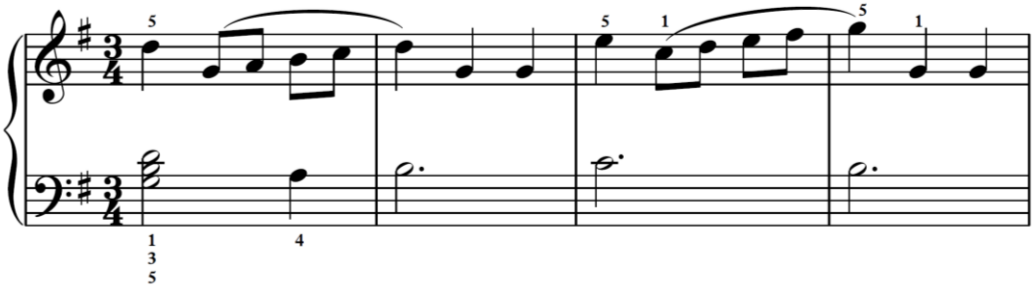
Basic Music Theory for Adult Beginner-Level Piano Players

With emphasis on half steps and whole steps

Online at www.lakesidepress.com/PianoSyllabus.pdf

by Lawrence Martin
drlarry437@gmail.com



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Cover: First four measures of Minuet in G, from the Clavier Book of Anna Magdalena Bach. For centuries this famous piece was assumed to be by Johann Sebastian Bach, but authorship is now attributed to Christian Petzold (1677-1733), a Bach contemporary. For more on this piece, see Appendix C.

Acknowledgments

I would like to thank the following people for their meticulous review of this syllabus: Ruth Martin, Glenn Perry, Rosamond van der Linde, and Preston Davis. They have helped catch typos, mistakes, and confusing passages in earlier drafts. My goal is to make sure everything herein is clear to the beginner; if not, please let me know and I will make any necessary changes.

Table of Contents (Ctrl + left click on any item to go directly to that section)

Basic Music Theory for Adult Beginner-Level Piano Players
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Introduction

Music theory is a huge subject, one whose study can become quite complex. *Basic Music Theory for Adult Beginner-Level Piano Players* covers the subject selectively. The emphasis, as stated in the subtitle, is on the one aspect I believe MOST USEFUL for adults who wish to review some basic music theory: **half steps and whole steps.** (Some sources use the term semitones for whole steps and half tones for half steps; in this syllabus I will stick with half steps and whole steps.)

This syllabus does not cover some other important aspects of basic music theory, such as note durations, rhythm and time signatures. After the appendices you will find a list of Additional Recommended Resources related to basic music theory, for those who wish to delve further.

In studying music theory, I have been surprised and confounded that most written materials on the subject (books, monographs, websites) tend to under-emphasize the concept of half steps and whole steps. It's surprising, because the simple method of counting half and whole steps can enhance understanding of music scales, chords and intervals, as well as "music keys" and "modes."

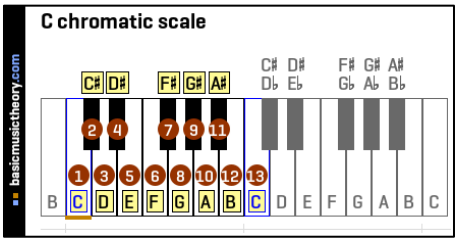
I am a beginner-level player, not a trained pianist. This might be considered the ultimate 'chutzpah', to write a music theory syllabus when not a true musician. However, it's not as crazy as it sounds. First, I am a profession`nal writer, with 20 books to date, plus two other syllabuses on music theory, one for the ukulele and one for the Native American flute. Both are free and available online.
http://www.lakesidepress.com/UkeSyllabus.pdf
http://www.lakesidepress.com/NAFSyllabus.pdf

Second, as a beginner-level piano player and student of music theory, I recognize the confusion often generated by experts who write on the subject. I think the confusion arises because experts often don't realize what beginners don't know, and they don't go to proper lengths to explain the subject. A good example of this is in the area of music modes. (See Appendix B for my explanation of modes.) Going to "proper lengths" in explaining music theory to beginner-level players should include repetition, questions with answers, and audio examples, and I have incorporated these elements into each section of the syllabus.

In summary, this syllabus is for a specific audience, adults who consider themselves at the beginner to near-intermediate level and seek a better understanding of music theory, specifically scales, chords, intervals, keys and modes. If you're not sure what level you're at, check out Appendix E. Of course, players of any skill level are welcome to peruse this syllabus; just keep in mind that it's basic theory, stuff an advanced player probably knows backwards and forwards.

How To Use This Syllabus

This syllabus is for the beginner-level adult piano player with an interest in music theory. All the figures in this Syllabus are from free internet sources. In particular, I highly recommend www.basicmusictheory.com, for its excellent keyboard and clef figures of all the common chords and scales. The keyboard figures from this website have the design of letters in yellow boxes and numbers in red circles, such as the one below.



Appendix E gives several sources that explain the various piano-playing levels. I emphasize "beginner-level" because this Syllabus is really basic information, albeit in a format that may be new to the reader.

You can start from the beginning and read through the Sections in order, or skip around. You may already know much of what's in here, but not seen it actually explained, in writing, or viewed any of the videos linked throughout the Syllabus. My goal is to explain every topic clearly, using piano and clef diagrams and, in various places, video from the internet.

This figure, found throughout the Syllabus, indicates Youtube links that demonstrate some scale, interval or musical passage, or give a concise video lecture. If you have a good understanding of basic theory but want to hear musical examples, or hear brief lectures on a particular topic, skip around to this symbol and click on the links.

Another approach, instead of reading the sections in order or viewing all the videos, is to take the multiple-choice quizzes at the end of each Section. If the questions seem simple, the answers readily apparent, you probably don't need that Section.

Whatever approach you use, it's good that you're interested. That interest should make you a better player.

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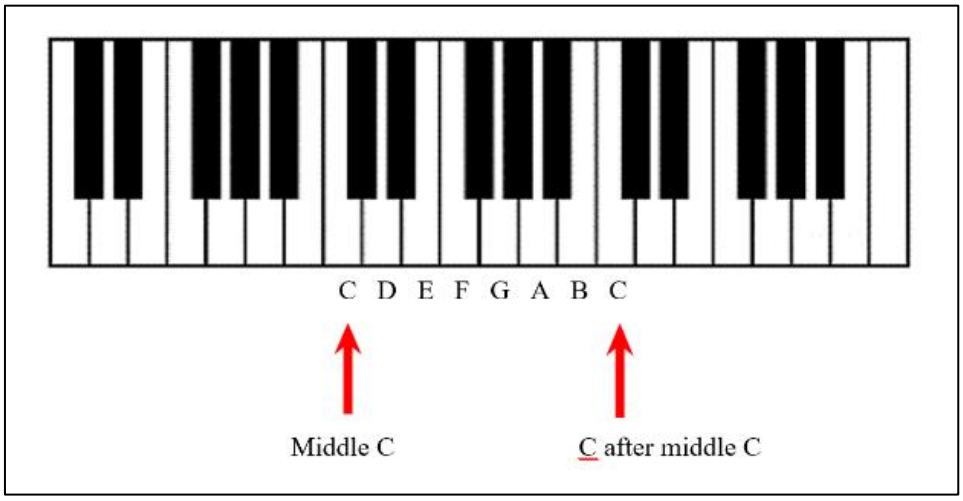
May, 2023
The Villages, FL

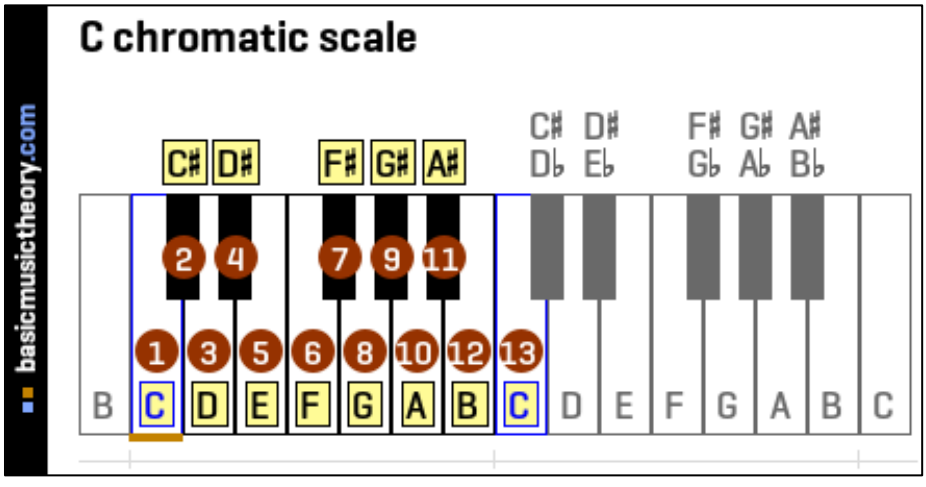
Section 1: Half Steps and Whole Steps

Here is the middle section of the piano keyboard, with its series of white and black keys.



The piano is tuned based on sound frequencies of notes that have evolved over the centuries, in the Western tradition (some Eastern music has different notes and won't be discussed here).

Below is the C chromatic scale, which includes every key between one C and the next higher C. That's 13 keys in all: 8 white keys (including both Cs), and five black keys.



Click link below for demonstration of chromatic scale
https://www.Youtube.com/watch?v=sr2rXc9Qu4A

Each of these notes has a specific sound frequency when struck, and this frequency is universal across all standard pianos. Middle C (the fourth C key from left on a standard 88-key piano keyboard, sometimes referred to as C4) is 261.6 hz, which means that when you strike middle C, a sound wave is generated that causes the air to vibrate back and forth 261.6 times a second. When you strike A above middle C, the sound wave generated is 440 hz.

The difference between any two adjacent keys, including all the black and white keys, is a *half step*. The difference between two keys when there is another key in between is a *whole step*.

Thus, for example, C to C# is a half step, C# to D is a half step, E to F is a half step, B to C is a half step, etc. C to D is a whole step, as are E to F#, G to A, and A# to C, etc.

If you look at the actual frequencies of each piano key, starting from middle C to the next higher C, you'll see that notes a half step apart have about half the frequency difference as do notes a whole step apart. (The note frequencies are from https://www.seventhstring.com/resources/notefrequencies.html.)

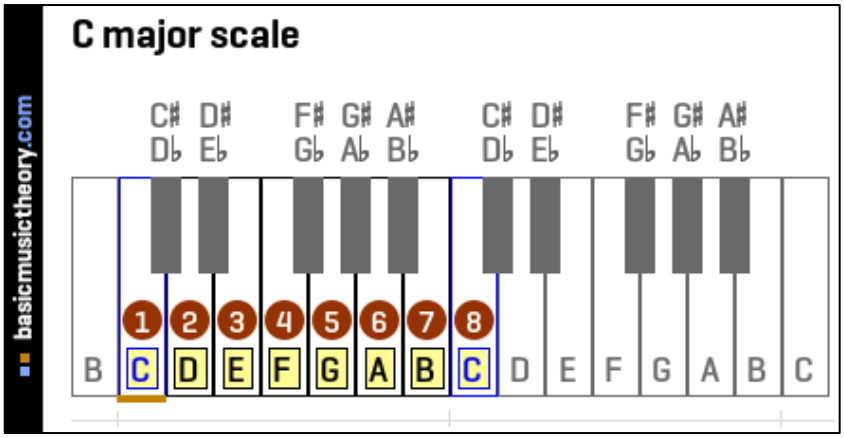
Start middle C -->	C	C#	D	D#	E	F	F#	G	G#	A	A#	B	C
HZ	261.6	277.2	293.7	311.1	329.6	349.2	370.0	392.0	415.3	440.0	466.2	493.9	523.3
HZ difference to next higher note	15.6	16.5	17.4	18.5	19.6	20.8	22	23.3	24.7	26.2	27.7	29.4	

Thus:

- C to D (whole step) difference = 42.1 hz, but from E to F (half step) difference = 19.6 hz
- E to F# (whole step) = 40.4 hz, but (again) from E to F (half step) = 19.6 hz
- A# to C (whole step) = 57.1 hz, but from B to C (half step) = 29.4 hz.

So the concept of half steps and whole steps is rooted in simple sound wave physics. Half steps have about half the frequency span as do whole steps. Playing these notes on the keyboard will quickly demonstrate the aural difference between half steps and whole steps.

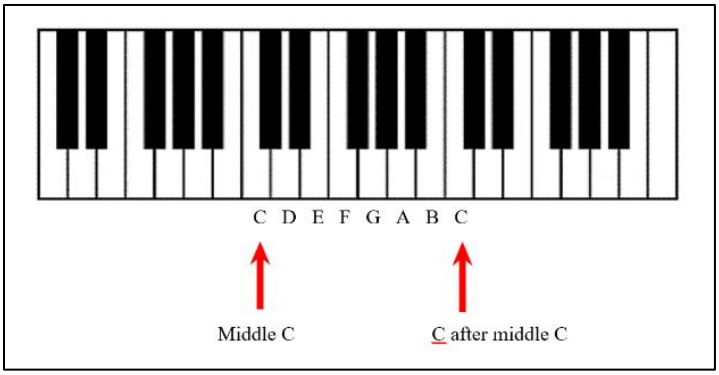
Now let's look at the C major scale, starting from one C to the next C. It has no black keys, so the scale is simply: C-D-E-F-G-A-B-C.



Demo of the C major scale:
https://www.Youtube.com/watch?v=QDWKzG5oaog

Note that all the adjacent white keys of the C major scale are a whole step apart except for E to F and B to C, which are a half step apart. This is visually apparent. In the C major scale, the white keys a whole step apart have a black key between them. The white keys that are a half step apart (E-F and B-C) do not have a black key between them.

Now try to visualize the keyboard in your mind, and while doing so write down the sequence of whole and half steps for the C major scale.



← Visualize the keyboard in your mind as you write the C major scale on paper.

You should be able to write down the following sequence:

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

Writing down this C major scale – simply by visualizing the keyboard without actually looking at it – will help lay the foundation for the following sections on scales, chords, intervals, musical keys, and modes.

TEST YOUR UNDERSTANDING OF THIS SECTION. Choose the single best answer.

1. Middle C on a standard 88-key keyboard is:
    a. C1
    b. C2
    c. C3
    d. C4

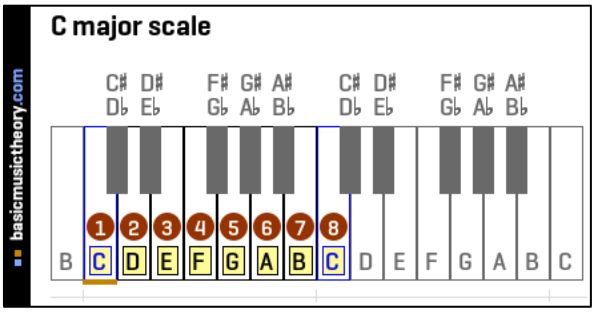
2. Based on the pattern of whole and half steps for a major scale, the number of *half steps* from one C to the next higher C is:
    a. one
    b. two
    c. three
    d. four

3. Based on the pattern of whole and half steps for a major scale, the number of *whole steps* from one C to the next higher C is:
    a. three
    b. four
    c. five
    d. six

4. In the C chromatic scale, the number of half steps from C to the next higher C is:
    a. eight
    b. ten
    c. eleven
    d. twelve

5. A half step in the C major scale occurs between:
    a. C and C#
    b. B and C
    c. E and F#
    d. D and E

Section 2: Music Scales – Definition of Major and Minor Scales

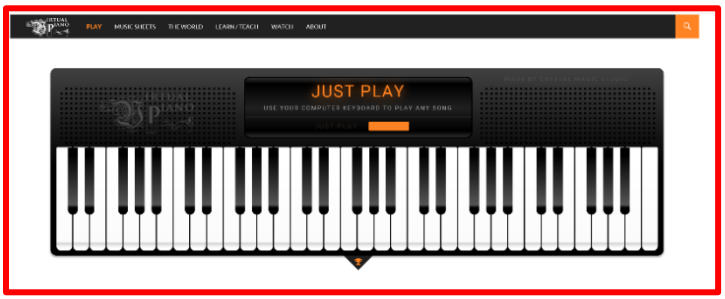


The C major scale, shown above, has the following series of whole (w) steps and half (h) steps.

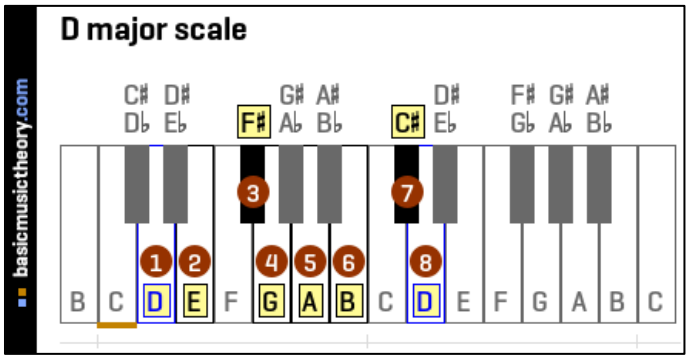
w-w-h-w-w-w-h

This sequence of whole and half steps is the pattern for all major scales. Conversely, any series of 8 notes with this whole step-half step sequence is a major scale. It doesn't matter if you start on D, E, F, G#, Bb or any other key, black or white. Proceed with this exact sequence of whole and half steps and you will be playing the major scale for that starting note.

Go to the keyboard, or if one is not immediately available, bring up a simulated keyboard from the internet. Here is one I recommend that does not require any downloading (see screen shot): https://virtualpiano.net/



Start on D and play the above sequence of whole and half steps; you will be playing the D major scale. Any black keys? Let's see.

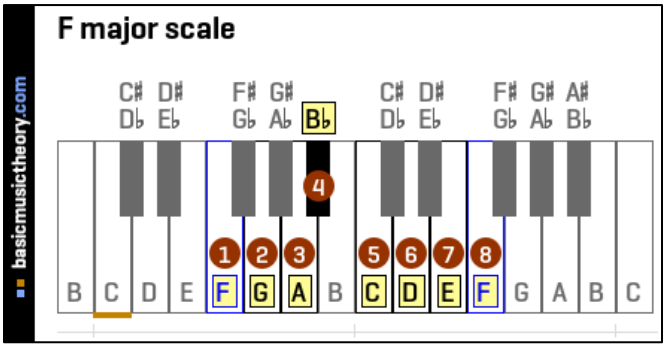


Demo of the D major scale:
https://www.Youtube.com/watch?v=kHX3sUohaCU

Starting on D, the first step is a whole step, so we go from D to E
The next step is a whole step so we can't go from E to F, since that would only be a half step;
instead, we have to go from E to F#.
The next step is a half step so it's F# to G
The next step is a whole step so it's G to A
The next step is a whole step so it's A to B
The next step is a whole step so it's B to C#
The next step is a half step so its C# to D
Thus we have the D Major Scale:

D – E – F# – G – A – B – C# – D
w w h w w w h

Here is another major scale, starting on the F key. Again, the whole-step, half-step sequence has to be: w-w-h-w-w-w-h



Demo of the F major scale:
https://www.Youtube.com/watch?v=UhXgnKoixdc

Starting on F, we get:

F – G – A – Bb – C – D – E – F
w w h w w w h

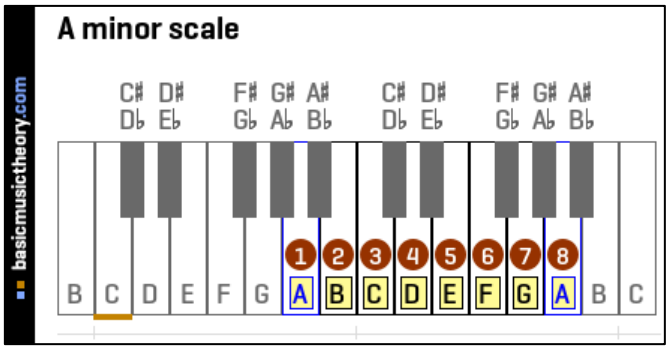
As you can see, B flat is necessary to preserve the major scale pattern of whole and half steps. Thus the F major scale has a single Bb. It is the only major scale with a flat that doesn't start on a flatted note (as do Bb, Eb, Ab, Db, Gb and Cb).

In the keyboard diagrams above, you'll note that each black key has two names, one flat and one sharp. These notes are *enharmonic*, a term we'll come upon again in discussing intervals and musical keys. It just means that the same note, interval or key can be named two different ways; the only thing different is the name or the spelling.

Referring to the F major scale, why isn't the note after A called A#? Because in any sequence of notes of a scale, or notes of a chord for that matter, the convention is to never use the same letter twice. Thus it has to be Bb and not A#.

Minor Scales

A minor scale has a different sequence of half steps and whole steps than does a major scale. Let's start with the A minor scale, which has no sharps or flats. Go to the keyboard (or a simulated one on the internet) and play the A minor scale: A - B - C - D - E - F - G - A.



Demo of the A minor scale:
https://www.Youtube.com/watch?v=DEEqLoMasxs

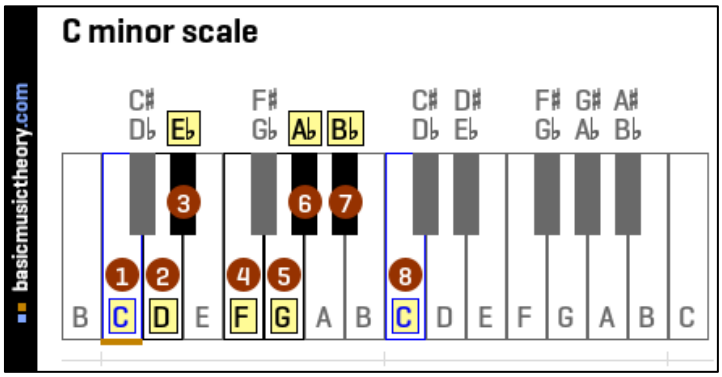
Now, figure out the sequence of half steps and whole steps you've just played.
A
whole step
B
half step
C
whole step
D
whole step
E
half step
F
whole step
G
whole step
A

This sequence of half steps and whole steps for the A minor scale also defines the minor scale for all other starting notes:

w – h – w – w – h – w – w

Confusion Alert. There are actually three types of minor scales. The above sequence defines the *natural* minor scale. The other two types are *harmonic* minor and *melodic* minor, which have a slightly different sequence of whole and half steps, and are discussed at the end of this section. When there is no adjective used before "minor scale," as in the keyboard diagram below, the scale is taken to mean the natural minor, as shown in the above figure for the A minor scale.

Using the natural minor whole step-half step pattern, we can now figure out any minor scale. Here is the C natural minor scale.



Demo of C minor scales (natural, harmonic and melodic)
https://www.Youtube.com/watch?v=RWkNL176M2E

C
 whole step
D
 half step
Eb
 whole step
F
 whole step
G
 half step
Ab
 whole step
Bb
 whole step
C

The C minor scale has three flat notes: Eb, Ab and Bb. These flat notes are necessary to adhere to the whole-step half-step pattern that defines the natural minor scale. Note that the sequence requires going from D to Eb, and not to D#. This same Eb black key would be labeled D# in another scale (e.g., the A major scale), but here it is Eb. Why? Again, because you cannot use the same letter twice in defining any scale or chord.

A large chunk of western music is written in either a major or minor scale. Other 8-note scales (including repeat of the root note) that don't adhere to the major or minor sequence of whole and half steps are called "modes," such as the Mixolydian mode. (Modes are discussed briefly in the next chapter, and more in depth in Appendix B.)

***

To summarize, major scales have one series of whole and half steps, and minor scales have a different series of whole and half steps. You can memorize the patterns or, alternatively, figure them out in your head, by visualizing the keyboard and counting out the white keys in either the C major scale (from C to next C) or the A minor scale (from A to next A).

One way to quickly recall the major scale sequence is to remember that it has two identical patterns of w and h, joined by a whole step.

w-w-h-w-w-w-h

For the first w-w-h, you know C to D is a whole step (visualize it) and D to E is a whole step (visualize it) and E to F is a half step (ditto). And, to end with w-w-h, you have G to A, A to B, and B to C. The middle whole step is F to G.

For the natural minor scale, the sequence w-h-w repeats, followed by a whole step.

w-h-w-w-h-w-w

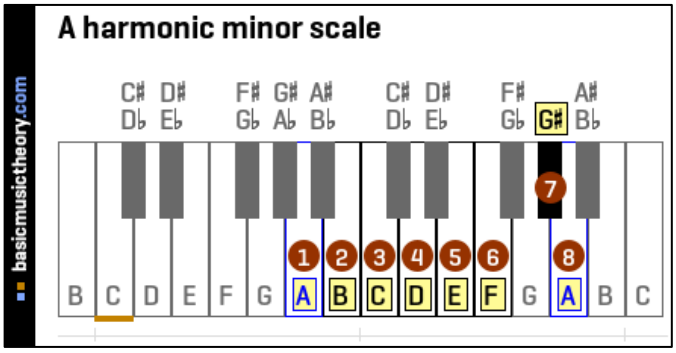
For the first w-h-w, you know A to B is a whole step, B to C is a half step, and C to D is a whole step. The next sequence is the same w-h-w pattern: D to E is a whole step, E to F a half step and F to G is a whole step. The scale ends with G to A, a whole step.

This Youtube link analyzes several examples of music in the natural minor scale
https://www.Youtube.com/watch?v=PbH3ifEvBTs

Harmonic Minor and Melodic Minor Scales

The two other minor scales, called the harmonic minor and melodic minor, are slight variations of the natural minor scale.

The harmonic minor scale sharps the 7th note of the natural minor scale. Its pattern of whole and half steps is thus **w-h-w-w-h-w½-h.**

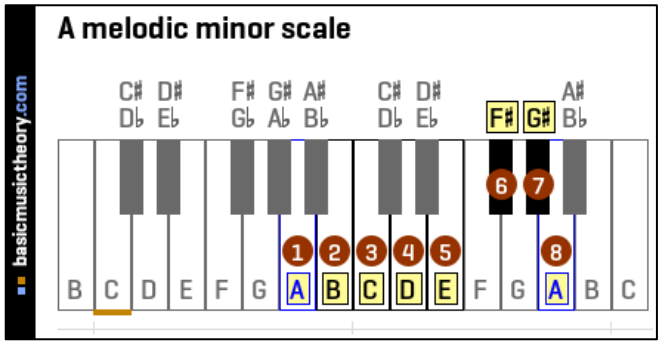


Demo of the A harmonic minor scale
https://www.Youtube.com/watch?v=xZttOW2jd7U

The harmonic minor is of some importance to beginning piano players, because a lot of music written in the "minor scale" is actually in the harmonic minor. That is, the key signature will show a minor key, but the 7th note will be raised a half step. This creates what in music theory is called a "leading tone." A leading tone is the 7th note of a scale one-half step below the octave. It wants resolution to the octave, and is said to be more satisfying than a 7th note a full-step below the octave.

The 7th note of A natural minor is G, which is a full step below the next A, and so is not a leading tone. G# in the natural minor scale is only a half step below A, so it is a leading tone, and therefore is more often used in music written in the "G minor" scale. This aspect will be discussed further in the section on chords.

Melodic minor scales raise both the 6th and 7th notes one half step when ascending, but when descending, the 6th and 7th notes are flatted, same as the natural minor scale. However, this pattern is not always followed. In some jazz music, for example, the 6th and 7th notes stay flatted when descending. Either way, the melodic minor scale is of more interest to composers than beginning piano players, so it will not be discussed further.



This 14-minute video provides an excellent discussion of differences between natural minor, harmonic minor, and melodic minor scales
https://www.Youtube.com/watch?v=Q7WqKpD7w4Q&t=14s

TEST YOUR UNDERSTANDING OF THIS SECTION. Choose the single best answer. Ideally, try to figure out the answers by playing notes on the keyboard.

1. The series of whole and half steps for the E major scale is:
   a. w-w-h-w-w-w-h
   b. w-h-w-w-w-w-h
   c. w-h-w-w-h-w-w
   d. w-w-h-w-w-h-w

2. The series of whole and half steps for the E (natural) minor scale is:
   a. w-w-h-w-w-w-h
   b. w-w-h-w-w-h-w
   c. w-h-w-w-w-w-h
   d. w-h-w-w-h-w-w

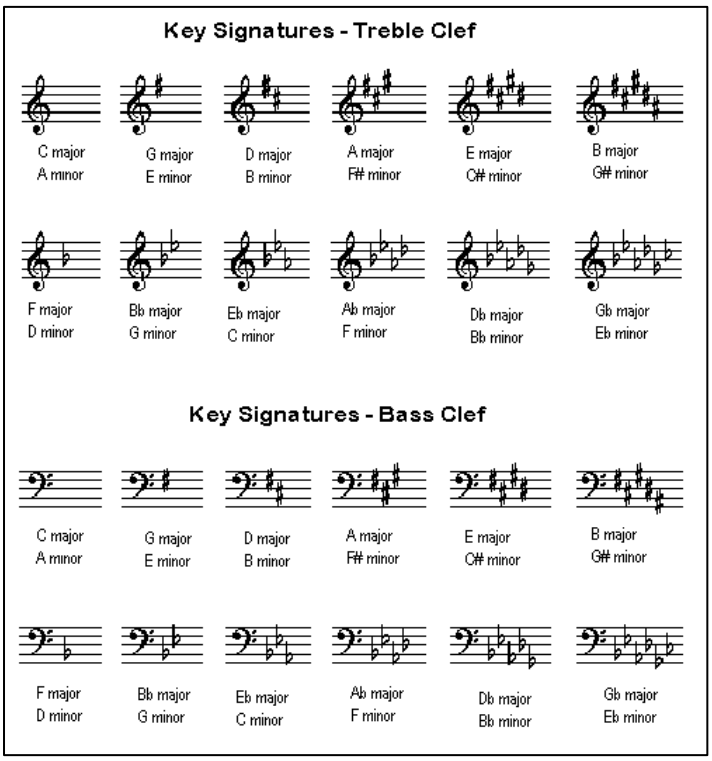
3. Based on the series of whole and half steps that define the major scale, how many sharps are in the A major scale?
   a. one
   b. two
   c. three
   d. four

4. Based on the series of whole and half steps that define the minor scale, how many flats are in the C minor scale?
    a. one
    b. two
    c. three
    d. four

5. In the F minor scale, what is the first occurrence of a half step?
    a. F to Bb
    b. Gb to G
    c. G to Ab
    d. A to Bb

Section 3: Music Scales – Relation of Major to Minor

Piano scales are simply a series of black and white piano keys (or only white piano keys for C major and A minor). The sequences of sharps and flats for each scale are always indicated in the treble and bass clefs, as shown below (figure is from https://www.piano-keyboard-guide.com/key-signatures.html).



This number of sharps and flats defines the "key signature" for that scale. The key signature will have either no sharps or flats (indicating C major or A minor), or show one or more sharps or one of more flats (no mixing of sharps and flats).

Note that for every major scale, there is an associated minor scale, with the *same number and position* of sharps and flats. The associated minor scale is called *the relative minor* of the major scale. Thus the relative minor scale of the C major scale is A minor; both have only white keys and no sharps or flats.

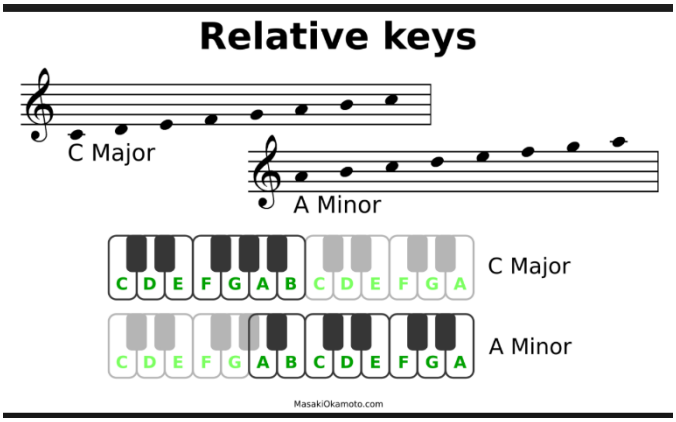
The C major scale starts on C and has this series of whole and half steps: w-w-h-w-w-w-h

The A minor scale starts on A and has this series of whole and half steps. w-h-w-w-h-w-w

The relative minor of the G major scale is E minor; both have only one sharp in their key signature, the F#. The relative minor scale of F major is D minor; both have only one flat in their key signature, the B flat. The relative minor scale of D major is B minor; both have two sharps in their key signature.

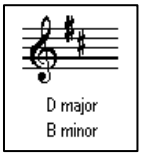
There are two ways to quickly determine the relative minor scale without having to memorize anything. One is to just count down 3 half steps from the tonic (first) note of the major scale; that piano key will be the tonic note of the relative minor scale. The other method is to count up to the 6th note of the major scale; that piano key will also be the tonic of the minor scale.

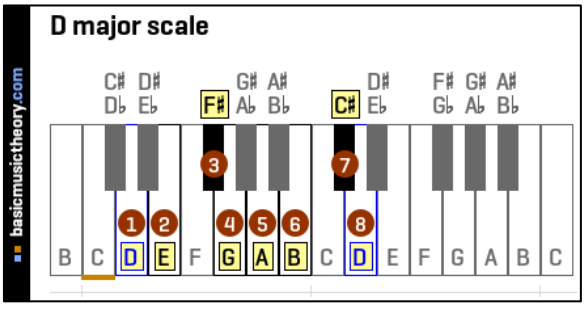
For example, 3 half steps down from C in the C major scale is A, so A minor is the relative minor of C major. The 6th note of the C major scale is also A; this is shown in the following figure from http://www.masakiokamoto.com/tag/music-theory-2/page/5/

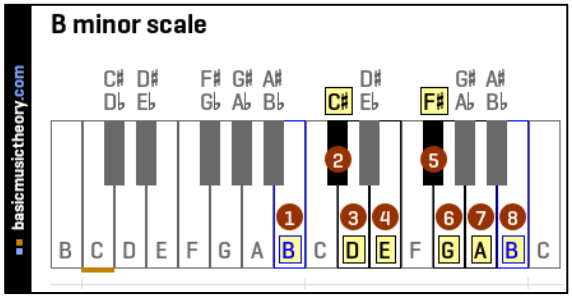


The next two examples show the piano keyboard for a major scale and its relative minor.

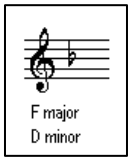
- Three half steps down from D in the D major scale is B; B minor is the relative minor of D major. B is also the 6th note up from D. The key signature for both scales is the same: an F# and a C#.

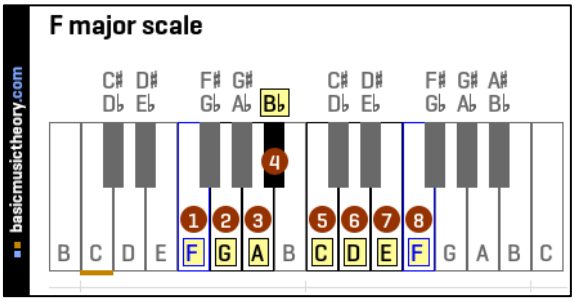


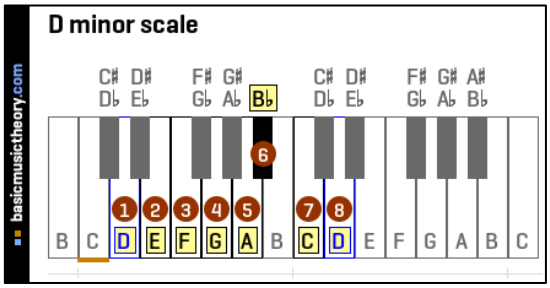




Three half steps down from F in the F major scale is D; D minor is the relative minor of F major. D is also the 6th note up from F. The key signature for both scales is the same: a Bb.

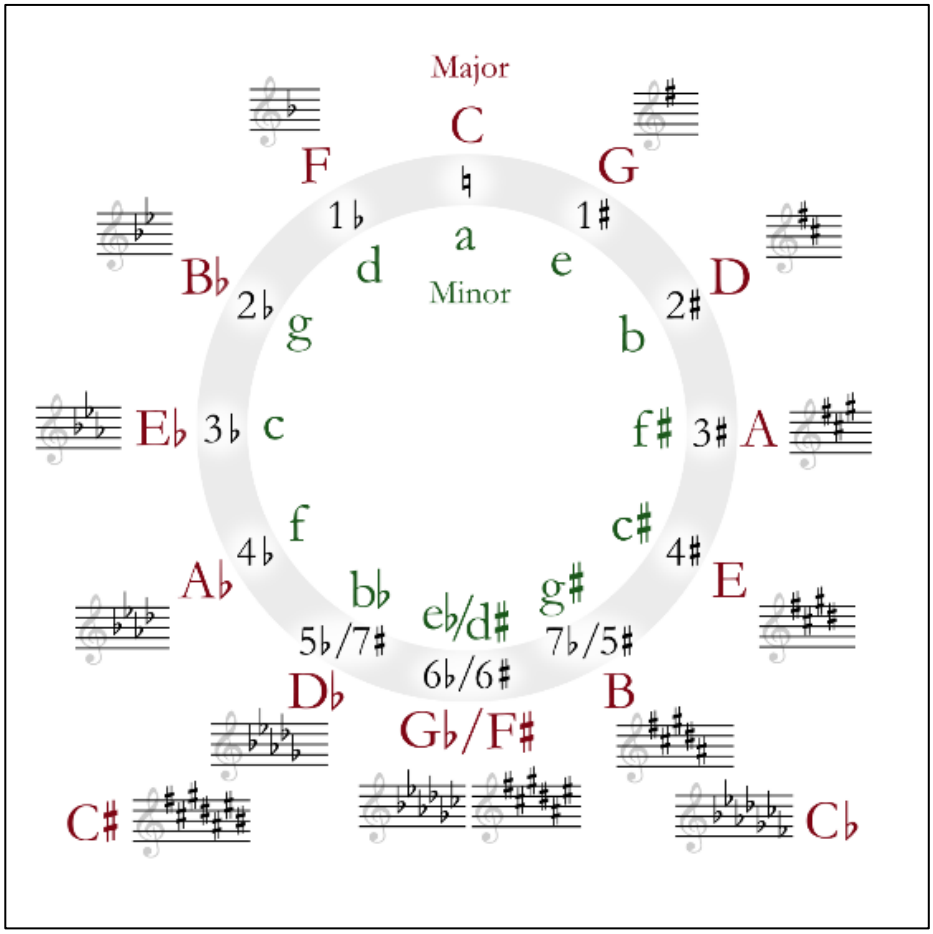






A device familiar to musicians, known as the Circle of Fifths, shows the relationships between all the major and relative minor keys. This Circle, pictured below, is discussed in Appendix A.

https://commons.wikimedia.org/w/index.php?curid=4463183



TEST YOUR UNDERSTANDING OF THIS SECTION. Choose the single best answer.

1. The relative minor of the Bb major scale is:
    a. D minor
    b. G minor
    c. E minor
    d. F minor

2. Three sharps in the key signature defines which pair of scales?
    a. A major and F# minor
    b. F major and D minor
    c. B major and G# minor
    d. D major and B minor

3. As sharps are added to the key signature, the sequence is always (see Circle of Fifths):
    a. C#, F#, D#, A#, G#
    b. A#, B#, C#, D#, E#
    c. C#, D#, E#, F#, G#
    d. F#, C#, G#, D#, A#

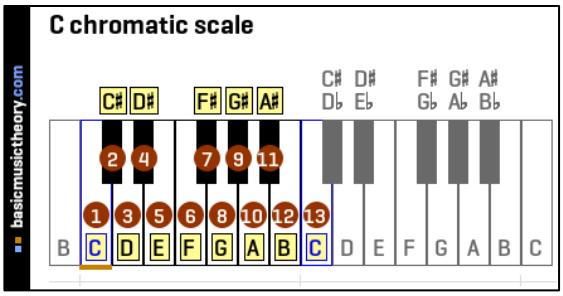
4. As flats are added to the key signature, the sequence is always (see Circle of Fifths):
    a. Bb, Eb, Ab, Db, Gb
    b. Ab, Bb, Cb, Db, Eb
    c. Cb, Db, Eb, Fb, Gb
    d. Fb, Cb, Gb, Db, Ab

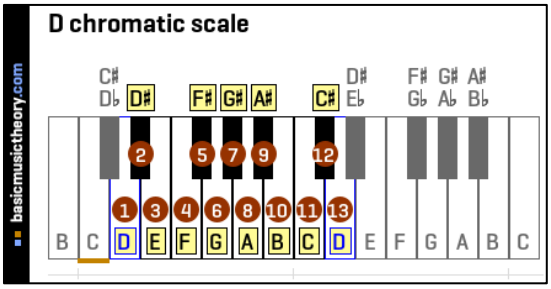
5. The relative minor scale of E major is:
    a. C minor
    b. C# minor
    c. D minor
    d. D# minor

Section 4: More on Scales and Modes

By now you should be familiar with the definition of major and minor scales. These make up the vast bulk of popular and classical music, but there are many other scales, and words to describe them. And there's the rub. Books, websites, and blogs about music theory can easily confuse the beginner, because terms like "scale," "mode," "diatonic," and "pentatonic" are often used without crystal-clear definitions. This section can be skipped if you have a good understanding of these terms, but if not, I recommend reviewing it before proceeding.

The building blocks of all scales are found in the 12 notes of the chromatic scale. Two examples of the chromatic scale are shown below, starting on C and on D. All chromatic scales play the same 12 notes, the only difference being the sequence based on the starting note.





All western music scales (shorter than the chromatic scale) use some sequence of these 12 notes, typically 5, 6 or 7. The major and natural minor scales are two different 7-note scales.

Confusion Alert. When we say the scale is 7 notes, we mean 7 *different* notes, so don't be confused when the demonstrated scale contains 8 notes; in a 7-note scale the 8th note is always a repeat of the first or root note.

The major scale sequence is the pattern of half steps and whole steps obtained when you start on C, and play just the white notes up to the next C.

$$w - w - h - w - w - w - h$$

The minor scale sequence is the pattern of half steps and whole steps obtained when you start on A, and play just the white notes up to the next A.

$$w - h - w - w - h - w - w$$

But what if you start on D, E, F, G, or B, and play the 8 white keys, starting with each letter? Those sequences are scales also, but with a different pattern of half and whole steps than the major and natural minor scales. For no good, rational reason, these 5 other whole-step, half-step patterns are commonly referred to as modes and not scales. The terminology is thus not consistent, which is an endless source of confusion for beginners. To make matters worse, some

explanations of modes dwell on the ancient or medieval definitions, which are different from how they are defined today.

Below is a table with all 7 modes or scales. In this table W = whole step, h = half step. The Ionian mode is the same as the major scale, the Aeolian mode is the same as the natural minor scale. For a more in-depth discussion of modes, see Appendix B.

