

Perfecting Intonation

*Finding the place where
Equal Temperament & Just Intonation
meet.*

Method book with play-along CD

*by
David Beecroft*

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Berlin, Germany

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For David Caldwell.

He knows the real value of an ice cream.

On matters of intonation and technicalities
I am more than a martinet — I am a martinetissimo.
Leopold Stokowski

~

Harpists spend 90 percent of their lives tuning their harps
and 10 percent playing out of tune.
Igor Stravinsky

~

Are we not formed, as notes of music are,
For one another, though dissimilar?
Percy Bysshe Shelley

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Introduction

If there is any truth to the statement: “You are a product of your environment” then today we as musicians must be a product of the keyboard and “equal temperament”. Every day our ears are saturated with music. Music produced in studios where the midi keyboard and sequencing software rule the roost. We are inundated with music played by small game computers, telephones, automated call waiting, music for television stings, radio program introductions, “chill out” music for hair salons, drum and bass grooves, DJ productions etcetera. Music that for the most part is created in the computer environment. There is no conscious thought about intonation. Tuning is a “pre-set”.

Young musicians are told to look at a tuner as a learning aid for playing in tune. We are told that a piano is “in tune” and accept it without ever questioning what this means. Because most music comes out of a box and not out of our own mouths we are gradually losing the consciousness that music is a form of *human* expression. We, as a culture, (Western, that is), are losing the ability to *blend* our voices together. Equal temperament, while enabling us to make incredible music has a dark side, (oooooooooh!).

You might be tempted to ask: “Is this a problem?” And to answer your question I am tempted to reply with the second most favourite saying of my father. His most favourite saying was: “Fathers are a sorry lot.” True for some I am sure but not very relevant here. Almost as often he used to say: “They don’t know, and they don’t know that they don’t know”. And yes, as kids my brothers and I used to howl: “DAD! You can’t say stuff like that, it’s totally arrogant”. Well, arrogance aside, it does help illustrate my point though, which is this: if you have been fed a (life) long diet of equal temperament then it is not likely that you would have learned what it sounds like when several tones really blend together.

Isn’t a perfectly tuned equal temperament perfectly in tune? No. Equal temperament is a system of tuning that was invented to allow music to be played in all tonal centres on instruments that have fixed note positions. For voice and string instruments such as violin, viola, cello and contra bass, equal temperament plays less of a role, but for musical instruments such as piano, any electronic keyboard, guitar or other fretted instrument, equal temperament is indispensable. As I said, it is to date, the only viable tuning system that allows the music to be played in any of twelve key centres using only twelve discrete pitches within one octave. But what about the world of brass and woodwinds? Aren’t these instruments also designed to play in all keys equally. Yes, but the difference is that brass^{*} and woodwind players can alter the pitch of a note away from equal temperament by changing embouchure and air stream. Brass and woodwind players play instruments designed to play tones using a tuning system

^{*}Valved brass instruments play tones derived from various combinations of the (three) valves with the natural overtone series. I am a woodwind player, life for us is easy. I wouldn’t wish a trumpet on my worst enemy (if I had one).

that we can not naturally sing. A player sensitive to the art of blending can alter the natural (equal tempered) pitch of their instrument to blend perfectly with other instruments, but more on this later.

What is perfectly in tune? The overtone series represents a series of intervals or frequencies of resonance that can occur in natural materials and resonating cavities. It is a series of intervallic relationships that can be represented mathematically as whole number ratios. Whole number ratios are what we would recognize as being perfectly in tune, even whole number ratios that do not occur in the natural overtone series.

So, what is the problem? Actually, there are a few problems or there is no problem, depending upon how you make music. If you make monophonic music or melodies that are played over a single note drone as in the music of traditional Oriental cultures then all is fine with the world. When you wish to make polyphonic or chordal music, or music that changes key then there is a big problem. Basically the problem is this; when you change the root or lowest tone that is heard, then you create a whole new set of relationships between all of the tones above. When you change the lowest tone, you must change the tuning of every note of the scale above it. This is something a singer can do without a single thought, but with a keyboard it isn't possible. Experienced wind, brass and string players can and do alter their tuning to some degree as they tend to gravitate towards natural tuning simply because it "sounds right". Playing in tune isn't about being tough and insisting you are right, and it is a little more complicated than simply checking your pitch with an electronic tuner to "see if you are right".

What is playing in tune? An important clue came to me through an older saxophonist friend of mine. He related a story about Jerry Toth, another Toronto based musician and former lead alto player of the Boss Brass among other things. When asked about his perfect intonation, he said that playing in tune is very simple, *you focus on making the other person sound good*. Aside from illustrating his lack of ego and a deep respect for the musicality of his colleagues, this anecdote points to an aspect of music that is rarely taught in books** or music schools. This aspect of music is the art of blending or harmonizing with other monophonic instruments, with or without accompaniment from piano or other fixed pitch instruments.

****Chase Sanborn** has published a book called "**Tuning Tactics**" which does address the problem of intonation through playing along with perfect fifths.

