

Chapter One – Pitch

Introducing the terminology

The tones created by musical instruments are a wonderful example of the workings of the laws of acoustic physics and the sounds can be discussed in scientific terms. However, this book will not discuss music in terms of Hertz and Waveforms, but instead mostly use the terms traditionally used in the discussion of music theory. The one exception will occur here with this extremely brief discussion of the tuning standard used in Western music; A – 440:

The term "pitch" is used in music to describe the aspect of music that is high or low (i.e. A singer can sing a high note or a low note) This should not be confused with loud or soft but instead is a description of a high pitch (like a child's voice) or a low pitch (like a man with a deep voice)

The scientific measurement of a note's "Pitch" is called its Frequency. Frequency is measured in units called Hertz (Hz). Hertz is a measurement of the number of cycles of the waveform that will occur with the time period of one second. (Cycles per second) = hertz.

A–440 hz is the standard tuning note for Western Culture. In other words the tone "A" (vibrating at 440 cycles per second) is the tuning reference from which all the instruments are tuned.

As mentioned above, in the field of music, the terminology used amongst musicians is different from the scientific community. Musicians usually refer to the letter name of the pitch and less often to the frequency

Music terminology used for describing pitch is the first seven letters of the alphabet.

A B C D E F G

This alphabetical arrangement of the note names creates the A natural minor scale commonly used in music.

Many of the examples used throughout music focus on the note "C". Because of this fact it is sometimes useful to think of the music alphabet as being arranged as follows:

C D E F G A B

That arrangement of the note names creates a common scale called the C major scale.

The complete cycle of letter names comprises one register of sound called an Octave. The letter names are reused in higher registers of pitch so that each octave contains the same number of possible notes.

Pitch

Additional terms: Sharp (#) Flat (b) Natural (n) Octave

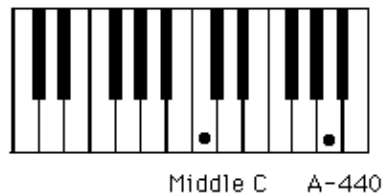
The full range of pitches is divided into different registers named OCTAVES. (Two notes that are one octave apart have the same letter name, however the frequency of the higher note is twice that of the lower note) Each octave is comprised of the complete musical alphabet. There are many different notes named "A", each in a different Octave register. One of them is A-440, the tuning reference tone. (Other "lower A's" are A-220, A-110 and so on, other "higher A's" are A-880, A-1760, and so on.) The tuning standard A-440 tone is also referred to as "A4" (in octave identification numbers, explained later), or "A above middle C" (on the piano).

Each note on an instrument has a letter name (actually each note has more than one letter name)

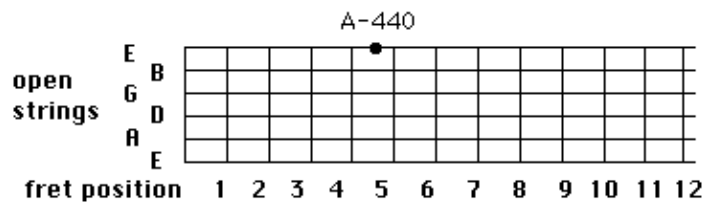
The note A-440 is shown below for the keyboard and guitar instruments

Keyboard landmarks

A-440 is the first A note above middle C on the piano. The diagram below shows A-440 in relation to middle C.



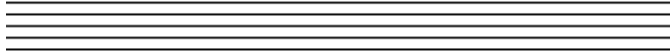
Guitar landmarks



note: The guitar sounds one octave lower than it is written. Because of this fact, the notation of the above note will appear to be one octave higher than the corresponding note on the piano.

Music Notation

Western music uses a graphic notation system consisting of a 5 lined STAFF. Noteheads are placed on the line or space positions of the staff.



Clefs

At the beginning of a piece of music notation a CLEF is placed upon the staff . The purpose of the clef is to assign a specific letter name to the different line and space positions of the staff.

Two Clefs used are the TREBLE CLEF and BASS CLEF



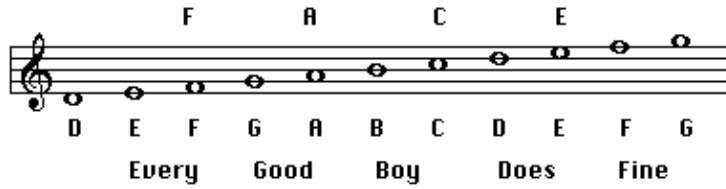
Each clef assigns different letters to the staff positions. (i.e. The bottom line in treble clef is "E" and the bottom line in bass clef is "G".)

Treble Clef (G clef)

The treble clef is drawn similar to a backwards "S". The scroll part of the "S" is spiralling towards the second line which is defined as the musical letter "G". Because of the physical feature the treble clef is sometimes referred to as the "G" clef. Once the second line is defined as G then all of the other line and space positions are defined using an alphabetical sequence.

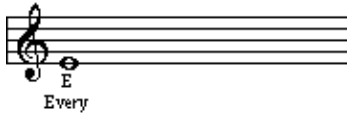
- | | |
|---------------------------|------------------|
| G (space above the staff) | |
| E (top space) | F (top line) |
| C (third space) | D (fourth line) |
| A (second space) | B (middle line) |
| F (first space) | G (second line) |
| D (space below the staff) | E (bottom line) |

Pitch



Use the following phrases to memorize the positions of the treble clef:

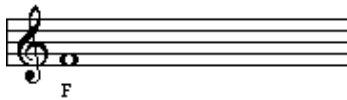
(LINES from bottom to top) Every Good Boy Does Fine (E G B D F)



Alternate Mnemonics: Empty Garbage Before Dad Flips

Elvis Goes Boogeying Down Freeways

The letter name of the spaces from bottom to top spell FACE.



Bass clef (F clef)

The Bass clef is drawn similar to a backwards "C" with two dots above and below the fourth line of the staff. The fourth line of the Bass clef is defined as the musical letter "F". The Bass clef is sometimes referred to as the "F" clef. Once the fourth line is defined as F then the other line and space locations are defined using an alphabetical sequence; F (space below the staff), G (bottom line), A (first space), B (second line), C (second space), D (third line), E (third space), F (fourth line), G (fourth space), A (top line), B (space above the staff).

Pitch

A musical staff with a bass clef. The notes are placed on the lines and spaces from bottom to top: G (line 1), A (space 1), B (line 2), C (space 2), D (line 3), E (space 3), F (line 4), G (space 4), A (line 5), B (space 5). Above the staff, the words "All Cows Eat Grass" are written above the notes. Below the staff, the words "Good Boys Do Fine Always" are written below the notes.

Use the following phrases to memorize the positions of the bass clef:

(lines from bottom to top) Good Boys Do Fine Always (G B D F A)

A musical staff with a bass clef. A single note G is placed on the first line from the bottom. Below the note, the letter "G" and the word "Good" are written.

(spaces from bottom to top) All Cows Eat Grass (A C E G)

A musical staff with a bass clef. A single note A is placed in the first space from the bottom. Below the note, the letter "A" and the word "All" are written.

Create other memory aids for the lines and spaces of the treble and bass clefs.

Grand Staff or Great Staff

The Treble Clef Staff and the Bass Clef Staff are often used together to create the Great or Grand Staff. Notes in the treble clef are in a higher octave than the notes of the bass clef, therefore the Treble Clef Staff is placed above the Bass Clef Staff.

A diagram of a Grand Staff consisting of two staves. The top staff has a treble clef and the bottom staff has a bass clef.

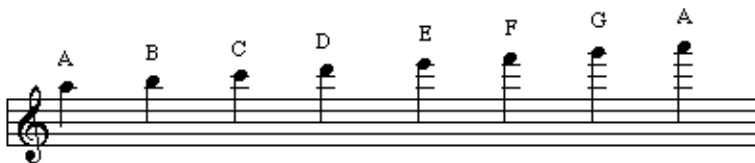
Pitch

Ledger lines

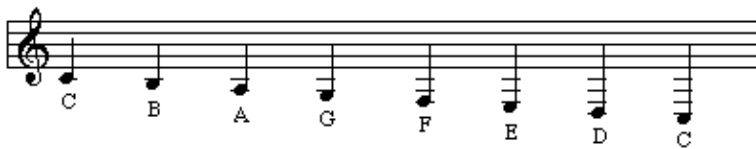
Many instruments have a range that exceeds the range of the Grand staff. The range of the staff can be extended with the use of ledger lines. Ledger lines are added to create additional lines or spaces, either above or below a staff. As an example, in treble clef, the space above the staff is G, the first ledger line above the staff is A, the space above the first ledger line is B, the second ledger line above the staff is C, the space above the second ledger line is D, and so on.



Notes on ledger lines (and spaces) above the staff in treble clef



Notes on ledger lines (and spaces) below the staff in treble clef



Notes on ledger lines (and spaces) below the staff in bass clef



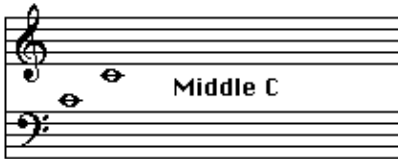
Pitch

Notes on ledger lines (and spaces) above the staff in bass clef



Middle C

The note in treble clef, one ledger line below the staff, is the same note as the note in bass clef, one ledger line above the staff. That note is called "Middle C" because it is in the middle of the treble and bass clefs (and it is approximately in the middle of the standard keyboard). When middle C is used in a phrase that includes notes in the treble clef then the ledger line is placed closer to the treble clef staff. Likewise, when the note is part of a phrase in the bass clef staff then the ledger line will be closer to the bass clef staff. Middle C is shown below in both Bass and Treble clefs. The specific musical situation will usually dictate which of the two is more appropriate.



[\[prev\]](#) [\[Table of Contents\]](#) [\[next\]](#)

Michael Sult

Use this page to practice identifying Note Names

Select the clef(s) that you want to practice, then click the 'Set Clef' button
your score >>out of _____ Treble Clef Bass Clef Both Clefs

What is the letter name of the note shown below?

To answer, click on the appropriate letter name.

Octave signs

Octave signs are used to eliminate the excessive use of ledger lines. An octave sign of "8 va" can be used with a note or series of notes to indicate that these notes should be performed one octave higher (which would put those notes in the upper ledger line range of that staff).



The first measure is rewritten in the second measure with the use of 8va sign. In other words, the first and second measures will sound exactly the same when performed.

An octave sign of "8 vb" or "8 bassa" can be used with a note or series of notes to indicate that these notes should be performed one octave lower (which would put those notes in the lower ledger line range of that staff).



The first measure is rewritten with the use of 8vb sign in the second measure.

Note on Octaves: Identifying and writing octaves is an essential skill. It is easy if you remember these few principles:

1. The lower and upper notes of the octave are always on unlike positions of the staff (i.e. Space/Line or Line/Space)
2. If the lower is on a line then the upper is 4 spaces above it (the converse is of course true: if the upper is on a space then the lower is 4 lines below it).
3. If the lower is on a space, then the upper is 4 lines above it (the converse is of course true: if the upper is on a line, then the lower is 4 spaces below it).

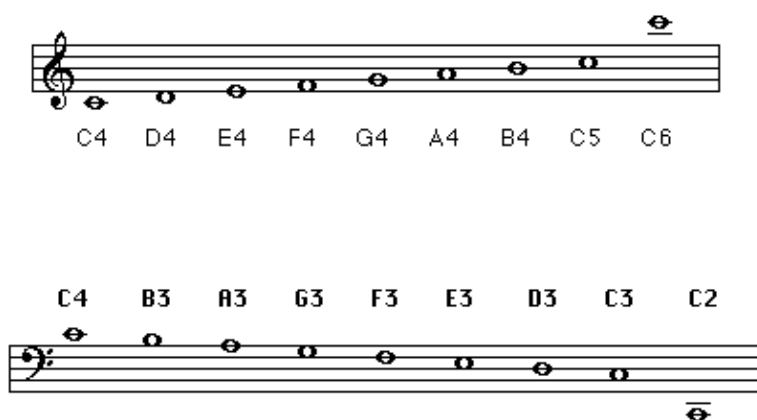
Of course, these rules also apply to ledger lines (and spaces).

Pitch

*A word of urgency to the new music student who wants to gain the most out of this book or any study of music: Mastery of this early material is essential at this stage because this material lays the foundation upon which one can build a fabulous mansion of musical knowledge. Really! Libraries and book stores are full of musical treasures that can be unlocked if you know how to read the musical code (notation). If you haven't learned the letter names of the positions of the staff by the first week, stay up late and learn them! Use the standard memory aids such as "Every Good Boy Does Fine", etc. to help you remember. This is of utmost importance!! Whatever it takes, do it, because this train is leaving soon and I'm assuming that everybody onboard has command of these basic notation principles.

Octave identification numbers

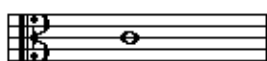
The different octaves are identified by number. Although the musical alphabet goes from A to G the octave range numbers change on the letter C (instead of A). Middle C is identified as the C4, all the letter names above that tone until the next C are in the 4th octave, i.e. D4, E4, F4, G4, A4, and B4. The next note (third space) is C5. The fifth octave continues in similar fashion. The note on the second ledger line above the staff is C6.



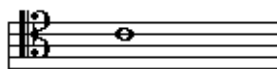
There is more than one system of designating the specific octave numbers. The student should be aware of the (most unfortunate) fact that many synthesizer manufacturers label Middle C as C3 not C4 ! The truth is that in most instances one does not need to identify the specific octave number of a note, the musical context will make that information obvious, so the discrepancies between the different numbering systems become irrelevant.

Movable C clef

An additional family of clefs is sometimes used for other purposes. These movable C Clefs are used to assign the note Middle C to one of the lines of the staff (middle C is on the first ledger line below the staff in treble clef and on the first ledger line above the staff in bass clef). These clefs are not as common, however certain instruments such as the viola still use this type of clef.



Middle C



Middle C

Class assignment:

Links to the Assignment Pages

Each assignment link below is to a GIF file on a single page. Print out each page and complete the assignments. Use your browser's BACK button to return to this page.

- ◆ [Pitch Worksheet 1](#)
- ◆ [Ledger Line Worksheet](#)
- ◆ [Pitch Worksheet 2](#)

(After printing out a worksheet, use your browser's BACK button to return to this page)

Using the notes of the musical alphabet on the staff, write out the following words: BAD, BEAD, ABE, CAD, DAD, DEAD, FEED, FED, ADD, GAD, etc.

Using the Alphabet conversion chart below, write out musical sentences.

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

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

Michael Sult

Pitch Worksheet 1

answers

(1–10) D, G, E, D, F, B, A, C, F, E

(11–20) G, C, G, D, E, A, E, E, D, C

(21–30) G, E, B, D, F, A, C, A, F, B

(31–40) G, A, A, E, G, F, C, B, D, F

(41–50) G, E, D, B, A, F, E, B, G, G

(51–60) F, A, B, A, F, G, C, F, D, F

Pitch Worksheet 2

answers

(1–8) C, F, F, D, B, D, E, E

(9–16) G, C, G, F, F, C, A, G

(17–24) D, G, E, F, C, B, E, F

(25–32) E, B, D, D, C, A, B, A

(33–40) B, B, D, E, F, D, F, B

Ledger Line Worksheet

answers

(1–8) A, C, B, D, F, G, E, A

(9–16) B, C, G, F, A, D, E, C

(17–24) D, G, E, F, C, A, C, B

(25–32) E, G, F, B, C, A, B, E

(33–40) B, C, E, D, E, D, C, C

Chapter Two – Keyboard

Music theory usually is easier to grasp when it is applied to and experienced on a musical instrument. This chapter will relate the musical alphabet and other musical ideas to the keyboard (piano, organ or synthesizer) and guitar fretboard.

For those who have no prior instrumental experience it is suggested that you study the sections on keyboard. Guitarists who have playing experience but little or no theory background will find the section on guitar of interest.

Before a discussion of theory can begin a few definitions must be presented.

Half step

the smallest interval in the 12–tone system, used as the basic unit with which to measure the size of other intervals. The abbreviation "H" is used often throughout this book. On other occasions the number 1 is used as an abbreviation for a half step.

Whole–step

A whole step is two half steps in size. The abbreviation "W" is used throughout this book. On other occasions the number 2 is used as an abbreviation for a whole step.

Sharp

example: C#

A sharped note is one half–step higher than the natural letter name, this is often (but not always) a black key on the keyboard. Examples; C# is one half–step higher than C, F# is one half–step higher than F.

Flat

example: E b

A flatted note is one half–step lower than the natural letter name, this is often (but not always) a black key on the keyboard. Examples; Eb is one half–step lower than E, and Bb is one half–step lower than B.

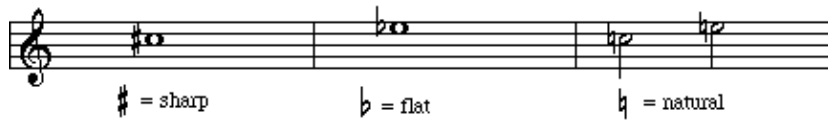
Pitch

Natural

example: C natural

A natural note is the same as the original letter name. The term is usually used to make clear that a previously sharped or flatted note has been restored to its natural letter name.

The following example shows C-sharp then E-flat followed by C and E (both natural).



Octave

– An octave is the distance of 12 half steps. The musical alphabet along with the terms "sharp" and "flat" are used to assign names for all of the notes in one octave range. Additional octaves (using the same names) are added as needed to accommodate the different instrumental and vocal ranges.

Keyboard

Half steps on the Keyboard

The following animated graphic shows all of the consecutive half steps intervals for one octave of the keyboard.



The interval of a half-step occurs between any note (white key or black key) and its immediate adjacent neighbor. Most white keys have a black key the interval of one half-step away except for the half-step intervals between B-C and E-F (there is no black key between B and C or between E and F). All black keys

Pitch

have a white key the interval of one half-step away.

Whole steps on the Keyboard

Most adjacent white keys (C–D, D–E, F–G, G–A, and A–B) are the interval of a whole-step away. Most adjacent black keys (C#–D#, F#–G#, and G#–A#) are the interval of a whole-step away. Other whole-step combinations include B–C#, E–F#, Bb–C, and Eb–F.

The following animation shows a series of whole steps, first from the note C then from the note C#.



The previous chapter on Pitch has introduced the 7 letter names used in music notation and discussion. The system of music used throughout most of western culture is based on a 12 tone per octave system. The letter names explain 7 of the 12 tones, but what about the other 5 tones of the system? These remaining tones have a letter name followed by the symbol "#" ("sharp") or the symbol "b" ("flat"). Any letter name can be followed by symbol "#" or "b". With 7 different letter names and three versions of each letter name (each having a "sharp" name and "flat" name as well as its original "natural" name) there would appear to be 21 different tones ($3 \times 7 = 21$)! Several of the 21 different names have the same sound and in fact there are only 12 different tones per octave in this system. All of the 12 tones have more than one name to describe that sound. The context of the music will determine which name is most appropriate. This is common in music and is known as "enharmonics" (two different names that sound the same). It is because of enharmonics and the arrangement of the letter names within the pitch system that we have a 12 tone system instead of 21 tone system.

The Keyboard is considered the best instrument on which to demonstrate music theory concepts. All musicians can benefit from the study of the keyboard. The first task is memorizing the letter names of the white keys on the keyboard. Notice the pattern of the black keys (2 black keys, 3 black keys, 2 black keys, 3 black keys, etc.). A landmark white key note lies to the immediate left of the group of 2 black keys. Those white keys are called "C".

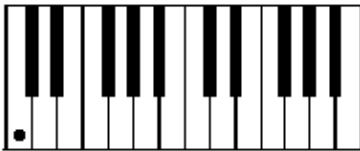


Pitch

Another landmark white key lies to the immediate left of the group of 3 black keys. Those white keys are called "F"

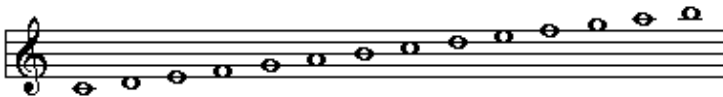


The other letter names of the musical alphabet are assigned to the remaining white keys as shown below.

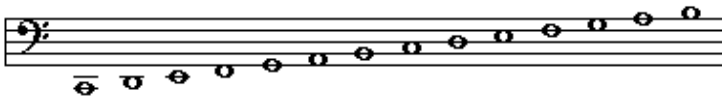


(from left to right C,D,E,F,G,A,B,C,D,E,F,G,A and B)

Using the treble clef, the letter names are C,D,E,F,G,A,B,C,D,E,F,G,A and B.



Using the bass clef, the letter names are also C,D,E,F,G,A,B,C,D,E,F,G,A and B. These notes are two octaves lower than the notes shown above in Treble Clef.

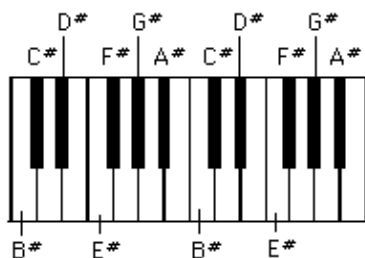


The pattern is repeated up and down the full range of the keyboard.

Although the black keys have a different look about them, one must understand that they are notes just the same as the white keys and are used to create music just as the white keys are used. They are arranged in such a way as to help keyboard players literally "feel" their way around the musical alphabet. The black keys are the notes that have the "sharp" and "flat" names.

Pitch

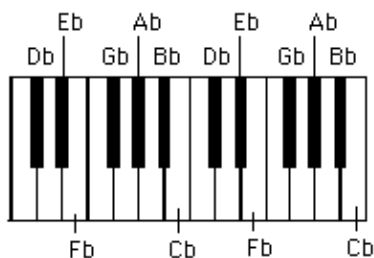
First the notes that have "sharp" names.



B# C# D# E# F# G# A# B# C# D# E# F# G# A# B#

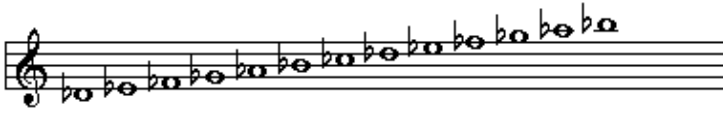
The black keys are used for 5 of the 7 "sharp" note names and these 5 are the most commonly used of the sharp notes. Two less frequently used sharps are also available: B# and E#. These notes are enharmonic to C and F respectively (that is, they are white keys!). Since a sharp raises any note one half-step and it has previously been noted that the interval between B–C and E–F is a half-step, it is logical that B# and E# would sound the same as C and F respectively. This is the first of many enharmonic situations that illustrates how 12 tones can accommodate 21 different names.

The notes with "flat" names are shown below.



Natural

Pitch



Db Eb Fb Gb Ab Bb Cb Db Eb Fb Gb Ab Bb

The black keys are used for 5 of the 7 "flat" note names and these 5 are the most commonly used of the flat notes. Two less frequently used flats are also available: Cb and Fb. These notes are the enharmonic equivalents to B and E respectively (Cb and Fb are white keys). Notice that all of the black keys have both a "sharp" name and a "flat" name. These enharmonic duplicates complete the explanation of the 12 tone (with 21 names) system.