MODE	**SEQUENCE OF NOTES**	**STEPS**	**Another name:**
Ionian	C D E F G A B C	W-W-h-W-W-W-h	Major scale
Dorian	D E F G A B C D	W-h-W-W-W-h-W	
Phrygian	E F G A B C D E	h-W-W-W-h-W-W	
Lydian	F G A B C D E F	W-W-W-h-W-W-h	
Mixolydian	G A B C D E F G	W-W-h-W-W-h-W	
Aeolian	A B C D E F G A	W-h-W-W-h-W-W	Natural minor scale
Locrian	B C D E F G A B	h-W-W-h-W-W-W	

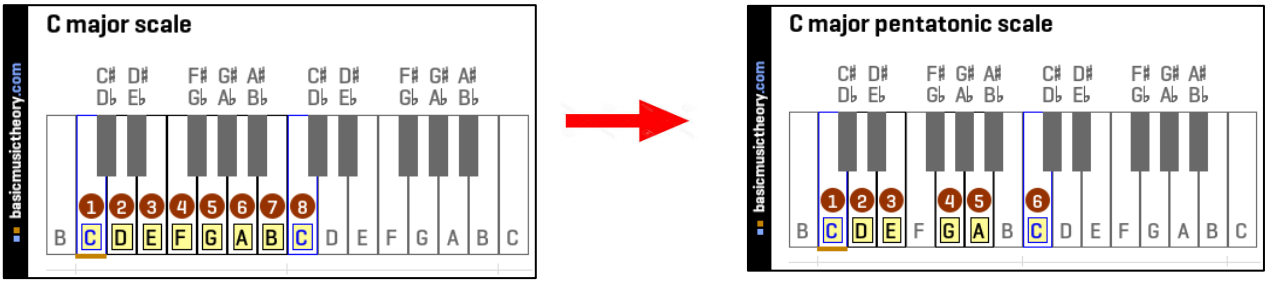
Diatonic Scales

"Diatonic" is a general term for any 7-note scale that includes five whole steps and two half steps in each octave (the 7 notes plus a repeat of the root note). As part of the definition, the two half steps are separated from each other by either two or three whole steps, depending on their position in the scale. All of the modes above are diatonic scales. Note that all diatonic scales are also heptatonic, i.e., they contain 7 notes, not counting repeat of the root note. However, not all heptatonic scales are diatonic. A 7-note scale that went from C to F# would not be diatonic.

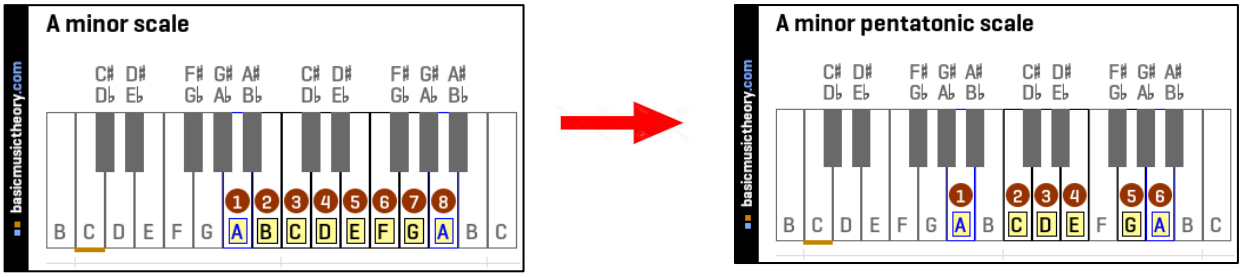
Non-diatonic scales

What is not diatonic? The most common non-diatonic scales are the pentatonic or 5-note scales, of which there are many. The two types we most often encounter are the major and minor pentatonic scale. They are derived from the diatonic scale.

The major pentatonic scale consists of the 1st, 2^{nd}, 3^{rd}, 5^{th}, and 6^{th} notes of a major scale. Thus the 4^{th} and 7^{th} notes are omitted. The C major scale is C – D – E – F – G – A – B. The C major pentatonic scale is C – D – E – G – A.



The minor pentatonic scale consists of the 1st, 3rd, 4th, 5th and 7th notes of the natural minor scale. Thus the 2nd and 6th notes are omitted. The A minor pentatonic scale is A – C – D – E – G.



Pentatonic scales are very common in folk and country music, and in jazz. Also, most commercially-available Native American flutes (both 5-hole and 6-hole types) are designed to play music in the minor pentatonic scale. A brief review of this scale for the Native American flute is at https://www.flutopedia.com/int3_penta_minor.htm.

Overview and demonstration of major and minor pentatonic scales.
https://www.Youtube.com/watch?v=71dDH_Q4Bjg

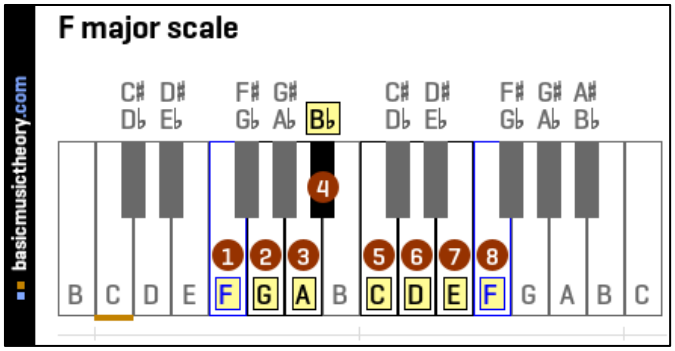
Demo of songs using just the pentatonic scale
https://www.Youtube.com/watch?v=fdi-93yEcGs

***

More on the Leading Tone

As previously stated, the leading tone is one half-step below the octave; it gets the name from the fact that it wants to resolve to the octave. In a major scale, it would be the 7th degree or 7th note of the scale, which is always one-half step below the octave. Something in our brain wants resolution when we hear this note.

Go to the piano and play any major scale, and stop after the 7th note. For example, in F major (see below) stop after E. Note how you want it to resolve, to go to the F. Any music in F major that stopped on E would seem unfinished, unsatisfying. In the key of F major, shown below, E is a leading tone.



Leading tone videos
2-minutes: https://www.Youtube.com/watch?v=m85qyA4Xekw
4.5 minutes: https://www.Youtube.com/watch?v=gM01663tNuE

***

So to recap, a diatonic scale has 7 notes; when you add in a repeat of the first note, the resulting octave has 5 whole steps and 2 half-steps. The half steps are separated by either 2 or 3 whole steps. The whole-half step pattern of diatonic scale obtained when you start on C and play only white keys up to the next C is a major scale. The whole-half step pattern of diatonic scale obtained when you start on A and play only white keys up to the next A is a natural minor scale.

A pentatonic scale is 5 notes derived from either the major scale or the minor scale, as defined above.

Mode is but another name for a diatonic scale, and includes the major and minor scales, plus 5 others: Dorian, Phrygian, Lydian, Mixolydian, and Locrian. Each of the 7 modes has a different pattern of half and whole steps. The specific pattern can be quickly discerned by playing 8 consecutive notes using only white keys. If you start on C you will play Ionian mode, start on D it will be Dorian mode, etc. (see the table of modes in this Section). The whole step, half step pattern obtained in this manner may be applied to any note of the chromatic scale. Given that there are 12 notes in an octave, and 7 different modes, that comes to 84 different scales!

Confusion Alert. Irrespective of this modern definition of "mode," in common parlance the Ionian and Aeolian modes are commonly referred to as the major and natural minor scale, respectively, leaving the term "mode" to refer to the other five scales. Just keep in mind that each mode or scale is but a different arrangement of half steps and whole steps for the 7 notes of the diatonic scale.

There are many other scales, most or all of which will not be encountered by the piano beginner, e.g., the blues scale and the whole tone scale. Each is fascinating in its own way, and used by various musicians. The rest of this syllabus will concentrate on the major and minor scales.

TEST YOUR UNDERSTANDING OF THIS SECTION. Choose the single best answer.

1. w-w-h-w-w-w-h is the pattern seen in which mode?
    a. Ionian
    b. Dorian
    c. Myxylodian
    d. Aeolian

2. The minor pentatonic scale is formed from the natural minor scale by eliminating which notes?
    a. 1st and 3rd
    b. 2nd and 5th
    c. 2nd and 6th
    d. 4th and 7th

3. The major pentatonic scale is formed from the major scale by eliminating which notes?
    a. 1st and 3rd
    b. 2nd and 5th
    c. 2nd and 6th
    d. 4th and 7th

4. If you start on F and play only the white keys a full octave, which mode will you be playing?
    a. Ionian
    b. Lydian
    c. Phrygian
    d. Aeolian

5. In the D major scale, which note is the leading tone?
    a. B
    b. C
    c. C#
    d. D

Section 5: Music Intervals

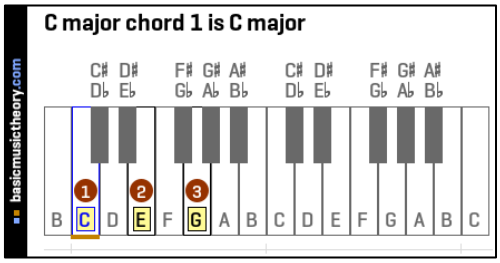
Intervals are an important part of basic music theory. I will spread their discussion over two sections.

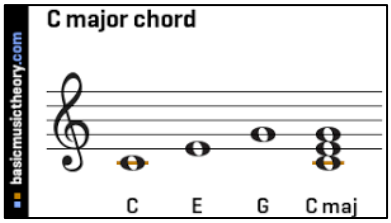
Scales, as well as chords, are a series of intervals between notes. At their most basic level, intervals are the number of half steps between notes. A single half step between notes is one interval (minor 2nd), a whole step between notes is a different interval (major 2nd), etc.

There are two fundamental types of intervals, harmonic and melodic. A harmonic interval is when the two notes are played at the same time. A melodic interval is when they are played separately.

Interval naming is based in part on the alphabet and in part on how many half steps are between the notes. Thus each and every interval has *two names*, e.g., minor third, perfect fourth, major sixth, etc. Their nomenclature can be very confusing, because the number of half steps *does not* appear in the naming.

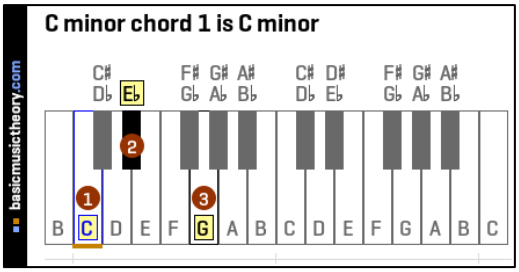
To explain this nomenclature, consider the first triad of the C major scale, the C major chord. It consists of the first, third and fifth letter of the scale, shown below on the keyboard and in the treble clef.

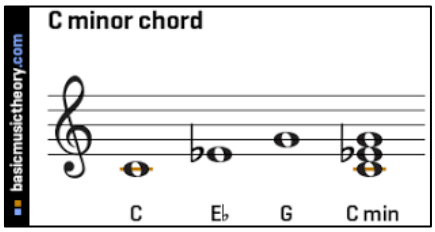




The interval between C and E is called a third because E is the third letter up from C. The interval E to G is a third because G is the third letter up from E. Thus, when the three notes of the chord are played at the same time, you are playing one third stacked on another third.

But what about the C minor chord? Here the letters are C-Eb-G. From C to Eb is still a third, because it consists of the first and third letters of the scale. And Eb to G is also a third, because G is the third letter up from E.





It is apparent that musical intervals need some "qualifier" in order, for example, to distinguish one third from another third. Hence each interval has two names or adjectives. One is the *numbe*r, based solely on the distance apart in the alphabet; the other is a *qualifier*, based on the number of half steps between the notes.

If you play the same note twice, e.g., A-A, there is no letter difference, so the "number" for that interval is called one or "unison." If you play A-B, the number name for the interval is two or a "second." Since there are 8 letters in a scale, the numbers go from 1 (unison) to 8 (eighth). So that's part of the interval naming. Every interval has a number. The second part of the name, the qualifier, has five possibilities, listed below.

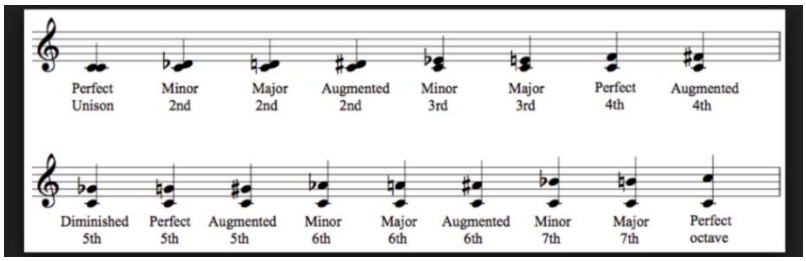
Interval Qualifiers
Diminished
Minor
Perfect
Major
Augmented

The following table shows the number of the interval in the vertical column, and the qualifier names across the top.

No. of half steps in each specific interval

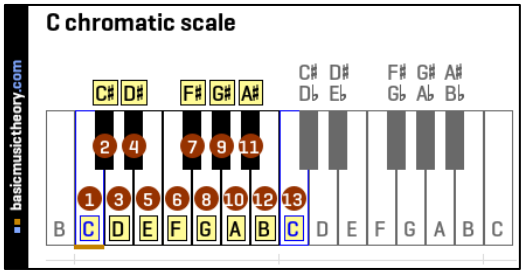
	Diminished	Minor	Perfect	Major	Augmented
Unison			0		1
Second	0	1		2	3
Third	2	3		4	5
Fourth	4		5		6
Fifth	6		7		8
Sixth	7	8		9	10
Seventh	9	10		11	12
Eighth	11		12		13

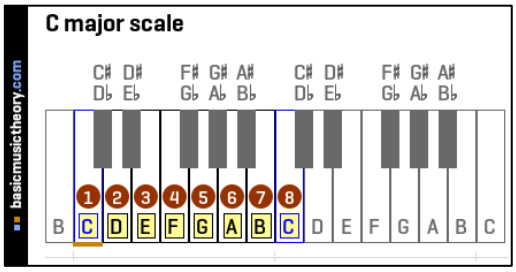
Here are some of the intervals in the treble clef. These examples are harmonic intervals, as the two notes of each interval would be played together.



https://musictheoryonline.com/what-are-intervals/

The next table gives examples of each type of interval in the C chromatic scale. The highlighted intervals are all the intervals of the C major scale.





No. of half steps in each specific interval

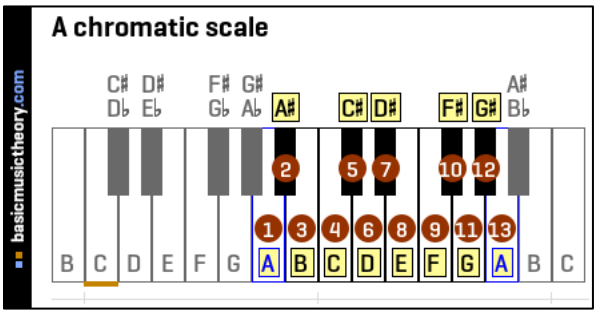
With examples from tonic C

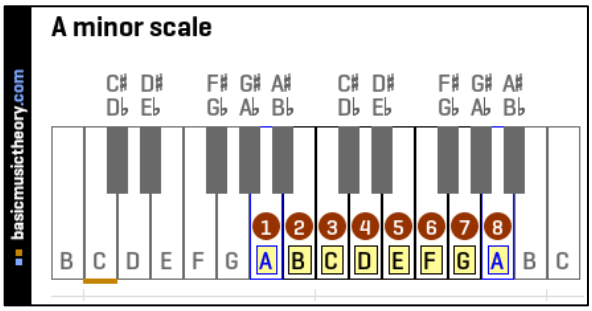
	Diminished	Minor	Perfect	Major	Augmented
Unison			C-C		C -C#
Second	C -Dbb	C-Db		C-D	C-D#
Third	C-Ebb	C-Eb		C-E	C-E#
Fourth	C-Fb		C-F		C-F#
Fifth	C-Gb		C-G		C-G#
Sixth	C-Abb	C-Ab		C-A	C-A#
Seventh	C-Bbb	C-Bb		C-B	C-B#
Eighth	C-C'b		C-C'		C-C'#

Confusion Alert. Don't be confused by the awkward naming, such as C-Ebb for a diminished 3rd. The rule is that the number reflects how far apart the letter names are. Thus a third interval can't be called C-D; that would have to be some type of *second* interval. A *third* interval has to have a letter in between the two notes, so in this case it has to be some C to some E. So, on the keyboard you would play this diminished 3rd as C-D, but in interval nomenclature it is labeled C-Ebb.

Note in the above table that the intervals from C to any other note of the C major scale are either a perfect or a major interval. This is also true of the other major scales. All intervals from the root note are either major or perfect.

What about the natural minor scale? Natural minor scales each include one major, 4 perfect, and 3 minor intervals. The table below gives examples of each type of interval in the A chromatic scale. The highlighted intervals are all the intervals of the A natural minor scale.





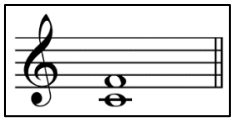
No. of half steps in each specific interval
With examples from tonic A

	Diminished	Minor	Perfect	Major	Augmented
Unison			A-A		A -A#
Second	A -Bbb	A-Bb		A-B	A-B#
Third	A-Cb	A-C		A-C#	A-C##
Fourth	A-Db		A-D		A-D#
Fifth	A-Eb		A-E		A-E#
Sixth	A-Fb	A-F		A-F#	A-F##
Seventh	A-Gb	A-G		A-G#	A-G##
Eighth	A-A'b		A-A'		A-A'#

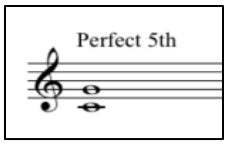
NOMENCLATURE

By this point you may be wondering, why all the complexity in a syllabus aimed at beginner-level piano players? Do we really need to know that a diminished 2nd is C-Dbb? The short answer is no. What's really important is an understanding of interval nomenclature, because (if for no other reason) it is germane to learning about chords, which are nothing more than a combination of intervals. If you have a basic understanding of the interval structure, as outlined in the above tables, you should feel much more comfortable when encountering chord names like C major, D minor, F diminished, etc. To help further this understanding, the following examples of interval nomenclature are offered.

- The interval C-F, shown here in the treble clef, is a "Perfect 4th" because, as is evident from the chromatic scale above, it spans four letters and encompasses five half steps, C-C#, C#-D, D-D#, D#-E, E-F. Any interval that meets these criteria – a 4-letter span and 5 half steps – is a perfect 4th. An Augmented 3rd also has 5 half steps, and (starting at the root C) goes from C to E#, which is identical to C to F. However, since it is formed by increasing ("augmenting") a half step on the E, to E#, it is technically an augmented 3rd and not a perfect 4th. It spans 3 letters, not 4. These two intervals are said to be "enharmonic," i.e., labeled differently but sounding the same. You are already familiar with this concept from the black keys, each of which can be labeled as a flat or a sharp, depending on the musical key.



- The interval C-G, shown here in the treble clef, is a "Perfect 5th" because it spans five letters and encompasses seven half steps, C-C#, C#-D, D-D#, D#-E, E-F, F-F#, F#-G. Any interval that meets these criteria – a 5-letter span and 7 half steps – is a perfect 5th. A diminished 6th also has 7 half steps, and goes from C to A double flat, or Abb, which is identical to the interval C to F. However, since it is formed by decreasing a whole step, from A to Abb, it is technically a diminished 6th and not a perfect 5th. It spans 6 letters, not 5. Again, these intervals are said to be "enharmonic," i.e., labeled differently but sounding the same.



There are many Youtube videos about intervals. Below are several, from short all the way to a 4 part course. Also listed are two videos on recognizing intervals by ear, something musicians learn early on, but may be a challenge for adult beginner-level piano players.

How intervals work – Music Theory Crash course – 6 minutes
https://www.Youtube.com/watch?v=2V3bvZu2Xqo

Reading and Understanding Intervals – 22 minutes
https://www.Youtube.com/watch?v=LCCH-RGvoqw

Music Theory – Understanding Intervals – 4 Parts (British – uses term "semitone" for half step)
Part 1 **https://www.Youtube.com/watch?v=GgbiO6c72ww**
Part 2 **https://www.Youtube.com/watch?v=4pWYXN80tco**
Part 3 **https://www.Youtube.com/watch?v=tv8b4FhW09A**
Part 4 **https://www.Youtube.com/watch?v=vRoyrNnUY3o**

Why Learning Intervals by Ear is Important (And How To Do It)
https://www.Youtube.com/watch?v=6EqZPtUYaco

Ear training for intervals
https://www.Youtube.com/watch?v=_aDCO3h_xik

Famous intervals in song writing

There are many. The perfect 8th (octave) is used in "Over The Rainbow," the perfect 4th in "Here Comes The Bride," the minor 2nd in the theme from "Jaws," and the major 2nd in "Happy Birthday." For a comprehensive list of intervals in popular music, check out the following website.

http://www.people.vcu.edu/~bhammel/theory/new_menu/resources/interval_songs.htm

Hear some examples of intervals at this Youtube site.
https://www.Youtube.com/watch?v=rVyzzCijXSA

This five-minute video covers both intervals and interval inversions, the latter being the subject of Section 6. It also provides aural examples of intervals.
https://www.Youtube.com/watch?v=YgxPUyGZKug

TEST YOUR UNDERSTANDING OF THIS SECTION. Choose the single best answer.

1. C to C# is what interval?
   a. Minor second
   b. Major second
   c. Minor third
   d. Unison

2. How many half steps are in a major 7th interval?
   a. 7
   b. 9
   c. 11
   d. 12

3. Which two intervals are enharmonic?
   a. Perfect 4th and augmented 3rd
   b. Diminished 4th and augmented 3rd
   c. Perfect 5th and minor 6th
   d. Minor 7th and augmented 6th

4. How many half steps are in an augmented 7th?
   a. 10
   b. 11
   c. 12
   d. 13

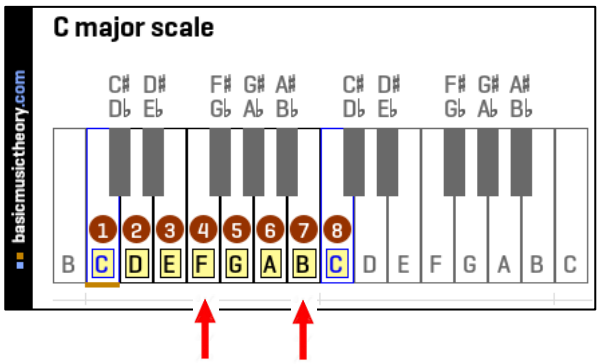
5. An interval with 6 half steps could be:
   a. A major 6th
   b. A minor 6th
   c. An augmented 5th
   d. A diminished 5th

Section 6: Tritones, Compound Intervals, and Interval Inversions

What is a tritone?

A tritone is a music interval composed of six half steps, which is 3 whole steps or whole tones (hence, *tri*tone; a whole step and a tone are synonymous). For example in the key of C major, F to B is a tritone, since it encompasses three whole tones: F–G, G–A, and A–B.

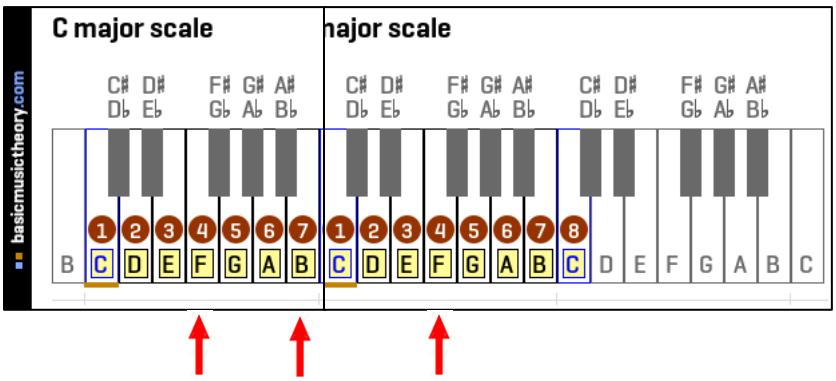
Each major scale has only one tritone per octave, as shown below for C major, where the sole tritone is F to B. Start on any note other than F, count 6 half-steps up, and you won't end on a scale note.



Tritone is F to B in C major scale

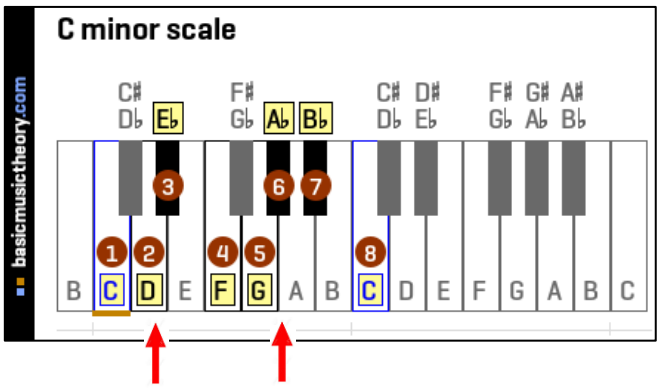
If we consider the *key* of C major, which can include more than one octave, we find two different tritones: F to B *and* B to F. This is shown below for two octaves of C major. No matter how many octaves of C major you include, you will find just two different tritones.

Confusion Alert. When reading about tritones (if you do), don't confuse statements about there being a *single tritone* of the *major scale* with other statements about there being *two tritones* of the *major key*. They are both correct.

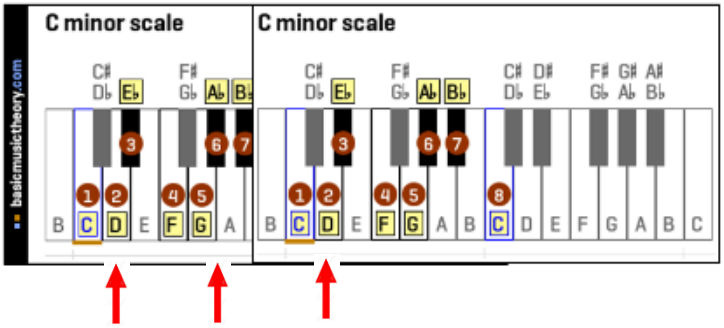


Tritones are F to B and B to F in key of C major

There is also one tritone in the natural minor scale, between the 2nd and 6th notes, as shown below for C minor. The tritone is D to Ab. If we consider more than a single octave for C minor, i.e., the *C minor key*, then you encounter two different tritones: D to Ab and Ab to D.



Tritone is D to Ab in C minor scale

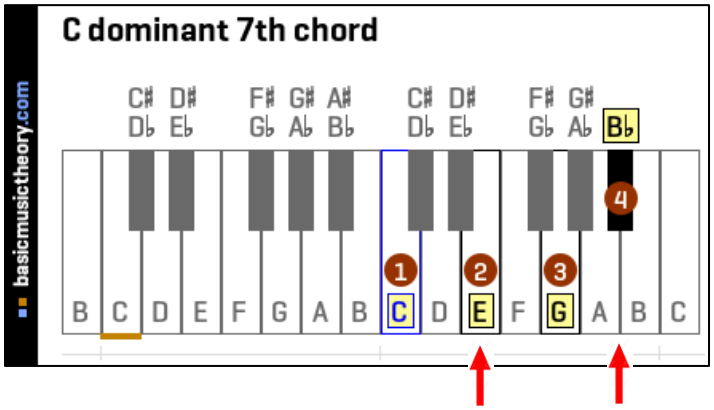


Tritones are D to Ab and Ab to D in key of A minor.

The tritone is considered a dissonant interval, in contrast to others, like the perfect 4th and perfect 5th, and for this reason it was rarely used in the Middle Ages. Some sources say it was outright banned from music during this period, and was considered the "devil in music," but that is apparently not true. Considered unpleasant, it was simply used infrequently. For an interesting history of this interval, view the following 10-minute Youtube video, "The Devil in music."

The Devil in music (an untold history of the Tritone)
https://www.Youtube.com/watch?v=eR5yzCH5CsM

Also note that the tritone is an interval in dominant chords, like C7 and D7, when in their root position, i.e., not inverted. It occurs between the third and seventh note above the root, so in C7 the tritone is E to Bb. This interval of course doesn't hold if the chord is inverted (see Chord Inversions, Section 9). Below is the C7 chord. E to Bb is 6 half steps and is a tritone.



Tritone is E to Bb in D7 chord

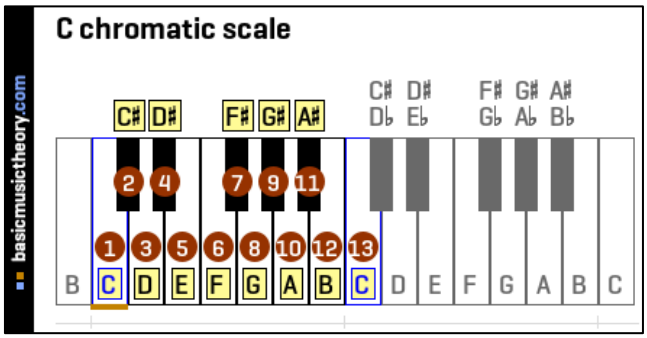
Today the tritone is commonly used to create tension. The tritone seeks "resolution", so in tonal music is always followed by another chord or chords to resolve the tension. The typical resolution for a dominant 7th chord is to move to a major or minor chord, e.g.,
G7 resolves to C Major or minor, D7 resolves to G Major or minor, F7 resolves to Bb Major or minor (https://pianowithwillie.com/tritones-and-chord-substitutions/).

Finally, a word about nomenclature. Below is the table of intervals with their half steps, presented in Section 5 of this syllabus. Note a 6-step interval can be either a diminished 5th or an augmented 4th (both highlighted in yellow). So, every tritone is either a D5 or an A4. Also, note that in any given octave, D5 and A4 are enharmonic. They are different names applied in different situations, but the intervals — 6-half steps each — are the same.

No. of half steps in each specific interval

	Diminished	Minor	Perfect	Major	Augmented
Unison			0		1
Second	0	1		2	3
Third	2	3		4	5
Fourth	4		5		**6**
Fifth	**6**		7		8
Sixth	7	8		9	10
Seventh	9	10		11	12
Eighth	11		12		13

Below is the chromatic scale staring on C. The tritone C to F# is an augmented 4th, because it spans 4 letters (C to F) and contains 6 half steps, one *more* than a perfect 4th. The tritone C to Gb is a diminished 5th, because it spans 5 letters (C to G), and contains 6 half steps, one *less* than a perfect 5th. The two intervals are identical, or enharmonic, but named differently depending on the circumstances. (See more examples of this type at end of Section 5 on interval naming.)



Music theory about tritones can become quite complex, and this is more than enough for beginner-level piano players. There are many more tritone videos on Youtube. The four below range from 2 to 10 minutes. If you only have time for one, I recommend the 6-minute video from PianoTV.

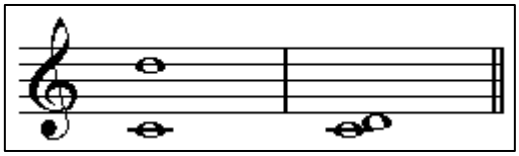
2-minute video: The tritone: the devil's interval? https://www.Youtube.com/watch?v=wKF-j_3gTKA
4-minute video: What is a tritone? https://www.Youtube.com/watch?v=fQhkAzemonc
6-minute video from PianoTV: https://www.Youtube.com/watch?v=I7YGQ2arIEg
10-minute video: Understanding tritones: https://www.Youtube.com/watch?v=ziZpQhTYG80

Compound Intervals

The above table of interval half steps maxes out with the octave, an interval of 12 half steps. Compound intervals go beyond 12 half steps, e.g., C to D above the octave, which is 14 half steps and is called a major 9th.

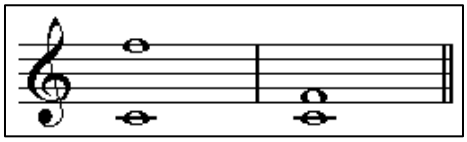
You might occasionally encounter compound intervals. As a practical matter most adults probably can't stretch more than 9 or 10 keys (if that), so when compound interval is played with both notes together, it usually requires two hands.

Each compound interval is related to a simple interval. Subtract 7 from the compound interval and you get the related simple interval. The compound interval below is C-D, which is a 9th because it spans 9 letters. Subtract 7 and you have a major 2nd.

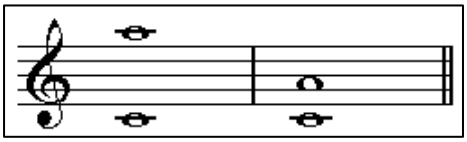


Major 9th / Major 2nd

Remember, this is only one-half the name of an interval. For the other half, the quality, you need to know the number of half steps. C to D in the next octave is 14 half steps, which is a major ninth. C to D in the same octave is 2 half steps, so it is a major second. An easier way to keep this straight is to remember that the subtracted interval will have the same quality as the first one. Major will stay major, minor will stay minor, etc. Here are two more examples, from http://www.teoria.com/en/reference/c/comp-simp.php.



Perfect 11th / Perfect 4th

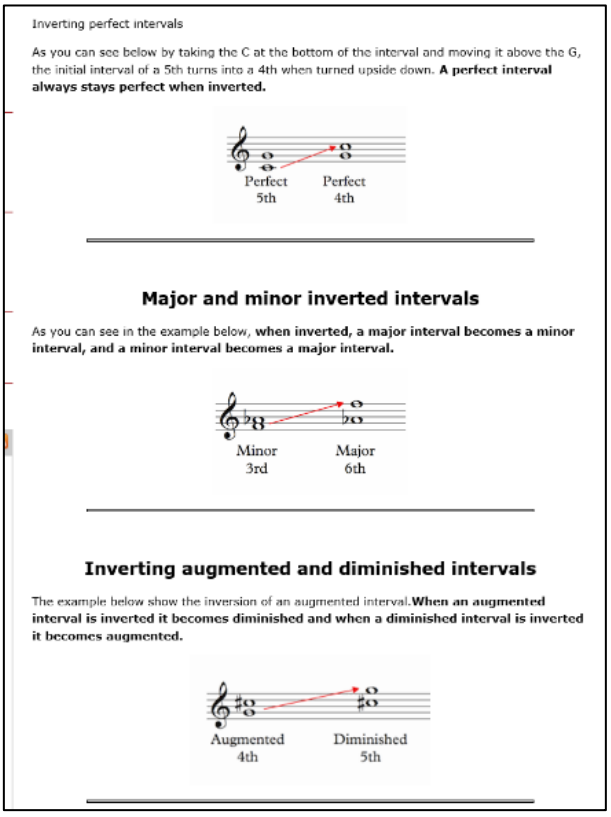


Major 13th / Major 6th

Interval Inversions

Interval inversion simply means taking the bottom note of an interval and putting it on top. The result is a new name and interval. Interval inversions are an integral part of basic music theory, and form the basis for all chord inversions, discussed in Section 8.

Interval inversions shown here, in the treble clef, are from https://www.essential-music-theory.com/inverted-intervals.html.



Inverting perfect intervals

As you can see below by taking the C at the bottom of the interval and moving it above the G, the initial interval of a 5th turns into a 4th when turned upside down. **A perfect interval always stays perfect when inverted.**

Perfect 5th Perfect 4th

Major and minor inverted intervals

As you can see in the example below, **when inverted, a major interval becomes a minor interval, and a minor interval becomes a major interval.**

Minor 3rd Major 6th

Inverting augmented and diminished intervals

The example below show the inversion of an augmented interval. **When an augmented interval is inverted it becomes diminished and when a diminished interval is inverted it becomes augmented.**

Augmented 4th Diminished 5th

The table below shows the resulting interval for each inversion.

INTERVAL INVERSIONS

Initial Interval	Inverted Interval	Addition of the Interval Numbers	Total No. half steps in both intervals
Prime	Octave	9	12
2nd	7th	9	12
3rd	6th	9	12
4th	5th	9	12
5th	4th	9	12
6th	3rd	9	12
7th	2nd	9	12
Octave	Prime	9	12

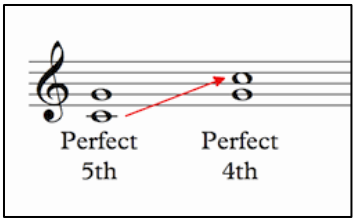
Major	Minor
Perfect	Perfect
Augmented	Diminished
Diminished	Augmented

EXAMPLES of INTERVAL INVERSIONS

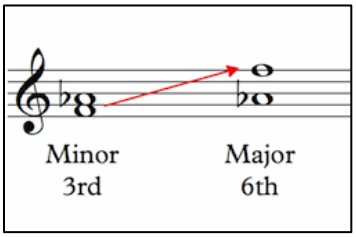
Interval	Notes	# half steps	Interval after Inversion	Notes	# half steps
Major 2nd	C - D	2	Minor 7th	D - C	10
Major 3rd	C - E	4	Minor 6th	E - C	8
Minor 3rd	C - Eb	3	Major 6th	Eb - C	9
Perfect 5th	C - G	7	Perfect 4th	G - C	5
Minor 6th	C - Ab	8	Major 3rd	Ab - C	4
Major 7th	C - B	11	Minor 2nd	B - C	1
Augmented 5th	C-G#	8	Diminished 4th	G# - C	4
Diminished 6th	C - G	7	Augmented 3rd	G - C	5

In this table, note the following patterns. (Treble clef figures from https://www.essential-music-theory.com/inverted-intervals.html)

- The number of half steps of the initial and inverted interval always adds up to 12. Thus, if there are 7 half steps in a perfect 5th, its inversion – a perfect 4th -- will have 5 half steps



- The *number* name of the interval and its inversion (2nd, 3rd, 4th, etc.) -- will always add up to 9. In the above example, 5+4 = 9. In this example of Minor 3rd to Major 6th, 3+6 = 9.



There are several instructional videos on compound intervals and interval inversions

Compound intervals
https://www.Youtube.com/watch?v=QOi5nzl_a6M
https://www.Youtube.com/watch?v=vRoyrNnUY3o&t=64s

Interval inversions
https://www.Youtube.com/watch?v=RkvUiiwLtxk
https://www.Youtube.com/watch?v=xyWJ0cnJoQo

TEST YOUR UNDERSTANDING OF THIS SECTION. Choose the single best answer.

1. A perfect 4th inverts to a:
   a. perfect 5th
   b. minor 4th
   c. major4th
   d. augmented 3rd

2. A Minor 3rd inverts to a:
   a. perfect 4th
   b. major 4th
   c. major 6th
   d. minor 6th

3. An interval plus its inversion together contain how many half steps?
   a. 9
   b. 10
   c. 11
   d. 12

4. A diminished interval inverts to what type of interval?
    a. major
    b. minor
    c. augmented
    d. perfect

5. A major interval inverts to what type of interval?
    a. minor
    b. perfect
    c. diminished
    d. augmented

Section 7: Three-Note Chords: Major, Minor & Diminished

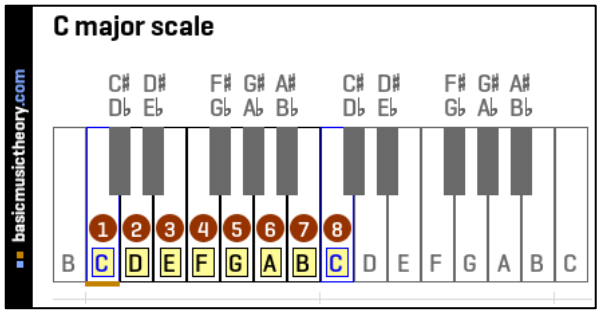
Now on to chords. Chords are three or more notes played together, or in sequence, that are formed from a specific scale. When the scale is identified in the key signature, as shown above, we say the chords are part of the "musical key."

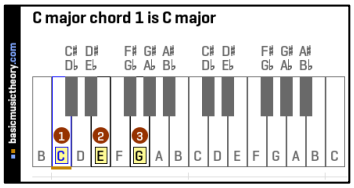
The phrase "formed from a specific scale" means the notes of the chord are in the scale. Starting from the root note for each chord, the chords are formed from *alternate* keys; there are no adjacent piano keys. In the C major scale, C-D-E is not a scale chord, but C-E-G is. Similarly, in the D major scale, D-E-F# is not a scale chord, but D-F#-A is.

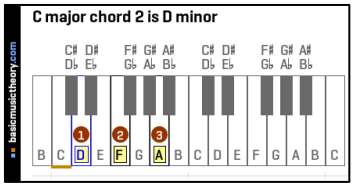
3-note chords – also called triads – are classified as major or minor by the number of half steps between the notes.

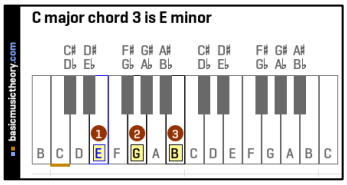
3-Note Chords of Major Scales

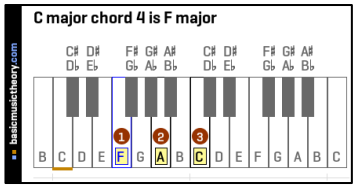
Below are piano diagrams of all the 3-note chords or triads of the C major scale.

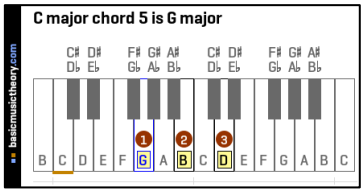


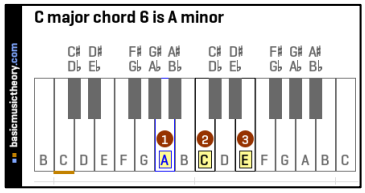


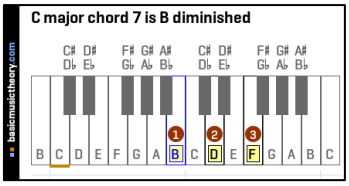




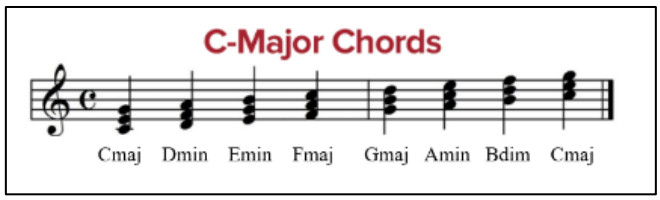








Here are the 3 note triads on the treble clef, starting and ending with the C major triad.



Note that each chord is either a *majo*r or *minor* triad, except B, which is labeled "diminished." The naming is based on how many half steps are between the first and second notes, and between the second and third notes.

***Major* 3-note chords or triads: 4 half steps between 1st and 2nd note, 3 half steps between 2nd and 3rd note. The pattern is 4-3.**

***Minor* 3-note chords or triads: 3 half steps between 1st and 2nd note, 3 half steps between 2nd and 3rd note. The pattern is 3-4.**

***Diminished* 3-note chords or triads: 3 half steps between 1st and 2nd note, 3 half steps between 2nd and 3rd note. The pattern is 3-3.**

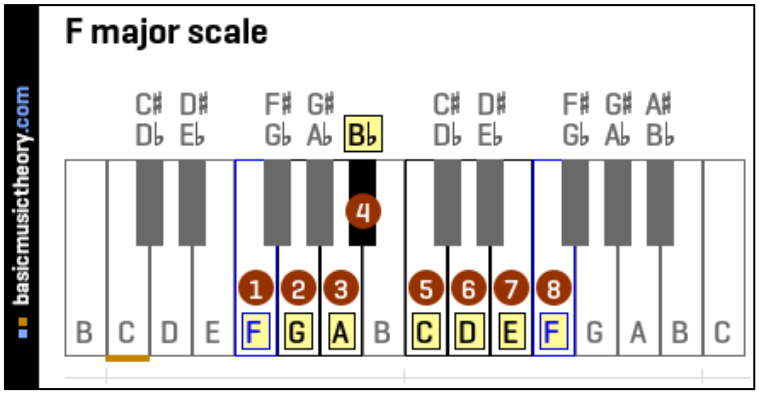
Each 3-note chord or triad also has a Roman numeral designation, to show the nature of the chord: capitals for the major chords, and lower case for minor chords. Diminished chords are lower case and have a superscript ^{o}. Thus, the Roman numeral sequence for the seven 3-note triads is:

I, ii, iii, IV, V, vi, vii^{o}.

