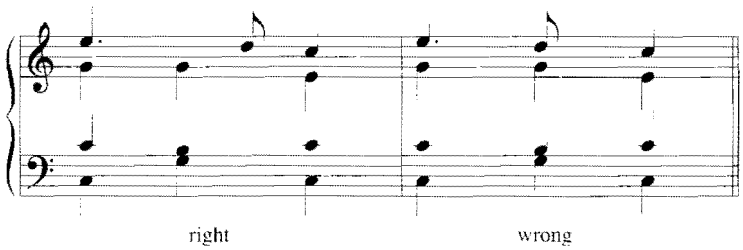


4. *Dotted Notes.* When the note head is in a space, the dot is found in the same space. When the note is on a line, the dot is usually found in the space above, though it is sometimes in the space below.

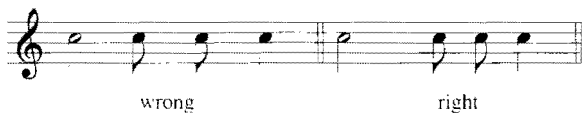


5. *Vertical Arrangement of Notes.* All notes sounding simultaneously must be written so that a line drawn through the note heads will be perpendicular to the lines of the staff.

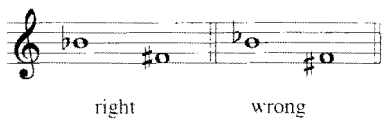




6. *Horizontal Arrangement of Notes.* Space between notes should be in approximate proportion to their time values.



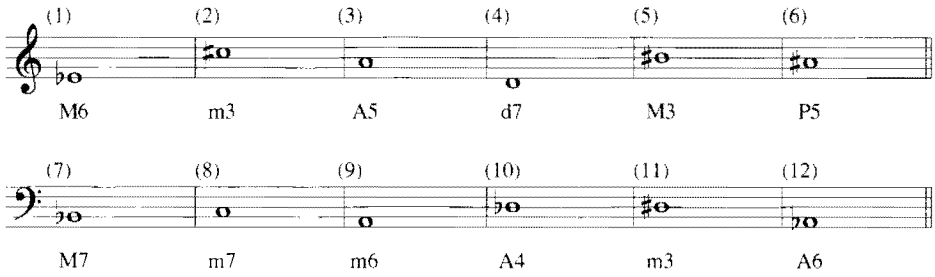
7. *Placement of Accidentals.* Accidentals are placed directly before the affected note and on the same line or space as the note head.



The effect of an accidental lasts until the following bar line, unless it is cancelled by a natural sign or the note is tied into the following measure or measures.

BASICS QUIZ #2

1. Write the second note of these ascending intervals.



2. Name the inversion of each interval.

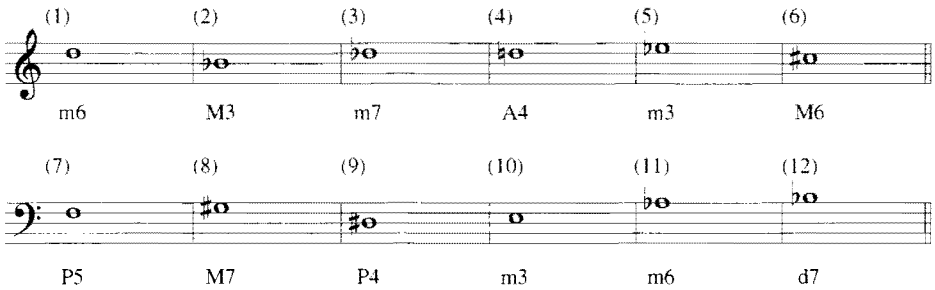
a. M3 _____ *e.* M6 _____

b. P5 _____ *f.* M2 _____

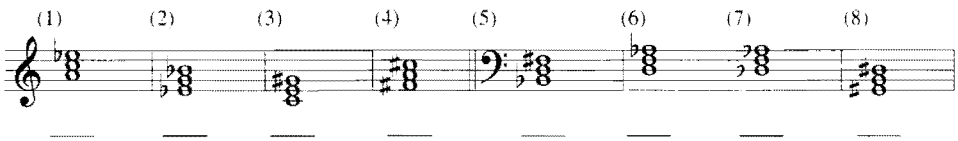
c. M7 _____ *g.* d5 _____

d. A4 _____ *h.* A2 _____

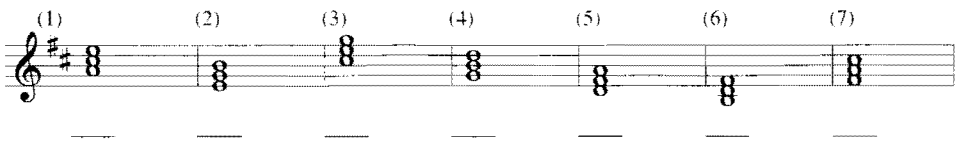
3. Write the second note of these descending intervals.



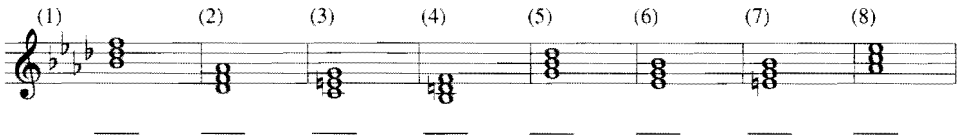
4. Name each triad: M, m, d, or A.



5. In D major, place the correct roman numeral under each chord.



6. In F minor, place the correct roman numeral under each chord.



In Appendix E: Answers to all questions in Basics Quiz #2 are given.

ARTICLE #1

Pitch Notation from Earliest Times

We know that music existed in ancient times from sources such as pictures, artifacts, and literary works (Psalm 150 from the Bible, for example). However, because there was no music notation in those times, we will never know exactly how ancient music sounded.

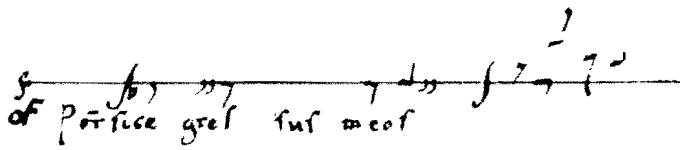
The earliest known notation is that of pre-Christian Greece, in which letters of the alphabet were used to represent pitches. Because very little of this notation survives, we know only a little about the sound of their music, despite the fact that the Greeks were prolific in writing about music.

The beginnings of our present notation date back to approximately the eighth century A.D., when the object of notation was to indicate pitch levels and directions in singing the chants of the church service. This was done with signs, called *neumes,* placed directly over the words of the chant. The result was a vague indication of the movement of the melody—helpful, probably, only to someone already acquainted with the melody.

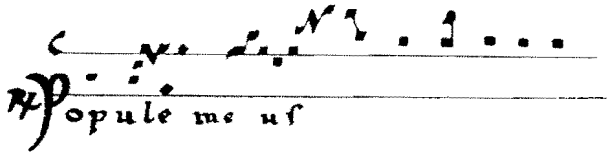
Neumes, circa 8th century

It occurred to someone in the tenth century that pitch could be indicated by drawing a line indicating a certain pitch (usually F) and placing neumes on, above, and below it. Staves with more lines followed, with four- and five-line staves appearing in the thirteenth century. By that time, neumes had evolved into note shapes more readily recognizable as precursors of our present notation. Notation was all black until the fifteenth century, when white notation appeared with the black to form a system that was used until approximately 1600 (see "Early Rhythmic Notation" on page 56).

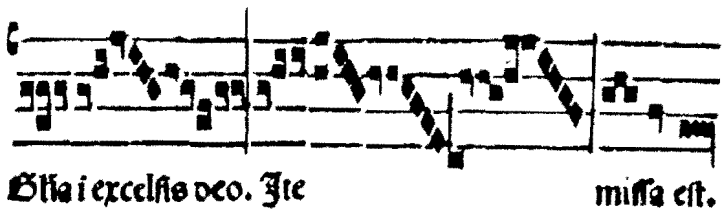
One-line staff, circa 10th century



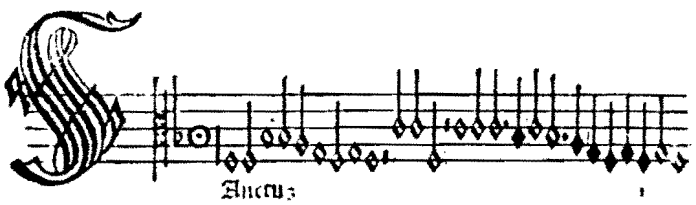
Two-line staff, circa 11th century



Four-line staff, circa 13th century

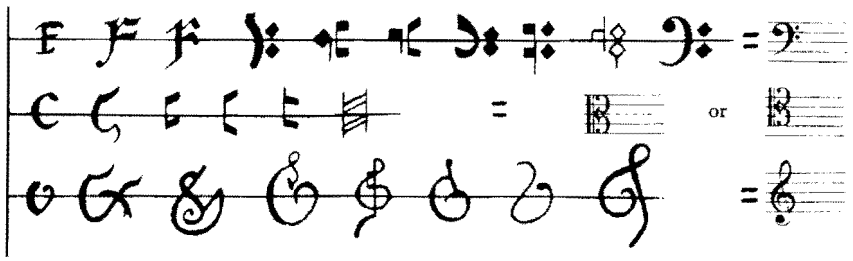


Five-line staff with white notation, 16th century



Clef signs developed from the need to designate the pitch names of the lines and spaces of the staff. The earliest clefs were representations of the letter names needed. These changed over the centuries to the forms used today.

Clefs



From Music Notation: A Manual of Modern Practice *by Gardner Read. Second Edition (Taplinger/Crescendo, 1979). © 1969 by Crescendo Publishing Company. Reprinted by permission.*

From 1600 to the present century, notation has undergone few developments. Contemporary composers express new ideas with a variety of notational devices, including conventional notation displayed in unconventional ways, new notational symbols accompanied by their own written directions, and graphic representations of the sounds the composer wishes to have produced.

The wide variety of notational devices, too numerous to be shown here, will be considered in *Advanced Harmony: Theory and Practice,* third edition. Further information can also be found in these texts: Reginald Smith Brindle, *The New Music* (London: Oxford University Press, 1975); Kurt Stone, *Music Notation in the Twentieth Century* (New York: W. W. Norton & Co., Inc., 1980); and Gardner Read, *Music Notation: A Manual of Modern Practice* (Taplinger/Crescendo, 1979).

3

Basics III

duration; time signatures

Note and Rest Values

Durations of pitch or silence may be indicated by characteristic note shapes and rest signs.

FIGURE 3.1 *Notes and Rests*[1]

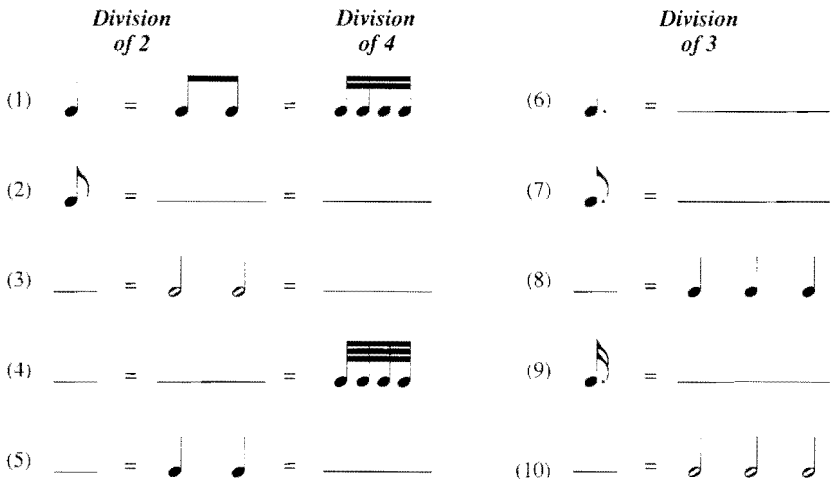
Double Whole Note		2	Double Whole Rest	
Whole Note		1	Whole Rest	
Half Note		1/2	Half Rest	
Quarter Note		1/4	Quarter Rest	
Eighth Note		1/8	Eighth Rest	
Sixteenth Note		1/16	Sixteenth Rest	
Thirty–second Note		1/32	Thirty–second Rest	
Sixty–fourth Note		1/64	Sixty–fourth Rest	

[1]The double whole note and rest are little used in post-sixteenth-century music. In many older or foreign editions of music, the quarter rest is written as 𝄽 (opposite of the eighth rest, 𝄾).

These notes do not indicate any specific duration of sound. Rather, their fractional names indicate relative durations: Any note value is twice as long as the next smaller value (= +) or half as long as the next higher value (= one half of).

Placing a dot after a note increases its value by one half—for example, . = ; . = . (The curved line is a *tie;* tied notes are performed as a single note value.) Although rests may be dotted, it is common practice to use two signs—for example, instead of . When a note is dotted, it is three times longer than the next lower undotted value (. =); or an undotted note is one third the length of the next higher dotted value (= one third of).

DRILL #1 Fill in each blank with the appropriate note value or values.



Tempo

How long a sound or a rest is actually held can either be suggested or be specified by a *tempo (time) marking.* Most music before 1750 included no indication at all. It was assumed that a musician would understand from the character of the music itself how fast or how slow the music should be performed.

The first tempo indications were Italian words placed at the beginning of a piece, words such as *presto* (very fast), *allegro* (joyfully), *andante* (rather slow), and *largo* (very slow). Similar indications in other languages soon followed. As you can see, these words indicate tempo only in a general way.

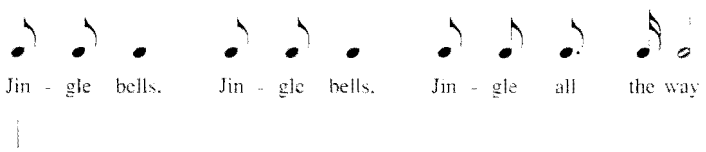
To indicate a specific duration, a marking such as M.M. = 60 often appears, meaning in this case that a quarter note has a duration of one second. M.M. stands for *Maelzel's metronome,* a ticking mechanism that Johann Maelzel claimed to have invented about 1816, and that can be set at numerous points between 40 and 208 beats per minute. Beethoven was the first composer to take advantage of metronome markings.

Although the metronome provides exact durations, exclusive reliance on it produces only mechanical results. Its use must be tempered by the performer's insight regarding the best artistic expression of the composer's ideas.

The Beat

The *beat* is a measurement that divides time into units of equal length, commonly moving you to tap your foot or your finger while listening to music. To illustrate this concept, sing "Jingle Bells" and tap as indicated in Figure 3.2. In so doing, you are dividing time into equal units, or beats, regardless of the staff notation used.

FIGURE 3.2 *Demonstration of Beats*



Grouping of Beats

As you listen for beats, as in Figure 3.2, you will note that they tend to group themselves, with one beat assuming more importance than the others. To experience this, sing "Jingle Bells" again. You should feel a grouping of two, a strong beat followed by a weaker beat (Figure 3.3*a*). Follow this by singing "America" (Figure 3.3*b*). Do you feel a three-beat grouping?

FIGURE 3.3 *Beat Groupings*

(*a*) Jin-gle bells, Jin-gle bells.

1 2 1 2

(*b*) My coun-try, 'tis of thee.

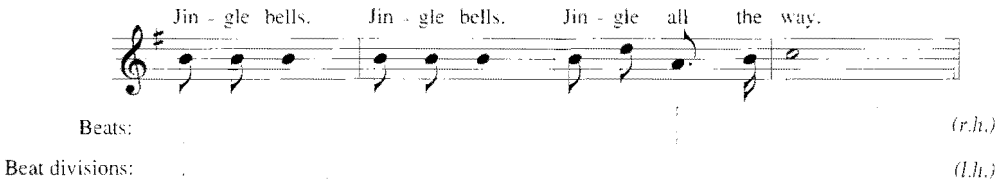
1 2 3 1 2 3

Groupings of four, commonly used in music composition, are more difficult to illustrate, since each grouping tends to sound like two groupings of two, although the third beat receives somewhat less emphasis than the first: 1 2 3 4.

Varieties of the Beat (Simple and Compound)

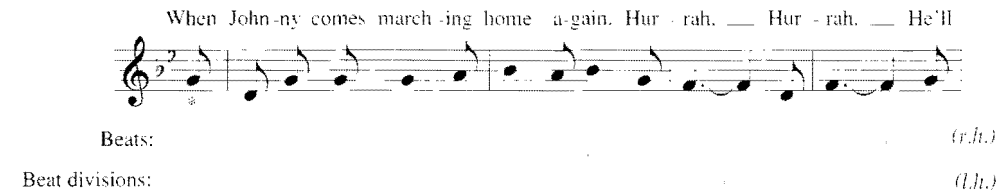
Two varieties of the beat exist: *simple beat* and *compound beat*. To illustrate the simple beat, sing "Jingle Bells" (Figure 3.2) once more. Notice that each beat has two divisions, easily demonstrated by making *two* taps instead of one at each beat. Then try tapping beats with the right hand while tapping the two simple divisions of each beat with the left hand.

FIGURE 3.4 *Tapping Simple Divisions*



The compound beat can be illustrated in the same way. Sing "When Johnny Comes Marching Home Again" (Figure 3.5). First listen for the beats and tap them. They are in groups of two. Then listen for the beat divisions and tap them. This time, there are *three* divisions for each beat.

FIGURE 3.5 *Tapping Compound Divisions*



*The first beat of a measure is known as a *downbeat*. A preceding beat or part of a beat is an *upbeat*.

In summary, beats tend to group themselves in patterns of two, three, or four. In each pattern, the beat division may be either two or three.

FIGURE 3.6 *Beat Groupings and Beat Divisions*

	Duple		Triple			Quadruple			
	1	2	1	2	3	1	2	3	4
Simple division	>	>	>	>	>	>	>	>	>
Compound division	>	>	>	>	>	>	>	>	>

Time Signature (Meter Signature)

A time signature consists of two numbers, one above the other (for example, $\frac{2}{4}$), at the beginning of a composition. It tells us

1. the number of beats in each grouping;
2. the division of the beat, simple or compound;
3. the notation to be used.

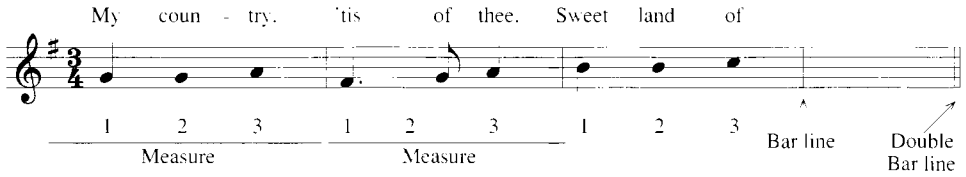
Simple Time Music in which the beat is divisible into two parts is said to be in *simple time*. The numerator (upper number) 2, 3, or 4 indicates the grouping of beats, and the denominator (lower number) indicates the simple note value receiving one beat.

In Figure 3.4, beats are grouped in twos, and the quarter ($\frac{1}{4}$) note is chosen to represent one beat. Hence, we can place a time signature of $\frac{2}{4}$ on the staff because

$\frac{1}{4} + \frac{1}{4} = \frac{2}{4}$, or 2 (beats) times $\frac{1}{4} = \frac{2}{4}$.[2]

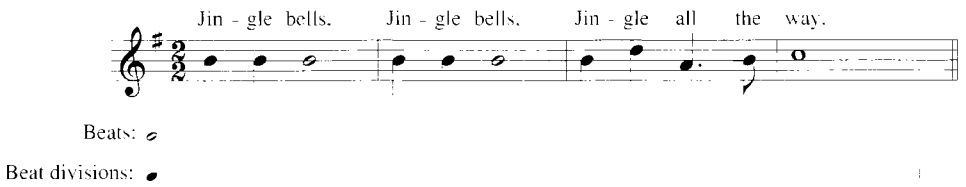
The time signature appears immediately after the key signature on the staff. When notes are placed on the staff, each beat grouping is separated by a *bar line (bar)*. The distance between two bar lines is a *measure*, and a *double bar* marks the end of a composition or the end of a major section of a composition.

FIGURE 3.7 *Bar Lines and Measures*



In simple time, any simple note value may be chosen to represent the beat—for example, a half note ($\frac{1}{2}$): $\frac{1}{2} + \frac{1}{2} = \frac{2}{2}$, or 2 (beats) times $\frac{1}{2} = \frac{2}{2}$. Notice in Figure 3.8 that the pattern below the staff is identical to that in Figure 3.4. This change in notation does *not* affect performance, assuming the duration of the beat is the same in each case.

FIGURE 3.8 *The Half Note as the Beat*



You will observe from Figure 3.9, a table of simple time signatures, that the numerators of simple time signatures are 2, 3, and 4.

2 = duple simple time (meter)

3 = triple simple time

4 = quadruple simple time

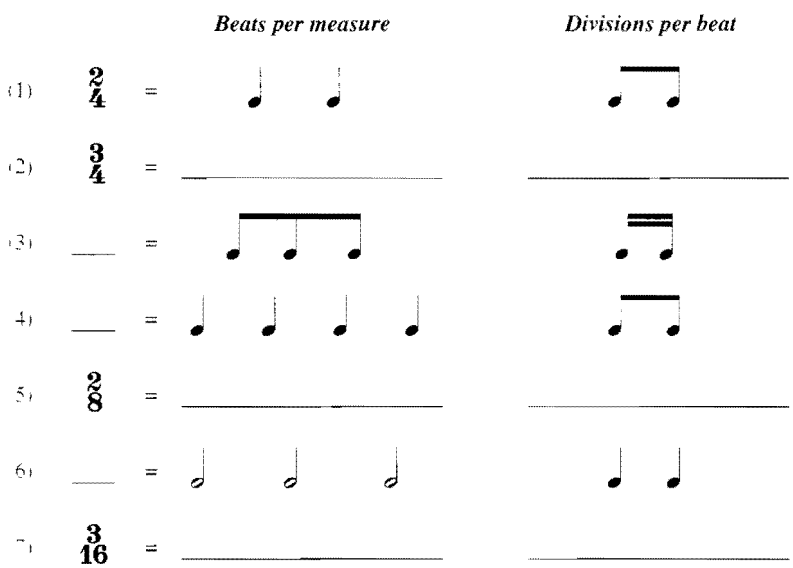
[2]The horizontal line is used for fractions but not in a time signature. Though they are arithmetical terms, "numerator" and "denominator" are convenient to describe members of the time signature.

FIGURE 3.9 *Simple Time Signatures*

Beat note		*2 beats per measure (Duple)*	*3 beats per measure (Triple)*	*4 beats per measure (Quadruple)*
𝅝	$\binom{1}{1}$	$\frac{2}{1}$	$\frac{3}{1}$	$\frac{4}{1}$
𝅗𝅥	$\binom{1}{2}$	$*\frac{2}{2}$ or ¢	$*\frac{3}{2}$	$*\frac{4}{2}$
♩	$\binom{1}{4}$	$*\frac{2}{4}$	$*\frac{3}{4}$	$*\frac{4}{4}$ or C
♪	$\binom{1}{8}$	$\frac{2}{8}$	$*\frac{3}{8}$	$*\frac{4}{8}$
𝅘𝅥𝅯	$\binom{1}{16}$	$\frac{2}{16}$	$\frac{3}{16}$	$\frac{4}{16}$
𝅘𝅥𝅰	$\binom{1}{32}$	$\frac{2}{32}$	$\frac{3}{32}$	$\frac{4}{32}$

* indicates the most commonly used time signatures

DRILL #2 Fill in the blanks, using number 1 as a guide.



Compound Time Music using compound beat values (notes with three divisions) is said to be in *compound time*. The numerators 6, 9, and 12 also represent 2, 3, and 4

beats per measure, as we will see by working out the time signature exactly as we did for simple time.

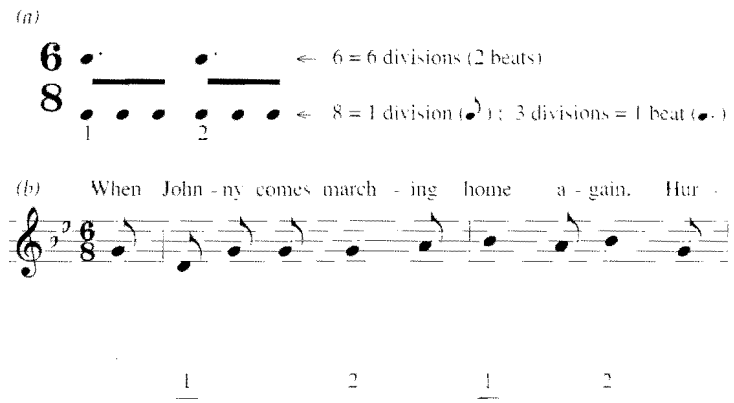
First, repeat the tapping exercise in Figure 3.5. Sing the tune and tap the beats. Result: beat groupings of two. Next, tap the beat divisions. Result: three divisions for each beat.

Next, choose a note to represent the beat. Only a dotted note can have three divisions. Choosing a commonly used dotted-note value, the dotted quarter note (♩.), we find its fractional value to be $\frac{3}{8}$. The time signature must be $\frac{6}{8}$ because

$\frac{3}{8} + \frac{3}{8} = \frac{6}{8}$, or 2 (beats) times $\frac{3}{8} = \frac{6}{8}$.

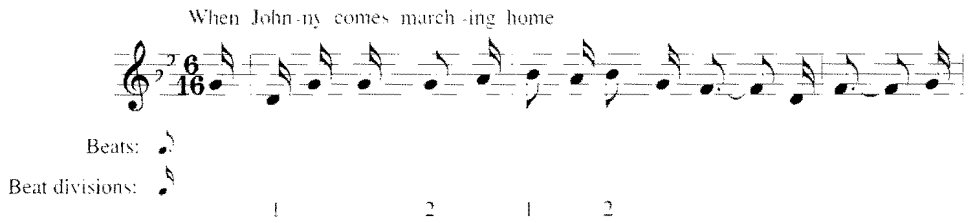
Confusion about compound time signatures stems from the fact that the numerator, instead of indicating how many beats per measure, actually shows the number of *beat divisions* per measure, and the denominator indicates the *note value of the beat division*, as shown in Figure 3.10*a* and on the staff in Figure 3.10*b*.

FIGURE 3.10 *Compound Time Signature ($\frac{6}{8}$ Time)*



Again, we could have chosen a different note value to represent the beat—for example, a ♪.: $\frac{3}{16} + \frac{3}{16} = \frac{6}{16}$. The pattern below Figure 3.11 is identical to that in Figure 3.5.

FIGURE 3.11 *Example of $\frac{6}{16}$ Time Signature*



Observe from the table of Compound Time Signatures in Figure 3.12 that the numerators of signatures are 6, 9, and 12, representing 2, 3, and 4 beats per measure.

6 = duple compound time
9 = triple compound time
12 = quadruple compound time

FIGURE 3.12 *Compound Time Signatures*

Beat note		*2 beats per measure (Duple)*	*3 beats per measure (Triple)*	*4 beats per measure (Quadruple)*
𝅗𝅥.	$\binom{3}{2}$	$\frac{6}{2}$	$\frac{9}{2}$	$\frac{12}{2}$
𝅗𝅥.	$\binom{3}{4}$	$\frac{6}{4}$*	$\frac{9}{4}$*	$\frac{12}{4}$*
♩.	$\binom{3}{8}$	$\frac{6}{8}$*	$\frac{9}{8}$*	$\frac{12}{8}$*
♪.	$\binom{3}{16}$	$\frac{6}{16}$*	$\frac{9}{16}$*	$\frac{12}{16}$*
𝅘𝅥𝅯.	$\binom{3}{32}$	$\frac{6}{32}$	$\frac{3}{32}$	$\frac{12}{32}$

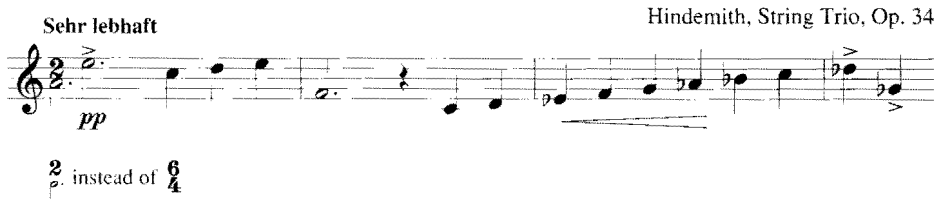
* indicates the most commonly used time signatures

DRILL #3 Fill in the blanks, as in Drill #2 (page 45).

			Beats per measure	*Divisions per beat*
(1)	$\frac{6}{8}$	=	_____	_____
(2)	$\frac{9}{8}$	=	_____	_____
(3)	____	=	𝅗𝅥. 𝅗𝅥.	♩ ♩ ♩
(4)	$\frac{12}{8}$	=	_____	_____
(5)	$\frac{6}{16}$	=	_____	_____
(6)	____	=	♪. ♪. ♪.	𝅘𝅥𝅯 𝅘𝅥𝅯 𝅘𝅥𝅯
(7)	____	=	𝅗𝅥. 𝅗𝅥. 𝅗𝅥. 𝅗𝅥.	♩ ♩ ♩

An example of a better but little used way of writing compound time signatures is seen in Figure 3.13, in which the composer has used $\frac{2}{\text{𝅗𝅥}.}$ instead of $\frac{6}{4}$. In the same way, the common time signature $\frac{6}{8}$ would be written $\frac{2}{\text{𝅗𝅥}.}$ and $\frac{2}{4}$ would be written $\frac{2}{\text{𝅗𝅥}}$. If all time signatures, both simple and compound, were written in this manner, interpretation of any time signature would be much easier.

FIGURE 3.13

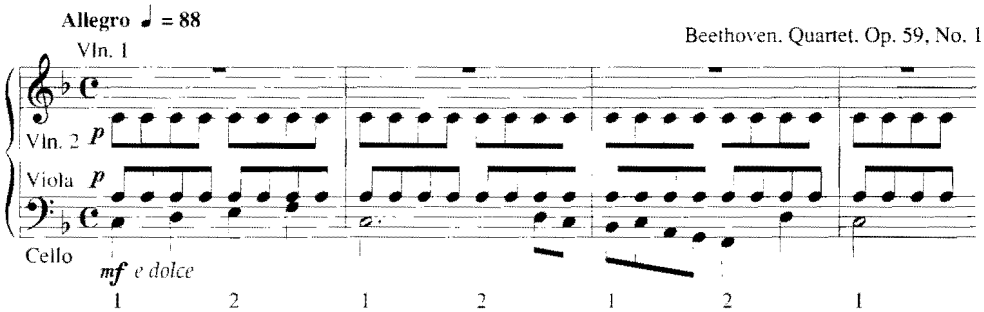


Other Interpretations of Time Signatures

In any time signature the upper number always indicates how many of the note values expressed by the lower number will be found in one measure. Although interpretations of time signatures such as those just presented are generally useful, there are occasions when a very fast or a very slow tempo requires a different interpretation.

In a Fast Tempo In music in a fast tempo with a signature of $\frac{4}{4}$, there may actually be two half-note beats rather than four beats per measure. This is often indicated by a metronome marking, such as 𝅗𝅥 = 88 as used by Beethoven in Figure 3.14.