Music Math

(Of interest only to the Left Brained)

12 tones = 7 letter names + 5 sharp names

(2 sharp names are enharmonics of natural letter names and not counted as different tones)

(all of the flat names are enharmonics and not counted as different tones)

21 names = the above 12 names + 2 sharp names not counted above + 7 flat names

Actually, it is even more involved because there are rare instances when a double sharp is used, leading to even more names for the same 12 sounds! We will see the double sharps in action later on in the context of the Harmonic and Melodic minor scales.

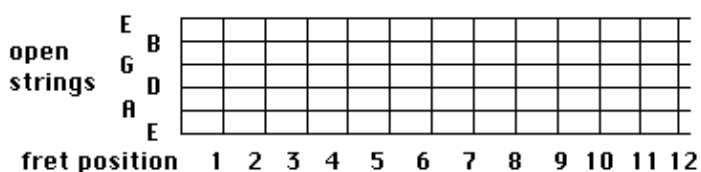
[\[prev\]](#) [\[Table of Contents\]](#) [\[next\]](#)

Michael Sult

Chapter Three – Guitar

Half steps on the Guitar fretboard

The guitar fretboard is divided into half-step increments. There are no white and black keys on the fretboard. Each fret is a half-step interval from its adjacent neighbor.



Whole steps on the Guitar fretboard

A whole step on the guitar fretboard is a two fret distance when the two notes are on the same string. If the notes are on adjacent strings then the fret span is -3 frets on most strings (-2 frets between string 2 and string 3).

The open strings are usually considered the landmark notes on the guitar.

The highest sounding string is "E" (string 1).

then "B" (string 2),

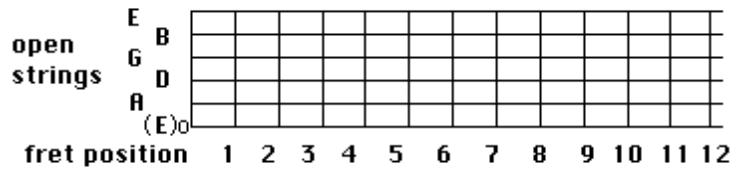
the next is "G" (string 3),

the next one is "D" (string 4),

the next higher is "A" (string 5),

the lowest sounding string is another "E" (string 6),

Pitch



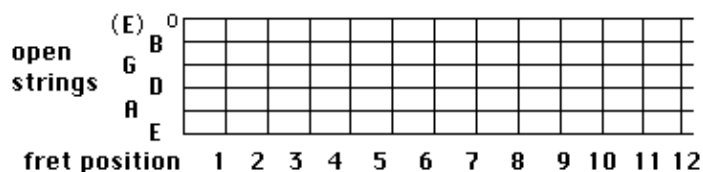
The low E (string 6) is two octaves lower than the high E (string 1).

The guitar fretboard is divided into half-step increments, each string having its own specific range. There are no white and black keys on a fretboard to distinguish the sharp and flat notes from the natural notes. The intervals between adjacent natural letter names of the musical alphabet have been stated as being a half-step between B-C and E-F, all other adjacent letter names are a whole-step apart. This means that the note "C" is one fret (one fret = half-step) higher than the note "B". Also the note "D" is two frets (two fret = whole-step) higher than the note "C".

Natural notes on the Fretboard

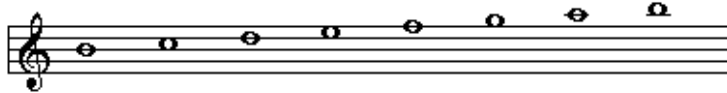
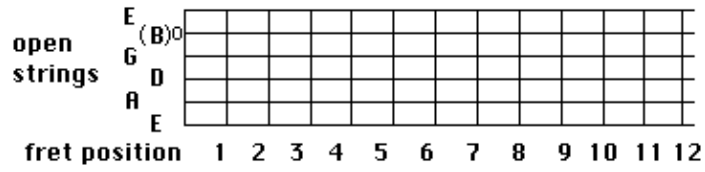
The natural notes of the fretboard should be memorized. Remember that the natural notes are a whole-step interval apart except between B-C and E-F.

The natural notes on string 1 (E string)

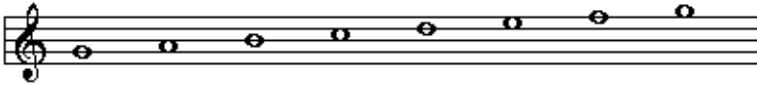
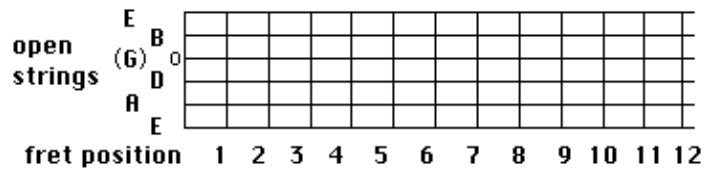


Pitch

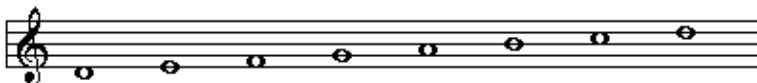
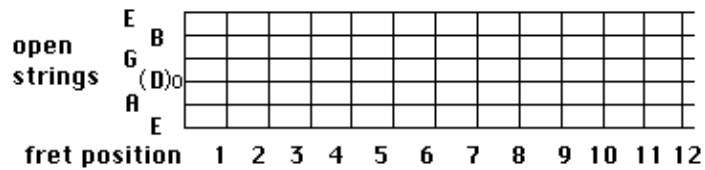
The natural notes on string 2 (B string)



The natural notes on string 3 (G string)



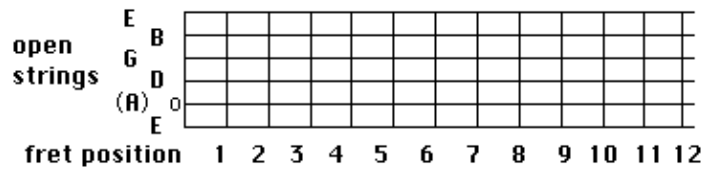
The natural notes on string 4 (D string)



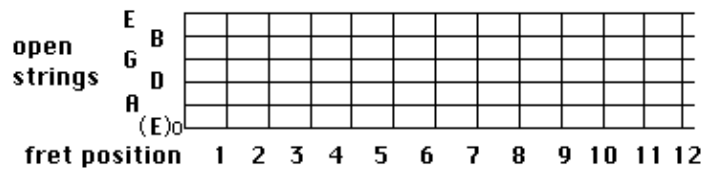
Natural notes on the Fretboard

Pitch

The natural notes on string 5 (A string)



The natural notes on string 6 (E string)



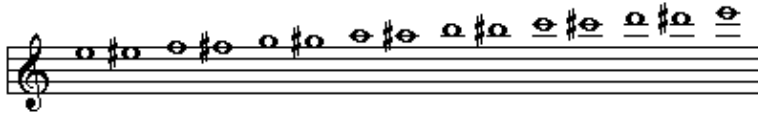
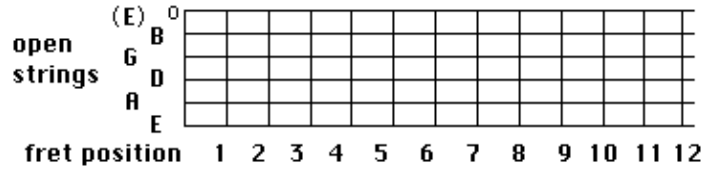
[\[prev\]](#) [\[Table of Contents\]](#) [\[next\]](#)

Michael Sult

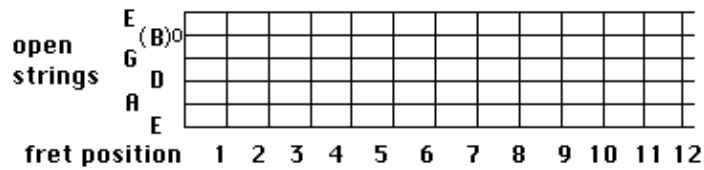
Sharp notes on the Fretboard

The sharp notes are always notes that are one fret higher up the neck of the fretboard.

The natural and sharp notes on string 1 (E string)

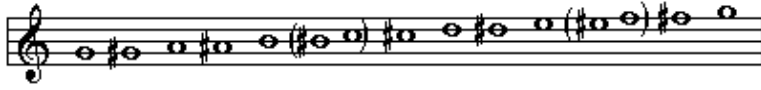
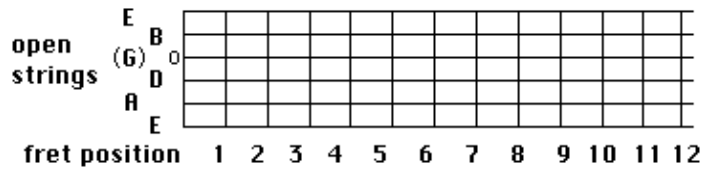


The natural and sharp notes on string 2 (B string)

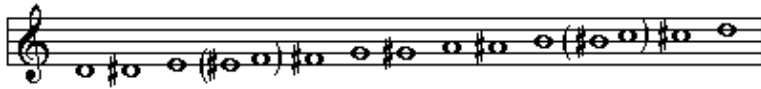
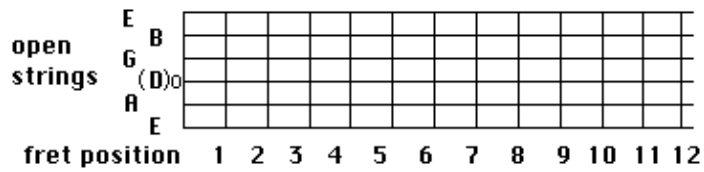


The natural and sharp notes on string 3 (G string)

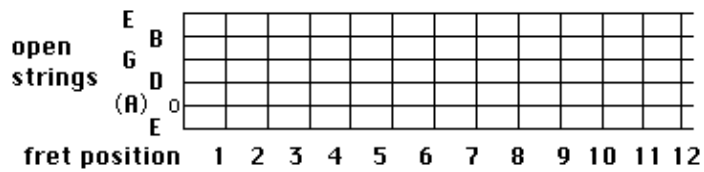
Pitch



The natural and sharp notes on string 4 (D string)

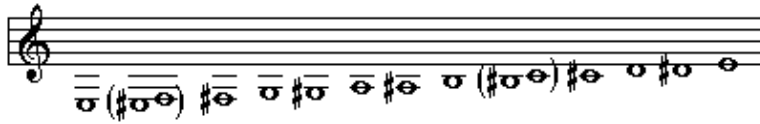
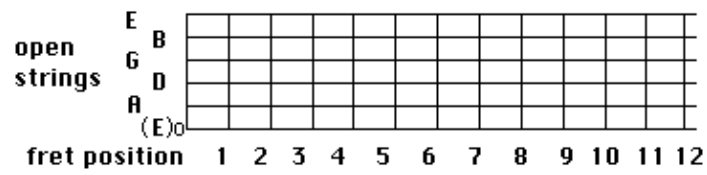


The natural and sharp notes on string 5 (A string)



Pitch

The natural and sharp notes on string 6 (E string)



[\[prev\]](#) [\[Table of Contents\]](#) [\[next\]](#)

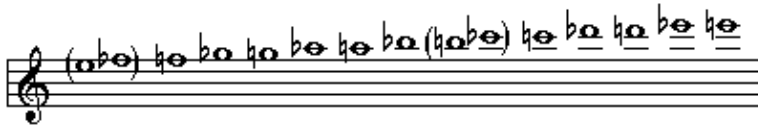
Michael Sult

Flat notes on the Fretboard

The flat notes are always notes that are one fret lower down the neck of the fretboard.

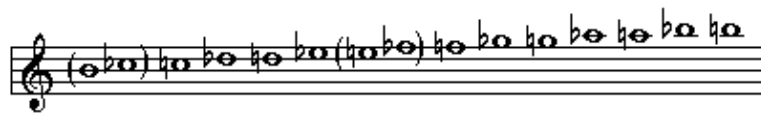
The natural and flat notes on string 1 (E string)

open strings	(E)	0											
	G												
	D												
	A												
E													
fret position		1	2	3	4	5	6	7	8	9	10	11	12



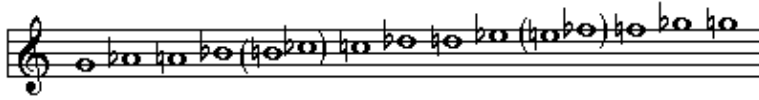
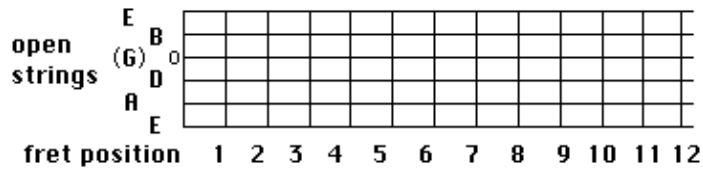
The natural and flat notes on string 2 (B string)

open strings	E	0											
	(B)												
	G												
	D												
A													
E													
fret position		1	2	3	4	5	6	7	8	9	10	11	12

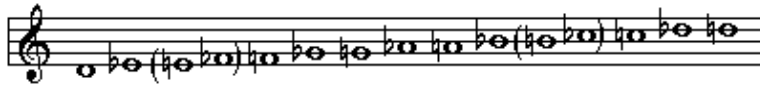
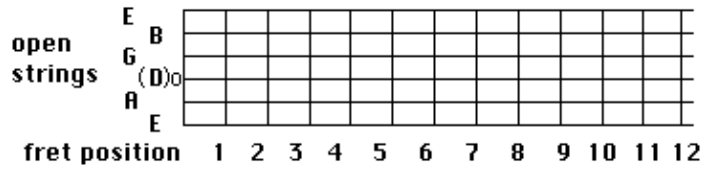


The natural and flat notes on string 3 (G string)

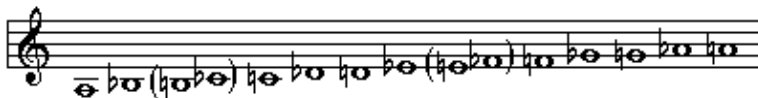
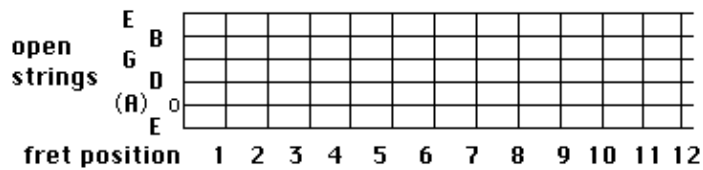
Pitch



The natural and flat notes on string 4 (D string)



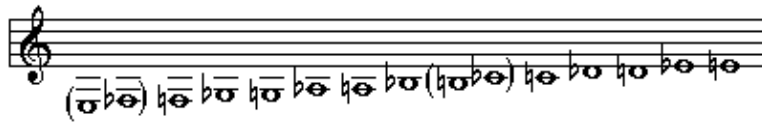
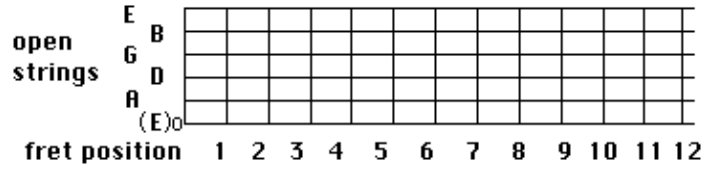
The natural and flat notes on string 5 (A string)



Flat notes on the Fretboard

Pitch

The natural and flat notes on string 6 (E string)



[\[.prev\]](#) [\[.Table of Contents\]](#) [\[.next\]](#)

Michael Sult

Chapter Four – Major Scale

Musical Scales are used in the music of most cultures. A Scale is a series of notes that are arranged in a specific interval pattern. One of the most common scales is called a Major Scale.

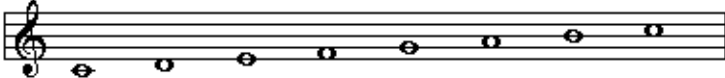
The Major Scale consists of a series of 7 notes whose interval pattern is:

1 2 3 4 5 6 7 8 (1 in the next octave)

W W H W W W H

W = Whole Step H = Half Step

1	2	3	4	5	6	7	8
W	W	H	W	W	W	H	



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

Notice that major scales are usually written as 8 notes, however the last note is the same letter name as the first and is in fact the first note of the next octave of that scale.

Half step intervals occur between scale degrees 3–4 and 7–8 of the major scale.

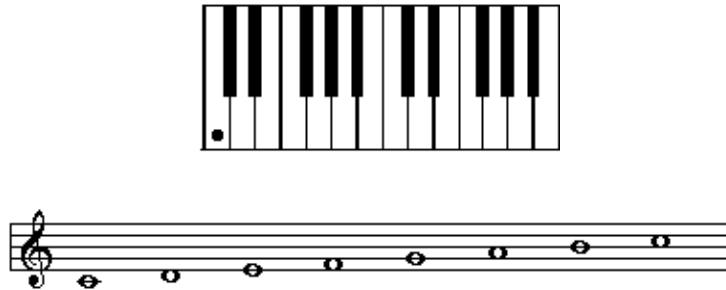
The interval of a Whole step occurs between all other scale degrees.

Pitch

Keyboard

The piano keyboard is arranged so that the White keys have the appropriate intervals for the C major scale. The half step between E–F and B–C on the keyboard also happens to be the scale degrees 3–4 and 7–8 respectively.

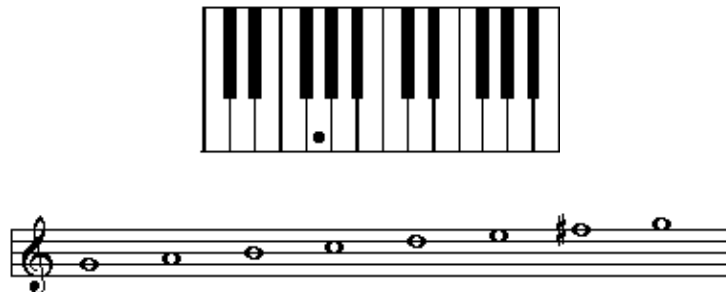
C major



Major Scales can be created beginning on any note. The interval pattern of W–W–H–W–W–W–H is always used to create the Major Scale. Major scales beginning on any other note will require the use of one or more black keys.

examples:

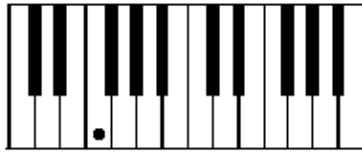
G major



G A B C D E F# G
W W H W W W H

Pitch

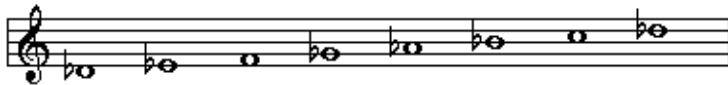
F major



F G A Bb C D E F
W W H W W W H

Regardless of the starting note of any major scale, the interval formula will determine the notes used for that major scale.

Db major



Db Eb F Gb Ab Bb C Db
W W H W W W H

A few of the thousands of melodies that are based on Major Scales:

Joy to the World – Handel

Flat notes on the Fretboard

Pitch

G major minuet – Bach

Jesu Joy of man desiring

Whiter Shade of Pale

Nowhere Man

Groovy Kind of Love (Clementi)

Lean on Me

Amazing Grace

Row Row Row your boat

Silent Night

Class Assignments:

Links to the Assignment Pages

Each assignment link below is to a GIF file on a single page. Print out each page and complete the assignments. Use your browser's BACK button to return to this page.

Using the worksheets, write out all of the Major scales.

- [Major Scale Worksheet 1](#)
- [Major Scale Worksheet 2](#)
- [Major Scale Worksheet 3](#)

(After printing out a worksheet, use your browser's BACK button to return to this page)

Pitch

Select one of the above melodies with which you are familiar. Play the first phrase of the melody determine the melodic formula. Play the phrase in a different key using the melodic formula as a guide to finding the correct notes within the scale.

[\[prev\]](#) [\[Table of Contents\]](#) [\[next\]](#)

Michael Sult

Chapter Five – Major Scale – Guitar

Major scales on the Fretboard

Musical Scales are used in the music of most cultures. A scale is a series of notes arranged in a specific interval pattern. One of the most common scales is called the Major Scale.

The Major Scale consists of a series of 7 notes whose interval pattern is:

1 2 3 4 5 6 7 8 (1 in the next octave)

W W H W W W H

W = Whole Step H = Half Step

Major scales are usually written as 8 notes, however the last note is the same letter name as the first and is in fact the first note of the next octave of that scale.

i.e. C major = C D E F G A B C (next octave)

Half step intervals occur between scale degrees 3–4 and 7–8 of the major scale.

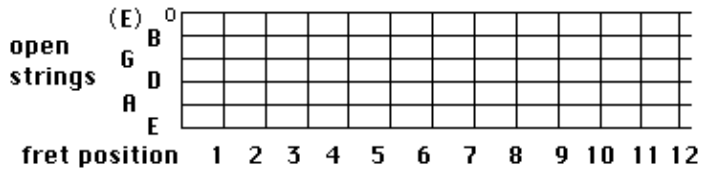
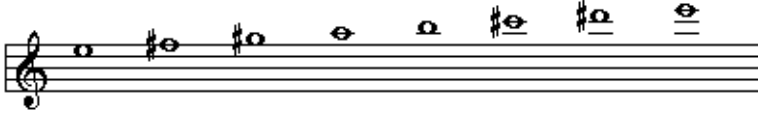
The interval of a Whole step occurs between all other scale degrees.

Each fret on the fretboard of a guitar is equal to one half step in pitch change. That means that each half step interval in the scale (3–4 and 7–8) will be played on adjacent fret positions. All of the whole step intervals will be two frets apart. The Major scale in the key of E can be played entirely on the first string by playing the following positions on the fretboard:

Pitch

Notice the fretboard spacing used throughout the scale reflects the intervals of whole steps and half steps.

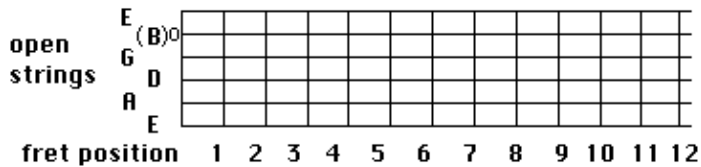
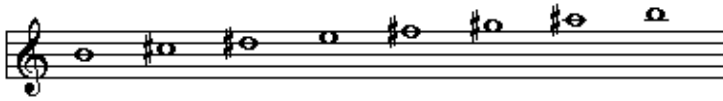
Open	2nd	4th	5th	7th	9th	11th	12th
	W	W	H	W	W	W	H
E	F#	G#	A	B	C#	D#	E



The same positions on the other strings will create the following major scales.