Below are the 3-note triads or chords of the C major scale, with the corresponding Roman numeral (RN), and the number of half steps between the notes. Check this against the keyboard diagrams above.

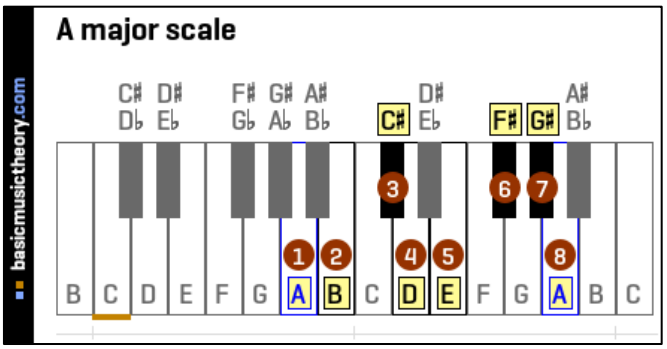
C major triads	Notes	RN	Half Steps between notes of chord
C major	C-E-G	I	4 between C and E, 3 between E and G
D minor	D-F-A	ii	3 between D and F, 4 between F and A
E minor	E-G-B	iii	3 between E and G, 4 between G and B
F major	F-A-C	IV	4 between F and A., 3 between A and C
G major	G-B-D	V	4 between G and B, 3 between B. and D
A minor	A-C-E	vi	3 between A and C, 4 between C and E
B diminished	B-D-F	vii^{o}	3 between B and D, 3 between D and F

Below are the 3-note triads or chords for the F major scale.



F major triads	Notes	RN	Half Steps between notes of the chord
F major	F-A-C	I	4 between F and A, between A and C
G minor	G-Bb-C	ii	3 between G and Bb, 4 between Bb and C
A minor	A-C-E	iii	3 between A and C, 4 between C and E
Bb major	Bb-D-F	IV	4 between Bb and D, 3 between D and F
C major	C-E-G	V	4 between C and E, 3 between E and G
D minor	D-F-A	vi	3 between D and F, 4 between F and A
E diminished	E-G-Bb	vii^{o}	3 between E and G, 3 between G and Bb

Below are the 3-note triads for the A major scale. Notice that the pattern of major-minor-diminished is the same as for C major and F major. In fact, the 3-note chord or triad sequence in every major scale is the same: I, ii, iii, IV, V, vi, vii^{o}.



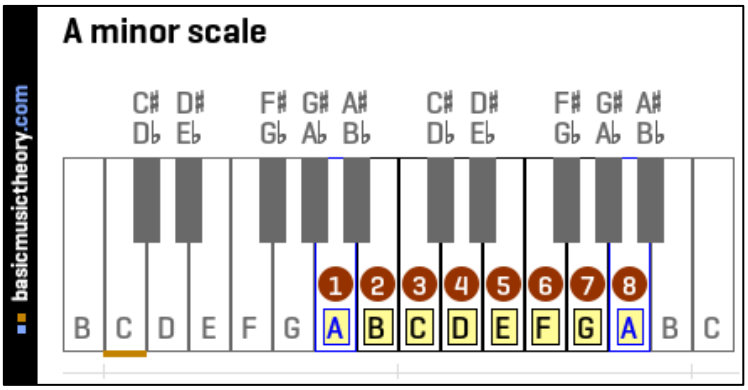
A major triads	Notes	RN	Half Steps between notes of the chord
A major	A-C#-E	I	4 between A and C#, 3 between C# and E
B minor	B-D-F#	ii	3 between B and D, 4 between D and F#
C# minor	C#-E-G	iii	3 between C# and E, 4 between E and G
D major	D-F#-A	IV	4 between D and F#, 3 between F# and A
E major	E-G#-B	V	4 between E and G#, 3 between G# and B
F# minor	F#-A-C#	vi	3 between F# and A, 4 between A and C#
G# diminished	G#-B-D	vii^{o}	3 between G# and B, 3 between B and D

Two videos that teach and demonstrate playing triads.
https://www.Youtube.com/watch?v=c5w0GHRWKl0
https://www.Youtube.com/watch?v=cepQVdpZB5U

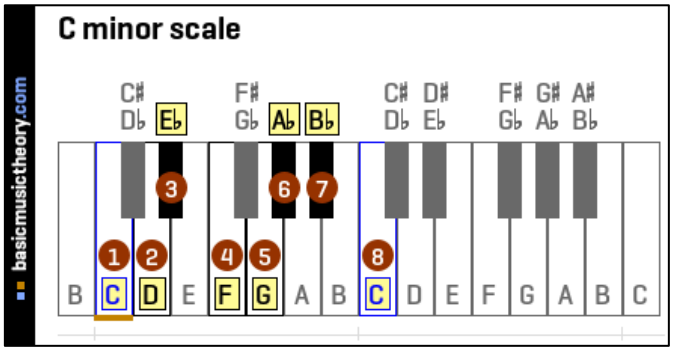
This video shows how to "play hundreds of songs with 4 chords: C, G, Amin, F."
https://www.Youtube.com/watch?v=gmvwZRwn-j0

3-Note Chords of Minor Scales

There is also a common pattern of triads or 3-note chords for the minor scales, which is: i, ii^{o}, III, iv, v, VI, VII. Below are the 3-note chords for both the A minor and C minor scales.



A minor triads	Notes	RN	Half Steps between notes of chord
A minor	A-C-E	i	3 between A and C, 4 between C and E
B diminished	B-D-F	ii^{o}	3 between B and D, 3 between D and F
C major	C-E-G	III	4 between C and E, 3 between E and G
D minor	D-F-A	iv	3 between D and F, 4 between F and A
E minor	E-G-B	v	3 between E and G, 4 between G and B
F major	F-A-C	VI	4 between F and A, 3 between A and C
G major	G-B-D	VII	4 between G and B, 3 between B and D



C minor triads	Notes	RN	Half Steps between notes of the chord
C minor	C-Eb-G	i	3 between C and Eb, 4 between Eb and G
D diminished	D-F-Ab	ii^{o}	3 between D and F, 3 between F and Ab
Eb major	Eb-G-Bb	III	4 between Eb and G, 3 between G and Bb
F minor	F-Ab-C	iv	3 between F and Ab, 4 between Ab and C
G minor	G-Bb-D	v	3 between G and Bb, 4 between Bb and D
Ab major	Ab-C-Eb	VI	4 between Ab and C, 3 between C and Eb
Bb major	Bb-D-F	VII	4 between Bb and D, 3 between D and F

Note the difference between the major, minor and diminished 3-note chords for the major and natural minor scale.

For the major scale, the major chords are I, IV, V. For the natural minor scale, the major chords are III, VI, VII.

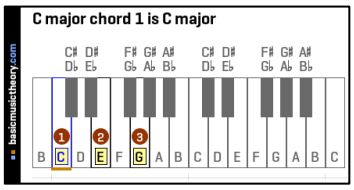
Major Scale:	I	ii	iii	IV	V	vi	vii^{o}
Natural Minor Scale:	i	ii^{o}	III	iv	v	VI	VII

I recommend you memorize this sequence, as it will come in handy when examining chords in lead sheets. For example, if a song is in C major, expect to see some variation of I, IV, V, or C, F and G. If the song is in A minor, expect to see some variation of III, VI, VII, or C, F and G.

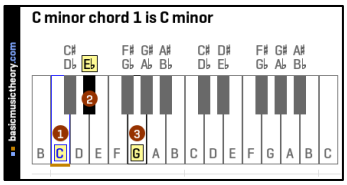
***

At this point it is fair to ask, why the emphasis on half steps in intervals and chords.

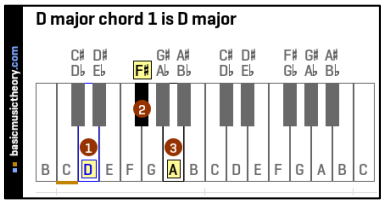
- **Major to minor triad.** You are probably familiar with "formulas" for these triads, e.g., 1-3-5 for major triads and 1-3b-5 for minor triads (the middle key is flatted). The basis for these and other chord formulas is the number of half steps between notes, and I would argue that *understanding* this half-step basis is a better way to learn. For example, when playing music from lead sheets, where the chords are notated above the treble clef (discussed in Section 11), it is not uncommon to come upon the major and minor chord of the same root note close together, e.g., Cmaj followed by Cmin. Just knowing the major and minor triad half steps tells you to play Cmin by going down one half step from E, i.e., go from a 4-3 half step arrangement, to a 3-4. That change only requires moving your middle finger down one half step.



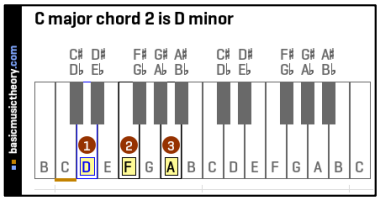
Middle finger down ½ step →



But doesn't the formula 1-3b-5 tell you to do the same thing? Yes, but knowing the *basis* for the formula is better. For example, consider music with a Dmaj triad followed by a Dmin triad.



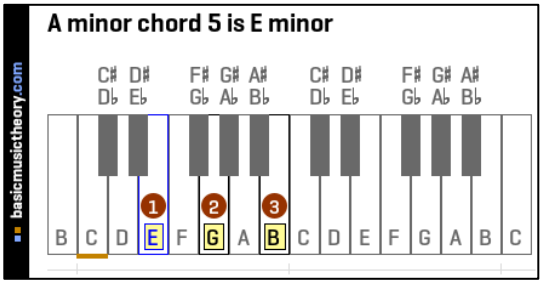
Middle finger down ½ step →



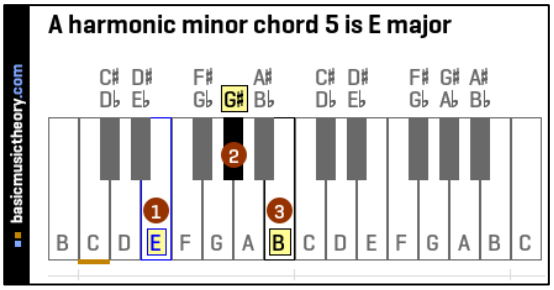
You know the formula: go from 1-3-5 for Dmaj to 1-3b-5 for Dmin, i.e., flatten the middle note, F#, to an F. F is not a flat note; the reason for going there may not be obvious if you just memorize a formula. In summary of this point, understanding the basic theory regarding half steps will allow you to apply any shortcuts you've learned – formulas – much more reliably and efficiently.

- **Harmonic 5th major triad used in minor key.** In Section 3, I noted that a lot of music written in "the minor scale" is actually in the harmonic minor scale, i.e., where the 7th note of the natural minor scale is raised a half step. In the key of A minor, raising the 7th note changes G to G#. This makes the fifth triad major, not minor.

Triad on the 5th note of the A natural minor scale: E-G-B is minor triad, labeled v



Triad on the 5th note of the A harmonic minor scale: E-G#-B is major triad, labeled V



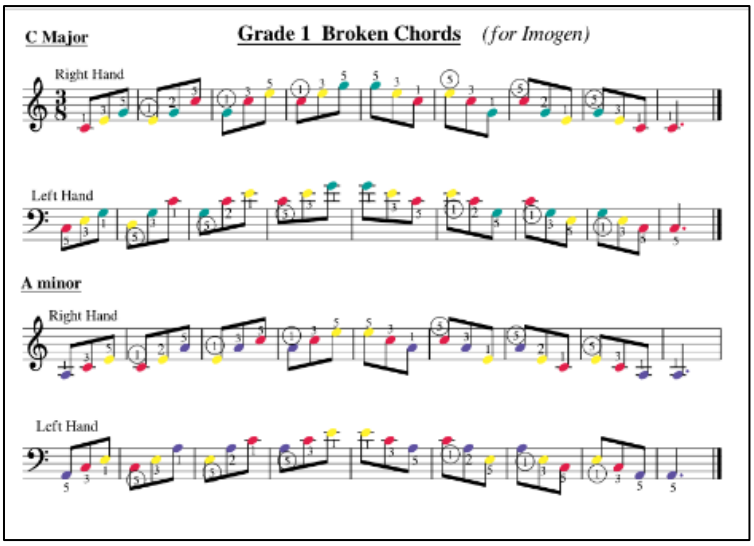
You will see this major 5 chord (V or V7) played a lot in minor scale music, and may wonder why a major chord is being played in a minor key. The reason is because it's based on the harmonic minor scale.

- **Chord progressions.** The first, fourth and fifth triads, always major chords in a major scale, are a very common *chord progression* or chord sequence in popular music, i.e., I-IV-V. Thus, in the key of C, the song typically opens with a C chord, then progresses to F (IV) and at some point to G (V), with eventual resolution back to C. Similarly, in the key of F, there will be an opening F chord (I), followed at some point by Bb (IV) and then C (V), with eventual resolution back to F. There are other common "chord progressions" in popular songs, and having some appreciation of the chords for each scale will provide a better understanding of the music you're playing.

Click here for short video on chord progressions.
https://www.Youtube.com/watch?v=H8o22AiT-fI&t=57s

Three chords to know (in every key)
https://www.pianotv.net/2016/08/three-chords-to-know-piano/

- **Broken chords.** Chords in the base clef are often "broken," that is, the individual chord notes are in sequence rather than stacked. Knowing the basic chords can help you name these chords in the bass clef, so when you see the pattern repeat, you can more easily find the notes -- because you recognize the chord. Below is an example of C Major and A minor as broken chords. This aspect is discussed further with a piece of classical music, in Section 10.



https://musescore.com/user/26377/scores/5185405

Broken chords piano lessons

3-minute video: https://www.Youtube.com/watch?v=04UGtSJE0Q0
10-minute video: https://www.Youtube.com/watch?v=-XOnl8NDClc
24-minute video: https://www.Youtube.com/watch?v=dIhkv-RgfK4

TEST YOUR UNDERSTANDING OF THIS SECTION. Choose the single best answer.

1. How many major triads are in a major scale?
   a. 2
   b. 3
   c. 4
   d. 5

2. How many minor triads are in a minor scale?
   a. 2
   b. 3
   c. 4
   d. 5

3. The seven 3-note triads in a major scale have which Roman numeral nomenclature?
   a. I, ii, III, IV, v, vi, vii^{o}
   b. I, ii, iii, IV, V, vi, vii^{o}
   c. I, II, iii, iv, V, VI, vii^{o}
   d. i, II, iii, iv, V, VI, vii^{o}

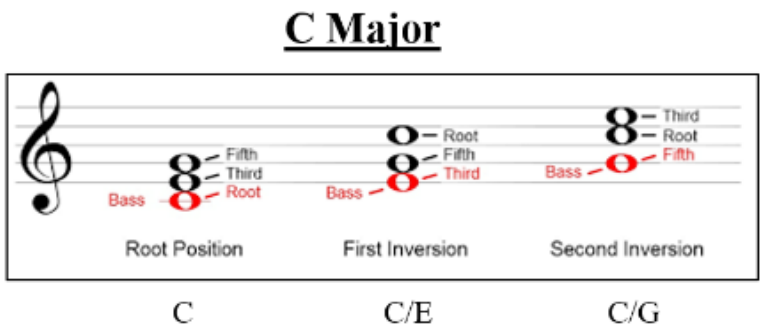
4. The seven 3-note triads in a minor scale have which Roman numeral nomenclature?
    a. I, ii, III, IV, v, vi, vii^{o}
    b. I, ii, III, iv^{o}, v, VI, VII
    c. i, II, iii^{o}, iv, v, VI, VII
    d. i, ii^{o}, III, iv, v, VI, VII

5. A diminished triad has what pattern of half steps between notes?
    a. 3-4
    b. 4-3
    c. 3-3
    d. 4-4

Section 8: Three-Note Chord Inversions

Chord inversions are simply a rearrangement of the chord notes in a different sequence. The half steps that characterize major and minor chords, discussed earlier, only apply to chords in the root position, not to their inversions.

In the C Major chord, C-E-G, C is the root note and is in the bass or bottom position. E-G-C is the same chord, but inverted so C is now on top and E is in the bottom position; this is called the *first inversion* of the C chord. G-C-E is also the same chord, with C in the middle and G in the botttom position; this is called the *second inversion* of the C chord. The inversions are notated with the first letter indicating the chord, and the second letter indicating the bottom note.



Inverted chords allow you to minimize hand movements and play faster and smoother. Chord inversions are common, both in standard piano sheet music (treble and bass clefs) and in lead sheets (treble clef only, chords on top).

On the next two pages are lists of major and minor triads, with inversions. For the first chord in each list, the notes are shown on both the keyboard and on the treble clef.

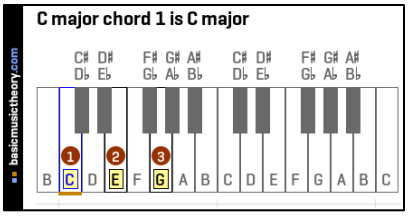
Confusion Alert: In these triads keep in mind the nomenclature. C/E means the C chord with E as the bass note, so it is E-G-C; D/A means the D chord, with A the bass note, so it is A-D-F#; etc.

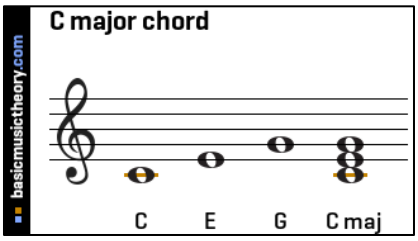
The following Youtube videos provide demonstrations of chord inversions. The 6.5 minute video is particularly recommended.

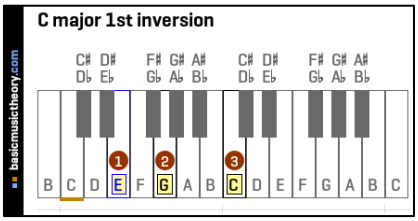
2 minutes: https://www.Youtube.com/watch?v=QJRkG9ZBDmE
6.5 minutes: https://www.Youtube.com/watch?v=v0nhQfLhPjc
12 minutes: https://www.Youtube.com/watch?v=Rp1JHaqYOqM

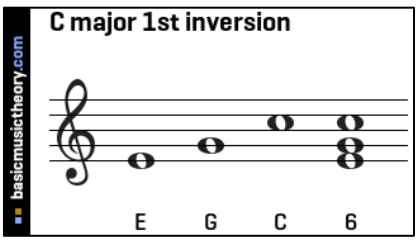
Major triads with inversions

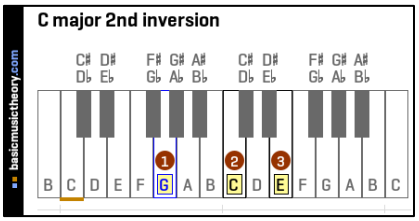
	1st inversion	2nd inversion
C	C/E	C/G
C#	C#/F	C#/G#
D	D/F#	D/A
D#	D/G	D/A#
E	E/G#	E/B
F	F/C	F/A
F#	F#/A#	F#/C#
G	G/B	G/D
G#	G#/C	G#/D#
A	A/C#	A/E
A#	A#/D	A#/F
B	B/D#	B/F#

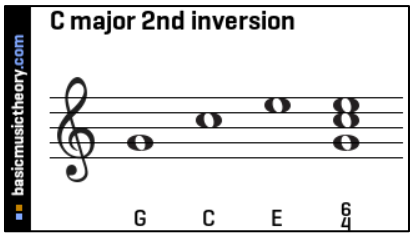






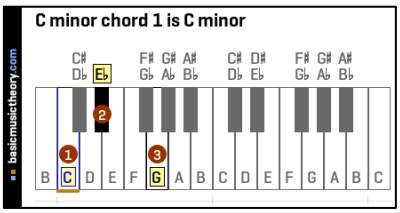


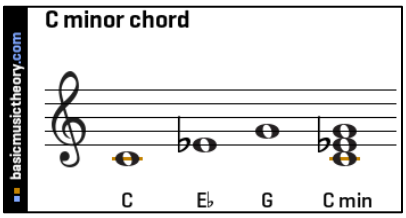


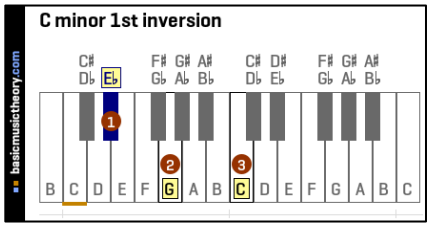


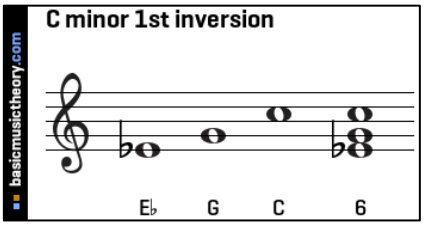
Minor triads with inversions

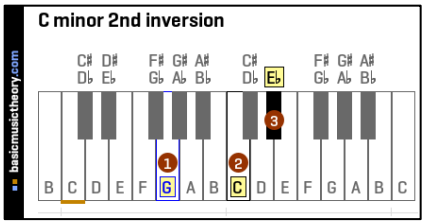
	1st inversion	2nd inversion	
Cm	Cm/Eb	Cm/G	
C#m	C#m/E	C#m/G#	
Dm	Dm/F	Dm/A	
D#m	Dm/F#	Dm/A#	
Em	Em/G	Em/B	
Fm	Fm/B	Fm/A	
F#m	F#m/A	F#m/C#	
Gm	Gm/A#	Gm/D	
G#m	G#m/B	G#m/D#	
Am	Am/C	Am/E	
A#m	A#m/C#	A#m/F	
Bm	Bm/D	Bm/F#	

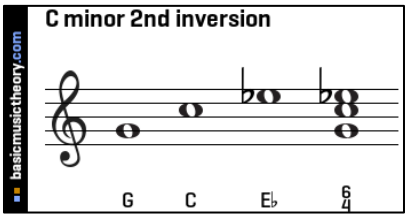










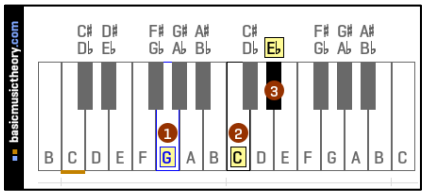


TEST YOUR UNDERSTANDING OF THIS SECTION. Choose the single best answer.

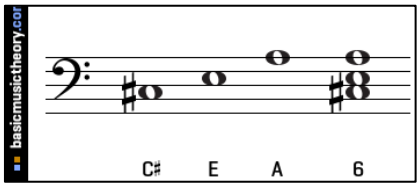
1. The 2nd inversion of C major is:
    a. C-E-G
    b. E-C-G
    c. G-C-E
    d. None of the above

2. The 2nd inversion of Dm is:
    a. D-F-A
    b. F-A-D
    c. A-D-F
    d. None of the above

3. The 3 note chord shown on the keyboard is:
    a. C minor, 1st inversion
    b. C minor, 2nd inversion
    c. G minor
    d. G minor, 1st inversion



4. This 3-note chord is shown in the bass clef is:
    a. A major
    b. A major, 1st inversion
    c. A major, 2nd inversion
    d. C# major



5. The 3-note chord shown in the bass clef is:
    a. F major
    b. F major, 1st inversion
    c. Bb major
    d. Bb Major, 2nd inversion

Section 9: Four-Note Chords: Sevenths

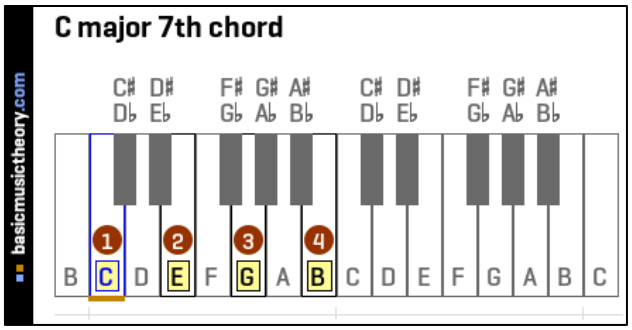
Four-note chords have a 1-3-5-7 pattern, and are called "seventh chords." Starting at C in the C major scale, the "C seven" chord would thus be C-E-G-B. Starting at D in the D major scale, the "D seven" chord would be D-F#-A-C, and so forth.

Except it's not that simple. There are actually many "seventh" chords for every root note. The website musictheory.com lists *eleven* 7th chords:

7th chords
Major
Dominant
Minor
Diminished
Half-diminished
Augmented
Augmented major 7th
Dominant sus4
Major sus2
Major sus4
Minor-major

In popular music, the ones we are most likely to encounter are the *major seventh*, *dominant seventh* and *minor seventh*. The best way to learn them is to consider the number of half steps between the notes.

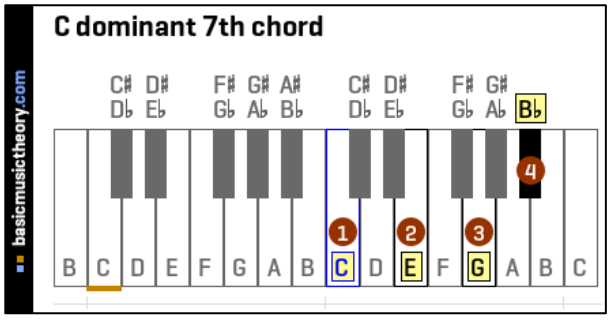
- The major seventh chord builds on the major triad, with the fourth note of the chord a major third – 4 half-steps – above the third note. The fourth note is also a single half step below the octave. The C major seventh chord is thus C-E-G-B, where G-B is a major triad (4 half steps), and B is a half-step below C. This chord is labeled Cmaj7. The pattern for half steps of a major seventh is 4-3-4.



4-3-4 is the half-step pattern for major 7th chords

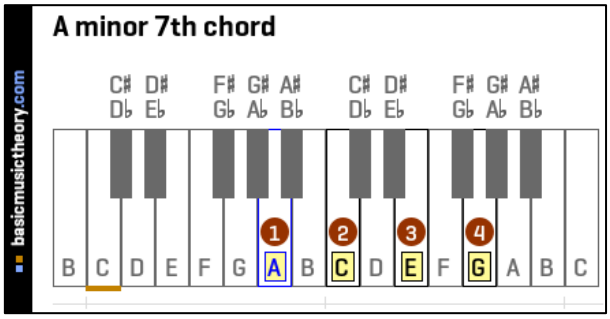
- The dominant seventh chord also builds on the major triad, with the fourth note a minor third – 3 half-steps – above the third note. The fourth note is also 2 half steps (or one

whole step) below the octave. The C dominant seventh chord is thus C-E-G-Bb, where Bb is a half-step below C. This chord is labeled C7. The pattern for half steps of a dominant seventh is 4-3-3.



4-3-3 is the half-step pattern for dominant 7th chords.

- The fourth note of a minor seventh chord builds on the minor triad, with the fourth note two half steps (a whole step) below the octave. The A minor seventh chord is thus A-C-E-G, where G is a whole step below A. This chord is labeled Amin7. The pattern for half steps of a minor seventh is 3-4-3.



3-4-3 is the half-step pattern for minor 7th chords.

Confusion Alert. Note that C7, D7, E7, etc., without a modifier, means a dominant seventh chord, not a major 7th or a minor 7th chord To signify a major 7th chord, use "M", "maj" or "major" before the number 7. To signify a minor 7th chord, use "m", "min" or "minor" before the number 7.

Tutorials on 7th chords
https://www.Youtube.com/watch?v=OAJUCFFOEt0
https://www.Youtube.com/watch?v=InBCuYsqnxk

Tutorial on playing dominant 7th chords
https://www.pianotv.net/2018/10/how-to-play-dominant-7th-chords/

TEST YOUR UNDERSTANDING OF THIS SECTION. Choose the single best answer.

1. Starting on F#, what are the next 3 notes for the F# minor seventh chord (hint: use the pattern of half steps for this chord, 3-4-3):
   a. A#-C-D
   b. A-C-E
   c. G#-A#-C
   d. A-C#-E

2. Starting on A, what are the next 3 notes for the A major 7^{th} chord (hint: use the pattern of half steps for this chord, 4-3-4):
   a. C-E-G
   b. C#-E-G
   c. C-E#-F#
   d. C#-E-G#

3. Starting on B, what are the next 3 notes for the B dominant 7^{th} chord (hint: use the pattern of half steps for this chord, 4-3-3):
   a. D#-F#-A
   b. D#-F-A
   c. D-F-A
   d. D-F#-A

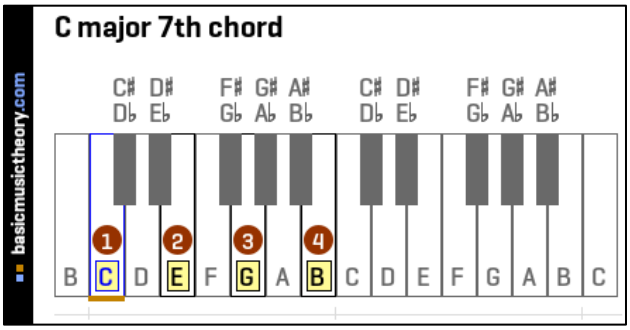
4. The chord "F7" has what pattern of half steps between notes?
   a. 3-4-4
   b. 4-3-3
   c. 4-3-4
   d. 3-4-3

5. Another name for "C7" is:
   a. C major 7
   b. C minor 7
   c. C dominant 7
   d. C augmented 7

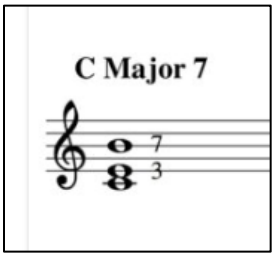
Section 10: More on Seventh Chords – 3-Note Sevenths and Inversions

Playing 7th chords – Omitting the "5" note

You've probably noticed that piano instruction books for beginners typically omit the "5" note when showing 7th chords in one of the clefs. Since the 7 chord is composed of the 1-3-5-7 notes of the scale, the omitted "5" is the third note. In the case of C major 7th chord, this would be the note G.



Example: (http://jazzpianolessons.online/start-here/guide-tones-3-note-jazz-chords/)



Cmaj7 is C-E-G-B. It is commonly played without the G, as shown here in the treble clef: C-E-B. Even though it has only 3 notes, it is still a 7 chord, because it contains the 1-3-7 notes of Cmaj7.

Confusion Alert. Numbers for musical notes can be confusing because the same note on the keyboard can be numbered differently, depending on the context. Thus in the above keyboard example, G is the 5th note of the C major scale, but the 3rd note of the C major 7 chord. Whenever you come across a note number, pay careful attention to the context in which the number is assigned.

In any seventh chord, the "5" is considered least essential to the harmony. The "1" is the tonic, the "3" note determines if the chord is major or minor, and the "7" is what makes it a seventh chord, so those are all important. Since the "5" doesn't have an essential role, it is often omitted, making the 4-note chord easier to play as just 3 notes. It is still a "seventh" chord, even though you are only playing 3 of the 4 notes in that chord. Below is a quote from one website about shortened 7-chords. Regarding the "5" in a 7-chord:

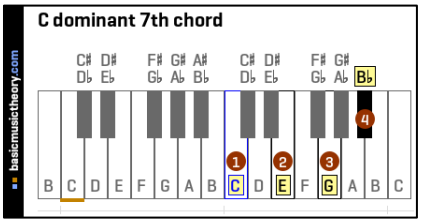
> "It does not contribute to the sense of major or minor, nor does it add any interest (tension, dissonance or sense of forward movement) to the sound. Therefore, it can typically be omitted quite safely without affecting the stability or tonality of the chord." (http://www.tyquinn.com/2010/chord-theory-6-omitting-notes/)

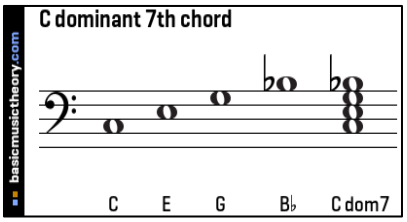
4-note chord inversions

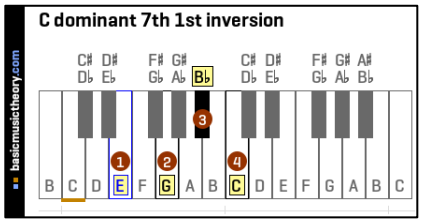
Three-note chords or triads have a first and a second inversion, as discussed in a previous section. Four-note chords have one more inversion, a third inversion. Below is a table of inversions for dominant 7ths, with some examples. The nomenclature is the same as for 3-note triads. C7/E means the C chord is C7, with E as the bass note, so it is E-G-C-Bb; D7/A means the D7 chord, with A the bass note, so it is A-D-F#-C; etc.

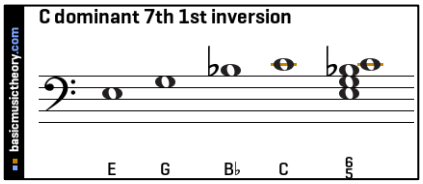
Dominant 7th chords with inversions

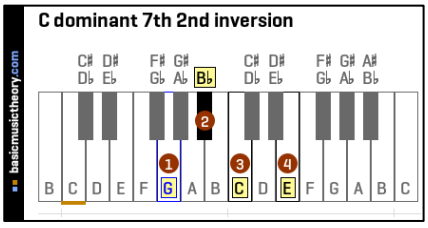
	1st inversion	2nd inversion	3rd inversion
C7	C7/E	C7/G	C7/Bb
C#7	C#7/F	C#7/G#	C#7/B
D7	D7/F#	D7/A	D7/C
D#7	D7/G	D7/A#	D7/C#
E7	E7/G#	E7/B	E7/D
F7	F7/C	F7/A	F7/Eb
F#7	F#7/A#	F#7/C#	F#7/E
G7	G7/B	G7/D	G7/F
G#7	G#7/C	G#7/D#	G#7/A#
A7	A7/C#	A7/E	A7/G
A#7	A#7/D	A#7/F	A#7/G#
B7	B7/D#	B7/F#	B7/A

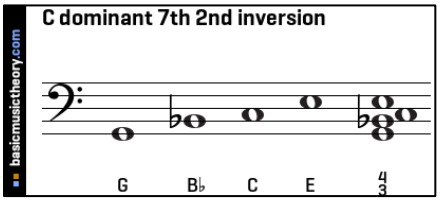


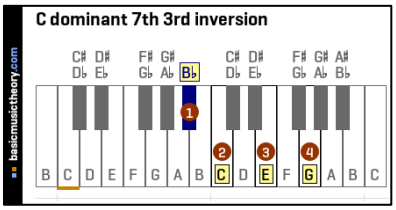


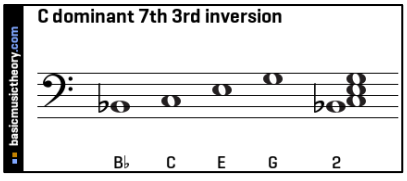












TEST YOUR UNDERSTANDING OF THIS SECTION. Choose the single best answer.

1. What is the bass note for the 2nd inversion of E7?
   a. E
   b. G#
   c. B
   d. D

2. What is the bass note for the 1st inversion of A7?
   a. A7
   b. C#
   c. E
   d. G

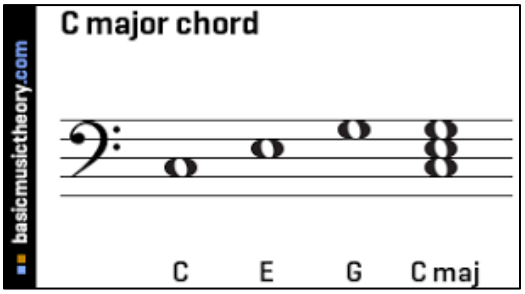
3. If Bb-D-G are played together, what chord is it?
   a. Bbmin
   b. Gmin
   c. Gmin 1st inversion
   d. Gmin 2nd inversion

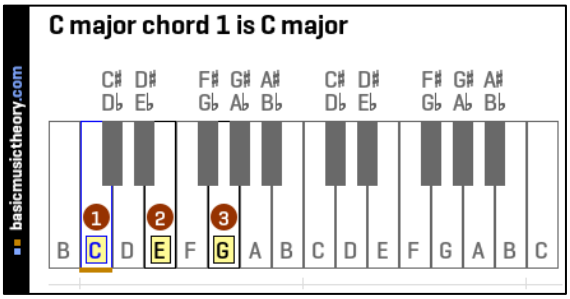
4. If A-C-Eb-F are played together, what chord is it?
   a. F7
   b. F7 1st inversion
   c. F7 2nd inversion
   d. F7 3rd inversion

5. The notes C-E-Bb play what chord?
   a. C major
   b. C7 major
   c. C7
   d. C minor

Section 11: Chords in the Bass Clef

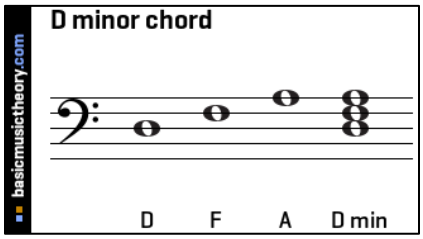
Most chords are played in the bass clef, where they may be stacked or broken. Another name for broken chords is arpeggio. The bass clef below shows the C major chord, first as 3 successive notes (broken), then all played together (stacked).

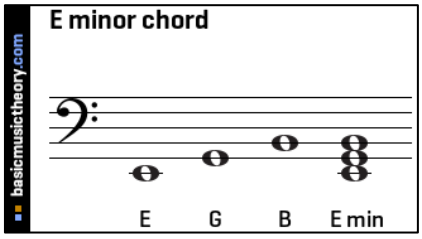


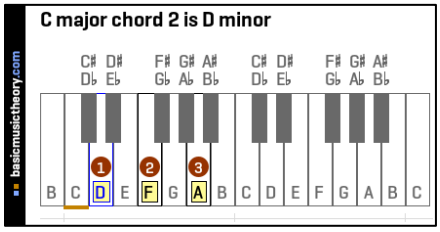


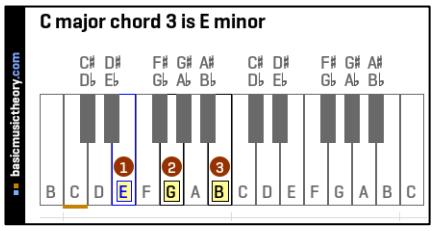
Piano teachers emphasize students should learn to read music *not* note by note, but by patterns or groups of notes. The oft-quoted analogy is that you don't read a book letter by letter, but by words or groups of words. Not sure if this analogy is really germane, but it is true that experienced pianists read chord patterns without having to worry about individual notes. It is obviously much better to instinctively "know" that the notes in the bass clef above are the C major chord, and where to find them on the keyboard, than to take time to read them separately as C, E and G. (Chord patterns are also important to recognize in the treble clef, but since most harmony in piano music is played in the bass clef, this section will put its focus there.)

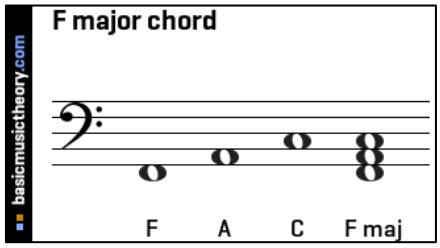
In the above example, note that the C major chord occupies three successive spaces. The second chord of the C major scale, D minor, occupies 3 successive lines. Going through all 7 triads or 3-note chords of the C major scale, we see that the pattern alternates: 3 spaces followed by 3 lines, ending with the B diminished chord on three lines, B-D-F.

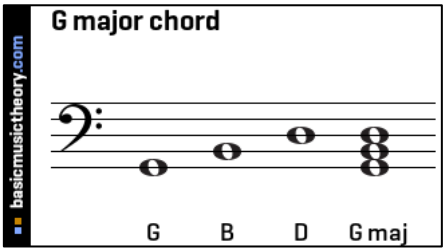


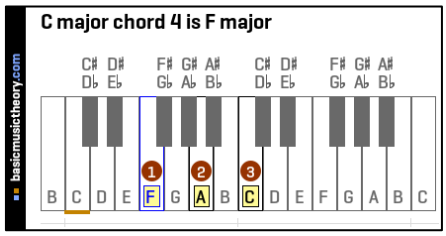


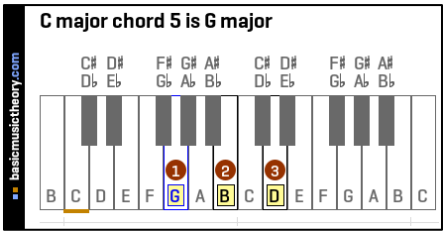


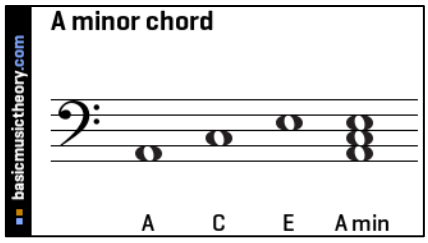


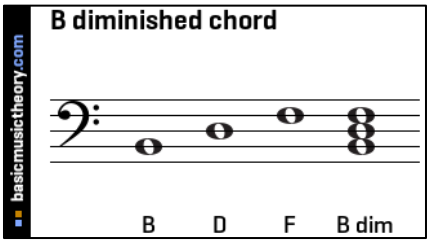


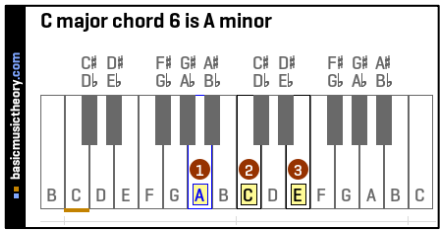


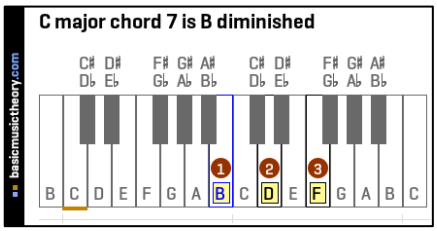






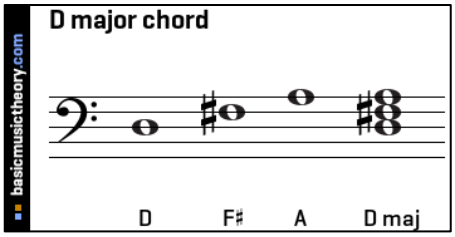


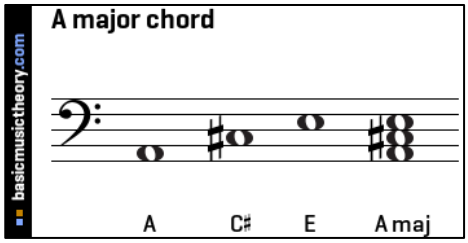


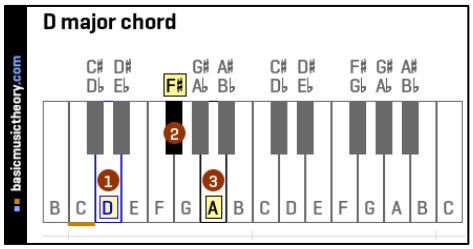


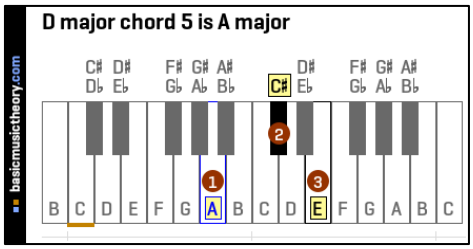
There are two points to make about this pattern. First, identify the bottom note and you know the triad pattern will be *alternating* letters. For example, identify D in the base clef of the C major scale, and you know the chord is D – F – A. Identify A in this scale and you know that the chord is A – C – E. So there is no need to read note by note, just the pattern.

