# Music Fundamentals 3: Minor Scales and Keys

**Collection Editor:**
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**C O N N E X I O N S**

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# Chapter 1

# Minor Keys and Scales[1]

## 1.1 Music in a Minor Key

Each major key[2] uses a different set of notes[3] (its major scale[4]). In each major scale, however, the notes are arranged in the same major scale pattern and build the same types of chords that have the same relationships with each other. (See Beginning Harmonic Analysis[5] for more on this.) So music that is in, for example, C major, will not sound significantly different from music that is in, say, D major. But music that is in D minor will have a different quality, because the notes in the minor scale follow a different pattern and so have different relationships with each other. Music in minor keys has a different sound and emotional feel, and develops differently harmonically. So you can't, for example, transpose[6] a piece from C major to D minor (or even to C minor) without changing it a great deal. Music that is in a minor key is sometimes described as sounding more solemn, sad, mysterious, or ominous than music that is in a major key. To hear some simple examples in both major and minor keys, see Major Keys and Scales[7].

## 1.2 Minor Scales

Minor scales sound different from major scales because they are based on a different pattern of intervals[8]. Just as it did in major scales, starting the minor scale pattern on a different note will give you a different key signature[9], a different set of sharps or flats. The scale that is created by playing all the notes in a minor key signature is a **natural minor scale**. To create a natural minor scale, start on the tonic note[10] and go up the scale using the interval pattern: **whole step, half step, whole step, whole step, half step, whole step, whole step**.

[1] This content is available online at <http://cnx.org/content/m10856/2.24/>.
[2] "Major Keys and Scales" <http://cnx.org/content/m10851/latest/>
[3] "Duration: Note Lengths in Written Music" <http://cnx.org/content/m10945/latest/>
[4] "Major Keys and Scales": Section Major Scales <http://cnx.org/content/m10851/latest/#s2>
[5] "Beginning Harmonic Analysis" <http://cnx.org/content/m11643/latest/>
[6] "Transposition: Changing Keys" <http://cnx.org/content/m10668/latest/>
[7] "Major Keys and Scales", Exercise 1 <http://cnx.org/content/m10851/latest/#exer0a>
[8] "Interval" <http://cnx.org/content/m10867/latest/>
[9] "Key Signature" <http://cnx.org/content/m10881/latest/>
[10] "Major Keys and Scales" <http://cnx.org/content/m10851/latest/#p1a>

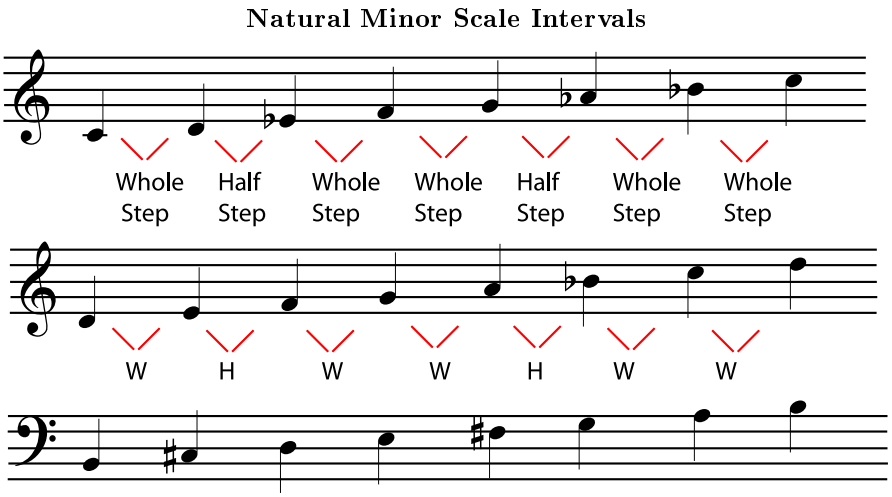


**Figure 1.1**

Listen[11] to these minor scales.

**Exercise 1.1** ***(Solution on p. 8.)***

For each note below, write a natural minor scale, one octave, ascending (going up) beginning on that note. If you need staff paper, you may print the staff paper[12] PDF file.

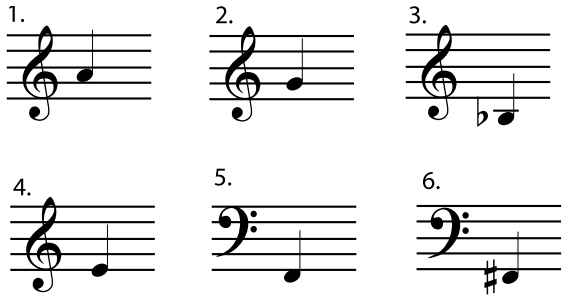


**Figure 1.2**

## 1.3 Relative Minor and Major Keys

Each minor key shares a key signature[13] with a major key. A minor key is called the **relative minor** of the major key that has the same key signature. Even though they have the same key signature, a minor

[11] See the file at <http://cnx.org/content/m10856/latest/3a.mid>
[12] See the file at <http://cnx.org/content/m10856/latest/staffpaper1.pdf>
[13] "Key Signature" <http://cnx.org/content/m10881/latest/>

key and its **relative major** sound very different. They have different tonal centers[14], and each will feature melodies, harmonies, and chord progressions[15] built around their (different) tonal centers. In fact, certain strategic accidentals[16] are very useful in helping establish a strong tonal center in a minor key. These useful accidentals are featured in the melodic minor (Section 1.3: Relative Minor and Major Keys) and harmonic minor (Section 1.3: Relative Minor and Major Keys) scales.

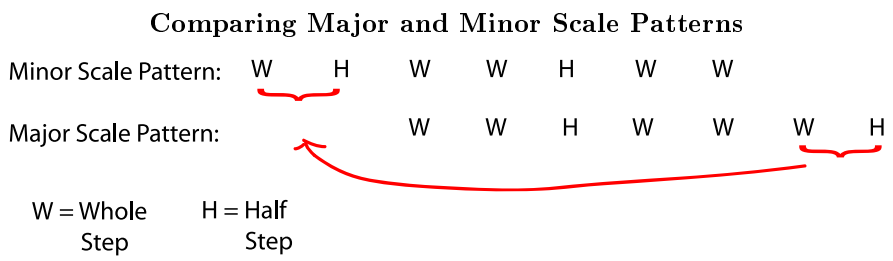


**Figure 1.3:** The interval patterns for major and natural minor scales are basically the same pattern starting at different points.