B major scale on string two,

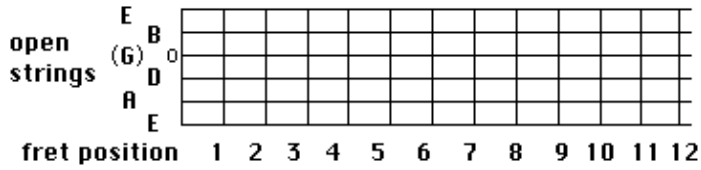
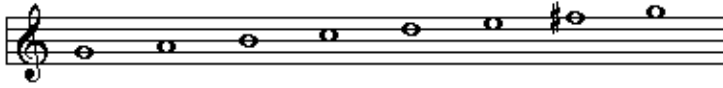
Open	2nd	4th	5th	7th	9th	11th	12th
	W	W	H	W	W	W	H
B	C#	D#	E	F#	G#	A#	B



G major scale on string 3,

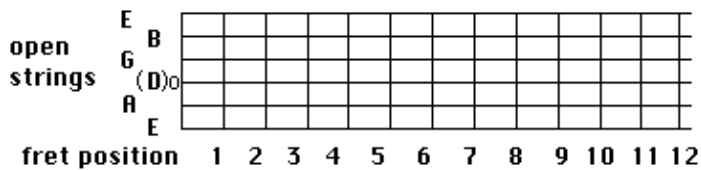
Pitch

Open 2nd 4th 5th 7th 9th 11th 12th
 W W H W W W H
 G A B C D E F# G



D major scale on string 4,

Open 2nd 4th 5th 7th 9th 11th 12th
 W W H W W W H
 D E F# G A B C# D



A major scale on string 5,

Open 2nd 4th 5th 7th 9th 11th 12th
 W W H W W W H
 A B C# D E F# G# A

Pitch

The diagram shows the E major scale on a single string (string 1). The musical notation is on a treble clef staff with notes: E (open), F# (1st fret), G# (2nd fret), A (3rd fret), B (4th fret), C# (5th fret), D# (7th fret), and E (12th fret). Below it is a fretboard diagram with 12 frets and 5 strings. The strings are labeled from top to bottom: E, B, G, D, and (A) E. The notes of the E major scale are placed on the first string at their respective fret positions.

E major scale on string 6 (two octaves lower than string 1).

Open	2nd	4th	5th	7th	9th	11th	12th
	W	W	H	W	W	W	H
E	F#	G#	A	B	C#	D#	E

The diagram shows the E major scale on string 6. The musical notation is on a treble clef staff with notes: E (open), F# (2nd fret), G# (4th fret), A (5th fret), B (7th fret), C# (9th fret), D# (11th fret), and E (12th fret). Below it is a fretboard diagram with 12 frets and 5 strings. The strings are labeled from top to bottom: E, B, G, D, and (A) E. The notes of the E major scale are placed on the sixth string at their respective fret positions.

After all of those major scales have been demonstrated, the truth is the major on guitar is not played on a single string in most circumstances. Instead the scale is played across several strings using different fingering combinations on each string. When you play some of the notes on different strings you can stay in one position for the entire scale. This type of position playing is very common on the guitar. Compare the version of the E major scale shown below with the one entirely on the first string shown earlier.

The diagram shows the E major scale across multiple strings. The musical notation is on a treble clef staff with notes: E (open), F# (1st fret), G# (2nd fret), A (3rd fret), B (4th fret), C# (5th fret), D# (7th fret), and E (12th fret). The notes are distributed across strings: E (open), F# (1st fret), G# (2nd fret), A (3rd fret), B (4th fret), C# (5th fret), D# (7th fret), and E (12th fret).

Pitch

open strings	E												
	B												
	G							E					
	D												
	A												
E													
fret position	1	2	3	4	5	6	7	8	9	10	11	12	

The multi-string version is the more common approach to scale playing, however you shouldn't overlook the unique tone quality achieved by playing a scale or melodic passage entirely on a single string.

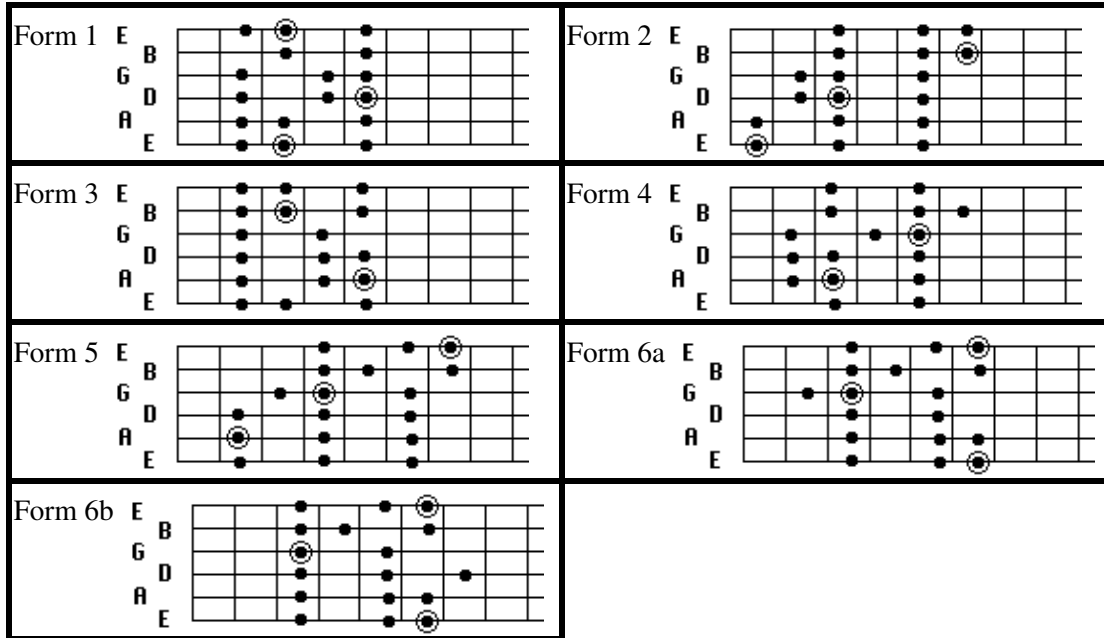
Major Scales can be created beginning on any note. A very useful set of scales is shown in the [next] file. These scales are easily transposable because they don't contain any open strings so you can move them up and down the neck as needed.

[\[prev\]](#) [\[Table of Contents\]](#) [\[next\]](#)

Michael Sult

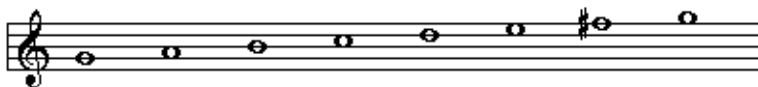
Major Scales on the Guitar

Several commonly used guitar major scale forms are shown below. The form numbers are arbitrary and these forms may be labelled differently in other books.



Here is an example of using the above scale patterns in two different keys, G and F.

All of the above finger patterns could be used to play the notes shown below.



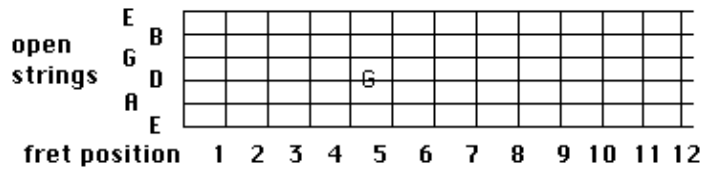
intervals W W H W W W H

G major: notes G A B C D E F# G

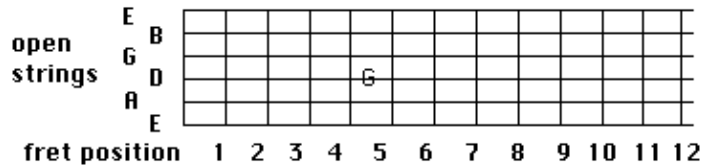
The following animated graphics show how these notes can be played at several locations on the fretboard.

First in G at the second position using a portion of form 1

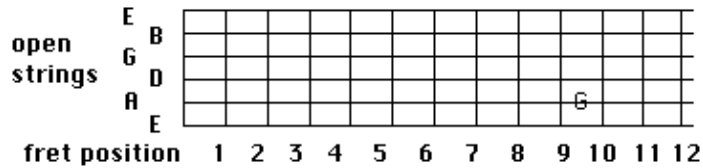
Pitch



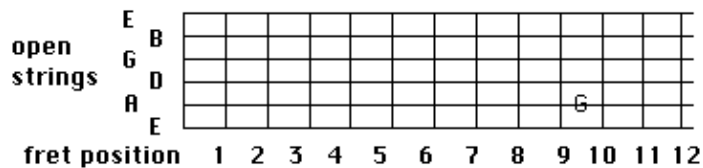
Next in G at the fourth position using a portion of form 2



Then in G at the seventh position using a portion of form 3



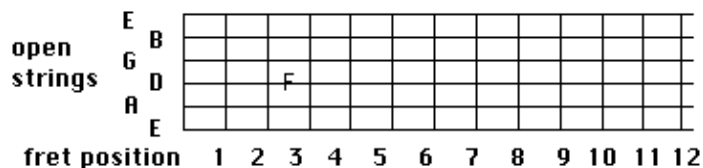
A fourth example in G at the ninth position using a portion of form 4



More examples can be created, however four will be enough to illustrate the concept of transposable scale forms.

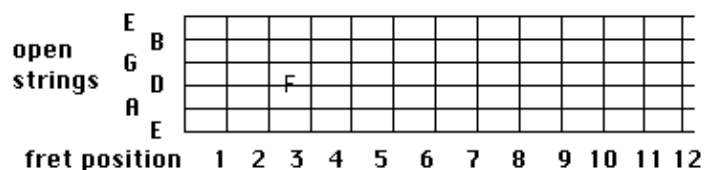
To transpose this scale to key of F, the same forms can be moved down a whole step (from G to F). Notice that this moves the first form to the open position (using some open strings). This form will have to be modified (or ignored) in the key of E, Eb, D and lower because those open strings move off the fingerboard. You might be able to use that scale form 12 frets higher (one octave) if necessary.

First in F at the open position using a portion of form 1

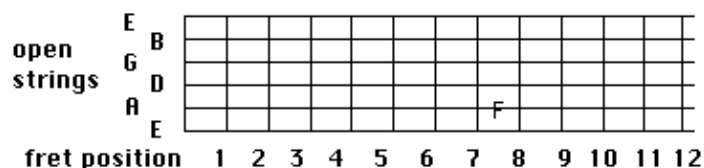


Pitch

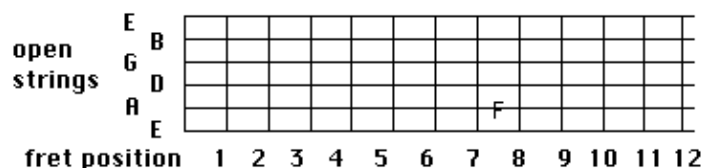
Next in F at the second position using a portion of form 2



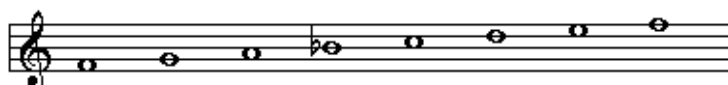
Then in F at the fifth position using a portion of form 3



Finally in F at the seventh position using a portion of form 4



All of the above fingerings for F can be used to play the notes shown below.



intervals W W H W W W H

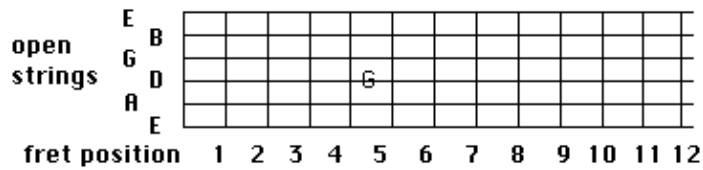
F major: notes F G A Bb C D E F

Notice how the same scale forms, moved to a different fret position, can be used for each of the two keys (G and F) above. This is how the guitar works. A single scale pattern can be used in several keys simply by moving the pattern to a different fret.

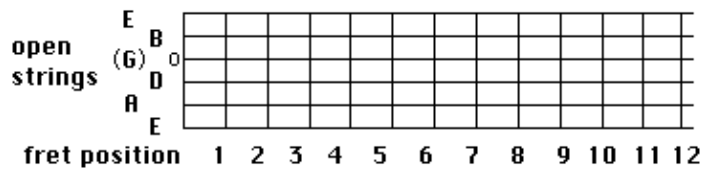
There are several other ways of playing scales on the guitar. Shown below are three of the many additional possibilities for playing a G major scale

Pitch
More G Major

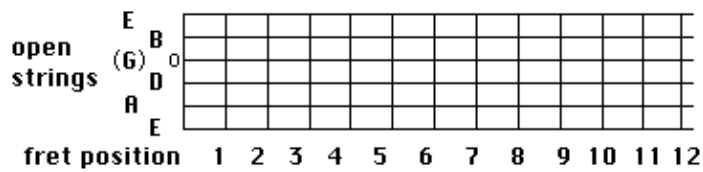
two notes per string



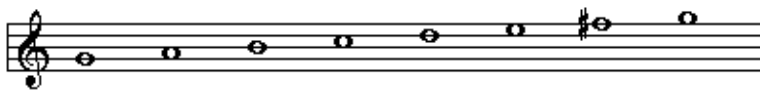
four notes per string



cross string version using as many open strings as possible
 string order 3, 4, 2, 3, 2, 1, 3, 2



All of the above can be used to play the G major scale below.



[\[prev\]](#) [\[Table of Contents\]](#) [\[next\]](#)

Michael Sult

Chapter Six – Note Values and Rhythms

Pulse, Beat

Most music has an underlying pulse or beat. This is especially true of dance music whose pulse is sounded so strongly that people want to "dance to the music". This pulse in music is used as one of the measuring units when notating music into a written form. As you listen to music, you will notice that the pulses are further organized around larger patterns, perhaps 2, 3, 4 or more pulses making up a larger unit called a measure (discussed later in this chapter). The organization of the pulses into measures will determine a composition's meter (also discussed later in this chapter). The most common meters are Two beat (also known as Duple), Three beat (Triple), and Four beat (Quadruple) meters..

Below is a list of popular compositions that are in various 2, 3, 4 beat meters

Most Marches 2 beat pattern

Most Polkas 2 beat pattern

Most football "fight" songs 2 beat pattern

Mozart symphony no. 40 (1st mvt) 2 beat pattern

My Favorite Things 3 beat pattern

Someday My Prince Will Come 3 beat pattern

Star Spangled Banner 3 beat pattern

Blue Danube Waltz 3 beat pattern

Take it to the limit 3 beat pattern

Johnny B. Goode 4 beat pattern

Pulse, Beat

Pitch

Most Rock 'n Roll 4 beat pattern

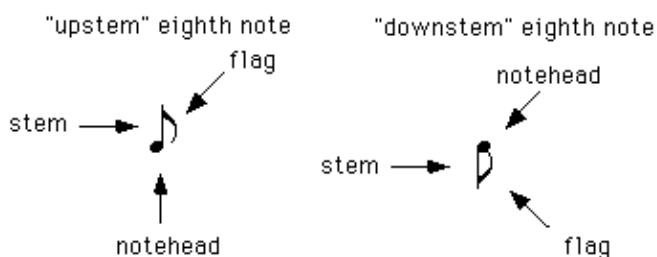
Take the "A" Train 4 beat pattern

Most Jazz Standards 4 beat pattern

Standard Music notation is a system of graphic symbols that can be used to represent the rhythmic and pitch elements of music.

The Note

In music notation, a note is used to represent the sounds of the music. The notes tell the performer the pitch and the duration and the sound. In this chapter the note's duration values will be studied, as well as the general topic of rhythm. First examine the following diagram of an "eighth note" and make note of the different elements that make up the note value.



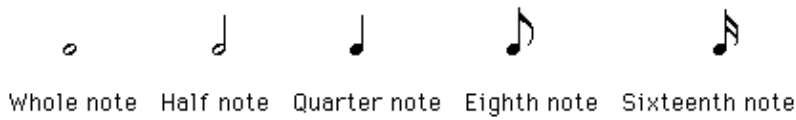
Notice that on the upstem eighth notes the stem is on the right side of the notehead and the flag (on the right side of the stem) is curving downward toward the notehead. These characteristics are true of all upstem notes that have flags.

On the downstem eighth note the stem is on the left side of the notehead and the flag (on the right side of the stem) is curving upward toward the notehead. These characteristics are true of all downstem notes that have flags.

Note Values

Pitch

Some of the note values used in music notation are shown below:



Before examining the relationship of the note values, first notice the different physical characteristics of the notes.

The names of the notes help one understand the relationship between the note values, with regard to duration. Each succeeding note value is twice as fast as the previous note value. A half note is twice as fast as a whole note, a quarter note is twice as fast as a half note, and eighth note is twice as fast as a quarter note and so on. For example a tone of a Whole note value will be twice as long in duration as a tone of A Half note value. Likewise it will take 4 quarter notes sounded in succession to equal the length of duration of 1 Whole note.



The following table shows the relationship of durations of the different note values. Each line represents the same amount of time in duration, in other words the long series of sixteen notes (16 of them) can be played in succession and will last as long as the sustained duration of one whole note. (note: Even though the whole note at top is lined up in the middle of the horizontal axis (with regard to the sixteenth notes), that whole note would sound at the same time as the first of the 16 sixteenth notes. The reason for lining up the note values as shown below is to demonstrate that each note value is subdivided into two of the next faster note values on the next line.)



Pitch

Faster note value of 32nd notes (three flags) and 64th notes (four flags) are also available when needed.

While the note values are related to one another, the note values do not tell a performer how long (in seconds) any specific note will last. For example, if in a composition a half note lasts one second, then a quarter note will last for 1/2 second. If, however, in a different and slower composition a half note last for two seconds, then a quarter note will last for 1 second.

When music is notated, the composer or arranger has to decide which of the note values he or she wants to designate as the pulse or beat. The 3 most commonly used values are the half note, the quarter note, and the eighth note. Once the composer chooses which note value will equal the beat then all of the rhythms can be written in relationship to that beat. If a composer designates a quarter note as the beat and wants to notate a tone that lasts for 4 beats, then a whole note should be written into the score. If the composer instead designated that an eighth note equals the beat then the same musical idea (a tone with a duration of 4 beats) would be written as a half note.

Once a composer designates the note value that equals the beat then the next faster note value will subdivide the beat into 2 part. For example if the Quarter note equals the beat then the eighth note is twice as fast, creating a two-part subdivision. The two-part subdivision of the beat is common in music and referred to as simple meter. Don't let the name fool you, there is a large volume of very complicated music written in simple meter. Most of the syncopated rhythms (syncopated rhythms are rhythms that fit in-between the basic pulse) in the music of the "soul" and "funk" styles (i.e., Earth, Wind, and Fire, or Tower of Power) are in a simple meter. Simple meter refers to the two-part subdivision of the beat.

Although the notation system offers flexibility as to assigning which note equals the beat, there are many traditions in music notation. The most common designation for the beat is the quarter note. Many Classical and Latin compositions that are in fast tempi use the half note as the beat (known as "Alla Breve" or "cut time"). One possible explanation for this notation is that it takes less ink to write a rhythm with a half note beat than to write that rhythm with a quarter note beat, since there are less beams and/or flags to draw. Sometimes the eighth note equals the beat or sometimes 3 eighth notes are grouped together to equal the beat.

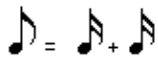
Dotted notes

A dot may be placed after a note to increase its duration by 50%. For instance a regular Quarter note will have the same duration as 2 eighth notes, however a Dotted Quarter note will have the duration of 3 eighth notes (2

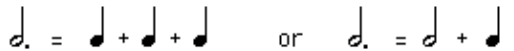
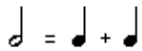
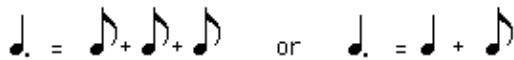
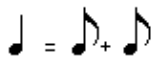
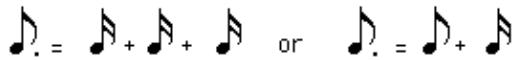
Pitch

+ 1 (50% of 2) = 3). The dotted note value can be used in many ways and it is especially useful in a rhythmic style known as compound meter. In compound meter a dotted note equals the beat and the rhythmic style is one in which each beat has a three-part subdivision.

Regular notes



Dotted notes

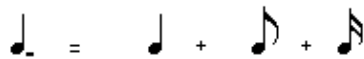


Many styles of music are based on a three part subdivision of the beat. Some of the commonly known styles include Irish Jigs, Shuffle Blues, and 50's Pop Ballads. When notating music in these styles it is helpful to use the dotted note as the beat. Doing so can save both time and ink.

Double Dotted Notes

A second dot can be added to a note, that second dot will add 25% of the original (undotted) value to the note. With 2 dots a note will increase its duration by 75%.

Double dotted notes













Rests

Pitch

Each note has an equivalent rest. A note is a symbol to play a tone on an instrument, while a rest is a symbol instructing the player to be silent for a specific rhythmic duration.

The following table shows the note values and their equivalent rests.

	<u>Note Values</u>	<u>Equivalent Rest</u>
Whole note		 (hangs below the 4th line of the staff)
Half note		 (sits above the 3rd line of the staff)
Quarter note		
Eighth note		
Sixteenth note		

The dot (and double dots) can also be used with rests. The dot has the same effect with rests as with notes; it lengthens the duration of the silence.

Dotted rests

$$\text{--} = \text{--} + \text{>} \qquad \text{>} \cdot = \text{>} + \text{>} \qquad \text{>}\cdot = \text{>} + \text{>}$$

Ties

Another way to extend the duration of a note is to connect it to another note with a tie. A tie is a curved line connecting two noteheads together. The tie creates a single note. The duration of the tied group is the sum of

Pitch

the durations of the two notes. As will be shown later, the tie line is especially useful for notes whose duration carries them "across the barline".



In the following example the eighth notes are beamed together in groups of two. When there are two or more eighth notes (or faster values) in a row, the beamed notation is frequently used instead of individual flags. The purpose of the beaming is to show the location of the faster note values in relationship to the beat. The principles of beaming notes together will be discussed later.

Sometimes the tie line is used to clarify a rhythm with respect to the beat: a rhythm that could be written differently. The top example shows the way the rhythm is syncopated against the beat. Although the lower example seems to be a simpler way of notating the same rhythm, it is not as obvious that the middle three quarter notes are syncopated.



Tempo

As mentioned, the note values do not instruct the performer as to the rate of the pulse, but simply the relationship of the durations to one another. The speed or rate of the pulse is indicated in one of two ways. The first type of tempo marking is a term from the list below. These terms are used to instruct the performer as to the speed of the pulse, however they do not give an exact tempo and are open to interpretation. One performer's "Allegro" might be another's "Vivace".

Tempo term	Speed of the pulse
Presto	Extremely fast
Vivace	Quick, lively
Allegro	Fast, cheerful

Pitch

Moderato	Moderate speed
Andante	Walking speed
Adagio	Slow, at ease
Lento	Slow
Largo	Very Slow

The following terms are used to indicate a change in tempo within a composition.

accelerando – gradually increase tempo (as "Hava Nagilah" is often performed)

ritardando – gradually decrease tempo (as is typical at endings)

The abbreviations of Accel (or Acc.) and Ritard (or Rit.) respectively are commonly used in scores.

Additional terms are also used to help define the tempo.

assai – "much" or "quite" i.e. Allegro assai – quite fast

con brio – "with vigor" or "spirit" i.e. Allegro con brio – fast with vigor

con moto – "with motion" i.e. Moderato con moto – moderate with motion

non troppo – "not too much" i.e. Allegro non troppo – not too fast

poco – "a little" i.e. poco ritardando – slow down a little

Metronome markings

A second, more precise method for indicating the tempo is a "metronome marking" (m.m.). A metronome is a small device that simply "ticks" an audible sound at a steady tempo whose rate is adjustable. It is used frequently for practicing scales and other musical exercises. Metronomes are also valuable to set the precise tempo of a composition. A metronome marking is used to set a note value to a specific duration measured in pulses per minute. For example the following metronome marking indicates that a quarternote should be performed at a rate of 120 per minute. This setting of 120 can be selected on the metronome and the performer can listen to a few clicks to establish the tempo. This tempo can often be committed to memory with a

Pitch

surprising degree of accuracy.