Of course you always have to be mindful of the key signature, i.e., the keys with sharps or flats. In the two D major and A major chords from the D major scale (next page), the pattern is the same – alternating letters – but you have to keep in mind that F and C are sharped notes.

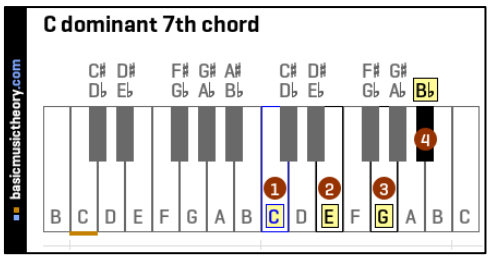


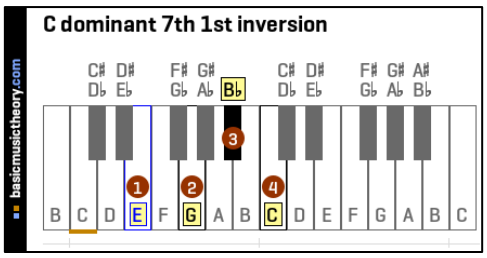


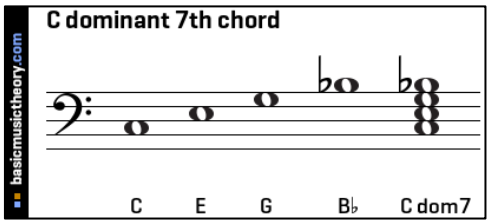


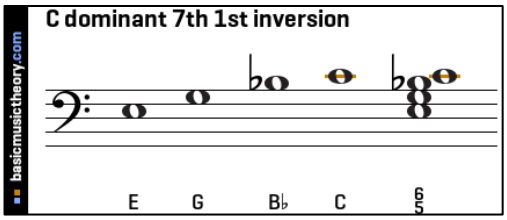


The second point is that when there are two notes adjacent on the clef, i.e., line-space or space-line, the notes are *adjacent letters* in the scale. This is illustrated below with the first inversion of C dominant 7th chord. Note that adjacent letters does not mean the same thing as adjacent keys. Bb is not adjacent to C; there is a B in between them. Space-line and line-space does indicate that that the two keys are adjacent letters, and if you know the key signature, you'll know if either or both is a sharp or a flat.

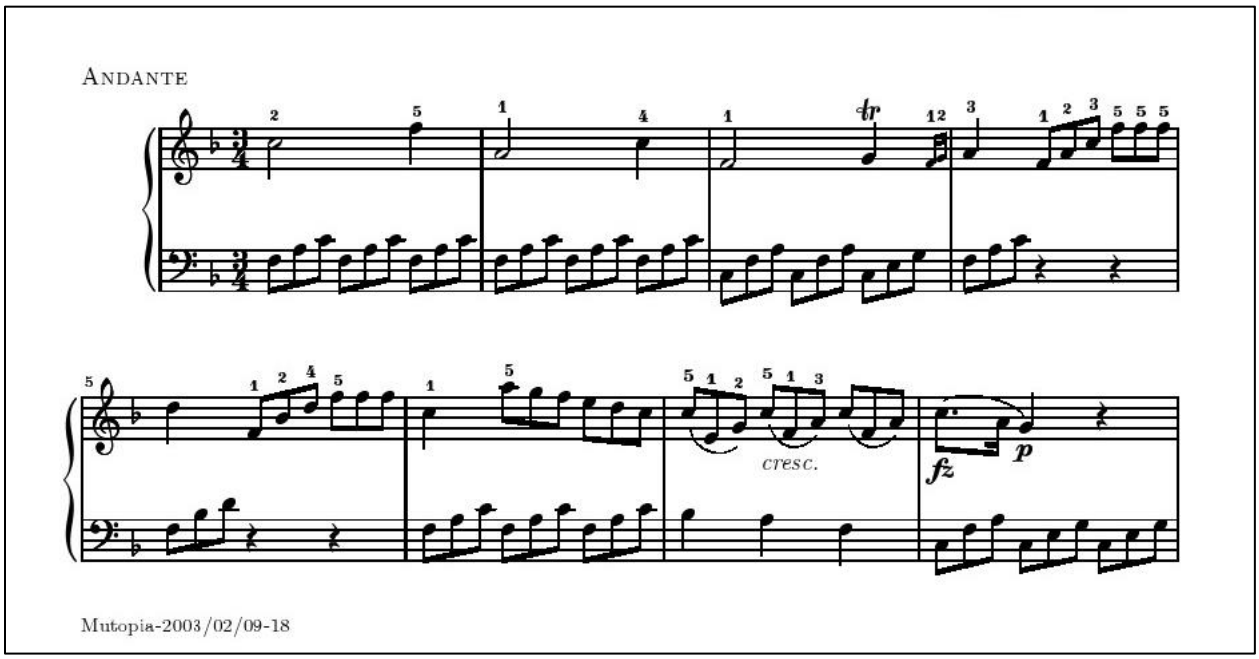








A good example of broken chords, or arpeggios, is seen in the opening bars of the Andante movement from Sonatina, Op. 36, No. 1, by Muzio Clemente. This movement is in F major, 3/4 time. Here are the first 8 measures.



The following points relate to the bass clef of these 8 measures, which contains only broken chords.

- In each of the first two measures the F major chord, F-A-C, is played 3 times. Since the time signature is 3/4, each chord is played as if was a quarter note in length.
- In the third measure the F major chord is again played 3 times, but as the 2nd inversion, C-F-A.
- In the fourth measure F-A-C is played once, followed by two quarter note rests,
- In the fifth measure the notes F-Bb-D, the 2nd inversion of the Bb major chord, are played once; this is followed by two quarter note rests.
- The sixth measure repeats the first measure, i.e., 3 F major chords.
- The seventh measure has 3 descending notes in the bass clef, Bb-A-F, which are found in the Bb Major 7 chord, Bb - D - F –A. (It is common to omit one of the notes of a 4-note chord, in this case the “D”.)
- The eighth measure has the 2nd inversion of F major, C-F-A, followed by two C major chords, C-E-G.

Clementi’s Op. 36, No. 1 is played at half speed in the first link and at full speed in the second link.
https://www.Youtube.com/watch?v=D_O2jp8gcpo
https://www.Youtube.com/watch?v=0_Ksi2qmW0A

Knowing the key is F major, you shouldn't have to "read" the chord notes separately, but instead can learn to recognize the chord patterns. The bass note in the first two measures for each chord is F, and the notes are on lines, which means alternating letters: F-A-C. This is a little more complicated in the third measure, where you have the 2nd inversion of F major, C-F-A. However, seeing how the three notes are placed (2nd space, 4th line, 5th line) tells you this is not a root triad, but instead an inversion of some sort.

None of this is intuitive for beginners, unless you are some sort of piano prodigy. It takes work, and practice. But once you have gone through a piece like this several times, you will learn to appreciate reading chords rather than struggling to figure out the individual notes.

<u>TEST YOUR UNDERSTANDING OF THIS SECTION</u>. Choose the single best answer.

1. Which of the following occupies 3 successive spaces in the bass clef?
    a. F-A-C
    b. G-B-D
    c. C-E-A
    d. D-F-G

2. What is this bass clef chord?

    a. A major
    b. C major
    c. G major
    d. F major

3. What is this bass clef chord?

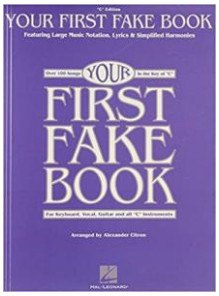
    a. A major
    b. 1st inversion of F major
    c. Bb major
    d. 2nd inversion of Bb major

4. What is 4th note of the C7 chord?
    a. B
    b. Bb
    c. B#
    d. A

5. What is the 4th note of C7 in first inversion?
    a. C
    b. E
    c. G
    d. B

Section 12: Chords in Lead Sheets and Song Sheets

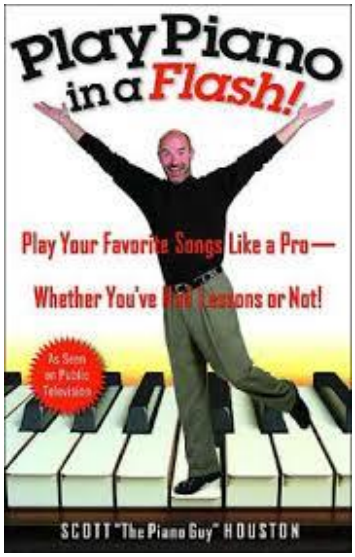
There are two basic approaches to teaching piano to beginning adults. One is the 'classical' method, which teaches how to play both treble and bass clefs. This is the standard approach used to teach children, and it provides the most flexibility. Within this approach are several different teaching methods, such as Bastien, Faber, and Alfred, but they all teach the student to read and play both clefs.

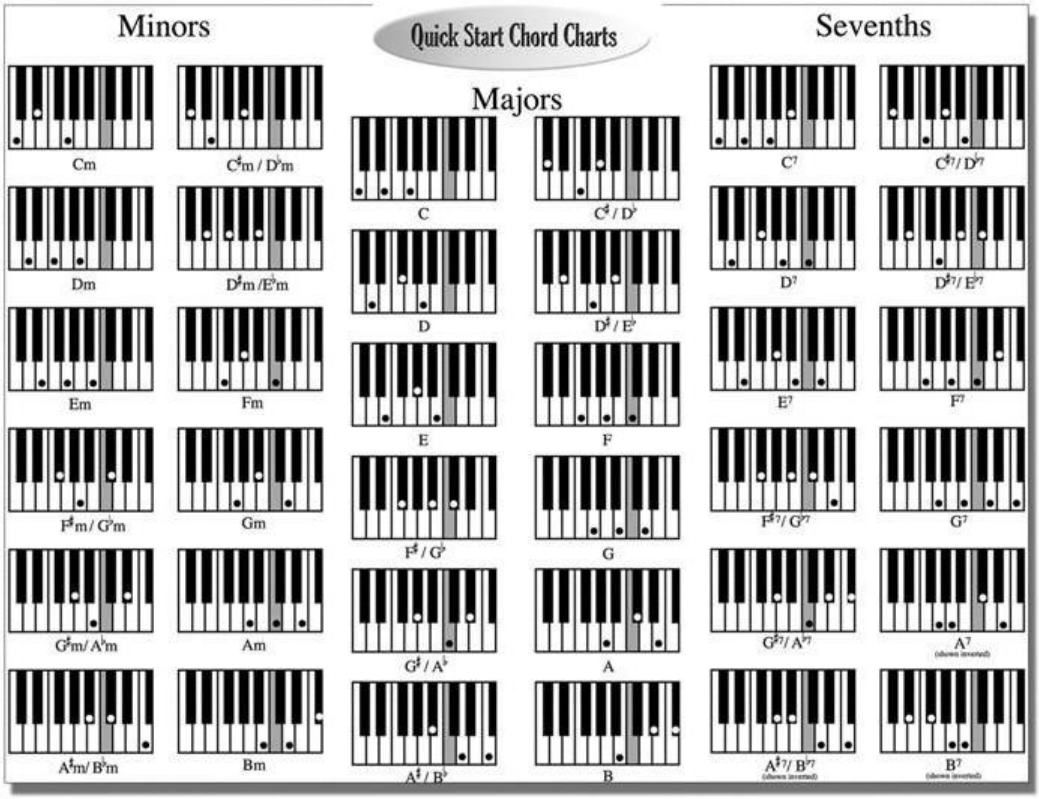


The other approach uses lead sheets, which have just the treble clef, plus the harmony – chord names – written above the treble clef notes. Lead sheets are favored by adults who just want to play popular songs, and not spend precious time learning the bass clef.

A collection of lead sheets in book form has long been known as a "fake book," because experienced players could "fake" the complex harmony of the bass clef by just learning a series of chords. (For the history of fake books, see https://blog.sheetmusicplus.com/2014/07/23/how-to-read-a-fake-book/.)

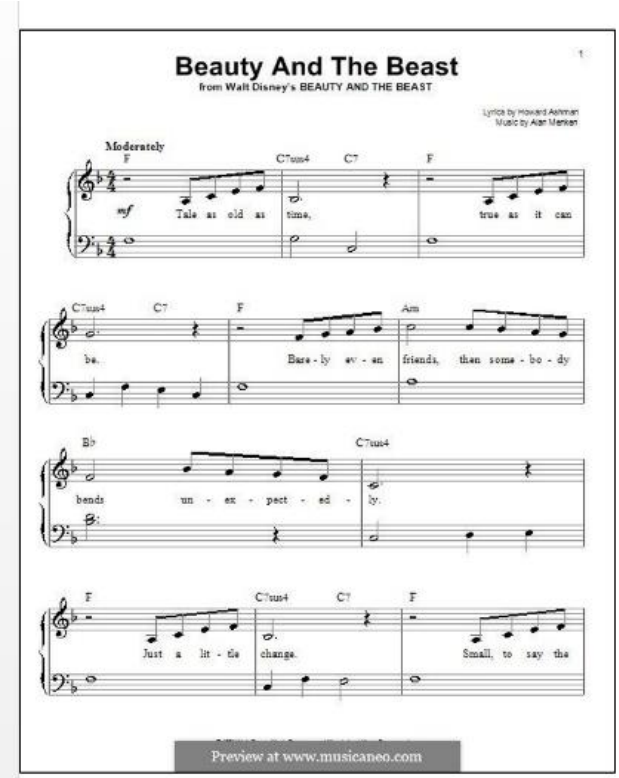
The lead sheet approach was popularized by Scott Houston, who has produced shows about the method on PBS, and sells his books and course materials on the internet. Houston also has over 100 Youtube videos, accessed at https://www.Youtube.com/user/pianoguytv. The cover of one of his instruction books is shown below, beside a picture of chords from his website (https://www.scotthouston.com/products/the-piano-guy-starter-set). The idea is that if you learn a bunch of chords played with your left hand, you can do away with the bass clef, so this is a short cut compared to the classical teaching method.

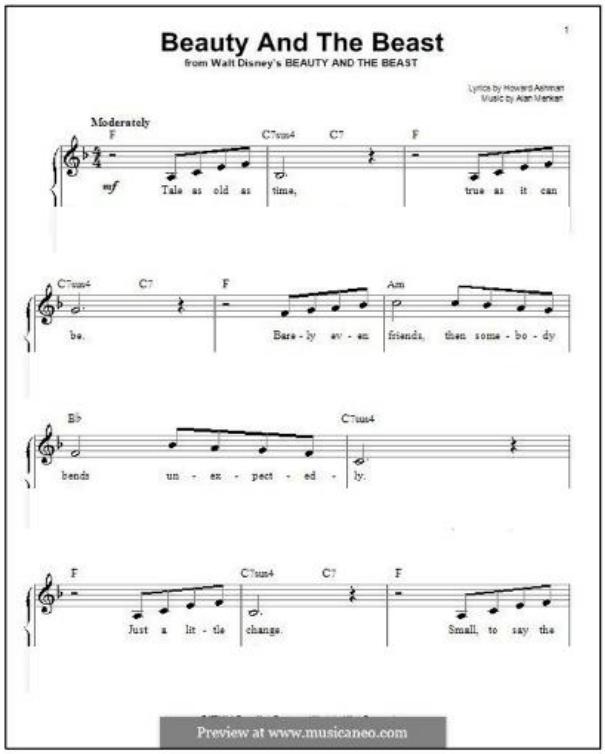




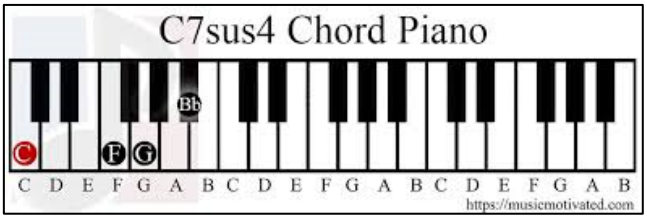
Lead Sheets

Below left is sheet music showing the treble and bass clefs, with some chords written above the treble clef. In this piece of music, the bass clef notes aren't all that difficult, but do require you to know how to read that clef, and many adult beginners don't want to bother learning that. The same music without the bass clef is a lead sheet, shown below right.

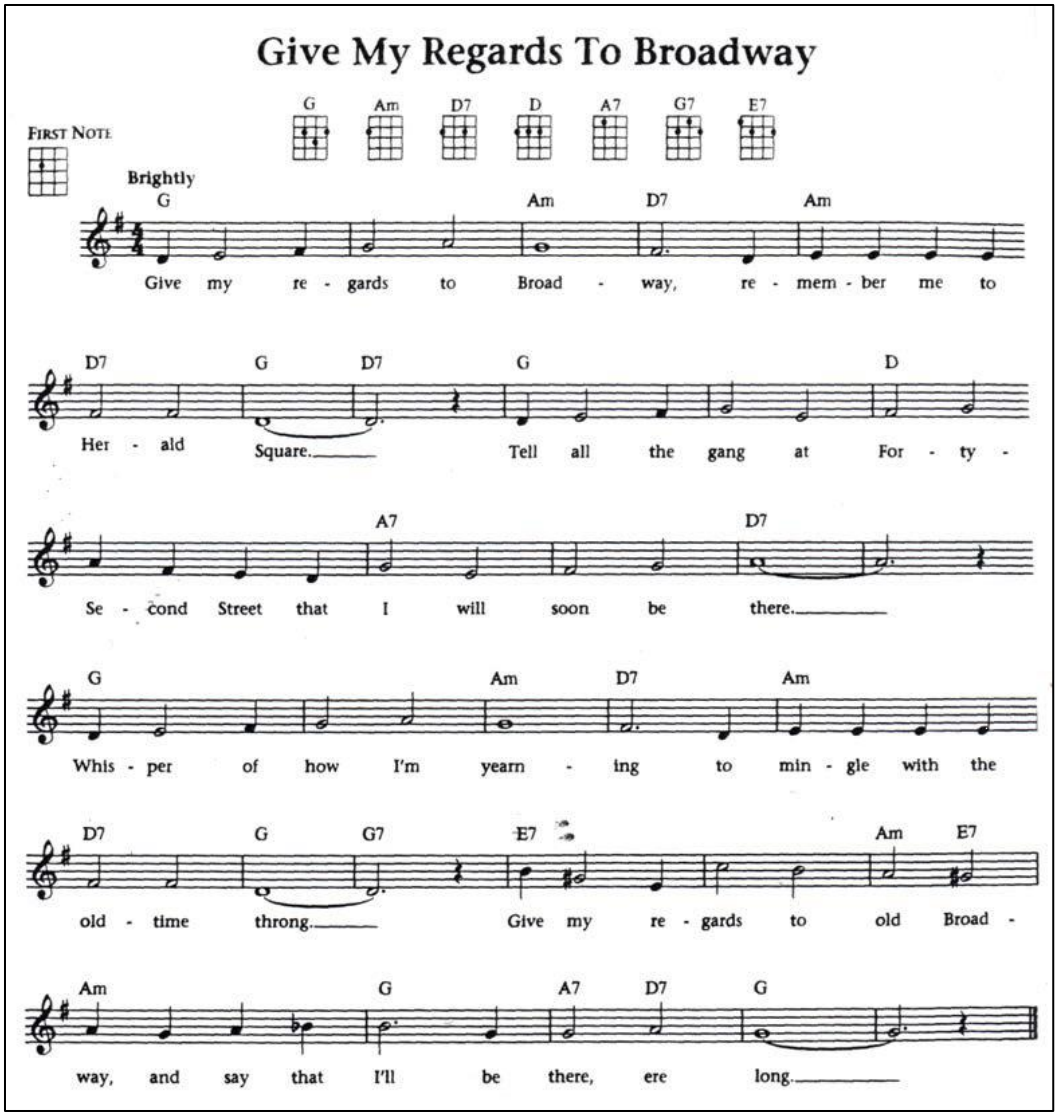




With the lead sheet you can play Beauty and the Beast just by learning a few chords, without having to worry about reading the bass clef. You play the melody with your right hand and the chords with your left hand. Except for the C7sus4, the chords in this particular lead sheet are common, ones you already likely know. And if playing this piece of music was really your goal, it would not be hard to look up and learn the C7sus4. Or, alternatively, you could "fake" it and just play C7 instead.



On the next page is a lead sheet geared toward ukulele players. It shows uke chords at the top, and then the treble clef with chord names displayed above the notes. In a typical uke session, players strum the chords and sing the melody. This same lead sheet could be played by a pianist, using the left hand for the chords and right hand for the melody.



Song Sheets

Yet another format for playing music is the song sheet. Song sheets have only the words and chords, no treble or bass clef, as shown below for "Wagon Wheel" and "Love Me Tender".

Song sheets are commonly used in music sessions where the melody is sung, and the harmony is provided by string instruments – guitar, mandolin, ukulele, banjo, etc. While song sheets are not used to teach piano, they are useful for examining chord progressions, and will be discussed further in the section on music keys.

Wagon Wheel

C G Am F
4/4 SN -

INTRO: C G Am F C G F F

C G
Headed down south to the land of the pines
Am F
And I'm thumbin' my way into North Caroline
C G F
Staring' up the road and pray to God I see headlights
C G
I made it down the coast in seventeen hours
Am F
Pickin' me a bouquet of dogwood flowers
C G F
And I'm a-hopin' for Raleigh I can see my baby to-night.

C G
So rock me mama like a wagon wheel
Am F
Rock me mama any way you feel
C G F
Hey, hey mama rock me.
C G
Rock me mama like the wind and the rain
Am F
Rock me mama like a south-bound train
C G F
Hey, hey mama rock me.

Love Me Tender

C D7 G7 E7 Am C7 F Fm A7
4/4 SN - G

INTRO: C//// D7//// G7//// C////

C D7 G7 C
Love me tender, love me sweet. Never let me go.
C D7 G7 C
You have made my life complete and I love you so.

C E7 Am C7 F Fm C
Love me tender, love me true, all my dreams ful - filled.
A7 D7 G7 C
For my darling I love you and I always will.

TEST YOUR UNDERSTANDING OF THIS SECTION. Choose the single best answer.

1. If the Wagon Wheel song sheet was transformed into traditional piano music, what notes would be in the first measure of the bass clef?
    a. C-F-A
    b. C-D-E
    c. C-F-G#
    d. C-E-G

2. If the Broadway song sheet was transformed into traditional piano music, what notes would be in the third measure of the bass clef?
    a. A-C-E
    b. A-C#-E
    c. A#-C-E
    d. Ab-C-E

3. In Scott Houston's Quick Start chord sheet, which type of chord is not represented?
    a. Major triad
    b. Minor triad
    c. Dominant 7^{th}
    d. Major 7^{th}

4. What is this chord?
    a. C major
    b. C minor
    c. C diminished
    d. C augmented

5. What is this chord?
    a. D major
    b. D minor 7th
    c. D7
    d. D major 7

Section 13: Chord Progressions

A chord progression is simply the sequence of chords used to harmonize the melody, such as I-IV-V, or I-vi-IV-V. Review the triads below for C major. If the music is in this key, and the chord progression is I-IV-V, the chords in sequence will be C maj, F maj, G maj.

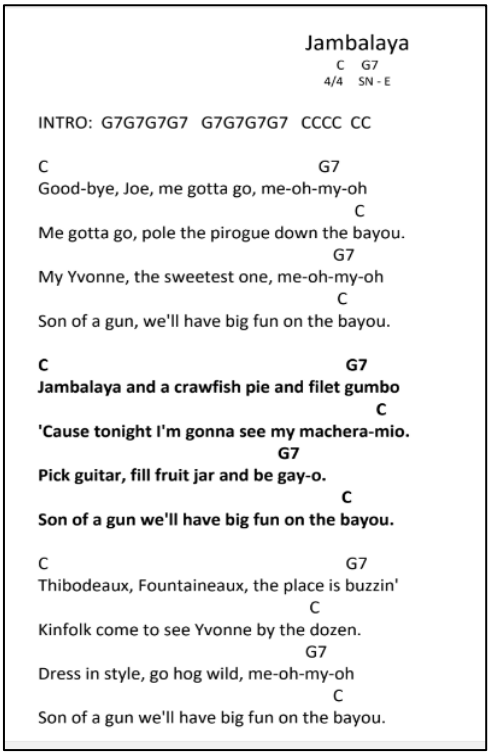
C major triads	Notes	RN	Half Steps between notes of chord
C major	C-E-G	I	4 between C and E, 3 between E and G
D minor	D-F-A	ii	3 between D and F, 4 between F and A
E minor	E-G-B	iii	3 between E and G, 4 between G and B
F major	F-A-C	IV	4 between F and A., 3 between A and C
G major	G-B-D	V	4 between G and B, 3 between B. and D
A minor	A-C-E	vi	3 between A and C, 4 between C and E
B diminished	B-D-F	vii^{o}	3 between B and D, 3 between D and F

The Roman numeral sequence for triads is the same in every major key: I, ii, iii, IV, V, vi, vii^{o}. The I-IV-V chord progression in the key of F maj would be F maj, Bb major, C major.

F major triads	Notes	RN	Half Steps between notes of the chord
F major	F-A-C	I	4 between F and A, between A and C
G minor	G-Bb-C	ii	3 between G and Bb, 4 between Bb and C
A minor	A-C-E	iii	3 between A and C, 4 between C and E
Bb major	Bb-D-F	IV	4 between Bb and D, 3 between D and F
C major	C-E-G	V	4 between C and E, 3 between E and G
D minor	D-F-A	vi	3 between D and F, 4 between F and A
E diminished	E-G-Bb	vii^{o}	3 between E and G, 3 between G and Bb

Popular music in particular is based on a common chord progressions, known to every musician. Below are two songs with just two chords each.

This song sheet for Jambalaya, in the key of C, uses C and G7 chords — the I and V7 of the C major scale.



Jambalaya

C G7

4/4 SN - E

INTRO: G7G7G7G7 G7G7G7G7 CCCC CC

C G7
Good-bye, Joe, me gotta go, me-oh-my-oh
C
Me gotta go, pole the pirogue down the bayou.
G7
My Yvonne, the sweetest one, me-oh-my-oh
C
Son of a gun, we'll have big fun on the bayou.

C G7
Jambalaya and a crawfish pie and filet gumbo
C
'Cause tonight I'm gonna see my machera-mio.
G7
Pick guitar, fill fruit jar and be gay-o.
C
Son of a gun we'll have big fun on the bayou.

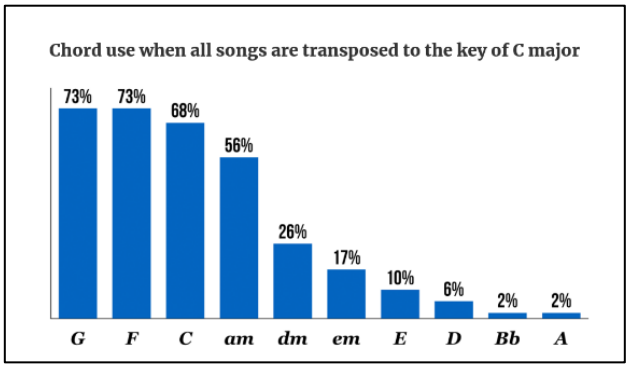
C G7
Thibodeaux, Fountaineaux, the place is buzzin'
C
Kinfolk come to see Yvonne by the dozen.
G7
Dress in style, go hog wild, me-oh-my-oh
C
Son of a gun we'll have big fun on the bayou.

- This song sheet for Achy Breaky Heart, in the key of F, uses the I (F) and V (C) chords of the F major scale.

Achy Breaky Heart - Billy Ray Cyrus 1992

[F]You can tell the world you never was my girl
You can burn my cloths when I'm **[C]**gone
Or you can tell your friends just what a fool I've been
And laugh and joke about me on the **[F]**phone
[F]You can tell my arms to go back to the farm
You can tell my feet to hit the **[C]**floor
Or you can tell my lips to tell my fingertips
They won't be reaching' out for you no **[F]**more
(Chorus)
[F]*But don't tell my heart, my achy breaky heart*
I just don't think it'd under ***[C]****stand*
And if you tell my heart, my achy breaky heart
He might blow up and kill this ***[F]****man…..Ooooo*
[F]You can tell your Ma I moved to Arkansas
Or you can tell your dog to bite my **[C]**leg
Or you can tell your brother Cliff who's fist can tell my lips
He never really liked me any **[F]**way
[F]Oh tell your Aunt Louise, tell anything you please
Myself already knows that I'm **[C]**okay
Oh you can tell your eyes to watch out for my mind
It might be walking out on me **[F]**today

In popular music one of the most common chord progressions is I-IV-V. In the key of C major this is C, F and G. When 1300 popular songs were analyzed, these 3 chords, or their counterparts in other keys (i.e., the I, IV, V in other keys) were by far the most used.
http://www.hooktheory.com/blog/i-analyzed-the-chords-of-1300-popular-songs-for-patterns-this-is-what-i-found/



You will find many videos on Youtube teaching the I, IV, V chords. In Section 7 I provided a link to PianoTV video Three Chords to Know. Links to two other videos on these important chords are listed below.

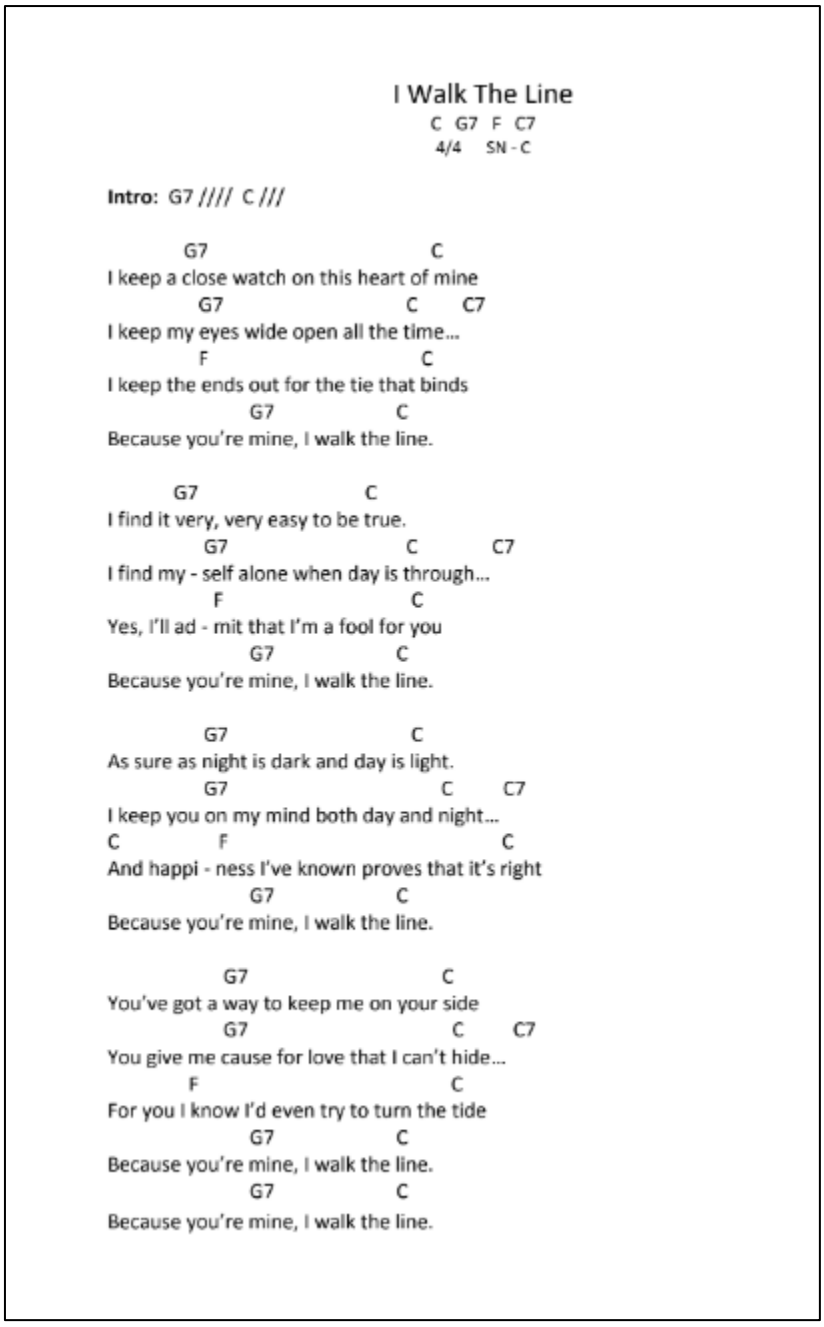
Piano Chord Progressions: I-IV-V-IV Quick Tutorial
7.5 minutes: https://www.Youtube.com/watch?v=idjDY6rTVTE

Having fun with the I, IV, V Chord Progression
21 minutes: https://www.Youtube.com/watch?v=Sxfze1CKA8c

The fourth most common chord in the above graph is vi, or A minor (am) in the key of C. After that there is a rapid fall off in chord frequency.

Below is a song sheet for the popular Johnny Cash song I Walk The Line, with a I-IV-V7 chord progression. Note that the song starts on G7, but the basic progression is C (I) to IV (F) to V7 (G7). The song ends on the tonic chord, which is C.

In this and other progressions you often see the dominant seventh chord substituted for one or more of the triads. Substituting G7 for G, or any other dominant chord for its respective triad, does not change the chord progression.



I Walk The Line

C G7 F C7

4/4 SN - C

Intro: G7 //// C ///

G7 C
I keep a close watch on this heart of mine
G7 C C7
I keep my eyes wide open all the time...
F C
I keep the ends out for the tie that binds
G7 C
Because you're mine, I walk the line.

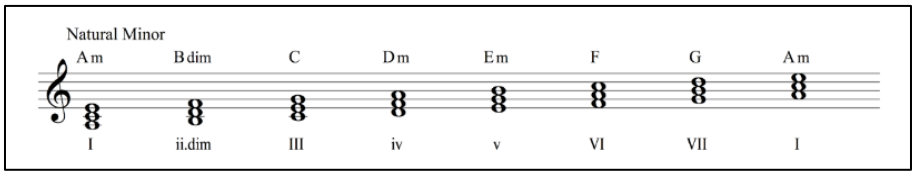
G7 C
I find it very, very easy to be true.
G7 C C7
I find my - self alone when day is through...
F C
Yes, I'll ad - mit that I'm a fool for you
G7 C
Because you're mine, I walk the line.

G7 C
As sure as night is dark and day is light.
G7 C C7
I keep you on my mind both day and night...
C F C
And happi - ness I've known proves that it's right
G7 C
Because you're mine, I walk the line.

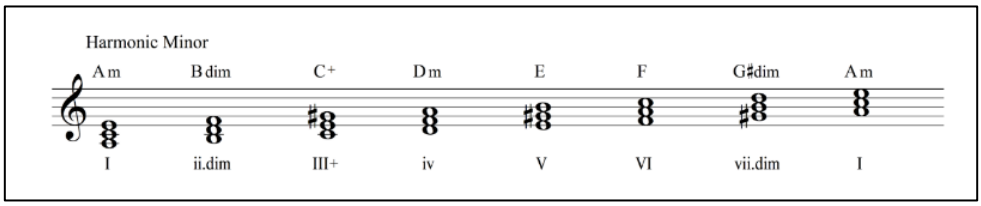
G7 C
You've got a way to keep me on your side
G7 C C7
You give me cause for love that I can't hide...
F C
For you I know I'd even try to turn the tide
G7 C
Because you're mine, I walk the line.
G7 C
Because you're mine, I walk the line.

Minor Scale Progressions

Just like the major scales, all minor scales share the same order of triads. They are listed below, with the specific triads shown for A natural minor and A harmonic minor scales. The harmonic minor scale is formed by raising the 7th note of the natural minor scale one half step. As result, in the A minor scale, G is raised to G#; this changes three chords. C major becomes C augmented (III^+), E minor becomes E major (V), and G major becomes G# diminished. (Treble clef figures from https://www.musical-u.com/learn/discovering-minor-chord-progressions-minor-chords-part-one/.)



A natural minor	Notes	RN	Half Steps between notes of chord
A minor	A-C-E	i	3 between A and C, 4 between C and E
B diminished	B-D-F	ii^o	3 between B and D, 3 between D and F
C major	C-E-G	III	4 between C and E, 3 between E and G
D minor	D-F-A	iv	3 between D and F, 4 between F and A
E minor	E-G-B	v	3 between E and G, 4 between G and B
F major	F-A-C	VI	4 between F and A, 3 between A and C
G major	G-B-D	VII	4 between G and B, 3 between B and D



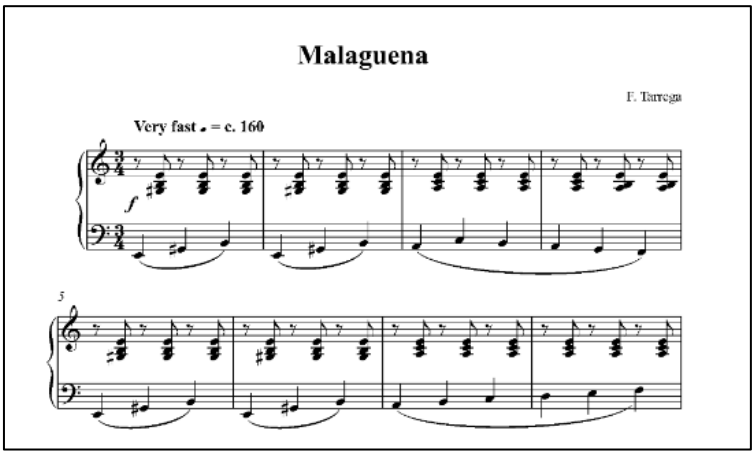
A harmonic minor	Notes	RN	Half Steps between notes of chord
A minor	A-C-E	i	3 between A and C, 4 between C and E
B diminished	B-D-F	ii^o	3 between B and D, 3 between D and F
C augmented	C-E-G#	III^+	4 between C and E, 4 between E and G#
D minor	D-F-A	iv	3 between D and F, 4 between F and A
E major	E-G#-B	V	4 between E and G#, 3 between G# and B
F major	F-A-C	VI	4 between F and A, 3 between A and C
G# diminished	G#-B-D	vii^o	3 between G# and B, 3 between B and D

As a practical matter (at least for beginner-level piano players), the most important aspect of the harmonic minor scale is the fifth chord, which is major (V), as opposed to minor (v) in the natural minor scale. Much music written in a natural minor key uses the V or V7 chord lifted from the harmonic minor.

For example, music written in A minor will use the III and the VII major chords from the natural minor scale, and substitute V or V7 for the minor fifth. Essentially, composers in the minor key borrow the harmonic minor fifth, which is V or V7, but otherwise stick to the natural minor

chords. Below are the first two lines from Malaguena, in the key of A minor. In this music the chords are played in the treble clef. Note in the first measure the 3-note chords are G#-B-E. This is a V chord from the A harmonic minor scale.

https://www.8notes.com/scores/17312.asp



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Below is a table showing common chord progressions, with the specific chords for major keys C, D, F, G and A. For any of these chords, you may also use the dominant 7th chord. Note that the chords in the list for ii-V-I progressions are all dominant 7th chords. Also note that there are numerous variations within these patterns. A common one is simply to repeat one of the chords, e.g., for the I-IV-V-V.

Common Chord Progressions

Major Keys: C, D, F, G & A

I	IV	V
C	F	G
D	G	A
F	Bb	C
G	C	D
A	D	E

I	vi	IV	V
C	Am	F	G
D	Bm	G	A
F	Dm	Bb	C
G	Em	C	D
A	F#m	D	E

ii	V	I
Dm7	G7	Cmaj7
Em7	A7	Dmaj7
Gm7	C7	Fmaj7
Am7	D7	Gmaj7
Bm7	E7	Amaj7

I	vi	ii	V
C	Am	Dm	G
D	Bm	Em	A
F	Dm	Gm	C
G	Em	Am	D
A	F#m	Bm	E

I	V	vi	IV
C	G	Am	F
D	A	Bm	G
F	C	Dm	Bb
G	D	Em	C
A	E	F#m	D

I	IV	vi	V
C	F	Am	G
D	G	Bm	A
F	Bb	Dm	C
G	C	Em	D
A	D	F#m	E

I	iii	IV	V
C	Em	F	G
D	F#m	G	A
F	Am	Bb	C
G	Bm	C	D
A	C#m	D	E

I	IV	I	V
C	F	C	G
D	G	D	A
F	Bb	F	C
G	C	G	D
A	D	A	E

I	IV	ii	V
C	F	Dm	G
D	G	Em	A
F	Bb	Gm	C
G	C	Am	D
A	D	Bm	E

www.piano-keyboard-guide.com

Transposition

Musicians are adept at transposition while playing. Transposition is the ability to play a specific chord progression in one of several keys. Thus, a musician may know a song in C that has the I-IV-V progression (C major – F major – G major). Then, in a jam session, the leader may say "let's play it in F." The musician knows – and can play – the same I, IV, V progression in F: F major, Bb major, C major. Sometimes a song sheet is written in a way to show only the chord numbers, without notating any letters. Again, the musician adept at transposition can play whatever chords are dictated by the announced key. Below is a chart showing the chords for each major key "by the number."

https://www.praisecharts.com/blog/the-nashville-number-system-chart-for-bands/

KEY	I	ii	iii	IV	V	vi	vii°	I
	1	2m	3m	4	5	6m	7°	1
C	C	Dm	Em	F	G	Am	B°	C
D	D	Em	F#m	G	A	Bm	C#°	D
E	E	F#m	G#m	A	B	C#m	D#°	E
F	F	Gm	Am	Bb	C	Dm	E°	F
G	G	Am	Bm	C	D	Em	F#°	G
A	A	Bm	C#m	D	E	F#m	G#°	A
B	B	C#m	D#m	E	F#	G#m	A#°	B

TEST YOUR UNDERSTANDING OF THIS SECTION. Choose the single best answer.