It is easy to predict where the relative minor of a major key can be found. Notice that the pattern for minor scales overlaps the pattern for major scales. In other words, they are the same pattern starting in a different place. (If the patterns were very different, minor key signatures would not be the same as major key signatures.) The pattern for the minor scale starts a half step plus a whole step lower than the major scale pattern, so **a relative minor is always three half steps lower than its relative major**. For example, C minor has the same key signature as E flat major, since E flat is a minor third higher than C.

[14] "Major Keys and Scales" <http://cnx.org/content/m10851/latest/#p1a>
[15] "Harmony": Chords <http://cnx.org/content/m11654/latest/#l0b>
[16] "Pitch: Sharp, Flat, and Natural Notes" <http://cnx.org/content/m10943/latest/#p0e>

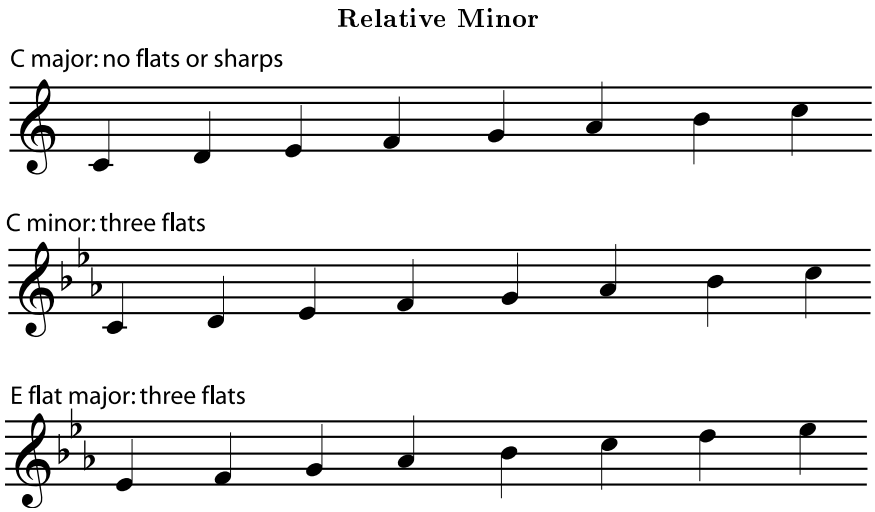


**Figure 1.4:** The C major and C minor scales start on the same note, but have different key signatures. C minor and E flat major start on different notes, but have the same key signature. C minor is the **relative minor** of E flat major.

**Exercise 1.2** *(Solution on p. 8.)*

What are the relative majors of the minor keys in Figure 1.2?

## 1.4 Harmonic and Melodic Minor Scales

NOTE: Do key signatures make music more complicated than it needs to be? Is there an easier way? Join the discussion at Opening Measures[17] .

All of the scales above are **natural minor scales**. They contain only the notes in the minor key signature. There are two other kinds of minor scales that are commonly used, both of which include notes that are not in the key signature. The **harmonic minor scale raises the seventh note of the scale by one half step, whether you are going up or down the scale**. Harmonies in minor keys often use this raised seventh tone in order to make the music feel more strongly centered on the tonic[18]. (Please see Beginning Harmonic Analysis[19] for more about this.) In the **melodic minor scale**, **the sixth and seventh notes of the scale are each raised by one half step when going up the scale, but return to the natural minor when going down the scale**. Melodies in minor keys often use this particular pattern of accidentals[20], so instrumentalists find it useful to practice melodic minor scales.

[17] http://openingmeasures.com/music/22/why-cant-we-use-something-simpler-than-key-signatures/
[18] "Major Keys and Scales" <http://cnx.org/content/m10851/latest/#p1a>
[19] "Beginning Harmonic Analysis": Section Minor Keys <http://cnx.org/content/m11643/latest/#s6>
[20] "Pitch: Sharp, Flat, and Natural Notes" <http://cnx.org/content/m10943/latest/#p0e>

**Comparing Types of Minor Scales**

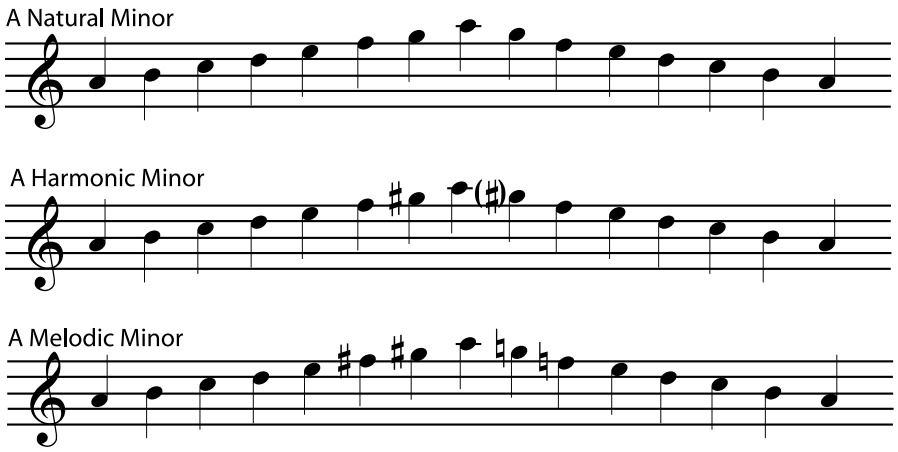


**Figure 1.5**

Listen to the differences between the natural minor[21], harmonic minor[22], and melodic minor[23] scales.

**Exercise 1.3** ***(Solution on p. 8.)***

Rewrite each scale from Figure 1.2 as an ascending harmonic minor scale.

**Exercise 1.4** ***(Solution on p. 9.)***

Rewrite each scale from Figure 1.2 as an ascending and descending melodic minor scale.

## 1.5 Jazz and "Dorian Minor"

Major and minor scales are traditionally the basis for Western Music[24], but jazz theory also recognizes other scales, based on the medieval church modes[25], which are very useful for improvisation. One of the most useful of these is the scale based on the dorian mode, which is often called the **dorian minor**, since it has a basically minor sound. Like any minor scale, dorian minor may start on any note, but like dorian mode, it is often illustrated as natural notes beginning on d.

[21] See the file at <http://cnx.org/content/m10856/latest/tonminnatural.mp3>
[22] See the file at <http://cnx.org/content/m10856/latest/tonminharmonic.mp3>
[23] See the file at <http://cnx.org/content/m10856/latest/tonminmelodic.mp3>
[24] "What Kind of Music is That?" <http://cnx.org/content/m11421/latest/>
[25] "Modes and Ragas: More Than just a Scale" <http://cnx.org/content/m11633/latest/#p2a>

**Dorian Minor**

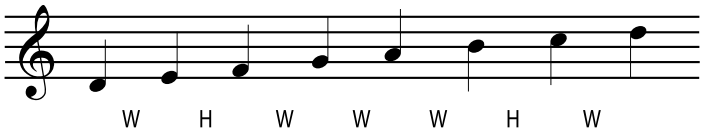


**Figure 1.6:** The "dorian minor" can be written as a scale of natural notes starting on d. Any scale with this interval pattern can be called a "dorian minor scale".