M.M. ♩ = 120

In a different time signature the composer may want to define the speed of a half note or an eighth note.

Modern day MIDI sequencers and drum machines are designed to work with standard metronome settings. One of the features common to MIDI sequencers is the ability to change tempo every measure if desired. Of course, most music uses a relatively steady tempo therefore the metronome marking is very useful for establishing and maintaining the correct tempo for a composition.

Class Assignment:

Links to the Assignment Pages

Each assignment link below is to a GIF file on a single page. Print out each page and complete the assignments. Use your browser's BACK button to return to this page.

- [Note Value Worksheet 1](#)
-

(After printing out a worksheet, use your browser's BACK button to return to this page)

Music reading is a skill that can be developed with regular practice by anyone. One valuable skill to gain is the instant recognition of short rhythmic phrases. The memorization of the following rhythmic units will help in improving one's music reading skills.

The first set of rhythms assumes that the quarter note receives one beat. Within that set the first group contains rhythms that last for one beat. The second group contains rhythms that last for two beats, the third group contains three beat rhythms, and the fourth group contains four beat rhythms. These are not all of the mathematical possibilities however they represent many of the rhythms used in music of many styles.

Pitch

The second set of rhythms assumes that the dotted quarter note receives one beat. The beat can be subdivided into three smaller parts each an eighth note in duration. There are four groups in this set also, the first group contains rhythms that last for one beat. The second group contains rhythms that last for two beats, the third group contains three beat rhythms, and the fourth group contains four beat rhythms. Once again, these are not all of the mathematical possibilities however they represent many of the rhythms used in compound meters.

Divide the class into two groups.

group 1 – clap a steady pulse (andante)

group 2 – perform from the rhythm pattern pages

play each rhythm 4 times then rest for 4 times

periodically switch the roles of group 1 and group 2.

Periodically change tempo.

[\[prev\]](#) [\[Table of Contents\]](#) [\[next\]](#)

Michael Sult

Note Value Worksheet no. 1

Assume that the quarter note receives one count, how many total counts are in the follows series of note values.

Assume that the eighth note receives one count, how many total counts are in the follows series of note values.

Assume that the half note receives one count, how many total counts are in the follows series of note values.

Assume that the dotted quarter note receives one count, how many total counts are in the follows series of note values.

Assume that the dotted eighth note receives one count, how many total counts are in the follows series of note values.

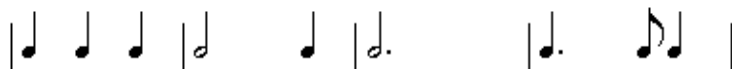
Assume that the dotted half note receives one count, how many total counts are in the follows series of note values.

Chapter Seven – Meter

Barlines and Measures

Almost all music has its rhythm organized in reference to a specific amount of pulses. As an example a waltz is a style of music that uses a three beat pattern, a Rock'n'Roll song often uses a four beat pattern, while a polka usually has a two beat pattern. In music notation vertical lines (called barlines) are used to separate the note values into rhythmic units called measures. Assuming that the pulse is at a steady rate, the length of time of each measure will be equal.

three beat measures separated by barlines



Meter

A Meter signature (or time signature) is a set of two numbers, one placed on top of the other, used to express:

- 1) top the number of pulses in the meter pattern and
- 2) bottom the type of note that will represent the pulse.

Three beats in one measure
Eighth note receives one beat

Two beats in one measure
Half note receives one beat

Four beats in one measure
Quarter note receives one beat

(As will be explained later, the above definition of the time signature is not absolutely accurate for a type of meter known as Compound Meter.)

Pitch

Once the meter is established each beat can be subdivided into faster note values and these can be used with longer note values to create the specific rhythms of a musical composition. The subdivision of the beat is usually into two parts (known as simple meter) or into three parts (known as compound meter)

Simple Meter

Simple meter uses a two part subdivision of the pulse or beat. In the time signature of 4/4, the quarter note receives one count or pulse. The eighth note is the two part subdivision of the basic pulse (two eighth notes equal the same duration as one quarter note). There are countless examples of the simple meter in classical and pop music. Some familiar examples include Beethoven's 5th symphony, Mozart's 40th symphony, the Rock classics, Louie Louie and Roll over Beethoven. Any meter whose rhythmic style is such that the pulse is subdivided into two parts is known as simple meter.

The following meters use the eighth note as the beat and the sixteenth note as the 2-part subdivision.



The following meters use the quarter note as the beat and the eighth note as the 2-part subdivision.



The following meters use the half note as the beat and the quarter note as the 2-part subdivision.



In any meter the subdivision can be divided down further to create faster rhythms as needed.

Compound Meter

Compound meter uses a three part subdivision of the pulse or beat. The standard notation practice for compound meter uses a dotted note value (such as a dotted eighth note, dotted quarter note or dotted half note) to represent the pulse. This pulse can easily be subdivided into three parts because a dotted note value is equal

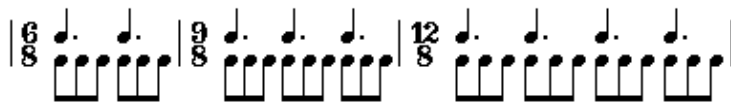
Pitch

to three of the next faster note values. For example, a dotted quarter note equals three eighth notes. The traditional time signatures for compound meter can present some confusion because the bottom number of the time signature often represents the subdivision not the pulse. For example, the time signature of 6/8 seems to indicate that there are six beats to a measure and the eighth note receives one count. However, frequently music in 6/8 time feels as if there are only two beats in a measure and the dotted quarter note receives one count. This is sometimes referred to as 6/8 counted "in two". Similarly the time signature of 9/8 often feels as if there are only three beats in the measure and the dotted quarter receives one count (9/8 counted "in three"). 12/8 often feels like it is "in four". Some compound time signatures are listed below.

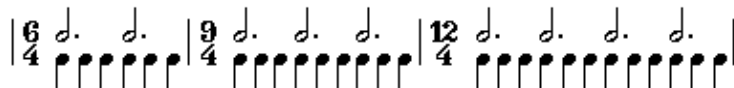
The following meters use the dotted eighth note as the beat and the sixteenth note as the 3-part subdivision.



The following meters use the dotted quarter note as the beat and the eighth note as the 3-part subdivision.



The following meters use the dotted half note as the beat and the quarter note as the 3-part subdivision.



Many popular songs from the 1950's (such as Blueberry Hill by Fats Domino) have the compound meter rhythmic style.

It should be noted that the tempo of a composition will help determine what note value feels like the pulse. During slow compositions in 6/8, for example, the listener may feel all six eighth notes as the basic beats of the meter. However, in a faster composition the listener may feel the dotted quarter note as the pulse and perceive the eighth note as the subdivision of the basic beat.

Borrowed subdivisions

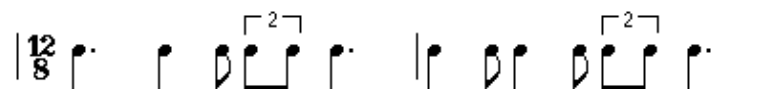
Triplets and other tuplets

Sometimes a composer will want to notate a rhythm that shifts from a simple meter "feel" to a compound meter "feel". This borrowed "compound" subdivision is a "triplet". A triplet symbol (a "3" written above the notes in question) is used to allow for a 3 part subdivision of the beat while remaining in simple meter.



One familiar melody by J. S. Bach entitled Jesu, Joy of Man's Desiring is an example of a 9/8 time feel that is notated in the simple meter of 3/4. Listen to a recording of this piece and notice the three part subdivision of the beat. You will notice that most of the subdivisions are triplets and only rarely is the beat divided into two parts.

Sometimes a compound meter will have a two part subdivision to a beat or beats. This borrowed "simple" subdivision is a "duplet" and is notated with a "2" above the notes of the duplet.



Style and Rhythmic interpretation

It is common for music in the certain styles to be written in simple meter yet have a different interpretation during performance. As an example, a series of eight notes in 4/4 meter may feel like a 12/8 meter. A series of eighth notes in the notation are performed similar to a quarter note followed by an eighth note in 12/8 meter. Jazz and Blues tunes often are notated in simple meter yet performed with a different rhythmic style than the notation provides.

A bluesy phrase like the following (used as the "pay off" phrase of "Don't get Around Much Anymore" by Duke Ellington) is usually written in simple meter.



It is performed with more of a triplet feel, almost as if it were notated as shown below. In performance the player will not play either notation exactly but some compromise of the two. A jazz player's exact placement of the beat and subdivisions will uniquely identify that player's style, ranging from cool to square. The two

Pitch


notated versions when played with computer accuracy are both examples of a square style. Cool is that nebulous area in between the two.




The French Overture style of the baroque era is an example of the performance practice deliberately departing from the written notation. The dotted notes of this compositional style were performed as double dotted notes with the following note played twice as fast.

Following the Score

There are many different symbols in music that instruct that performer as to how to follow the score. Below are a list of the important symbols and terms that every musician should recognize. Following this list is an example of how many of the symbols and terms are used in a musical score.

Coda 

Segno (sign) 

Fine – latin for "the end"

D.C. (Da Capo) – repeat from the beginning

D.C. al Fine – repeat from the beginning then stop at the word "Fine"

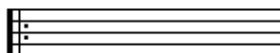
D.C. al Coda – repeat from the beginning then jump to the coda section when you reach the coda symbol

D.S. (Dal Segno) – repeat from the sign

D.S. al Fine – repeat from the sign then stop at the word "Fine"

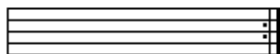
D.S. al Coda – repeat from the sign then jump to the coda when you reach the coda symbol

"Repeat from" signs

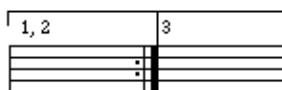


Pitch


"Repeat" signs



"Multiple repeat" signs



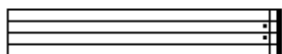
"Repeat previous measure" signs  This symbol is placed in a measure.

"Repeat previous measures" signs  This symbol is placed in a measure and will have a number written above the repeat sign indicating how many measures are to be repeated.

Since music often contains repetition, it is useful to have instructions that tell the reader to jump to a section and repeat that section (instead of having to write that section out again). All these symbols, words or phrases provide an instruction to jump to a new place in the score. The following list summarizes the common instructions and their meaning.

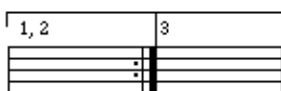
Places you jump **from**:

- 1) D.C., D.C. al Fine or D.C. al Coda (jump back to beginning)
- 2) D.S., D.S. al Coda or D.S. al Coda (jump back to Segno sign)
- 3) Repeat signs (jump back to "repeat from" sign or beginning)



- 4) Multiple Repeat signs (jump back to "repeat from" sign or beginning)


In this example you would jump back the first and second time you reach this measure labelled "1, 2" and the third time you would skip the "1, 2" ending and take the "3" ending and continue forward in the music score.

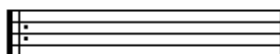


- 5) Coda signs (jump forward to Coda sign after a D.C. al Coda or D.S. al Coda)



Pitch

Places you jump **back to**:

- 1) Beginning (from a D.C., D.C. al Fine, D.C. al Coda, or a Repeat sign)
- 2) the Segno sign  (from a D.S., D.S. al Fine, or D.S. al Coda)
- 3) "Repeat from" sign (from a Repeat or Multiple Repeat sign)



Places to jump **forward to**:

- 1) Coda section  (from a Coda sign) 

The term coda can refer to two different things: 1) as the location from which you jump and 2) the coda section, this place in the score to which you are jumping. Both sections are labelled with the coda sign shown above.

Example Lead Sheet

(After viewing example, use your browser's BACK button to return to this page)

Class Assignments:

Links to the Assignment Pages

Each assignment link below is to a GIF file on a single page. Print out each page and complete the assignments. Use your browser's BACK button to return to this page.

Pitch

- [Barline Worksheet 1](#)
 - [Barline Worksheet 2](#)
-

(After printing out a worksheet, use your browser's BACK button to return to this page)

Perform multi-part rhythms from rhythm games pages.

Listen to recording of songs and determine the meter.

[\[prev\]](#) [\[Table of Contents\]](#) [\[next\]](#)

Michael Sult

Chapter Eight – Beaming

Eighth notes, sixteenth notes and other faster note values have flags attached to the stem of the note. When two or more in a row of these faster note values are notated the flags are often replaced by a beam. Notes that use beams instead of flags must be beamed together in relationship to the pulse. One purpose of the beaming is to show the reader the grouping of note values as they relate to the beat structure of the meter. Beamed note groups should usually start at the beginning of a beat and the beam should stop at the end of the beat. The following examples will illustrate the concept of correct beaming.

Beaming in Simple meter

In the first 4/4 example, each pair of eighth notes in the first measure can be beamed together because the first of each pair begins on the beat. However, in the second measure notice that the first eighth note is not beamed because it is on the second half of the second beat (it is not on the beginning of a beat). The next two eighth notes are beamed together because they are within the third beat of the measure and, more importantly, the first of that pair begins on the beat. The first note of a beamed group should begin on the beat (an exception to this rule will be shown later).

Unbeamed notation

Beamed notation

In the first measure of the next example, all four sixteenth notes of the third beat can be beamed together because the first sixteenth of that group begins on the beat and the entire group makes up one full beat. In the second measure notice that the four sixteenth notes are not beamed together but instead the first two sixteenth notes are beamed with the eighth note in the second beat and the next two sixteenth notes are beamed with an eighth note in the third beat. Notice that in each case the beamed groups begin on the beat and the beamed group lasts for one complete beat.

Incorrect Beaming

Pitch

Combining sixteenth notes and eighth notes (or dotted eighth notes) in beamed groups is common in music notation and below are some of the typical rhythmic figures. In each example it is assumed that the first note of the beamed group begins on the beat.



As mentioned above sometimes a beamed group does not begin on the beat. The following is an example of this type of beaming.



Even though the sixteenth notes do not begin on the beat they can still be beamed together

Beaming in compound meter

Beaming in compound meter has a different look than simple meter. While both meters beam in accordance to the beat, in compound meter that beat is a dotted note value. In 6/8 meter, (when performed "in two") the dotted quarter is the beat and the eighth note is the three part subdivision. A series of three eighth notes, all within a beat, will be beamed together.



It is important that the beamed group starts at the beginning of a dotted quarter pulse and concludes at the end of that same dotted quarter pulse.

The following example shows both a correct and incorrect beaming of rhythms in 9/8 (counted "in three").

Pitch

Musical notation in 6/8 time showing three measures of incorrect beaming. The first measure has a beamed group of four sixteenth notes starting on the first eighth note pulse. The second measure has a beamed group of four sixteenth notes starting on the second eighth note pulse. The third measure has a beamed group of four sixteenth notes starting on the third eighth note pulse. Each measure is labeled "Incorrect Beaming" below it.

Common rhythms in compound meter as shown below. Notice how the beaming of the sixteenth notes works within the eighth note beaming.

Musical notation in 6/8 time showing three measures of correct beaming. The first measure has a beamed group of four sixteenth notes starting on the first eighth note pulse. The second measure has a beamed group of four sixteenth notes starting on the second eighth note pulse. The third measure has a beamed group of four sixteenth notes starting on the third eighth note pulse.

Occasionally the beamed group of a rhythm will not begin or end on the dotted quarter pulse. The following example illustrates this notation, notice how the sixteenth notes in the first measure are beamed in two groups of two instead of grouping all four sixteenth notes together. This beaming allows the reader to see the second pulse of the measure as a new beamed group.

Musical notation in 6/8 time showing two measures. The first measure has a beamed group of two sixteenth notes starting on the first eighth note pulse, followed by another beamed group of two sixteenth notes starting on the second eighth note pulse. The second measure has a beamed group of two sixteenth notes starting on the first eighth note pulse, followed by another beamed group of two sixteenth notes starting on the second eighth note pulse.

The beaming of triplets and other tuplets is in accordance with the borrowed subdivision. As an example, the following passage written in simple meter with triplet eighth notes is beamed similar to compound meter.

Musical notation in 4/4 time showing two measures. The first measure has a triplet of eighth notes beamed together, followed by a single eighth note. The second measure has a triplet of eighth notes beamed together, followed by a single eighth note.

Class Assignments:

Beaming in compound meter

Links to the Assignment Pages

Each assignment link below is to a GIF file on a single page. Print out each page and complete the assignments. Use your browser's BACK button to return to this page.

- [Beaming Worksheet](#)
-

[[prev](#)] [[Table of Contents](#)] [[next](#)]

©1997 Michael Sult

Chapter Nine – Major Key Signatures

As you have seen in the previous chapter, sharp or flat notes are frequently used in major scales. In addition to placing "accidental" sharps or flats in front of the notehead, a key signature can be used to indicate a consistent usage of sharps or flats in a composition. A key signature is placed to the immediate right of the Clef and shows the reader which sharps or flats are consistently used in the composition.

Since the Key of C major does not require any sharped or flatted notes, a blank key signature is appropriate for the key of C.



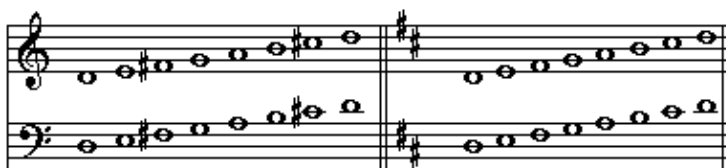
Keys using Sharps

As stated above, a blank key signature is appropriate for the key of C, however the key of G major consistently uses the note F# as the seventh scale degree. If a signature of one sharp (F#) is used at the beginning of a composition that is in the key of G major it will eliminate the need to write any "accidental" #s in front of the "F" noteheads. The key signature of one sharp should be memorized as representing the key of G major.



Pitch

The Key of D major consistently uses both F# and C#. A key signature of two sharps is used to represent the key of D major.



Notice that the fifth note of the key of C (G) is the starting note of the key that has one sharp. Likewise, the fifth note of the key of G (D) is the starting note of the key that has two sharps. The next key is A major (fifth note of D major) containing three sharps. The pattern continues until all seven notes are sharped creating the key of C# major. The key signature for C# major uses all seven sharps and contains all of the sharps used in traditional key signatures containing sharps.

It is important to place the sharp on the traditional locations used for key signatures.

Treble Clef

- 1) The first sharp, F# is always placed on the top line, (never on the first space).
- 2) The second sharp, C# is always placed on the third space.
- 3) The third sharp, G# is always placed on the space above the staff, (never on the second line).
- 4) The fourth sharp, D# is always placed on the fourth line.
- 5) The fifth sharp, A# is always placed on the second space.
- 6) The sixth sharp, E# is always placed on the top space, (never on the first line).
- 7) The seventh sharp, B# is always placed on the third line.

Key Signature for C# major



Bass Clef

- 1) The first sharp, F# is always placed on the fourth line.
- 2) The second sharp, C# is always placed on the second space.
- 3) The third sharp, G# is always placed on the fourth space, (never on the first line).
- 4) The fourth sharp, D# is always placed on the third line.
- 5) The fifth sharp, A# is always placed on the first space, (never on the top line).
- 6) The sixth sharp, E# is always placed on the third space.
- 7) The seventh sharp, B# is always placed on the second line.

Notice that the last sharp of a key signature is always the seventh note (leading tone) of the scale. If you encounter a key signature containing sharps whose letter name you cannot remember, simply go up a half-step from the last sharp in the signature to arrive at the tonic tone (scale degrees 7–8).

Here are a couple of examples.

- 1) The key signature containing three sharps has as its last sharp, "G#". Move up one half-step from "G#" to the tonic note "A".
- 2) The key signature containing six sharps has as its last sharp, "E#". Move up one half-step from "E#" to the tonic note "F#".

Pitch



A major (three sharps) and F# major (six sharps)

Keys using Flats

Some major keys use flats instead of sharps. The key of F major uses all natural notes except Bb. A key signature of one flat (Bb) is used to represent the key of F major.



The key of Bb uses two flats; Bb and Eb. A key signature of two flats is used to represent the key of Bb major.



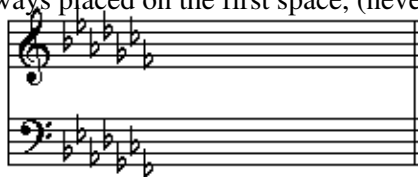
Notice that the fourth note of the key of C (F) is the starting note of the key that has one flat. Likewise, the fourth note of the key of F (Bb) is the starting note of the key that has two flats. The next key is Eb major (fourth note of Bb major) containing three flats. The pattern continues until all seven notes are flatted creating the key of Cb major. The key signature for Cb major uses all seven flats and contains all of the flats used in traditional key signatures containing flats.

Pitch

It is important to place the flat on the traditional locations used for key signatures.

Treble Clef

- 1) The first flat, Bb is always placed on the middle line.
- 2) The second flat, Eb is always placed on the fourth space,(never on the first line).
- 3) The third flat, Ab is always placed on the second space.
- 4) The fourth flat, Db is always placed on the fourth line.
- 5) The fifth flat, Gb is always placed on the second line.
- 6) The sixth flat, Cb is always placed on the third space.
- 7) The seventh flat, Fb is always placed on the first space, (never on the top line).



Key Signature for Cb major

Bass Clef

- 1) The first flat, Bb is always placed on the second line.
- 2) The second flat, Eb is always placed on the third space.
- 3) The third flat, Ab is always placed on the first space, (never on the top line).
- 4) The fourth flat, Db is always placed on the third line.
- 5) The fifth flat, Gb is always placed on the first line, (never on the fourth space).

Pitch

- 6) The sixth flat, Cb is always placed on the second space.
- 7) The seventh flat, Fb is always placed on the space below the staff, (never on the fourth line).

Notice that the second-to-last flat of a key signature is always the tonic note of the scale. If you encounter a key signature containing two or more flats whose letter name you cannot remember, simply look at the second to last flat in the signature to determine the tonic tone.

Here are a couple of examples,

- 1) The key signature containing three flats has as its second to last flat, "Eb". It is the key of Eb.
- 2) The key signature containing six flats has as its second to last flat, "Gb". It is the key of Gb.



Eb major (three flats) and Gb major (six flats)

Be sure to memorize the key signatures of both C# major and Cb major. These key signatures contain the maximum amount of sharps and flats respectively. If you are confident about the positioning of the sharps and flats in these key signatures you will not have any difficulty with any of the other key signatures as they are all derived from the same sequence.