1. Which of the following is *not* a I- IV- V chord progression?
   a. C-F-G
   b. E-A-B
   c. F-B-C
   d. B-E-F#

2. The harmonic minor scale raises which note of the natural minor scale a half step?
   a. 2nd
   b. 4th
   c. 5th
   d. 7th

3. Which degrees of the natural minor scale are the roots of major chords?
   a. 1, 4, 5
   b. 2, 5, 7
   c. 3, 4, 6
   d. 3, 6, 7

4. What is the half step pattern of diminished 3-note chords?
   a. 3-4
   b. 4-3
   c. 3-3
   d. 4-2

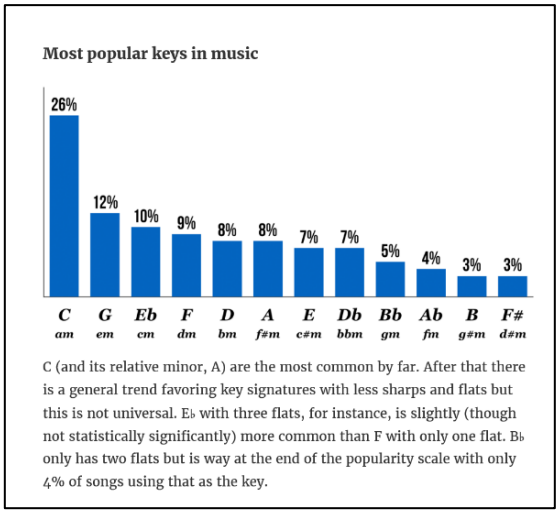
5. To transpose C-F-G chord progression into the key of G, what would you play?
   a. G-C-D
   b. G-A-B
   c. G-Bm-Em
   d. G-Am-D

Section 14. Music Keys

As you've no doubt noticed, the word "key" is pervasive throughout basic music theory. "Key" can refer to the:

- piano key, the piece of ivory pressed for each note
- key signature, denoted by the series of flats or sharps that appear at the beginning of each line in the treble and bass clefs
- "music key," the scale indicated by the key signature and its associated harmony, which is largely made up of chords; the chords can be notes played together, or "broken," i.e., played in sequence. For beginner-level pieces, harmony is typically confined to the bass clef of piano sheet music.

There are as many music keys as there are major and minor scales (and more when you take into account other music modes, as discussed in Appendix B). This graph shows the most common keys in a series of 1300 popular songs. http://www.hooktheory.com/blog/i-analyzed-the-chords-of-1300-popular-songs-for-patterns-this-is-what-i-found/ (There is a slight inconsistency in the figure. Bb is shown as 5% in the graph and stated as 4% in the legend; either way, Bb is an uncommon music key.)



It is not surprising that the keys of C and A minor are the most common as they are the simplest, having no sharps or flats. Other musical keys common in popular songs are G (one sharp), F (one flat), and D (two sharps). It is somewhat surprising that Eb outranks F and D, as it has 3 flats, whereas F has one flat and D has two sharps.

Much classical music is also written in these common keys, but you are more likely to find less common keys, such as C# major, in classical music. Here are the musical keys for Beethoven's 9 symphonies and his 16 string quartets. (For a list of symphonies by musical key, see https://en.wikipedia.org/wiki/List_of_symphonies_by_key.)

Beethoven Symphonies
No. 1 in C major
No. 2 in D major
No. 3 in E flat major
No. 4 in B flat major
No. 5 in C minor
No. 6 in F major
No. 7 in A major
No. 8 in F major
No. 9 in D minor

Beethoven String Quartets
No. 1 in F major
No. 2 in G major
No. 3 in D major
No. 4 in C minor
No. 5 in A major
No. 6 in Bb major
No. 7 in F major
No. 8 in E minor
No. 9 in C major
No. 10 in Eb major
No. 11 in F minor
No. 12 in Eb major
No. 13 in Bb major
No. 14 in C# minor
No. 15 in A minor
No. 16 in F major

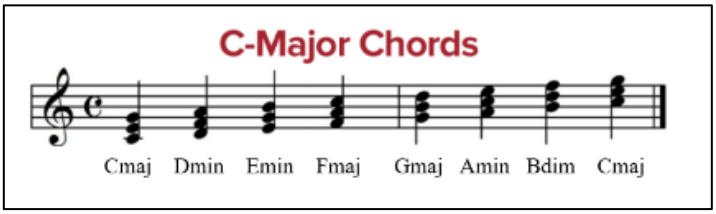
As stated, a music key is a scale and its associated harmony. The key word is "associated" — the harmony for the music is based on the designated scale. For example there are specific chords of the C major scale that are different from chords of D major, F major, etc.

When we say "play in the key of C," we are referring to notes of the C scale *and* chords associated with that scale. In "tonal music," which is most of Western music, the first note of the scale is the "tonic" or home note, and the chords revolve around that tonic and eventually return to it in some manner. Composers talk about "resolution to the tonic," which is another way of saying that the music sounds good when the chords come back to the tonic. Another term often used is "chord progression," the sequence of chords that, eventually, progress back to the tonic note. (Chord progressions are discussed in Section 13.)

Musical composition can be much more complex of course, since keys can change within a piece, new chords and notes unassociated with the key can be added, etc. However, from a simplistic viewpoint (one recommended for beginning piano players), it's best to think of a music key as a specific scale with all or most of the harmony coming from notes of that scale.

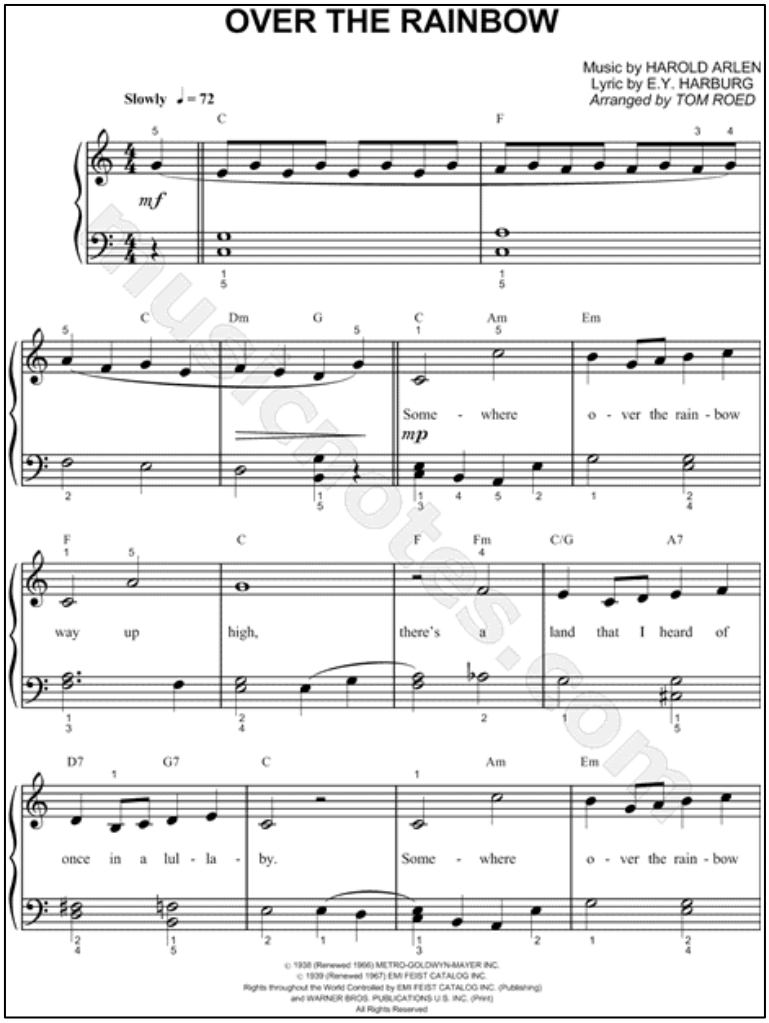
To illustrate this point I'll discuss two common music keys, C major (no sharps or flats) and then F major (one Bb).

Here are the triads or 3-note chords of C major, followed by music for Over The Rainbow, in that key.



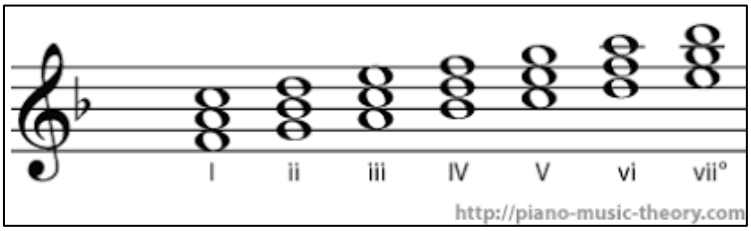
https://ledgernote.com/columns/music-theory/circle-of-fifths-explained/

C major triads	Notes	RN	Half Steps between notes of chord
C major	C-E-G	I	4 between C and E, 3 between E and G
D minor	D-F-A	ii	3 between D and F, 4 between F and A
E minor	E-G-B	iii	3 between E and G, 4 between G and B
F major	F-A-C	IV	4 between F and A., 3 between A and C
G major	G-B-D	V	4 between G and B, 3 between B. and D
A minor	A-C-E	vi	3 between A and C, 4 between C and E
B diminished	B-D-F	vii^{o}	3 between B and D, 3 between D and F

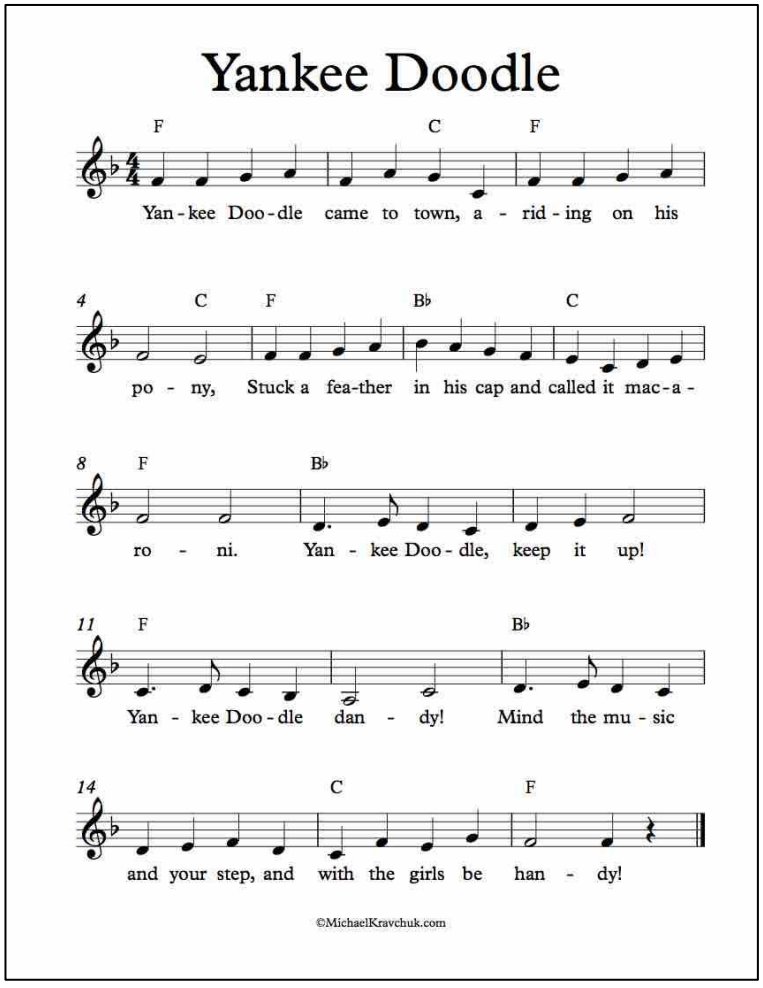


After the initial "pickup note," the first measure contains I or C major chord for this key, C-E-G. It is followed by the IV chord, F, in measure 2, then another C major in measure 3. Next is D minor, which is the ii chord <u>in this key</u>. After Dm is G, the V chord, then back to C. So the progression here is I-IV-ii-V, a common progression in popular music. If this same progression was in some other key, say F major, the chords would be different. They would be Fmaj-Bb-Gmin-Cmaj. To restate this point, the key defines the harmony that will be used to accompany the melody.

Here are the triads or 3-note chords of F major, followed by music for Yankee Doodle, in this key.



F major triads	Notes	RN	Half Steps between notes of the chord
F major	F-A-C	I	4 between F and A, between A and C
G minor	G-Bb-C	ii	3 between G and Bb, 4 between Bb and C
A minor	A-C-E	iii	3 between A and C, 4 between C and E
Bb major	Bb-D-F	IV	4 between Bb and D, 3 between D and F
C major	C-E-G	V	4 between C and E, 3 between E and G
D minor	D-F-A	vi	3 between D and F, 4 between F and A
E diminished	E-G-Bb	vii^{o}	3 between E and G, 3 between G and Bb

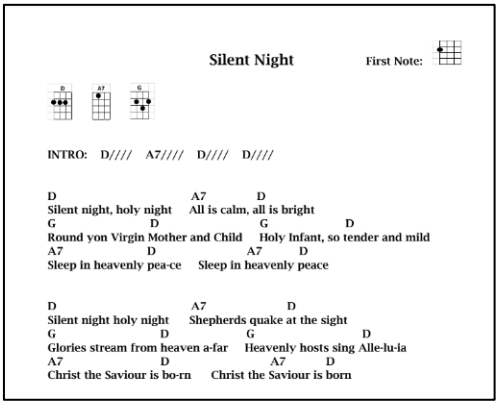


The music opens with the I chord for this key, F major (F-A-C). It is followed by the V chord, C major, then back to F major. Next is C, then F, then the IV chord, Bb. The basic progression here is I-V-IV. If this same progression was in some other key, e.g., C major, the chords would be different. The key defines the harmony used, in this case some basic chords.

Same song, different keys

To further illustrate this point, look at these three song sheets for Silent Night, used by various ukulele clubs (the fret diagrams in the first example are for uke chords). Each is in a different key: D, F or G. Note how the key determines the chords that are played.

Key of D



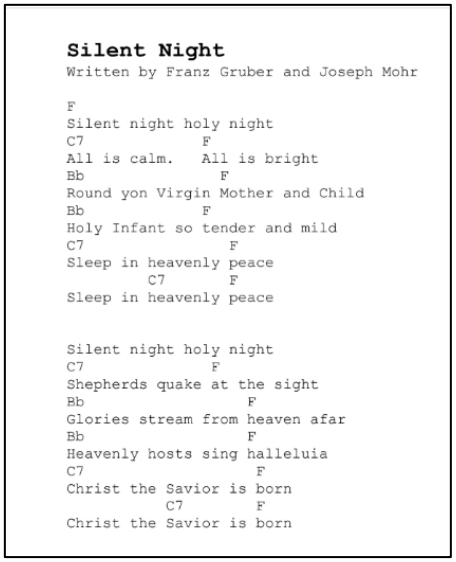
Silent Night First Note:

INTRO: D//// A7//// D//// D////

D A7 D
Silent night, holy night All is calm, all is bright
G D G D
Round yon Virgin Mother and Child Holy Infant, so tender and mild
A7 D A7 D
Sleep in heavenly pea-ce Sleep in heavenly peace

D A7 D
Silent night holy night Shepherds quake at the sight
G D G D
Glories stream from heaven a-far Heavenly hosts sing Alle-lu-ia
A7 D A7 D
Christ the Saviour is bo-rn Christ the Saviour is born

Key of F

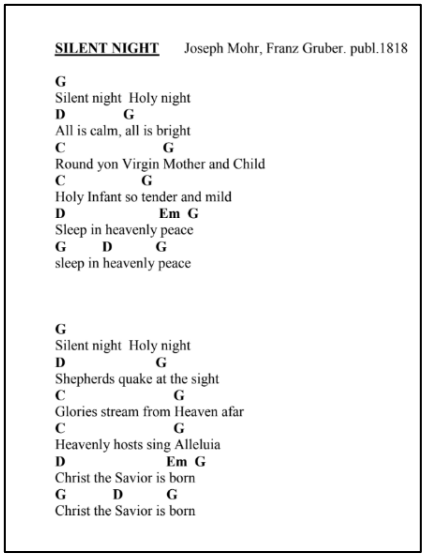


Silent Night
Written by Franz Gruber and Joseph Mohr

F
Silent night holy night
C7 F
All is calm. All is bright
Bb F
Round yon Virgin Mother and Child
Bb F
Holy Infant so tender and mild
C7 F
Sleep in heavenly peace
C7 F
Sleep in heavenly peace

Silent night holy night
C7 F
Shepherds quake at the sight
Bb F
Glories stream from heaven afar
Bb F
Heavenly hosts sing halleluia
C7 F
Christ the Savior is born
C7 F
Christ the Savior is born

Key of G



SILENT NIGHT Joseph Mohr, Franz Gruber. publ.1818

G
Silent night Holy night
D G
All is calm, all is bright
C G
Round yon Virgin Mother and Child
C G
Holy Infant so tender and mild
D Em G
Sleep in heavenly peace
G D G
sleep in heavenly peace

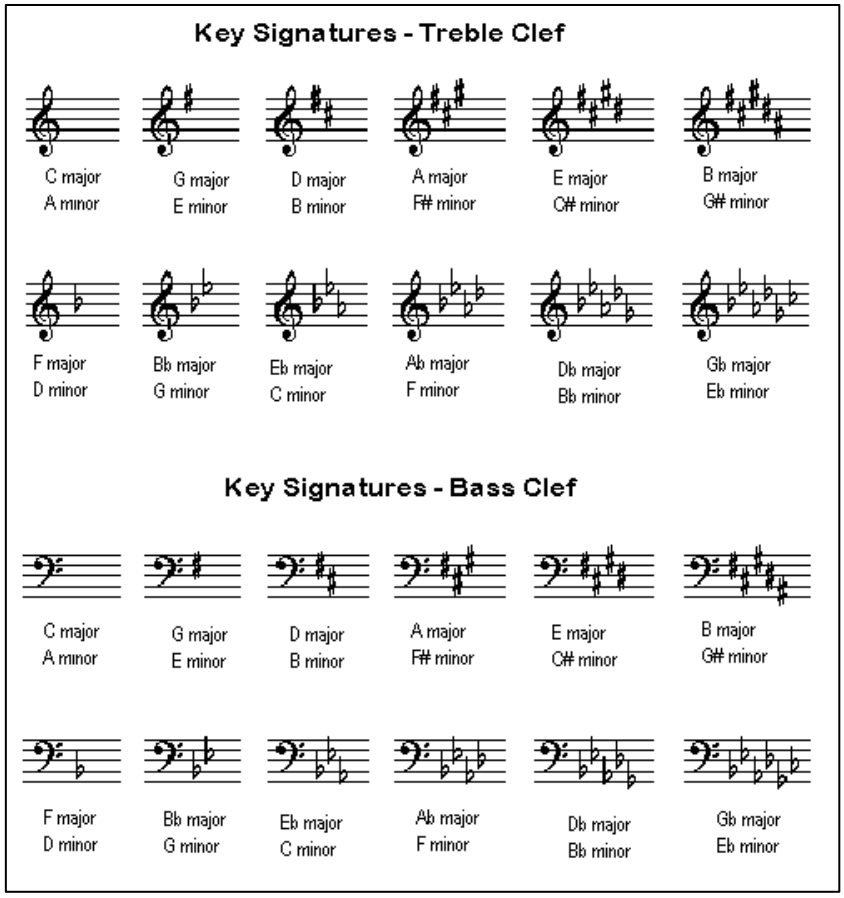
G
Silent night Holy night
D G
Shepherds quake at the sight
C G
Glories stream from Heaven afar
C G
Heavenly hosts sing Alleluia
D Em G
Christ the Savior is born
G D G
Christ the Savior is born

- In the key of D, the IV chord is G and the V chord is A7.
- In the key of F, the IV chord is Bb and the V chord is C
- In the key of G, the IV chord is C and the V chord is D; an Em (vi in this key) is also thrown in for variety.

In summary, the key determines the harmony. Harmony can be quite complex, but in tonal music it is based on the notes (and resulting chords) determined by the key.

Identifying the music key

In traditional piano sheet music (treble and bass clefs) and in lead sheets (treble clef only), the key is shown by the key signature, discussed in Section 3 and other sections of this syllabus. The key signature shows the number of sharps and flats (or none, as in the case of C major and A minor), which defines the key signature. Here again is the table of some key signatures also shown in Section 3, from https://www.piano-keyboard-guide.com/key-signatures.html).



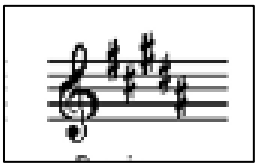
But what about song sheets, that have no treble or bass clef? In song sheets you can usually identify the key of the music by the first and last chords. When the first and last chords are the same, e.g., D and D, then that is the music key. This is evident in all three pieces of Silent Night shown above. When the first and last chords differ, generally the last chord indicates the key of the music.

TEST YOUR UNDERSTANDING OF THIS SECTION. Choose the single best answer.

1. Music in the key of F would use which I-IV-V progression?
   a. F-A-C
   b. Bb-F-A
   c. F-Bb-C
   d. F-A-C#

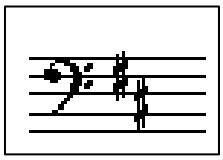
2. A I-ii-IV-V progression in the key of C major would use which chords?
   a. C-Dm-F-G
   b. C-Em-F-G
   c. C-Fm-G-A
   d. C-Fm-A-B

3. What major key is this key signature?



   a. B major
   b. E major
   c. C sharp major
   d. F sharp major

4. What minor key is this key signature?



   a. A minor
   b. B minor
   c. C minor
   d. F minor

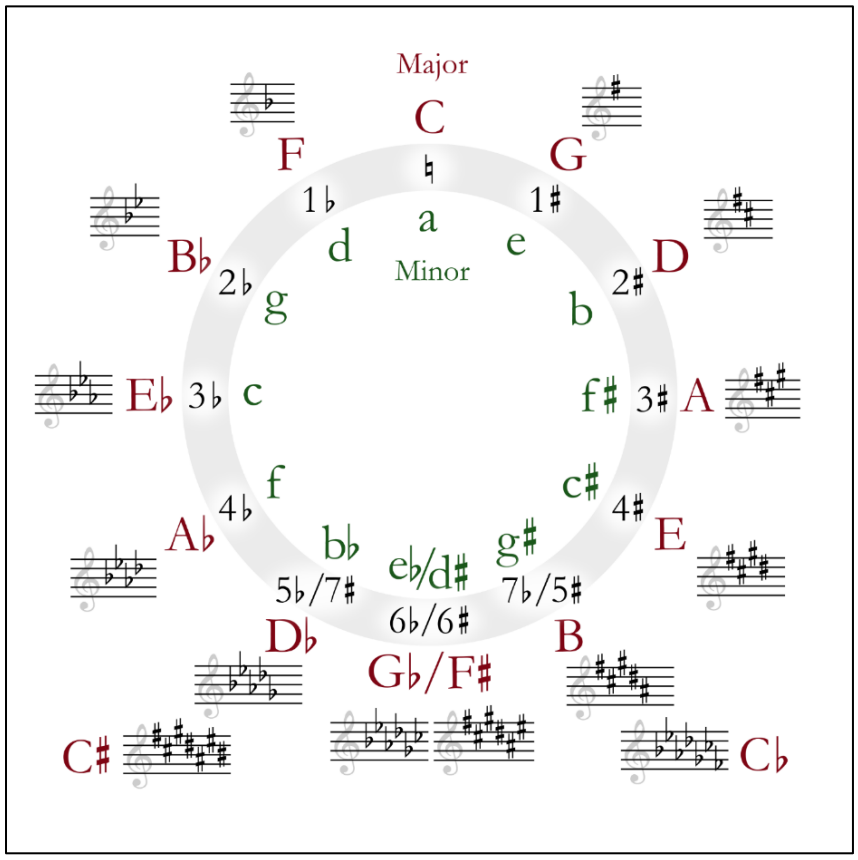
5. The best way to determine the key of music in song sheet format is from:
   a. the chord progression
   b. the first and last chords
   c. the IV chord
   d. the V chord

Appendix A: Circle of Fifths

If you study music theory, sooner or later you'll come across the Circle of Fifths. It is a visual presentation of key signatures in a circle, and shows the relationships of major and natural minor scales. Starting at C major, it goes clockwise through the major keys by intervals of a fifth. After 7 sharps are reached (key signature C# major), it continues in counterclockwise fashion through keys with flats, ending back at C major.

NOTE:

- It's a Circle of Fifths if you start at the top (C major) and go clockwise. If you start at the top and go counterclockwise, it's a Circle of Fourths, so another name for this device is Circle of Fourths.
- The fifths are perfect fifths, so 7 half steps. The fourths are perfect fourths, so 5 half steps.
- In any discussion of the Circle of Fifths, keep in mind that the letters shown, such as C or G or D, could represent a scale, a key, or a chord. The discussion should always make clear which of the three possibilities the letter represents.



https://commons.wikimedia.org/w/index.php?curid=4463183

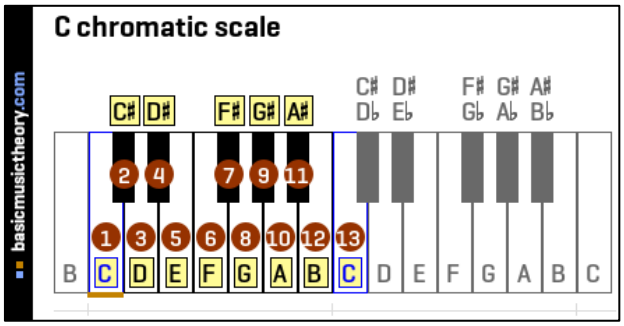
Each major key is associated with a relative minor key, which shares the same key signature. (To repeat, these are the *natural* minor scales.) For example: the relative minor of C major is A minor; both play only the piano's white keys, and have no sharps or flats; the relative minor of D major is b minor; both have two sharps, F# and C#; the relative minor of Eb is C minor; both have 3 flats, Cb, Bb and Eb; etc.

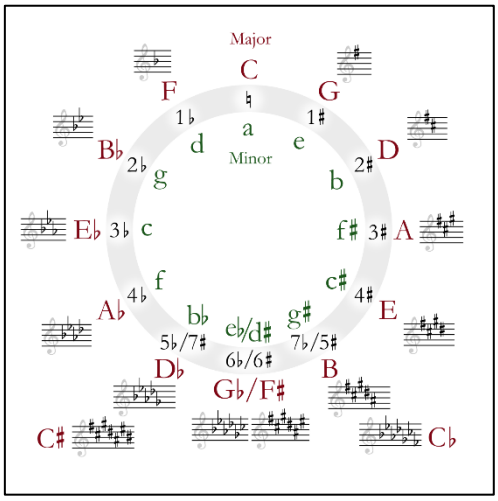
Note that at the bottom of the Circle of Fifths, there are 3 sets of enharmonic key signatures: B Major and Cb Major; C# Major and Db Major; Gb Major and F# Major. Though labeled differently, they play the exact same notes on the keyboard.

Per Wikipedia: "Musicians and composers use the circle of fifths to understand and describe the musical relationships among some selection of those pitches. The circle's design is helpful in composing and harmonizing melodies, building chords, and modulating to different keys within a composition."

So, the Circle of Fifths is not something needed by beginning piano players, which is why I put this subject in the Appendix. Nonetheless, the Circle does help explain key signature relationships, and I recommend a review for this reason alone.

Constructing the Circle of Fifths





Clockwise

For instructive purposes, the Circle of Fifths starts at the top, on C. The C major scale has no sharps or flats. The sequence of whole and half steps for all major scales is shown below.

Major Scale: W W H W W W H

The relative minor scale of C major is A minor, noted as "a" below the C at the top. A minor has the same key signature as C major, but a different sequence of whole and half steps. (Remember, the relative minor of each major scale starts on the 6th note of the major scale.)

Minor Scale: W H W W H W W

The Circle of Fifths is constructed by proceeding clockwise by *ascending* fifths; these are perfect fifths, so 7 whole steps. A fifth up from C is G. The G major scale has one sharp, F#. Its relative minor is E minor, notated "e" in the above diagram.

The next fifth is D, with 2 sharps: F# and C#; its relative minor is B minor, notated "b".

The circle proceeds clockwise until C# (7 sharps) is reached; its relative minor scale is Bb. Note the order of sharps as they are added: F-C-G-D-A-E-B. The mnemonic often recommended for this sequence is Father Charles Goes Down and Engages Battle.

You could continue going clockwise to reach the flat key signatures. For example, a fifth up from C# is Ab, with four flats. A fifth up from Ab is Eb, with three flats, etc. However, most descriptions of the Circle, after laying out all the sharp key signatures, prefer to go back to the top and then move counterclockwise.

Confusion Alert. Keep in mind that if you move to the right *on the circle*, you move by ascending fifths up the scale. If you move to the *left on the circle*, you move by ascending fourths up the scale.

Counterclockwise

From C major, proceed counterclockwise by ascending *fourths*, until Cb is reached (7 flats). Just as with sharps, flats are added so that intervals conform to the major scale structure of whole and half steps.

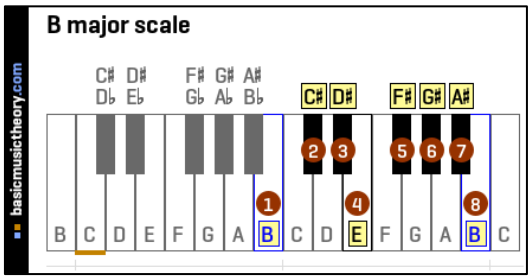
Going counterclockwise from C, each successive scale flats the 7th note, so the order of flats, as they are added to the key signatures, is B-E-A-D-G-C-F. The recommended mnemonic for successive flats is Battle Engaged And Down Goes Charles' Father.

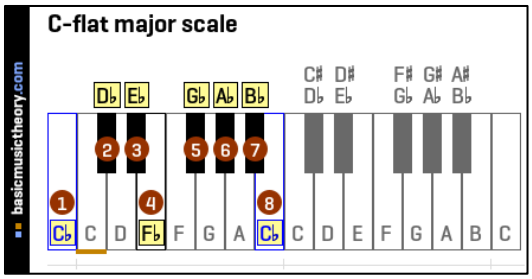
Enharmonic keys in the Circle of Fifths

The bottom of the circle can be confusing, because it shows enharmonic scales that are not intuitive. Let's examine them more closely (refer to figure of Circle of Fifths).

B major and Cb major

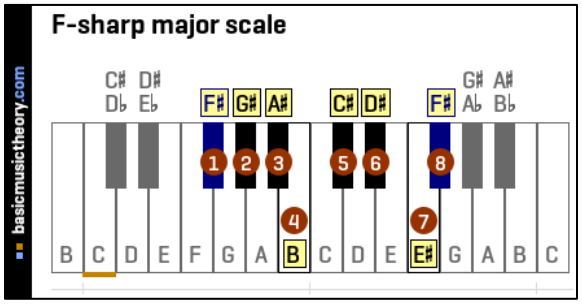
When you get to 5 sharps you have the B major scale or key signature. When you get to 7 flats you have the Cb major scale or key signature. *They are the same*, just labeled differently. Thus, for example, B in the B major scale is labeled Cb in the Cb major scale.

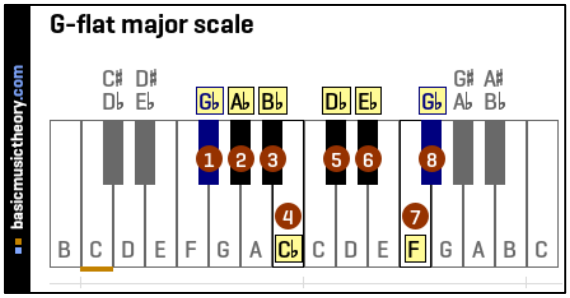




F# major and Gb major

F# major has 6 sharps and Gb major has 6 flats. Again, the two scales have the same notes, but they are labeled differently.

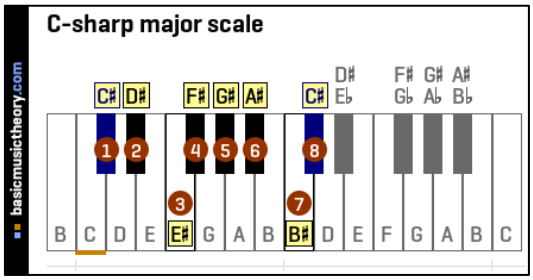


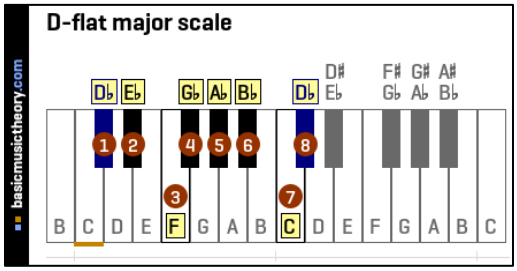


At this point it is fair to ask why the labeling is different. The simple answer is: because you can't use the same letter twice in any scale. If we start on F# and follow the whole step-half step pattern for the major scale (W-W-H-W-W-W-H), the next note has to be the next black key. If we called it Ab, then the next note would have to be Bb, and the note after that couldn't be labeled B!

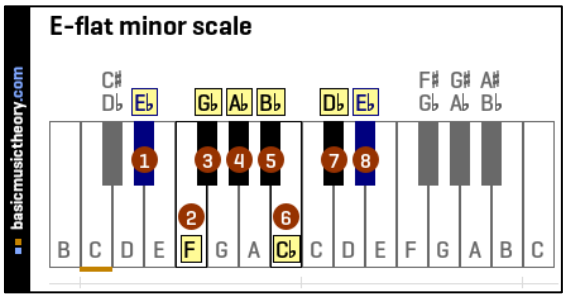
Similarly, if we start on Gb on the flat side of the Circle, the next note has to be the next black key; we can't label it G#, since that would be two G's in a row, so it has to be Ab.

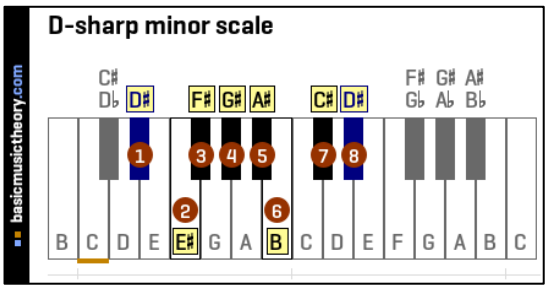
Continuing on with enharmonic major scales, we have C# major and Db major: Same notes, different labeling. They are the last of the enharmonic major scales in the Circle of Fifths





Note that there is only <u>one pair of enharmonic natural minor scales in the Circle, eb and d#.</u> Here are those two scales on the keyboard. Again, same notes, different labeling.





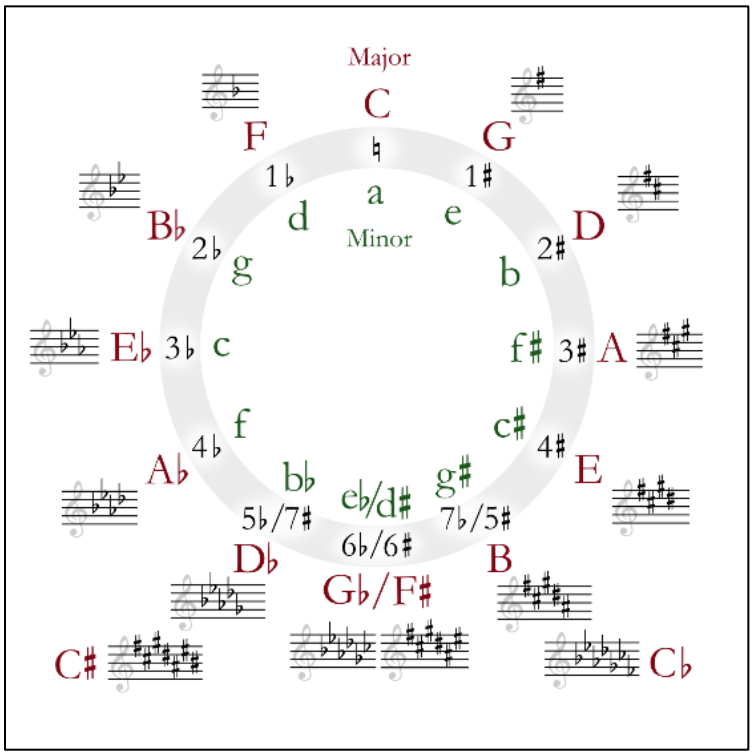
How is the Circle of Fifths Used?

Musicians and song writers find the Circle of Fifths helpful in finding chords for harmony, in modulation of keys within a song, and in transposing from one key to another.

As Chord Finder

One of the commonest chord progressions in popular music is I-IV-V; these are the three major chords in any major scale. To find these 3 chords quickly, just look to the right and left of any key in the Circle of Fifths.

In the key of C, the IV chord is F, the V chord is G.
In the key of G, the IV chord is C, the V chord is D.
In the key of F, the IV chord is Bb, the V chord is C.
Etc.



To quickly find the minor chords in any major scale, look for the next four chords after the V chord; they are that scale's 3 minor chords and single diminished chord. Here are examples for C major, G major and D major. The Roman numerals pertain to the degree of that chord on the scale.

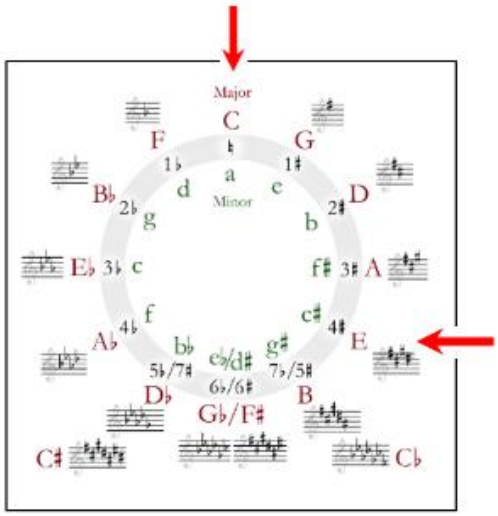
	ii	vi	iii	vii^{o}
C major:	D minor	A minor	E minor	B diminished
G major:	A minor	E minor	B minor	F# diminished
D major:	E minor	B minor	F# minor	C# diminished

Of course, one could also memorize the chords that go with each scale, but with a Circle of Fifths handy, that shouldn't be necessary. It readily tells you which chords go with which key.

Modulation and Transposition

In addition to finding chords, the Circle is useful for changing keys, i.e., from one key to another. When done within a song, this is known as modulation. If you're in the key of C, and want to modulate, or change part of your song to another key that works well, look to the right (key of G) and to the left (key of F) for keys whose chords will work well with C. If you're in the key of Eb, and want to modulate, Bb and Ab are keys that will work well.

Suppose you have a song that's in the key of C, and your singer wants to sing it in E? Your sheet music has all the C chords, not the E chords. Now you have to transpose the key of C, with its associated chords, to the key of E, with a different set of chords. To find the chords for the key of E, go to the Circle.



All you need to do is change all chords by the same distance as C to E. Thus, where you have C chord now becomes an E chord; where you have an F chord now becomes an A chord; where you have a G chord now becomes a B chord; etc.

So the Circle of Fifths is all about relationships, what works well in harmony. It provides a quick visual reference to this information.

Excellent discussions of Circle of Fifths
20-minutes: https://www.Youtube.com/watch?v=_UxzDjU3-hM
27-minutes: https://www.Youtube.com/watch?v=1swhMTSFayI

Circle of Fifths: Choose the one best answer:

1. Which of the following is *not* represented by the letters on the Circle of Fifths?
   a. Scale
   b. Key
   c. Chord
   d. Interval

2. From the Circle of Fifths, the IV and V chords of Eb major are, respectively:
   a. Ab and Bb
   b. Bb and Ab
   c. g and f
   d. f and g

3. The key signatures in the Circle of Fifths increase counterclockwise by:
   a. Major fifths
   b. Major fourths
   c. Perfect fifths
   d. Perfect fourths

4. The relative minor scale of Db major is:
   a. F
   b. Bb
   c. Eb
   d. C

5. Enharmonic with the key of C# major is:
   a. Bb major
   b. F# major
   c. Db major
   d. Ab major

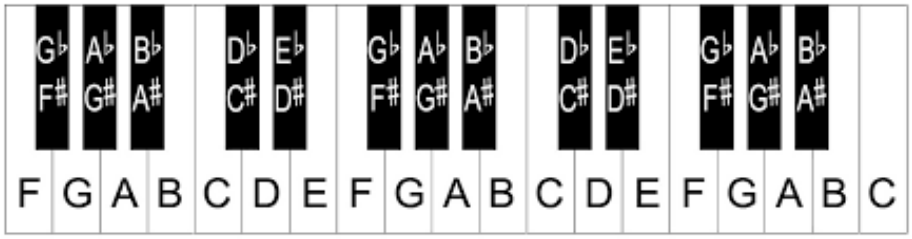
Appendix B. Music Modes Explained

Understanding music modes is not essential to playing the piano; they are really of more interest to composers. However, I kept coming across the term, and in trying to understand modes, found the online and printed book explanations confusing and convoluted. So I wrote my own explanation, using the concept of whole and half steps to make sense of the subject. Since modes is not a subject beginning (or even advanced) piano players need to bother with, I put my explanation in the Appendix. But if it interests you, read on.

Modes are confusing to many non-musicians and people new to music, not least because practically everything written about them is either overly complex, or so simplistic that nothing is really explained. The Wikipedia entry for modes spends most of its verbiage on arcane historical aspects, and only at the end does it get to "Modern Western Modes," but by then the non-musician is apt to feel bewildered. On the other extreme, many web sites – including Youtube videos on the subject – fail to clarify the differences and similarities among terms like "modes," "scales," "minor scale," "major scale," etc. Instead these terms are thrown out willy-nilly, without clear explanation.

Modes have encompassed a lot of musical patterns over the centuries of musical history, but today the term "mode" is generally used to mean one of seven specific sequences of musical notes. *In this context a mode is a specific sequence of whole steps and half steps that begins on one note and ends on the same note an octave higher, e.g., C to C or D to D.*

There are 7 commonly-recognized music modes, each with a different sequence of half steps and whole steps. They are best demonstrated by starting on a specific white note of the keyboard and playing *only white notes* until you get to the same note an octave higher. These sequences are listed in the table below the keyboard (W refers to "whole step" and h to "half step").



MODE	**SEQUENCE OF NOTES**	**STEPS**	**Another name:**
Ionian	C D E F G A B C	W-W-h-W-W-W-h	Major scale
Dorian	D E F G A B C D	W-h-W-W-W-h-W	
Phrygian	E F G A B C D E	h-W-W-W-h-W-W	
Lydian	F G A B C D E F	W-W-W-h-W-W-h	
Mixolydian	G A B C D E F G	W-W-h-W-W-h-W	
Aeolian	A B C D E F G A	W-h-W-W-h-W-W	Natural Minor scale
Locrian	B C D E F G A B	h-W-W-h-W-W-W	

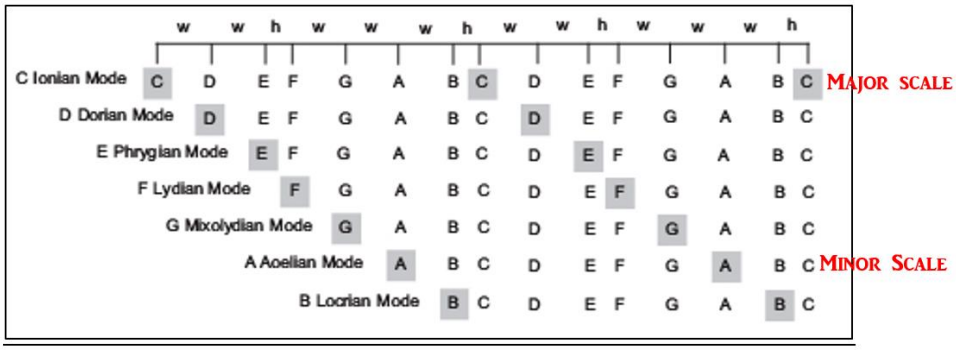
Note that *any* two adjacent keys – black or white – are a half step apart. For example, C-C# are a half step apart, as are E-F and B-C. Any two keys with one key in between them are a whole step apart. For example, C-D are a whole step apart, as are E-F# and B-C#. What you really have with each new mode is a different sequence of half steps and whole steps, and it is this specific sequence that defines each mode.