CD FIGURE 3.14

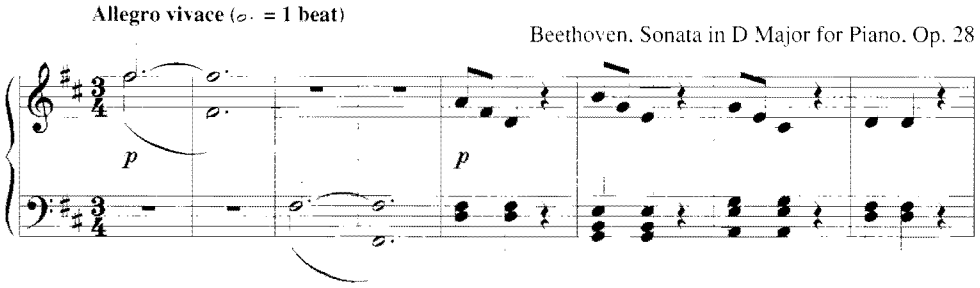


When a fast tempo is indicated but no metronome marking is present, any decision to interpret $\frac{4}{4}$ or 𝄴 as two beats in a measure must depend upon a subjective evaluation of the composer's intent. In the case of many well-known works, such interpretations have become traditional, as can be heard in the final movement of Mendelssohn's

Symphony No. 4 (*Italian*), Op. 90 (tempo marking *Presto*), or in the final movement of Tchaikovsky's Symphony No. 4, Op. 64 (tempo marking *Allegro con fuoco*).

Similarly, a fast tempo with a signature of $\frac{3}{4}$ or $\frac{3}{8}$ is often performed with one beat per measure. In Figure 3.15, each dotted half note receives one beat with a division of three quarter notes. The aural effect is that of compound time, one beat per measure.

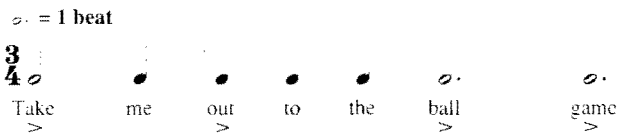
CD FIGURE 3.15



Why did Beethoven write this example in $\frac{3}{4}$, rather than using the duple compound time signature of $\frac{6}{4}$ 𝅗𝅥. 𝅗𝅥. 𝅗𝅥. 𝅗𝅥. ? Composers use $\frac{3}{4}$ instead of $\frac{6}{4}$ (or $\frac{3}{8}$ instead of $\frac{6}{8}$) in those fast tempi in which every third division has an equally strong accent like that in Figure 3.15, in contrast to $\frac{6}{4}$ (or $\frac{6}{8}$) in which the first division is stronger than the fourth:

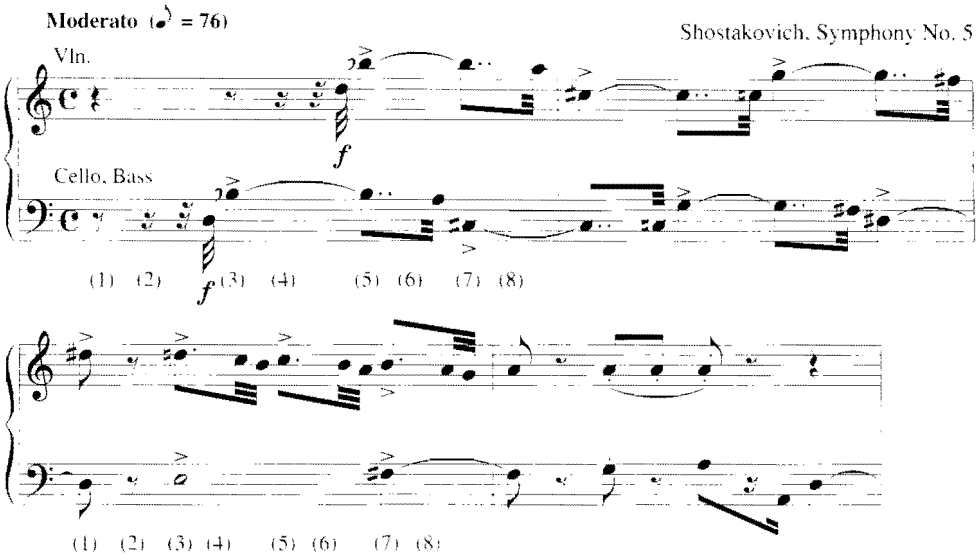
The same is true of the popular tune "Take Me Out to the Ball Game," in which the composer has used $\frac{3}{4}$ instead of a duple compound signature to emphasize the strong accent on each third division.

FIGURE 3.16



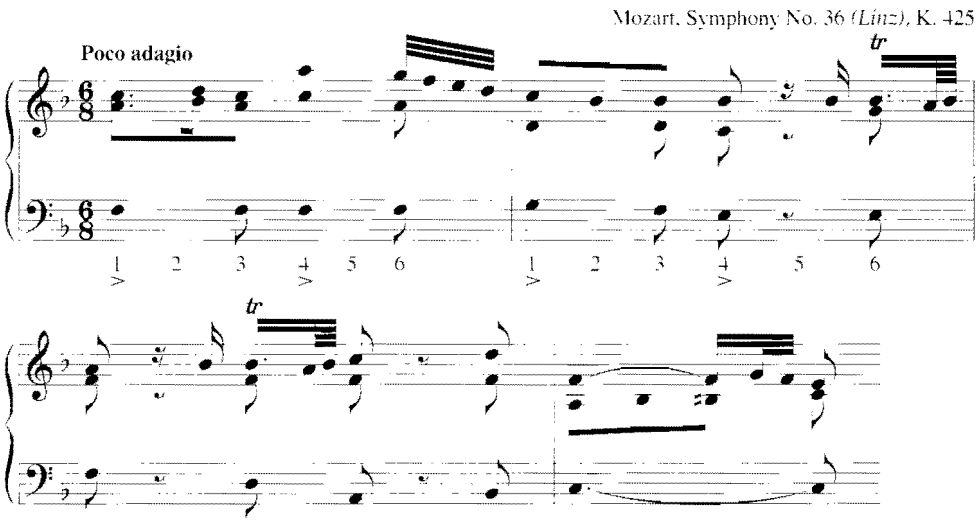
In a Slow Tempo In simple time, the division of the note value indicated in the denominator of the signature may sound as the beat value. In the slow $\frac{4}{4}$ of Figure 3.17, the aural effect is that of eight beats per measure.

CD FIGURE 3.17



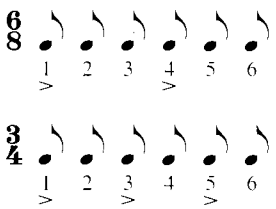
In compound time with a very slow tempo, the lower number of the time signature indicates the note value receiving one beat.

CD FIGURE 3.18



Observe that the numerator 6 in a very slow tempo still represents duple compound time because of the stress placed on the first and fourth beat divisions. The numerator 3 in a very slow tempo also has six beat divisions but represents triple simple time because the stress is on the first, third, and fifth beat divisions.

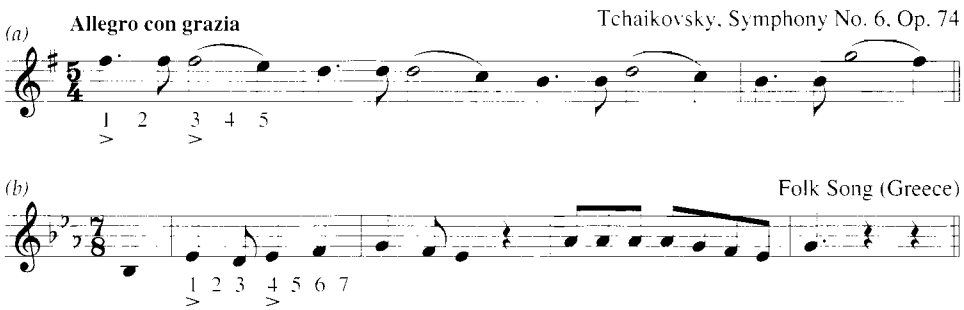
FIGURE 3.19



Numerators of 5 and 7; Other Numerators A numerator of 5 usually indicates simple time in which each measure includes a group of two beats and a group of three beats—for example, $\frac{5}{4}$ 𝅗𝅥 𝅗𝅥 𝅗𝅥 𝅗𝅥 𝅗𝅥 or 𝅗𝅥 𝅗𝅥 𝅗𝅥 𝅗𝅥 𝅗𝅥 . A numerator of 7 similarly indicates various groups of two beats and three beats: 3 + 2 + 2, 2 + 2 + 3, or 2 + 3 + 2—for example $\frac{7}{8}$ 𝅗𝅥 𝅗𝅥 𝅗𝅥 𝅗𝅥 𝅗𝅥 𝅗𝅥 𝅗𝅥 or $\frac{7}{4}$ 𝅗𝅥 𝅗𝅥 𝅗𝅥 𝅗𝅥 𝅗𝅥 𝅗𝅥 𝅗𝅥 .

The desired grouping can be indicated in several ways: by beaming notes, by using phrase marks or accent marks, and by separating the groups with a vertical dotted bar line.

FIGURE 3.20



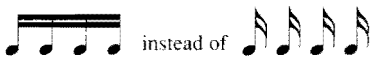
Many other signatures exist, used primarily in twentieth-century music. Some examples are $\frac{10}{4}$, $\frac{8}{8}$, $\frac{15}{8}$, $\frac{3\frac{1}{2}}{4}$, $\frac{3+2+2}{4}$, and $\frac{6}{8}\,\frac{2}{4}$.[3]

These examples point out the difficulty the composer often encounters in choosing a time signature that best represents the rhythmic and metric intentions of the music. Consequently, it is most important that the performer not rely solely on the time signature but make sufficient study of the music to determine the time signature's intent.

[3] See Gardner Read, *Music Notation* (Boston: Allyn & Bacon, 1969), chap. 10.

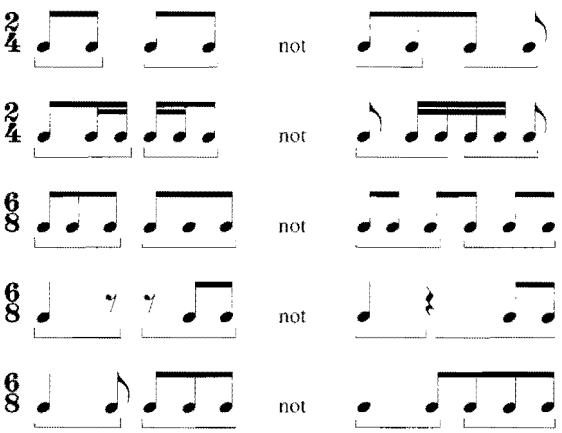
Beaming Notes for Rhythmic Clarity

Notes employing flags may be grouped together with beams.

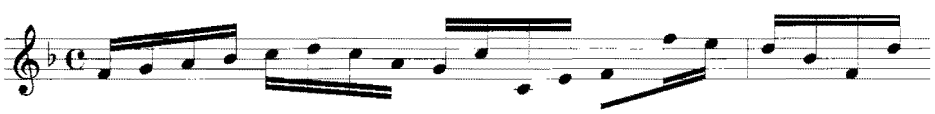


Notes ordinarily should be beamed according to beat units. In the following example, _____ indicates a beat unit.

FIGURE 3.21

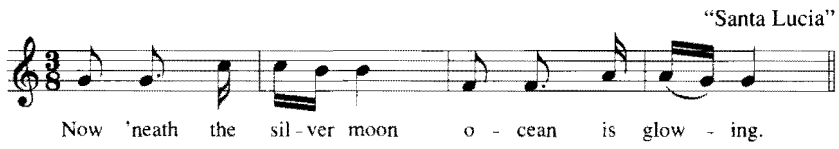


When you place a group of beamed notes on the staff, use a stem direction that is correct for the majority of notes in the group.



In vocal music, beams traditionally are used only when two or more notes are found on a single syllable. Recent practice allows beaming when syllables are carefully placed below beamed notation (beamed sixteenth notes in measure 2 of Figure 3.22). The curved line (*slur*) under "glow-" shows that the two notes are sung on a single syllable.

FIGURE 3.22

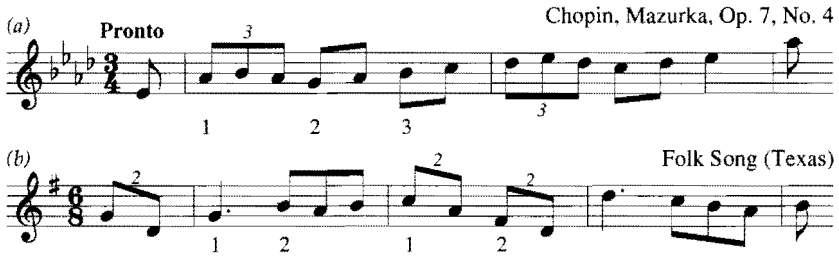


Triplets, Duplets, and Quadruplets

A *triplet* is a group of three notes dividing a simple note value into three equal parts (= ; =). Since the division is not mathematically accurate, a "3" is placed above the beam or the stems of the group. The triplet in $\frac{2}{4}$, for example, has the same duration as a or . Other examples are = = (three sixteenths have the same duration as two sixteenth notes) and = = (three quarter notes have the same duration as two quarter notes).

Similarly, a *duplet* is a group of two notes dividing a compound note value into two equal parts (= =). A *quadruplet* is a combination of two duplets (= or).

FIGURE 3.23

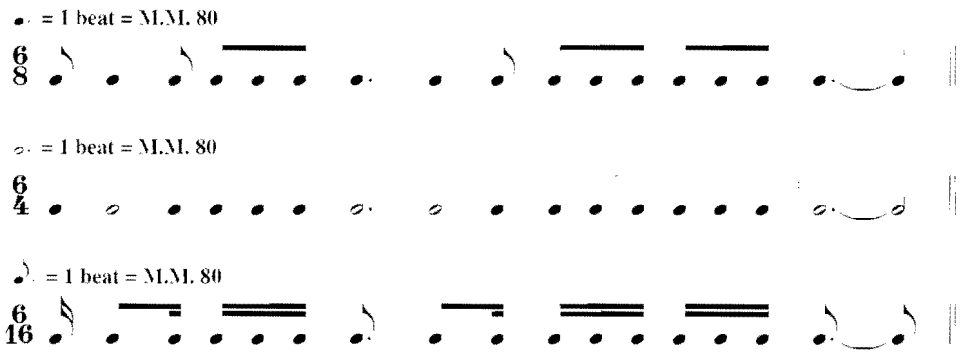


Rhythmic Transcription

Now that you have studied the derivation of time signatures, it should be obvious that any two or more time signatures with identical numerators designate the same meter.

If, for example, you hear music that you can identify as being in duple compound time, you can assume that the numerator of the time signature is 6, but it would be absolutely impossible to tell which of the possible denominators the composer had used. It could be any of them, since the denominator affects only the notation to be used. The same music with like numerators but with differing denominators will sound identical when the tempo of the beat is equal in each.

FIGURE 3.24

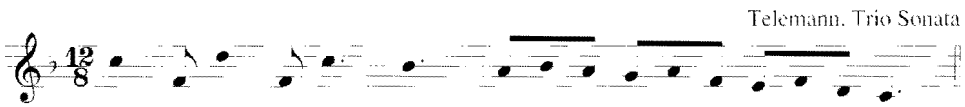


DRILL #4 Rewrite each of these melodies using the time signatures indicated.

1. In $\frac{4}{2}$ and $\frac{4}{8}$

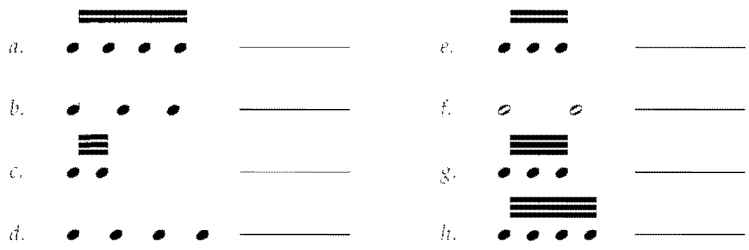
2. In $\frac{3}{4}$ and $\frac{3}{16}$

3. In $\frac{12}{16}$ and $\frac{12}{4}$



BASICS QUIZ #3

1. Write the single note value equivalent to the given group. Example:  = ♩



2. Describe each time signature as shown in the example.

			Description		*Beat note*	*Divisions*
Example:	$\frac{2}{4}$	=	duple	simple	♩	♩ ♩
a.	$\frac{3}{4}$	=				
b.	$\frac{6}{8}$	=				
c.	$\frac{4}{2}$	=				
d.	$\frac{9}{8}$	=				
e.	$\frac{12}{4}$	=				
f.	$\frac{2}{2}$	=				
g.	$\frac{12}{16}$	=				
h.	$\frac{3}{16}$	=				

In Appendix E: Answers to all questions in Quiz #3 are given.

ARTICLE #2

Early Rhythmic Notation

In the history of the notation of rhythm, the time signature made its appearance at a comparatively late date. One reason for this is that music before the seventeenth century did not make use of bar lines, and another is that a note value did not come to indicate a specific division (such as $\mathbb{o} = \mathbb{d}\,\mathbb{d}$) until about the same time.

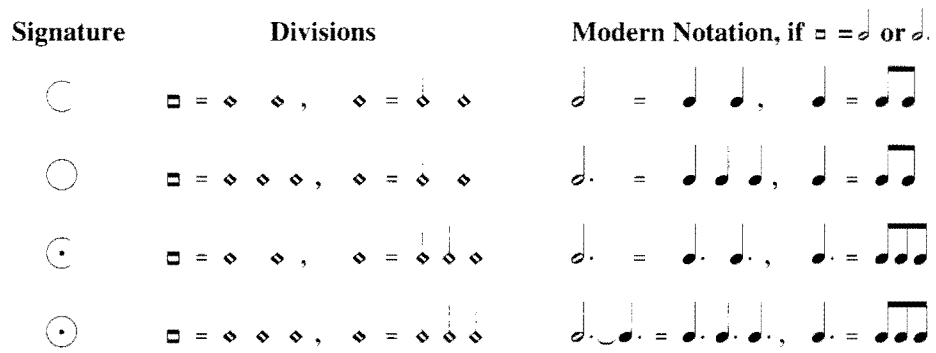
The earliest notation, as found in the religious chants of the eighth and ninth centuries, represented pitch only. How the rhythmic element of this plainchant notation was interpreted is still not entirely clear.

The first measurable rhythmic notation was produced in the thirteenth century. In this system, the duration of each note depended upon what note value or values followed it. The system, called *mensural notation* and developed by Franco of Cologne about 1280, was used to represent the rhythmic modes—a series of six rhythmic patterns, each representing the triple division in which the music of the time was composed.

Observe in the figure that the *longa* ( ) equals a quarter note at some times and a dotted quarter note at others, depending on the context. The same principle holds true for the *breve* ( ). This music needed no time signatures. Its symbols were often combined into groups called *ligatures;* for example, , , and . Another example can be seen in the article "Pitch Notation from Earliest Times," on page 37.

Mensural notation

About 1320, Philippe de Vitry, in his treatise *Ars Nova (The New Art),* recognized duple rhythm (note values divisible by two) as well as triple rhythm. Also at this time, white notation was gradually replacing much of the black notation. To indicate division of note values into two or three, a system of *mensural signatures* was devised about 1450. But in this system, the actual value of a given note was still determined by its relation to the preceding or following note (again, review page 37).



Of these four signatures, the time signature **C** still remains, indicating duple division at all levels and now used to indicate $\frac{4}{4}$ meter. Another mensural signature, **C** indicated that all notes following it were to be taken twice as fast as before. Known as *cut time* or *alla breve* (the symbol = in the preceding table is called a *breve*), it is still used today to indicate $\frac{2}{2}$ meter. The time signatures we use today had developed by the early seventeenth century, and they have remained virtually unchanged since that time.

ARTICLE #3

What Is Music Theory?

A Prelude to the Study of Harmony

Music is universal. It exists in some form in every part of the world inhabited by humans. Its existence for thousands of years is attested to by references to music in humankind's earliest writing, pictures, and artifacts. During all this time, and in all these places, music has developed in a multitude of ways, each expressing the historical era and the local culture of its creators. In our own day, the number of ways in which the music of Western culture is expressed makes an impressive list: symphonic, folk song, military march, rock and roll, liturgical mass, jazz, and electronic music, to name only a few.

These diverse forms of musical expression have one characteristic in common: All use as their raw material the resources of sound—pitch, duration, intensity, and timbre. The art of composing music is dependent upon the skill of the composer in making choices from the raw materials of sound and in organizing those choices in ways that produce a successful composition.

The study of music theory is, in the broadest sense, the study of how sound has been organized to make music, regardless of geographical location or historical period. Obviously, a complete study of music theory would be one of great magnitude. But the task is simplified somewhat by the fact that throughout music history, ways of organizing musical sound in a given geographical area or a given historical period are often similar, making it convenient for the scholar or the student to concentrate on one such area or period at a time. Our present study will focus on music composed in western Europe and the areas under its influence, particularly the Americas, between the approximate dates 1600 and 1900, with comparative references to earlier styles, culminating in a survey of twentieth-century music. The era chosen encompasses the Baroque, Classical, and Romantic periods of music history and includes many of the best-known names in present-day concert repertoire, from J. S. Bach through such composers as Mozart, Beethoven, and Chopin, and at the end of the era, Brahms and Wagner.

It was during this period that harmony was a predominant characteristic of music composition. Harmony, defined broadly, results when two or more pitches sound simultaneously or in close succession. In this sense, most music of any period could be described as harmonic. But music of the period from about 1600 to about 1900 makes almost exclusive use of a system of tonal harmony so pervasive that the era is often known as the *common practice period.* Its principal characteristics are

1. chords built in thirds, such as C E G, called *tertian* harmony;
2. two scale systems, major and minor;
3. a tonal center represented by the tonic tone of a major or minor scale and a triad built on that tone, to which all tones and chords gravitate;
4. a certain predictability in the order of the various chords as they gravitate toward the tonic, a process often called *functional harmony.*

Before about 1600, music composition was based upon a system of six different scales, called *modes* (see Appendix D), and upon the concept of *counterpoint*—the simultaneous sounding of two or more melodic lines, their juxtaposition dependent upon the interval between any upper voice and the lowest sounding voice (see the example in the article on page 198). Counterpoint has been used extensively since 1600 but in addition to harmonic or other bases.

Since about 1900, composers of "serious" music have experimented with new ways of musical expression through nontertian and nontonal harmony, nontraditional uses of melody and rhythm, and use of new sound resources such as synthesizers and computers. Tonal music, however, is still widely used in the twentieth century and can commonly be heard in commercial music (radio, TV, motion pictures, "elevator music," and so forth) and in much educational and popular music.

4

Tonic and Dominant I

cadences

Beginning in this chapter, many assignments will be followed by one or two references to the locations of their answers. One of these references, In Appendix E, *indicates that answers are given in whole or in part, as indicated. The other,* In the Workbook, *indicates that a similar assignment using the same assignment number, such as* Assignment 4.1, *will provide additional practice, with answers. At appropriate places, there will be reference to additional assignments with given answers for closely related material; these are identified with a reference such as* Assignment 4A. *Lack of reference to an assignment in the* Workbook *indicates that no answers are given for that assignment.*

The Cadence

We will begin our study of harmony with an excerpt from the music of Bach, the well-known "Jesu, Joy of Man's Desiring," to illustrate the concept of *cadence,* a universal characteristic of music composition. First, listen to the music in Figure 4.1.

After you have listened to the music, sing the melody line of Figure 4.1, with or without the piano accompaniment. As you arrive at the final note, you should feel satisfied that you have come to a good stopping place and that there is no necessity to continue.

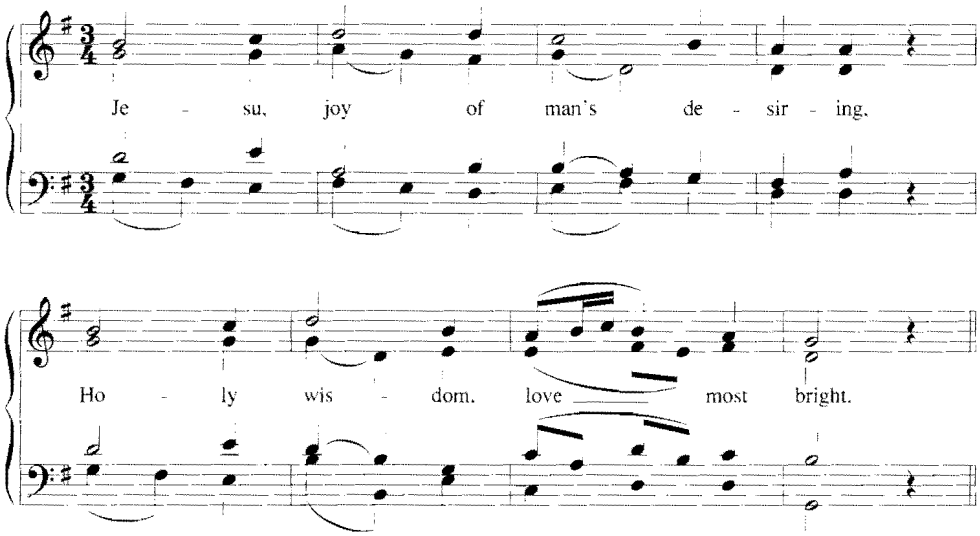
The sensation of arriving at a stopping place indicates the location of a cadence. You may have noticed another stopping place at the end of measure 4. But in this case, the cadence seems to be only temporary, requiring that the music continue. Poetry also exhibits these traits. In this stanza from an American folk ballad, note the two temporary pauses and the final stop at the end:

When the curtains of night
Are pinned back by the stars, *(pause)*
And the beautiful moon sweeps the sky, *(pause)*
I'll remember you, love, in my prayers. *(final stop)*[1]

[1]From Carl Sandburg's *The American Songbag* (1927).

FIGURE 4.1

Bach, *Herz und Mund und That und Leben,*
"Jesu, Joy of Man's Desiring," BWV 147



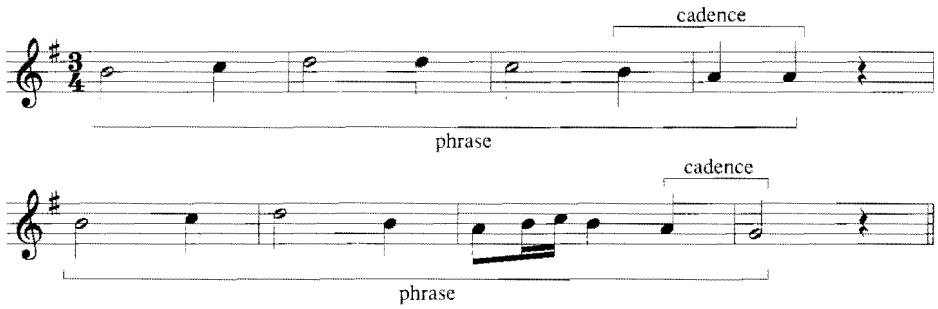
As you read the poem or sing the melody above, the function of the cadence is clear: to mark a pause, complete or incomplete, in the poetic or musical thought being expressed. In this way, cadences make it possible for poetry or music to be a true structure, rather than just a nonstop flow of words or pitches.

The Cadence in Relation to Form

The structure of a piece of music is known as its *form*.[2] The terminology of music form describes all aspects of musical structure, from the smallest unit of pitch or rhythm to the complete composition. In Figure 4.1, a cadence appears at the end of each group of four measures, and each marks the end of a "form," which in this case is called a *phrase*. The two phrases together, one with a temporary cadence and the other with a full stop, constitute a form known as a *period*, as shown in Figure 4.2, the melody line from Figure 4.1.

[2]Form is presented in more detail in Chapter 7.

FIGURE 4.2 *Form in a Melodic Line*



The final goal of a melodic line is commonly the tonic note of the key, as shown in Figure 4.2. The same is true in harmony: The ultimate goal of a series of chords is almost invariably the tonic triad. It is this feeling of reaching a goal, the tonic, that establishes aurally a sense of key in a composition. The pitch name of this tonic tone is also the name of the key. In listening to the Bach example (Figure 4.1), we recognize the sound of the final melody note and the final bass note as being tonic. By looking at the score and seeing that both notes are G, we know that G represents finality and, therefore, that the music is in the key of G.

Harmony at the Cadence (Major Keys)

In harmony, a cadence is usually found as the last two chords of a formal structure.[3] Most commonly, the chords dominant, V or V^7, and tonic constitute the cadence (review page 27 for roman numeral symbols). Looking at the final cadence of Figure 4.3, we see that the final two chords, the cadence, make use of the triads V and I (D F♯ A and G B D). In Figure 4.1, also in G major, the cadence is V^7–I (D F♯ A C–G B D). The two cadences are shown side-by-side for comparison in Figure 4.4.

[3]Cadences in the music of any historical era or geographical location fulfull the same function as those described here. For a few examples of cadences from music of other times and places, see the article "The Universality of the Cadence," on page 82

CD FIGURE 4.3

Bach, "Werde munter, mein Gemüte" (#350)[4]
(original key, B♭ major)

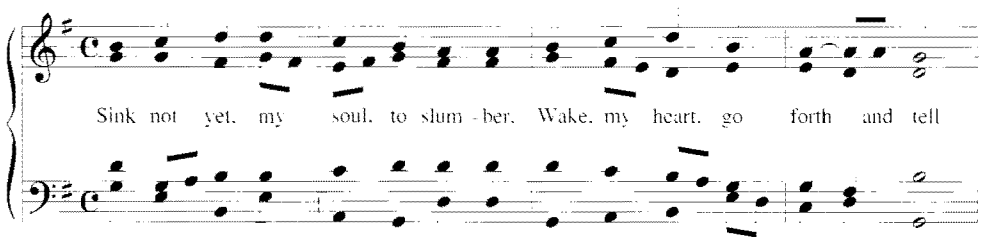
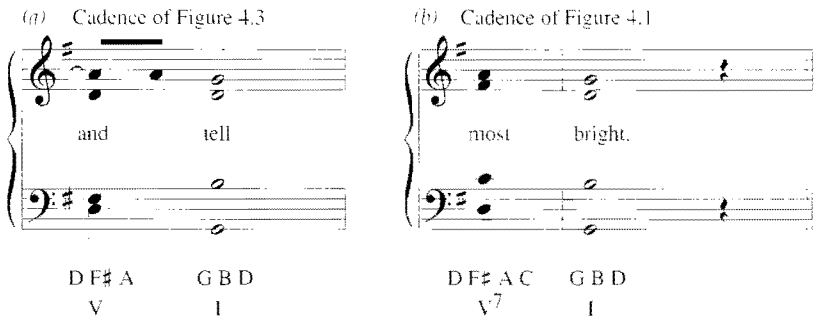


FIGURE 4.4 *Comparison of Cadences*

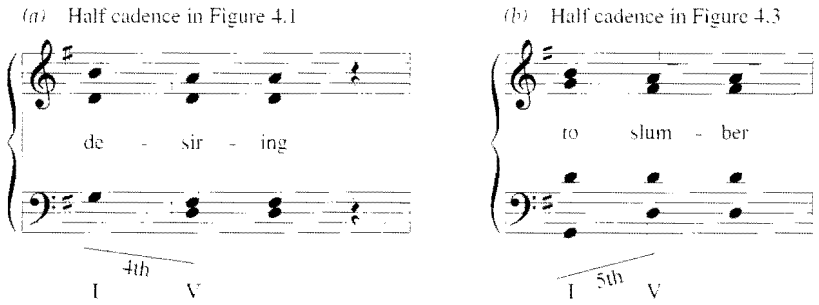


Both cadences in Figure 4.4 are called *authentic* cadences, a term describing a cadence with a root movement from dominant to tonic. The presence or absence of a seventh in the chord is not relevant. It might seem that we should study the easier chord, V, before V^7. But since V^7 is used far more frequently than V, we need to consider both.

When a cadence ends on any chord other than the tonic triad, it is called a *half cadence*. Figure 4.5 shows the half cadences, I–V, from the music of Figures 4.1 and 4.3.