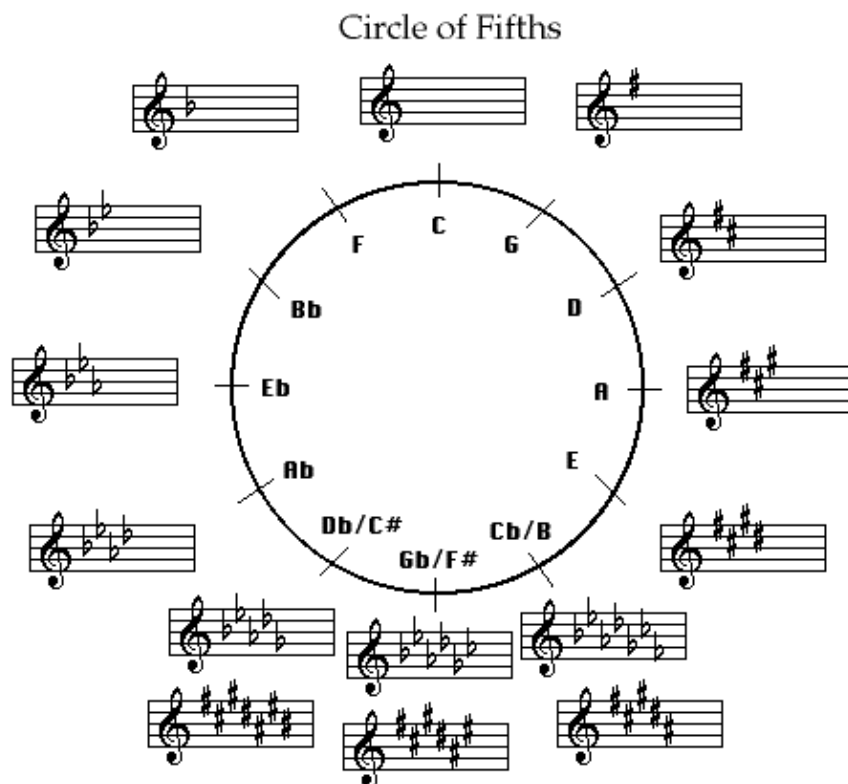
Circle of Fifths

The topic of intervals is taken up later, however the interval from the first note of a scale to fifth note of a scale is used here to organize the scale in a way known as the "Circle of Fifths". The Circle of Fifths consists of a circle with 12 positions marked on the circumference (like an analog clockface) The key of 'C' is at the top of the circle (i.e. 12 o'clock). Moving clockwise, the next position is G major (one sharp), then D major (two sharps), then A major (three sharps), and so on until the key of C# major is positioned where 7 o'clock

Pitch

would be on a clockface. This completes the positioning of the keys that contain sharps.

Next, the keys that contain flats are positioned on the circle moving in a counterclockwise direction. The key of F major (one flat) is located at the 11 o'clock position, the next position (at 10 o'clock) is Bb major (two flats), the next Eb (three flats), and so on until the key of Cb major is located at 5 o'clock. Notice that three positions have two keys (C#/Db, F#/Gb, and B/Cb). These keys are enharmonics of one another, that is, C# major sounds the same as Db major and so on.



Links to the Assignment Pages

Each assignment link below is to a GIF file on a single page. Print out each page and complete the assignments. Use your browser's BACK button to return to this page.

- [Key Signature Worksheet 1](#)
- [Key Signature Worksheet 2](#)

[\[prev\]](#) [\[Table of Contents\]](#) [\[next\]](#)

©1997 Michael Sult

Circle of Fifths

Circle of Fifths

The image displays 12 major chords arranged in a circle, each on a five-line staff in treble clef. The chords are: C (C4), F (F4), Bb (Bb4), Eb (Eb4), Ab (Ab4), Db (Db4), C# (C#4), Gb (Gb4), F# (F#4), G (G4), D (D4), and A (A4). The chords are arranged in a circular pattern, with C at the top and F# at the bottom. The chords are arranged in a circle, with C at the top and F# at the bottom. The chords are arranged in a circle, with C at the top and F# at the bottom.

Chapter Ten – Minor Scales

There are three different forms of the Minor scale:

1. Natural minor,
2. Harmonic minor and
3. Melodic minor.

Each form consists of a series of 7 notes.

The interval pattern for each scale is the same for the first five notes, however the intervals used for the sixth and seventh scale degrees are different for each of the three forms.

Natural Minor

W = Whole Step H = Half Step

1	2	3	4	5	6	7	8
W	H	W	W	H	W	W	



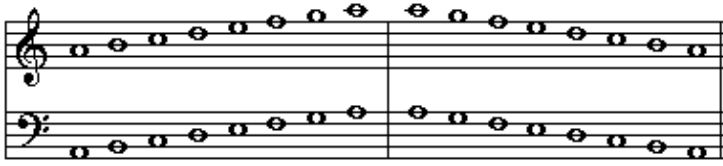
Half step intervals occur between scale degrees 2–3 and 5–6 of the natural minor scale.

The interval of a Whole step occurs between all other scale degrees.

The interval structure is reversed when the scale is descending.

Pitch

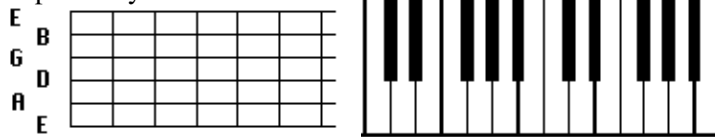
W H W W H W W W W H W W H W



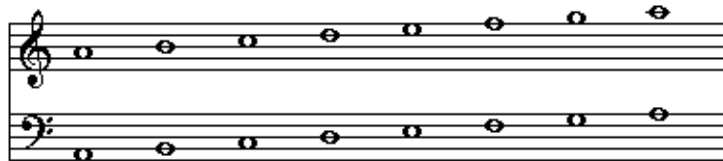
Keyboard/Guitar

natural minor

The interval pattern does not require the use of any black keys when starting on the note 'A'. The piano keyboard is arranged so that the White keys have the appropriate intervals for the A natural minor scale. The half step interval between B–C and E–F on the keyboard also happens to be the scale degrees 2–3 and 5–6 respectively.



1	2	3	4	5	6	7	8
W	H	W	W	H	W	W	
A	B	C	D	E	F	G	A



Pitch

Natural minor scales can be created beginning on any note. The interval pattern of W–H–W–W–H–W–W is always used to create the Natural minor Scale. Natural minor scales beginning on any other note will require the use of one or more black keys.

E natural Minor

1	2	3	4	5	6	7	8
W	H	W	W	H	W	W	
E	F#	G	A	B	C	D	E



D natural Minor

1	2	3	4	5	6	7	8
W	H	W	W	H	W	W	
D	E	F	G	A	Bb	C	D

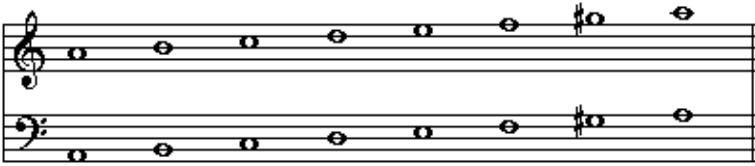


Harmonic Minor

W = Whole Step H = Half Step 1.5 = One and a Half steps

1	2	3	4	5	6	7	8
W	H	W	W	H	1.5	H	

Pitch



Half step intervals occur between scale degrees 2–3, 5–6 and 7–8 of the harmonic minor scale. An interval of One and a Half Steps occurs between scale degrees 6–7.

The interval of a Whole step occurs between all other scale degrees.

W H W W H 1.5 H H 1.5 H W W H W



Keyboard/Guitar

harmonic minor

Harmonic minor scales on the keyboard always will use at least one black key

example: A Harmonic minor

1	2	3	4	5	6	7	8
W	H	W	W	H	1.5	H	
A	B	C	D	E	F	G#	A

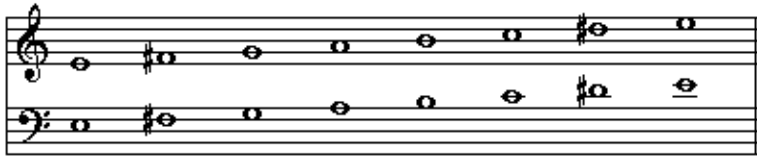


Pitch

Harmonic minor scales can be created beginning on any note. The interval pattern of W-H-W-W-H-1.5-H is always used to create the Harmonic minor Scale.

E harmonic minor scale.

1	2	3	4	5	6	7	8
W	H	W	W	H	1.5	H	
E	F#	G	A	B	C	D#	E



D harmonic minor scale

1	2	3	4	5	6	7	8
W	H	W	W	H	1.5	H	
D	E	F	G	A	Bb	C#	D



Melodic Minor

W = Whole Step H = Half Step

1	2	3	4	5	6	7	8
W	H	W	W	W	W	H	

Melodic Minor

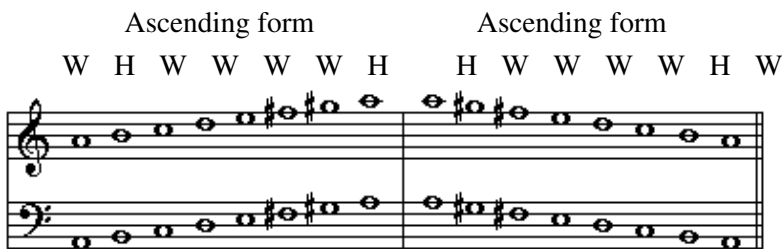
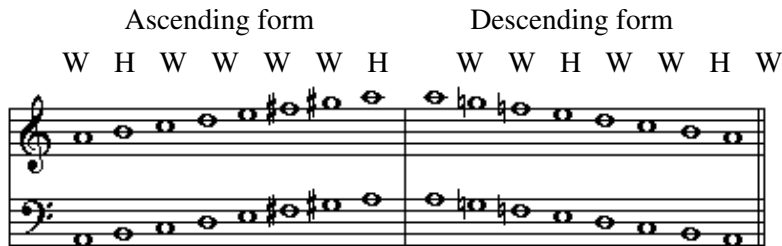
Pitch



Half step intervals occur between scale degrees 2–3 and 7–8 of the melodic minor scale.

The interval of a Whole step occurs between all other scale degrees.

Most theory books state that the melodic minor scale is different when ascending than when descending. (The descending form of the melodic minor scale is the same as natural minor.) While there are many examples of this ascending /descending usage of the minor scale this is not universal by any means. There are several examples of music where the "ascending form" of the melodic minor scale is used when the scale is descending.



Two or even all three forms of the minor scale may occur within a single composition.

The primary purpose of the harmonic minor scale is to give the V chord a major quality (more about chords later) The primary purpose of the melodic minor scale is to avoid the 1.5 step interval that occurs between scale degrees 6 and 7 in harmonic minor while at the same time allowing the V chord to remain major quality. In other words the melodic minor scale consists exclusively of whole steps and half steps (no 1.5 step

Pitch

intervals) and also creates a major chord at the V position in the scale. (See the chapter on triads for more about chords)

Keyboard/Guitar

melodic minor

Melodic minor scales on the keyboard always will use at least one black key.

scale degree 1 2 3 4 5 6 7 8

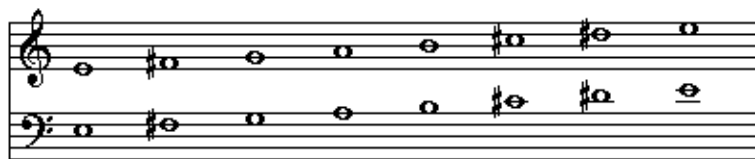
1	2	3	4	5	6	7	8
W	H	W	W	W	W	H	
A	B	C	D	E	F#	G#	A



Melodic minor scales can be created beginning on any note. The interval pattern of W-H-W-W-W-W-H is always used to create the Melodic minor Scale.

E melodic minor

1	2	3	4	5	6	7	8
W	H	W	W	W	W	H	
E	F#	G	A	B	C#	D#	E



Pitch

D melodic minor scale

1 2 3 4 5 6 7 8
W H W W W W H
D E F G A B C# D



Guitar Scale Forms

Natural minor scale forms

<p>Form 1</p> <p>E B G D A E</p>	<p>Form 2</p> <p>E B G D A E</p>
<p>Form 3</p> <p>E B G D A E</p>	<p>Form 4</p> <p>E B G D A E</p>
<p>Form 5</p> <p>E B G D A E</p>	<p>Form 6a</p> <p>E B G D A E</p>
<p>Form 6b</p> <p>E B G D A E</p>	

Harmonic minor scale forms

Pitch

<p>Form 1</p>	<p>Form 2</p>
<p>Form 3</p>	<p>Form 4</p>
<p>Form 5</p>	<p>Form 6a</p>

Melodic minor scale forms (ascending)

<p>Form 1</p>	<p>Form 2</p>
<p>Form 3</p>	<p>Form 4</p>
<p>Form 5</p>	<p>Form 6a</p>

Tunes that are based on a Natural Minor Scale:

God rest Ye merry Gentleman

Europa

Tunes that are based on a Natural Minor Scale:

Blue Bossa

Runaway

Harmonic Minor

Hava Nagila

Symphony no. 40 – Mozart

Melodic Minor

Bourree in E minor (Lute Suite #1) – Bach

Etude no. 1 – Carcassi

The Autumn Leaves – Mercer

Symphony no. 7 (2nd mvt) – Beethoven

Class Assignment:

Links to the Assignment Pages

Each assignment link below is to a GIF file on a single page. Print out each page and complete the assignments. Use your browser's BACK button to return to this page.

Using the worksheets, write out all of the Natural minor, Harmonic minor, and Melodic minor scales

- [Minor Scale Worksheet 1](#)
- [Minor Scale Worksheet 2](#)
- [Minor Scale Worksheet 3](#)
- [Minor Scale Worksheet 4](#)
- [Minor Scale Worksheet 5](#)
- [Minor Scale Worksheet 6](#)
- [Minor Scale Worksheet 7](#)
- [Minor Scale Worksheet 8](#)

(After printing out a worksheet, use your browser's BACK button to return to this page)

Select one of the above melodies with which you are familiar. Play the first phrase of the melody determine the melodic formula. Play the phrase in a different key using the melodic formula as a guide to finding the correct notes within the scale.

[\[prev\]](#) [\[Table of Contents\]](#) [\[next\]](#)

©1997 Michael Sult

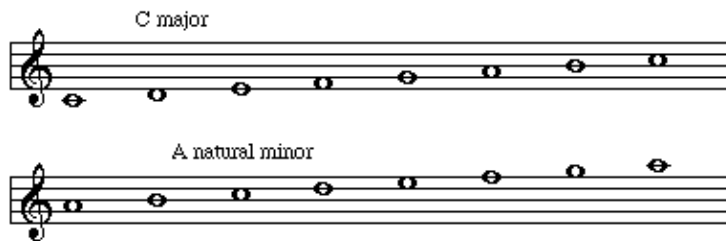
Chapter Eleven – Major / Minor relationships

Minor Scales are compared to major scales in one of two ways:

- 1) Relative relationship
- 2) Parallel relationship

Relative relationship

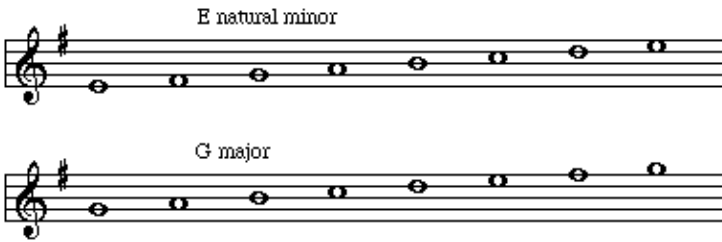
Every Major key shares its key signature with a Minor key (of a different letter name). That minor key is known as the Relative Minor of the Major key. (A minor is the relative minor of C major).



The reverse relationship is also true.

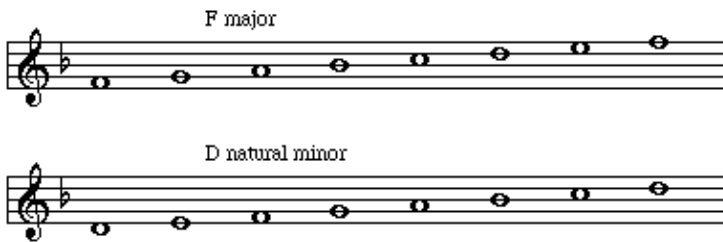
Every Minor key shares its key signature with a Major key (of a different letter name). That Major key is known as the Relative Major of the the Minor key. In the above example, C major is the relative major of A minor. In the following example, G major is the relative major of E minor.

Pitch



The letter name of a Major key's relative minor is always the same letter name as the 6th scale degree of that same major scale.

example: The sixth note of F major is "D", hence D minor is the relative minor of the F major.



Conversely, the letter name of a minor key's relative major is the same letter name as the 3rd scale degree of that minor scale

example: The third note of D minor is "F", therefore F major is the relative major of D minor.

The relative minor is in the natural minor form. If the harmonic or melodic forms are needed one must make the following changes to the natural minor scale:

Harmonic minor = natural minor with a raised 7th scale degree.

(all other tones unchanged)

Melodic minor = natural minor with a raised 6th and 7th scale degree.

(all other tones unchanged)

R = Raise One Half step

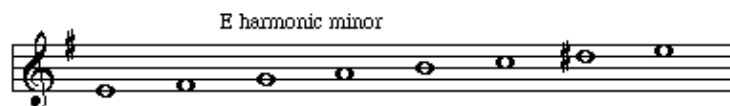
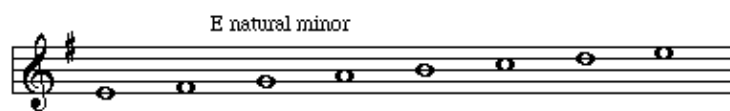
	Pitch							
Natural minor	1	2	3	4	5	6	7	8
Harmonic minor	1	2	3	4	5	6	R7	8
Melodic minor	1	2	3	4	5	R6	R7	8

Example

Scale Degree	1	2	3	4	5	6	7	8
G Major Scale	G	A	B	C	D	E	F#	G

Relative minor begins on the sixth note of major

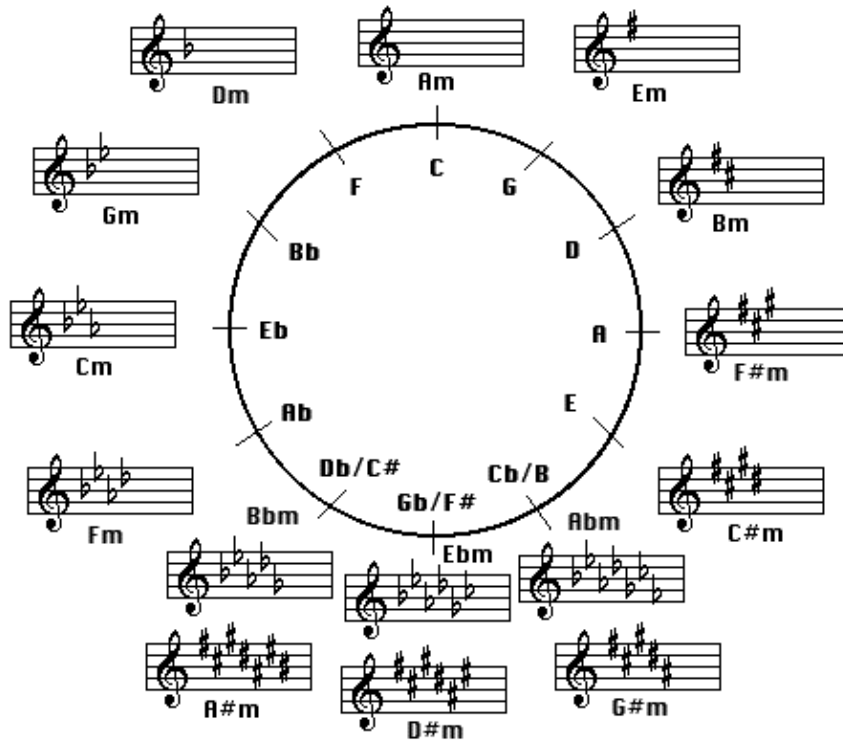
E Natural minor	E	F#	G	A	B	C	D	E
E Harmonic minor	E	F#	G	A	B	C	D#	E
E Melodic minor	E	F#	G	A	B	C#	D#	E



Circle of Fifths

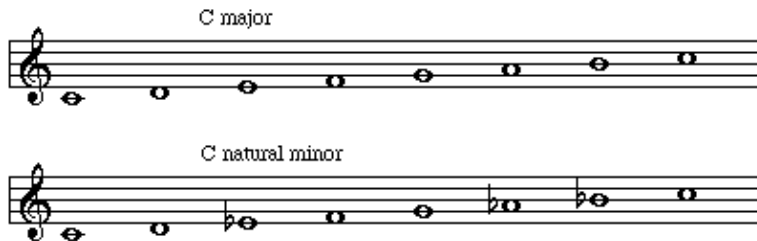
The circle of fifths shown in the chapter on major key signatures can be used with the corresponding relative minor keys.

Circle of Fifths



Parallel relationship

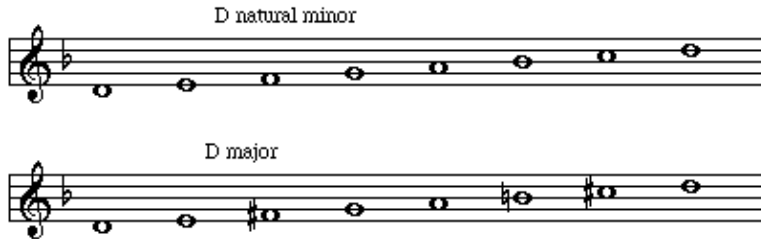
The parallel minor of any major key is the minor key that has the same letter name. (C minor is the parallel minor of C major.)



Pitch

The reverse relationship is also true.

The parallel major of any minor key is the major key that has the same letter name. (D major is the parallel major of D minor.)



When comparing the major and minor forms in their parallel relationship it is customary to use the major scale as the standard model. The minor forms are defined as having alterations to the major form.

L = Lower One Half Step

Major scale	1	2	3	4	5	6	7	8
Natural minor	1	2	L3*	4	5	L6	L7	8
Harmonic minor	1	2	L3	4	5	L6	7	8
Melodic minor	1	2	L3	4	5	6	7	8

* The lowered notes are sometimes referred to as "Flatted" i.e. "b3", however in the Sharp keys (G, D, A, E, B F# C#) some of the lowered notes are not "flats" but instead are "naturals". (see example 2)

Example 1

Scale Degree	1	2	3	4	5	6	7	8
C Major Scale	C	D	E	F	G	A	B	C
Parallel minor begins on the same note as major								
C Natural minor	C	D	E ^b	F	G	A ^b	B ^b	C
C Harmonic minor	C	D	E ^b	F	G	A ^b	B	C
C Melodic minor	C	D	E ^b	F	G	A	B	C

Pitch

C major

C natural minor

C harmonic minor

C melodic minor

Example 2

Scale Degree	1	2	3	4	5	6	7	8
A Major Scale	A	B	C#	D	E	F#	G#	A
Parallel minor begins on the same note as major								
A Natural minor	A	B	C	D	E	F	G	A
A Harmonic minor	A	B	C	D	E	F	G#	A
A Melodic minor	A	B	C	D	E	F#	G#	A

A major

A natural minor

A harmonic minor

A melodic minor

Notice that the melodic minor form has all of the same notes as the parallel major except the third scale degree. It is the third scale degree that most clearly distinguishes a scale as major or minor. As you change from the natural minor form to the harmonic and melodic forms, you are moving back towards the parallel major scale

Pitch

Although it is not as common, the Natural minor scale could be used as the standard from which comparisons are made.