Historically, the term "mode" and not "scale" was used for all these note sequences, going back to the ancient Greeks. Over time, the term for two particular modes – ionian and aeolian – came to be called "scales." Today we call the ionian mode the major scale, and the aeolian mode the minor scale (more specifically, the natural minor scale). The term "mode" is still used for the other note sequences.

Confusion alert. This variation in terminology is one reason for confusion generated by many articles and web videos about modes. Although all 7 modes are variations on whole-step half-step sequences, only two of the variations are now called "scales"; the other five are still called "modes."

So both "mode" and "scale" are simply a sequence of 7 notes. When you add in the repeat of the first note, you get the distinctive pattern of whole steps and half steps shown in the table above. Whole steps and half steps are best appreciated on the piano keyboard, shown above. (Each black key can be labeled as a sharp or a flat.)

The seven modes, with their sequence of whole steps and half steps, are shown in another table, below. Note that the **ionian mode** is also the **major scale**, and the **aeolian mode** is the **minor scale**. (Again, the the aeolian mode is the natural minor scale. There are two other minor scales, the harmonic minor and melodic minor, which are not represented by any of these modes.)



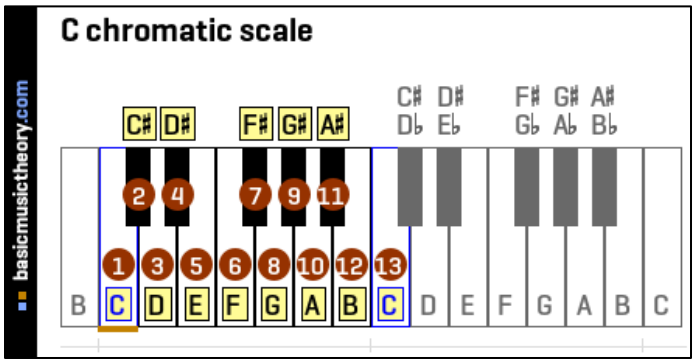
This table emphasizes the point that each mode can be determined by starting on a successive note of the C major scale (white keys only). In this way all the half steps are B-C and E-F. Again, the term "minor scale" in this table is the natural minor scale. (Table is from http://www.lotusmusic.com/lm_modes.html.)

- If you start on C and play C-D-E-F-G-A-B-C you will get the C ionian mode sequence, which is W-W-h-W-W-W-h. This is also the sequence for the major scale. The ionian mode and the major scale are synonymous.
- If you start on D and play D-E-F-G-A-B-C-D you will get the D dorian mode sequence, which is W-h-W-W-W-h-W. This mode does not have another scale name. It goes by the name of the root note and "dorian." Thus if you start the scale on D it is "D dorian"; if you start on E it is "E dorian," etc.
- If you start on E and play E-F-G-A-B-C-D-E you will get the E phrygian Mode sequence, which is h-W-W-W-h-W-W. This mode does not have another scale name. It goes by the name of the root note and "phrygian." Thus if you start the scale on E it is "E phrygian"; if you start on F it is "F phrygian," etc.
- If you start on A and play A-B-C-D-E-F-G-A you will get the aeolian mode sequence, which is W-h-W-W-h-W-W. This is also the sequence for the natural minor scale. The aeolian mode and natural minor scale are synonymous.

Similarly, the other four modes have a unique sequence of half steps and whole steps.

***

So that's how the modes are derived and named. Once you understand that each mode has a specific pattern of whole steps and half steps, it should be easy to see that within each mode there are 12 possible scales or "keys". That's because, *within any octave* there are 12 possible notes. The full octave that includes all the keys is called the chromatic scale, and is best visualized on the piano keyboard. From C to C are 13 notes (including the 2nd C).



To create the 12 possible scales for any given mode, all you do is take that mode's specific sequence of whole steps and half steps and start it on each of the 12 chromatic scale keys. For example, by moving the ionian pattern so that it starts on D, you now have the D ionian mode (D major scale). In order to keep the same pattern of whole steps and half steps, this D major scale includes both F# and C#.

D – E – F# – G – A – B – C# – D

W W h W W W h

So there are 12 possible major scales, or keys, for the ionian mode. These major scales are listed on the next page, with four examples shown on the treble clef. They all have the ionian (major scale) sequence of whole notes and half notes: W-W-h-W-W-W-h.

Note the terminology in the treble clef examples. The C major ionian mode is called simply "ionian mode." The D major scale is called "D ionian". The E major scale is called "E ionian." The F major scale is called "F ionian." By convention, we now use the major scale names for these ionian modes: C major, D major, E major and F major.

Ionian modes = Major scales

W-W-h-W-W-W-h

C major

Db major

D major

Eb major

E major

Fb major

F major

Gb major

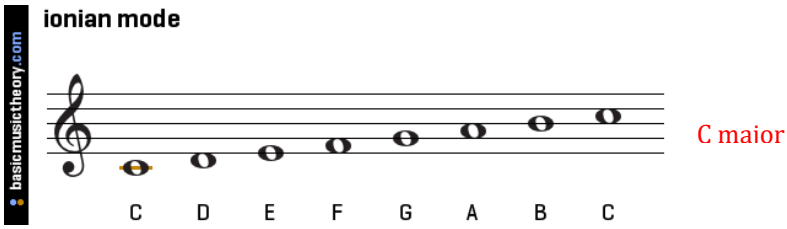
G major

Ab major

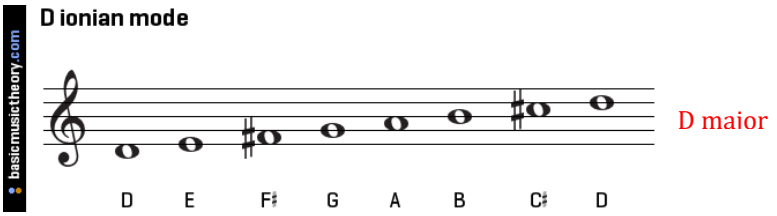
A major

B major

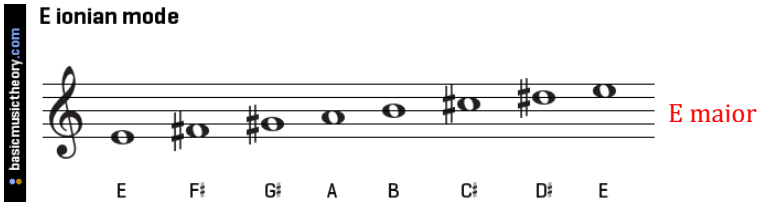
Four Ionian Modes on the Treble Clef



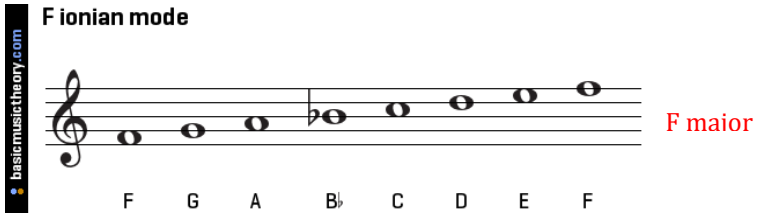
C maior



D maior



E maior



F maior

There are also 12 possible natural minor scales, or keys, which is identical to saying there are 12 possible aeolian modes. These natural minor scales are listed below, with four examples shown on the treble clef. They all have the aeolian (minor scale) sequence of whole notes and half notes: W-h-W-W-h-W-W.

Aeolian modes =

Natural minor scales

W-h-W-W-h-W-W

C minor

Db minor

D minor

Eb minor

E minor

Fb minor

F minor

Gb minor

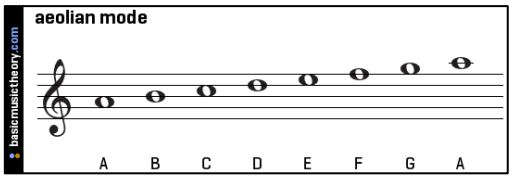
G minor

Ab minor

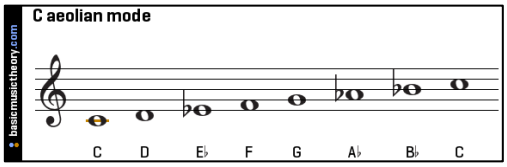
A minor

B minor

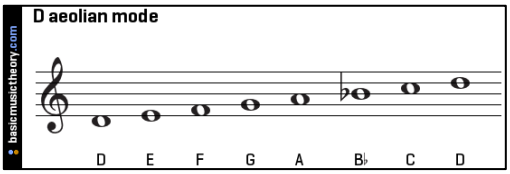
Four Aeolian Modes on the Treble Clef



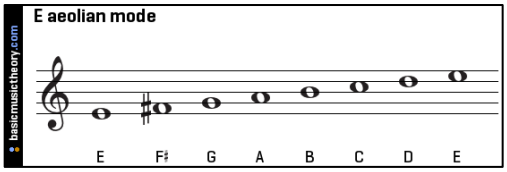
A minor



C minor

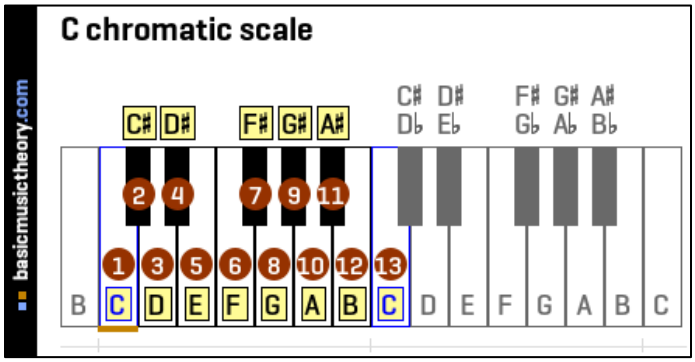


D minor



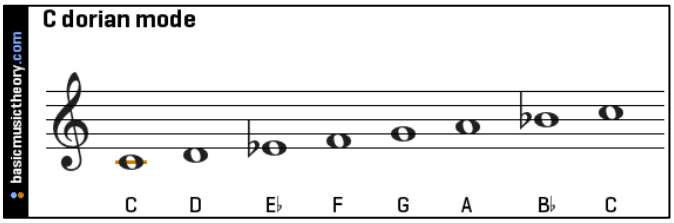
E minor

You can do this exercise for the other five modes as well. Each mode has 12 possible keys, because there are 12 keys of the chromatic scale. Below are listed all the keys for the other five modes, starting on C of the chromatic scale. Also shown, on the treble clef, is the key of C *for that particular mode*.



Dorian modes

Sequence: W-h-W-W-W-h-W



C Dorian →

C# Dorian

D Dorian

D# Dorian

E Dorian

F Dorian

F# Dorian

G Dorian

G# Dorian

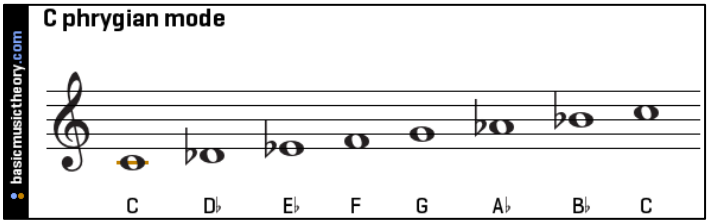
A Dorian

A# Dorian

B Dorian

Phrygian modes

Sequence: h-W-W-W-h-W-W



C Phrygian →

C# Phrygian

D Phrygian

D# Phrygian

E Phrygian

F Phrygian

F# Phrygian

G Phrygian

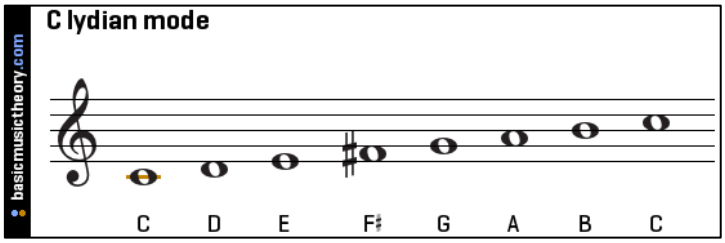
G# Phrygian

A Phrygian

A# Phrygian

B Phrygian

Lydian modes



Sequence: W-W-W-h-W-W-h

C Lydian →

C# Lydian

D Lydian

D# Lydian

E Lydian

F Lydian

F# Lydian

G Lydian

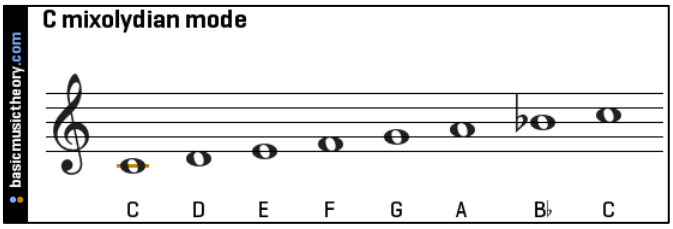
G# Lydian

A Lydian

A# Lydian

B Lydian

Mixolydian modes



Sequence: W-W-h-W-W-h-W

C Mixolydian →

C# Mixolydian

D Mixolydian

D# Mixolydian

E Mixolydian

F Mixolydian

F# Mixolydian

G Mixolydian

G# Mixolydian

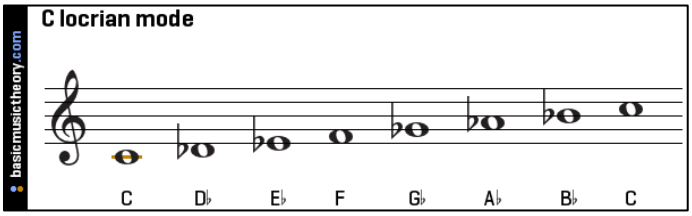
A Mixolydian

A# Mixolydian

B Mixolydian

Locrian modes

Sequence: h-W-W-h-W-W-W



C Locrian →

C# Locrian

D Locrian

D# Locrian

E Locrian

F Locrian

F# Locrian

G Locrian

G# Locrian

A Locrian

A# Locrian

B Locrian

Confusion Alert. Again, note the difference in nomenclature between ionian/aeolian modes and the other modes. Ionian modes are called by the names of the major scale, e.g., C major, D major, etc.; they are not called C ionian, D ionian, etc. Aeolian modes are called by names of the minor scale, e.g., C minor, D minor, etc., and not C aeolian or D aeolian. The other modes are called by their modal name.

Music in the Various Modes

While most music played today is in either ionian or aeolian mode (or the other minor scales, harmonic and melodic), there are many pieces of music in the other modes. Below are some examples of music in each of the modes. The majority of popular music is written in one of the major scales (i.e., ionian mode), but there is also much popular music in the minor scale. Classical music often combines major and minor scales. One interesting category included below is music written in all 24 major and minor keys (i.e., the 12 major scales and the 12 minor scales).

Musical composition is very complex, and classical music as well as popular songs may use more than one mode. This list is simply to show examples gleaned from the internet. Web sources specific to a mode are listed under the mode. Websites that cover more than one mode include:

http://www.classicfm.com/discover/music/guide-to-musical-modes/#JWZIAq0MTi6oZY0A.99

http://www.dreamtheaterforums.org/boards/index.php?topic=27396.0

http://www.classicfm.com/discover/music/guide-to-musical-modes/#3WDl8cadHmB6Rfiz.97

http://www.secretsofsongwriting.com/2009/10/29/dorian-mode-aeolian-mode-minor-key-whats-the-difference/

Major scale (ionian mode)
"Happy Birthday"
"God Bless America"
"Star Spangled Banner"
"Yankee Doodle"
"You Are My Sunshine"
Mozart symphony #23 in D major
Beethoven Symphony #1 in C major
Beethoven Symphony # 7 in A major
Schubert Symphony #9 in C major

Minor scale
The aeolian mode is the natural minor scale. Much minor scale music is also in harmonic minor scale, and some is in the melodic minor scale; these are variations of the natural minor and technically not the aeolian mode.

Classical
Beethoven Symphony #5 in C minor
Mozart symphony #40 in G minor
Brahms Symphony #1 in C minor
Brahms Symphony #4 in E minor
Tchaikovsky Symphony #1 in G minor

Popular
Bob Dylan - All Along the Watchtower
https://www.Youtube.com/watch?v=bT7Hj-ea0VE

R.E.M. - Losing My Religion (R.E.M.)
https://www.Youtube.com/watch?v=xwtdhWltSIg

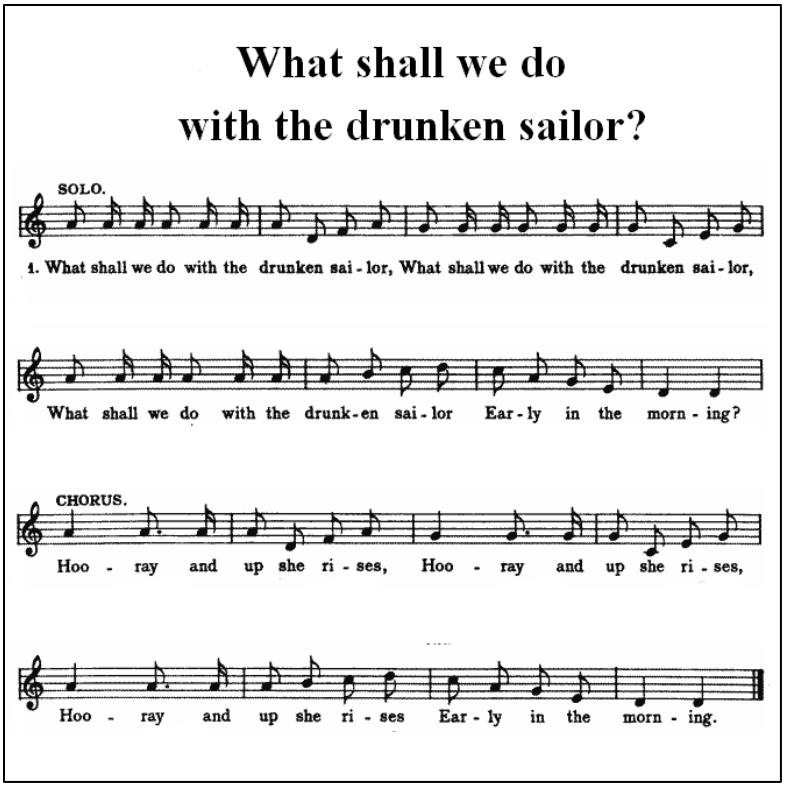
Animals – House Of The Rising Sun (Animals version)
https://www.Youtube.com/watch?v=MgTSfJEf_jM

Music written in all 24 major and minor keys

https://en.wikipedia.org/wiki/Music_written_in_all_major_and/or_minor_keys

- Johann Sebastian Bach: *The Well-Tempered Clavier* (1722 and 1742; two separate sets of 24 Preludes and Fugues, together known as "the 48")
- Frédéric Chopin: 24 Preludes, Op. 28 (1835–39)
- Charles-Valentin Alkan: 25 Preludes, Op. 31 (1847), 24 Études in all the major and minor keys, Opp. 35 and 39 (1848 and 1857)
- Alexander Scriabin: 24 Preludes, Op. 11 (1893–95)
- Sergei Rachmaninoff: 24 Preludes, Opp. 3/2, 23 and 32 (1892; 1901–03; and 1910)
- Paul Hindemith: *Ludus Tonalis* (1942, twelve keys)
- Dmitri Shostakovich: 24 Preludes and Fugues, Op. 87 (1950–51). He also wrote a separate set of 24 Preludes, Op. 34, in 1933

Dorian mode
https://en.wikipedia.org/wiki/Dorian_mode
Smoke on the Water by Deep Purple
Scarborough Fair
Eleanor Rigby (The Beatles)
Dear Old Stockholm - (Miles Davis)
Bach - Toccata and Fugue in D minor, BWV 538 (NOT the famous one, which is BWV 565)
"Drunken Sailor"



Phrygian mode
https://en.wikipedia.org/wiki/Phrygian_mode
Liszt's Hungarian Rhapsody No.2
Rimsky Korsakov's Scheherezade
Vaughan Williams's Fantasia on a Theme of Thomas Tallis
Final aria of Philip Glass's Satyagraha.
Samuel Barber's Adagio for Strings, op. 11

Lydian mode
https://www.reddit.com/r/musictheory/comments/1l2fsr/any_good_suggestions_for_lydian_mode_pieces/
Chopin's Mazurka No. 15
Theme to "The Simpsons"
Stravinsky – Prelude in the Lydian Mode
Third movement of Beethoven's String Quartet No. 15 in A minor
Os Justi by Bruckner

Mixolydian mode

https://en.wikipedia.org/wiki/Mixolydian_mode

"Norwegian Wood" by The Beatles (some verses in Dorian mode)

Theme to the TV series *Star Trek*

Debussy's "The Sunken Cathedral"

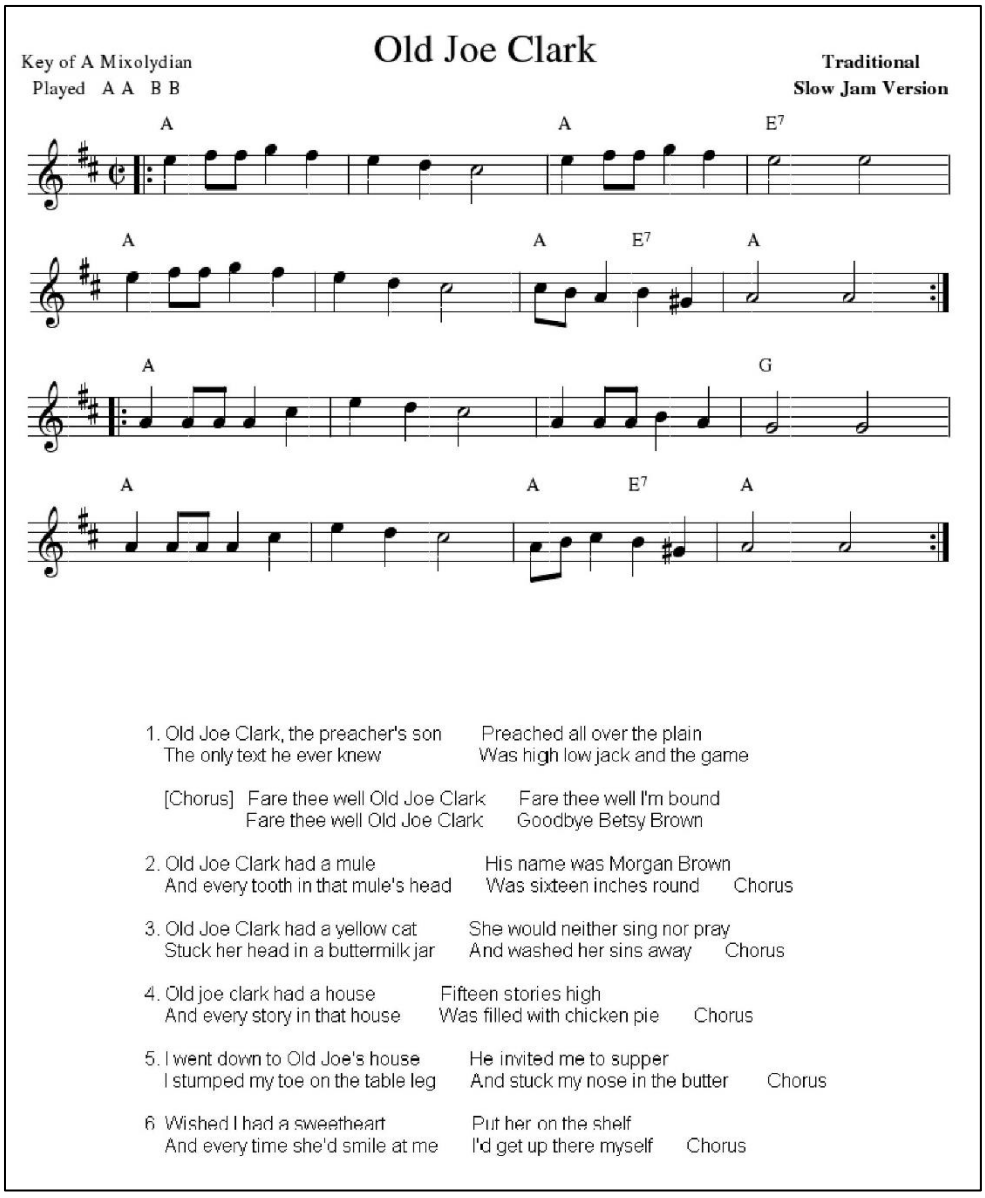
"The Wreck of the Edmund Fitzgerald" by Gordon Lightfoot

"Hey Jude" by the Beatles

"Express Yourself" by Madonna

"Let it Loose" by The Rolling Stones

"Old Joe Clark"



Old Joe Clark

Key of A Mixolydian
Played A A B B

Traditional
Slow Jam Version

A A E7

A A E7 A

A G

A A E7 A

1. Old Joe Clark, the preacher's son Preached all over the plain
The only text he ever knew Was high low jack and the game

[Chorus] Fare thee well Old Joe Clark Fare thee well I'm bound
Fare thee well Old Joe Clark Goodbye Betsy Brown

2. Old Joe Clark had a mule His name was Morgan Brown
And every tooth in that mule's head Was sixteen inches round Chorus

3. Old Joe Clark had a yellow cat She would neither sing nor pray
Stuck her head in a buttermilk jar And washed her sins away Chorus

4. Old joe clark had a house Fifteen stories high
And every story in that house Was filled with chicken pie Chorus

5. I went down to Old Joe's house He invited me to supper
I stumped my toe on the table leg And stuck my nose in the butter Chorus

6 Wished I had a sweetheart Put her on the shelf
And every time she'd smile at me I'd get up there myself Chorus

Locrian mode
https://en.wikipedia.org/wiki/Locrian_mode
John Kirkpatrick's song "Dust to Dust"
Brief passages of Sibelius Rachmaninov (Prelude in B minor, op. 32, no. 10), Hindemith (Ludus Tonalis), and Sibelius (Symphony no. 4 in A minor, op. 63) "may be regarded as in the Locrian mode."
Debussy's *Jeux* has three extended passages in the Locrian mode.

Modes: Choose the one best answer:

1, The mode names for the major and natural minor scale are, respectively:
   a. Ionian and Dorian
   b. Aeolian and Ionian
   c. Ionian and Aeolian
   d. Dorian and Ionian

2. The whole-step half-step pattern for the Dorian mode can be determined by the white keys on the piano, from which key to which key?
   a. D to C
   b. C to D
   c. D to D
   d. D to C

3. W-W-h-W-W-h-W is the whole-step half-step pattern for which mode?
   a. Lydian
   b. Myxolydian
   c. Phrygian
   d. Aeolian

4. How many Ionian scales can be derived from the chromatic scale?
   a. 1
   b. 2
   c. 12
   d. 13

5. Aeolian mode is another name for:
   a. Natural minor scale
   b. Natural and harmonic minor scales
   c. Natural, harmonic and melodic minor scales
   d. Major scale

Appendix C: Q & A on Petzold's Minuet in G

The Minuet in G that appears in the Clavier Book of Anna Magdalena Bach is considered one of the easier pieces for beginners, usually placed in level 2. It was originally ascribed to Bach, but research decades ago determined it was actually written by a contemporary, Christian Petzold (1677-1733). Now you'll often see it with both names listed, or just Petzold's. There are many recordings of this piece on Youtube, each about 2-minutes long, including the following two.

https://www.Youtube.com/watch?v=icZob9-1MDw
https://www.Youtube.com/watch?v=X7nOOFCGCDg

For several variations of this piece (in style of Mozart, Chopin, Scott Joplin, others), by the Brazilian virtuoso Vinheteiro, see:
https://www.Youtube.com/watch?v=-AKxRFr6E00

There is also a pop tune with this melody, recorded by the female vocal group The Toys, in 1965, titled "A Lover's Concerto." Wikipedia has an article about the song at https://en.wikipedia.org/wiki/A_Lover%27s_Concerto.

There are several Youtube recordings of "A Lover's Concerto," but the one I most recommend is the original televised recording:

https://www.Youtube.com/watch?v=p7fQSlvd0so&list=RDp7fQSlvd0so&start_radio=1.

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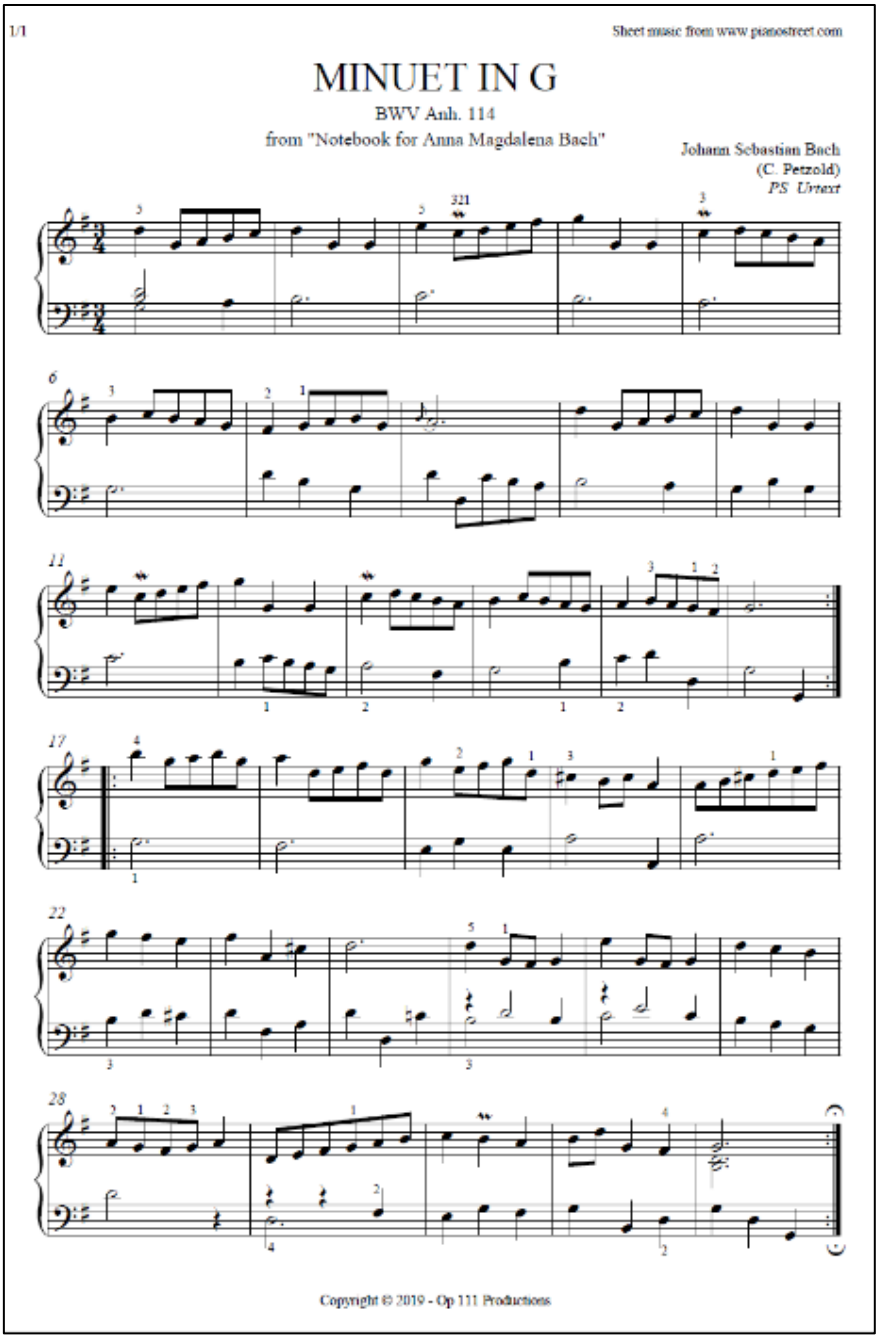
The questions refer to the Bach/Petzold sheet music, shown on the next page (from www.pianostreet.com).



1. The 3-note chord in the bass clef, first measure, is:
a. C
b. D
c. G
d. F

2. How many times are the first 16 measures played?
a. One
b. Two
c. Three
d. Four

3.The first two notes of the 8th measure, base clef, are what interval?
a. 5th
b. 6th
c. 7th
d. octave

4.The small note before the C in the treble clef, measure 8, is a/an:
a. grace note
b. trill
c. accidental
d. 8th note

5.The wiggly sign above the C in measure 5 signifies a/an:
a.grace note
b.trill
c.accidental
d.accented note

6.The chord in the treble clef of the last measure is:
a.B
b.D
c.G
d.C

Appendix D: Q & A on Clementi Sonatina Op. 36, No. 1

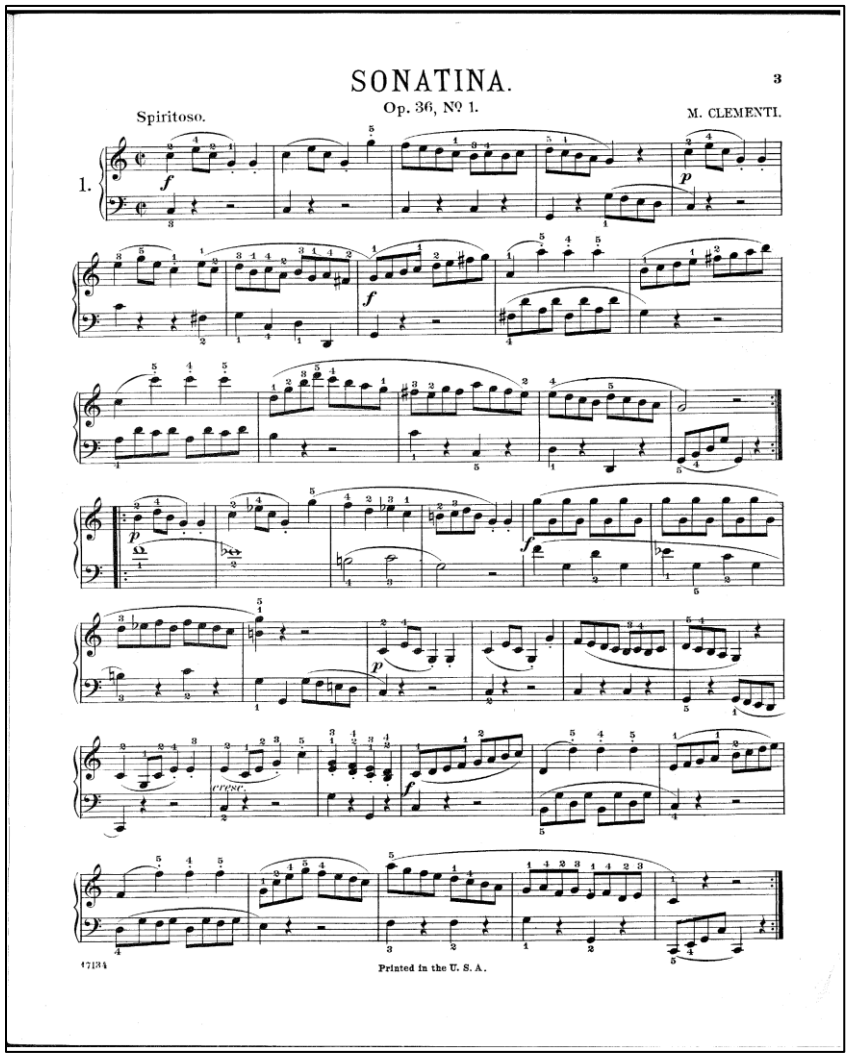
The next 3 pages display the 3 movements of Clementi's Sonatina Op. 36, No. 1. Depending on what source you use, this piano music is either for advanced beginners or early intermediate players, definitely at a level above Petzold's Minuet in G. As it is popular teaching piece, you will find lots of renditions and videos on the internet. Piano World has a forum on the piece, at: http://forum.pianoworld.com/ubbthreads.php/topics/2809588/study-group-clementi-sonatina-in-c-major-op-36-no-1.html#Post2809588

PianoTV teacher Allysia Van Betuw has a Youtube tutorial of the Sonatina at: https://www.Youtube.com/watch?v=m4tYu2ldkAY

For each movement I have created a multiple-choice quiz for beginner-level players. The questions are based on information either in this Syllabus, or provided in Ms. Betuw's tutorial.

Clementi Sonatina Op. 36, No. 1

First Movement – Spiritoso


SONATINA. 3

Op. 36, Nº 1.

Spiritoso. M. CLEMENTI.

Printed in the U. S. A.

1. This movement in in the key of:
a. C
b. A minor
c. F
d. G

2. The first two notes in the treble clef are what interval?
a. Major 2nd
b. Major 3rd
c. Diminished 4th
d. Augmented 3rd

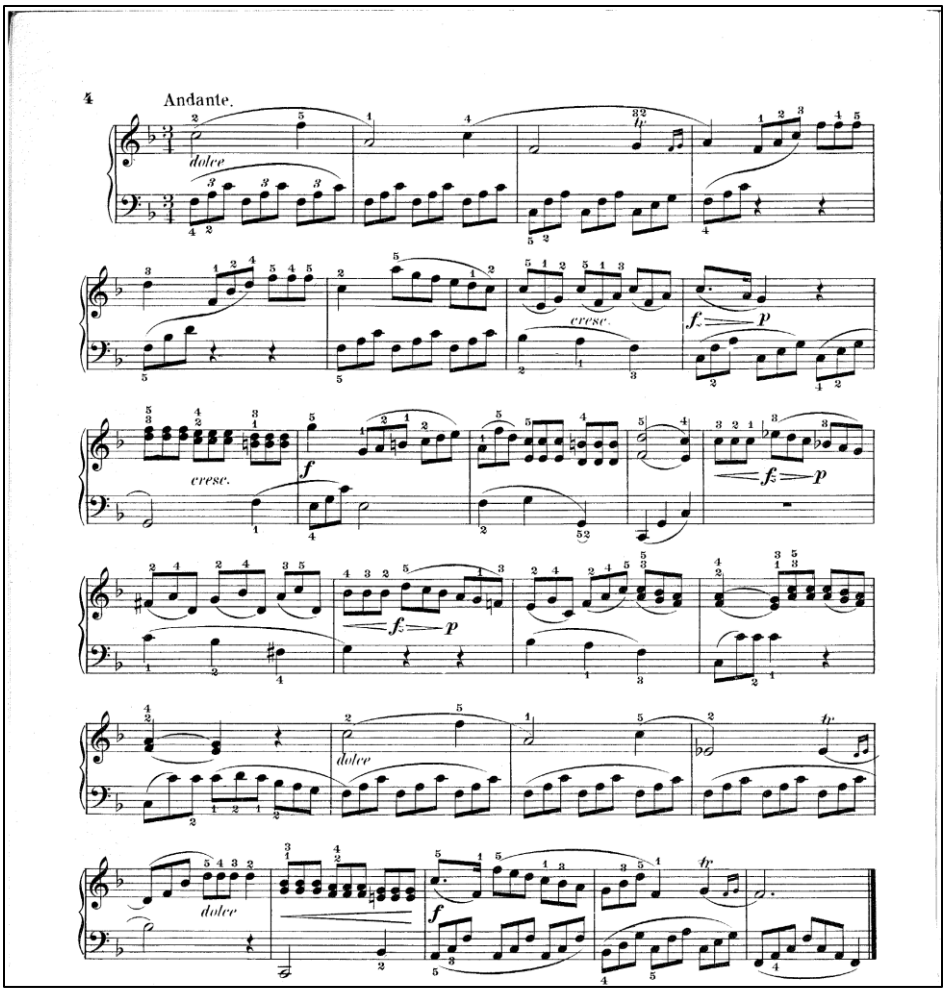
2. The first accidental introduced into this movement is:
a. Eb
b. F#
c. Bb
d. Gb

3. This accidental represents modulation to the key of:
a. D
b. E
c. G
d. A

5. The interval of the first two notes in measure 9, treble clef, is:
a. Major 6th
b. Major 7th
c. Octave
d. Major 9th

7. The first 3 notes in the bass clef, last measure, are what broken chord?
   a. F major
   b. D major
   c. C major
   d. E flat major

Second Movement - Andante



1. This Andante is movement is in key of
   a. C
   b. F
   c. G
   d. A minor

2. The broken chord in first measure is:
   a. C major
   b. F major
   c. D major
   d. E minor

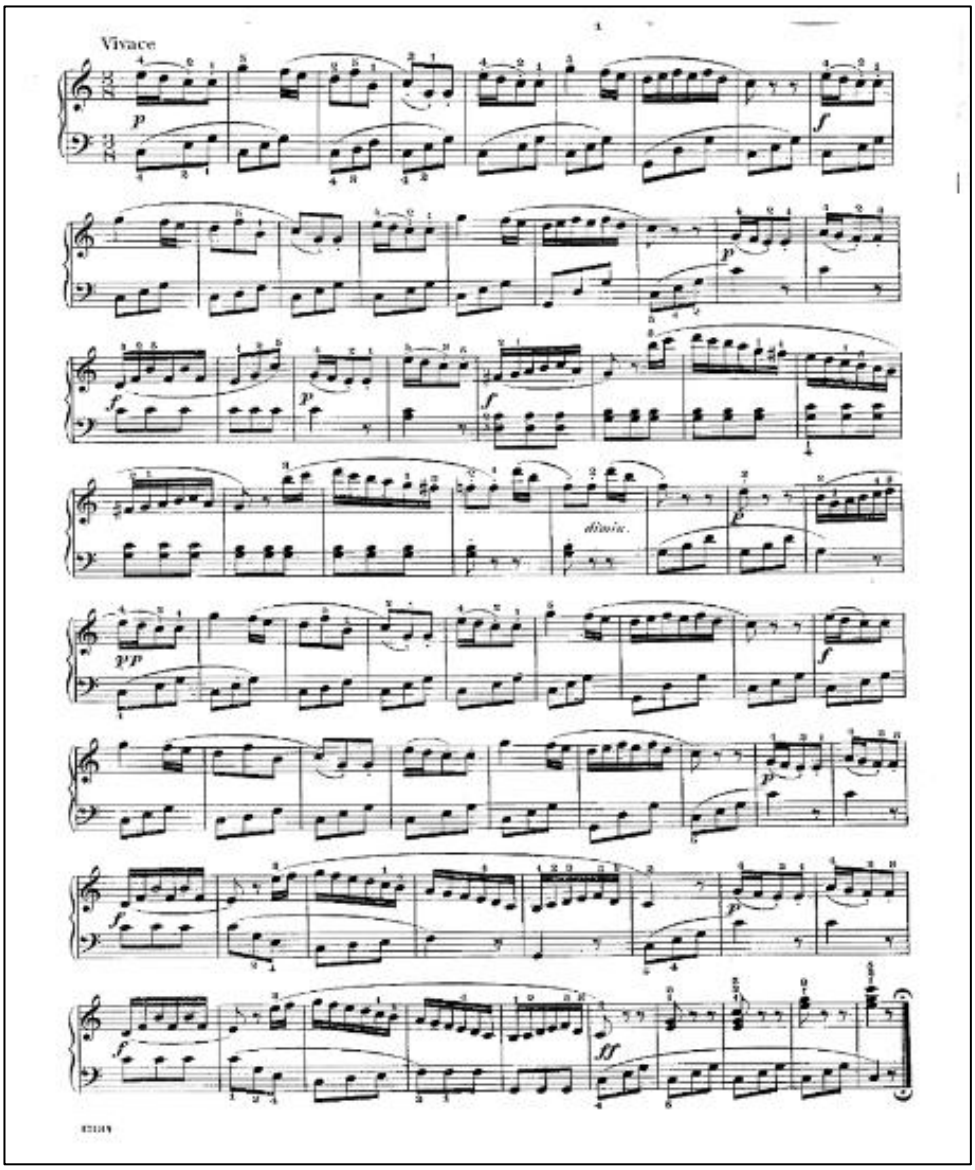
3. The curved lines over the first measure means the notes are to be played:
   a. Staccato
   b. Legato
   c. Dolce
   d. With gusto

4. The treble clef in the third line starts with a series of eighth note intervals. The first set, D-F, are:
   a. Minor seconds
   b. Major seconds
   c. Major thirds
   d. Minor thirds

5. The second set of eighth note intervals in this same treble clef, C-E, are:
   a. Minor seconds
   b. Major seconds
   c. Major thirds
   d. Minor thirds

6. The last measure of the Andante movement, bass clef, plays what broken chord?
   a. C major
   b. G major
   c. F major
   d. D major

Third movement - Vivace



1. The broken chord in the bass clef, first measure, is:
a. F major
b. C major
c. A minor
d. G major

2. In the first 18 measures (first two lines) how many times is the C chord played?
a. 8
b. 10
c. 12
d. 14

3. What is the interval of the bass clef note pairs, G-C, first measure of line 4?
a. Major 3rd
b. Major 4th
c. Perfect 4th
d. Perfect 5th

4. What is the interval of the bass clef note pairs, G-B, second measure of line 4?
a. Major 3rd
b. Minor 3rd
c. Diminished 4th
d. Perfect 4th

5. There is modulation in the third line, to what key?
a. F
b. G
c. A
d. E

6. Which aspect of this movement is distinct from either of the other two movements?
   a. Modulation to a different key
   b. Sharps or flats outside the musical key
   c. Broken chords
   d. 16th notes

Appendix E: Skill Levels of Piano Players – What Level Are You?