[4]The number is that of the chorale in the collected editions of chorales of J. S. Bach, such as *The 371 Chorales of Johann Sebastian Bach*, edited, with the original instrumental obbligatos and with English texts, by Frank D. Mainous and Robert W. Ottman (New York: Holt, Rinehart & Winston, 1966). Excerpts from these chorales will be used extensively in this text.

FIGURE 4.5 *Half Cadences*



Is there a difference in these half cadences? Look again at the two half cadences in Figure 4.5. Both are I–V, but the root movement in the first is G down to D, a perfect fourth, whereas in the other the root movement is up a perfect fifth, but still G to D. Here is an example of the *inversion* of intervals as discussed on page 24. Since each interval is the inversion of the other, there is no change in the harmonic structure, so the two cadences are analyzed identically.

Root relationship by perfect fifth, as illustrated in cadential harmony, is probably the most important element delineating the character of tonal harmony. Chord movements based on roots a fifth apart are more common than others, and the most common key relationships are based on this interval, as in the circle of fifths (page 13).

As a diversion, we wish to point out that there is a strong similarity other than in cadences between Figures 4.1 and 4.3. Look at these figures carefully: sing or listen to both. Can you see or hear the similarity? They use the same melody![1] In devising the melody of "Jesu, Joy of Man's Desiring" from the chorale tune of Figure 4.3, what changes did Bach make? Sing or play the melody of each again and it should be obvious.

Spelling Tonic and Dominant Chords (Major Keys)

Further study of cadences will be easier if you are sure that you can spell the I, V, and V^7 chords quickly and accurately in any key. Here are two ways to do this:

1. For any diatonic chord, the chord number is the same as the scale step upon which it is built. From that letter name, spell in thirds by skipping over every other note of the scale. In these examples, the letter names skipped are in parentheses.

C major: I = C (d) E (f) G = C E G
B major: V = F♯ (g♯) A♯ (b) C♯ = F♯ A♯ C♯
V^7 = F♯ (g♯) A♯ (b) C♯ (d♯) E = F♯ A♯ C♯ E♯

[1] This melody was originally a hymn tune written by Johann Schop in 1642. Bach's harmonization of this melody is one of five to be found in *The 371 Chorales;* the others are 95, 121, 233, and 365.

2. Any major triad, diatonic or altered, can easily be spelled by using the following groups. Since there are but seven letter names, there are only seven possible triad spellings without accidentals. Three of these are already major, three are minor, and one is diminished; the triads can be grouped accordingly.

Group I *(major)*			Group II *(minor)*			Group III *(diminished)*		
C	E	G	D	F	A	B	D	F
F	A	C	E	G	B			
G	B	D	A	C	E			
-	-	-	-	↑	-	-	↑	↑

Group I. Triads in Group I will always be major when each member carries no accidental or when each carries the same accidental, as indicated by the symbol - - -.

C	E	G,	C♯	E♯	G♯,	C𝄪	E𝄪	G𝄪,	C♭	E♭	G♭,	C𝄫	E𝄫	G𝄫
-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Group II. Triads in Group II will be major when the third carries an accidental one half step higher than the root and the fifth (- ↑ -).

A	C♯	E,	A♯	C𝄪	E♯,	A♭	C	E♭,	A𝄫	C♭	E𝄫
-	↑	-	-	↑	-	-	↑	-	-	↑	-

Group III. This single triad on the pitch name B is major when the third and the fifth carry an accidental one half step higher than the root (- ↑ ↑).

B	D♯	F♯,	B♯	D𝄪	F𝄪,	B♭	D	F,	B𝄫	D♭	F♭
-	↑	↑	-	↑	↑	-	↑	↑	-	↑	↑

This system is especially helpful when spelling a triad from its third or its fifth. For example, how would you spell a major triad whose third is F𝄪?

1. If F𝄪 is 3, the basic triad is D F A.
2. D F A is in Group II, - ↑ -, in which the third carries an accidental one half step higher than the root or the fifth.
3. The accidental 𝄪 is a half step higher than the accidental ♯; therefore, the root and the fifth are D♯ and A♯. The complete triad is D♯ F𝄪 A♯.

ASSIGNMENT 4.1 *(a)* Spell major triads when the given name is the root.

From Group I: F, F♯, F♭; G, G♯, G♭

From Group II: D, D♯, D♭; E, E♯, E♭

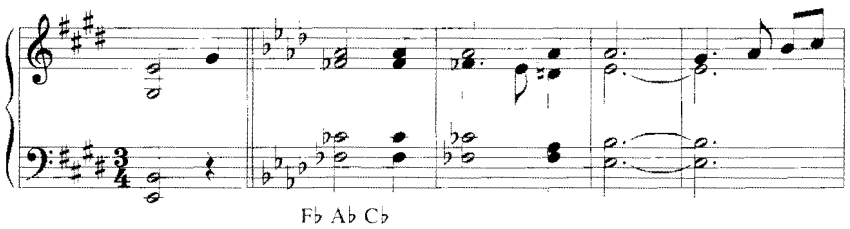
ARTICLE #4

The "Difficult" Triad Spellings

When spelling triads, you may feel that some are too complex to be useful. As your knowledge of harmony expands, you will find more and more of these triads in the music you study. Here are two examples: (1) F♭ A♭ C♭, the enharmonic of E G♯ B and used as the triad built on ♭6̂ (F♭) in the key of A♭ major; and (2) D♯ F𝄪 A♯, used as the dominant triad in G♯ minor.

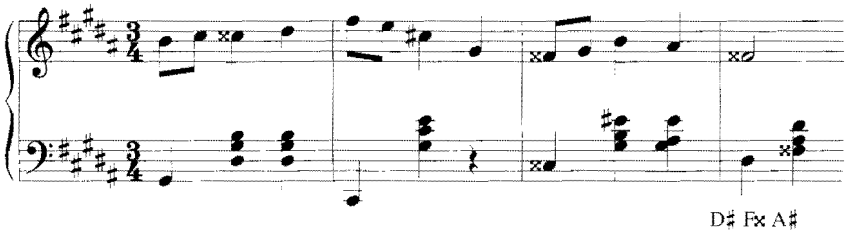
EXAMPLE 1

Schubert, *Moment Musical*, D. 780, No. 6



EXAMPLE 2

Chopin, Mazurka, Op. 33, No. 4



(b) Spell major triads when the given name is the third.

G♯, B, F♯, B♭, D, F𝄪, C♯, D♭, B, A♯

(c) Spell major triads when the given name is the fifth.

C, B, F♯, A♭, F, G♯, B♭, A♭, E♯, G♭

In Appendix E: Answers to the entire assignment are given.
In the Workbook: Do Assignment 4.1a–c. Answers are given.

ASSIGNMENT 4.2 Spell the I, the V, and the V^7 in each major key. Start with C major and work through the circle of fifths (review page 13) as begun for you below. In V^7, the seventh is $\hat{4}$. In C major, $\hat{4}$ is F. Adding F to G B D produces the V^7, G B D F.

	I	V	V^7
C:	C E G	G B D	G B D F
G:	G B D	D F♯ A	D F♯ A C
D:	D F♯ A	A C♯ E	A C♯ E G

In the Workbook: Do Assignment 4.2. Answers are given.

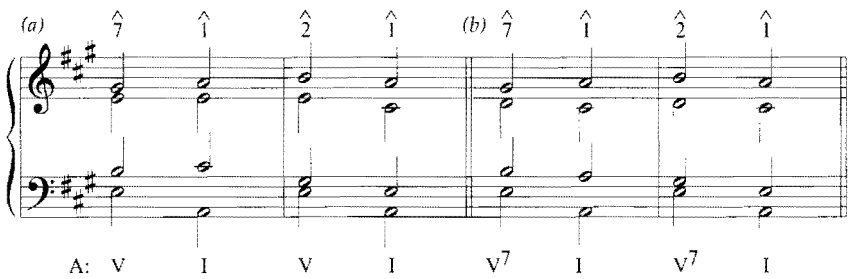
Cadences Incorporating Dominant Harmony

Perfect Authentic (PA) These are the characteristics of the perfect authentic cadence:

1. The progression is V–I or V^7–I, each chord with its root in the bass.
2. In the tonic triad (I), $\hat{1}$ is found in both soprano and bass.
3. The soprano line is usually $\hat{7}$–$\hat{1}$ or $\hat{2}$–$\hat{1}$.

The cadences of Figure 4.6*a* are perfect authentic, V–I, soprano lines $\hat{7}$–$\hat{1}$ and $\hat{2}$–$\hat{1}$. The cadences of 4.6*b* are the same except for the use of V^7. Review Figures 4.1 and 4.3; both show perfect authentic final cadences.

FIGURE 4.6 *Perfect Authentic Cadences*

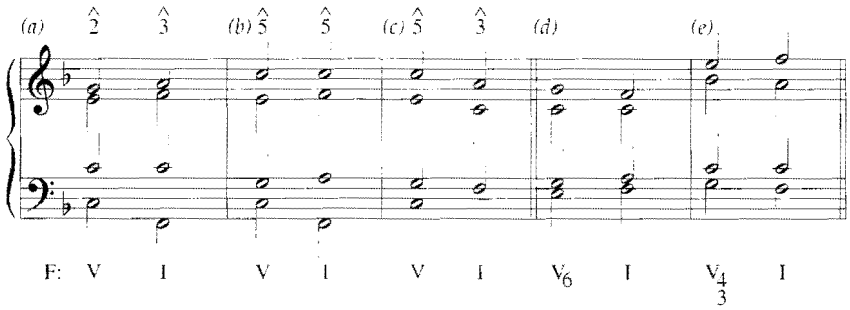


Imperfect Authentic (IA) These are the characteristics of the imperfect authentic cadence:

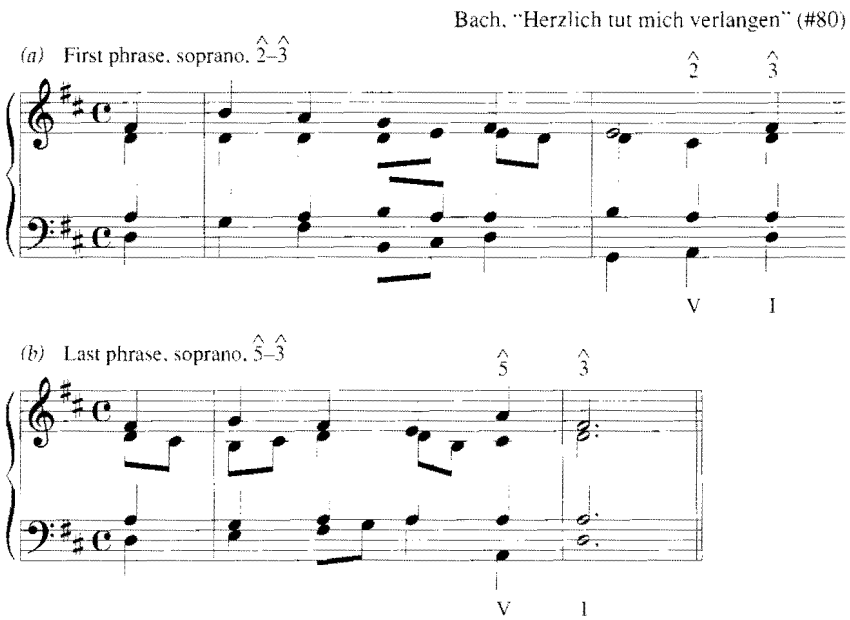
1. The progression V–I or V^7–I deviates in some way from a perfect authentic cadence; for example,
   a. The soprano note in the final tonic triad is $\hat{3}$ or $\hat{5}$.
   b. One or both chords are in inversion (review "Inversion of Chords," page 24).
2. The soprano line is usually $\hat{2}$–$\hat{3}$, $\hat{5}$–$\hat{5}$, or $\hat{5}$ down to $\hat{3}$ (Figure 4.7).

Figure 4.8, the first and last phrases of a chorale, shows two different imperfect authentic cadences.

FIGURE 4.7 *Imperfect Authentic Cadences*

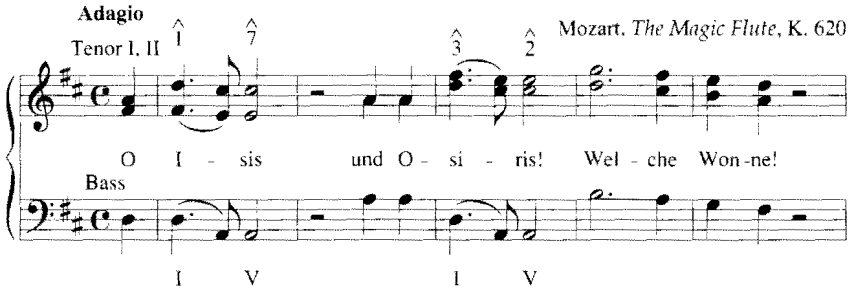


CD FIGURE 4.8



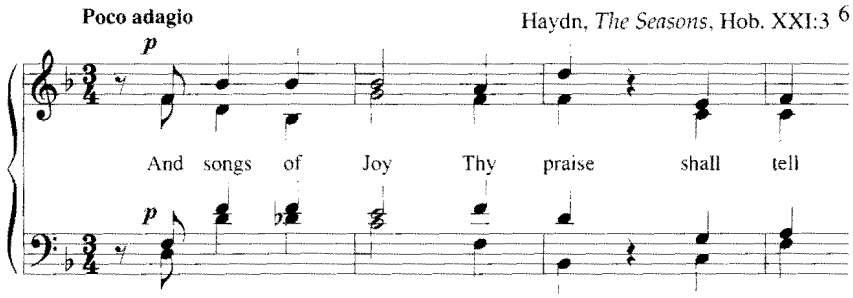
Half Cadence (HC) Any cadence ending on a chord other than the tonic triad is a half cadence, the most common being I–V. (Note that this cadence is *not* called an "authentic half" cadence.) The cadences of Figure 4.5 are half cadences. There are several soprano movements: $\hat{1}$–$\hat{7}$, $\hat{1}$–$\hat{2}$, $\hat{3}$–$\hat{2}$, $\hat{5}$–$\hat{5}$, and by various skips. Figure 4.9 illustrates two half cadences, each closing a two-measure idea.

FIGURE 4.9



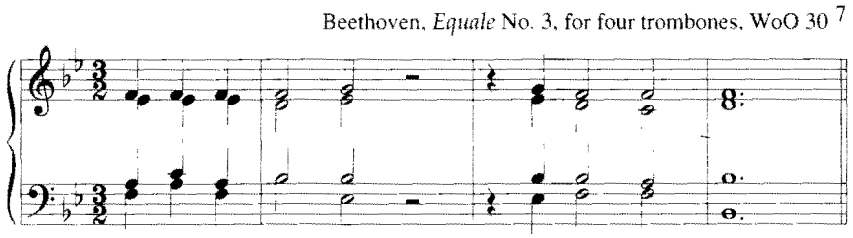
ASSIGNMENT 4.3 Describe the cadence in each of these excerpts, naming the key and the cadence (PA, IA, HC) and indicating the scale steps of the melodic line. For Figure 4.8*b*, the answer is: Key D ; Cadence IA ; Melody line $\hat{5}$–$\hat{3}$.

(1)



Key _____ Cadence _____ Melody line _____

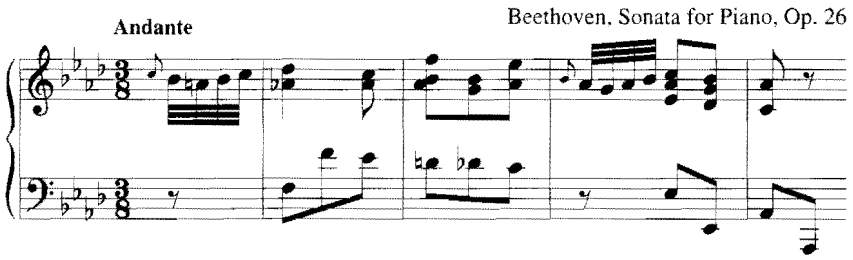
(2)



Key _____ Cadence _____ Melody line _____

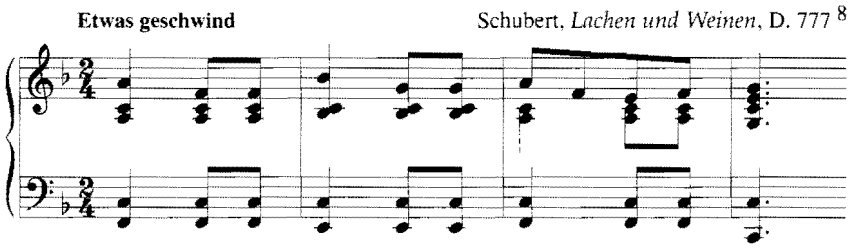
[6] Hob.: abbreviation for Anthony von Hoboken, who in 1957 catalogued Haydn's works.
[7] WoO: abbreviation for "Work without opus number."

(3)



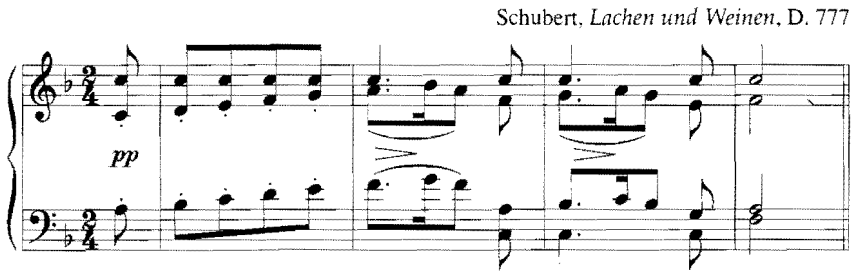
Key _____ Cadence _____ Melody line _____

(4)



Key _____ Cadence _____ Melody line _____

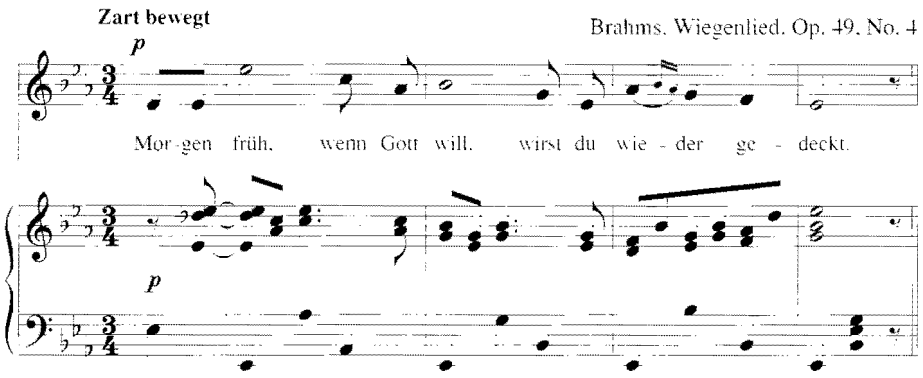
(5) Where is the melody line in this excerpt? Describe the movement of the soprano line during the four measures. Which line do you think you should use when describing the cadence? (There is no right or wrong answer. In analysis, we will encounter many similar situations for which alternative explanations are possible.)



Key _____ Cadence _____ Melody line _____

[8]D.: abbreviation for Otto Deutsch, who in 1951 catalogued Schubert's works.

CD *(6) This familiar song by Brahms has two melody lines. Describe the cadence* for each.



Vocal melody: Key _____ Cadence _____ Melody line _____

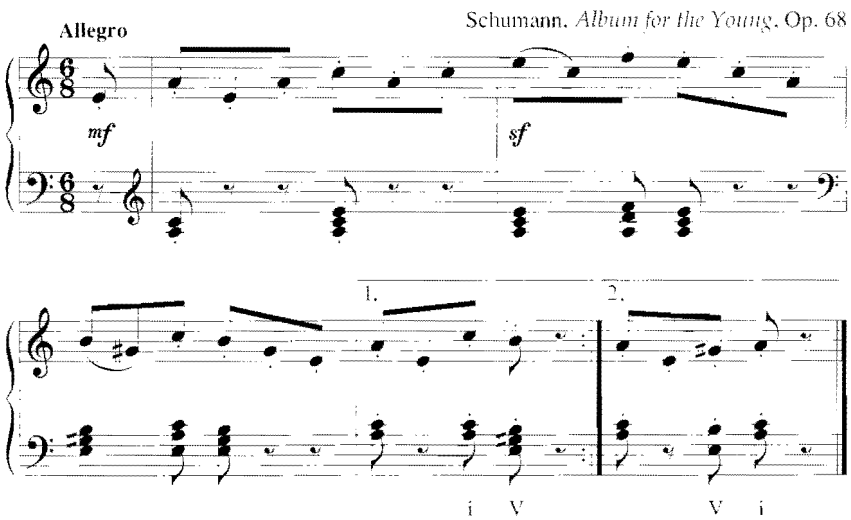
Piano melody: Key _____ Cadence _____ Melody line _____

In Appendix E: Answers to the entire assignment are given.

The Cadence in Minor Keys

Authentic cadences and the half cadence in a minor key are similar to those in a major key. The tonic triad is usually minor (i), whereas the dominant triad is usually major (V), requiring an accidental to provide a leading tone for the key. In Figure 4.10, V–i in A minor is spelled E G♯ B–A C E. Can you name the two cadences and explain the formal structure?

CD FIGURE 4.10



Spelling Tonic and Dominant Triads (Minor Keys)

You should be able to spell quickly and accurately the cadence chords in minor keys.

1. In the tonic (i) triad, the third is lowered in relation to the spelling of the major triad. Whereas I in C major is C E G, i in C minor is C E♭ G. Where there is no parallel major key, spell a major triad above the tonic tone and then lower the third a half step. Example: In G♯ minor, a major triad above the tonic is G♯ B♯ D♯; therefore, the tonic minor is G♯ B D♯.

   The tonic triad is also easily spelled by locating $\hat{1}$, $\hat{3}$, and $\hat{5}$ in the scale of the key. In G♯ minor, $\hat{1}$, $\hat{3}$, and $\hat{5}$ are G♯, B, and D♯.
2. In all major and minor keys, V and V^7 are major triads and major–minor seventh chords, respectively. In minor, the third of the chord is ♯$\hat{7}$, raised in relation to the key signature to provide a leading tone.

ASSIGNMENT 4.4 Spell these minor triads when

a. the root is given: A, B♭, B, C♯, F♯

b. the third is given: G, E♭, B♭, A♭, B

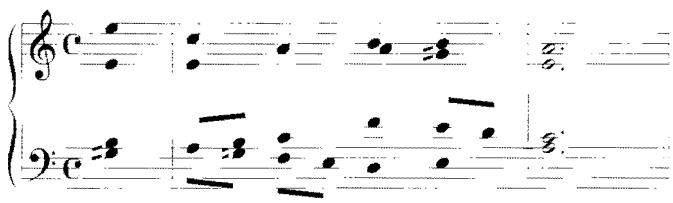
c. the fifth is given: F♯, G♯, D, B♭, A♯

In Appendix E: Answers to the entire assignment are given.
In the Workbook: Do Assignment 4.4. Answers are given.

ASSIGNMENT 4.5 Locate, identify, and describe the cadences in each of these examples. Follow the same procedure as in Assignment 4.3.

CD (1)

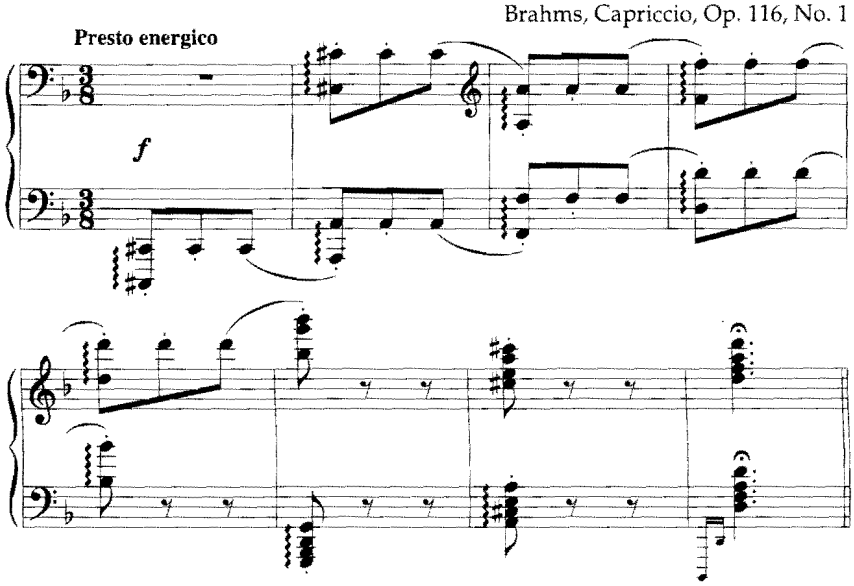
Bach, "Helft mir Gotts güte Preisen" (#23)



Key _____ Cadence _____ Melody line _____

(2)

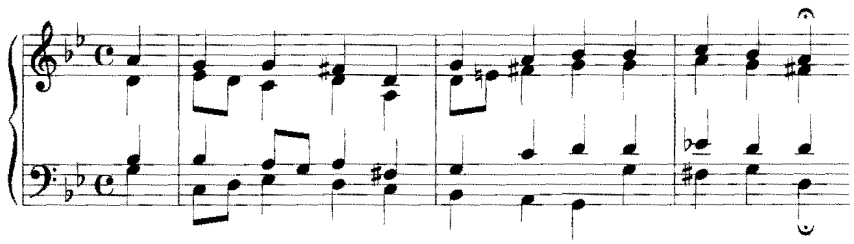
Brahms, Capriccio, Op. 116, No. 1



Key _____ Cadence _____ Melody line _____

(3)

Bach, "Herzliebster Jesu, was hast du verbrochen" (#59)



Key _____ Cadence _____ Melody line _____

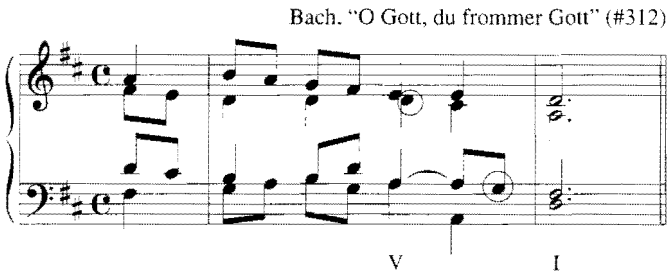
In Appendix E: Answers to the entire assignment are given.

Cadences Incorporating Dissonances

Music does not consist solely of triads and seventh chords. Tones other than chord tones are so frequent that it is necessary to investigate them to understand even simple music scores. These tones are dissonances (as defined on page 27) that sound simultaneously with a chord structure, and are called *nonharmonic tones*. For the present, it will be sufficient to simply recognize the presence of nonharmonic tones. Study of their nomenclature and use will follow in Chapters 11 and 12.

In the cadence of Figure 4.11, the alto D is not part of the A C♯ E triad, nor is the G in the tenor. But note that the G is the seventh of A C♯ E G. When the seventh is found this way, moving down by step from the root, it is called a *passing seventh.* You should be able to find more nonharmonic tones in the triads preceding the cadence of this example.

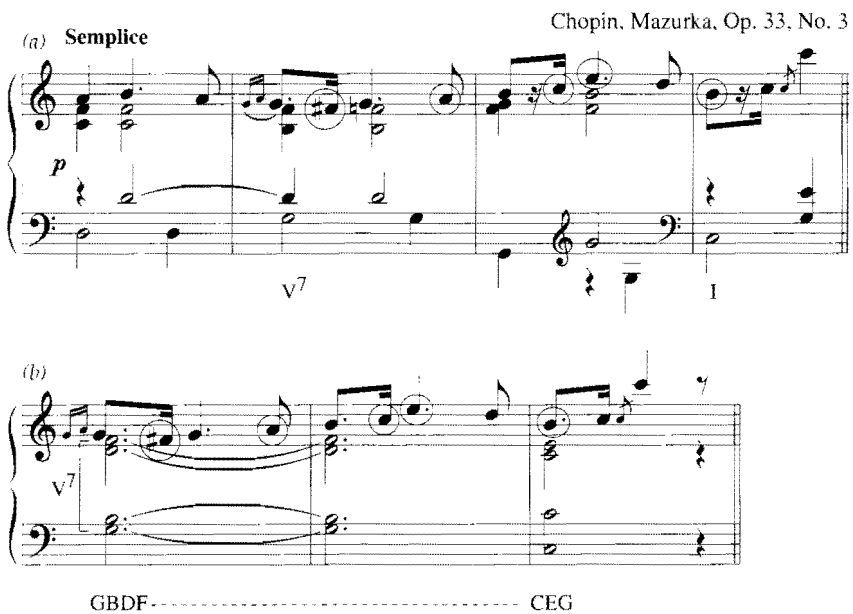
CD FIGURE 4.11



More complex is the cadence in Figure 4.12*a*, showing the V^7 triad extended for two measures, during which there are four nonharmonic tones, as well as one more in the tonic triad. In *b*, the texture is simplified to show the nonharmonic tones more clearly.

Note that the first circled note, F♯, is a *chromatic* nonharmonic tone, meaning that the tone is not part of the scale of the key in which it is found (F♯ is not a member of the C major scale). The remaining nonharmonic tones are *diatonic.*

CD FIGURE 4.12

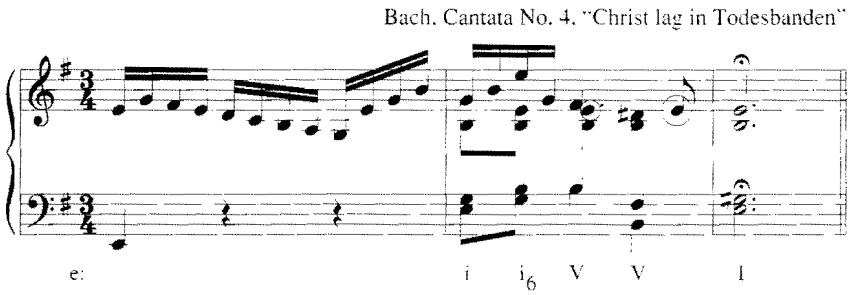


Other Cadences: The Picardy Third and the "Empty Fifth"

The next two examples show not only nonharmonic tones in the cadence, but also two other features found in some minor cadences, especially in music written from about 1600 to 1750.

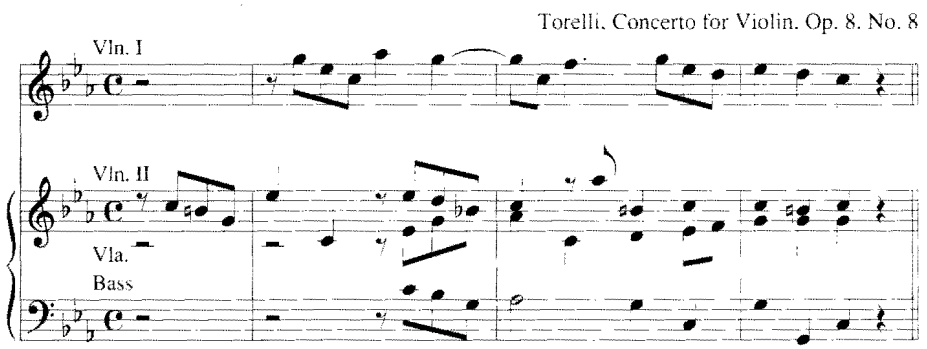
In the first (Figure 4.13), the final tonic chord in E minor is the major triad E G♯ B. This final major triad in a minor key is known as a *Picardy third* (or *tierce de Picardie*), for reasons unknown. Notice that the uppercase roman numeral "I" is used.