Comparing this scale to the natural minor scale makes it easy to see why the dorian mode sounds minor; only one note is different.

**Comparing Dorian and Natural Minors**

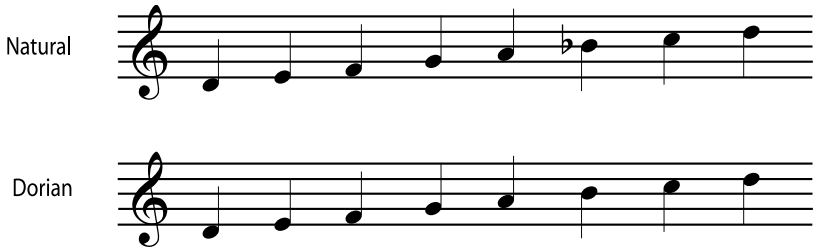


**Figure 1.7**

You may find it helpful to notice that the "relative major" of the Dorian begins one whole step lower. (So, for example, D Dorian has the same key signature as C major.) In fact, the reason that Dorian is so useful in jazz is that it is the scale used for improvising while a ii chord[26] is being played (for example, while a d minor chord is played in the key of C major), a chord which is very common in jazz. (See Beginning Harmonic Analysis[27] for more about how chords are classified within a key.) The student who is interested in modal jazz will eventually become acquainted with all of the **modal scales**. Each of these is named for the medieval church mode[28] which has the same interval pattern, and each can be used with a different chord within the key. Dorian is included here only to explain the common jazz reference to the "dorian minor" and to give notice to students that the jazz approach to scales can be quite different from the traditional classical approach.

[26] "Beginning Harmonic Analysis": Section Basic Triads in Major Keys <http://cnx.org/content/m11643/latest/#s1>
[27] "Beginning Harmonic Analysis" <http://cnx.org/content/m11643/latest/>
[28] "Modes and Ragas: More Than just a Scale" <http://cnx.org/content/m11633/latest/#p2a>

**Comparison of Dorian and Minor Scales**

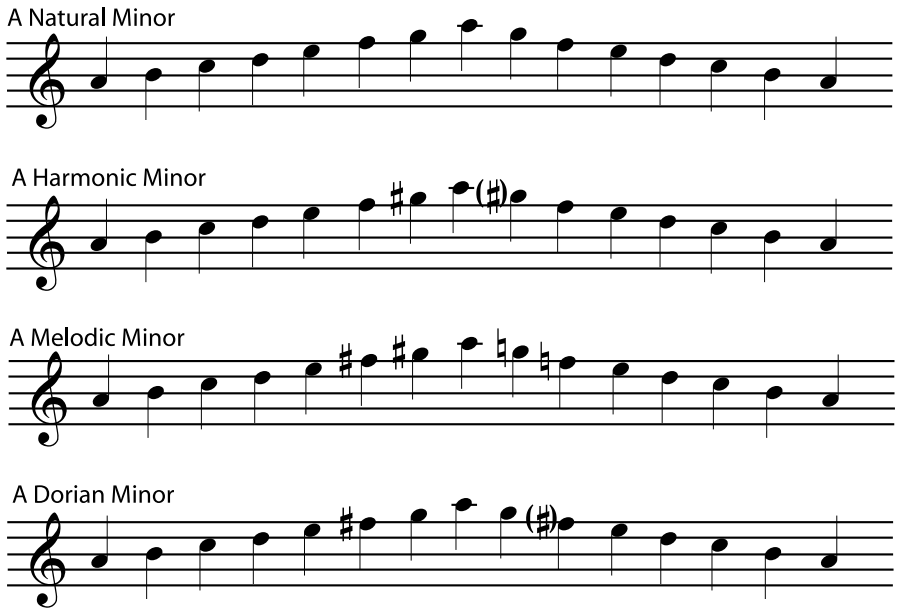


**Figure 1.8:** You may also find it useful to compare the dorian with the minor scales from Figure 1.5 (Comparing Types of Minor Scales). Notice in particular the relationship of the altered notes in the harmonic, melodic, and dorian minors.

# Solutions to Exercises in Chapter 1

### Solution to Exercise 1.1 (p. 2)

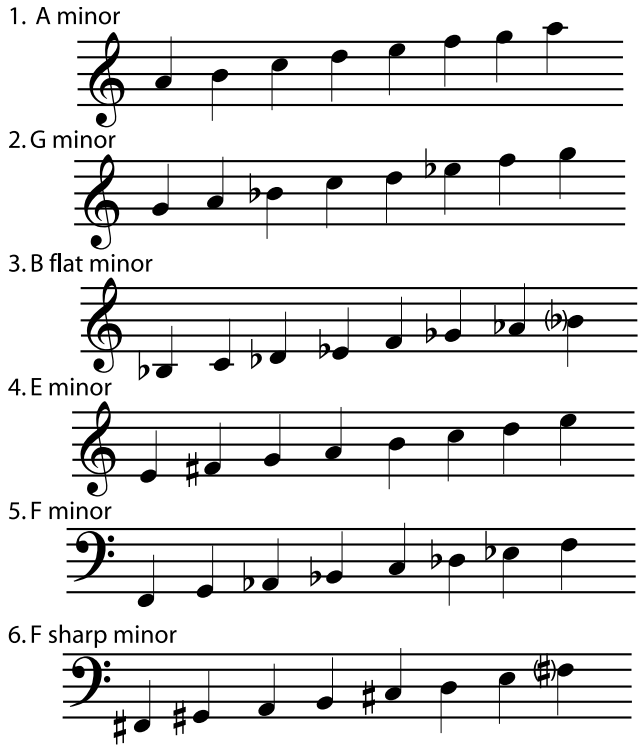


**Figure 1.9**

### Solution to Exercise 1.2 (p. 4)

1. A minor: C major
2. G minor: B flat major
3. B flat minor: D flat major
4. E minor: G major
5. F minor: A flat major
6. F sharp minor: A major