There's no universal standard for defining skill levels. The most formalized standards are from two British organizations, The Associated Board of the Royal Schools of Music (ABRSM) and the Royal Conservatory of Music (RCM). Both are widely used in Great Britain and Canada, and also to some extent in the U.S.

ABRSM
https://us.abrsm.org/en/our-exams/piano
ABRSM tests for 8 levels or grades of piano playing. Their manual lists many pieces for each grade; you can download the complete list at:
https://us.abrsm.org/fileadmin/user_upload/PDFs/Piano_Syllabus_2019___2020_complete.pdf

https://www.mymusictheory.com/
This British website gives syllabus information and video instruction on the 8 ABRSM levels.

RCM
https://www.pianotv.net/about-musical-grades/
There are 10 grades in the RCM, with additional preparatory grades (kind of like kindergarten), and an ARCT level, which is the most advanced step of the RCM system. RCM's 112 page syllabus is downloadable at:
https://files.rcmusic.com//sites/default/files/files/RCM-Piano-Syllabus-2015.pdf

In addition to standards set by ABRSM and RCM, the following videos and websites can give some idea of where you are in the skill level spectrum.

***

Brazilian pianist Fabricio Vinheteiro has short videos on Youtube, each demonstrating 10 levels of playing difficulty, from easy to hard. Below are the song lists he plays in three different videos.

https://www.Youtube.com/watch?v=p7rPHVkcRLI

Level 1 – Czerny No. 1
Level 2 – Bach Minuet in G
Level 3 – Clementi – Sonatina in C Major
Level 4 – Bach – Prelude BWV 999
Level 5 – Mozart – Sonata in C, K. 545
Level 6 – Bach – 2 Part Invention No. 8
Level 7 – Bach – 3 Part Invention, No. 3
Level 8 – Bach – Well Tempered Clavier, Fugue 2
Level 9 – Chopin – Etude, Op. 10, No. 12
Level 10 – Liszt – Hungarian Rhapsody, No. 2

https://www.Youtube.com/watch?v=liGpB4wpav0

Level 1 – Ah! Vous dirai-je, maman
Level 2 – Bach Minuet in G [A different minuet than in the first video]
Level 3 – Mozart – Minute in G, K1
Level 4 – Beethoven – Moonlight Sonata, 1st movement
Level 5 – Mozart – Rondo Alla Turca
Level 6 – Bach – 2 Part Invention, No. 4
Level 7 – Scarlatti – Sonata K 531
Level 8 – Bach – Well Tempered Clavier, Prelude No. 3
Level 9 – Chopin – Great Brilliant Waltz
Level 10 – Beethoven – Moonlight Sonata, 3rd Movement

https://www.Youtube.com/watch?v=2jc1Gw-JP8g

Level 1 – London Bridge is Falling Down
Level 2 – Happy Birthday to You
Level 3 – Bach – Minuet in G Anh 115
Level 4 – Beethoven – Fur Elise
Level 5 – Bach – Invention 1 BWV 772
Level 6 – Satie – Gymnopedie, No. 2
Level 7 – S. Joplin – The Entertainer
Level 8 – Bach – Prelude No. 6
Level 9 – Debussy – Arabesque No. 1
Level 10 – Chopin – Fantasie Impromptu

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https://www.experiencepiano.com/whats-my-level/
This website gives the definitions below for early beginner, beginner, and early intermediate players.

Early Beginner

- May not know any note names or be able to find them on the keyboard
- Can read neither treble nor bass clef
- May be able to play by ear

Repertoire: none

Beginner

- Knows the notes and can find them on the keyboard
- May be able to read treble or bass clef, familiar with relative note values and some dynamic and tempo notations
- May know some major or minor scales and arpeggios

Repertoire: piano method books

Early Intermediate

- Can read treble and bass clefs together
- Understands key and time signatures and is familiar with basic dynamic and tempo notations
- Knows major scales and arpeggios at least up to A and E flat, may know related minor scales and can play at least two octaves (hands together or separate) at a moderate tempo

Repertoire Examples:
Minuet in G major, BWV 115 from *Notebooks for Anna Magdalena* by J.S. Bach/C. Petzold

***

The website www.8notes.com provides sheet music based on piano skill level.

Level 1 – Beginner: https://www.8notes.com/piano/adults/sheet_music/?difficulty=1
Level 2 - Between Beginner and Intermediate:
https://www.8notes.com/piano/sheet_music/?difficulty=2
Level 3 – Intermediate: https://www.8notes.com/piano/adults/sheet_music/?difficulty=3
All levels: https://www.8notes.com/piano/adults/sheet_music/

***

This 4-minute video has excerpts from pieces "too easy to nearly impossible."
https://www.Youtube.com/watch?v=cmfJBSVz3-U

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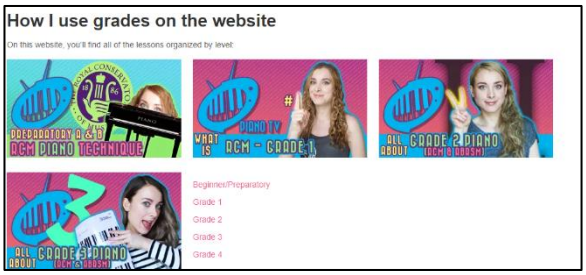
PianoTV: Musical Grade Levels

Allysia Van Betuw, the creator of PianoTV (www.pianotv.com), offers a multitude of teaching videos from her studio in Saskatchewan. Several deal with piano skill levels.

https://www.pianotv.net/about-musical-grades/
This link is to several different videos dealing with musical grades. Grades 1, 2 and 3 should be of particular interest to Adult beginners. Clicking on each level will take you to a discussion and links to other related videos.



Ms. Van Betuw discusses the Henle Level System in another Youtube video.
https://www.Youtube.com/watch?v=zJF9QJMFpAc
The Henle system covers only classical music, and divides pieces into easy, medium and difficult. Within each category are 3 levels, so 9 levels altogether. Examples below are from the Henle website.

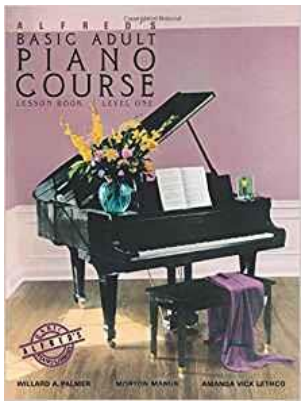
Levels of difficulty

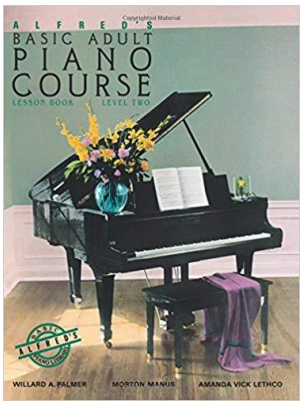
The levels of difficulty of the piano music published by G. Henle Publishers

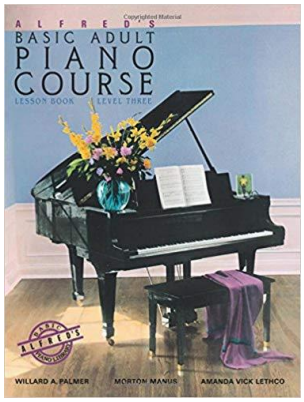
Level	gradetable	Example
1	easy	Bach, Notebook for Anna Magdalena Bach, nos. 4 and 5
2		Bach, Well-Tempered Clavier I, no. 1 Prelude C major
3		Beethoven, Piano Sonatas op. 49,1 and 2
4	medium	Grieg, Lyric Pieces op. 12, no. 4
5		Schumann, Fantasy Pieces op. 12, no. 1
6		Chopin, Nocturnes op. 27, nos. 1 and 2
7	difficult	Beethoven, Piano Sonata op. 10, no. 3
8		Beethoven, Piano Sonata op. 81a
9		Schumann, Toccata op. 7

https://www.henle.de/us/about-us/levels-of-difficulty-piano/.

https://www.pianotv.net/2019/01/alfreds-basic-adult-piano-course-method-guide-review/
In this Youtube video Ms. Betuw discusses the popular Alfred Adult Teaching series. After going through the three books – covers shown below – she states you'll be around a grade 2 level piano player.







Ms. Betuw (pictured) also offers excellent online courses that are part live and part recorded, for all levels through advanced beginner. https://www.pianotv.net/ptvschool/

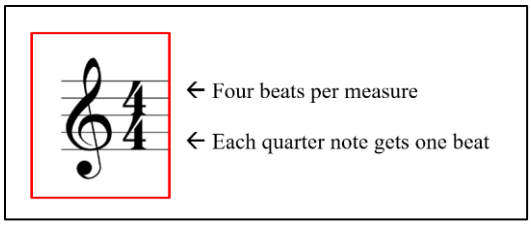
Appendix F: Simple Time and Compound Time

by Larry Martin
drlarry437@gmail.com

Emphasis in this syllabus (www.lakesidepress.com/PianoSyllabus.pdf) has been on half steps and whole steps, as a way to explain and help you better understand scales, modes, chords and intervals. Clearly, a study of basic music theory must also include elements of rhythm. This appendix covers one aspect of rhythm that can be confusing to adult beginners: simple time and compound time. These "times" are sometimes referred to as simple meter and compound meter.

Simple time = simple meter
Compound time = compound meter

Modern Western music notation always contains a *time signature*, signifying the time or meter for the music. The time signature is the two numbers that appear after the clef sign. The upper number represents the number of beats per measure, and the lower number represents the kind of note that has a time value of one beat. A "2" for the bottom number means a half note, a "4" means a quarter note, an "8" means an eighth note, etc.



Confusion alert: The term "beat" can be confusing because, in relationship to the time signature, it is defined differently for simple and compound time. In simple time, the upper number is the number of beats per measure. Thus 4/4 time signature means there are 4 beats per measure, and when counting (out loud or silently) you would count "ONE-two-three-four" if the measure has 4 quarter notes, or "ONE-and-two-and-three-and-four-and" if the measure has 8 eighth notes. (Capitals signify which beat gets the most emphasis; underlined number indicates a degree of emphasis between the capital note and other notes.)

In compound time signatures, the number of beats per measure is the upper number *divided by 3.* Thus 6/8 time has two "beats," each of which can be divided into three notes. When counting a 6/8 time with six eighth notes per measure, you would count "ONE-and-ah-two-and-ah). This distinction will be discussed further in the section on compound time.

Most time signatures can be classified as simple or compound time. However, a third category is called "odd meter," which is some combination of simple and compound time within each measure. Beginner-level players don't need to bother with odd meters, but the subject is presented in this appendix because it will aid in understanding simple and compound time.

Below are basic definitions and examples. After this information is a list of Youtube videos presented by experts. With the knowledge gained from this appendix, information covered in the videos should be familiar territory.

Simple Time

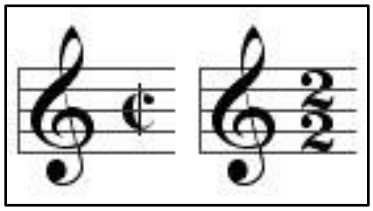
In simple time, the top number of the time signature is always 2, 3 or 4. Most simple time signatures encountered will be one of the following:

2/2, 2/4, 2/8
3/4, 3/8
4/4, 4/8

Just by listening, musicians can usually tell when the music is in simple time; to explain how they know, they may say it has "an up-down feel" or a "one-two pulse."

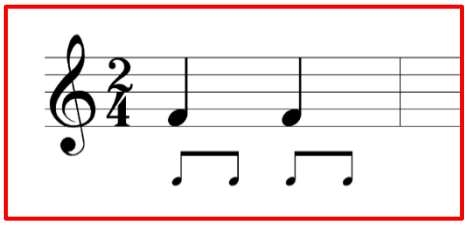
Any meter in which the beat can be divided into two equal parts is simple time. Terms used to further classify simple time are duple, triple and quadruple, discussed below. (Red-bordered figures of music measures are from www.musictheory.net. Other figures are attributed within the text.)

Simple Duple – 2 beats per measure; each beat can be broken into two notes. Below are two examples of simple duple. The first is 2/2 and goes by the name "alla breve" or "cut time." It is often notated in the clef by a large C with a line through it, meaning common time (4/4) cut in half. Thus in cut time there are two beats per measure and each *half note* gets one beat, whereas in 4/4 time there are four beats per measure and *each quarter note* gets one beat. (Figure from https://en.wikipedia.org/wiki/Alla_breve)



Cut time is essentially the same as 4/4 but twice as fast. Marches are the most common use of cut time. A side-by-side-comparison between cut time and 4/4 is shown in the section on 4/4 time. In the list of Youtube videos are 3 short ones on cut time.

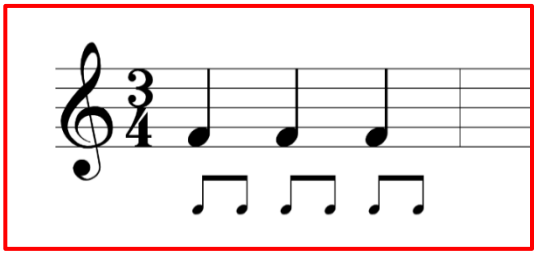
The second example of simple duple is a measure of 2/4, showing that each quarter note can be divided into two eighth notes. If you were counting the quarter notes, the count would be simply "ONE-two." If the 2/4 measure had the 4 eighth notes, as shown below the measure, you would count "ONE-and-two-and."



Hear 2/4 Time Signature - The Grand Old Duke of York

www.Youtube.com/watch?v=pQqMB8rYK9E&feature=emb_rel_end/

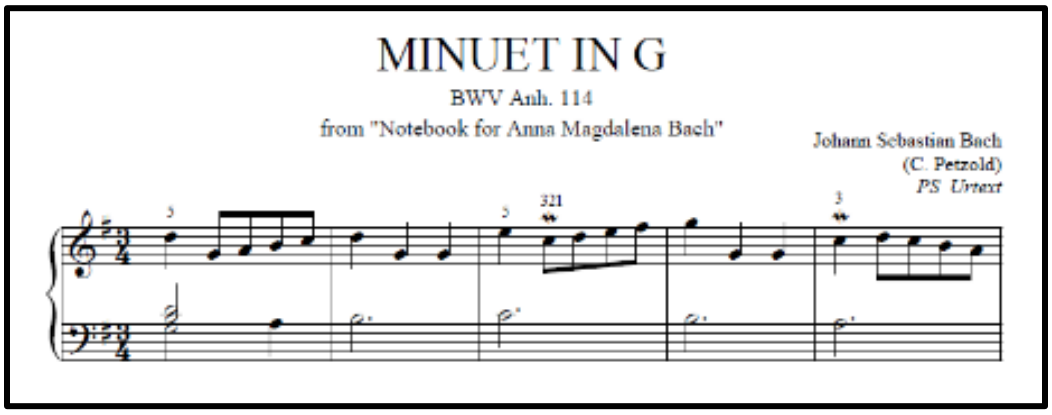
Simple Triple – 3 beats per measure; as with all simple time, each beat can be broken into two notes. Below is a measure of 3/4, showing that each quarter note can be divided into two eighth notes. (Note: 3/4 time is commonly referred to as "waltz time," as it is the rhythm for waltzes.) If you were counting the quarter notes, it would be simply "one-two-three." If the 3/4 measure had the 6 eighth notes, as shown below the measure, you would count "ONE-and-two-and-three-and."



Hear 3/4 Time Signature - Humpty Dumpty

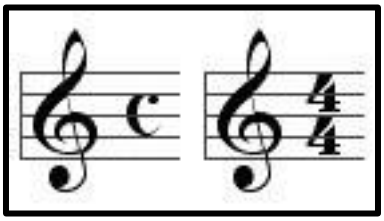
www.Youtube.com/watch?v=UA_-pyB3LZo&feature=emb_logo

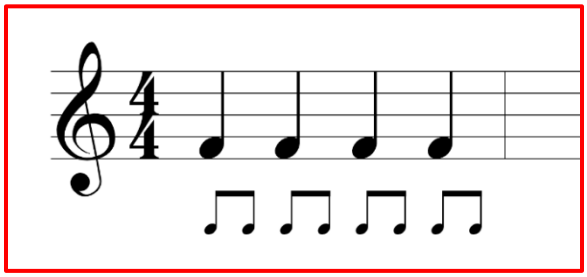
Petzold's "Minuet in G" (once attributed to Bach), discussed in Appendix C, is in 3/4 time. Below is the first line. If you were to count out the measures you would count ONE-and-two-and-three-and." Hear it on Youtube at https://www.Youtube.com/watch?v=icZob9-1MDw.



Simple

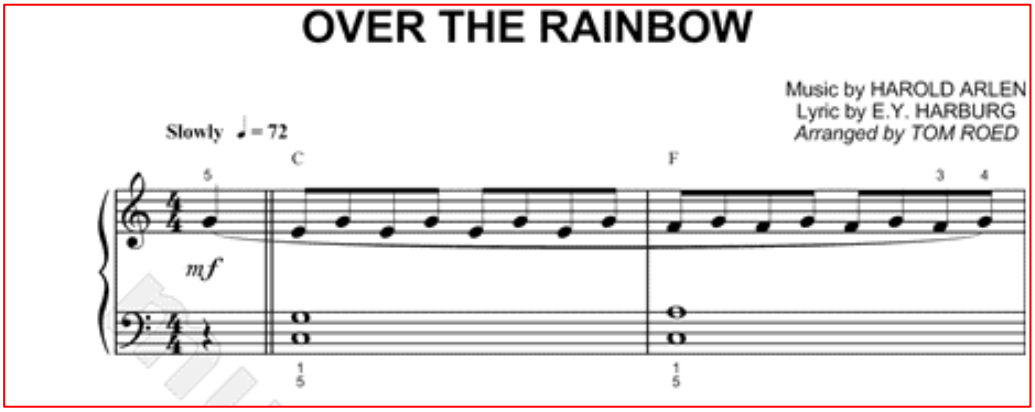
Quadruple – 4 beats per measure; each beat can be broken into two notes. Below is a measure of 4/4, showing that each quarter note can be divided into two eighth notes. (Note: 4/4, also called "common time," is by far the most common time signature in popular music. It is often notated simple with a large "C" instead of 4/4, as shown below) If you were counting the quarter notes, it would be simply "ONE-two-three-four." If the 4/4 measure had all 8 eighth notes, as shown below the measure, you would count "ONE-and-two-and-three-and-four-and." (Figure on left from https://en.wikipedia.org/wiki/Alla_breve)



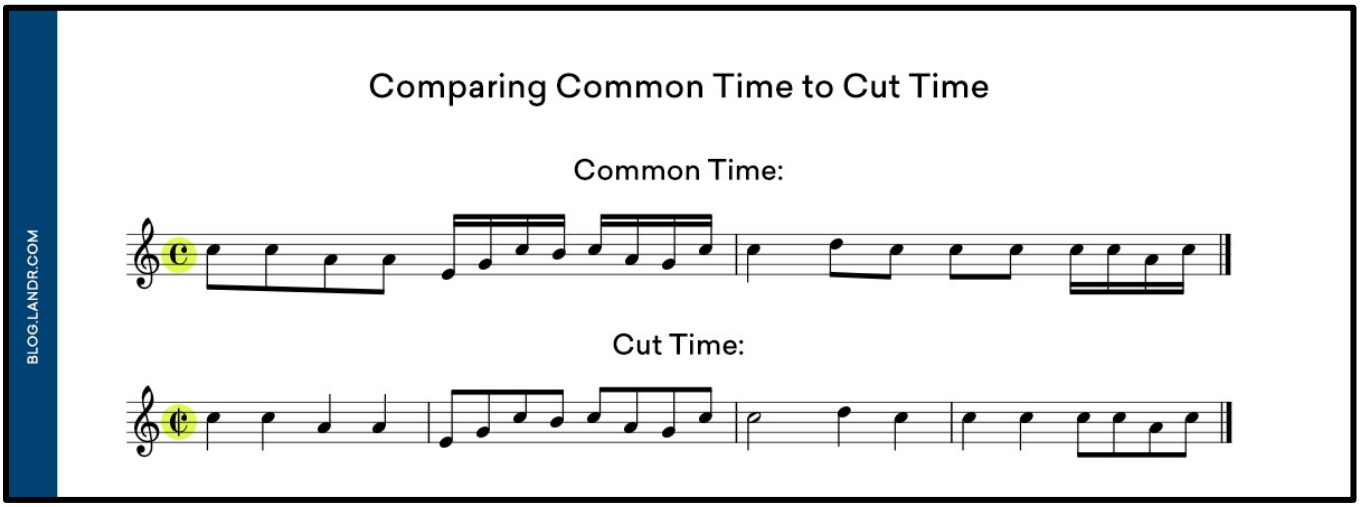


Hear 4/4 Time Signature – Mary had a Little Lamb
www.Youtube.com/watch?v=MTngBNEZmRE/

"Over the Rainbow," sheet music in Section 14 of this Syllabus, is in 4/4 time. Here is the first line. Note that the treble clef has 8 eighth notes per measure, whereas the bass clef has one whole note per measure. If you were to count out the measure it would be "ONE-and-two-and-three-and-four-and." Hear Judy Garland sing it at: https://www.Youtube.com/watch?v=PSZxmZmBfnU.



Confusion Alert. Back to cut time (2/2) vs. common time (4/4). They are the same except that 2/2 is twice as fast as 4/4. Thus 16th notes in 4/4 are 8th notes in 2/2; eighth notes in 4/4 are quarter notes in 2/2; etc. Cut time allows fast music to be written in a cleaner format. See figure below (from https://blog.landr.com/time-signatures/). To quote from this website: "Notation for fast pieces in 4/4 often requires extensive use of double-barred sixteenths and will make a page of sheet music will often look very complicated and intimidating. Cut time makes it possible to express the same tempo while cutting down on the number of double-barred notes used on a page."



Compound Time

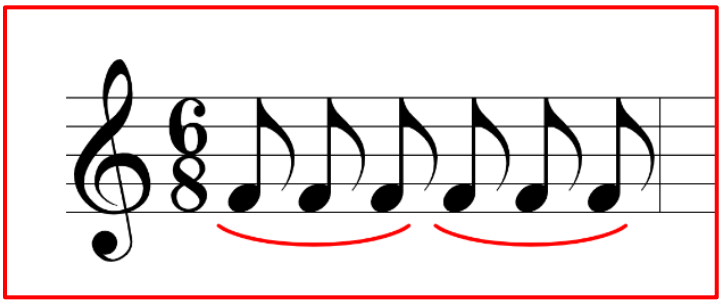
In compound time, the top number is always 6, 9 or 12. Most compound time signatures encountered will be one of the following:

6/4, 6/8
9/4, 9/8
12/4, 12/8

A meter in which the beat can be divided into three equal parts (rather than two) is referred to as "compound time." The top number of a compound time signature divided by 3 gives the number of beats per measure. As explained in the introduction, this is different from simple time, where the top number = the number of beats per measure.

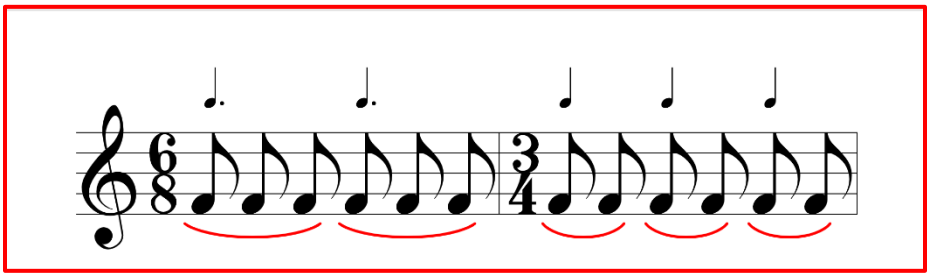
Just by listening, musicians can tell when the music is in compound time; to explain how they know, they may say it has a "swaying, swinging or rocking feel," or a "lilting rhythm." Like simple time, terms used to further classify compound time are duple, triple and quadruple, discussed below. Figures that illustrate compound time are from www.musictheory.com.

Compound duple – 6/8 is an example: 2 beats per measure by the definition used above. If you count this measure, it would be "ONE-and-ah-two-and-ah," or some variation that used one syllable per note. My piano teacher, who taught in Bennington, Vermont, recommends "BEN-ning-ton-ben-ning-ton."



Hear 6/8 Time Signature – Hey Diddle Diddle
www.Youtube.com/watch?v=TEOVCbNRJUk&feature=emb_title

Confusion alert: The 6 eighth notes in a 6/8 time signature could also be shown as 6 eighth notes in a 3/4 time signature. Thus 6 eighth notes in a measure could be "compound time" (left measure below) or "simple time" (right measure below).

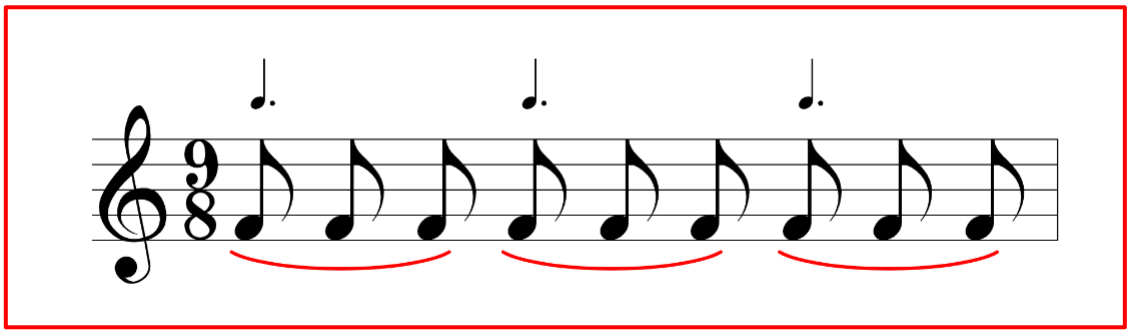


The difference is that 6/8 has two groups of 3 notes, whereas 3/4 has three groups of two notes. In 6/8, each group of 3 has the equivalent time duration of a dotted quarter note, as shown above that measure. Either way, 6/8 has two beats per measure, with each beat represented by 3 eighth notes.

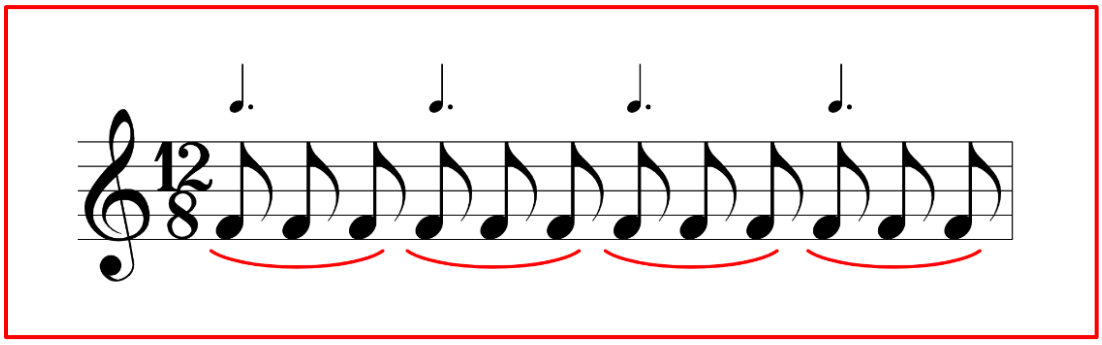
In 3/4, each group of 2 notes has the equivalent time duration of a regular quarter note, as shown above the measure. Either way, 3/4 has three beats per measure, with each beat represented by two eighth notes.

Note that the two measures would be played differently. In 6/8 there would be emphasis on the 1st and 4th eighth notes, sounded out as "ONE-and-ah-two-and-ah," In 3/4 the emphasis would be on the 1st, 3rd and 5th eighth notes, sounded out as "ONE-and-two-and-three-and."

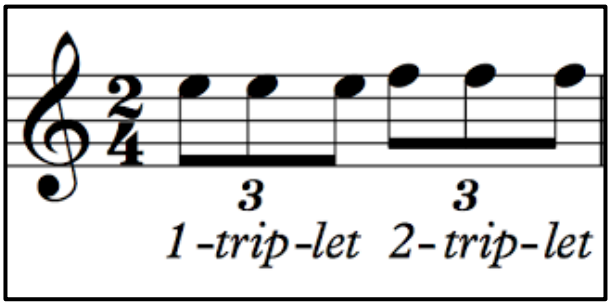
Compound triple - 9/8 is an example: 3 beats per measure. Each grouping of 3 eighth notes has equivalent time duration to a dotted quarter note, as shown above the measure. It would be sounded out as "ONE-and-ah-two-and-ah-three-and-ah."

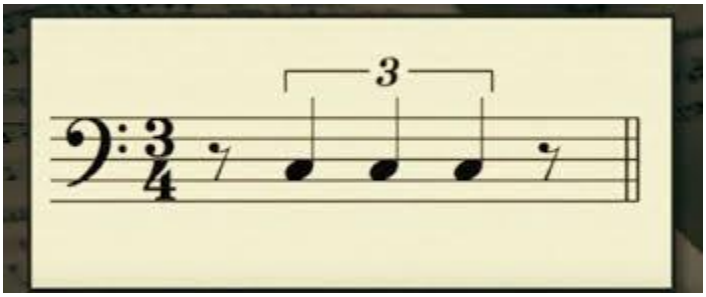


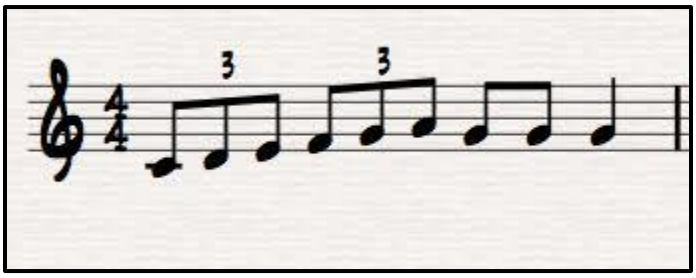
Compound quadruple - 12/8 is an example: 4 beats per measure. Each grouping of 3 eighth notes has equivalent time duration to a dotted quarter note, as shown above the measure. It would be sounded out as "ONE-and-ah-two-and-ah-three-and-ah-four-and-ah."



Confusion alert: You have no doubt encountered the following “triplets” in simple meter or simple time, as shown below for 2/4, 3/4 and 4/4 simple time measures. Does this contradict the distinction that in simple time the beat is can be divided into two, whereas in compound time the beat can be divided into three equal parts instead of two?







The short answer is no. In simple time each triplet represents the timing of *one note*, not three notes. Thus a triplet does not have the same timing of a dotted note, whereas in compound time, any three successive notes of the same length has the same timing as that one a dotted note. (See previous examples of 6/8, 9/8 and 12/8 compound time signatures.) So a triplet in simple time does not contradict the distinction between simple and compound time.

Odd meter or odd time signature

An odd time signature (also known as irregular, or asymmetric) is any time signature that doesn't fit the 3 categories of simple and compound time signatures: duple time, triple time, and quadruple time. Among the more common odd time signatures you will encounter are the following:

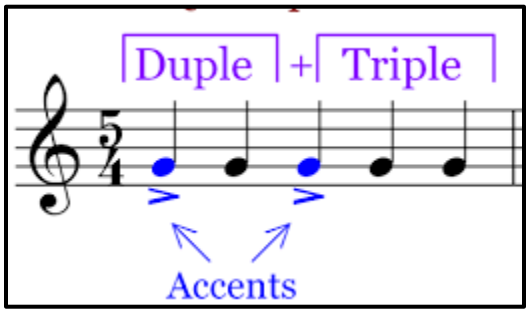
5/4, 5/8
7/4, 7/8
11/4, 11/8

For a list of music in unusual time signatures, see
https://en.wikipedia.org/wiki/List_of_musical_works_in_unusual_time_signatures

Odd time signatures contain both simple and compound beats. As you go through the following examples (measures are from www.musictheory.net/ unless otherwise stated) keep in mind the following:

- Simple beats are divisible by two, and compound beats are divisible by three.
- A compound beat has the same timing as that of a dotted note

Example: 5/4 time. In terms of the number of "beats" in this and other odd time signatures, things get dicey. This figure is from http://donrathjr.com/time-signatures-symbols-part-22c/. Best to avoid trying to classify how many beats there are, and think more about how you would play the rhythm. Here the musician places accents on the first quarter note of the duple notes ("simple time") and the first quarter note of the triple notes ("compound time").



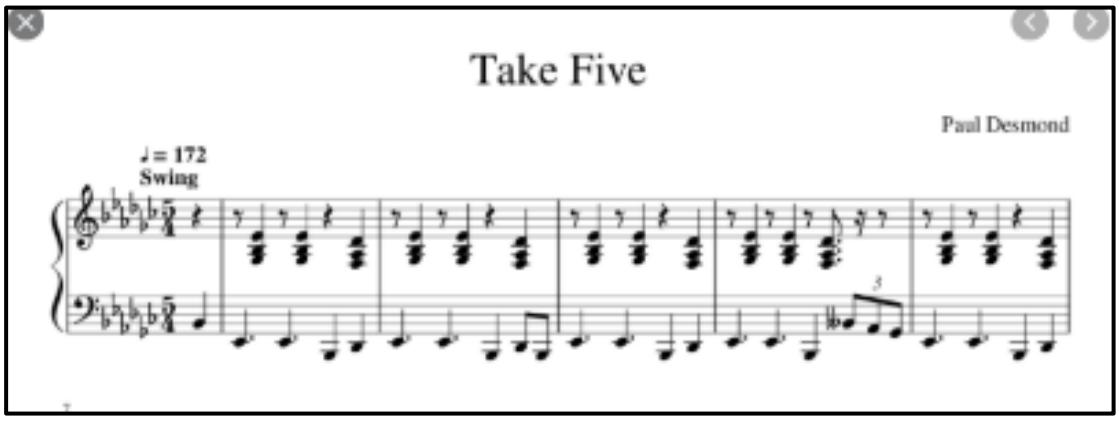
Confusion alert. Some musicians call 5/4 time an example of "compound time," and not "odd meter." If you delve into this subject, it is easy to get confused – is a 5/4 time signature "compound" or "odd"? Using the definition that seems most prevalent in music theory, any measure that contains both a duple and a triple, as shown, is classified as "odd meter." Experienced musicians can obviously call it by any term they want, and in essence the important thing is how it's played, not its name. So don't be confused if you see 5/4 time called "compound" in some sources. In this appendix it is classified as "odd" meter.

Perhaps the most famous piece of music written in 5/4 is “Take Five,” composed by saxophonist Paul Desmond and originally recorded by the Dave Brubeck Quarter in 1959, for the album *Time Out*. Brubeck named the music after the time signature.

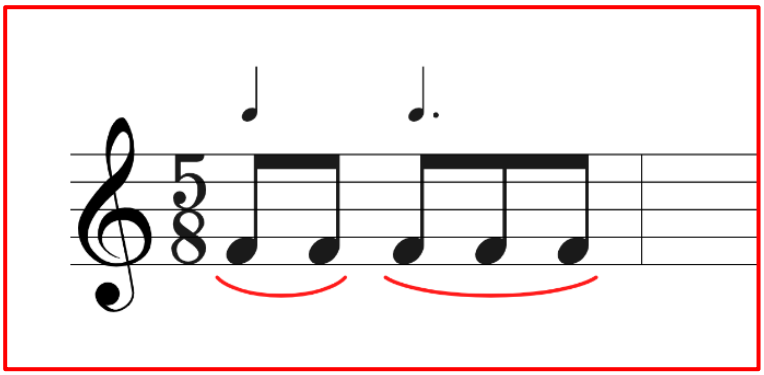
There are many recordings of “Take Five” on Youtube. The following link is to a 1964 performance, with Dave Brubeck at the piano, Joe Morello on drums, Paul Desmond on alto sax, and Eugene Wright playing bass. www.Youtube.com/watch?v=tT9Eh8wNMkw

You can also hear a 30-second sample of the music on the Wikipedia website.
https://en.wikipedia.org/wiki/Take_Five

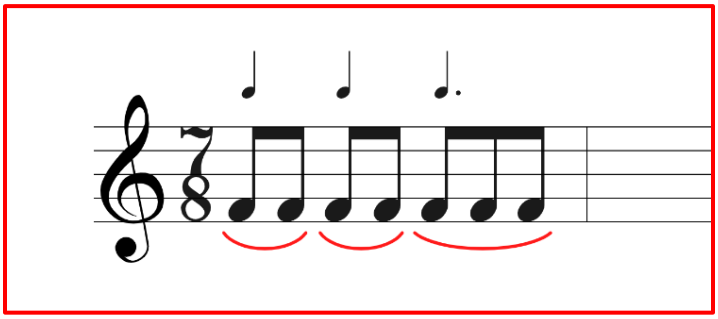
“Take Five” was written in the key of E♭ minor (6 flats). The first line is shown below. As with all written music, the time signature follows the key signature.



Example: 5/8 time. In the measure below the first two eighth notes fit the definition of “simple time,” and the following three eight notes, “compound time.” Above the treble clef is a quarter note in place of the two eight notes of simple time, and a dotted quarter note in place of the three eighth notes of compound time. If played as written in the measure, you would hit the F key five times, emphasizing or accenting the first and third eighth notes, and count as follows: ONE-two-three-four-five. If the measure was written with just the regular quarter note and dotted quarter note (same time signature), you would hit the F key twice, holding the first time for two counts and the second time for three counts. Though only two notes would be played instead of five, the counting would be the same: ONE-two-three-four-five.

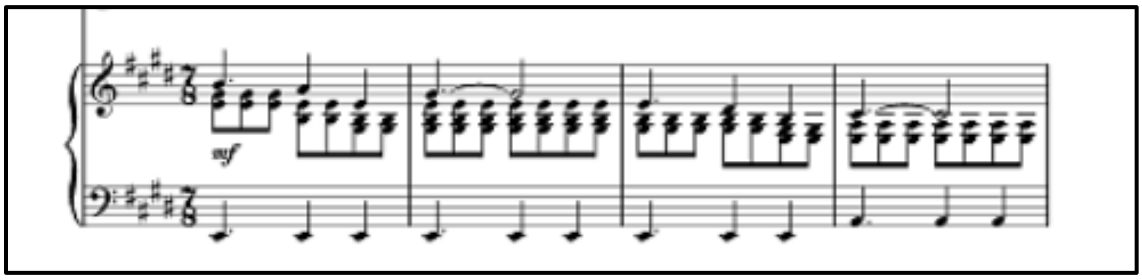


Example: 7/8 time: The measure below shows that the first four eighth notes fit the definition of "simple time" and the following three notes fit the definition of "compound time." Above the treble clef is a quarter note in place of each two-note simple time eighth notes, and a dotted quarter note representing the timing of the three compound time eighth notes. If played as written in the measure, you would hit the F key seven times, emphasizing or accenting the first, third and fifth eighth notes, and count as follows: ONE-two-three-four-five-six-seven. If the measure was written with just the two regular quarter notes and one dotted quarter note (same time signature), you would hit the F key three times, holding the first two times for two counts each, and the third time for three counts. Though only three notes would be played instead of seven, the counting would be the same: ONE-two-three-four-five-six-seven.



A popular song by Cat Stevens, "Ruby Love," is in 7/8 meter and the key of E Major. Below is the first line. The treble clef shows 7 eighth notes per measure. The bass clef shows one dotted quarter note (=3 eighth notes) followed by two regular quarter notes (= 2 eighth notes each), to equal 7 eighth notes for the whole measure.

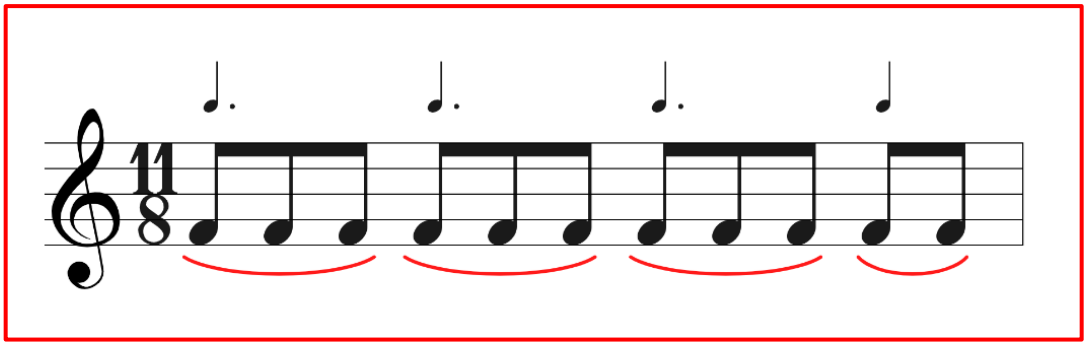
Ruby Love, by Cat Stevens



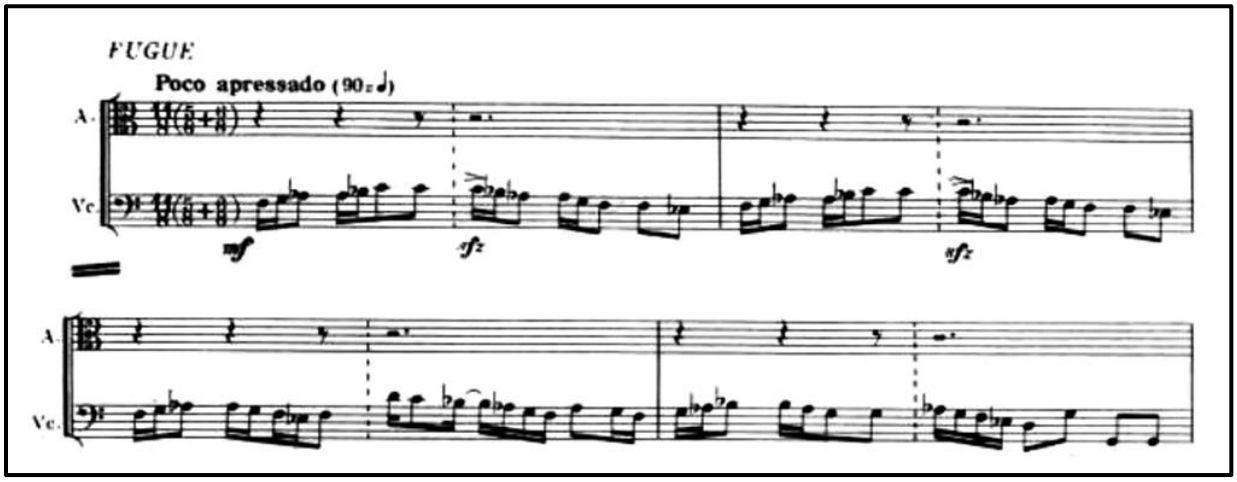
Hear “Ruby Love” on Youtube at https://www.Youtube.com/watch?v=ErZlGWDEtUE

For more on meter with 7 beats to the measure, see https://en.wikipedia.org/wiki/Septuple_meter

Example: 11/8 time: Three compound beats and one simple beat. Equivalent timing would be represented by 3 dotted notes and one quarter note, or all 11 eighth notes. Counting would be ONE-two-three-four-five-six-seven-eight-nine-ten-eleven.