CD FIGURE 4.13 *The Picardy Third*



The "empty fifth" is shown as the final tonic chord in Figure 4.14. Without a third, it is neither major nor minor. We still use "i" to identify the structure because it was used almost exclusively in minor. Use of both this structure and the Picardy third dates from an earlier time when a major triad or an empty fifth was considered more consonant and therefore more suitable as a final cadence in a minor key.

FIGURE 4.14 *The "Empty Fifth"*



ASSIGNMENT 4.6 Name each cadence (PA, IA, HC) in each excerpt.

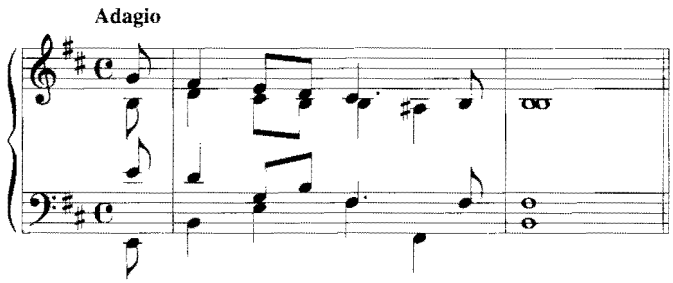
(1)–(3): Circle only those nonharmonic tones included with the cadence.

(4)–(6): Circle all nonharmonic tones in the entire excerpt (each excerpt includes only tonic and dominant harmony).

In any of the above, look for a V^7 cadence with the soprano line 4–3.

CD (1)

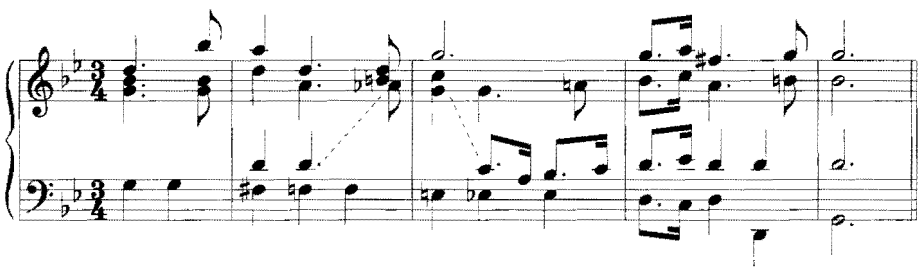
Handel, Concerto Grosso in B Minor, Op. 6, No. 12



Key _____ Cadence _____

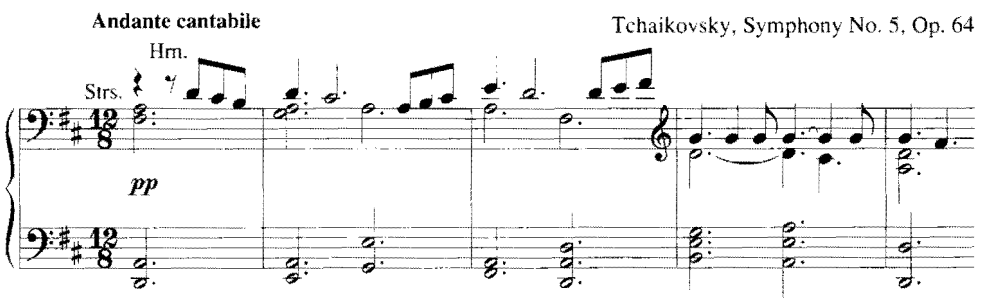
CD (2)

Bach, Cantanta No. 78, "Jesu, der du meine Seele"



Key _____ Cadence _____

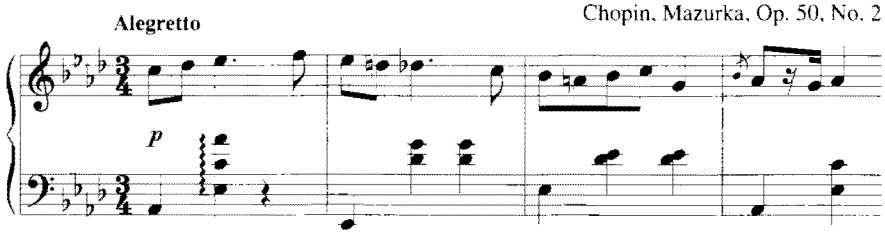
CD (3)



Key _____ Cadence _____

(4)

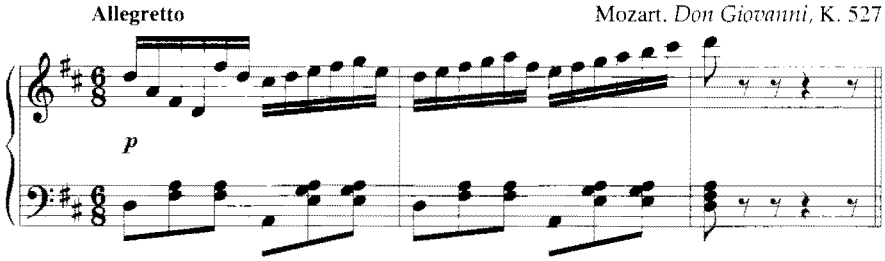
Chopin, Mazurka, Op. 50, No. 2



Key _____ Cadence _____

(5)

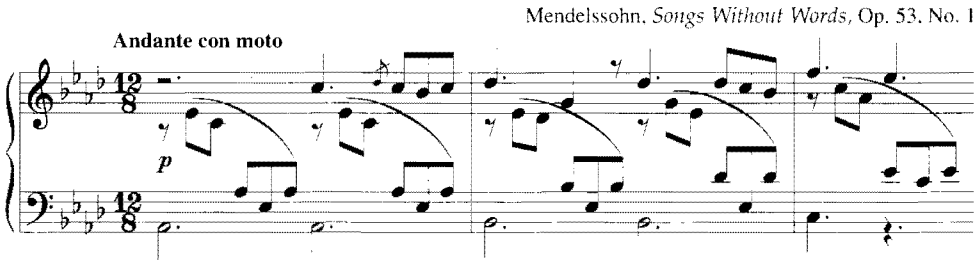
Mozart, *Don Giovanni*, K. 527



Key _____ Cadence _____

(6)

Mendelssohn, *Songs Without Words*, Op. 53, No. 1



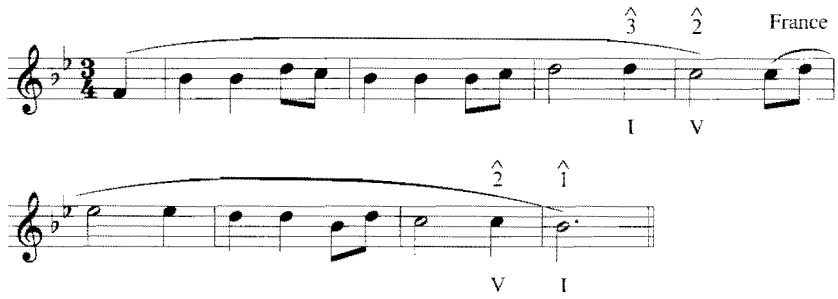
Key _____ Cadence _____

In Appendix E: Answers to (1)–(3) are given.

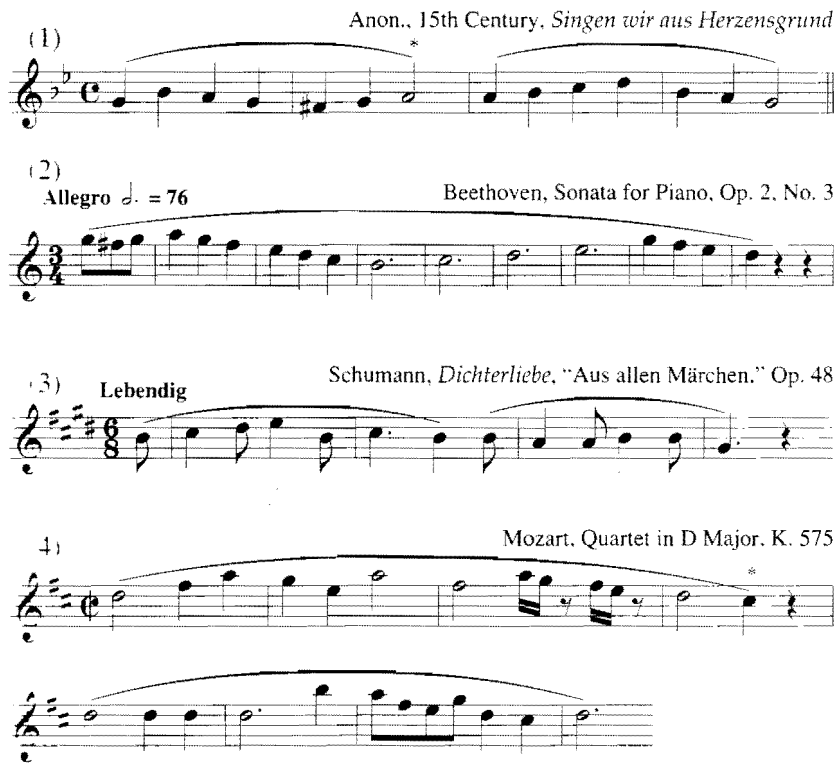
Cadences in a Melodic Line

Cadences for one voice can usually be identified by the scale-step numbers of the melody at the point of the cadence. Figure 4.15, in B♭ major, shows two cadences: $\hat{3}$–$\hat{2}$ (D–C) implies I (B♭ D F)–V (F A C), whereas the final cadence, $\hat{2}$–$\hat{1}$ (C–B♭), implies V–I.

FIGURE 4.15



ASSIGNMENT 4.7 Analyze the final cadence in each example as in Figure 4.15. Also analyze those interior cadences located by the asterisk.



Appendix E: Answers to the entire assignment are given.

Spelling Intervals from Major Triads

In Chapter 2, we learned to compute sizes and spellings of intervals, first by finding the major and perfect intervals above the tonic note, then by adjusting these by half-step manipulations to find other intervals. If you have now learned to spell major

triads quickly and accurately, it will be even easier, in this optional method, to recognize and spell perfect, major, and minor intervals, especially those difficult ones with ×'s and 𝄫's.

Each major (or minor) triad includes the six consonant intervals, each made up of two notes of the triad. In Figure 4.16, 1 ↑ 3 means root up to third in the triad (not scale-step numbers). 1 ↑ 3 also implies 3 ↓ 1, and so forth.

FIGURE 4.16 *Intervals in a Major Triad*

1 ↑ 5 P5	1 ↑ 3 M3	3 ↑ 1 m6
5 ↑ 1 P4	3 ↑ 5 m3	5 ↑ 3 M6

Here are sample problems:

"easy": P5 below D = ?
P5 is 5 ↓ 1
If D is 5,
its triad = G B D
5 ↓ 1 = D ↓ G

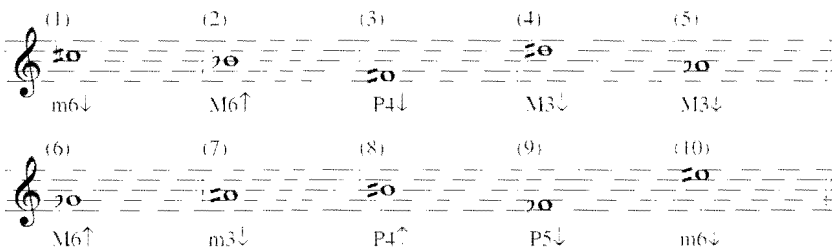
"difficult": M6 below C× = ?
M6 is 3 ↓ 5
If C× is 3,
its triad = A♭ C× E♭
3 ↓ 5 = C× ↓ E♭

ASSIGNMENT 4.8 *Spelling intervals.* Following the steps just given, name the second note of these intervals:

(1) m3 above F♭
(2) M6 below G
(3) P4 above A𝄫
(4) m6 above G×
(5) M3 below B𝄫
(6) P5 below G𝄫

In Appendix E: Answers to the entire assignment are given.
In the Workbook: Do Assignment 4.8. Answers are given.

ASSIGNMENT 4.9 *Writing intervals.* Place the second note of the given interval on the staff.

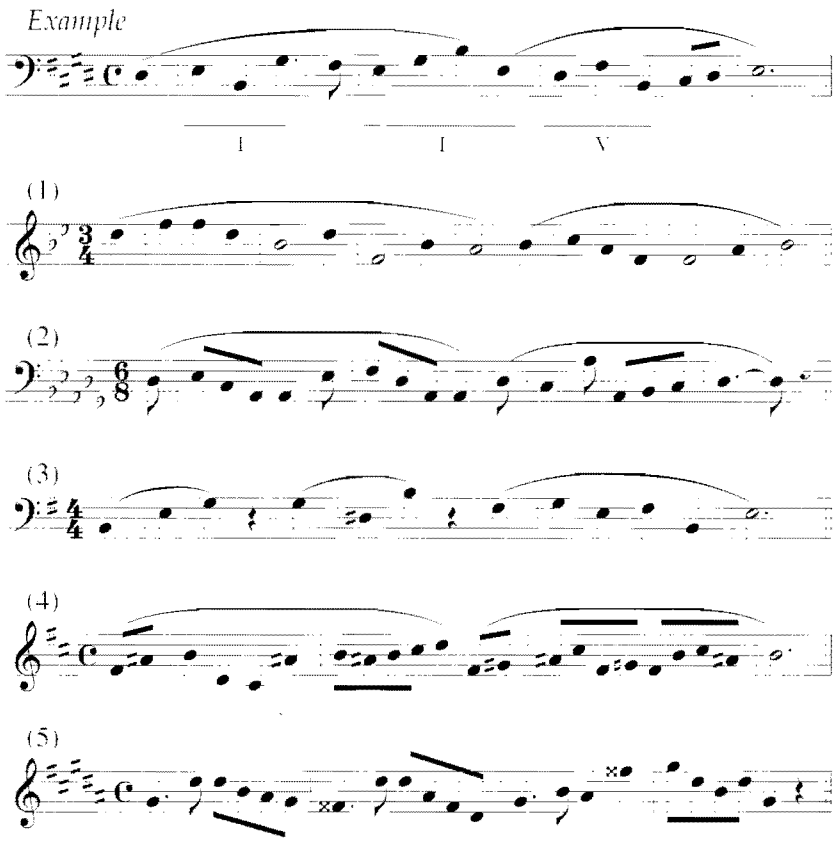


In Appendix E: Answers to the entire assignment are given.
In the Workbook: Do Assignment 4.9 a–b. Answers are given.

Triads Outlined in Melodies

Intervals in a melodic line often outline a triad. The melodies of Assignment 4.10 show more triad intervals than you would normally expect, but all are of typical usage.

ASSIGNMENT 4.10 Bracket any intervals in the I, i, or V chords and identify the triad as shown in the example. Be sure to spell the tonic and dominant triads before looking for the intervals.



Keyboard Harmony

In the study of keyboard harmony, you will learn to play chords and chord progressions as they are presented in each chapter. Playing harmonies, rather than just listening to them, will give you a more intimate acquaintance with their sounds and their relationships, and will help prepare you for practical application of your harmonic knowledge.

No previous keyboard skill is required. You will find your first experience in keyboard harmony easy if you have accomplished these prerequisites:

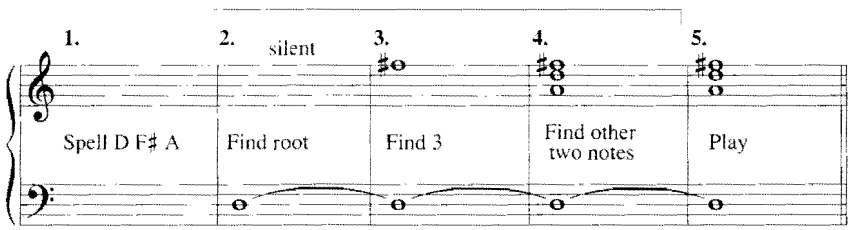
1. You know the names of the keys on the keyboard.
2. You have learned to spell quickly and accurately in all keys the chords presented in each chapter.

To begin the keyboard experience, you are asked to play only a single triad. The five steps below are illustrated in Figure 4.17 using a D major triad with its third in the soprano. Steps 1–4 show you how to find the correct keys before actually playing, so that at step 5 the triad will sound without error. With continued practice, you will soon be able to play any triad without the first four steps.

1. Spell the triad (D F♯ A).
2. Place a left-hand finger on the root of the triad (D). Do not play.
3. Place the little finger of the right hand on 3 (F♯). Do not play.
4. Find the two nearest notes of the triad below F♯ (D and A). Do not play.
5. Play all four notes of the triad simultaneously.

After sufficient practice, use step 5 only.

FIGURE 4.17 *Playing a Single Triad*



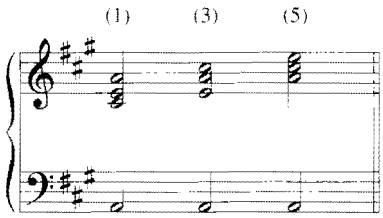
ASSIGNMENT 4.11 *Playing triads at the keyboard.*

(a) Using the five steps of Figure 4.17, play these triads ("C major-5" means the C major triad with its fifth in the soprano):

C major-5	E major-1
F major-1	D♭ major-5
E♭ major-3	B major-3

(b) Play any other triad in any soprano position, as chosen or assigned.

(c) Play successively a given triad in each of its three soprano positions, illustrated on the next page with the A major triad.



Summary

A *cadence* marks the close of a musical idea, temporary or final.

Cadences using the progression V–I or V–i are called *authentic* and may be *perfect* or *imperfect,* depending on their soprano and bass lines. A cadence ending on V (or any other chord) is a *half* cadence.

Form in music is determined by the location and types of cadences.

Cadences may include triads only, or they may contain additional nonharmonic tones.

In the Baroque era, cadences in a minor key often concluded with either a major triad (*Picardy third*) or a triad without a third.

Melody lines often outline triads or seventh chords, especially those chords on the dominant and the tonic.

The relationship of root movement by fifth in the authentic cadence represents the most important and frequent root movement in the period of music under study.

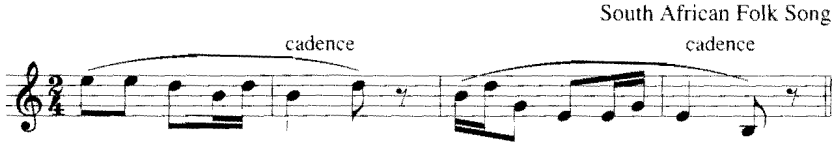
ARTICLE #5

The Universality of the Cadence

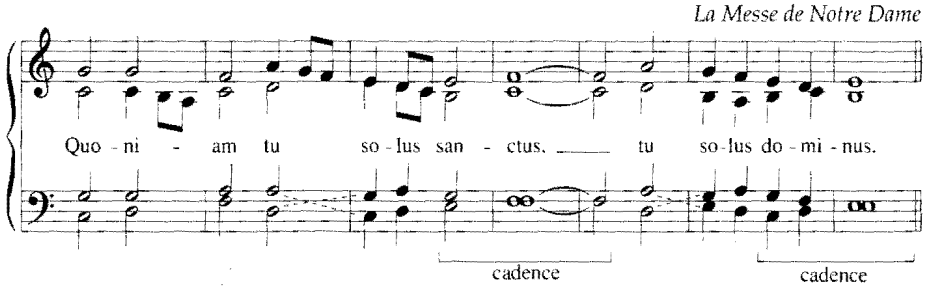
The use of cadences is a typical feature of all music, regardless of historical period or geographical area. There must always be places in any piece of music where the melody or the ensemble reaches a temporary or concluding resting point. How this is accomplished varies widely in differing times and places, as is demonstrated in the few but diverse examples that follow.

In contrast to these examples, most of the cadences of the common practice period reflect some type of tonic–dominant relationship, with V–I as a final cadence used almost exclusively.

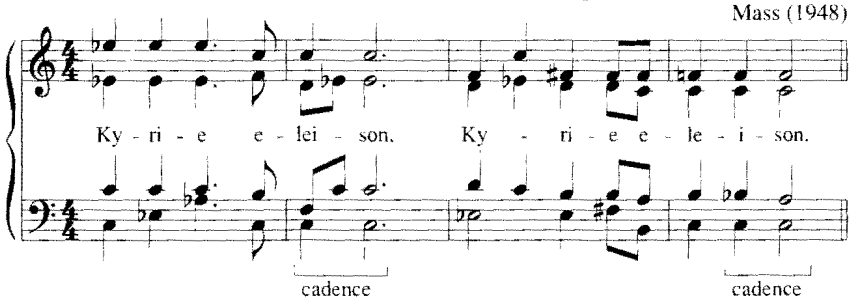
South African Folk Song



Guillaume de Machaut (ca. 1300–ca. 1370),
La Messe de Notre Dame



Igor Stravinsky (1882–1971),
Mass (1948)



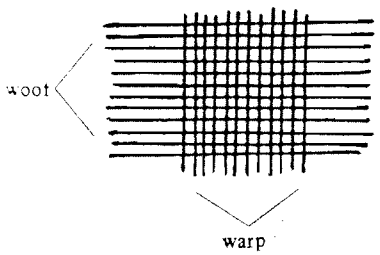
5

Tonic and Dominant II

part-writing

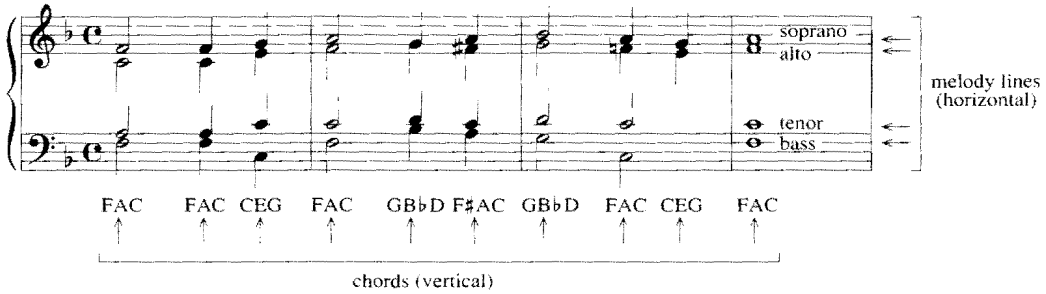
Part-writing, the procedure for connecting a series of chords, requires the skill of thinking in two musical directions at once. You might compare it to the art of weaving, in which the finished fabric is the result of combining vertical and horizontal threads ("warp" and "woof").

FIGURE 5.1



Looking at the simple hymn in Figure 5.2, we see the same type of interaction: The music is both a series of triads *and* a sounding of four melodic lines (voice lines)—soprano, alto, tenor, and bass. Each triad is identified by its spelling, describing the *vertical* structure of the hymn. At the same time, the four voice lines describe the music's *horizontal* structure. The tune in the soprano (highest voice) is obviously a melody, but the alto, tenor, and bass lines are also melody lines. If you sing the notes of the alto line (treble clef with stems downward), you are singing a melodic line. The same is true of the tenor and bass lines.

CD FIGURE 5.2

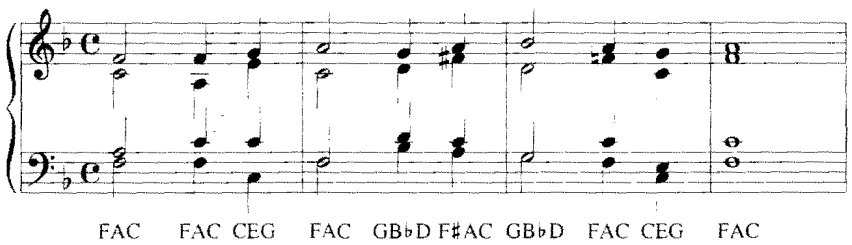


Achieving a good melodic line in each voice line[1] during a succession of chords is the goal of part-writing. Part-writing principles describe

1. how to distribute the various members of the chord among the number of voices in the composition (four voices in Figure 5.2, three in Figure 4.9); and
2. how to move each note in a given voice from chord to chord.

Placing individual notes of a given chord in one voice part or another at random can hardly be expected to produce good voice lines. If we were to rewrite Figure 5.2 using the same melody, bass line, and chords but filling in the alto and tenor voices at random, a version of the hymn such as that in Figure 5.3 might result.

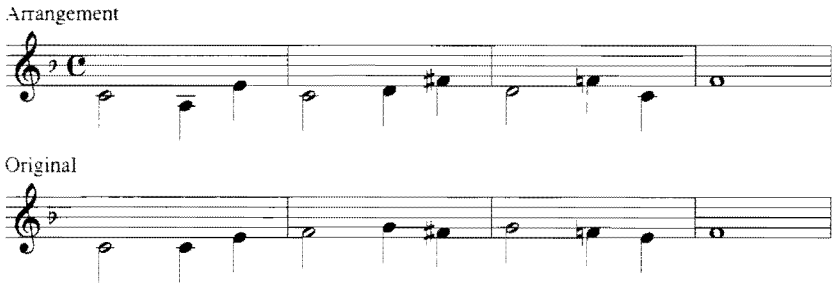
FIGURE 5.3



As this "arrangement" is played at the piano, try to sing the alto line. It is difficult because it is a poor melodic line, with numerous skips and with the leading tone and the altered tone resolving awkwardly. In Figure 5.4, compare the alto line of the arrangement with that of the original, noting how much easier it is to sing the original. The same comparison can be made with the two tenor lines.

[1]The term *voice line* commonly refers to a melodic line in either vocal or instrumental music.

FIGURE 5.4



Conventional Procedures

This and succeeding chapters will present procedures for part-writing. There are many ways to progress from one chord to the next while achieving the goal of good melodic lines. A number of these procedures have been used so consistently by composers that they can be considered conventional. But other procedures are also useful, especially when they produce more interesting musical results. Conventional procedures will be presented first, but study of alternative procedures and the advantages of their use will be considered as your writing skill develops.

In most cases, conventional procedures are introduced by examples in four-part chorale style. Students may wonder why such a restriction is employed, especially those whose major interest is other than vocal music. Actually, the same basic principles of harmonic writing exist in both the vocal and the instrumental music of the common practice period, but four-part vocal writing provides the easiest introduction to harmonic writing. Other applications will be introduced as harmonic studies become more advanced.

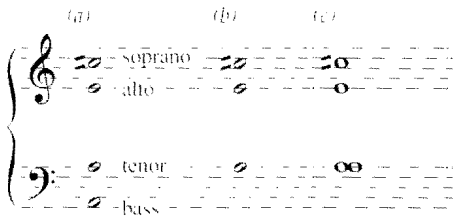
All the conventional procedures presented in this and the following chapters will be found together in Appendix A. You will find this appendix a convenient reference point to locate quickly the conventional procedure for any part-writing situation. We recommend that you take advantage of this compilation to review old procedures as you are learning new ones.

Writing a Single Triad

For the first part-writing project, we will place on the staff a single triad with its root in the bass. Although this is an easy project, it serves to introduce several procedures useful in future part-writing activities.

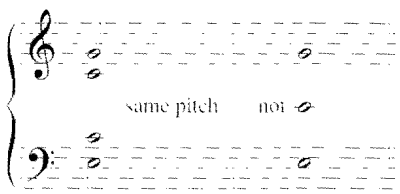
Our triad will be written in four voices: soprano, alto, tenor, and bass, conforming to the four ranges of the human voice. When the treble and bass staves are used, the soprano and alto voices appear on the treble staff, and the tenor and bass voices appear on the bass staff. Observe the stem directions: soprano, stem up; alto, stem down; tenor, stem up; bass, stem down (Figure 5.5*a*). When two voices on the same staff are the same note, the note carries both stem up and stem down (Figure 5.5*b*), or if the note is a whole note, the two whole notes are interlocked (Figure 5.5*c*).

FIGURE 5.5



However, when the two identical pitches are the alto and tenor voices, each must remain on its own staff (Figure 5.6).

FIGURE 5.6



When part-writing a single triad, you must take four factors into consideration: voice range, doubling, triad position, and distance between voices.

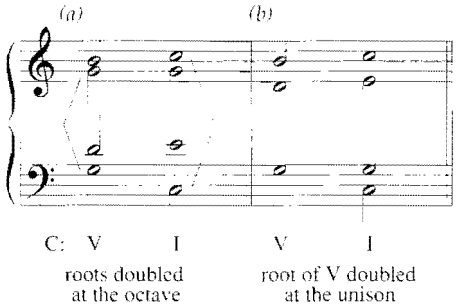
Voice Range Each of the four voices should, as a rule, be written in the normal singing range of that voice.

FIGURE 5.7

Voices ordinarily should be kept within the ranges outlined by the whole notes in Figure 5.7. Pitches outside these ranges are possible but should be used only sparingly and within the limits of the black notes.

Doubling Since four notes will be used, one note of the triad must be doubled; that is, two voices will have to use the same letter name, either in unison or in an octave relationship. A general rule for doubling in most triads is to double that tone which is strongest and most stable in the key. These tones are the scale steps tonic, dominant, and subdominant. In tonic and dominant triads, the root is ordinarily doubled (Figure 5.8).

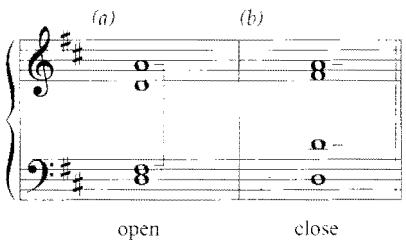
FIGURE 5.8



Other doublings are not necessarily wrong. There are circumstances, usually melodic, in which doubling the third or the fifth of the triad is desirable, as will be shown later. However, doublings should not be chosen haphazardly. If there is no particular reason to double the third or the fifth in a major triad, doubling the root is preferable.

Triad Position Triads may appear in either of two positions, *open* or *close*. In open position,[2] the distance between the soprano and the tenor is an octave or more; in close position, the distance between the soprano and the tenor is less than an octave. In either position, any interval may appear between tenor and bass.

FIGURE 5.9

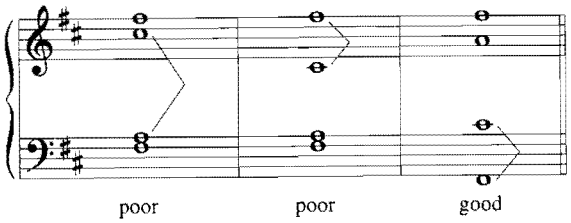


Note also that in open position, another note of the triad could be inserted between the tenor and the alto or the alto and the soprano, whereas in close position, the three upper voices are as close together as possible.

Distance between Voices The distance between any two adjacent voices (for example, soprano and alto) usually does not exceed an octave, except that an interval larger than an octave may appear between the bass and tenor voices (Figure 5.10).

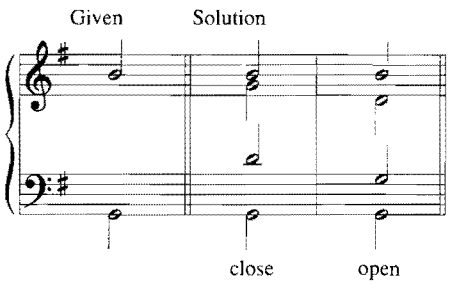
[2]The terms *open structure* and *close structure* are commonly used synonymously with *open position* and *close position*.