### Solution to Exercise 1.3 (p. 5)

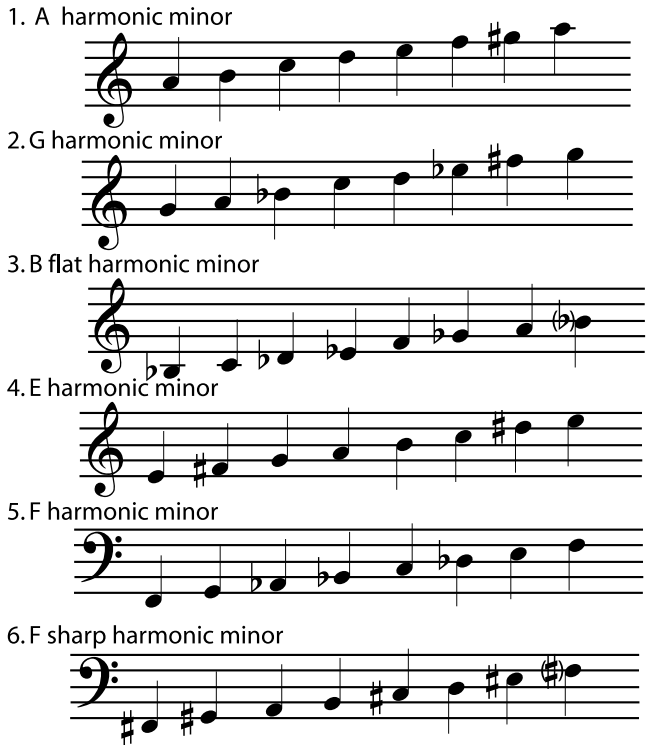


**Figure 1.10**

**Solution to Exercise 1.4 (p. 5)**

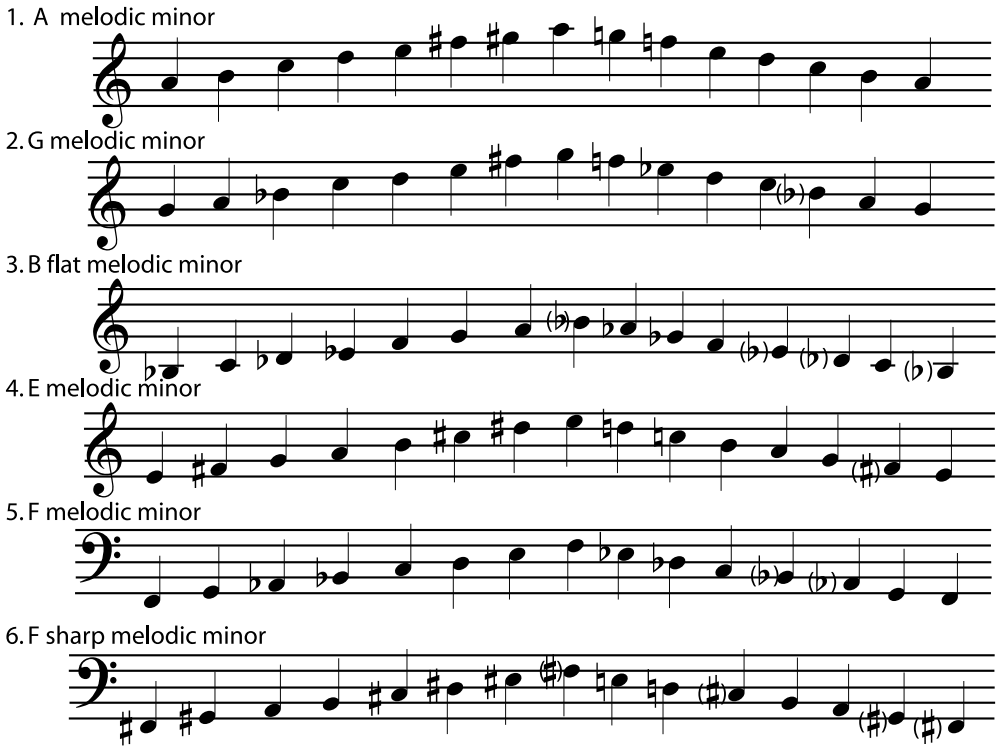
1. A melodic minor
2. G melodic minor
3. B flat melodic minor
4. E melodic minor
5. F melodic minor
6. F sharp melodic minor

**Figure 1.11**

# Chapter 2

# Learning Major and Minor Scales[1]

Mastering your major and minor scales is a foundational requirement for music theory and music performance. You can greatly assist your mastery of scales by devoting time to them every day. The more types of memory you engage, the better your retention and internalization of the scales. Here is a brief presentation of ways in which you can learn and memorize scales:

**Kinetic and Visual Memory**

Many musicians learn their scales first on their instruments. For instance, I first learned scales and arpeggios on piano. Later when I studied bassoon I practiced them on that instrument as well. The controlled finger motions I learned with each scale were similar to mastering a dance or gymnastic routine. With more and more practice, I became a "micro athlete" who could progressively reproduce the routine (the scale) with greater accuracy and speed. I made use of **kinetic memory**–the finger patterns were thoroughly memorized.

Playing scales on piano has the added benefit of encouraging **visual memory**. Watching fingers move over the landscape of white and black keys also reinforces the scale patterns. Even if you are not a pianist, you will enhance your memory of scales by practicing them at a keyboard. The keyboard is a great tool for visualizing scales.

**Cognitive Memory**

Cognitive memory and theoretical understanding overlap as categories, but it will be helpful to separate them here for the moment. Remember memorizing your multiplication tables? Rote memorization is also effective for learning your key signatures. Music majors need to rapidly recognize all key signatures and this speed only comes with memorization.

You should be able to immediately do the following:

1) Reproduce the order of sharps and flats. (F#, C#, G#, etc.; Bb, Eb, Ab, etc.)

2) Recognize or reproduce the number of sharps and flats for every key. For instance, you should be able to state quickly that Ab major has four flats, B major has five sharps.

3) Upon seeing a scale written out with accidentals (no key signature), you should immediately know the key.

The tonic (note name) of the relative minor key is a minor third (three half steps) below the tonic of the major key. A minor scale is termed a "relative minor" when it shares a key signature with its relative major. I find it simplest to identify the minor keys by their relationship to the major keys. Of course, I have memorized the more common minor key signatures simply through repeated usage. However, I use the relationship of the minor third for rapid recognition of the minor keys.

[1] This content is available online at <http://cnx.org/content/m25610/1.1/>.