R = Raise One Half step

Natural minor	1	2	3	4	5	6	7	8
Harmonic minor	1	2	3	4	5	6	R7	8
Melodic minor	1	2	3	4	5	R6	R7	8
Major scale	1	2	R3	4	5	R6	R7	8

Example

C Natural minor	C	D	E \flat	F	G	A \flat	B \flat	C
C Harmonic minor	C	D	E \flat	F	G	A \flat	B	C
C Melodic minor	C	D	E \flat	F	G	A	B	C
C Major scale	C	D	E	F	G	A	B	C

C natural minor

C harmonic minor

C melodic minor

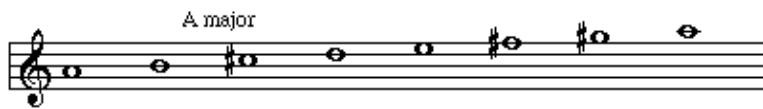
C major

This example again illustrates how the changes made to the natural minor form (to create the harmonic and melodic forms) are changes that move towards the notes of the parallel major scale

Another example in the key of A:

Pitch

A Natural minor	A	B	C	D	E	F	G	A
A Harmonic minor	A	B	C	D	E	F	G#	A
A Melodic minor	A	B	C	D	E	F#	G#	A
A Major scale	A	B	C#	D	E	F#	G#	A



[\[prev\]](#) [\[Table of Contents\]](#) [\[next\]](#)

©1997 Michael Sult

Chapter Twelve – Intervals

The distance between two notes is called an interval. There are two basic types of intervals in music: melodic and harmonic. A melodic interval occurs between consecutive notes of a melody. A harmonic interval occurs between two notes that are played at the same time.

There are two elements to the labelling of intervals in music. The first element is the **interval number** and the second element is the **interval prefix**. The most general measurement of an interval is the interval number. The interval number does not precisely measure an interval and the interval prefix is needed along with the interval number in order to provide an exact measurement of an interval.

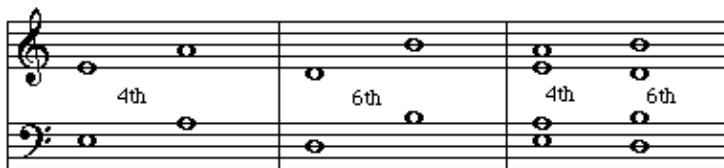
Interval Number

The interval number is a measurement of the difference in the two notes in regard to their position on the staff. To determine the appropriate number for an interval, count (starting with the number 1) the line/space positions from the lower note to the higher note.

As an example, the interval from the note E up to the note A is a 4th (counting the E line position as one; 1– "E" line, 2– "F" space, 3– "G" line, 4– "A" space).

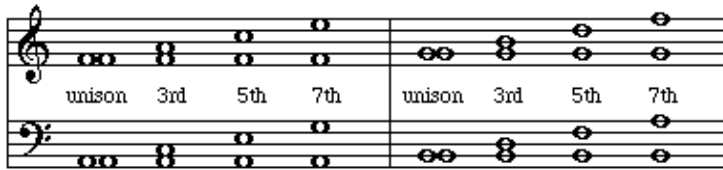
Likewise, the interval between D (space below the staff) and B (middle line) is a 6th (counting the "D" space as one; 1– "D" space, 2– "E" line, 3– "F" space, 4– "G" line, 5– "A" space, 6– "B" line).

The examples in this chapter use both the treble and bass clefs and the labelled interval is in both the treble and bass. The listed interval does not pertain to the distance between notes in the treble and bass.



Notice that both of the notes of odd numbered intervals (3rds, 5ths, 7ths, etc.) are on either lines or spaces.

Pitch

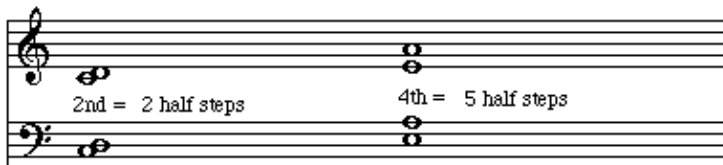


Conversely, on the even numbered intervals (2nds, 4ths, 6ths, etc.) one note is on a line and the other is on a space. This visual guide can help you quickly identify intervals.



Counting Half Steps

In order to precisely measure and label intervals you must count the half step distance between the two notes. When counting the interval number you started your count with the number one, however when counting half step distances you should start your count by designating the first note of the interval with the number zero then count each additional half step from that note to the other note of the interval. As an example the distance in half steps between the notes C and D is two half steps (count C =0, C#= 1, D= 2), and the distance from E to A is five half steps (E=0, F=1, F#=2, G=3, G#=4, A=5)



Interval Prefix (quality)

Five different terms are used as the interval prefix: Perfect, Major, Minor, Diminished, and Augmented. These terms are used to describe what is known as the quality of an interval.

The major scale is used as a model to define the Perfect and Major intervals. Starting from the first note of a major scale and measuring to the other tones of the scale, the following intervals are defined.

Pitch

Perfect Unison (two notes that are the same)

Major Second (First note to the second note of the scale)

Major Third (First note to the third note of the scale)

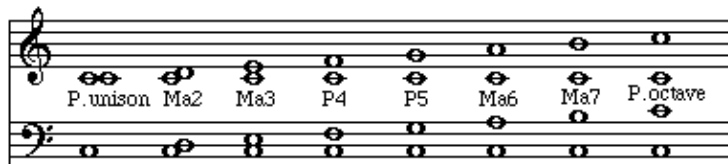
Perfect Fourth (First note to the fourth note of the scale)

Perfect Fifth (First note to the fifth note of the scale)

Major Sixth (First note to the sixth note of the scale)

Major Seventh (First note to the seventh note of the scale)

Perfect Octave (First note to the first note of the next octave)



When starting from the first note of a Major scale, there are no ascending intervals of minor, diminished or augmented quality.

Perfect intervals

Intervals of an unison, fourth, fifth, and octave are sometimes referred to as Perfect. In order to be a perfect interval there must be a precise distance, measured in half steps, between the two notes. As stated above, the intervals from the first note of major scale to the fourth, fifth, and octave are referred to as "Perfect" in regard to their interval prefix. These perfect intervals have a specific measurement in half steps as shown below.

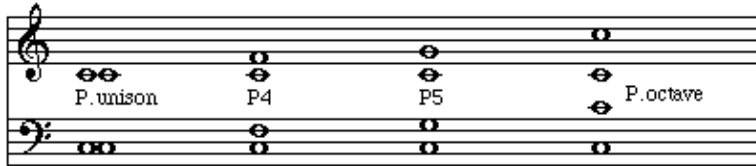
Perfect Unisons have 0 half steps (i.e. C to C)

Perfect Fourths have 5 half steps (i.e. C to F)

Perfect Fifths have 7 half steps (i.e. C to G)

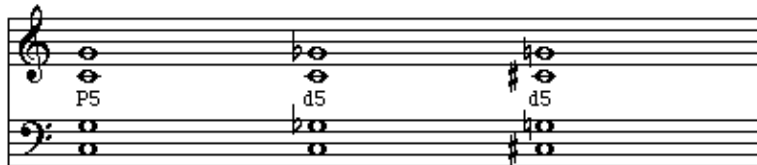
Perfect Octaves have 12 half steps. (i.e. C to the next C)

Pitch



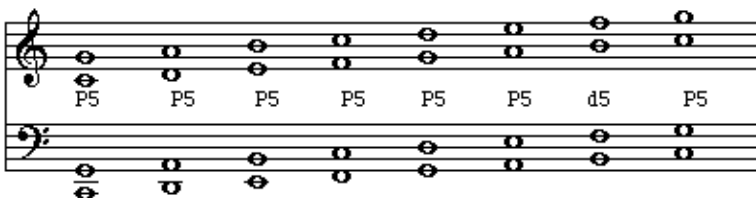
Diminished intervals

Any perfect interval made smaller by one half step becomes diminished. As an example the notes C to G comprise a Perfect Fifth (7 half steps), yet the notes C to Gb comprise a Diminished Fifth (6 half steps) because the distance is one half step smaller than the Perfect Fifth C to G. Similarly, the interval from C# to G is also a Diminished Fifth (6 half steps).



While Fourths, Fifths, and Octaves can be diminished intervals, the most common diminished interval is the Diminished Fifth. In more rare musical situations you might encounter a Diminished Fourth or Diminished Octave.

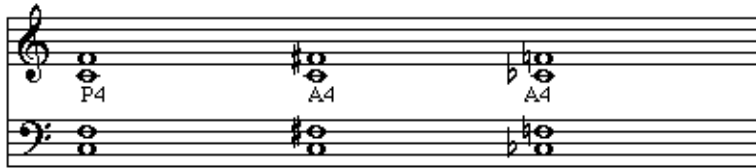
When measuring the fifths that are inherent in the major scale, you will notice that all are perfect except one. The fifth interval above the 7th scale degree is a diminished fifth while the fifth interval above all other scale degrees is a perfect fifth.



Augmented intervals

Pitch

Any perfect interval made larger by one half step becomes augmented. As an example, the notes C to F comprise a Perfect Fourth (5 half steps), yet the notes C to F# comprise an Augmented Fourth (6 half steps) because the distance is one half step larger than the Perfect Fourth C to F. Similarly, the interval from Cb to F is also an Augmented Fourth (6 half steps).



While Unisons, Fourths, Fifths, and Octaves can be Augmented intervals, the most common Augmented intervals are the Augmented Fourth and the Augmented Fifth interval (in addition to Augmented 2nds and Augmented 6th intervals mentioned below). In more rare musical situations you might encounter an Augmented Unison or Augmented Octave.

When measuring the fourths that are inherent in the major scale, you will notice that all are perfect except one. The fourth interval above the 4th scale degree is an augmented fourth while the fourth interval above all other scale degrees is a perfect fourth.



The terms Perfect, Diminished or Augmented are valid prefixes for the intervals of unisons, fourths, fifths, and octaves. The terms Major and Minor are never used as prefixes for unisons, fourths, fifths and octaves

Major intervals

The intervals of seconds, thirds, sixths and sevenths sometimes have a prefix of Major. In order to be a major interval there must be a specific distance in half steps between the two notes of the interval. As stated above, the intervals from the first note of major scale to the second, third, sixth and seventh are referred to as "Major" in regard to their interval prefix. These major intervals have a specific measurement in half steps as shown below.

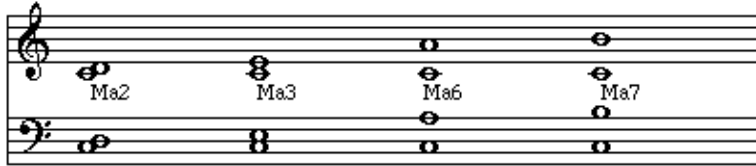
Major Seconds have 2 half steps (i.e. C to D)

Pitch

Major Thirds have 4 half steps (i.e. C to E)

Major Sixths have 9 half steps (i.e. C to A)

Major Sevenths have 11 half steps (i.e. C to B)

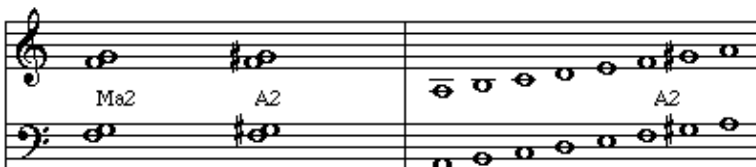


Each tone of a major and minor scale is an interval of a 2nd from its adjacent scale tone. All of the whole step intervals within a scale formula are "Major seconds". As an example, the major scale formula is W-W-H-W-W-W-H (W=whole step, H=half step), indicating that five major seconds are used.



Augmented intervals revisited

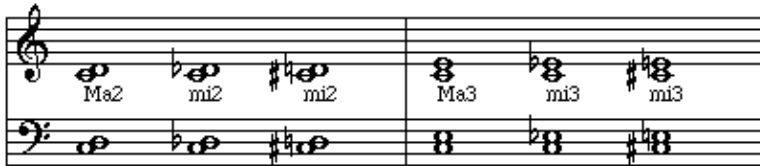
Major intervals made larger by one half step become Augmented. For example, since the interval for F to G (2 half steps) is a major second, the interval from F to G# (3 half steps) is an augmented second. An augmented second interval exists between the sixth and seventh scale degrees of all harmonic minor scales.



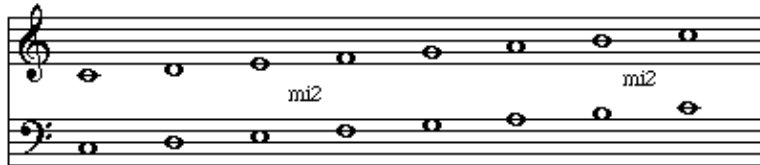
Although any interval can have a prefix of Augmented, the more common augmented intervals in music are the Augmented 2nd (as stated above) and Augmented 6th (in addition to the Augmented 4th and Augmented 5th mentioned in the previous section on augmented intervals). On more rare occasions one may find other augmented intervals.

Minor intervals

Major intervals made smaller by one half step become Minor. As an example, given that the interval from C to D is a major 2nd, the interval from C to Db is a minor 2nd (the interval from C# to D is also a minor 2nd). Likewise, since the interval from C to E is a major 3rd, the interval from C to Eb is a minor 3rd (the interval from C# to E is also a minor 3rd).



The half step intervals in the major scale formula are the location of minor seconds within the scale structure.



Notice that the Harmonic minor scale has three minor 2nds within the scale structure.



Both Major and Minor scales have several minor intervals within their structure. When considering the intervals of a 3rd inherent in the major scale, there are four different minor thirds: 1) from the second note to the fourth note of the scale. 2) from the third note to the fifth note of the scale. 3) from the sixth note up to the first note (first note, next octave) and 4) from the seventh note up to the second note of the scale (second note, next octave).

Pitch

A musical staff with a treble clef and a key signature of one sharp (F#). The staff contains eight pairs of notes, each pair representing an interval. The intervals are labeled as follows: Ma3, mi3, mi3, Ma3, Ma3, mi3, mi3, and Ma3. The notes are: G4-A4, A4-B4, B4-C5, C5-D5, D5-E5, E5-F5, F5-G5, and G5-A5.

Diminished intervals revisited

Minor intervals made smaller by one half step become Diminished. As an example, since the interval from G up to F is a minor 7th, the interval from G# up to F is a diminished 7th. All Harmonic minor scales contain a diminished 7th interval from the seventh note up to the sixth note of the scale (sixth note, next octave).

A harmonic minor

7 1 2 3 4 5 6 7 8

A musical staff with a treble clef and a key signature of one sharp (F#). The staff shows a harmonic minor scale: G4, A4, B4, C5, D5, E5, F#5, G5. The scale is divided into three measures. The first measure contains a chord symbol 'mi7' (E4-G4-B4-D5) and a chord symbol 'd7' (G4-B4-D5-F#5). The second measure contains a chord symbol 'd7' (G4-B4-D5-F#5). The third measure contains a chord symbol 'd7' (G4-B4-D5-F#5).

The terms Major, Minor, Diminished or Augmented are valid prefixes for the intervals of seconds, thirds, sixths and sevenths. The term Perfect is never used as a prefix for seconds, thirds, sixths and sevenths.

Interval Name Summary

The interval prefix qualities can be summarized as follows:

1) Major intervals made smaller by one half step become Minor.

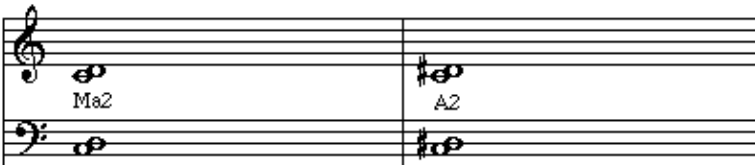
A musical staff with a treble clef and a key signature of one sharp (F#). The staff contains three pairs of notes, each pair representing an interval. The intervals are labeled as follows: Ma7, mi7, and d7. The notes are: G4-A4, A4-B4, and B4-C5.

Pitch

2) Minor and Perfect intervals made smaller by one half step become Diminished.



3) Major and Perfect intervals made larger by one half step become Augmented.



[\[prev\]](#) [\[Table of Contents\]](#) [\[next\]](#)

Michael Sult

Intervals within Scales

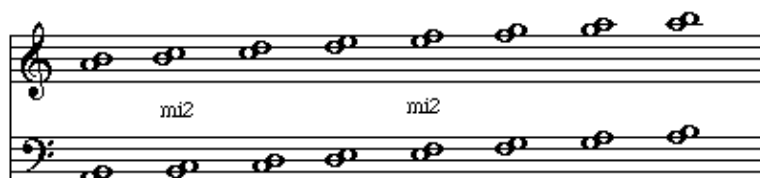
Seconds

All unmarked seconds on this page are Ma2 intervals

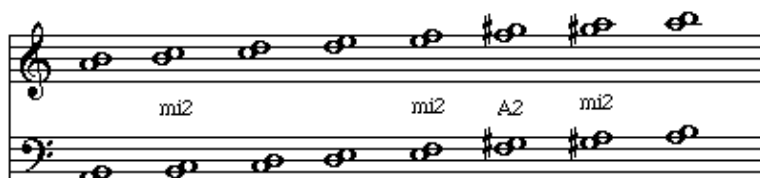
The following second intervals are found in the major scale.



The following second intervals are found in the natural minor scale.

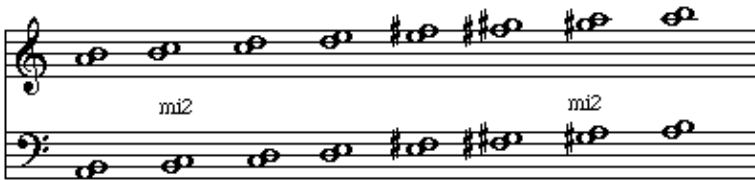


The following second intervals are found in the harmonic minor scale.



The following second intervals are found in the melodic minor scale.

Pitch



Thirds

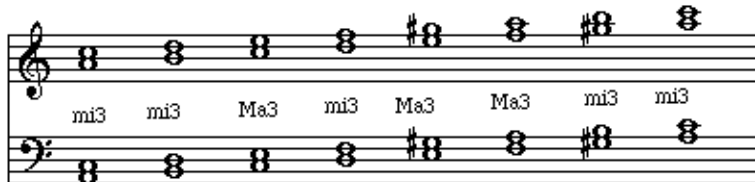
The following third intervals are found in the major scale.



The following third intervals are found in the natural minor scale.



The following third intervals are found in the harmonic minor scale.



The following third intervals are found in the melodic minor scale.

Pitch

A musical staff with two systems (treble and bass clefs) showing pitch intervals. The intervals are labeled as follows: mi3, mi3, Ma3, Ma3, Ma3, mi3, mi3, mi3. The notes are: C4, G4 (mi3); C4, E4 (mi3); C4, F4 (Ma3); C4, G4 (Ma3); C4, A4 (Ma3); C4, E4 (mi3); C4, G4 (mi3); C4, A4 (mi3).

Fourths

The following fourth intervals are found in the major scale.

A musical staff with two systems (treble and bass clefs) showing fourth intervals. The intervals are labeled as follows: P4, P4, P4, A4, P4, P4, P4, P4. The notes are: C4, F4 (P4); C4, G4 (P4); C4, A4 (P4); C4, F#4 (A4); C4, G4 (P4); C4, A4 (P4); C4, F4 (P4); C4, G4 (P4).

The following fourth intervals are found in the natural minor scale.

A musical staff with two systems (treble and bass clefs) showing fourth intervals. The intervals are labeled as follows: P4, P4, P4, P4, P4, A4, P4, P4. The notes are: C4, F4 (P4); C4, G4 (P4); C4, A4 (P4); C4, F#4 (A4); C4, G4 (P4); C4, A4 (A4); C4, F4 (P4); C4, G4 (P4).

The following fourth intervals are found in the harmonic minor scale.

A musical staff with two systems (treble and bass clefs) showing fourth intervals. The intervals are labeled as follows: P4, P4, P4, A4, P4, A4, d4, P4. The notes are: C4, F4 (P4); C4, G4 (P4); C4, A4 (P4); C4, F#4 (A4); C4, G4 (P4); C4, A4 (A4); C4, D#4 (d4); C4, G4 (P4).

The following fourth intervals are found in the melodic minor scale.

Pitch

A grand staff (treble and bass clefs) showing eight pairs of notes. The intervals are labeled below each pair: P4, P4, A4, A4, P4, P4, d4, P4. The notes are: C4-G4, D4-A4, E4-B4, F4-C5, G4-D5, A4-E5, B4-F5, C5-G5.

Fifths

The following fifth intervals are found in the major scale.

A grand staff showing eight pairs of notes. The intervals are labeled below each pair: P5, P5, P5, P5, P5, P5, d5, P5. The notes are: C4-G4, D4-A4, E4-B4, F4-C5, G4-D5, A4-E5, B4-F5, C5-G5.

The following fifth intervals are found in the natural minor scale.

A grand staff showing eight pairs of notes. The intervals are labeled below each pair: P5, d5, P5, P5, P5, P5, P5, P5. The notes are: C4-G4, D4-A4, E4-B4, F4-C5, G4-D5, A4-E5, B4-F5, C5-G5.

The following fifth intervals are found in the harmonic minor scale.

A grand staff showing eight pairs of notes. The intervals are labeled below each pair: P5, d5, A5, P5, P5, P5, d5, P5. The notes are: C4-G4, D4-A4, E4-B4, F4-C5, G4-D5, A4-E5, B4-F5, C5-G5.

The following fifth intervals are found in the melodic minor scale.

Pitch

Musical notation showing pitch intervals on a grand staff. The intervals are labeled as P5, P5, A5, P5, P5, d5, d5, and P5.

Sixths

The following sixth intervals are found in the major scale.

Musical notation showing sixth intervals in the major scale on a grand staff. The intervals are labeled as Ma6, Ma6, mi6, Ma6, Ma6, mi6, mi6, and Ma6.

The following sixth intervals are found in the natural minor scale.

Musical notation showing sixth intervals in the natural minor scale on a grand staff. The intervals are labeled as mi6, mi6, Ma6, Ma6, mi6, Ma6, Ma6, and mi6.

The following sixth intervals are found in the harmonic minor scale.

Musical notation showing sixth intervals in the harmonic minor scale on a grand staff. The intervals are labeled as mi6, Ma6, Ma6, Ma6, mi6, Ma6, mi6, and mi6.

The following sixth intervals are found in the melodic minor scale.

Pitch

A musical staff in treble clef with a key signature of one sharp (F#). The notes are G4, A4, B4, C5, D5, E5, F#5, and G5. Below the staff, the following intervals are labeled: Ma6, Ma6, mi6, Ma6, mi6, mi6, mi6, Ma6. The bass clef staff shows the corresponding bass notes: F#3, G3, A3, B3, C4, D4, E4, and F#4.

Sevenths

The following seventh intervals are found in the major scale.

A musical staff in treble clef with a key signature of one sharp (F#). The notes are G4, A4, B4, C5, D5, E5, F#5, and G5. Below the staff, the following intervals are labeled: Ma7, mi7, mi7, Ma7, mi7, mi7, mi7, Ma7. The bass clef staff shows the corresponding bass notes: F#3, G3, A3, B3, C4, D4, E4, and F#4.

The following seventh intervals are found in the natural minor scale.