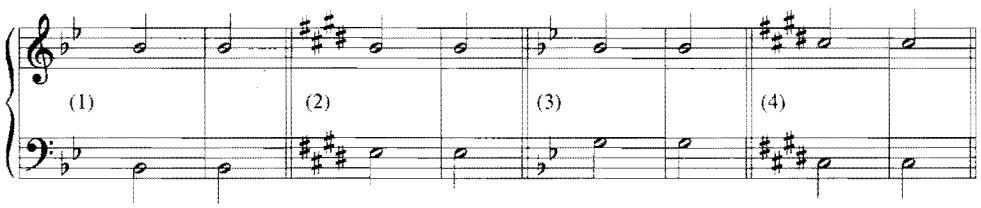
FIGURE 5.10



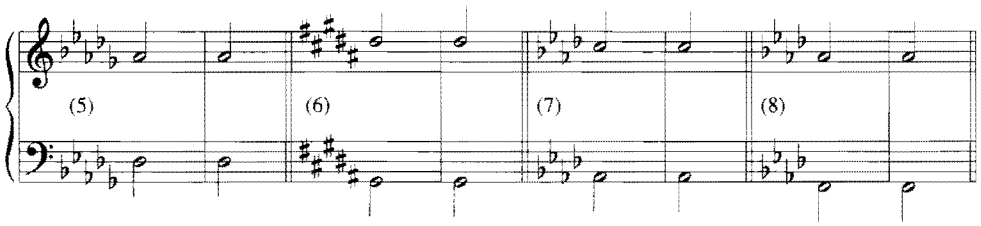
Crossed voices should be avoided at present. The tenor should not be placed above the alto, the alto above the soprano, and so forth.

ASSIGNMENT 5.1 Fill in the inner voices of each triad in both close and open position, in that order. At present, use two roots, one third, and one fifth, and observe instructions for range and distance between voices. Assume each triad to be tonic and name the key, indicating M or m. Here is an example:





Key: ____ ____ ____ ____



Key: ____ ____ ____ ____

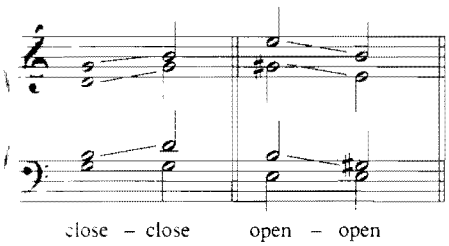
In the Workbook: Do Assignment 5.1a. Answers are given.

Connection of Repeated Triads

When you are writing repeated triads with a change in the soprano tone, the only decision you must make is whether to write the two triads in the same position or to change position in the second chord.

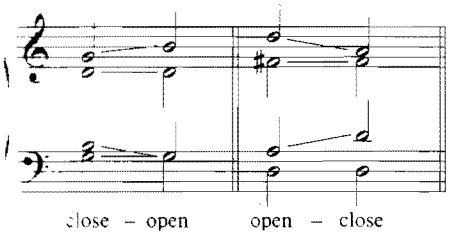
Maintaining the same position is accomplished by moving the three upper voices in similar motion.

FIGURE 5.11



When the second chord changes position, two voices, the bass and one other, remain stationary while the other two voices exchange tones.

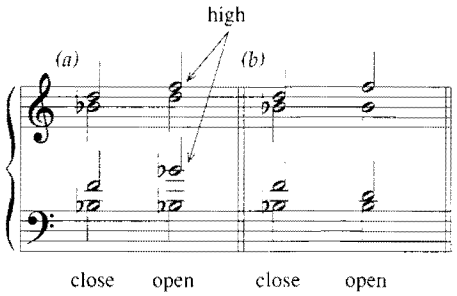
FIGURE 5.12



Change of position is usually necessary in three situations:

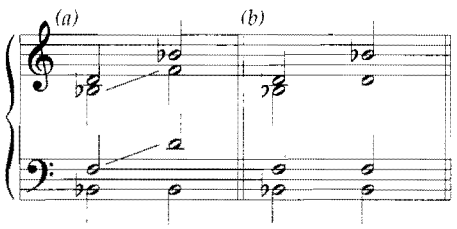
1. When an upper voice moves out of its usual range. In Figure 5.13, the notes are too high for the alto and tenor voices. Changing position puts these voices in a better range.

FIGURE 5.13



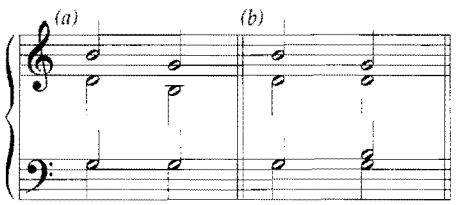
2. When there are large intervals in inner voices (Figure 5.14). Change of position produces more desirable small intervals or held notes.

FIGURE 5.14



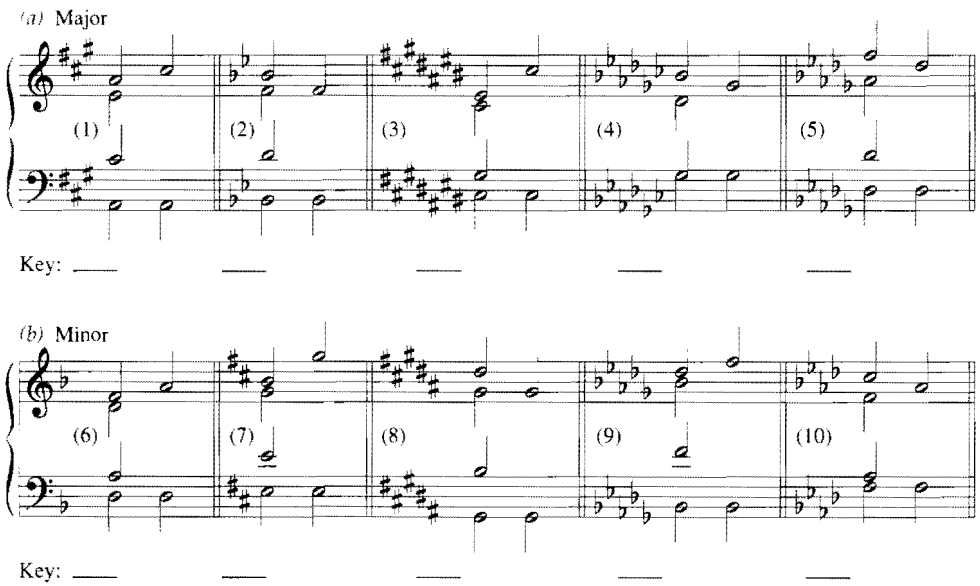
3. When the second triad contains no fifth, as in Figure 5.15. Changing from open to close position restores the usual distribution of voices. However, we will encounter acceptable exceptions later in our studies.

FIGURE 5.15



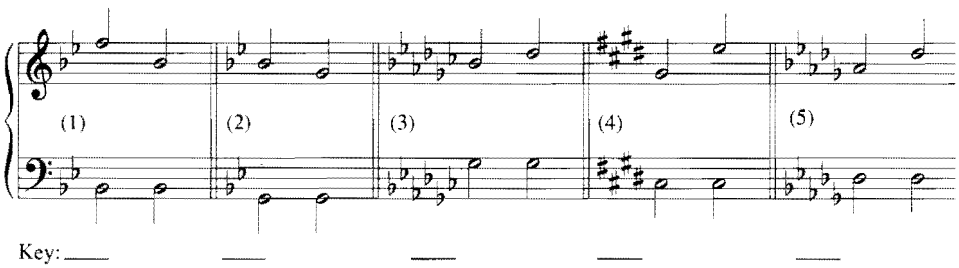
In the Workbook: Do Assignment 5A a, c, *and* d. *Answers are given.*
Do Assignment 5B. Answers are given.

ASSIGNMENT 5.2 *Writing repeated triads.* The first triad of each pair is complete. For each, decide whether the position of the first triad needs to be changed or whether the same position may be maintained. Place the name of the key below each example. In some examples, either way will be satisfactory.



In Appendix E: Answers to (1)–(3) are given.
In the Workbook: Do Assignment 5.2a. Answers are given.

ASSIGNMENT 5.3 *Writing repeated triads.* Only the soprano and the bass of the two triads are given. Fill in the alto and tenor voices. Name the key of each, indicating M or m.



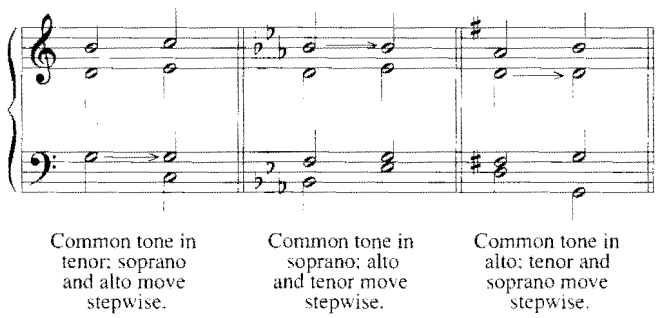
Writing the Authentic Cadence

In the various forms of the authentic cadence, the roots of the dominant and tonic chords are always separated by the interval of a fifth, or its inversion, the fourth. Because root movement by fourth is always implied in speaking of root movement by fifth, only the term *root movement by fifth* is necessary to convey both meanings. The following procedures are useful in connecting any two triads whose roots *in the bass* are a fifth apart; here they are applied to the writing of the authentic cadence.

Of the several ways of connecting the dominant and tonic triads, two are so commonly used that we will term them conventional. They can be applied in both major and minor keys.

First Procedure The first procedure is based on the assumption that if any two chords have a note (or notes) in common, it is best to carry that tone in the same voice into the next chord. G B D and C E G have a common tone, G. Holding G in the same voice allows the other two voices to move by step, the smoothest possible movement.

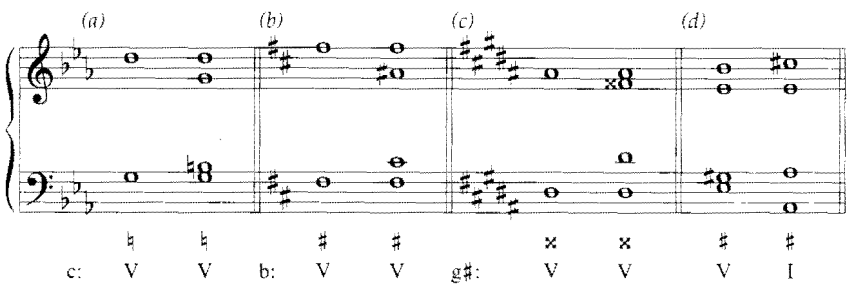
FIGURE 5.16



In a minor key, the third of V is ♯$\hat{7}$ (g: V = D F♯ A). To indicate this in a part-writing exercise, we use a figured bass symbol (review page 31), a ♯, ♮, or × below the staff, indicating that the third above the bass note is to be raised one half step (Figure 5.17*a–c*).

The Picardy third can be indicated in the same way (Figure 5.17*d*).

FIGURE 5.17



Examples of this first procedure from music compositions can be seen in cadences from earlier examples: the perfect authentic cadence in Assignment 4.3 (1), page 68; the imperfect authentic cadence in Figure 4.8*a*, page 67); and the half cadence in Figure 4.3, measure 2, page 62.

Second Procedure What if the common tone cannot be held? This predicament, as illustrated in Figure 5.18*a* in which I is left without a third, calls for another procedure: Move the three upper voices in the same direction (similar motion) to the nearest tones of the next triad. Note that when the soprano descends, the leading tone also descends to make the following triad complete (Figure 5.18*b* and *d* and Figure 5.19).

FIGURE 5.18

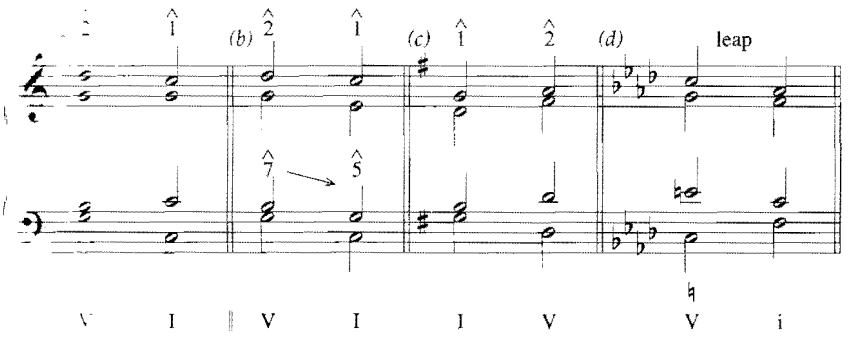
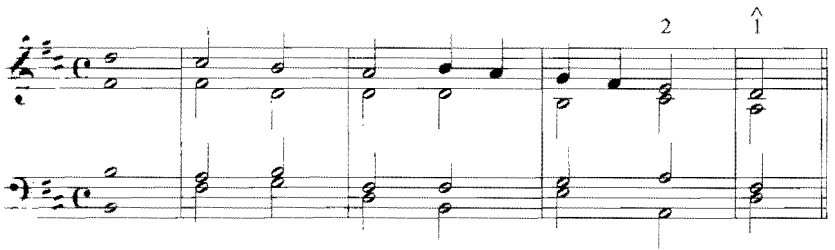
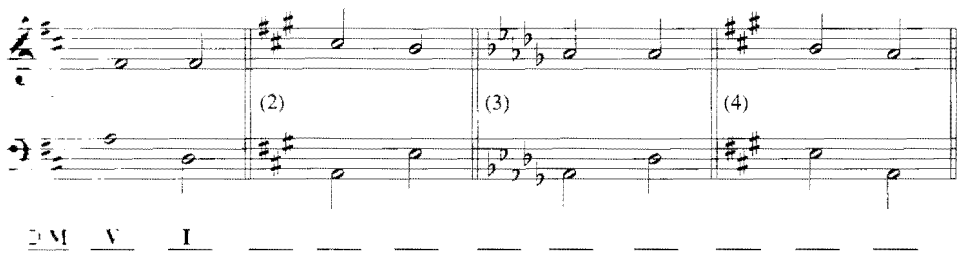


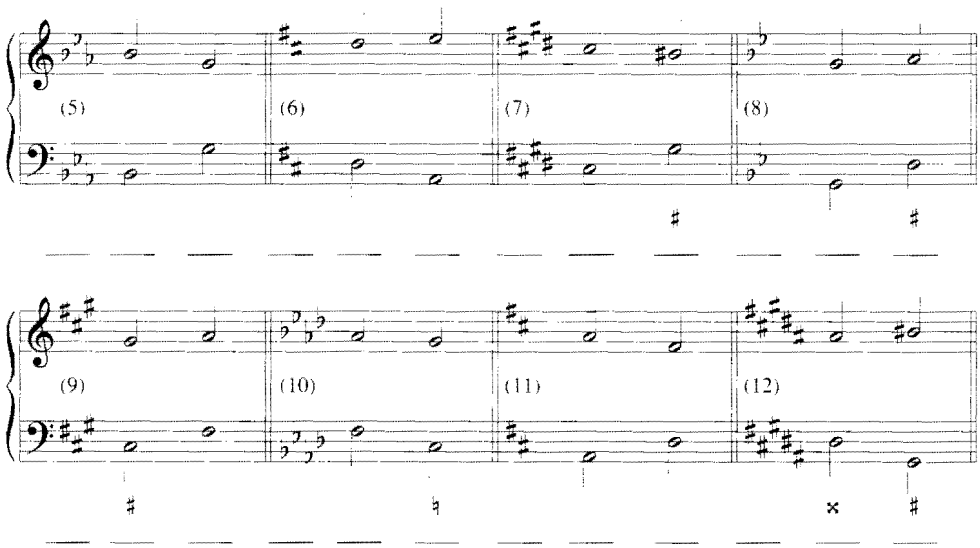
FIGURE 5.19

Martin Luther, "Ein' feste Burg"



ASSIGNMENT 5.4 *Writing authentic cadences.* Fill in alto and tenor voices, using open or close position as appropriate (some can be written either way). Examples of both procedures are included. Use the first procedure unless the soprano line moves 2–1, or by leap. In the three lines under each example, write the name of the key (major or minor) and the roman numeral for each triad.



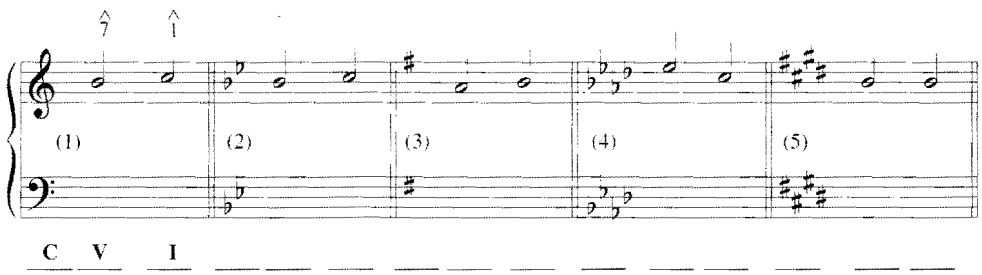


In Appendix E: Answers to (1)–(3) are given.
In the Workbook: Do Assignment 5.4a. Answers are given.

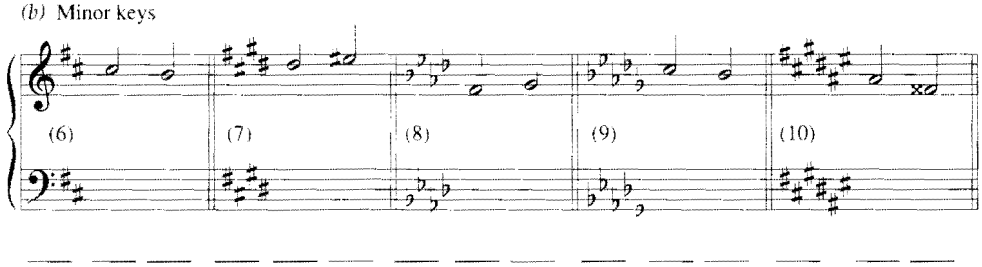
ASSIGNMENT 5.5 *Writing authentic cadences with only the soprano given.* Follow these steps:

1. Identify the key.
2. Write the scale-step numbers above each soprano line—for example, $\hat{2}$–$\hat{3}$.
3. In the three lines under each example, write the name of the key and the roman numeral for each triad.
4. Write first the bass line, then the inner voices.

(a) Major keys



(b) Minor keys



Alternative Procedures (1) In a final cadence, the leading tone in V may rise in any circumstance. The result is often an incomplete triad, three roots and one third (Figures 5.20 and 5.21).

(2) In any place in a phrase, the third of V may skip by the interval P4 to the third of I, or the reverse; the remaining voice is stationary. This skip usually appears in the soprano or tenor voice. Each triad includes all notes of the triad. The procedure is an effective way to change from open to close position or vice versa (Figure 5.22).

FIGURE 5.20

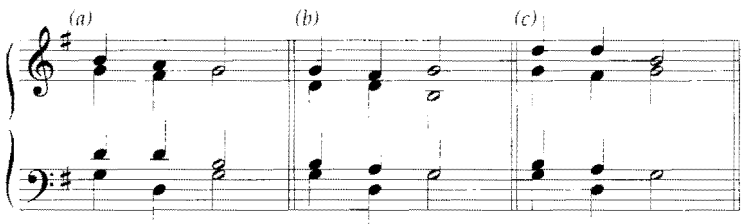


FIGURE 5.21

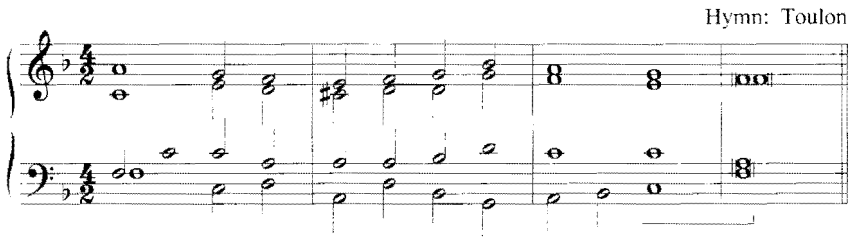
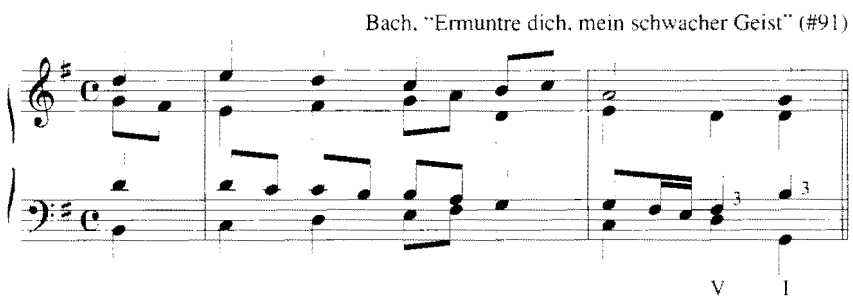
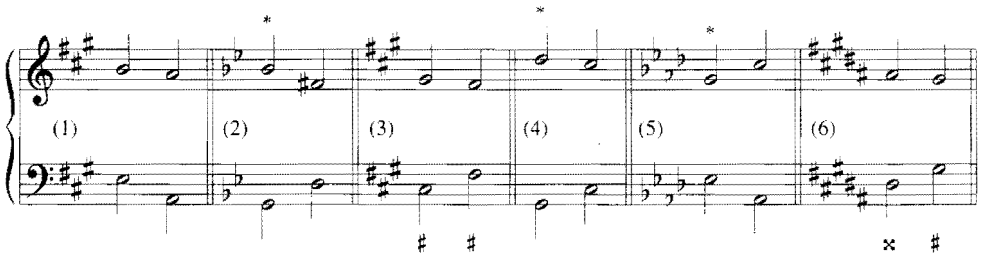


FIGURE 5.22



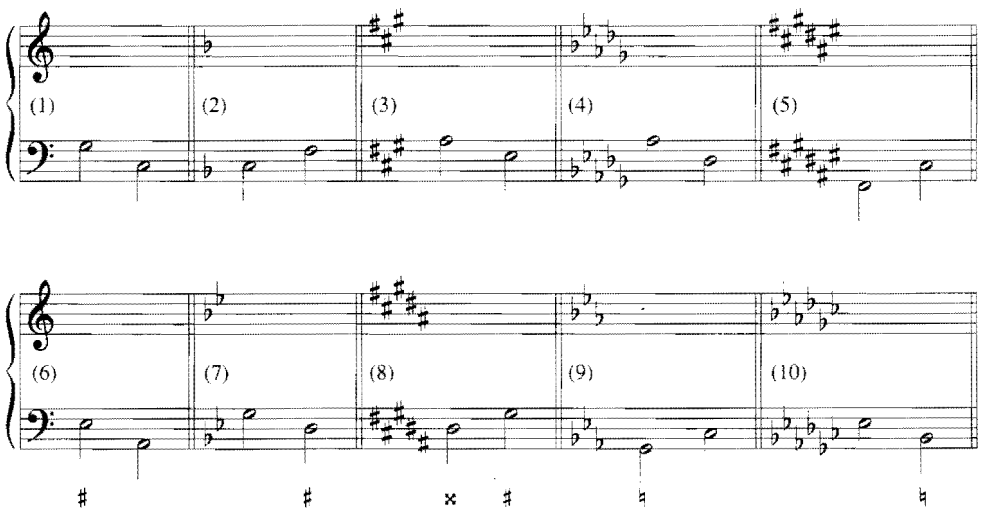
ASSIGNMENT 5.6 *Writing authentic cadences using the two alternative procedures just described.* In the examples indicated by an asterisk(*), use the "third-to-third" skip as in Figure 5.22. In all others, triple the root in the final tonic triad. Add a passing seventh in the V triad if you wish. (Review Figure 4.13 and preceding comment.)



In the Workbook: Answers to the entire assignment are given.

ASSIGNMENT 5.7 *Writing the cadence, bass line only given.* Your choice of a soprano note will determine which part-writing procedure to follow. Demonstrate at least one each of these:

1. The common tone
2. Similar motion in the three upper voices
3. The tripled root in I (i)
4. The "third-to-third" cadence of Figure 5.22

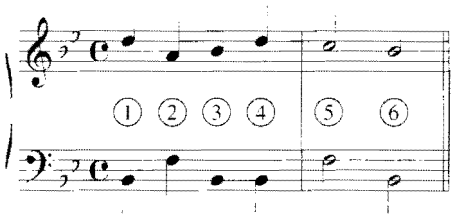


In the Workbook: Answers to the entire assignment are given.

Part-Writing in Phrase Lengths

The part-writing procedures for cadences can be used just as effectively in a phrase-length series of tonic and dominant triads. Figure 5.23 shows such a phrase; Figure 5.24 shows the solution.

FIGURE 5.23 *Extended Part-Writing Problem*



Here is how it can be done:

First triad: Better to start in open position to avoid high tenor note.

Triads 1–2: Here is the "third-to-third" movement, this time in the soprano. Part-writing is the same as in the cadence of Figure 5.22.

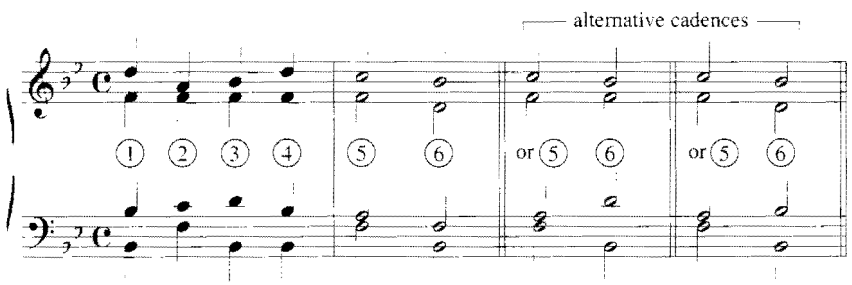
Triads 2–3: Easy common-tone progression.

Triads 3–4: Close to open, or open to close? The range of the tenor voice is the main consideration.

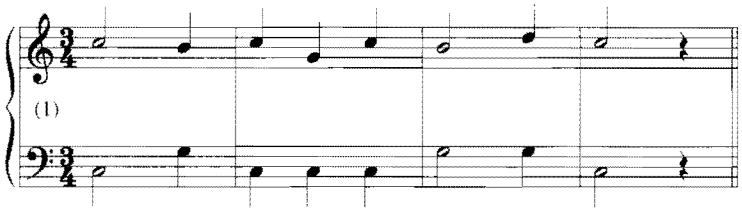
Triads 4–5: Easy common-tone progression again.

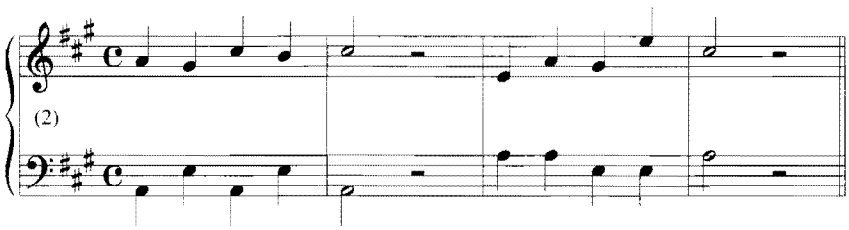
Triads 5–6: Use any of three different cadences. All are shown in Figure 5.24.

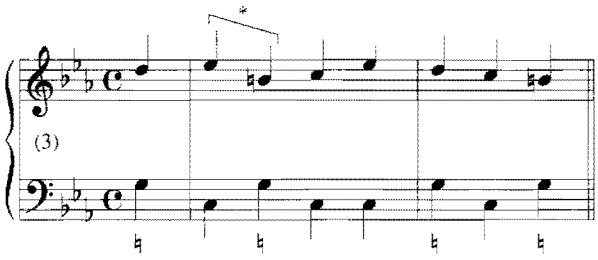
FIGURE 5.24 *Solution of Figure 5.23*



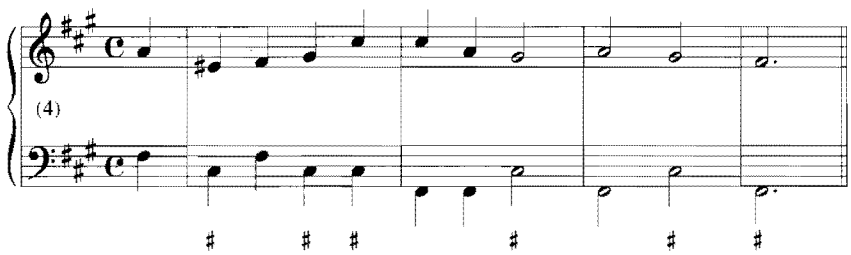
ASSIGNMENT 5.8 *Writing extended exercises.* Place triad numbers below the staff.







*What is this interval?



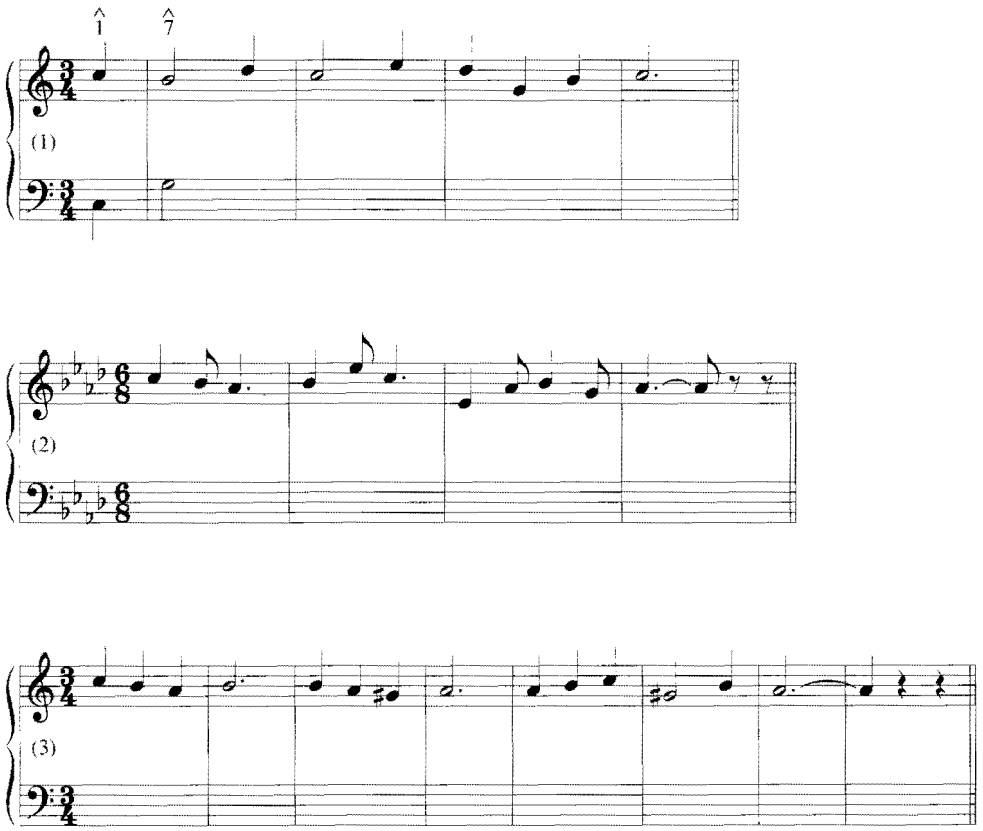
In Appendix E: The answer to (1) is given.

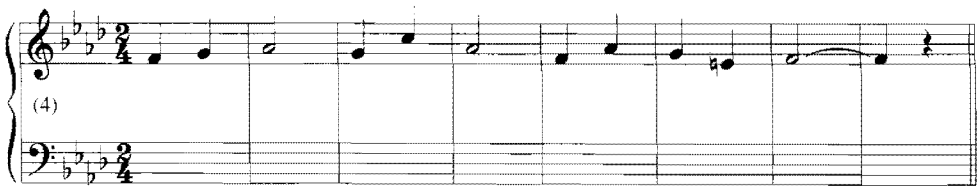
Harmonizing a Melody

Here are a few melodies, each note of which can be harmonized with a tonic or dominant triad. Any two successive notes will suggest either a repeated triad or one of the V–I or I–V progressions. (For example, $\hat{7} - \hat{1}$ anywhere in the melody is harmonized the same as the perfect authentic $\hat{7} - \hat{1}$ cadence.)