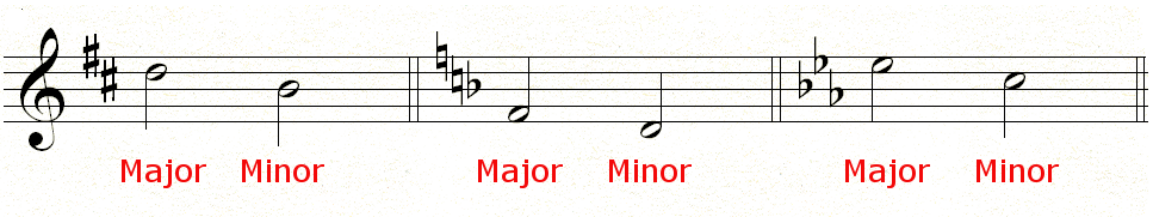


**Figure 2.1:** Examples of Relative Major and Minor

Figure 1 supplies the major and minor tonics of the given key signatures. The first example with two sharps has D as the tonic of the major scale and B as tonic of the minor scale. The two notes are separated by three half steps (D to C#, C# to C, C to B). You can also find the major to minor relationship by counting down three scale steps including the first note: D-C#-B. Try verifying the major to minor relationship in the other two examples by counting down by half steps and by scale steps.

Why are key signatures important for memorizing scales? If you know your key signatures, then the scale members will be obvious. For instance, if a major key signature with two sharps is given, the D major scale is required. One does not need to guess whether D major has G# in the scale, for instance. Every scale member is determined by means of the key signature.

The three common forms of the minor scales can then be remembered in relation to the key signature. You should be able to rapidly reproduce all the minor scales by memorizing the rules given below. The natural minor honors the key signature. It is "natural" since it does not alter the key signature. Below is an example of the A minor scale, a scale which has no sharps or flats in the key signature.

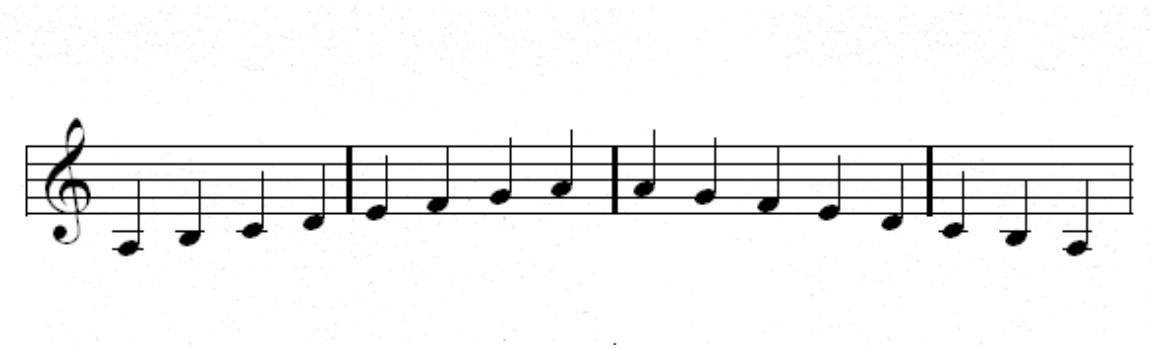

**Figure 2.2:** Natural minor scale in A.

The harmonic minor raises the seventh scale degree both ascending and descending. It is "harmonic" since the raised seventh allows for a dominant chord. A dominant chord in A minor would be E-G#-B.

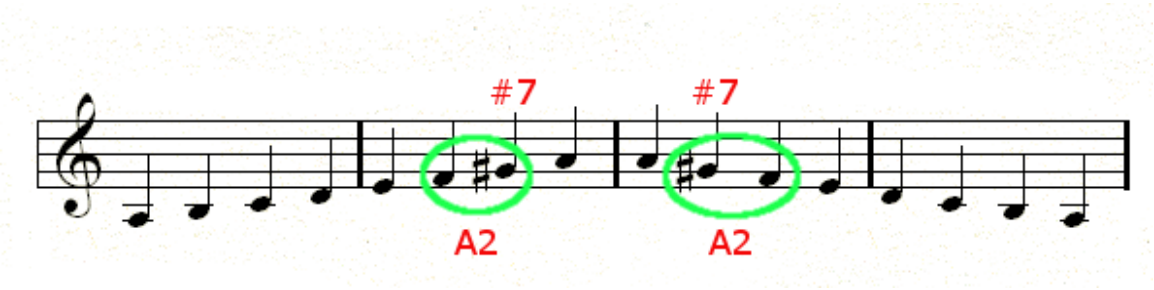


**Figure 2.3:** Harmonic minor scale in A.

The harmonic minor, with the augmented $2^{nd}$ (A2) interval, however, presents awkward melodic patterns both ascending and descending. The augmented $2^{nd}$ interval which contains three half steps is difficult to sing. This leads us to our last common configuration of the minor scale. The melodic minor raises the sixth and seventh scale degrees when ascending but then reverts to the natural minor descending. It is "melodic" since the scale moves in a smooth, step wise fashion ascending to the tonic (here A4) and descending from the tonic.

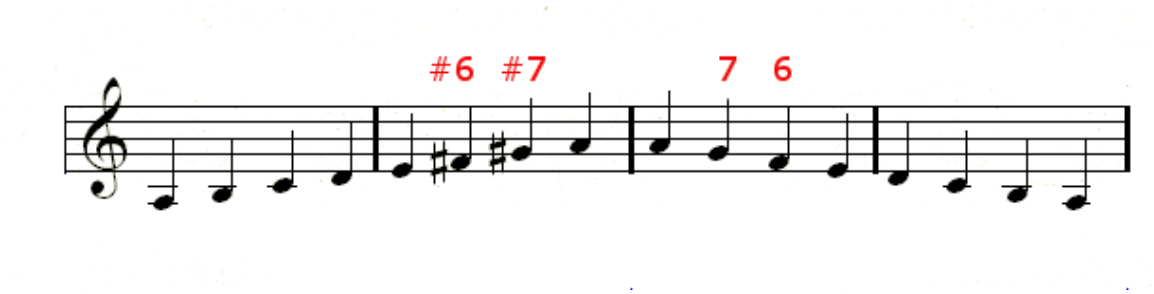


**Figure 2.4:** Melodic minor scale in A.

**Theoretical Understanding**

This section presents scale construction by means of tetrachords. One easy method of remembering the order of intervals in the major scale is to divide the scale into two tetrachords, that is, two groupings of four notes. Figure 1 provides a major scale starting on C.