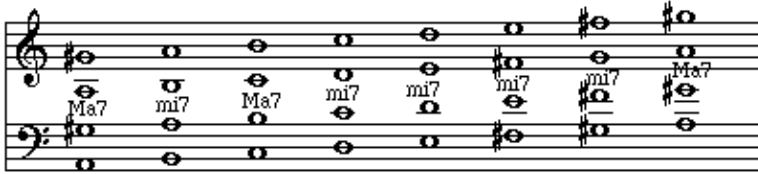
A musical staff in treble clef with a key signature of one sharp (F#). The notes are G4, A4, B4, C5, D5, E5, F#5, and G5. Below the staff, the following intervals are labeled: mi7, mi7, Ma7, mi7, mi7, Ma7, mi7, mi7. The bass clef staff shows the corresponding bass notes: F#3, G3, A3, B3, C4, D4, E4, and F#4.

The following seventh intervals are found in the harmonic minor scale.

A musical staff in treble clef with a key signature of one sharp (F#). The notes are G4, A4, B4, C5, D5, E5, F#5, and G5. Below the staff, the following intervals are labeled: Ma7, mi7, Ma7, mi7, mi7, Ma7, d7, Ma7. The bass clef staff shows the corresponding bass notes: F#3, G3, A3, B3, C4, D4, E4, and F#4.

The following seventh intervals are found in the melodic minor scale.

Pitch



Octaves

All of the octave intervals within the scales discussed so far have been Perfect octaves.

Inverting intervals (harmonic inversion)

Intervals can be inverted by placing the lower note one octave higher. As an example, the interval of a major 3rd from C to E can be inverted by placing the C one octave higher so that it is above the E note. The resulting interval is a Minor 6th.



A simple mathematical formula is used to calculate interval inversions. Simply subtract the interval number in question from the number nine to get the inverted interval number.

Formula: $9 - (\text{Interval number}) = (\text{inverted interval number})$

example $9 - 3 = 6$

The prefix will often change when an interval is inverted. The following prefix changes should be made when inverting intervals.

Interval prefixes and inversions

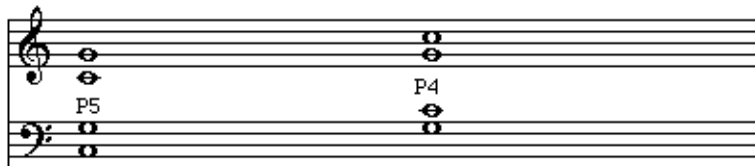
All Major intervals when inverted will become Minor



All Minor intervals when inverted will become Major

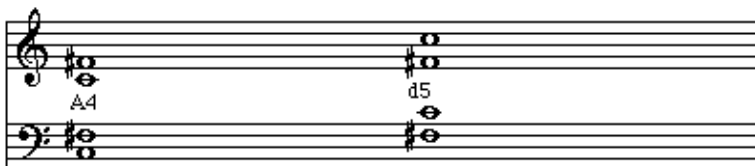


All Perfect intervals when inverted remain Perfect



All Augmented intervals when inverted will become Diminished

All Diminished intervals when inverted will become Augmented



Intervals and their inversion usually have a similar dissonant or consonant effect on the ear. The harmonic interval of a second and its inversion, a seventh, both frequently have a dissonant effect (clashing, tension producing). The interval of a third and its inversion, a sixth, both usually have a consonant effect (harmonious, pleasing effect). The interval of a fourth and its inversion, a fifth, both usually have an open

Pitch

sonorous effect somewhere between consonance and dissonance depending on the musical situation.

Melodic Inversion of Tone Rows

Interval inversion is used in a different way in a style of composition that uses a series of tones called a tone row. As an example, consider the 3 note tone row; A, C, B. When a tone row is inverted, the interval from one note to the next is not changed, simply the direction is reversed.

To create an inversion of the tone row one must change the direction of the interval from one tone to the next when compared to the original tone row. In the original 3 note tone row, the interval from the first two notes (A to C) is up a minor third, the interval from C to B is down a minor second. The inversion of the 3 note tone row would begin on A then go down a minor third to the note F# then up a minor second to the note G. This type of melodic inversion is used frequently in a compositional style known as serialism.

(insert example)

Compound intervals

Compound intervals are intervals greater than an octave. So far the discussion of intervals has been limited to distances up to an octave. Obviously intervals larger than an octave do exist and are quite common in music. The intervals of 9th, 10th, 11th, 12th, 13th, 14th, and 15th are related to intervals that have been previously discussed. As an example, the interval of a major 9th is simply a Major 2nd plus a perfect octave; likewise, an interval of an augmented 11th is simply an augmented 4th plus a perfect octave. Usually it is more convenient to discuss compound intervals as if they were simple intervals (one octave or less), however, it is helpful to use the terms 9th, 11th and 13th when discussing complex chord structures (particularly common in the Jazz style).

Class Assignments:

Links to the Assignment Pages

Each assignment link below is to a GIF file on a single page. Print out each page and complete the assignments. Use your browser's BACK button to return to this page.

• Intervals Worksheet

In order to improvise fluidly in a given key one must have command over the different diatonic intervals of the scale. These intervals are presented as paired into groups of interval inversions.

C Major Scale: Diatonic parallel intervals

Play the major scale in the interval of parallel thirds starting with C⁴/E⁴

Play the major scale in the interval of parallel sixths starting with E⁴/C⁵

Play the major scale in the interval of parallel fifths starting with C⁴/G⁴

Play the major scale in the interval of parallel fourths starting with G⁴/C⁵

Play the major scale in the interval of parallel seconds starting with C⁴/D⁴

Play the major scale in the interval of parallel sevenths starting with D⁴/C⁵

A Natural Minor Scale: Diatonic parallel intervals

Play the natural minor scale in the interval of parallel thirds starting with A³/C⁴

Play the natural minor scale in the interval of parallel sixths starting with C⁴/A⁵

Play the natural minor scale in the interval of parallel fifths starting with A³/E⁴

Pitch

Play the natural minor scale in the interval of parallel fourths starting with E4/A4

Play the natural minor scale in the interval of parallel seconds starting with A3/B3

Play the natural minor scale in the interval of parallel sevenths starting with B3/A4

A Harmonic Minor Scale: Diatonic parallel intervals

Play the harmonic minor scale in the interval of parallel thirds starting with A3/C4

Play the harmonic minor scale in the interval of parallel sixths starting with C4/A5

Play the harmonic minor scale in the interval of parallel fifths starting with A3/E4

Play the harmonic minor scale in the interval of parallel fourths starting with E4/A4

Play the harmonic minor scale in the interval of parallel seconds starting with A3/B3

Play the harmonic minor scale in the interval of parallel sevenths starting with B3/A4

A Melodic Minor Scale: Diatonic parallel intervals

Play the melodic minor scale in the interval of parallel thirds starting with A3/C4

Melodic Inversion of Tone Rows

Pitch

Play the melodic minor scale in the interval of parallel sixths starting with C4/A5

Play the melodic minor scale in the interval of parallel fifths starting with A3/E4

Play the melodic minor scale in the interval of parallel fourths starting with E4/A4

Play the melodic minor scale in the interval of parallel seconds starting with A3/B3

Play the melodic minor scale in the interval of parallel sevenths starting with B3/A4

A scale is made up of a series of seconds and we are accustomed to seeing the notes of the scale presented this way. To gain a different perspective on the notes of the scale studied so far, play the notes in the following sequences:

- 1) Thirds
- 2) Fourths
- 3) Fifths

[\[prev\]](#) [\[Table of Contents\]](#) [\[next\]](#)

Michael Sult

Intervals Worksheet no 1

answers

1=P5

2=mi2

3=P4

4=Ma3

5=mi7

6=mi6

7=P unison

8=P8

9=Ma6

10=Ma2

Note: there aren't any diminished or augmented intervals on the worksheet. But diminished intervals would be 1 half– step smaller than either a Perfect interval (4th,5th or octave) or a Minor interval (2nd, 3rd, 6th or 7th). And Augmented intervals are 1 half–step larger than either a Perfect interval (4th,5th or octave) or a Major interval (2nd, 3rd, 6th or 7th).

Chapter Thirteen – Triads

Introduction

Triads are made up of three different notes. The basic triads used in the music of the Western culture are created by the use of three notes from the basic scales studied previously. Notice that the triads are created by stacking the interval of third (E to G) upon another third (C to E). The lowest note is called the "Root", the middle note the "Third" and the top note the "Fifth".

When discussing triads it is useful to have a name for the entire harmonic structure. There are two elements to the naming of triads in music:

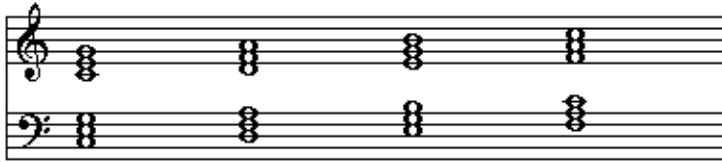
- 1) the root letter name
- 2) the chord suffix (quality).

The terms Major, Minor, Augmented and Diminished are used as a suffix to describe the quality of different triads similar to the way these terms are used as a prefix to describe the quality of intervals. (Notice that "perfect" is not used as a suffix for triads)

A suffix is used along with the letter name of the root to become the name of the triad. Examples: C major triad, or D minor triad. Frequently the term "chord" is used instead of "triad", i.e. C major chord, or D minor chord. ("Chord" is a more general term that includes the combination of 2 tones, 3 tones, 4 tones or more)

The triads shown in the example below are known as "root position/close voicing". The root position/close voicing triads contain two interlocking thirds. The notes of the triads are always either on the lines or on the spaces.

Pitch



Formula for Major and Minor Triads

The first two triads studied in this chapter are the Major triad and the Minor triad. These triads are most easily understood as being the structure that results when sounding the first, third, and fifth note of the Major or Minor scales respectively.

Major Triad

It is useful to memorize the interval structure of the different intervals that make up the major triad. Each major triad is comprised of three different intervals:

- 1) Ma3 (from the root to the 3rd)
- 2) mi3 (from the 3rd to the 5th)
- 3) P5 (from the Root to the 5th).

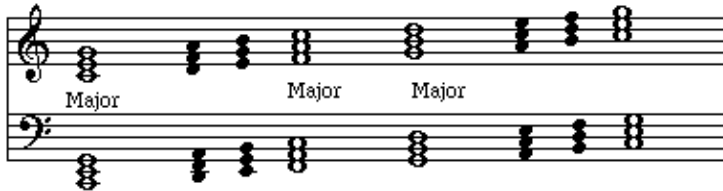
In a Major triad the interval of the lower third is a Major 3rd and the interval of the upper third is a Minor 3rd. Also of importance is that the interval from the Root to the Fifth is a Perfect 5th. The example shows a C major triad.



Pitch

The Major triad is created by the combination of the first, third and fifth notes of any Major scale. In fact, there are two other major triads inherent in the major scale, one whose root is the fourth note of the scale and one whose root is the fifth note of the scale:

- 1) the fourth note (root), sixth note (third), and first note (fifth) – (F major triad)
- 2) the fifth note (root), seventh note (third) and second note (fifth) (G major triad)



As you will see later, major triads are also used in minor keys.

Minor Triad

In a Minor triad the interval of the lower third is a Minor 3rd and the interval of the upper third is a Major 3rd. Also of importance is that the interval from the Root to the Fifth is a Perfect 5th.



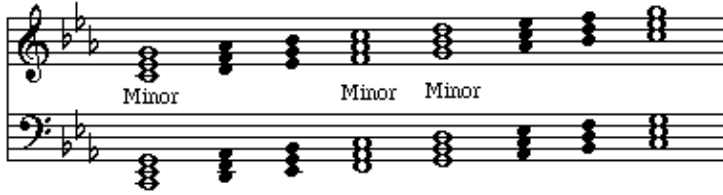
The Minor triad is created by the combination of the first, third and fifth notes of any Minor scale. In fact, there are two other minor triads inherent in the natural minor scale, one whose root is the fourth note of the scale and one whose root is the fifth note of the scale:

- 1) the fourth note (root), sixth note (third), and first note (fifth) (F minor)

Pitch

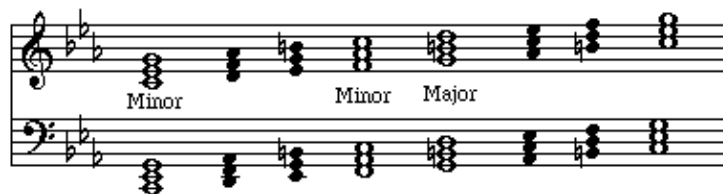
2) the fifth note (root) , seventh note (third) and second note (fifth) (G minor)

Natural minor



When using the Harmonic minor form, the triad whose root is the fifth note of the scale becomes a Major triad because the seventh note of the scale (which is the third of the triad) is raised one half step.

Harmonic minor



As you will see later, Minor triads are used in major keys also.

Root position

Close Voicing/Open Voicing

The triad can be changed to a different "voicing" without changing its "quality" or "position". By placing the third of the triad one octave higher, the triad will be in "open voicing". The basic open voicing is created by

Pitch

interlocking the lower interval of a fifth with the upper interval of a sixth.

Major

The diagram shows four triads on a grand staff (treble and bass clefs). The first triad is labeled 'close voicing' and has notes G4, B4, D5 in the treble and G3, B3, D4 in the bass. The second is 'open voicing' with G4, B4, D5 in the treble and G2, B2, D3 in the bass. The third is 'P5' with G4, B4, D5 in the treble and G3, B3, D4 in the bass. The fourth is 'Ma6' with G4, B4, D5 in the treble and G2, B2, D3 in the bass.

Minor

The diagram shows four triads on a grand staff (treble and bass clefs) with a key signature of one flat (Bb). The first triad is labeled 'close voicing' and has notes G4, Bb4, Db5 in the treble and G3, Bb3, Db4 in the bass. The second is 'open voicing' with G4, Bb4, Db5 in the treble and G2, Bb2, Db3 in the bass. The third is 'P5' with G4, Bb4, Db5 in the treble and G3, Bb3, Db4 in the bass. The fourth is 'mi6' with G4, Bb4, Db5 in the treble and G2, Bb2, Db3 in the bass.

Interval formula for Diminished and Augmented Triads

Augmented Triad

In an Augmented triad the interval of the lower third is a Major 3rd and the interval of the upper third is also a Major 3rd. Also of importance is that the interval of the Root to the Fifth is an Augmented 5th.

Pitch

Augmented triad Ma3 Ma3 A5

The augmented triad is found in the harmonic minor and melodic minor scales as the triad rooted on the third note of those scales.

A harmonic minor

Aug

C harmonic minor

Aug

Although the augmented triad does not exist as a diatonic triad in the major scale (diatonic triads are discussed later in this chapter) it is often used in a major key. The most frequent use of the augmented triad in a Major key is when the triad is rooted on the fifth note of the scale (Oh, Darlin' – Beatles, It's only love, Beatles) or the triad is rooted on the first note of the scale (Baby hold on to Me – Eddie Money, For Once in my life–Stevie Wonder). These augmented triads will always require a note that is outside the basic major scale structure but that is why they provide an interesting sound in major keys, they add a certain tension that is usually resolved by the following chord of the song.

C major

Major Major Aug

The Augmented triad rooted on the fifth note of a Minor key is also frequently used. It should be noted that the D# in the Augmented triad is enharmonic to Eb; a note that is diatonic to the key of C minor. Because of this fact the D# is often written as a Eb.

Pitch

Musical notation showing three triads: Minor, Major, and Augmented. The notation is in treble and bass clefs, with a key signature of two flats (B-flat and E-flat). The triads are labeled 'Minor', 'Major', and 'Aug'.

Root position

Close Voicing/Open Voicing

Augmented

Musical notation showing four augmented triads: close voicing, open voicing, A5, and mi6. The notation is in treble and bass clefs, with a key signature of one sharp (F#).

Diminished Triad

In a Diminished triad the interval of the lower third is a Minor 3rd and the interval of the upper third is also a Minor 3rd. Also of importance is that the interval of the Root to the Fifth is a Diminished 5th.

Musical notation showing four diminished triads: Diminished triad, mi3, mi3, and d5. The notation is in treble and bass clefs, with a key signature of one sharp (F#).

Two diminished triads occur in the harmonic minor scale:

1) the triad rooted on the the second note

Diminished Triad

Pitch

2) the triad rooted on the seventh note.

Musical notation for C harmonic minor scale. The title is "C harmonic minor". The notation shows the scale in both treble and bass clefs. Diminished triads are indicated by "dim" below the notes on the second and seventh degrees of the scale.

One diminished triad occurs in the major scale. It is rooted on the seventh note of the scale.

Musical notation for C major scale. The title is "C major". The notation shows the scale in both treble and bass clefs. A diminished triad is indicated by "dim" below the notes on the seventh degree of the scale.

Root position/Open Voicing

Diminished

Musical notation showing four diminished triads in root position. The triads are labeled: "close voicing", "open voicing", "d5", and "Ma6". The notation shows the notes in both treble and bass clefs.

Triads in Scale systems

Pitch

Each scale has its own pattern of intervals and triads. The following examples show what is termed the "diatonic triads" in the scales discussed so far.

Major scale

In the Major scale system there are three Major triads, three Minor triads and one Diminished triad. It is useful to memorize the order of the quality of triads that occur in a scale. In Major scale the order is:

I–major, II–minor, III–minor, IV–Major, V–major, VI–minor, VII–diminished.

Musical notation showing the diatonic triads in the major scale. The notation consists of two staves, Treble and Bass clefs. The triads are labeled as follows: I Maj, II min, III min, IV Maj, V Maj, VI min, VII dim, and VIII Maj.

I ii iii IV V vi vii I

Natural minor

In Natural minor there are three Minor triads, three Major triads and one Diminished triad. In natural minor the order of triads is:

I–minor, II–diminished, III–major, IV–minor, V–minor, VI–major, VII–major.

Musical notation showing the diatonic triads in the natural minor scale. The notation consists of two staves, Treble and Bass clefs, with a key signature of two flats. The triads are labeled as follows: I min, II dim, III Maj, IV min, V min, VI Maj, VII Maj, and VIII min.

i ii III iv v VI VII i

Pitch

Harmonic minor

In the Harmonic minor scale there are two Minor triads, two Major triads, two Diminished triads and one Augmented triad. In harmonic minor the order of triads is:

I–minor, II–diminished, III–augmented, IV–minor, V–major, VI–major, VII–diminished.

Musical notation showing the triads of the Harmonic minor scale in two staves (treble and bass clef). The triads are labeled as follows: min, dim, Aug, min, Maj, Maj, dim, min.

i ii III iv V VI vii i

Melodic minor

As in Harmonic minor, Melodic minor has two Minor triads, two Major triads, two Diminished triads and one Augmented, yet the triads occur in a different order than they do in Harmonic minor. In melodic minor the order of triads is:

I–minor, II–minor, III–augmented, IV–major, V–major, VI–diminished, VII–diminished.

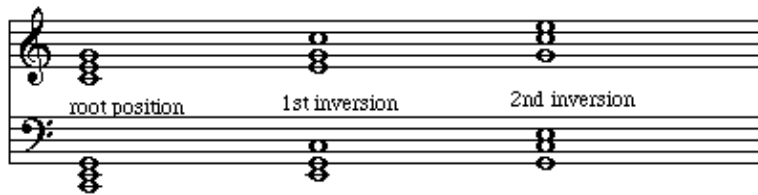
Musical notation showing the triads of the Melodic minor scale in two staves (treble and bass clef). The triads are labeled as follows: min, min, Aug, Maj, Maj, dim, dim, min.

i ii III IV V vi vii i

Inversions

The tones of the triads can be mixed up in different order to create what is known as inversions. When changing from close voicing to open voicing, the top two notes of the triad were inverted, however the root of the triad always remained as the lowest tone. When the Root is the lowest tone the triad is referred to as Root position. All of the close and open voicing triads presented so far in this chapter have been in root position.

When a tone other than the root is the lowest tone, the triad is referred to as either 1st inversion (3rd of the chord is the lowest note) or 2nd inversion (5th of the chord is the lowest note).



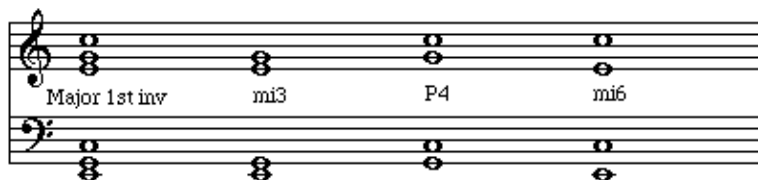
1st inversion

First inversion triads that are in close position have a specific look on the manuscript. The interval of a 3rd is interlocked with the interval of a 4th. It is useful to memorize the quality of the intervals that make up the first inversion triads.

Major

The major triad, when in 1st inversion, has a mi3 interval (the 3rd to the 5th) interlocking with a P4 interval (the 5th up to the root). The outside interval is a mi6 (3rd up to the root).

Major triad in 1st inversion



Minor

Pitch

The minor triad, when in 1st inversion, has a Ma3 interval (the 3rd to the 5th) interlocking with a P4 interval (the 5th up to the root). The outside interval is a Ma6 (3rd up to the root).

Minor triad in 1st inversion

A musical staff with two systems (treble and bass clefs) showing four chords in 1st inversion of a minor triad. The chords are labeled: 'Minor 1st inv', 'Ma3', 'P4', and 'Ma6'. The notes are: F4, A4, C5 (labeled 'Minor 1st inv'); A4, C5, E5 (labeled 'Ma3'); C5, E5, F4 (labeled 'P4'); and E5, F4, A4 (labeled 'Ma6').

Augmented

The augmented triad, when in 1st inversion, has a Ma3 interval (the 3rd to the 5th) interlocking with a d4 interval (the 5th up to the root). The outside interval is a mi6 (3rd up to the root).

Augmented triad in 1st inversion

A musical staff with two systems (treble and bass clefs) showing four chords in 1st inversion of an augmented triad. The chords are labeled: 'Aug 1st inv', 'Ma3', 'd4', and 'mi6'. The notes are: F#4, A#4, C#5 (labeled 'Aug 1st inv'); A#4, C#5, E#5 (labeled 'Ma3'); C#5, E#5, F#4 (labeled 'd4'); and E#5, F#4, A#4 (labeled 'mi6').

Diminished

The diminished triad, when in 1st inversion, has a mi3 interval (the 3rd to the 5th) interlocking with a A4 interval (the 5th up to the root). The outside interval is a Ma6 (3rd up to the root).

Diminished triad in 1st inversion

Pitch

Musical notation showing four triads in 2nd inversion on a grand staff. The triads are labeled: dim 1st inv, mi3, A4, and Ma6. The notes are: dim 1st inv (F, A, C), mi3 (D, F, A), A4 (C, E, G), and Ma6 (F, A, C).

2nd inversion

Second inversion triads that are in close position have a specific look on the manuscript. The interval of a 4th is interlocked with the interval of a 3rd. It is useful to memorize the quality of the intervals that make up the second inversion triads.

Major

The major triad, when in 2nd inversion, has a P4 interval (the 5th up to the root) interlocking with a Ma3 interval (root to the 3rd). The outside interval is a Ma6 (5th up to the 3rd).

Major triad in 2nd inversion

Musical notation showing four major triads in 2nd inversion on a grand staff. The triads are labeled: Maj 2nd inv, P4, Ma3, and Ma6. The notes are: Maj 2nd inv (F, A, C), P4 (C, F), Ma3 (F, A, C), and Ma6 (F, A, C).