1. Determine the scale-step numbers. In Assignment 5.9 (1), the first two notes (C–B) are $\hat{1}$–$\hat{7}$ in C, the same as the half cadence $\hat{1}$–$\hat{7}$, harmonized as I–V.
2. Place the root of the triad in the bass clef exactly below the soprano note. In (1) of Assignment 5.9, the first two bass notes are C (for C E G) and G (for G B D).
3. Write triad numbers below the staff.
4. Fill in the inner voices, just as in previous exercises.

ASSIGNMENT 5.9 *Melody harmonization.*



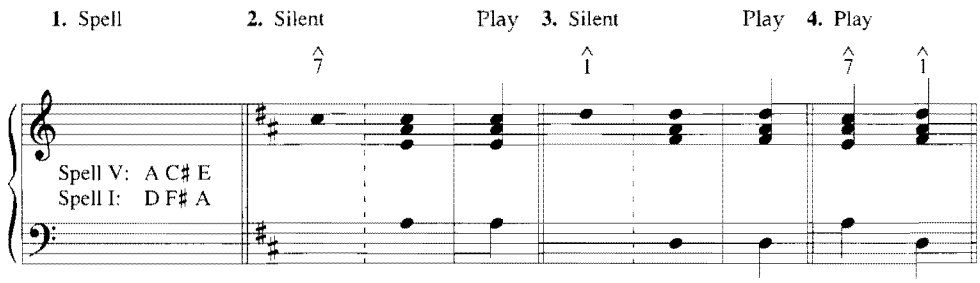


Keyboard Harmony

Authentic Cadences You have already played single triads at the keyboard. To play a cadence, simply play two triads in succession, the choice of triads and position determined by the type of cadence and the soprano line. For example, play a perfect authentic cadence in D major, soprano line $\hat{7}$–$\hat{1}$.

1. Spell the dominant and tonic triads.
2. Locate $\hat{7}$ of D major (C♯) on the piano; locate lower notes of the V triad (right hand, A, E; left hand, A). Play the triad.
3. Locate $\hat{1}$ of D major (D) on the piano; locate lower notes of the I triad. Play the triad.
4. Play the V–I progression.

FIGURE 5.25



When close position is used in the right hand, part-writing procedures will always be acceptable, and at the same time the cadence can easily be played. Playing two notes in each hand, open position, is also acceptable but is slightly more difficult.

ASSIGNMENT 5.10 *Playing cadences.* In practicing the following cadences, use the circle of fifths, starting at any key and progressing around the circle until you arrive at the starting key. In minor keys, consider each I as i and each $\hat{7}$ as ♯$\hat{7}$.

(a) Play the perfect authentic cadences:

Major:	$\hat{2}$ $\hat{1}$	$\hat{7}$ $\hat{1}$
	V – I	V – I

(b) Play the imperfect authentic cadences:

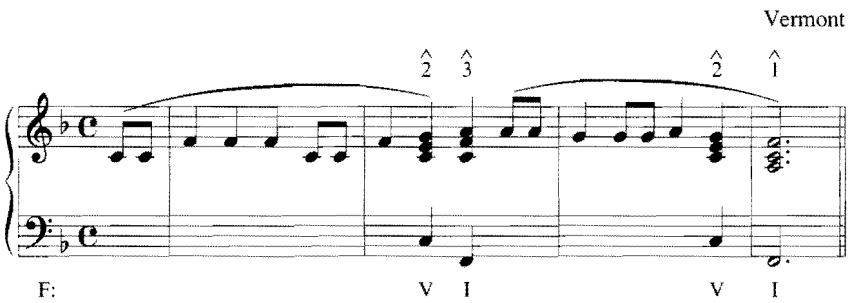
Major:	$\hat{2}\ \hat{3}$	$\hat{5}\ \hat{5}$	$\hat{5}\ \hat{3}$
	V – I	V – I	V – I

(c) Play the half cadences:

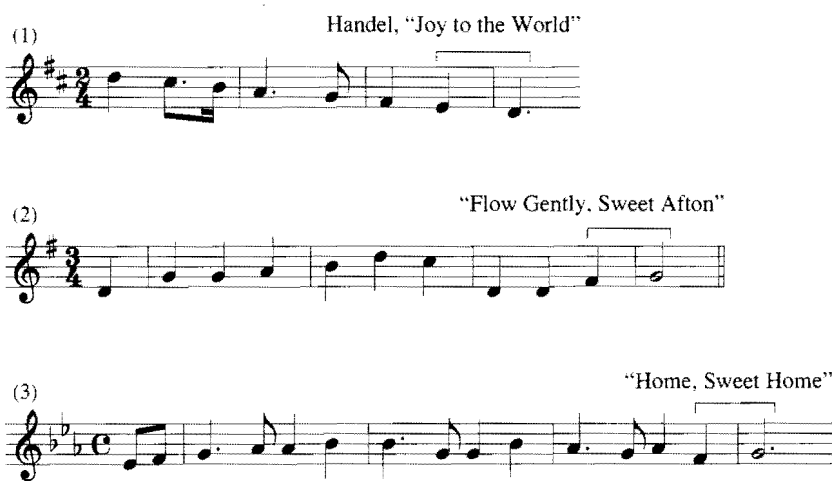
Major:	$\hat{1}\ \hat{7}$	$\hat{1}\ \hat{2}$	$\hat{3}\ \hat{2}$	$\hat{5}\ \hat{5}$
	I – V	I – V	I – V	I – V

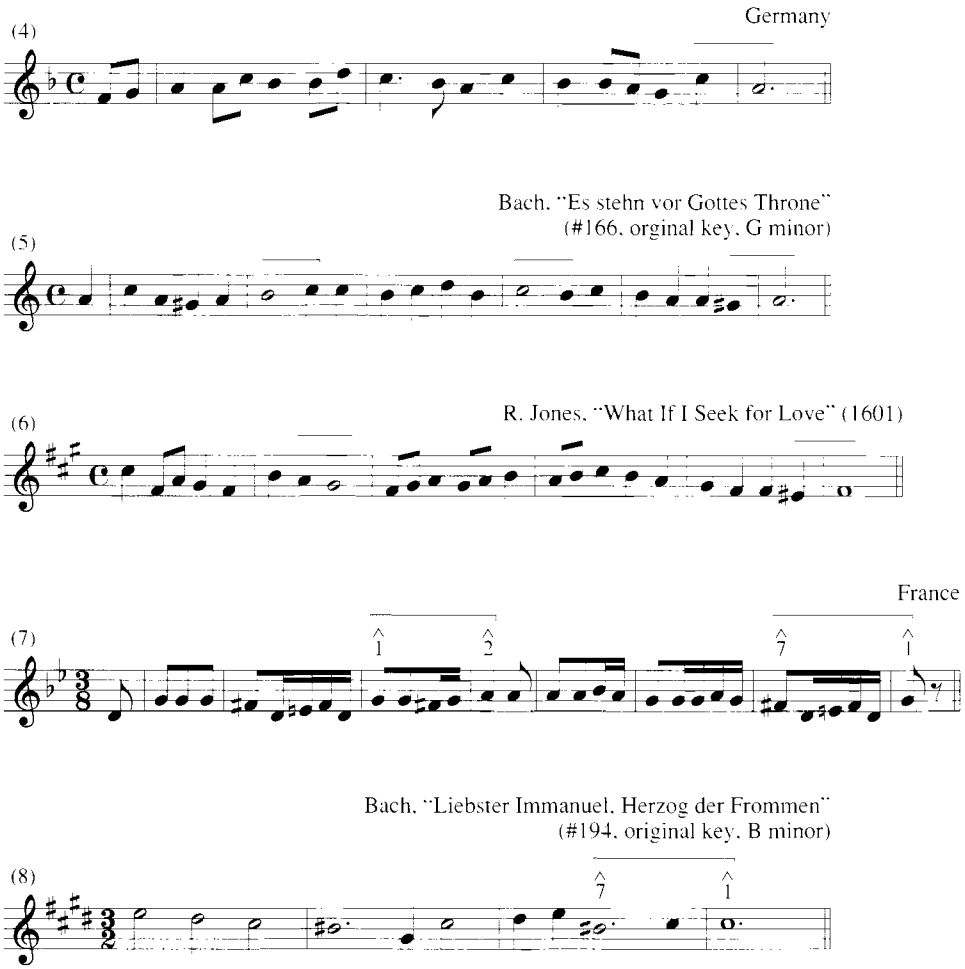
Harmonizing Melodic Cadences As a first step in learning to harmonize an entire melody, we will learn to harmonize melodic cadences with harmonic authentic cadences. In Figure 5.26, we see two motives from a folk song with the melodic cadences $\hat{2}$–$\hat{3}$ and $\hat{2}$–$\hat{1}$. These can be harmonized with an imperfect authentic cadence and a perfect authentic cadence, respectively.

FIGURE 5.26



ASSIGNMENT 5.11 Play these tunes (phrases from chorales and from well-known melodies) and supply a harmonic cadence at the point of the melodic cadence, as in Figure 5.26.



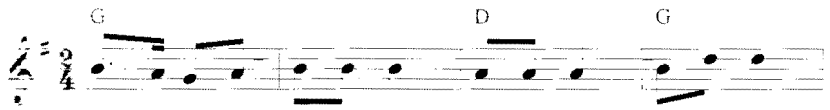


Melody Harmonization Using Lead Sheet Symbols

Music literature contains a vast amount of melodic material that can be harmonized using only I and V. Before asking you to choose *and* play a complete harmonization, we will ease you into this skill through the use of the *lead sheet* or *fake sheet.* This type of melodic presentation is found in most of the current series of public-school music textbooks. "Fake books" are well known in the popular music field; in these the performer improvises upon the given tune and its accompanying letter-name symbols.

In the simple nursery tune in Figure 5.27, the letter name of the root of each chord is used instead of the chord number. (You could have quickly figured out this harmonization, but the tune illustrates the point clearly.)

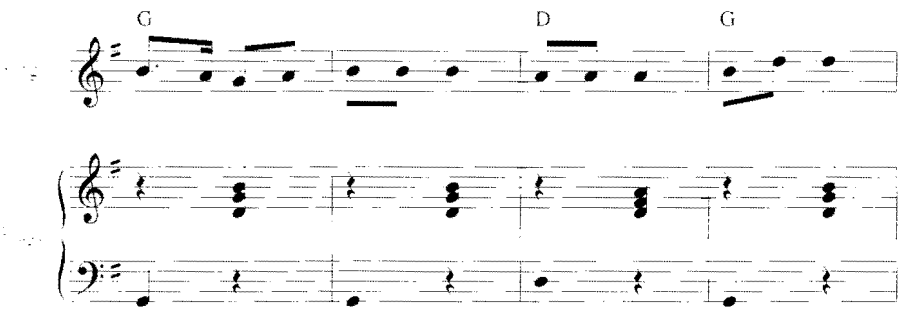
FIGURE 5.27 *Lead Sheet Symbols*



Of the many possible modes of performing a lead sheet, the following two are the simplest and at the same time yield musical results.

Playing an Accompaniment Only When someone else performs the tune, or when singing or whistle the tune yourself, use a simple "oom-pah" style: Play the root in the left hand on the strong beat and play the triad in the right hand on the weak beat (the second and third beats in triple meter).

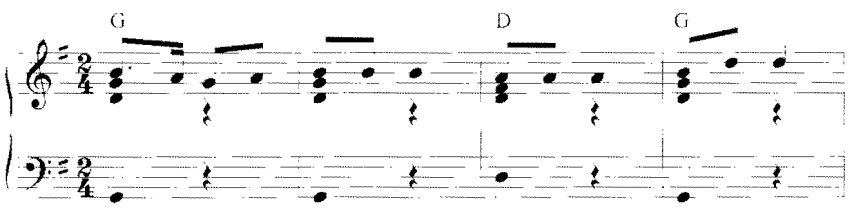
FIGURE 5.28



After the first triad is played, triads that follow should be connected by using the part-writing procedures already learned. Note that in going from measure 2 to measure 3 (I to V), the common tone was held.

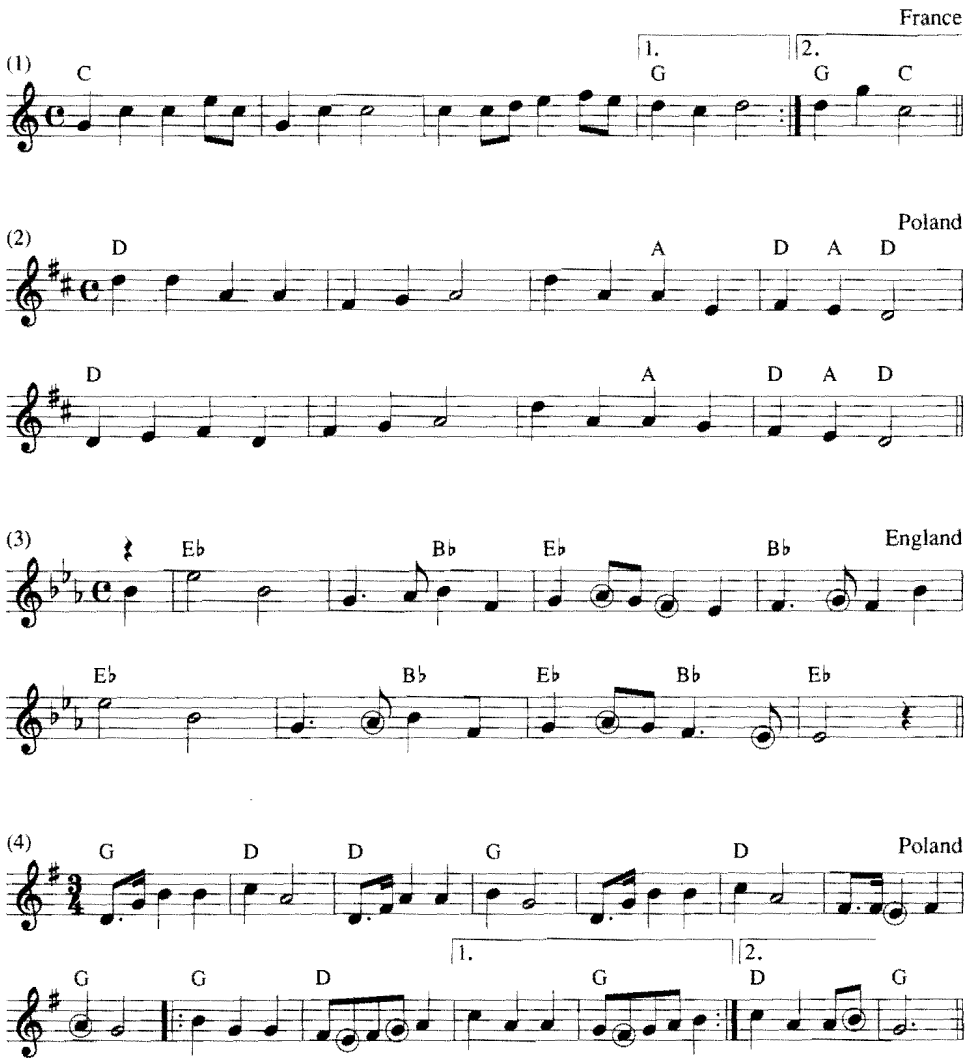
Playing Melody and Accompaniment Together Play the given chord on the downbeat, three notes in the right hand and one in the left hand, with the melody note being the highest note in the chord. Play a chord again (1) after a bar line (measures 1–2) or (2) at the point a new chord is required (measure 3). See "Note" on page 105.

FIGURE 5.29

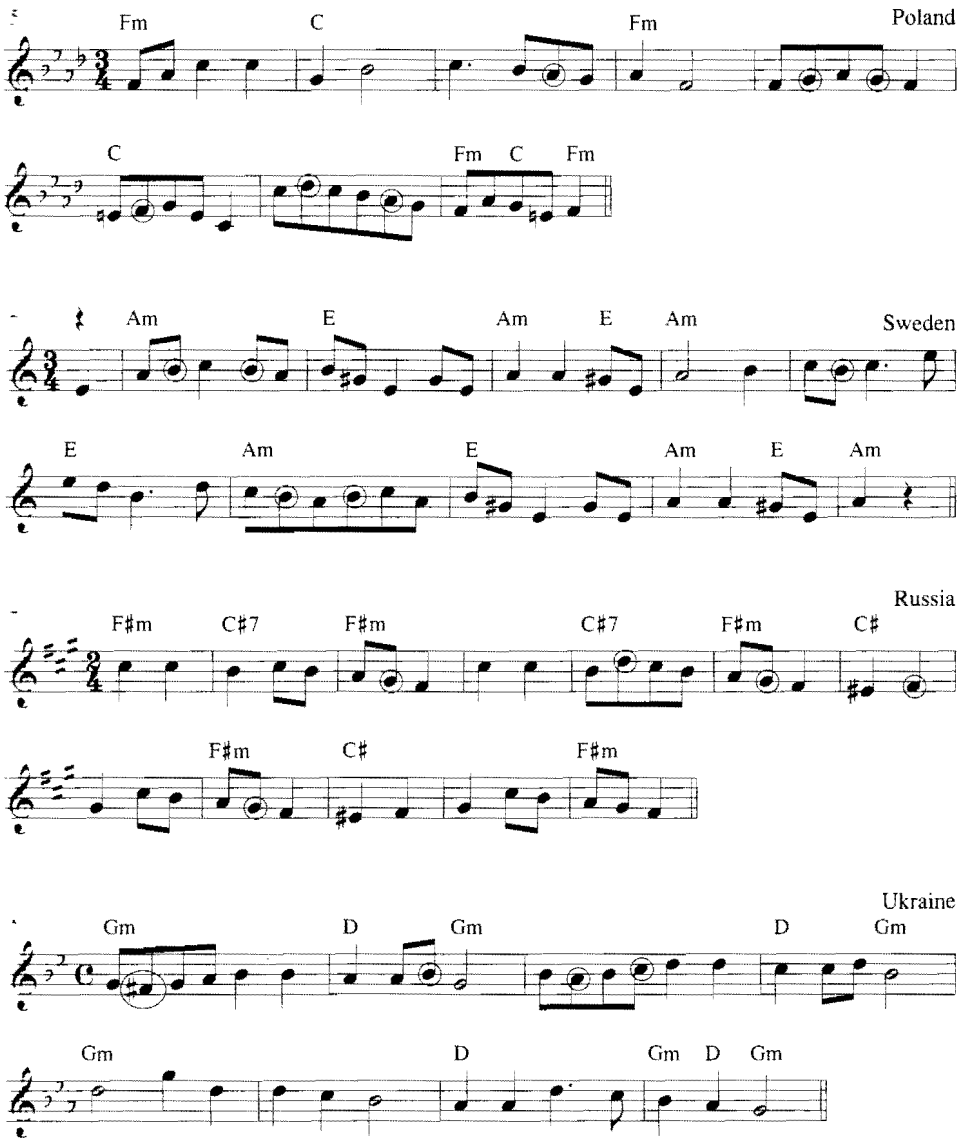


Practicing from lead sheets such as this will improve your keyboard facility, and careful observation of what you are doing will bring you insights into the reasons for harmonic choices and nonharmonic usages.

ASSIGNMENT 5.12 *Playing a harmonization from a lead sheet.* Circled notes are nonharmonic tones (review page 72).

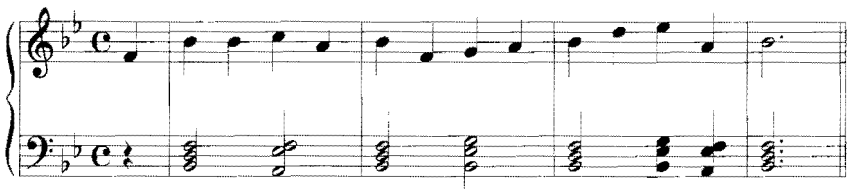


For a minor triad, "m" is added. Fm = F A♭ C.



Note: Playing chord progressions in melody harmonization is often taught the "easy" way, playing block triads with a minimum of finger movement in the left hand, leaving the right hand free to play the melody. This method works well enough in the study of tonic, dominant, and subdominant chords but becomes awkward and difficult in using the remaining harmonies. In addition, the left-hand sound is inferior and unprofessional: Musical voice leading is impossible, parallel octaves are frequent, and the sound of a cluster of notes in the bass range is usually harsh and unpleasant, as in this example.

FIGURE 5.30



Students needing instruction in playing chords only for nonprofessional purposes are referred to *Rudiments of Music*, third edition (Prentice Hall, 1995), Chapters 21 and 23, for a complete presentation of this method.

Summary

Part-writing is the art of achieving good melodic lines when connecting a series of chords.

Procedures used consistently by composers are said to be conventional, though these do not restrict the use of other ways of connecting chords.

These factors must be considered when writing a single triad: *voice range, doubling, triad position,* and *distance between voices.*

In *close position,* the three upper notes of a triad are as close together as possible. In *open position,* there is more than an octave between the soprano and tenor voices.

When a triad is repeated with a different soprano note, the position of the triad may change or remain the same, depending upon the musical context.

Conventional procedures for connecting the tonic and dominant triads are (1) hold the common tone and move the other voices stepwise, and (2) when the common tone cannot be held, move the three upper voices in similar motion.

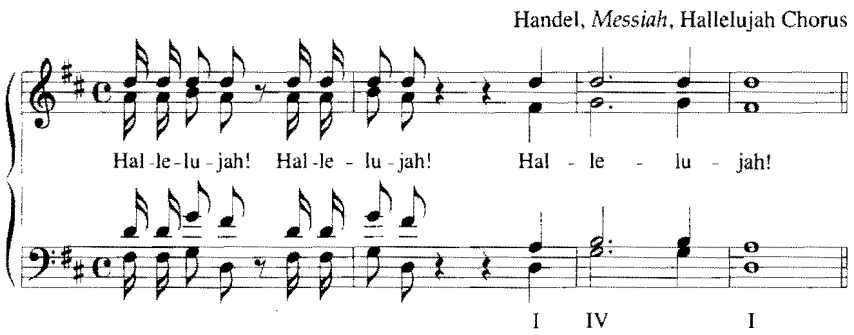
Other procedures to connect these two triads apply in special situations.

6

The Subdominant Triad

Upon completion of Chapter 5, either of Chapters 7 and 8, or both, may, if desired, be studied before or concurrently with this chapter.

FIGURE 6.1

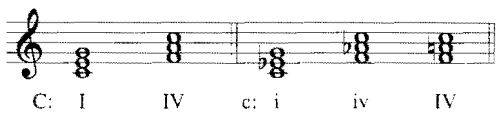


Who with any interest in music at all is not acquainted with this glorious conclusion to the Hallelujah Chorus? Most of the work's many "hallelujahs" are set to the progression I–IV–I, ending with the stately plagal (IV–I) cadence above.

Spelling the Subdominant Triad

The subdominant triad has its root on the fourth (subdominant) scale step of the key. In a major key, the triad is a major triad. In a minor key, the subdominant triad is usually minor, but when melodic considerations require the use of the raised sixth scale step, it is major. (Use of the major subdominant triad in a minor key will be studied in Chapter 10.)

FIGURE 6.2



ASSIGNMENT 6.1 Spell the subdominant triad in each major key.

In the Workbook: Answers to the entire assignment are given.

ASSIGNMENT 6.2 *(a)* Spell the minor subdominant triad in each minor key.
(b) Spell the major subdominant triad in each minor key.

In the Workbook: Answers to the entire assignment are given.

Plagal Cadences

Like the dominant triad, the subdominant triad can occur during the course of the phrase and also as part of a cadential progression. Cadences using the subdominant and the tonic triads are known as *plagal cadences* and may be found in the same forms as authentic cadences. The plagal cadences are these:

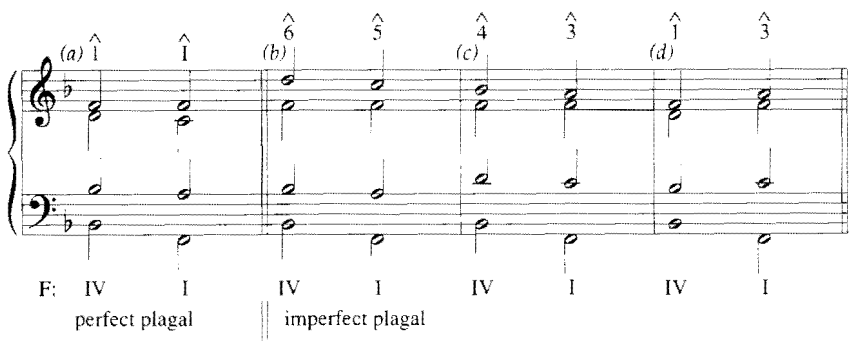
Perfect Plagal (PP) The progression IV–I or iv–i in which the subdominant triad has its root in the bass and the final tonic triad has its root in both bass and soprano (Figure 6.3*a;* see also Figures 6.1 and 6.4).

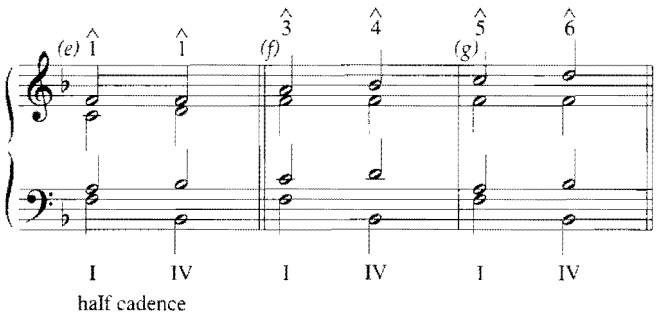
Imperfect Plagal (IP) The progression IV–I or iv–i in which the final tonic triad is found with its third or its fifth in the soprano. The commonly used soprano lines are $\hat{6}$–$\hat{5}$, $\hat{4}$–$\hat{3}$, and $\hat{1}$ up to $\hat{3}$ (Figure 6.3*b–d*).

Half Cadence (H) A little-used cadence, the progression I–IV or i–iv (Figure 6.3*e–g;* see also Figure 6.5).

If we replace the key signature of F major, one flat, with four flats, Figure 6.3 displays the same cadences in F minor.

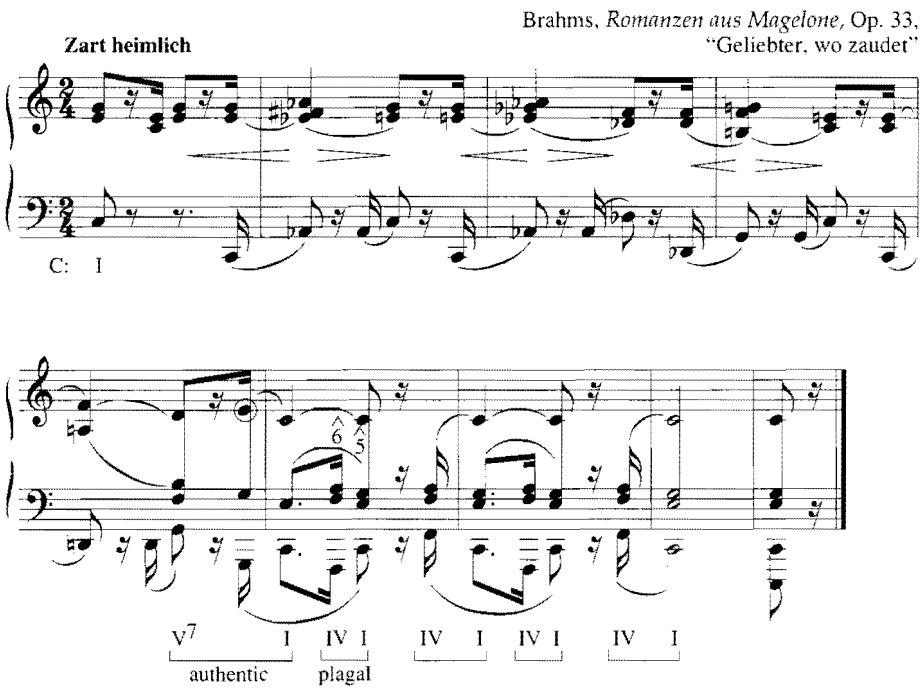
FIGURE 6.3 *Plagal Cadences*





Actually, plagal cadences are infrequent in music composition, usually following a V–I progression.[1] Figure 6.4 shows an extended perfect plagal cadence (soprano $\hat{6}$–$\hat{5}$) following V–I at the close of a *lied* (song) by Brahms.

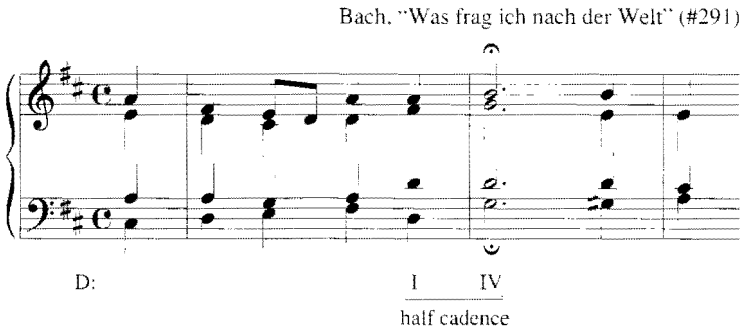
FIGURE 6.4



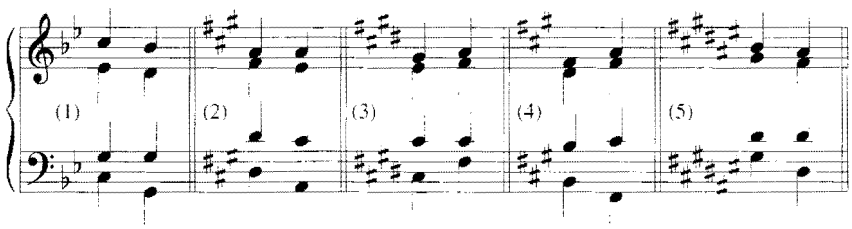
[1]A plagal cadence to the text "Amen" frequently concludes a hymn tune in the music of many religious denominations.

The uncommon half cadence may occur at the end of a phrase within the composition, as shown in Figure 6.5. You may also recall a similar cadence from the first phrase of "Auld Lang Syne" (". . . and never brought to mind?").

CD FIGURE 6.5 *Half Cadence, I–IV*



ASSIGNMENT 6.3 *Identifying plagal cadences.* For each cadence, name (1) the key (major or minor), (2) the cadence (PP, IP, or H), and (3) the scale steps in the soprano. For the cadence of Figure 6.1, the answers would be D, PP, $\hat{1}$–$\hat{1}$



In Appendix E: Answers to the entire assignment are given.

IV or iv in Other Progressions

The subdominant triad may progress freely to or from the tonic or the dominant, with the exception of V–IV, which is infrequently used. When the authentic cadence is preceded by IV or iv, the progression IV–V–I or iv–V–i is often known as a *full cadence*, shown in major in Figure 6.6 and in minor in Figure 6.7. (Do you remember the special name for the major cadential tonic triad in a minor key?)