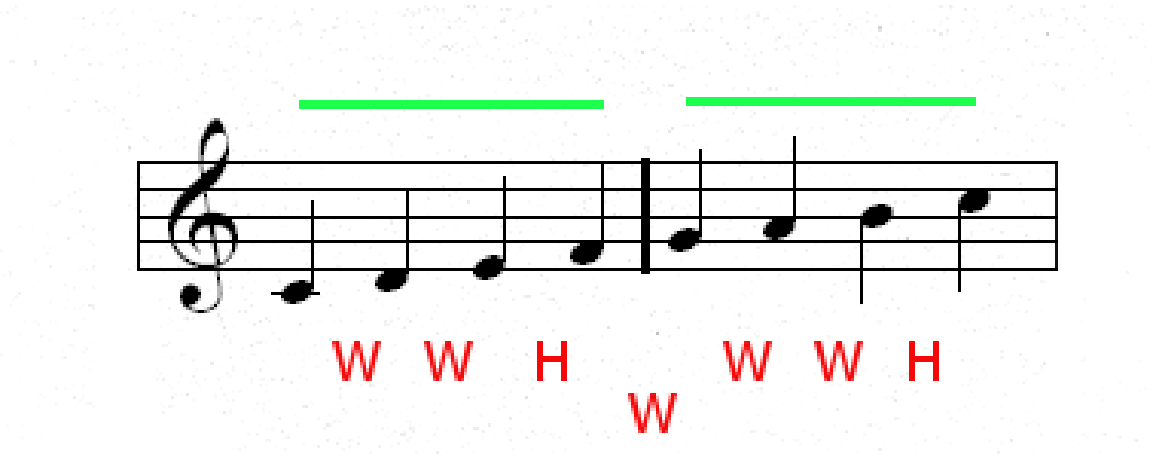


**Figure 2.5:** Major scale in C with tetrachords.

The two tetrachords in the major scale are under the green lines, separated by a bar line. Notice that the interval sequence is the same for the lower and upper tetrachord of the major scale. Each tetrachord has a whole, whole, and half step. Let's term this sequence of whole and half steps (W, W, H) the "major tetrachord."

Also notice that the two tetrachords are connected by a whole step (the lowest "W" in the figure). The tetrachords in the major scale as well as those in the minor scales are all connected by a whole step.

Minor scale construction is more complicated since there are three common forms of the scale. The natural minor features a lower tetrachord common to all the minor scales. We will call this sequence of whole and half steps (W, H, W) the "minor tetrachord." Study the following figures paying careful attention to the upper tetrachords in each minor scale:

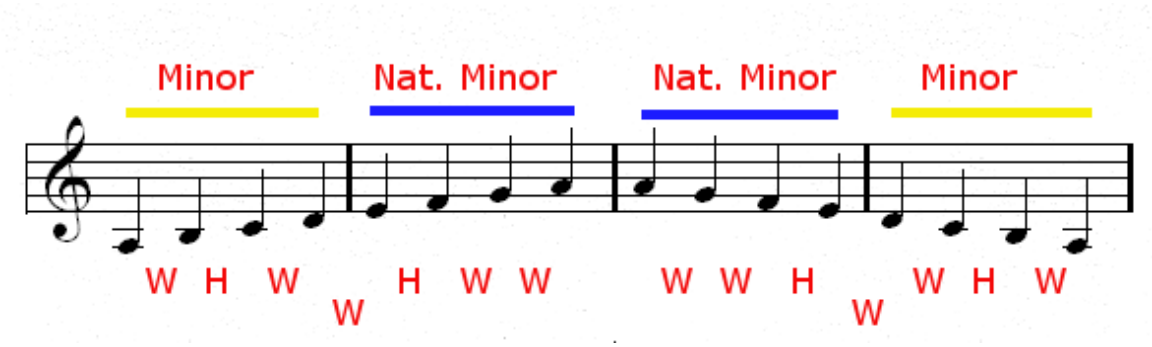


**Figure 2.6:** Natural minor scale in A with tetrachords.

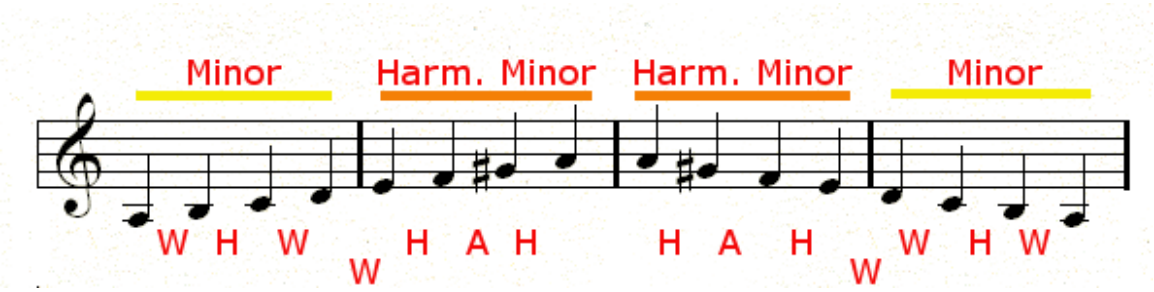


**Figure 2.7:** Harmonic minor scale in A with tetrachords.

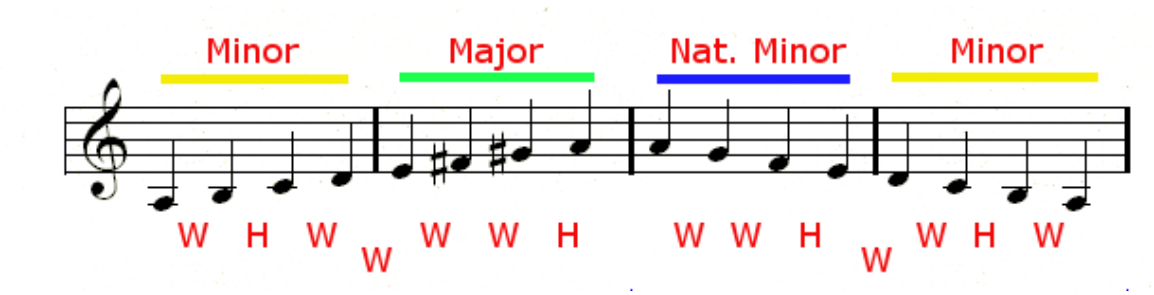


**Figure 2.8:** Melodic Minor Scale in A with tetrachords.

In summary, if you learn the four tetrachords you will be able to construct the major and three minor scales. All the tetrachords are connected by a whole step.

**Major scale**: lower major tetrachord (W, W, H), upper major tetrachord

**Melodic minor scale**: lower minor tetrachord (W, H, W), upper natural minor tetrachord (H, W, W)

**Harmonic minor scale**: lower minor tetrachord, upper harmonic minor tetrachord (H, A, H)

**Melodic minor scale ascending**: lower minor tetrachord, upper major tetrachord

**Melodic minor scale descending**: upper natural minor tetrachord, lower minor tetrachord

**Conclusion**

Familiarizing yourself with all of these ways of knowing major and minor scales will help you to master your scales. You will find that one or two methods work best. Whichever method you choose, however, you must develop rapid recognition of your scales and key signatures. This will take months of practice, so why not start working right now?