Heitor Villa Lobos’ Bachianas Brasileiras No. 9, second movement, is written in 11/8. Below is the first line. Note that the time signature is “11/8 (5/8 + 6/8)” to indicate two sections of a single movement. .This time signature appears in the alto clef. You can hear this music at https://www.Youtube.com/watch?v=G3Mj6HBbvXM



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See following pages for list of Youtube videos and internet links related to simple time and compound time. For books on music theory, see Additional Recommended Resources.

Youtube Videos

There are dozens of videos offered by experts. Below are a few, covering both simple and compound time. You will get the most out of them after you have reviewed information in this Appendix. They are listed in order of length, starting with the shortest.

Cut Time – 2 minutes
https://www.Youtube.com/watch?v=OdgHUoiX7Xk

Understanding Cut Time – 3 minutes
https://www.pianote.com/blog/cut-time/

What is compound meter? – 4 minutes
https://www.Youtube.com/watch?v=UALgioN316Y

Compound Meter Explained – 5 minutes
https://www.Youtube.com/watch?v=sQqkYtKl7IQ

Cut time vs. Common time – 7 minutes
https://www.pianotv.net/2018/11/cut-time-and-how-its-different-from-common-time/

Pianote – Basic Time Signatures – 7.5 minutes
https://www.Youtube.com/watch?v=ixm4R7hG-pk

Time Signatures: Simple & Compound – 8 minutes
https://www.Youtube.com/watch?v=F3xsoi-NKw8

Music Matters explanation – 8.5 minutes
https://www.Youtube.com/watch?v=UqJxXH2voMI

Compound meter: 6/8, 9/8 and 12/8 time signatures – 9 minutes
https://www.Youtube.com/watch?v=UW2lsS03UkY

Compound rhythms understood (No speaking; just plays notes for 3/8, 6/8, 9/8 and 12/8 time signatures) – 11 minutes
https://www.Youtube.com/watch?v=LG9kFM7wqiA

How to Understand and Count in 6/8 Time Signature – 11.5 minutes
https://www.Youtube.com/watch?v=rXSW6LdIIuw

Playing Unusual Time Signatures – 13 minutes
https://www.Youtube.com/watch?v=UznS0z2p83o

Youtube Videos (continued)

Time signatures Explained – 17 minutes
https://www.Youtube.com/watch?v=gk17N6cDKqQ

Simple and Compound Time Signatures – 25.5 minutes
https://www.Youtube.com/watch?v=qi6uuhU1unk

Websites

Introduction to Time Signatures
https://www.musical-u.com/learn/introduction-to-time-signatures/

Music Theory.net
www.musictheory.net

Alla Breve (2/2 time)
https://en.wikipedia.org/wiki/Alla_breve)

Time Signatures Clarified
https://www.musiceducationwhiz.com/Time-Signatures.html

Simple and Compound Time Signatures Re-examined
https://drive.google.com/file/d/0B0ZI8di-pEDvT2V0LVRVUGNFeWc/view

Time Signature
https://en.wikipedia.org/wiki/Time_signature

Compound Meter and Time Signatures
https://viva.pressbooks.pub/openmusictheory/chapter/compound-meters-and-time-signatures/

Understanding Compound Rhythms
https://www.instructables.com/How-to-Understand-Compound-Time-Signatures/#

Time Signatures: How to Feel the Beat
https://blog.landr.com/time-signatures/

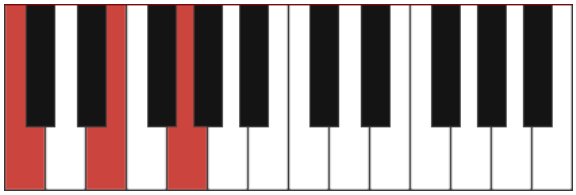
Unusual Time Signatures
https://en.wikipedia.org/wiki/List_of_musical_works_in_unusual_time_signatures

Appendix G
Chord Voicing for Beginner-Level Piano Players

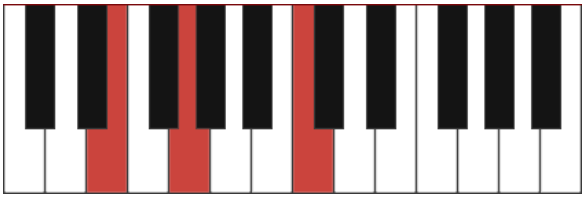
by Larry Martin
drlarry437@gmail.com

Every three-note chord can be played in one of three ways on the piano: in its root position, first inversion, or 2nd inversion. Here is the C major chord played all three ways. Figures are from website https://www.pianochord.org/c-major.html#hide1/.

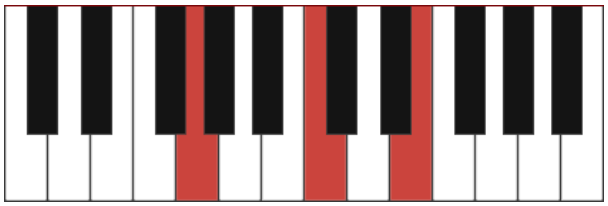
Root: C-E-G



1st inversion: E-G-C



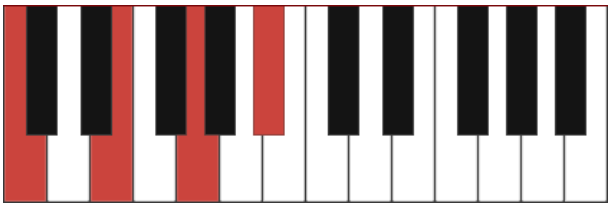
2nd inversion: G-C-E



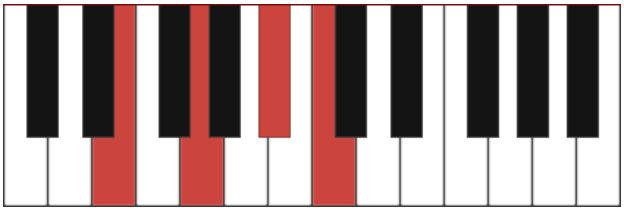
You could of course play the three notes of any chord much farther apart than shown here, e.g., C and E in one octave and G in another octave. However, for purposes of this discussion, I'll stick with the standard root + inversions as a way on introducing basic chord voicing.

Similar to the 3-note chords, every 4-note chord can be played in one of four ways, as shown for C7.

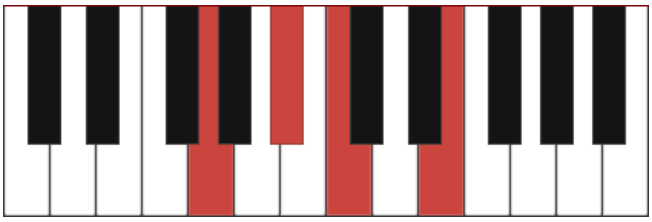
Root: C-E-G-Bb



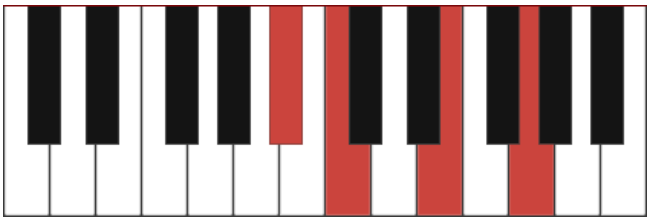
1st inversion: E-G-Bb-C



2nd inversion: G-Bb-C-E



3rd inversion: Bb-C-E-G



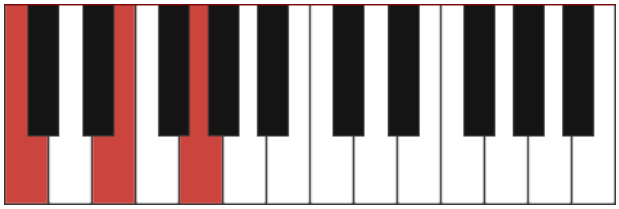
Chord voicing means arranging the notes of a chord to vary its sound. Beginner-level players have the basic options shown above, for 3- and 4- notes chords. More advanced players can jump all around the keyboard, placing the notes in different octaves, using two hands for a chord instead of just one, double up on some note, or omit a chord note if that doesn't affect the way it sounds.

This section focuses on choosing among the three options listed for 3-note chords, or the four options for 4-note chords. If the music calls for C major, is it better to play C-E-G, or does G-C-E work better? For beginner-level piano players, there are really two questions relating to chord voicing. 1) Which note sequence sounds better' 2) Which note sequence is easiest to finger given the preceding chord that was played?

If “best sounding” and “best note sequence” give the same chord, then it’s a no-brainer. Often, however, they are different.

Lead sheets will sometimes tell you which voicing to use. For example, if the chord sequence is C major followed by A minor, and you are playing C as C-E-G, the lead sheet may notate the A minor chord as Am/C. This means to play the A minor with “C” as the bottom or bass note: C-E-A, which is the first inversion of the A minor chord. This change from C to Amin only requires moving one finger, from the G to the A.

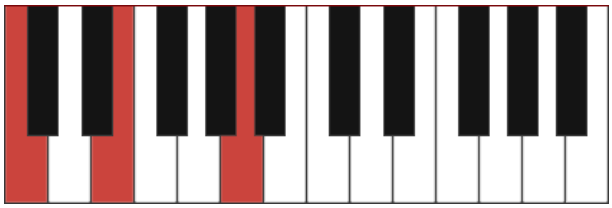
C, root position: C-E-G



Am/C

A minor, 1st inversion: C-E-A

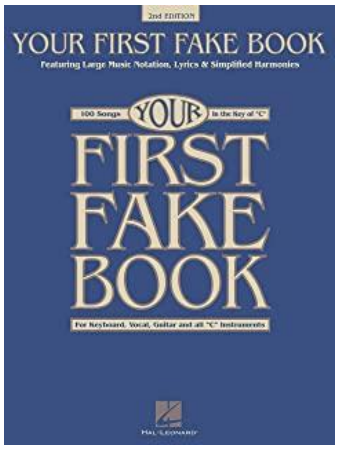
Notated on Lead Sheet as Am/C



When there is no such specific notation, it is up to you to find the best note sequence for each chord. It is also up to you (or your teacher, as the case may be) to decide if ease of movement from one chord to the other is paramount over sound, or vice versa. For beginner piano players, ease of movement is usually the primary concern, so the piece can be played fluidly. Advanced and professional pianists can make changes on the fly that beginners can’t, so ease of playing while keeping the rhythm is (for me) most important.

Throughout this Section I will show several chord sequences from popular-song lead sheets. All these songs are in the key of C major, and are simplified for beginner-level piano players. For each chord sequence, you should determine which is the best order of the notes for the chords that follow. Choices will be:

- For 3-note chords: root, 1st inversion, or 2nd inversion
- For 4-note chords: root, 1st inversion, 2nd inversion, or 3rd inversion



My own preferences are shown in yellow highlight. The best way to determine what is best for you is to sit at the keyboard and experiment! Different people may arrive at different results. If a keyboard is not readily available, the website https://www.pianochord.org/c-major.html#hide1/ has diagrams of each chord and its inversions.

Chord sequences referred to in this appendix are from "Your First Fake Book." Lines (e.g., "1st line") refer to the lead sheet of that song.

In the following example from the song "Beauty and The Beast," the first chord is C Major, played in the root position C-E-G. There follows F major, C major again, and G major. My preference, in yellow highlight, provides the most economy of movement, and sounds good as well. (As for exact fingering for the yellow-highlighted chords, choose that which fits best for you.)

Beauty…Beast

1st Line

	--->	--->	--->	
	C			
Chord	**Major**	**F Major**	**C Major**	**G Major**
Root	C-E-G	F-A-C	C-E-G	G-B-D
1st inversion		A-C-F	E-G-C	B-D-G
2nd inversion		C-F-A	G-C-E	D-G-B

Here is another example from "Beauty and The Beast."

3rd and 4th lines

	--->	--->	--->	
	C			
Chord	**Major**	**G minor**	**C7**	**F Major**
Root	C-E-G	G-Bb-D	C-E-G-Bb	F-A-C
1st inversion		Bb-D-G	E-G-Bb-C	A-C-F
2nd inversion		D-G-Bb	G-Bb-C-E	C-F-A
3rd inversion			Bb-C-E-G	

And one more example, from “Hello, Dolly!”

Hello, Dolly!

5th & 6th lines

	--->	--->	--->	--->	
Chord	**C Major**	**A minor**	**G minor**	**C7**	**F Major**
Root	C-E-G	A-C-E	G-Bb-D	C-E-G-Bb	F-A-C
1st inversion		C-E-A	Bb-D-G	E-G-Bb-C	A-C-F
2nd inversion		E-A-C	D-G-Bb	G-Bb-C-E	C-F-A
3rd inversion				Bb-C-E-G	

***

If you want to try your hand at choosing note sequence without seeing my preferences, go to the end of this appendix. There you will find several chord sequences from “My First Fake Book,” including the three above. They are presented twice, first with no yellow highlight, then the same sequences with yellow highlight (my choices). Try to determine which note sequence is best for you before looking at my choices.

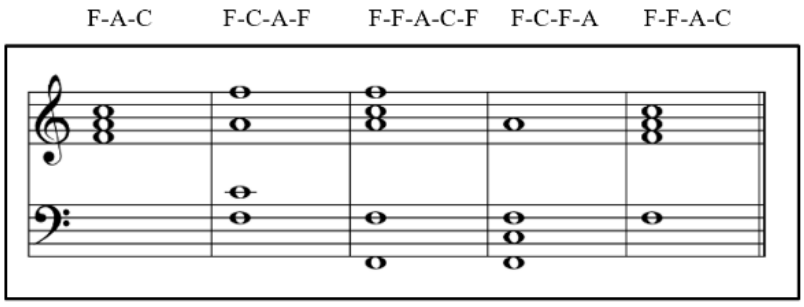
Chord Voicing: Additional Things to Consider

As indicated earlier, chord voicing can be more complicated than the simple inversions shown in these examples. Advanced pianists can: break up the chord and play it as an arpeggio; add riffs or intricate note sequences; move to other octaves for the chord, etc.

Open and Close Positions

The figure below shows the F major chord in its root position for five measures (root position means F is always the bottom note). The first measure shows F-A-C, with the three notes as close as possible, all playable with the right hand.
(From https://www.musictheory.net/lessons/51)

Some texts refer to chord notes that are as close as possible on the keyboard as “close position.” When the notes are not in “close position,” such as the ones shown in measures 2-5, they are referred to as “open position.”



In the 2nd measure, we have F and middle C in the bass clef and A and F in the treble clef: 4 keys played for the 3-note F chord. As noted, this is an "open position" for the F chord, as are the next 3 measures.

In the 3rd measure, the bass clef shows F and F an octave apart: two Fs, which can be played with the left hand. The treble clef shows A-C-F, which can be played with the right hand. Thus we have five keys played for the 3-note F chord.

In the 4th measure, we have F-C-F in the base clef, and A in the treble clef: four keys played for the F chord.

In the 5th measure, we have F in the base clef, and F-A-C in the treble clef; 4 keys played for the 3-note chord.

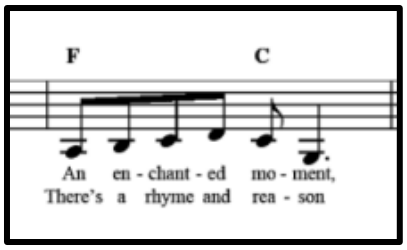
All these voices of the F major chord will sound slightly different, and may be chosen by the musician depending on his or her preference.

Terminology Alert. These examples all show F in the root position, because F is the bottom note. This is the case even though the third measure inserts a C between the two Fs in the bass clef. When reading about chord voicing, keep in mind that root position means the note that names the chord is always at the bottom. In 1st inversion chords, the "third" of the triad is always at the bottom. In 2nd inversion chords, the "fifth" of the triad is always at the bottom.

When right and left-hand cover the same notes

In lead sheets such as those in *My First Fakebook*, you will often come across music where the right-hand notes (treble clef) interfere with the preferred chord note sequence in the left hand.

The measure below is from the song "Can You Feel The Love Tonight." It shows the F chord followed by a C chord. If the F and C chords are played by the left hand in root position, and in the customary octave below middle C, they are going to interfere with the right hand playing notes below middle C, In this measures, those right hand notes are A and G. To avoid this interference, F and C should be played lower than their root positions.



In the first of the two keyboard figures shown below, F Major in the root position interferes with right hand playing the A below middle **C**. The next keyboard figure shows F Major in first inversion in a lower octave, so it does not interfere with the A note played with right hand. This is just one example of how to avoid conflicting notes.

Keyboard figures from https://www.pianochord.org/c-major.html#hide1/.

F Major – Root Position

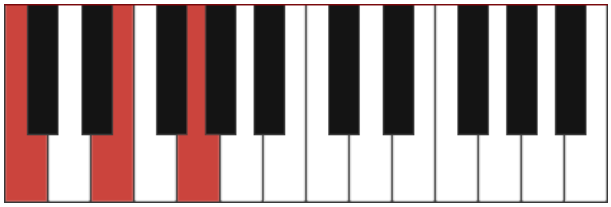
A **C**

F Major – 1st Inversion

***

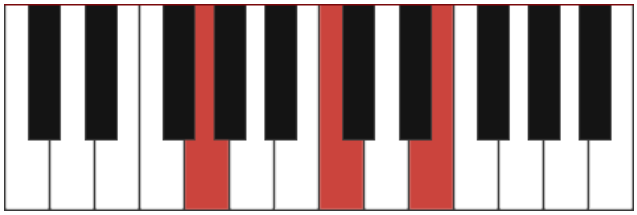
In the first of the two keyboard figures shown below, C Major in the root position interferes with right hand playing the G below middle **C**. The next keyboard figure shows C Major played in second inversion in a lower octave, so it does not interfere with the G note played with right hand. This is just one example of how to avoid conflicting notes.

C Major – Root Position



G **C**

C Major – 2nd Inversion



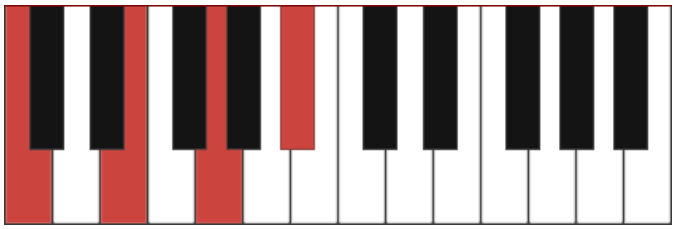
The 3-note 7 chord

Many pieces of music show only 3 notes for a 4-note 7 chord. It's still a 7 chord, though one of the notes is omitted. Most of the time it's the third note that is omitted.

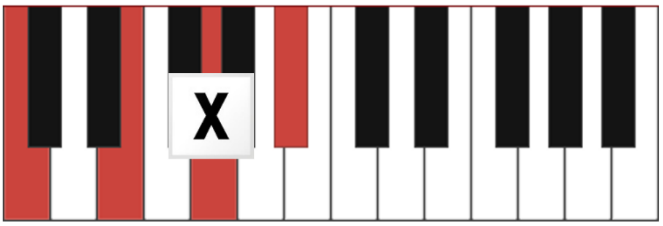
Confusion Alert: Counting from the root piano key, the third note of a 7 chord is the 5th piano key up from the root, so some texts will say "omit the 5th".

The reason the third note (the "5th") is "expendable" is because it's the least important. The first note is the root, which defines the chord; the 2nd note (the "3rd") is necessary to tell us if it's a major or minor chord, and the 4th note (the "7th") defines the chord as a 7 chord.
For beginner-level players all this can be confusing, so I will clarify with examples

Here is the C7 chord: C-E-G-Bb

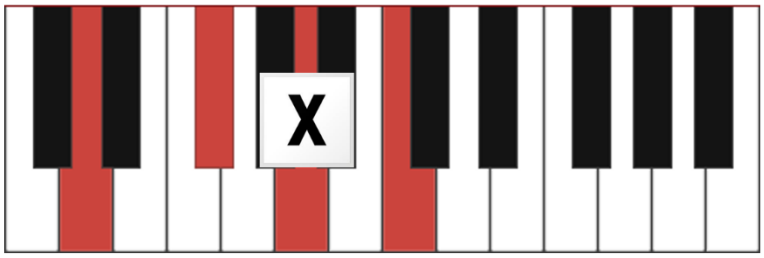


As shown below, this could be played as C-E-Bb, omitting the G, and it would still be considered C7.



Here is the D7 chord: D-F#-A-C.

As shown below, this could be played as D-F#-C, omitting the A, and it would still be considered G7.



CHOOSE BEST CHORD VOICING

Choose what you find is the best chord voicing, based on finger position and/or how it sounds. The choice is up to you. These examples are presented twice, first without yellow highlight, and then with yellow highlight, the latter reflecting my personal choices.

Chord Voicing – Your Best Choice?

Beauty…Beast

1st Line

		--->	--->	--->
Chord	**C Major**	**F Major**	**C Major**	**G Major**
Root	C-E-G	F-A-C	C-E-G	G-B-D
1st inversion		A-C-F	E-G-C	B-D-G
2nd inversion		C-F-A	G-C-E	D-G-B

3rd and 4th lines

		--->	--->	--->
Chord	**C Major**	**G minor**	**C7**	**F Major**
Root	C-E-G	G-Bb-D	C-E-G-Bb	F-A-C
1st inversion		Bb-D-G	E-G-Bb-C	A-C-F
2nd inversion		D-G-Bb	G-Bb-C-E	C-F-A
3rd inversion			Bb-C-E-G	

***

Hello Dolly

5th & 6th lines

		--->	--->	--->	--->
Chord	**C Major**	**A minor**	**G minor**	**C7**	**F Major**
Root	C-E-G	A-C-E	G-Bb-D	C-E-G-Bb	F-A-C
1st inversion		C-E-A	Bb-D-G	E-G-Bb-C	A-C-F
2nd inversion		E-A-C	D-G-Bb	G-Bb-C-E	C-F-A
3rd inversion				Bb-C-E-G	

***

Till There was You

1st - 2nd lines

	--->	--->	--->	
	C Major	**C# dim**	**D minor**	**F minor**
Root	C-E-A	C#-E-A	D-F-A	F-Ab-C
1st inversion		E-A-C#	F-A-D	Ab-C-F
2nd inversion		A-C#-E	A-D-F	C-F-Ab

Till There was You

3rd -5th lines

	--->	--->	--->	--->	--->	
Chord	**C Major**	**F Major**	**F# dim**	**C Major**	**A7**	**D minor**
Root	C-E-G	F-A-C	F#-A-C	C-E-G	A-C#-E-G	D-F-A
1st inversion		A-C-F	A-C-F#	E-G-C	C#-E-G-A	F-A-D
2nd inversion		C-F-A	C-F#-A	G-C-E	E-G-A-C#	A-D-F
3rd inversion					G-A-C#-E	

***

Try to Remember

5th - 6th lines

	--->	--->	--->	
Chord	**D minor**	**G7**	**E minor**	**A minor**
Root	D-F-A	G-B-D-F	E-G-B	A-C-E
1st inversion		B-D-F-G	G-B-E	C-E-A
2nd inversion		D-F-G-B	B-E-G	E-A-C
3rd inversion		F-G-B-D		

***

Yesterday

3rd line

	--->	--->	--->	--->	
Chord	**C Major**	**E7**	**A minor**	**F Major**	**G Major**
Root	C-E-G	E-G#-B-D	A-C-E	F-A-C	G-B-D
1st inversion		G#-B-D-E	C-E-A	A-C-F	B-D-G
2nd inversion		B-D-E-G#	E-A-C	C-F-A	D-G-B
3rd inversion		D-E-G#-B			

Yellow highlight – My choices

Chord Voicing – Author's choices in yellow

Beauty…Beast

1st Line

	--->	--->	--->	
Chord	**C Major**	**F Major**	**C Major**	**G Major**
Root	C-E-G	F-A-C	C-E-G	G-B-D
1st inversion		A-C-F	E-G-C	B-D-G
2nd inversion		C-F-A	G-C-E	D-G-B

3rd and 4th lines

	--->	--->	--->	
Chord	**C Major**	**G minor**	**C7**	**F Major**
Root	C-E-G	G-Bb-D	C-E-G-Bb	F-A-C
1st inversion		Bb-D-G	E-G-Bb-C	A-C-F
2nd inversion		D-G-Bb	G-Bb-C-E	C-F-A
3rd inversion			Bb-C-E-G	

***

Hello Dolly

5th & 6th lines

	--->	--->	--->	--->	
Chord	**C Major**	**A minor**	**G minor**	**C7**	**F Major**
Root	C-E-G	A-C-E	G-Bb-D	C-E-G-Bb	F-A-C
1st inversion		C-E-A	Bb-D-G	E-G-Bb-C	A-C-F
2nd inversion		E-A-C	D-G-Bb	G-Bb-C-E	C-F-A
3rd inversion				Bb-C-E-G	

***

Till There was You

1st - 2nd lines

	---> C Major	---> C# dim	---> D minor	F minor
Root	C-E-A	C#-E-A	D-F-A	F-Ab-C
1st inversion		E-A-C#	F-A-D	Ab-C-F
2nd inversion		A-C#-E	A-D-F	C-F-Ab

Till There was You

3rd -5th lines

Chord	---> **C Major**	---> **F Major**	---> **F# dim**	---> **C Major**	---> **A7**	**D minor**
Root	C-E-G	F-A-C	F#-A-C	C-E-G	A-C#-E-G	D-F-A
1st inversion		A-C-F	A-C-F#	E-G-C	C#-E-G-A	F-A-D
2nd inversion		C-F-A	C-F#-A	G-C-E	E-G-A-C#	A-D-F
3rd inversion					G-A-C#-E	

***

Try to Remember

5th - 6th lines

Chord	---> **D minor**	---> **G7**	---> **E minor**	**A minor**
Root	D-F-A	G-B-D-F	E-G-B	A-C-E
1st inversion		B-D-F-G	G-B-E	C-E-A
2nd inversion		D-F-G-B	B-E-G	E-A-C
3rd inversion		F-G-B-D		

***

Yesterday

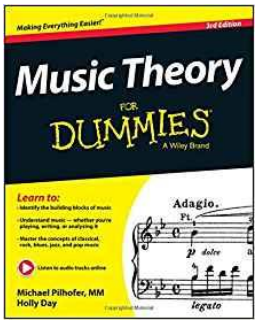
3rd line

	--->	--->	--->	--->	
Chord	**C Major**	**E7**	**A minor**	**F Major**	**G Major**
Root	C-E-G	E-G#-B-D	A-C-E	F-A-C	G-B-D
1st inversion		G#-B-D-E	C-E-A	A-C-F	B-D-G
2nd inversion		B-D-E-G#	E-A-C	C-F-A	D-G-B
3rd inversion		D-E-G#-B			

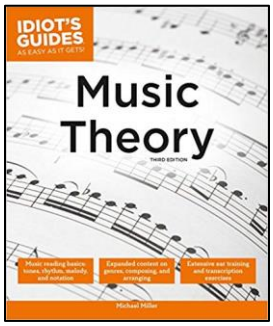
Additional Recommended Resources

Basic Music Theory Syllabuses by the author
For Ukulele: http://www.lakesidepress.com/UkeSyllabus.pdf
For Native American flute: http://www.lakesidepress.com/NAFSyllabus.pdf

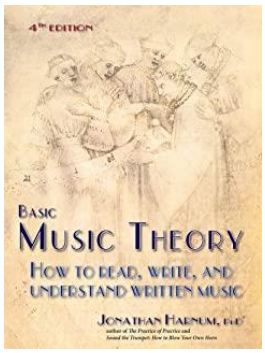
Printed Books, of which there are many; below are just a few
Music Theory for Dummies. A comprehensive guide, which includes all aspects of basic theory, including those not covered in this syllabus
https://www.amazon.com/Music-Theory-Dummies-Michael-Pilhofer/dp/1118990943/



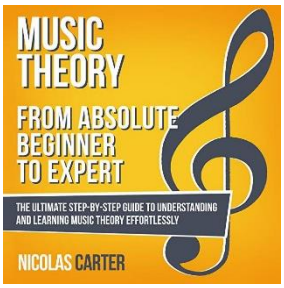
Idiot's Guide to Music Theory is in the same genre as the Dummies book: Comprehensive and basic.
https://www.amazon.com/Music-Theory-3E-Idiots-Guides/dp/1465451676/



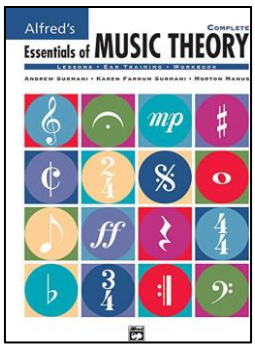
Basic Music Theory 4th Edition also comes as an audio book, though without musical passages. Audio serves more as a refresher after you've read the book.
https://www.amazon.com/Basic-Music-Theory-4th-Understand/dp/B0713Q4VKP/

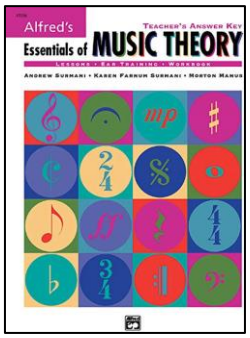


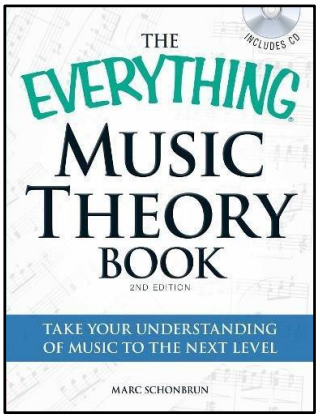
Music Theory: From Absolute Beginner to Expert, is another book that comes with an audio version.
https://www.amazon.com/Music-Theory-Step-Step-Understanding/dp/1986061833/

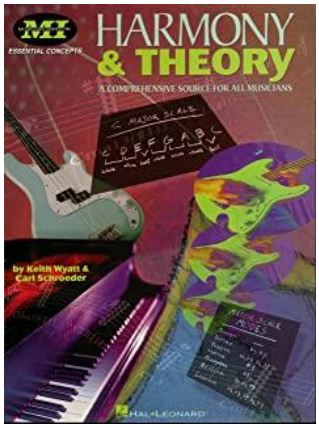


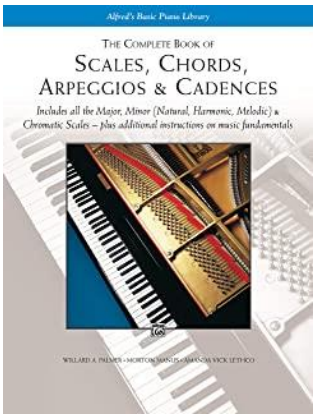
Alfred's Essential of Music Theory
If you like a workbook approach, Alfred's text is highly recommended. The answers come in a separate volume.
https://www.amazon.com/Essentials-Complete-Training-Workbook/dp/0882848976/
https://www.amazon.com/Alfreds-Essentials-Music-Theory-Teachers/dp/0882848984/

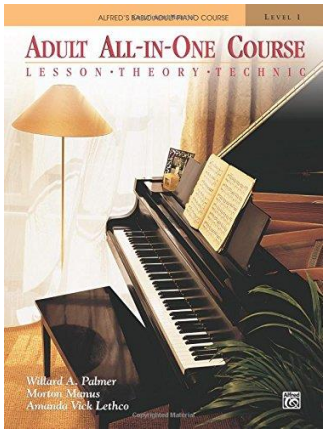


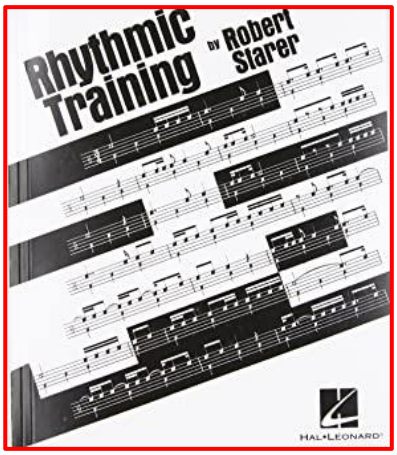






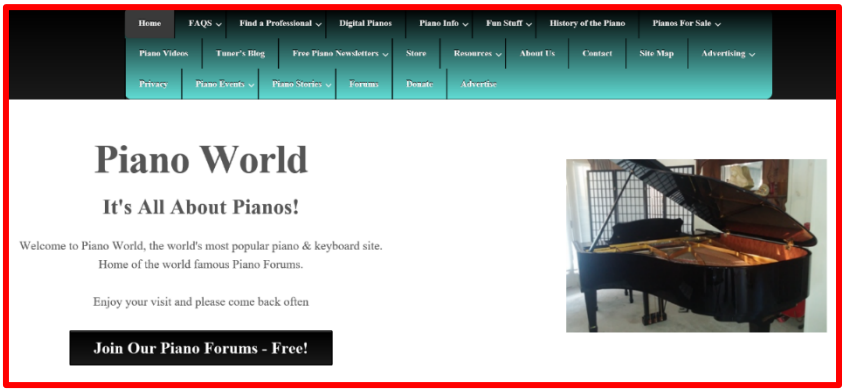






Encyclopedic Sources - websites

- Highly recommended is www.basicmusictheory.com. There you can look up any scale, chord or interval, and have a full explanation.
- Another comprehensive website is www.musictheory.net
- Piano World is a website for everything piano. It includes piano forum, an online discussion of every conceivable topic related to pianos and piano playing https://pianoworld.com/



PianoTV.net - Comprehensive set of Youtube videos

- www.pianotv.net is gateway to hundreds of instructional videos by Allysia Van Butew, an excellent teacher in Saskatchewan. I've also included several of her video links in Appendix E. Two other links, to her online courses and multiple videos, are listed below.
  https://www.pianotv.net/pianotvcourses/
  https://www.Youtube.com/channel/UCz0PmHG0RvQHazlEsFU-4uQ

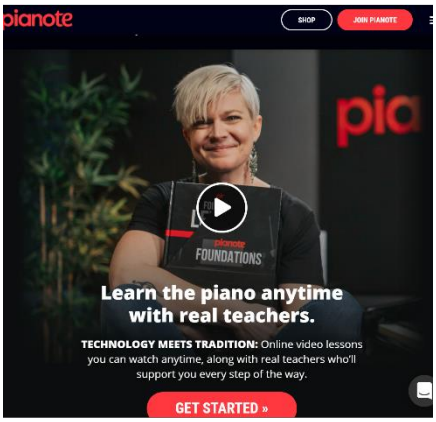
  Among her many videos are those that address the following questions/subjects
  - **Do you need a piano teacher?**

https://www.Youtube.com/watch?v=09N3FUs46eU

- **Piano books for adult beginners**
  https://www.Youtube.com/watch?v=b6cGELJwfDQ
- **How long does it take to learn to play piano?**
  https://www.Youtube.com/watch?v=liP-Kxl8SdM
- **Adult beginners at the piano – 12 problems and solutions**
  Part 1: https://www.pianotv.net/2017/01/adult-beginners-piano-12-problems-solutions-part-1/
  Part 2: https://www.pianotv.net/2017/02/adult-beginners-at-the-piano/
- **Am I too old to learn piano?**
  https://www.Youtube.com/watch?v=liP-Kxl8SdM

Pianote - Comprehensive set of videos for yearly subscription fee

Pianote.com is a subscription-only website with numerous short videos by instructors on every coneivable topic for the beginner. The videos are structured to take you from level to level as your playing improves. Lisa Witt (in scren shot) is the lead instructor in this popular series.



Music Theory Youtube Videos

There are many Youtube videos explaining various aspects of theory, including those in the pianotv series above, plus several listed in the syllabus sections. Also check out:

- Multipart free music theory course that covers all instruments
  https://www.Youtube.com/watch?v=6gHEIF0rT2w&list=PLB585CE43B02669C3

- Understanding Music Theory in One Hour – Animated Music Lesson
  https://www.Youtube.com/watch?v=kvGYl8SQBJ0

Live Online Piano Lessons for Adults

https://mccarthypiano.com/
McCarthy Piano will match you with an online teacher

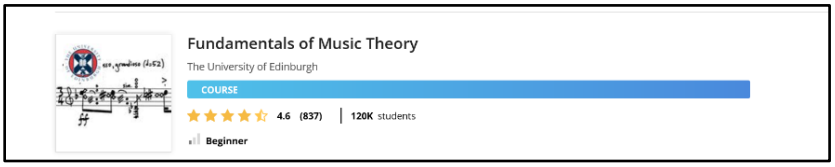
Internet-based Piano Instruction for Adults

THE MUSICAL WEBB: https://www.themusicalwebb.com/
The founder, New Jersey pianist Ayana Webb, has a comprehensive web-based program aimed at beginners. https://www.themusicalwebb.com/p/piano-lessons-beginner

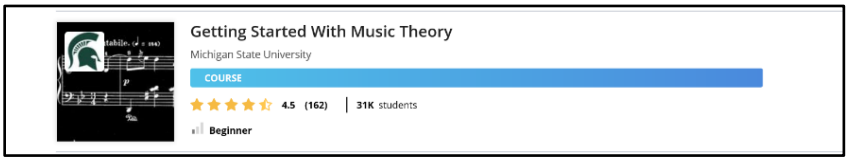
PIANO CAREER ACADEMY: https://www.pianocareeracademy.com/
The founder, Russian pianist Ilinca Vartic, has a 23-minute Youttube video for beginners is at https://www.Youtube.com/watch?v=_So-VEyBZ3w

Music Theory Courses

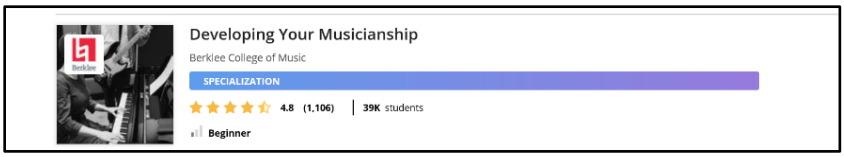
There are several free or low-cost online music theory courses designed for beginners. The three I am familiar with are listed below.



https://www.coursera.org/learn/edinburgh-music-theory



https://www.coursera.org/learn/music-theory



https://www.coursera.org/specializations/musicianship-specialization

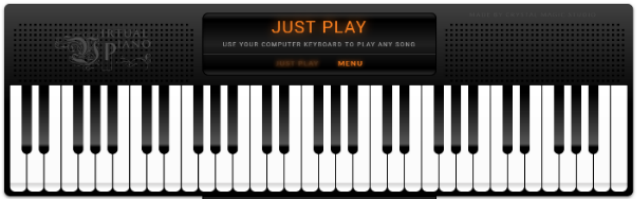
Piano Marvel

https://www.pianomarvel.com/

Piano is a unique online teaching program, which requires a computer or iPad. It is available by monthly or yearly subscription. You play what's on the screen. If you have a digital piano or keyboard, you get instant visual feedback on missed notes on any piece you play.

Sheet music based on piano skill level
www.8notes.com

Piano Simulator on Internet (no download required)
https://virtualpiano.net/



Social Media – Facebook Groups
Music Theory: https://www.facebook.com/groups/musictheory/
FB Music Theory: https://www.facebook.com/groups/169792463833954/
Music Theory Buffs: https://www.facebook.com/groups/382885618771737/
Ultimate Music Theory: https://www.facebook.com/UltimateMusicTheory/
Adult Piano Learners: https://www.facebook.com/groups/adultpianolearners/learning_content/

Pianist Magazine
In addition to articles about pianists and piano playing, this British publication includes 40 pages of sheet music, along with a CD demonstrating several of them. The pieces are arranged from beginner to advanced level. Individual print copies can be purchased at some Barnes & Noble bookstores, and digital copies online at https://www.pianistmagazine.com/. Their website also includes several short videos aimed at beginners

Answers to Multiple Choice Questions

Sections 1-14

Section 1: Half Steps and Whole Steps

1	d
2	b
3	c
4	d
5	b

Section 2: Music Scales – Definition of Major and Minor Scales

1	b
2	d
3	c
4	c
5	c

Section 3: Music Scales – Relation of Major to Minor

1	b
2	a
3	d
4	a
5	b

Section 4: More on Scales and Modes

1	a
2	c
3	d
4	b
5	c

Section 5: Music Intervals

1	a
2	c
3	a
4	c
5	d

Section 6: Tritones, Compound Intervals, and Interval Inversions

1	a
2	c
3	d
4	c
5	a

Section 7: Three-note Chords: Major, minor & diminished

1	b
2	b
3	b
4	d
5	c

Section 8: Three-note chord inversions

1	c
2	c
3	b
4	b
5	d

Section 9: Four-note chords: sevenths

1	d
2	d
3	a
4	b
5	c

Section 10: More on seventh chords – 3-note sevenths and Inversions

1	c
2	b
3	c
4	d
5	c

Section 11: Chords in the bass clef

1	a
2	d
3	d

4	b
5	a

Section 12: Chords in lead sheets and song sheets

1	d
2	a
3	d
4	b
5	c

Section 13: Chord progressions

1	c
2	d
3	d
4	c
5	a

Section 14: Music Keys

1	c
2	a
3	a
4	b
5	b

Appendix A: Circle of Fifths

1	d
2	a
3	d
4	b
5	c

Appendix B: Music Modes

1	c
2	c
3	b
4	c
5	a

Appendix C: Petzold Minuet in G

1	c
2	b
3	b
4	a
5	b
6	c

Appendix D: Clementi Sonatina

First Movement - Spiritoso

1	a
2	b
3	b
4	c
5	c
6	c

Second Movement - Andante

1	b
2	b
3	b
4	d
5	c
6	c

Third Movement - Vivace

1	b
2	c
3	c
4	a
5	b
6	d

END OF SYLLABUS