FIGURE 6.6

Hymn: Toulon (Old 124th)

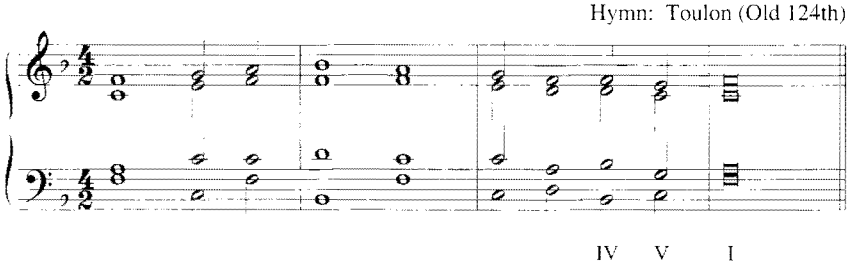
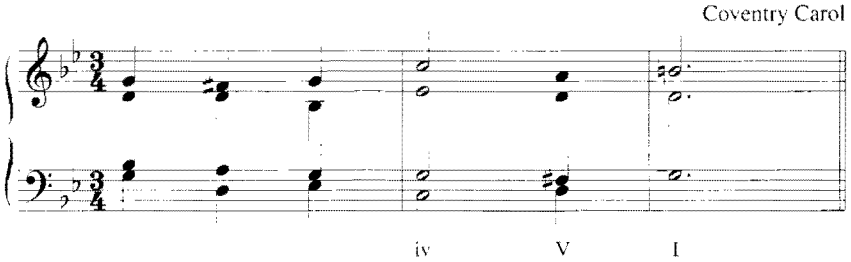


FIGURE 6.7

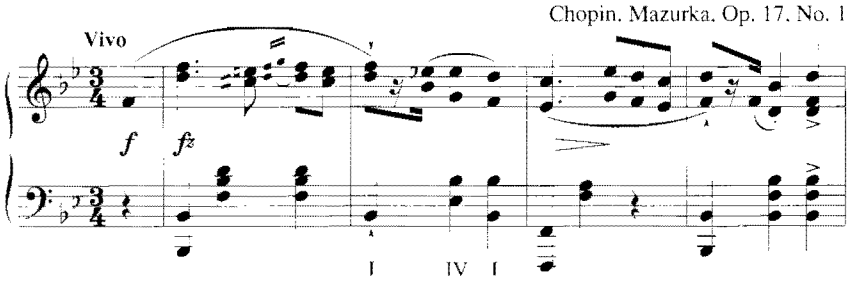
Coventry Carol



Any progression involving the subdominant triad can be used within the phrase, as in Figure 6.8, IV–I.

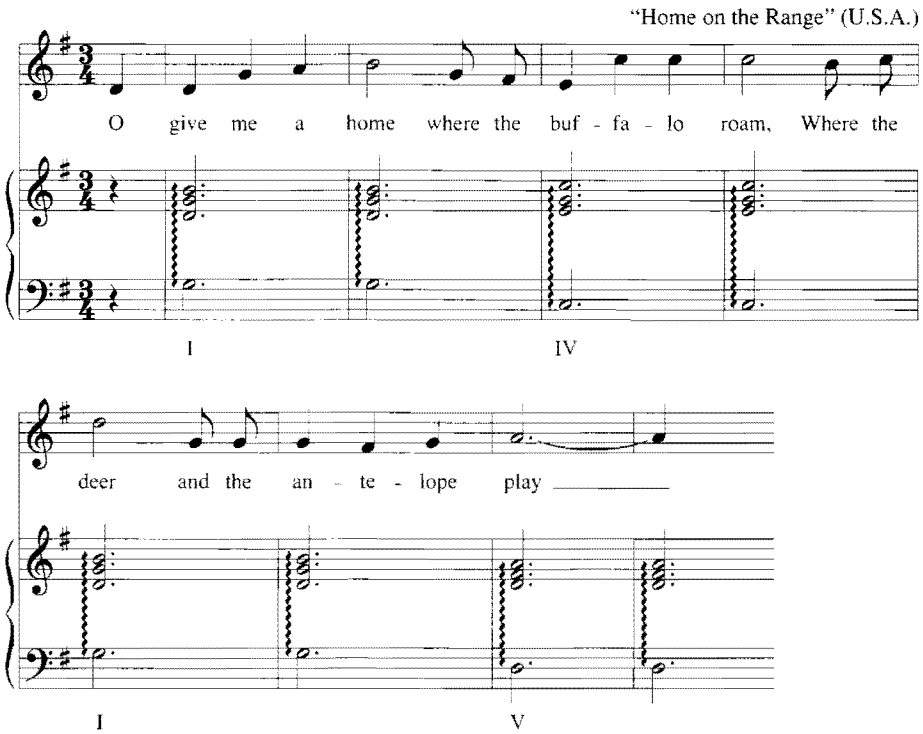
FIGURE 6.8

Chopin, Mazurka, Op. 17, No. 1



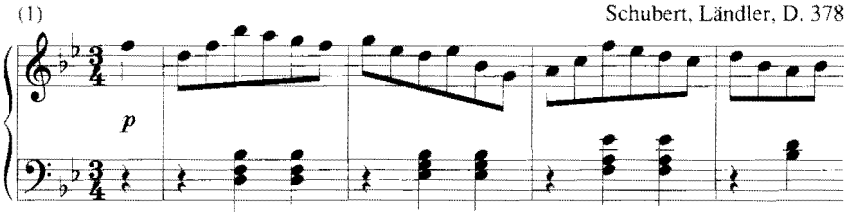
The tonic, dominant, and subdominant chords are widely used as the principal "guitar chords," especially for strumming along with a simple folk tune or with many of the country and western tunes of popular music.

CD FIGURE 6.9



ASSIGNMENT 6.4 *Harmonic analysis.* Analyze these excerpts using roman numeral symbols. Circle all nonharmonic tones.

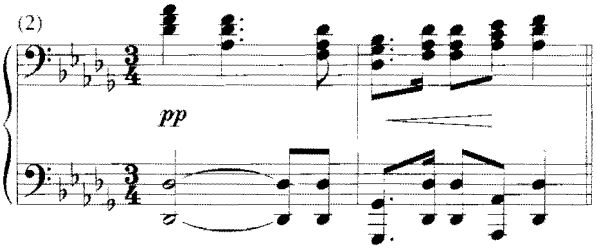
(1) Schubert, Ländler, D. 378



Wagner, *Das Rheingold,* Prelude to Scene 2

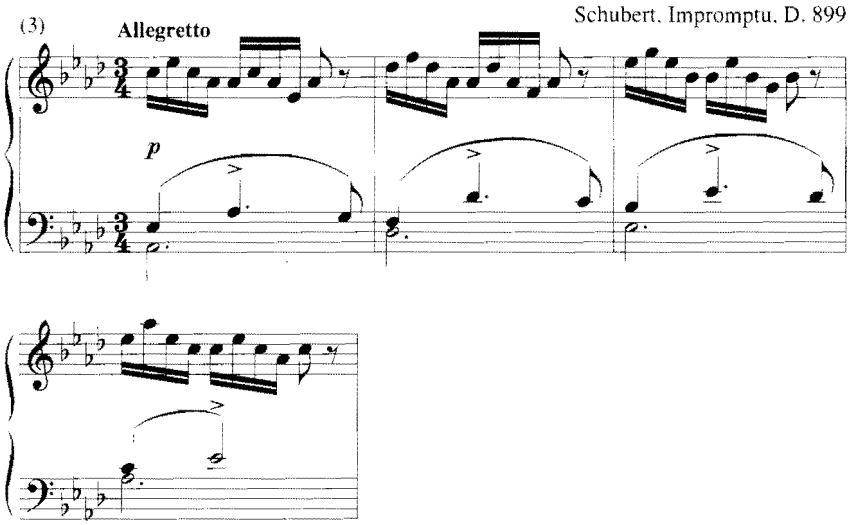
Ruhiges Zeitmass

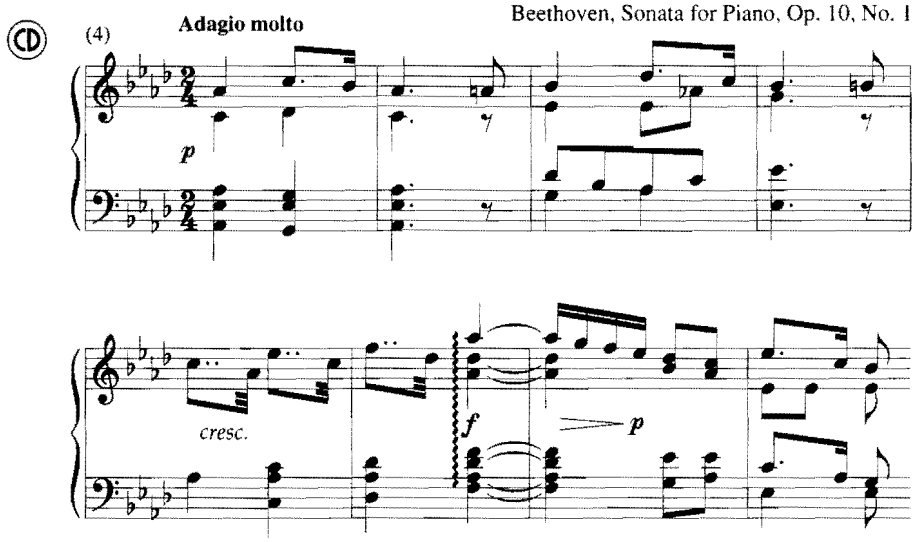
(2)

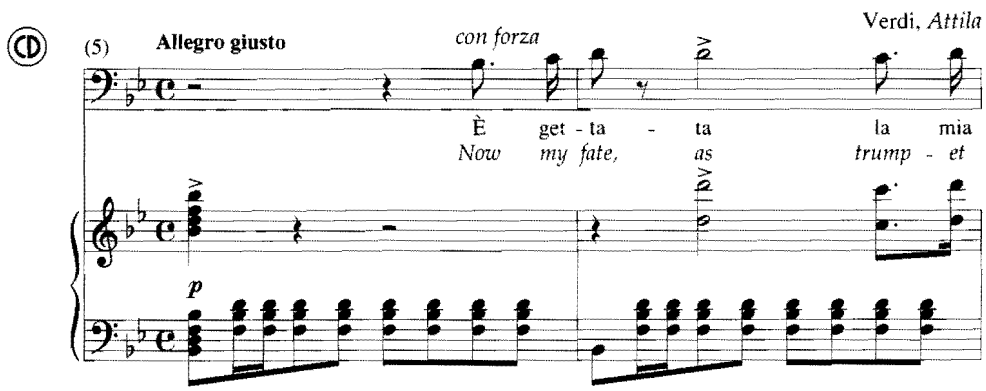


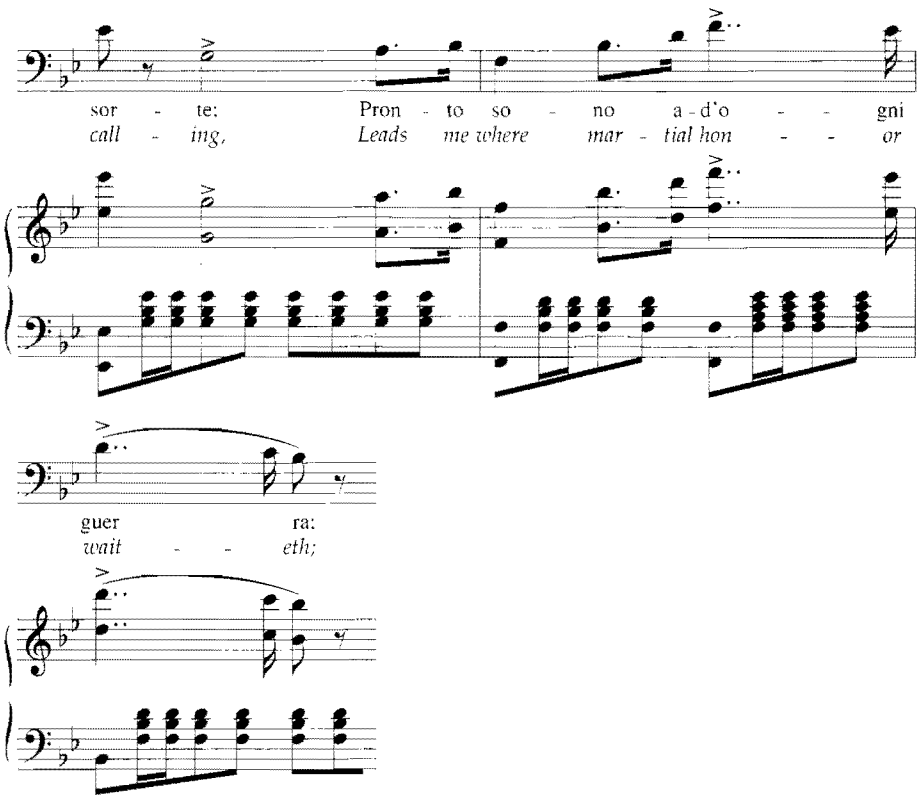
(3) Schubert, Impromptu, D. 899

Allegretto




(4)
Adagio molto
Beethoven, Sonata for Piano, Op. 10, No. 1
p
cresc.
f
p


(5)
Allegro giusto
con forza
Verdi, Attila
È get - ta - ta la mia
Now my fate, as trump - et
p

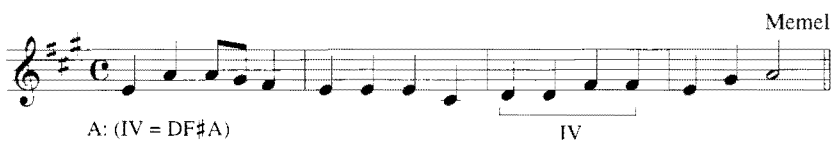


› *Appendix E: The answer to (1) is given.*

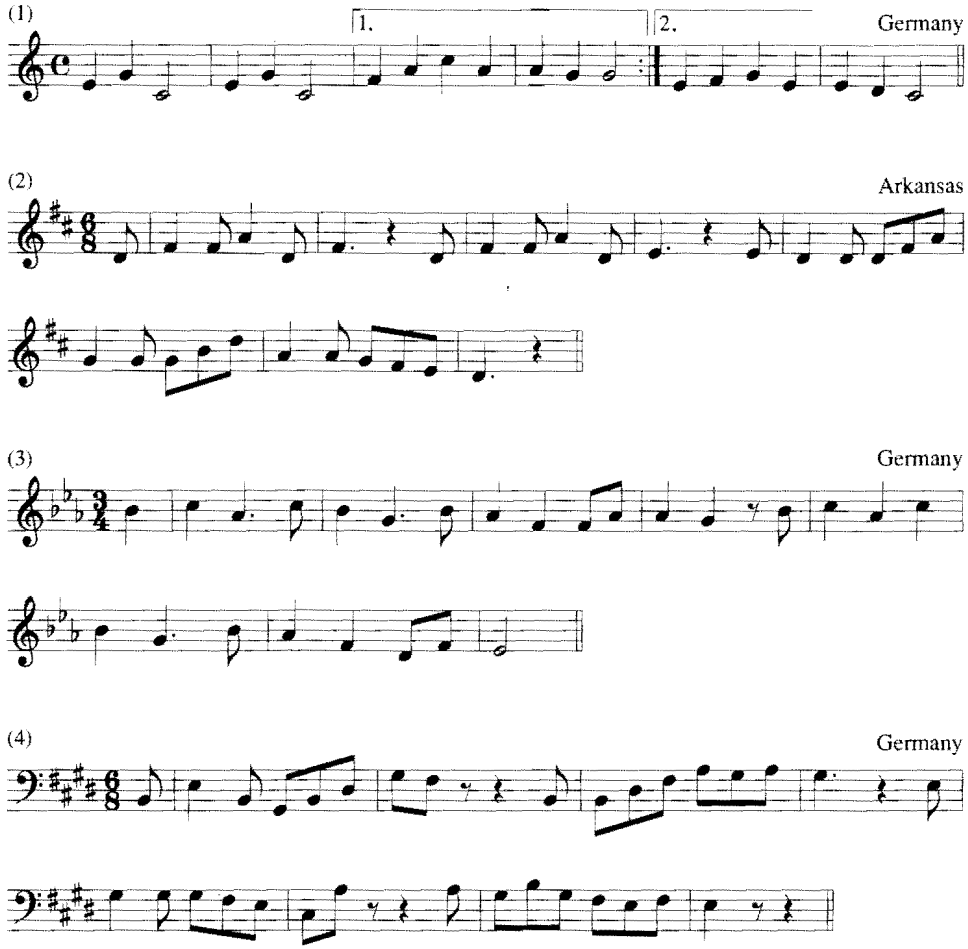
The Subdominant Triad in Melodic Writing

Intervals from the subdominant triad can be used effectively in melodic writing, although they are used less frequently than intervals from tonic and dominant triads.

FIGURE 6.10



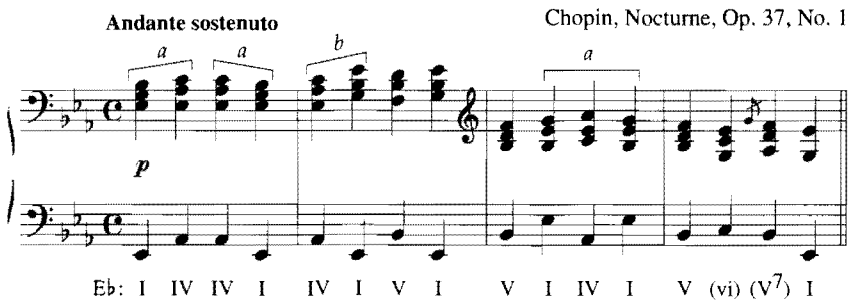
ASSIGNMENT 6.5 Locate and bracket intervals from the subdominant triad in these melodies, as in Figure 6.10.



Writing the Progression IV–I or iv–i

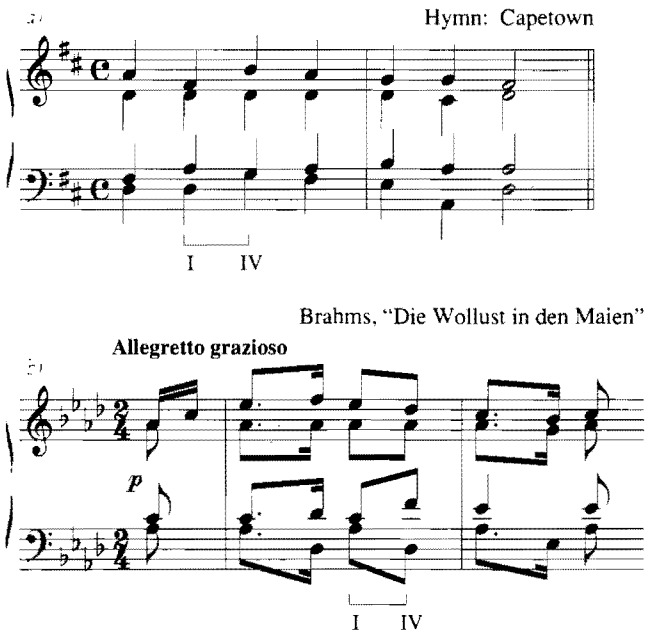
Since the roots of the IV and I triads are a fifth (fourth) apart, the part-writing procedures are the same as for V–I. In Figure 6.11, each pair marked *a* has a common tone; the pair marked *b* has none. Review these part-writing procedures as shown in Figure 6.3 and in Assignment 6.3.

FIGURE 6.11

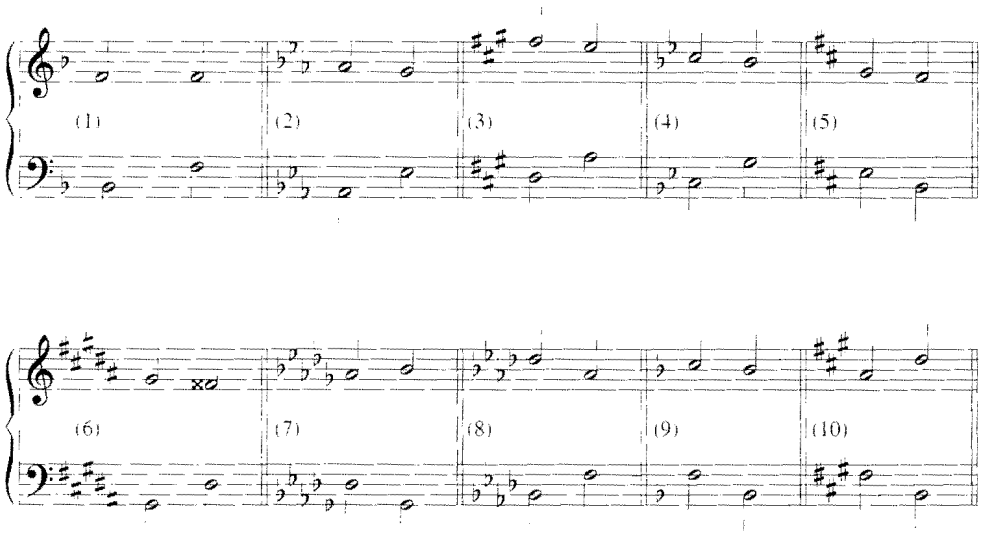


The "third-to-third" skip is not infrequent. Note the change of position in each I–IV progression when the skip is used: close to open in *a* and open to close in *b*.

FIGURE 6.12



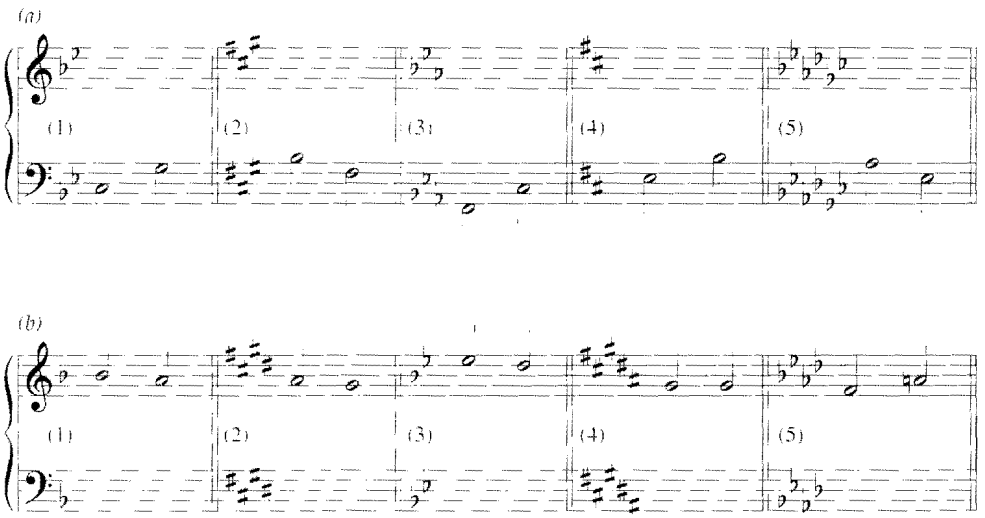
ASSIGNMENT 6.6 Write plagal cadences, (1)–(7), and progressions using the "third-to-third" skip, (8)–(10). Identify the cadences as PP, IP, or H. Place chord numbers below the staff.



ASSIGNMENT 6.7 Write plagal cadences when

(a) only the bass line is given. Include two PP cadences and one each of the IP cadences shown in Figure 6.3.

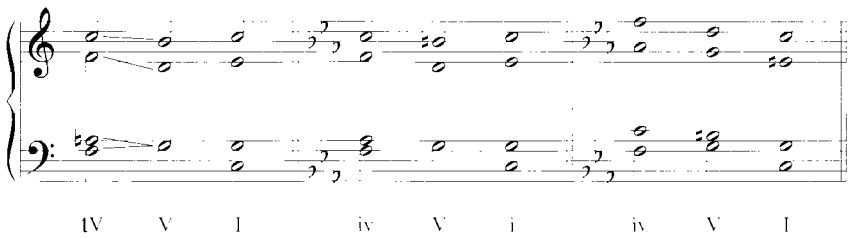
(b) only the soprano line is given. Be sure that each bass note is the root of a triad.



Writing the Progression IV–V (iv–V)

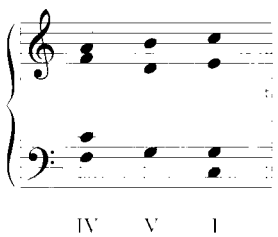
When the roots of two triads are a second apart, as in IV–V, no common tone is available. In the conventional procedure, each of the three upper voices moves to its nearest triad tone in contrary motion to the bass, as in Figure 6.13. Also review Figures 6.6 and 6.7

FIGURE 6.13



Did you notice in the preceding figures that the soprano note of IV (iv) always descends? The soprano may, of course, ascend; but in that case, the chord following is almost always vii°, a procedure to be studied in Chapter 10. There is one exception, very little used and available only for a IV (major) triad with its third in the soprano, as shown in Figure 6.14. The aural effect of parallel fifths is present, even though absent in the notation.

FIGURE 6.14



Parallel Fifths and Octaves; the Melodic Augmented Second

The heading of this section lists three weaknesses in part-writing that students almost always find frustrating. Since they can easily occur in the writing of triads with roots a second apart, they are first mentioned here, but they can occur in almost any part-writing problem. These are the three, shown in Figure 6.15:

1. Parallel perfect fifths
2. Parallel octaves
3. The melodic augmented second

FIGURE 6.15

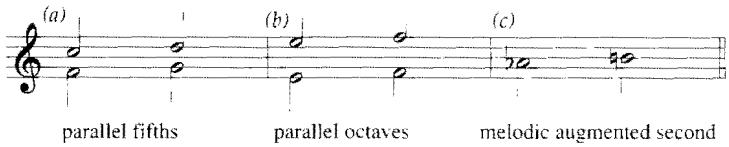
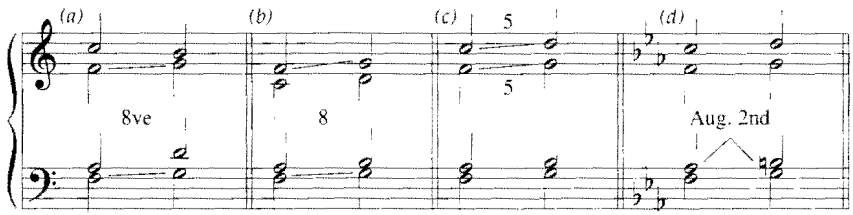


Figure 6.16 shows how easy it is to produce these errors when not using conventional procedures.

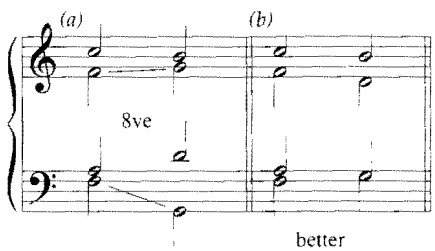
FIGURE 6.16



(Be sure to read Article #6, "The Three Demons of Part-Writing," in this chapter. Included is a discussion of why these procedures are objectionable.)

Any attempt to avoid parallel octaves by changing the direction of one of the two notes involved does not produce successful results. In Figure 6.17*a*, an attempt was made to avoid an octave by moving the bass down a minor seventh instead of up a major second. These are still parallel octaves, but they are called, in seemingly contradictory language, *parallel octaves by contrary motion*. There are, in our illustration, two F's going to two G's in the same pair of voices.

FIGURE 6.17



But there is an exception, as there usually is in part-writing! At the final cadence of a composition or at the end of one of its major sections, the soprano and bass commonly display the octave by contrary motion.

FIGURE 6.18

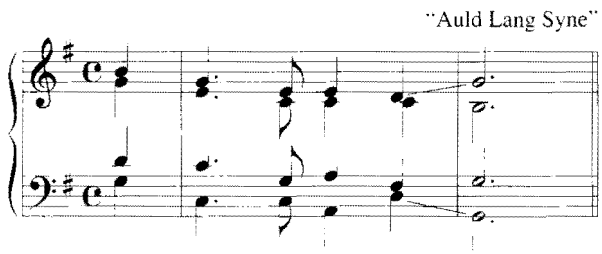
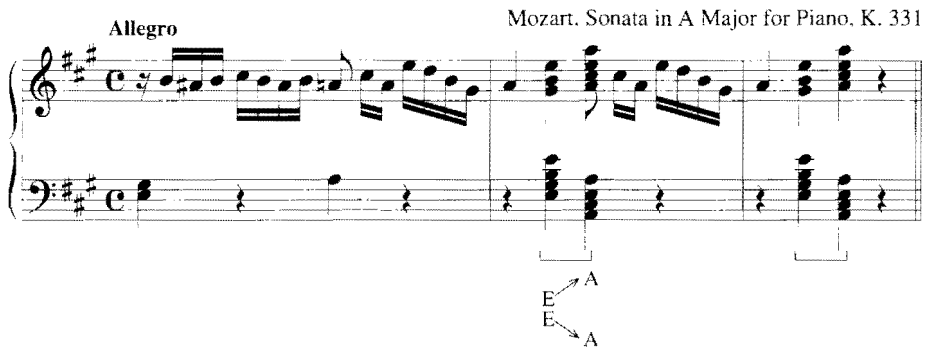
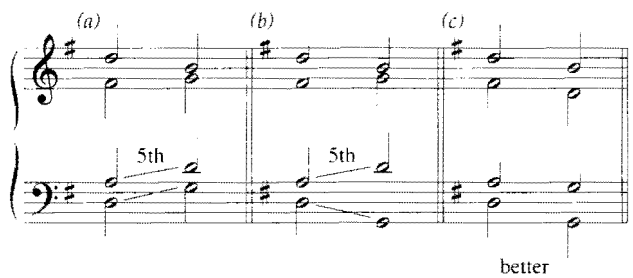


FIGURE 6.19



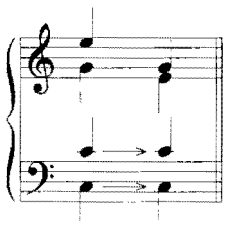
Parallel fifths by contrary motion are likewise to be avoided.

FIGURE 6.20



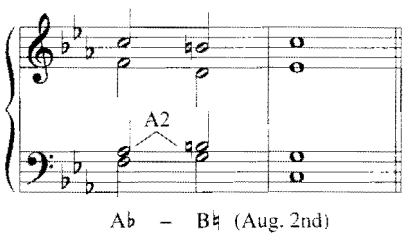
Note, however, that octaves or fifths repeated on the same pitches are *not* considered parallel; the use of these *stationary* octaves or fifths is acceptable.

FIGURE 6.21

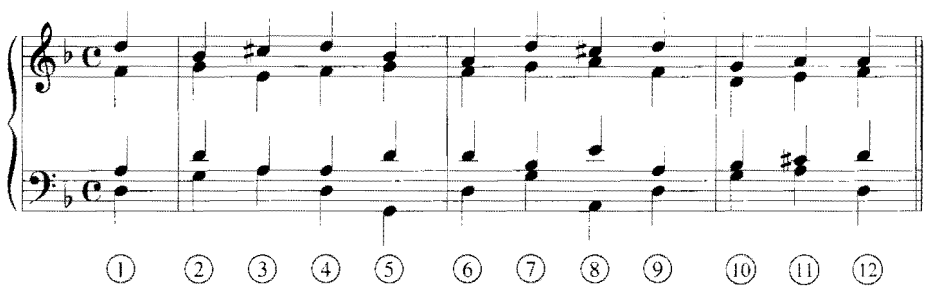


The melodic augmented second occurs in a minor key when one voice line progresses from ♭6̂ to ♯7̂, as in the tenor line of Figure 6.22. Notice also that the movement of the tenor has produced an unwanted doubled leading tone.

FIGURE 6.22



ASSIGNMENT 6.8 The following harmonization is full of these offending practices. How many can you find? Compare your answers with the list below.