# Chapter 3

# Ear Training[1]

## 3.1 What is Ear Training?

When musicians talk about **ear**, they don't mean the sense organ itself so much as the brain's ability to perceive, distinguish, and understand what the ear has heard. The term **ear training** refers to teaching musicians to recognize information about notes[2] and chords[3] just by hearing them.

A few people have what is called **perfect pitch** or **absolute pitch**. These people, when they hear music, can tell you exactly what they are hearing: the G above middle C[4], for example, or the first inversion[5] of an F minor chord[6]. A few musicians with particularly perceptive ears can even tell you that a piano is tuned a few cents[7] higher than the one that they play at home. This is an unusual skill that even most trained musicians do not have, and research seems to suggest that if you don't have it at a very early age, you cannot develop it. (For more on this subject, you may want to look up Robert Jourdain's *Music, the Brain, and Ecstasy: How Music Captures our Imagination*.)

However, most musicians can be trained to recognize **relative pitch**. In other words, if you play two notes, they can tell you that one of them is a major third[8] higher than the other. If you play four chords[9] in a row, they can tell you that you played a tonic-subdominant-dominant seventh-tonic (I-IV-V7-I) chord progression[10].

Fortunately, having relative pitch is good enough, and for many musicians may even be more useful than perfect pitch, because of the way Western[11] music is conceived. Since all major keys[12] are so similar, a piece in a major key will sound almost exactly the same whether you play it in C major or D major. The thing that matters is not what note you start on, but how all the notes are related to each other and to the "home" note (the tonic[13]) of the key. If someone really wants the piece to be in a different key (because it's easier to sing or play in that key, or just because they want it to sound higher or lower), the whole thing can be transposed[14], but the only difference that would make (in the sound) is that the entire piece will sound higher or lower. Most listeners would not even notice the difference, unless you played it in both keys, one right after the other.

[1] This content is available online at <http://cnx.org/content/m12401/1.15/>.
[2] "Duration: Note Lengths in Written Music" <http://cnx.org/content/m10945/latest/>
[3] "Harmony": Chords <http://cnx.org/content/m11654/latest/#l0b>
[4] "Octaves and the Major-Minor Tonal System" <http://cnx.org/content/m10862/latest/#p2bb>
[5] "Triads": Section First and Second Inversions <http://cnx.org/content/m10877/latest/#s2>
[6] "Naming Triads": Section Major and Minor Chords <http://cnx.org/content/m10890/latest/#s1>
[7] "Tuning Systems" <http://cnx.org/content/m11639/latest/#p3d>
[8] "Interval": Major and Minor Intervals <http://cnx.org/content/m10867/latest/#list22a>
[9] "Harmony": Chords <http://cnx.org/content/m11654/latest/#l0b>
[10] "Harmony": Chords <http://cnx.org/content/m11654/latest/#l0b>
[11] "What Kind of Music is That?" <http://cnx.org/content/m11421/latest/>
[12] "Major Keys and Scales" <http://cnx.org/content/m10851/latest/>
[13] "Major Keys and Scales" <http://cnx.org/content/m10851/latest/#p1a>
[14] "Transposition: Changing Keys" <http://cnx.org/content/m10668/latest/>

NOTE: All minor keys (Chapter 1) are also heard by most listeners as interchangeable, but there are important differences between major keys and minor keys. In fact, the differences in sound between a major key and a minor key is one of the first differences that a musician should be able to hear. If you would like to see whether your "ear" can recognize the difference between major and minor keys, please try the listening exercise[15] in Major Keys and Scales[16].

So, you often don't need to know exactly what notes or chords are being played. Simply having an ear well-trained in "relative pitch" is extremely useful in many ways. Guitar and piano players can figure out chord progressions[17] just by listening to them, and then play the progressions in their favorite keys. Other instrumentalists can play a favorite tune without a written copy of it, just by knowing what the interval to the next note must be. Composers and music arrangers can jot down a piece of music without having to "pick it out" on an instrument to find the notes and chords they want. And of course, ear training is crucial to any musician who wants to play jazz or any type of improvisation. Given a well-trained "ear", any musical idea that you "hear" in your head, you can play. And ear training is also crucial for those interested in music theory, musicology, or just being able to write down a tune accurately.

As with all other musical skills, there are many different levels and kinds of proficiency. One musician may be very good at "playing by ear", but may not even read music and cannot name intervals[18] or write the music down. Another may be very good at "taking dictation" (writing down the music they hear), and yet feel unable to do jazz improvisation. As always, the key is to practice the particular skills that you want to develop.

## 3.2 Ear Training Skills

### 3.2.1 Tuning

This is the most basic ear training skill, crucial to being able to play music that people will want to hear.

**Suggestions**

- At the beginner level, work with a skilled musician who can teach you how to tune your instrument and help you identify and fix tuning problems.
- Play with other musicians often. (Playing along with recordings does not teach good tuning skills.) Don't just tune at the beginning of rehearsals and performances. Listen at all times and be ready to retune any note whenever necessary.
- Spend as much time as necessary tuning whenever you play. Do not (knowingly) practice while out of tune; if you do, it will slow down your ear training tremendously. Whenever possible, until you are good at tuning, get someone else to help you tune every time you play.
- Practice tuning quickly and accurately. Learn any alternate fingerings and other "tricks" available on your instrument for fine-tuning each note as you play.

### 3.2.2 Playing Chords By Ear

For instruments that play chordal accompaniments, this is an incredibly useful skill.

**Suggestions**

- You do not have to learn to read music to be able to do this, but it is very helpful to know a little bit about music theory so that you can predict which chords are most likely to happen in a song. Try starting with Beginning Harmonic Analysis[19].

[15] "Major Keys and Scales", Exercise 1 <http://cnx.org/content/m10851/latest/#exer0a>
[16] "Major Keys and Scales", Exercise 1 <http://cnx.org/content/m10851/latest/#exer0a>
[17] "Harmony": Chords <http://cnx.org/content/m11654/latest/#l0b>
[18] "Interval" <http://cnx.org/content/m10867/latest/>
[19] "Beginning Harmonic Analysis" <http://cnx.org/content/m11643/latest/>

- Really listen to the chord progressions to the songs you do know. What do they sound like? Play the same progressions in different keys and listen to how that does and also does not change the sound of the progression. Change the bass notes of the chords to see how that changes the sound of the progression to your ears. Change fingerings and chord voicings, and again listen carefully to how that changes the sound to your ears.
- Practice figuring out the chords to familiar songs (that you don't know the chords to). For songs that you do know the chords to, try playing them in an unfamiliar key, or see if you can change or add chords to make a new harmony that still fits the melody.
- A teacher who understands harmony can help tremendously with this particular skill. Even if you don't normally take lessons, you might want to consider having a series of lessons on this. Find a teacher who is willing and able to teach you specifically about harmony and typical chord progressions.