Minor

The minor triad, when in 2nd inversion, has a P4 interval (the 5th up to the root) interlocking with a mi3 interval (root to the 3rd). The outside interval is a mi6 (5th up to the 3rd).

Minor triad in 2nd inversion

Pitch

Musical notation showing four triads in 2nd inversion on a grand staff (treble and bass clefs). The triads are labeled: Min 2nd inv, P4, mi3, and mi6. The notes are: Min 2nd inv (F4, A4, C5), P4 (F4, C5, F5), mi3 (F4, A4, Bb4), and mi6 (F4, A4, C5).

Augmented

The augmented triad, when in 2nd inversion, has a d4 interval (the 5th up to the root) interlocking with a Ma3 interval (root to the 3rd). The outside interval is a mi6 (5th up to the 3rd).

Augmented triad in 2nd inversion

Musical notation showing four augmented triads in 2nd inversion on a grand staff. The triads are labeled: Aug 2nd inv, d4, Ma3, and mi6. The notes are: Aug 2nd inv (F#4, A#4, C#5), d4 (F#4, C#5, F#5), Ma3 (F#4, A#4, B#4), and mi6 (F#4, A#4, C#5).

Diminished

The diminished triad, when in 2nd inversion, has a A4 interval (the 5th up to the root) interlocking with a mi3 interval (root to the 3rd). The outside interval is a Ma6 (5th up to the 3rd).

Diminished triad in 2nd inversion

Musical notation showing four diminished triads in 2nd inversion on a grand staff. The triads are labeled: dim 2nd inv, A4, mi3, and Ma6. The notes are: dim 2nd inv (Fb4, Ab4, Cb5), A4 (Fb4, Cb5, Fb5), mi3 (Fb4, Ab4, Gb4), and Ma6 (Fb4, Ab4, Cb5).

Arpeggio/Alberti Bass

Dominant 7th structure

Other Triadic Structures

Sus4

Sus2

Major b5

Class Assignments:

Links to the Assignment Pages

Each assignment link below is to a GIF file on a single page. Print out each page and complete the assignments. Use your browser's BACK button to return to this page.

- [Triad Worksheet 1](#)

(After printing out a worksheet, use your browser's BACK button to return to this page)

Michael Sult

Triad Worksheet no.1

answers

1 = D min 2 = G# dim 3 = C min 4 = F maj 5 = Eb aug 6 = G min 7 = B maj

Chapter Fourteen – Modes

Introduction

The Major scale can be used as a "parent scale" from which six additional relative scales can be created. They are called relative scales because they are all related to the same key signature. The natural minor scale is one of the relative scales (referred to as relative minor). A new scale can be created by starting on any scale degree and designating that tone as the starting point (or new tonic) for an one octave scale that has the same notes as the "parent" major scale. Using the Key of C major as the "parent" scale (key signature with no sharps or flats), six additional scales can be created.

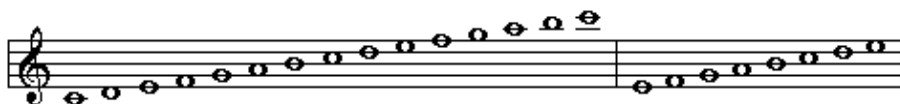
As an example, within the parent "C" major scale, there is a scale from D to D (d,e,f,g,a,b,c,d),

(dorian)



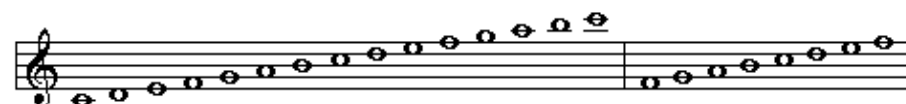
a scale from E to E (e,f,g,a,b,c,d,e),

(phrygian)



a scale from F to F (f,g,a,b,c,d,e),

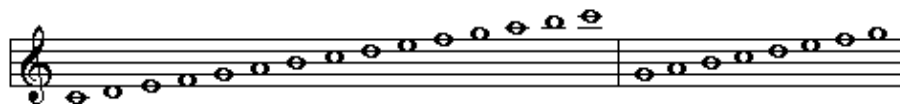
(lydian)



Pitch

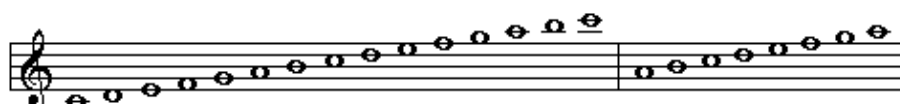
a scale from G to G (g,a,b,c,d,e,f,g),

(mixolydian)



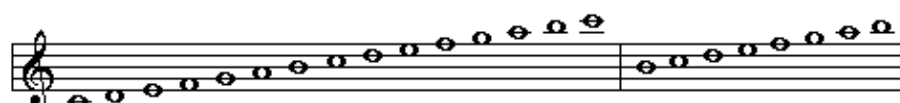
a scale from A to A (a,b,c,d,e,f,g,a),

(aeolian), does this look familiar?



a scale from B to B (b,c,d,e,f,g,a,b)

(locrian)



Often these scales are collectively referred to as "modes". The use of some of these modes date back to early Greek culture. Their original names are still used today.

The names are listed below:

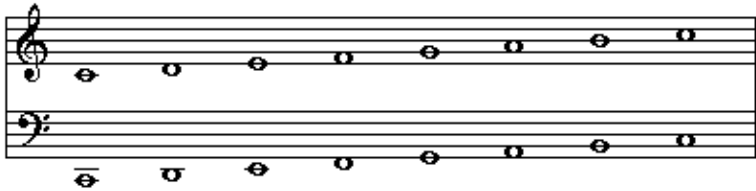
Ionian, Dorian, Phrygian, Lydian, Mixolydian, Aeolian, and Locrian

Only Ionian has the same formula as the major scale. None of the other additional scales have the same formula as major scales (with reference to their starting note) and each has an unique interval formula. These additional scales are useful in many styles of music and some of them (along with some additional scales) are commonly used in jazz, latin, rock, blues and other popular music styles.

Ionian

This mode has the same interval structure as a major scale, i.e. C Ionian is the same as C major.

	W	W	H	W	W	W	H	
	1	2	3	4	5	6	7	8



C Ionian is the same as C Major

Dorian

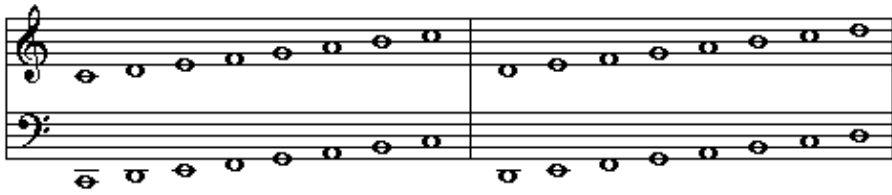
Relative comparison

The Dorian mode (or scale) can be formed by starting on the 2nd note of any major scale and continuing up one octave using notes from the original major scale. For example, the key of C major can be used to find the notes of a dorian scale. It is not "C" dorian but some other letter name (the 2nd note of C major). By counting up the C major scale to the second note, you arrive at "D". Start on D and continue up one octave (using notes from C major) to create a D dorian scale. The scale is known as the "D" dorian mode (or scale, the terms "mode" and "scale" are used interchangeably in this chapter)

D dorian is the "relative dorian" of C major.

W	W	H	W	W	W	H		W	H	W	W	W	H	W	
1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8

Pitch



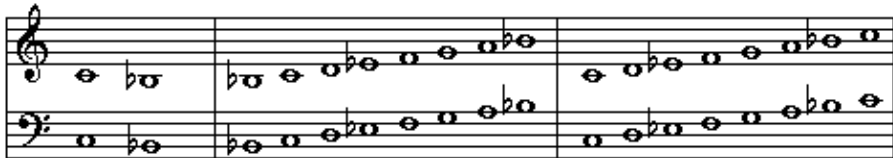
C major

D dorian

To find the dorian scale that starts on "C", you simply reverse the process and use the notes of a major scale whose second note is "C". Since the distance from the first note to the second note of a Major scale is a whole step (a major 2nd), you go down a whole step from "C" to the note "Bb" and use the notes of Bb major (yet starting on C) to create a C dorian scale.

C dorian is the "relative dorian" of Bb major.

W W H W W W H W H W W W H W
 1 2 3 4 5 6 7 8 1 2 3 4 5 6 7 8



Bb major

C dorian

Musicians who frequently use the dorian scale do not rely on this process to find the notes of a dorian scale (although they are certainly aware of this relationship), but instead will study the scale with exercises that relate directly to the tonic of the scale. In other words they do not play exercises in Bb major to study the C dorian scale, but instead play exercises "custom" written in the C dorian scale. The dorian scale is one of the basic scales used by jazz performers in "modal playing", a style popularized by Miles Davis' group and others in the 1960's.

The dorian scale is commonly used in Jazz (i.e. "So What" by Miles Davis), Latin/Rock (i.e. "Oye Como Va" by Santana), Folk (i.e. "Scarboro Faire" by Simon and Garfunkel) and other styles.

Pitch

So What

Musical notation for 'So What' in 4/4 time. The bass line features a D dorian scale starting on the second measure. The treble clef part shows a whole rest in the first measure, followed by a D major triad in the second measure. The text 'D dorian' is written above the scale in the third measure.

Oye Como Va

Musical notation for 'Oye Como Va' in 4/4 time. It features three staves: Guitar (Gtr), Organ, and Bass. The Organ part includes chords Am7 and D9. The Bass part includes an 8va octave sign. The text 'A dorian' is written above the scale in the third measure.

Scarboro Faire

Musical notation for 'Scarboro Faire' in 3/4 time, showing a single melodic line in the treble clef.

Dorian is one of the scales that can be used against a dominant seventh chord (of the same root) to create a typical rock/blues guitar solo style. This style emphasizes a minor third in the solo guitar against the major third in the rhythm guitar. (Additional scales that create this effect include minor pentatonic and the blues scales discussed later)

Pitch

C dorian

C mixolydian

Parallel comparison

A different perspective on the dorian scale can be gained by comparing the interval structure of the dorian scale to the interval structure of the parallel major scale. The parallel major scale has the same letter name tonic. The dorian scale could be viewed as a major scale with both a lowered third and a lowered seventh scale degree.

1 2 3 4 5 6 7 8 1 2 b3 4 5 6 b7 8

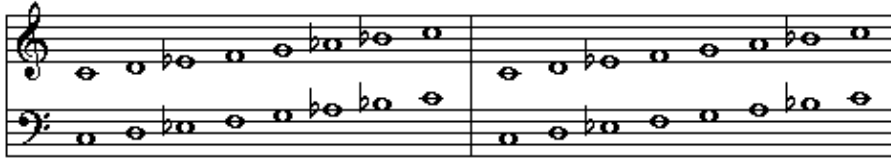
C major

C dorian

Since the dorian scale has a minor third interval from the tonic to the third scale degree, it is one of the "minorish" type of modes and is often compared to natural minor. The interval formula for Dorian is similar to natural minor (of the same starting note) except that a half step occurs between 6–7 (instead of 5–6 as in natural minor). In other words, dorian is like natural minor with a raised sixth scale degree.

W H W W H W W W H W W W H W
 1 2 3 4 5 6 7 8 1 2 3 4 5 #6 7 8

Pitch



C natural minor

C dorian

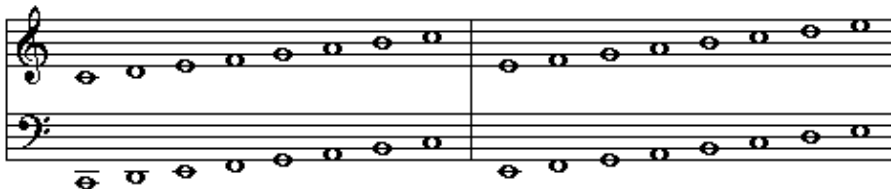
Phrygian

Relative comparison

The Phrygian mode can be formed by starting on the 3rd note of any major scale and continuing up one octave using notes from the original major scale. For example, the key of C major can be used to find the notes of a phrygian scale. It is not "C" phrygian but some other letter name (the 3rd note of C major). By counting up the C major scale to the third note, you arrive at "E". Start on E and continue up one octave (using notes from C major) to create an E phrygian scale.

E phrygian is the "relative phrygian" of C major.

H W W W H W W



C major

E phrygian

To find the phrygian scale that starts on "C", you simply reverse the process and use the notes of a major scale whose third note is "C". Since the distance from the first note to the third note of a Major scale is two whole steps (a major 3rd), you go down two whole steps from "C" to the note "Ab" and use the notes of Ab major

Pitch

(yet starting on C) to create a C phrygian scale.

C phrygian is the "relative phrygian" of Ab major.



Ab major

C phrygian

Parallel comparison

The interval structure of the phrygian scale can be compared to the interval structure of the parallel major scale. The parallel major scale has the same letter name tonic. The phrygian scale could be viewed as a major scale with a lowered second, third, sixth and seventh.

1 2 3 4 5 6 7 8 1 b2 b3 4 5 b6 b7 8



C major

C phrygian

The interval formula for phrygian is similar to natural minor (of the same starting note) except that a half step occurs between 1-2 (instead of 2-3 as in natural minor). In other words, phrygian is like natural minor with a lowered second scale degree.

W H W W H W W H W W W H W W
1 2 3 4 5 6 7 8 1 b2 3 4 5 6 7 8

Pitch



C natural minor

C phrygian

Probably the most common use of the phrygian mode is in Spanish Flamenco music. The phrygian scale, with its half step interval at the beginning of the scale, is used (along with some other scales) to create the Spanish Flamenco sounds. Performers who are experienced in this style are as familiar with the phrygian scale as they are with the major scale and other basic scales.

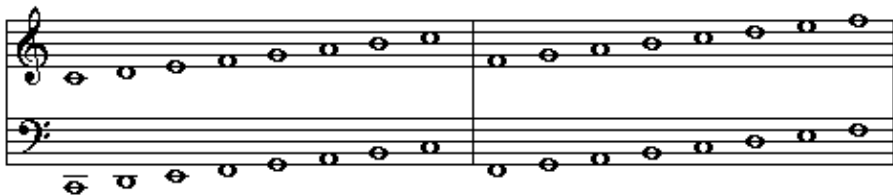
Lydian

Relative comparison

The Lydian mode can be formed by starting on the 4th note of any major scale and continuing up one octave using notes from the original major scale. For example, the key of C major can be used to find the notes of a lydian scale. It is not "C" lydian but some other letter name (the 4th note of C major). By counting up the C major scale to the fourth note, you arrive at "F". Start on F and continue up one octave (using notes from C major) to create a F lydian scale.

F lydian is the "relative lydian" of C major.

W W W H W W H



Lydian

Pitch

C major

F lydian

To find the lydian scale that starts on "C", you simply reverse the process and use the notes of a major scale whose fourth note is "C". Since the distance from the first note to the fourth note of a Major scale is two and a half steps (a perfect 4th) you go down two whole steps from "C" to the note "G" and use the notes of G major (yet starting on C) to create a C lydian scale.

C lydian is the "relative lydian" of G major.



G major

C lydian

Parallel comparison

The interval formula for lydian is similar to the interval structure of the parallel major scale (same tonic) except that, in lydian, a half step occurs between 4–5 (instead of 3–4 as in Major). The lydian scale is like a major scale with a raised fourth scale degree.

W W H W W W H W W W H W W H
1 2 3 4 5 6 7 8 1 2 3 #4 5 6 7 8



C major

C lydian

Often Jazz players will use the lydian scale against the tonic chord in a tune that is in a Major key. As an example, if they are playing "Take the A Train" in C, either the soloist, pianist, or both, might use the C lydian scale (or chords that reflect that scale) during the times that the C Major chord is used. As stated above this is

Pitch

a change of one note (the F becomes F#) and that note is a characteristic sound of Jazz harmony. That sound (the note "F#" in the context of C major) is often referred to as a "#4" or a "#11" and sometimes enharmonically as a "b5.

C Lydian

Cma7 D7#5

Mixolydian

Relative comparison

The Mixolydian mode can be formed by starting on the 5th note of any major scale and continuing up one octave using notes from the original major scale. For example, the key of C major can be used to find the notes in a mixolydian scale. It is not "C" mixolydian but some other letter name (the 5th note of C). By counting up the C major scale to the fifth note, you arrive at "G". Start on G and continue up one octave (using notes from C major) to create a G Mixolydian scale.

G mixolydian is the "relative mixolydian" of C major.

W W H W W H W

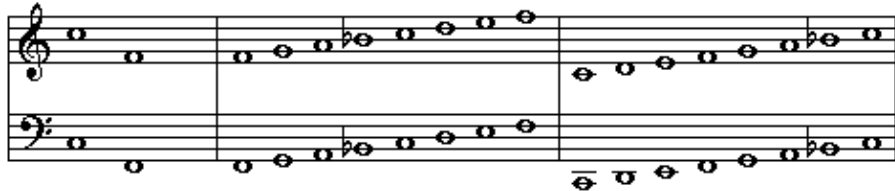
C major

G mixolydian

Pitch

To find the mixolydian scale that starts on "C", you simply reverse the process and use the notes of a major scale whose fifth note is "C". Since the distance from the first note to the fifth note of a Major scale is three and a half steps (a perfect 5th) you go down three and a half steps from "C" to the note "F" and use the notes of F major (yet starting on C) to create a C mixolydian scale.

C mixolydian is the "relative mixolydian" of F major.



F major

C mixolydian

Parallel comparison

The interval formula for Mixolydian is the same as for Major (of the same starting note) except that a half step occurs between 6-7 (instead of 7-8 as in Major)

W W H W W W H W W H W W H W
1 2 3 4 5 6 7 8 1 2 3 4 5 6 b7 8



C major

C mixolydian

Much of Rock and Roll music uses Mixolydian scales or variations on mixolydian scales. "Norwegian Wood" by the Beatles is a folk style use of the mixolydian scale, while the signature guitar riff from "Daytripper" also by the Beatles is based on a variation of the mixolydian scale. Many Rock & Roll and Boogie Woogie bass lines are created using the mixolydian scale.

Norwegian Wood – Lennon/McCartney

Mixolydian

Pitch



Because the key signature is E major, the "D natural" is required to create the mixolydian mode.

Daytripper – Lennon/McCartney

E7



This example uses an extra "chromatic" note (G natural) within the context of E mixolydian.

Aeolian

The interval formula for Aeolian is the same as natural minor.

W H W W H W W
1 2 3 4 5 6 7 8



Aeolian, same as Natural Minor

See the chapter on Minor for more information concerning the Aeolian (natural minor) scale.

Aeolian

Pitch

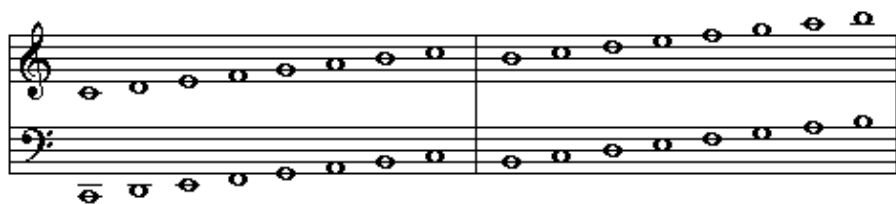
Christmas carols such as "God Rest ye Merry Gentlemen" and "We Three Kings" follow the aeolian (or natural minor) form. The aeolian scale is also commonly used in rock, pop, and jazz styles.

Locrian

Relative comparison

The locrian mode can be formed by starting on the 7th note of any major scale and continuing up one octave using notes from the original major scale. For example, the key of C major can be used to find the notes in a locrian scale. It is not "C" locrian but some other letter name (the 5th note of C major). By counting up the C major scale to the seventh note, you arrive at "B". Start on B and continue up one octave (using notes from C major) to create a B locrian scale.

H W W H W W W

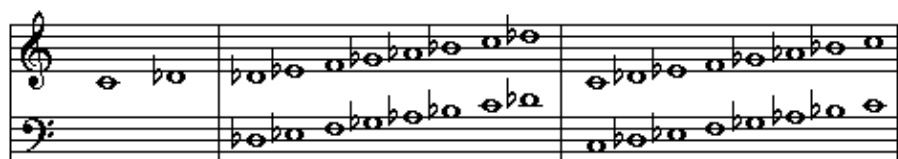


C major

B locrian

To find the locrian scale that starts on "C", you simply reverse the process and use the notes of a major scale whose seventh note is "C". Since the distance from the seventh note back up to the tonic note of a Major scale is a half step (a minor 2nd) you go up one half step from "C" to the note "Db" and use the notes of Db major (yet starting on C) to create a C locrian scale.

Pitch



Db major

C locrian

Parallel comparison

The interval structure for locrian has the unique characteristic of having two half steps within the first four intervals. This creates a scale that has a diminished 5th interval from the first note to the fifth note. All of the other modes have a perfect fifth interval from the first note to the fifth note of the scale. The diminished 5th of locrian causes the tonic triad to be diminished and this is one reason this mode hasn't been used as frequently as the other modes.

In a comparison with its parallel major, the locrian scale has a lowered second, third, fifth, sixth, and seventh (everything but the fourth is lowered). The locrian scale is so far removed from the major scale sound that many people find the parallel comparison to the major scale of very little use. The comparison with its parallel natural minor is more useful.

1 2 3 4 5 6 7 8 1 b2 b3 4 b5 b6 b7 8



C major

C locrian

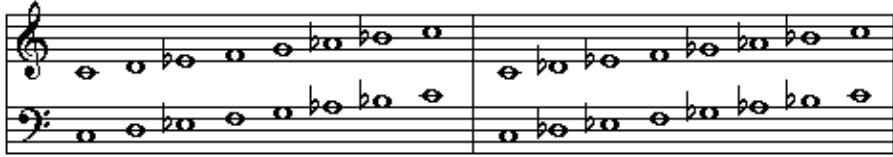
The locrian mode is similar to natural minor (of the same letter name) with two exceptions;

- 1) a half step occurs between 1–2 (instead of 2–3 as in natural minor), and
- 2) a half step occurs between 4–5 (instead of 5–6 as in natural minor).

The locrian scale is like natural minor with a lowered second and a lowered fifth scale degree.

Pitch

W H W W H W W H W W H W W W
 1 2 3 4 5 6 7 8 1 b2 3 4 b5 6 7 8



C natural minor

C locrian

As mentioned, the locrian scale, because of its diminished fifth interval from the tonic, is not used as commonly as the other modes. It does, however, have common uses in the jazz style. It is an appropriate scale for a half-diminished seventh chord which occurs as a VII chord in a major key or as a II chord in a minor key.



F major: IV ma7 vii m7b5 I ma7



C minor: ii m7b5 V 7 i m6

Links to the Assignment Pages

Each assignment link below is to a GIF file on a single page. Print out each page and complete the assignments. Use your browser's BACK button to return to this page.

- Mode Worksheet 1

(After printing out a worksheet, use your browser's BACK button to return to this page)

[\[prev\]](#) [\[Table of Contents\]](#) [\[next\]](#)

©1997 Michael Sult

Modes Worksheet no 1

answers

1 = E dorian 2 = G# locrian 3 = Db lydian 4 = F phrygian 5 = A mixolydian 6 = A phry