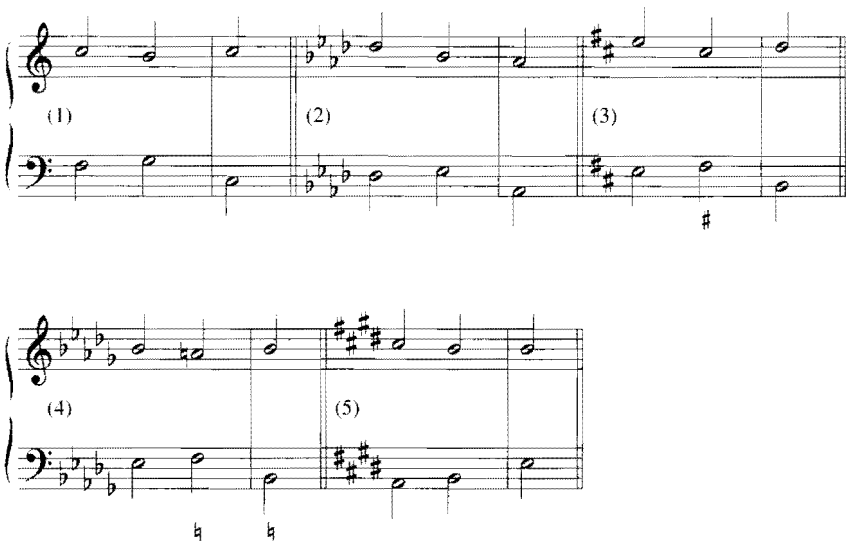


1–2 Fifths, tenor and bass
2–3 Augmented second, soprano
4–5 Fifths by contrary motion, tenor and bass
6–7 Fifths, soprano and bass
7–8 Octaves by contrary motion, alto and bass

8–9 Fifths by contrary motion, tenor and bass
9–10 Octaves by contrary motion, soprano and bass
10–11 Three! Octaves, fifths, and augmented second

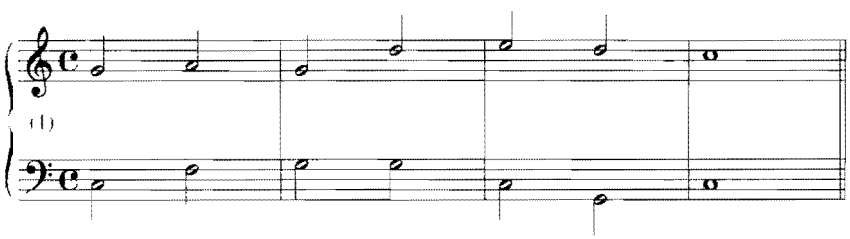
Use of conventional procedures will usually avoid such errors. This is not to say that only conventional procedures should be used. With the study of inversions and nonharmonic tones, we will have the opportunity for much more freedom in part-writing. But still, it is always best to try the conventional ways first.

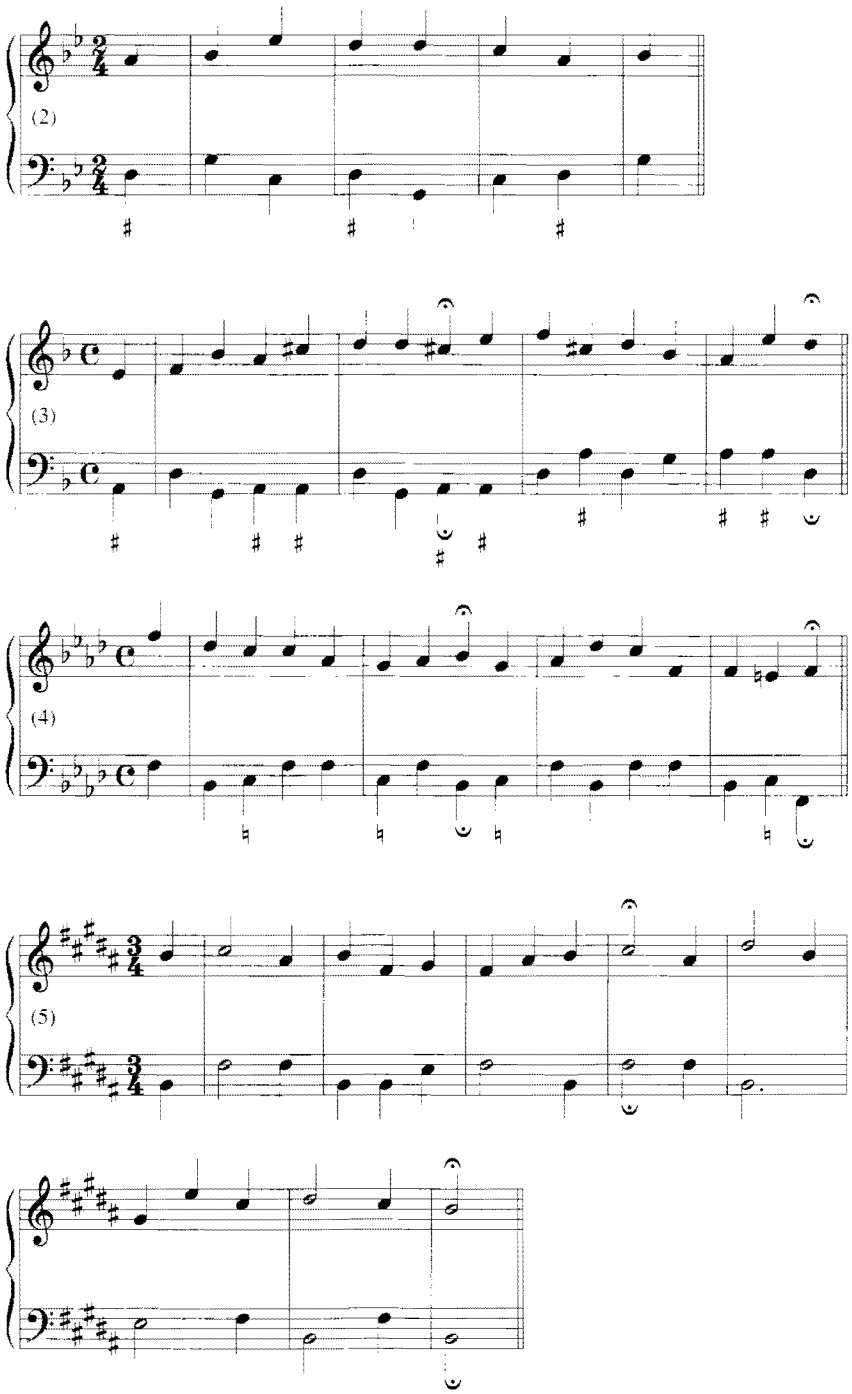
ASSIGNMENT 6.9 Write cadences as found below. Write chord numbers below the staff.



In the Workbook: Answers to the entire assignment are given.

ASSIGNMENT 6.10 Fill in alto and tenor voices using part-writing procedures studied thus far. Make harmonic analysis by placing the correct roman numeral below each bass note.



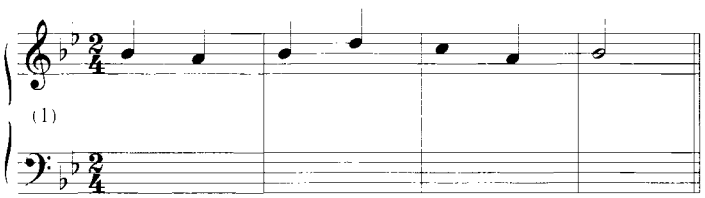


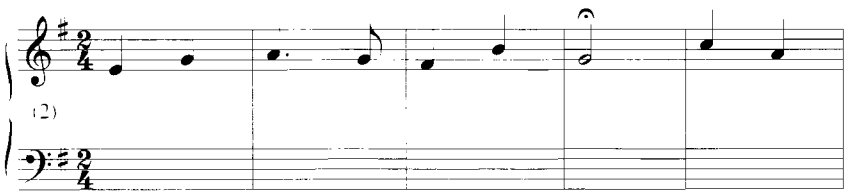
In Appendix E: The answer to (2) is given.

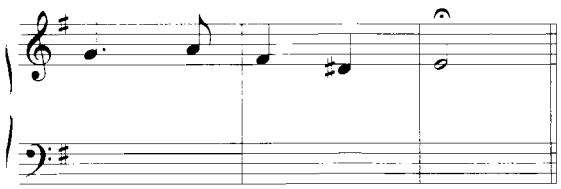
ASSIGNMENT 6.11 Harmonize melodies, supplying the alto, tenor, and bass parts. Follow this procedure:

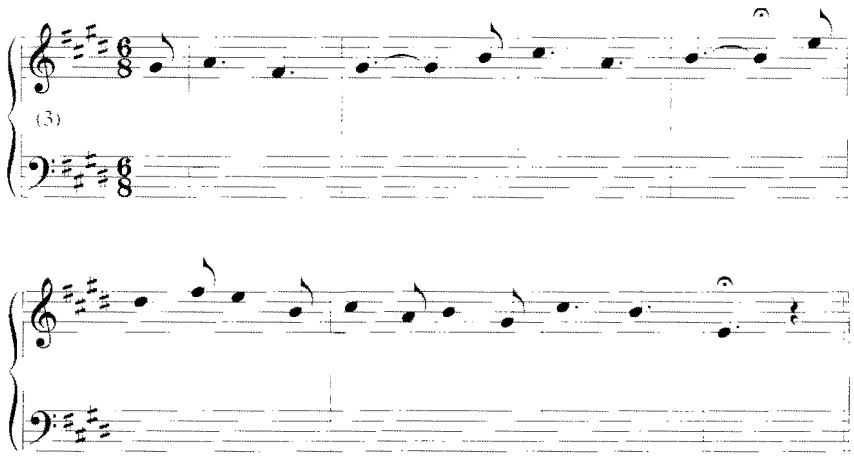
1. Determine the key. Do not only check the key signature, but also sing the melody through, observing the nature of the cadence to determine whether the melody is major or minor.
2. Write in the chord numbers for the cadence below the bass staff.
3. Write in chord numbers leading up to the cadence.
4. Write in the bass line, each note being the root of the chosen chord.
5. Fill in the inner parts.

Melody 1 can be harmonized in both a major key and a minor key. The subdominant triad will not appear in one of these keys.



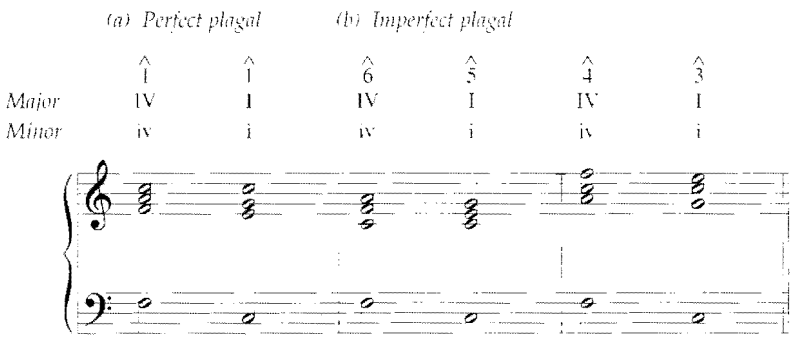






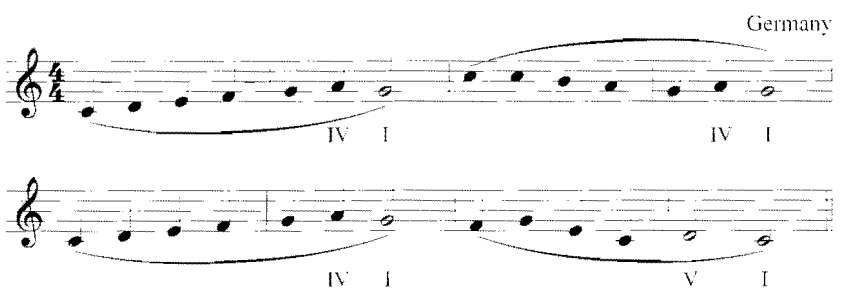
Keyboard Harmony

ASSIGNMENT 6.12 Play plagal cadences at the keyboard. Play them in each major or minor key.

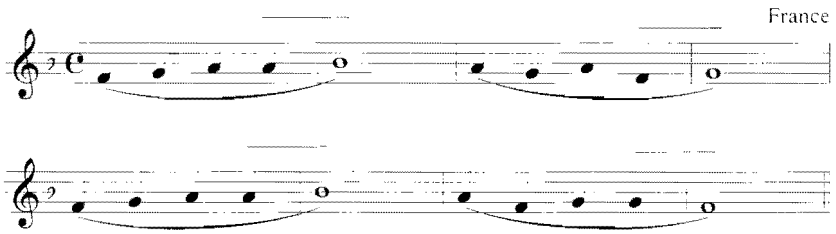


ASSIGNMENT 6.13 *Harmonizing cadences at the piano.* Play these melodies. When you reach a cadence (marked with a bracket), play an authentic or a plagal cadence as appropriate.

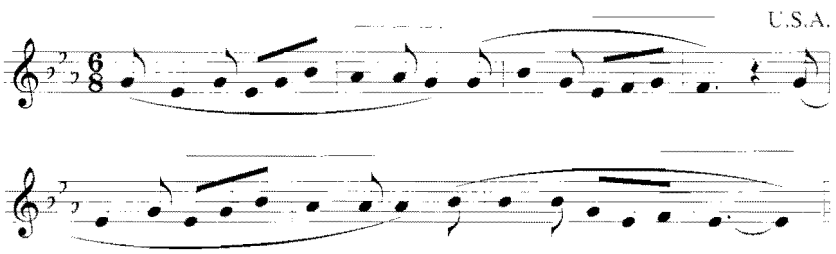
(1)



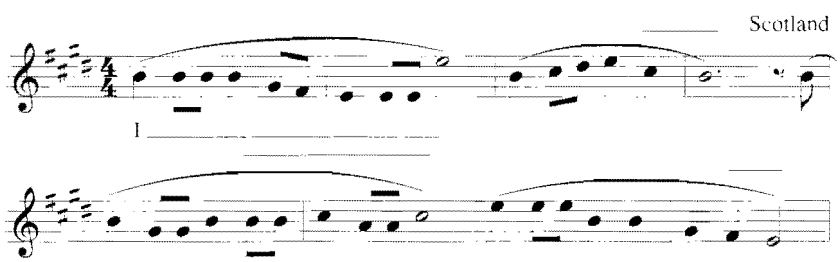
(2)



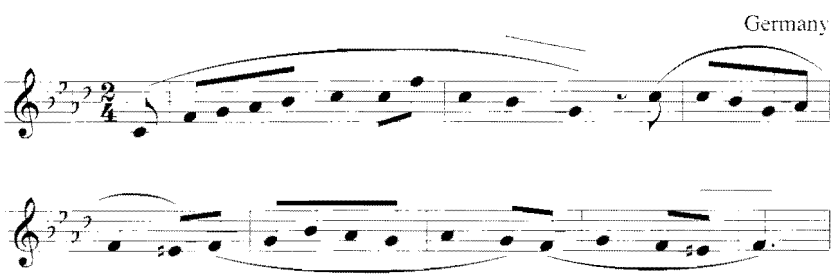
(3)



(4)

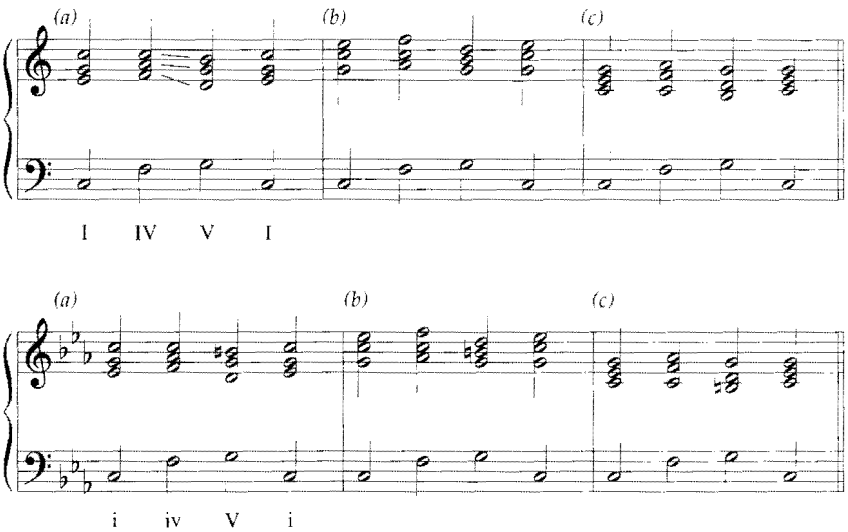


(5) The half cadence iv–V is included here.



The Progression I–IV–V–I

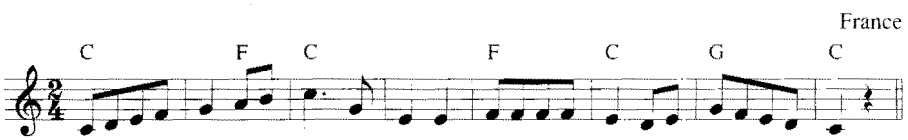
ASSIGNMENT 6.14 Play the progression I–IV–V–I and i–iv–V–i at the keyboard in each of its three soprano positions.



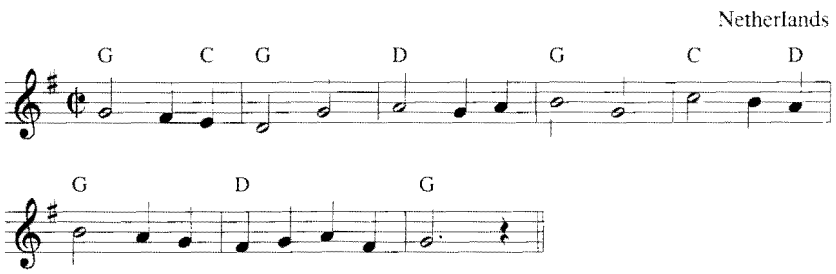
Melodic Harmonization

ASSIGNMENT 6.15 *Harmonizing a melody with lead sheet symbols.* The procedure is the same as that for I and V triads (review "Melody Harmonization Using Lead Sheet Symbols" in Chapter 5, page 102).

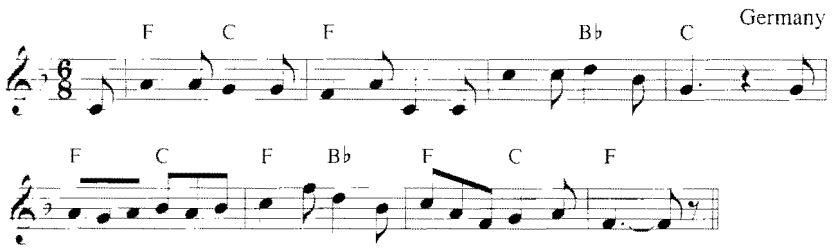
(1)



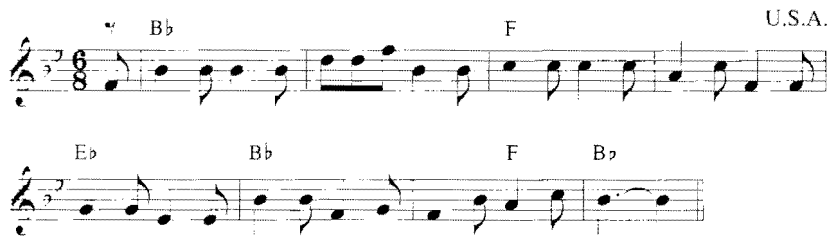
(2)



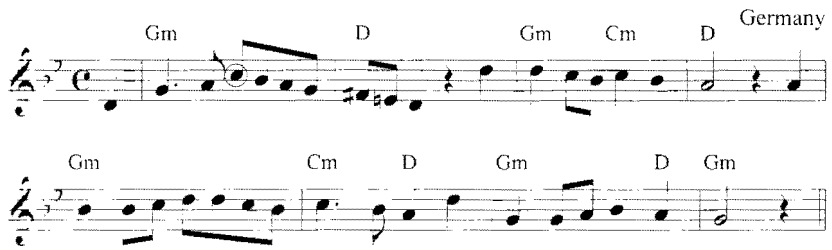
(3)



(4) Note the progression V–IV



(5)



plagal cadence consists of a progression from the subdominant to the tonic triad.

The plagal cadence is found in the same forms as the authentic cadence, although the half cadence is uncommon.

In a minor key, the subdominant triad may be iv or IV, depending upon the [illegible] of 6.

More common is the use of the progression IV–V. The IV–V–I progression at [illegible] cadence is sometimes called a *full cadence.*

In part-writing from IV to V, the three upper voices generally move down in [illegible]rary motion to the ascending bass. An ascending soprano usually requires that IV [illegible]llowed by vii°.

Certain part-writing difficulties may appear from this point on: the *parallel oc-* [illegible] the *parallel fifth,* and the *melodic augmented second.*

ARTICLE #6

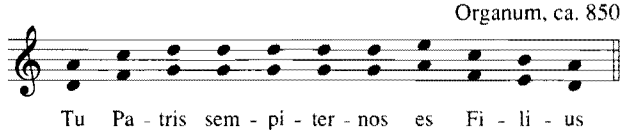
The Three Demons of Part-Writing

Well, not really demons. But many students, exasperated by their frequent and unwanted appearances, are ready to believe in some evil force at work!

There is nothing inherently wrong with parallel fifths, parallel octaves, and melodic augmented seconds. Any sound one can conceive is right if it pleases him or her, just as any sound is right for a particular era or a particular geographical area if it pleases the listeners of that time or place. However, during the period in Western music from about A.D. 1000 to A.D. 1900, these three sounds have generally *not* pleased composers or listeners; consequently, they have not been characteristic elements in the music of the West.

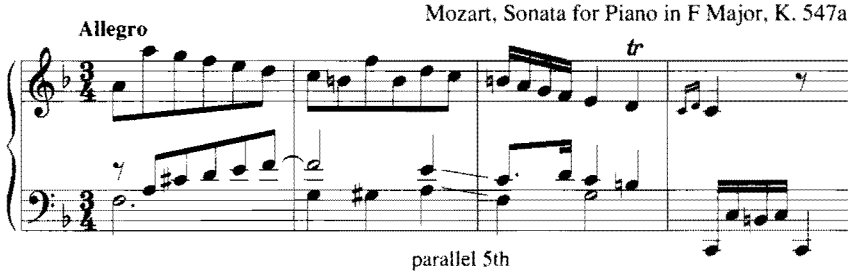
Ironically, the earliest known music for more than one voice line—the simultaneous sounding of a chant melody and the same melody a perfect fifth lower—produced, of course, a series of perfect parallel fifths.

Organum, ca. 850

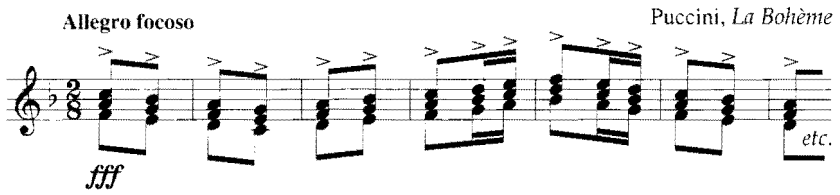


However, the monotony of this harmonic sound was replaced by the more interesting sounds of contrary motion about A.D. 1000, and from that time right up to our own, parallel fifths have been almost nonexistent in Western musical culture. They can be found occasionally, however, as in this excerpt from a Mozart sonata.

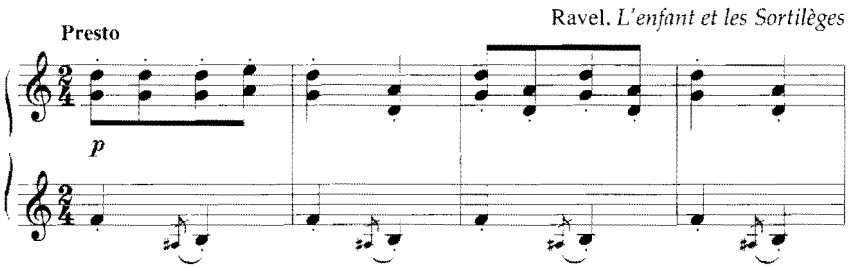
Mozart, Sonata for Piano in F Major, K. 547a



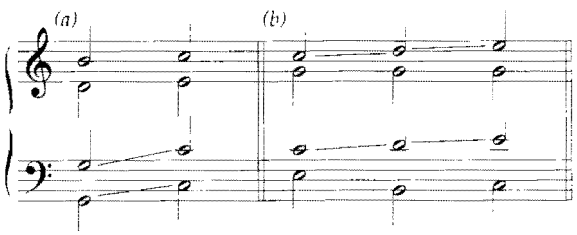
They have also been used to achieve special effects, as in the opening of the second act of *La Bohème,* in which they accompany a scene of general confusion.



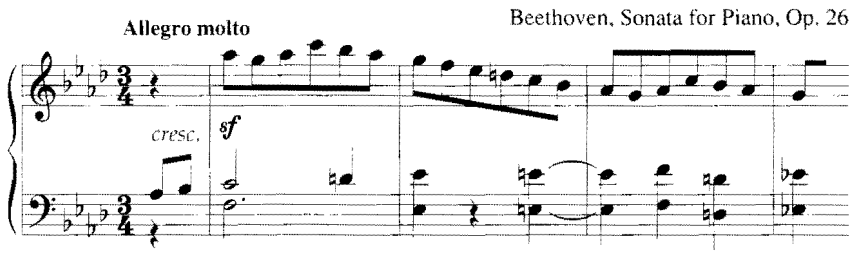
But in the twentieth century, and probably beginning with the music of Debussy (1862–1918), parallel fifths have regained their respectability after nearly a thousand years of neglect and are universally acceptable in contemporary music practice (see the following excerpt from a piece by Ravel).



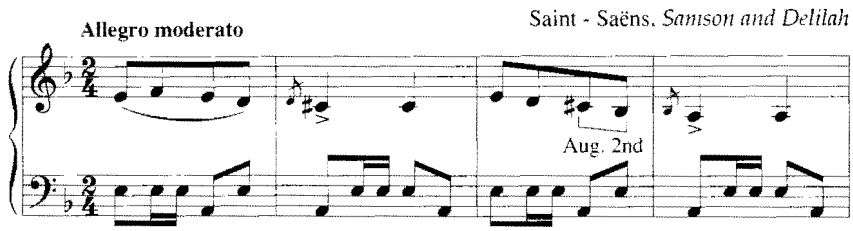
Parallel octaves are of two varieties, one acceptable, the other not. An octave is merely the repetition of a given pitch at another level, higher or lower. When the two notes sound simultaneously, the two sounds represent the same note. When two *different* voice lines move in octaves, then these octaves represent only one moving sound, and the effect is the loss of one voice line. In the example below, the four-voice structure is reduced to three by this parallelism.



Parallel octaves are acceptable when they represent a doubling of a single voice line, called *sonority doubling*, as is common in instrumental and keyboard music. In the following example, the octaves in measures 2–4 are merely a reinforcement of a single melodic line. Beethoven emphasizes this by the single stem on each octave in contrast to measure 1, where tenor and bass are differentiated by upward and downward stems.

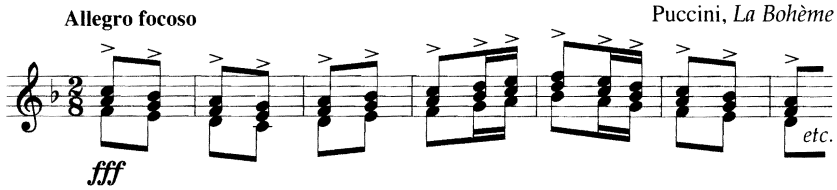


The melodic augmented second is a characteristic element in many Near Eastern and oriental scales (review the article "Some Varieties of Melodic Expression," on page 157). The interval is sometimes used in Western music to give a flavor of orientalism.



This interval also has its place in certain limited passages in Western music. These will be discussed later, since they have little relation to the elementary concepts now under discussion.

They have also been used to achieve special effects, as in the opening of the second act of *La Bohème,* in which they accompany a scene of general confusion.



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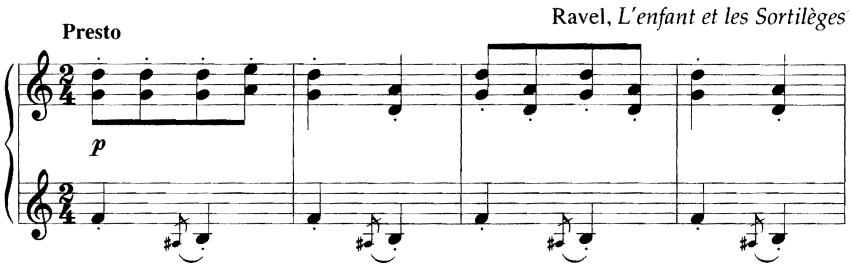

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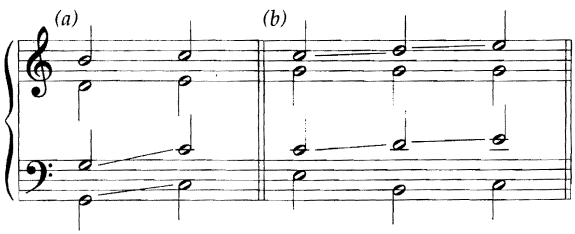

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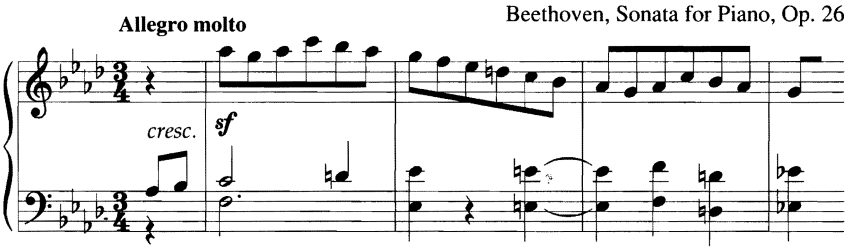

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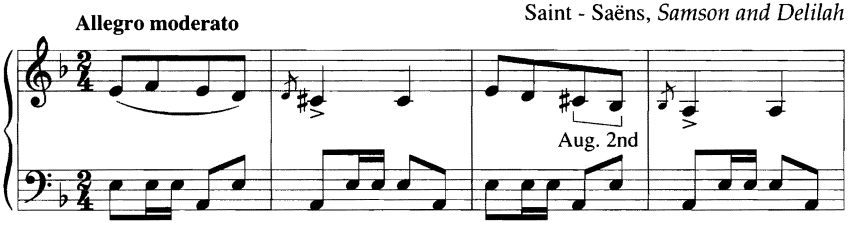

This interval also has its place in certain limited passages in Western music. These will be discussed later, since they have little relation to the elementary concepts now under discussion.

7

The Melodic Line I

This text is entitled *Harmony,* yet there is very little music that is only harmonic. Melody, on the other hand, can stand alone, as you know from your own experience when you whistle or sing a tune.

The earliest known music is exclusively melodic, and melody's importance in music composition continues to the present in spite of the many and diverse changes in musical styles over the years. Article #7, "Some Varieties of Melodic Expression," at the end of this chapter illustrates a few of the widely different concepts of melodic writing found during the course of the history of music.

Melodies associated with traditional harmony sound as they do because they represent the interaction of four musical elements: *form, pitch, harmonic implication,* and *rhythm and meter.*

orm

Most music is written in some orderly arrangement. In the music of the West, certain patterns of musical construction have come to be commonly (though not exclusively) used. These patterns are known as musical *forms.*

The term *form* refers to the shape or structure of the object or concept being described. In music, a form usually ends at a cadence point; a form begins either at the beginning of the piece or immediately after a cadence. Since a musical composition usually has more than one cadence, it usually contains a series of forms. These smaller forms, in turn, will often combine to make up a larger kind of form, the nature and description of which is determined by the number of cadences and the nature of the material between cadences.

The Phrase From this general description, we can turn our attention to the smallest of the forms, the *phrase.* In melodic writing, the phrase is a group of notes leading to a cadence. The distance from the first note of a phrase to the cadence may be any number of measures, though usually not more than eight. The four-measure phrase is so commonly used that it may be considered a standard length with which phrases of other lengths may be compared. Figure 7.1 shows such a phrase, ending with a perfect authentic cadence in measure 4. The phrase is marked off with a *phrase mark,* a