### 3.2.3 Playing Tunes by Ear

This is fun to be able to do, makes it easy to increase your repertoire, and is an important step in being able to improvise.

**Suggestions**

- Just do it! The best way to learn this skill is to spend some of your practice time trying to play tunes you know and like.
- Once you start getting good at this, see how quickly you can get a new tune down. How few mistakes can you make the first time you try it? Can you "recover" quickly from a mistake by making it sound like a bit of improvisation?
- If you play a melody instrument (one that plays only one note at a time), there are different bits of information that help you recognize what the next note will be: how far it is from the note you are on (see Interval[20]), where it is in the key (see Beginning Harmonic Analysis[21]) or where it is in the chord (see Triads[22]). These three things are all related to each other, of course - and a musician with a well-trained ear will be aware of all of them, at least subconsciously - but you may find at first that one works better for you than the others. You may want to experiment: is it easier for you to think of the next note as being a perfect fourth higher than the note you are on, or as being the root of the chord, or as being the fifth note in the scale of the key?
- As of this writing, petersax-online[23] had many exercises graded from simple to more difficult to help the beginner practice playing what you hear.

### 3.2.4 Improvisation

This is **the** skill you need for jazz. Blues, rock, and many Non-Western[24] traditions also use improvisation.

**Suggestions**

- Know your scales and arpeggios. A good improviser, given the name of a chord, can quickly play not only the notes of the chord but also the scale implied by the chord. Any decent book on playing jazz, or any teacher familiar with jazz, will introduce the student to these chords and scales.
- There are now many book/CD combinations available to help the beginning improviser in many different genres and on many different instruments. A good book of this type will give the student a chance to improvise on many familiar tunes, and some also introduce the music theory involved. At the time of this writing, one source of a large variety of such books was jazzbooks.com[25] .

[20] "Interval" <http://cnx.org/content/m10867/latest/>
[21] "Beginning Harmonic Analysis" <http://cnx.org/content/m11643/latest/>
[22] "Triads" <http://cnx.org/content/m10877/latest/>
[23] http://www.petersax.com
[24] "What Kind of Music is That?" <http://cnx.org/content/m11421/latest/>
[25] http://www.jazzbooks.com

- The exercises at the petersax[26] site mentioned above would also be useful for the beginning improviser.
- Listen to jazz often. Listen to the improvisers you admire, and if a particular solo really appeals to you, listen to it many times, find the notes on your instrument, and then try writing it down as accurately as you can. Many famous improvisors, when interviewed, mention how useful it was to them to learn from other soloists by **transcribing** their solos in this way.
- Figure out how to play your favorite jazz (or blues or rock) **licks** (short motives[27] that show up in many pieces in the same genre) on your instrument. Practice stringing them together in ways that make sense to you, but are different from what you've heard. Add your own variations.
- Find a teacher who is familiar with the type of improvisation you want to learn, join a jazz band, and/or get together with other musicians who also want to practise improvisation and take turns playing background/rhythm for each other.

### 3.2.5 Recognizing Intervals and Writing Music Down

This is the skill that allowed Beethoven to continue composing masterpieces even after he became deaf. If you are interested in composing, arranging, music theory, musicology, or just being able to write down a tune quickly and accurately, you'll want to be able to make that quick connection between what you hear and written music.

**Suggestions**

- Before you can do this, you must know your major[28] and minor (Chapter 1) keys and scales and your Intervals[29]. You may also want to understand Transposition[30], since you may find it easier to work in some keys than in others.
- As of this writing, Teoria Musical[31] was a free ear training website that worked well, and the commercial site TrainEar[32] included a free online version.
- Once again, practice is the best way to become good at this. Start with tunes that you know well, but don't know what the (written) notes are. Listen to them in your head (or play a recording) while trying to write them down. Then play what you have written, noticing where you were correct and where you made mistakes. Which intervals are you good at hearing? Which do you have trouble identifying? Do you often mistake one particular interval for another? Do you tend to identify a note by its interval from the previous note or by its place in the chord or in the key? Answering these questions will help you improve more quickly.
- Some people find it easier to learn to recognize intervals if they associate each interval with a familiar tune. (For example, in the familiar song from *The Sound of Music* that begins "Do, a deer, a female deer...", all the intervals in the phrase "a female deer" are major thirds, and every interval in the phrase "someday I'll wish upon a star" in the song "Somewhere Over the Rainbow" is a minor third.) The tune should be very familiar, so when trying to hear a tritone[33], some people will prefer thinking of the beginning of "The Simpsons" theme; others will prefer the beginning of "Maria" from *West Side Story*. If you think this method will work for you, try playing the interval you are having trouble hearing, and see what tune it reminds you of. As of this writing, TrainEar[34] included a long list, with links to recordings, or songs that can be associated with various intervals.
- Try searching at YouTube for "Interval song" or "ear training" to find videos that you might find helpful.

[26] http://www.petersax.com
[27] "Melody": Section Motif <http://cnx.org/content/m11647/latest/#s3>
[28] "Major Keys and Scales" <http://cnx.org/content/m10851/latest/>
[29] "Interval" <http://cnx.org/content/m10867/latest/>
[30] "Transposition: Changing Keys" <http://cnx.org/content/m10668/latest/>
[31] http://www.teoriamusical.net
[32] http://www.trainear.com
[33] "Interval" <http://cnx.org/content/m10867/latest/#p23b>
[34] http://www.trainear.com/Interval_Song_Associations_Interval_Songs_Song_Hints_23_2009.php

## Index of Keywords and Terms

**Keywords** are listed by the section with that keyword (page numbers are in parentheses). Keywords do not necessarily appear in the text of the page. They are merely associated with that section. *Ex.* apples, § 1.1 (1) **Terms** are referenced by the page they appear on. *Ex.* apples, 1


**A** absolute pitch, 17

**C** chord progressions, § 3(17)

**D** dorian minor, § 1(1), 5

**E** ear, § 3(17), 17
ear training, § 3(17), 17

**H** harmonic minor, § 1(1)
harmonic minor scale, 4

**I** improvisation, § 3(17)
interval, § 3(17)

**K** Key, § 2(11)
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**L** licks, 20

**M** Major, § 2(11)
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**N** natural minor, § 1(1)
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**P** perfect pitch, 17

**R** relative major, 3
relative minor, 2, 4
relative pitch, 17

**S** Scale, § 2(11)
scales, § 1(1)

**T** transcribing, 20
tuning, § 3(17)

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