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Blending or harmonizing is something that comes naturally when two people sing different pitches at the same time. We seek to find a pleasing relationship between the two tones. What we naturally feel as pleasing or would agree with as being “in tune” are intervals that are described mathematically as tones that are related by ratios of whole (rational) numbers, i.e. 1:1 (unison), 2:1 (octave), 3:2 (5th), 4:3 (4th), 5:4 (maj 3rd), 6:5 (mi 3rd) etc. Without becoming too technical this means that for the interval of an octave to be created, one tone, (the higher one), must vibrate at twice the frequency of the lower tone. For the interval of a 5th to be created the higher tone must vibrate three times for every two times the bottom tone vibrates and so on. It is not something we have to give thought to as the process of interval recognition is automatic. You may not (at first) know the name of the interval but you do readily recognize whether or not they are blending, which is to say, maintaining a rational or whole number ratio.

On a piano that is tuned to **equal temperament** there are only 12 different pitches within the octave and every interval maintains the same relationship regardless of key centre. Other than octaves, *there are no perfectly in tune intervals to be found on the piano*. Some intervals are closer to their whole number ratio or **just intonation** counterparts than others. 4ths and 5ths are intervals that we would recognize as in tune or blending as they are quite close to perfectly tuned 4ths and 5ths. But 3rds, 6ths, 2nds, 7ths (both natural and lowered) and tritones, are quite far from that which we would naturally hear or sing.

Just intonation is any musical tuning in which the frequencies of notes are related by ratios of whole numbers. Any interval tuned in this way is called a just interval; in other words, the two notes are members of the same harmonic series.

Equal temperament is a musical temperament, or a system of tuning in which every pair of adjacent notes has an identical frequency ratio. In equal temperament tunings an interval - usually the octave - is divided into a series of equal steps (equal frequency ratios). For modern Western music, the most common tuning system is twelve-tone equal temperament, sometimes abbreviated as 12-TET, which divides the octave into 12 (logarithmically) equal parts. It is usually tuned relative to a standard pitch of A=440 Hz (442 in Europe with some orchestras tuning to 443).

*The **cent** is a logarithmic unit of measure used for musical intervals. Typically cents are used to measure extremely small intervals, or to compare the sizes of comparable intervals in different tuning systems, and in fact the interval of one cent is much too small to be heard between successive notes. 1200 cents are equal to one octave, (a frequency ratio of 2:1), and an equally tempered semitone (the interval between two adjacent piano keys) is equal to 100 cents.

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Although a musician may equally identify a just or equal tempered interval he or she would not gravitate toward the equal tempered version while singing. Equal tempered intervals do not have an exact and recognizable position within us the way just intervals do. We naturally sing just intervals when we blend with another. To illustrate what is happening let's look at the interval of a 3rd.

The interval A to C# above, a just major third, an interval that we can easily recognize could be described thus; A perfectly in tune major third has a vibration ratio of 5/4, (5 cycles of the higher tone for every 4 cycles of the lower tone). One could also say that the upper tone has a wave that vibrates 1.25 times faster than the bottom tone, ($5/4 = 1.25$). When our A is vibrating at 440 cycles per second then the C# (major 3rd higher) would be vibrating 550 cycles per second. You could find and play this frequency with pinpoint accuracy as long as the A is sounding.

The interval of a major third in equal temperament, can be found by multiplying the lower frequency by 1.259921 (rounded off). At the risk of being overly complicated, this number is derived from the formula: 2 to the power of 4 over 12 ($2^{\frac{4}{12}}$). The numbers 4 and 12 come from the practice of dividing the octave into 1200 equal "cents". Each semitone equals 100 cents* and a major 3rd which is made up of 4 semitones and therefore 400 cents. An octave equals 1200/1200 therefore a major 3rd equals 400/1200 which is then reduced to 4/12. To determine the exact frequency of our C# in equal temperament we multiply the frequency of the lower note (440 hz) by 1.259921 to find the frequency of C#. In this instance the lower frequency of 440 hz is multiplied by 1.259921 to give an upper frequency of 554.36542 hz. These are not a frequencies I would like to bet my life on by having to whistle them.

In the most perfect of perfect worlds, i.e. perfect temperature, perfect instrument and perfect embouchure, your woodwind instrument may play pretty close to equal temperament but when, if ever, is this the case? In the real world we always have to adjust our tuning to blend. The real question is, what to adjust it to. I defy anyone to find by ear 554.36542 hz. If you were to play your C# along with an A from the piano, with a will to blend with that note, you would naturally gravitate to 550 hz, the just third. You could not, (in a million years), hear and play with any certainty a C# of 554.36542 hz, the equal temperament equivalent. Your mind is not made this way. With that said, we can forget the maths because equations will not help us play in tune.

Woodwind, brass and string players do have the option of learning the feel of equal temperament to help them play in tune. By practising while watching a tuner it is possible to approximate equal temperament. With repetition one can remember the feeling of each of the twelve tones. This could work, but only when you perform in the same environment you practice in and if the

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musicians you play with never vary from the tuning ideal (i.e. A=440) that you have learned. We can approximate equal temperament this way but I don't believe one can be sure that one is really playing in tune. Since insecurity breeds tension we as players need to be sure of our intonation.

Equal temperament only works because no key centre or chord is more in tune than any another. The equal temperament deception works best on instruments with fixed tunings because these instruments do not favour any particular keys, chords or intervals. While this is very practical it is not actually possible for woodwind, brass, or string players to accurately duplicate. If we opt to use our ears, then our natural feeling for blending gets in the way. Playing by rote breeds insecurity.

When playing with "in tune" intervals or less complicated perfectly tuned chords, we can find a point where our note is exactly in tune with the other tones. There is no exact placement or perfectly in tune spot for our note in an equal tempered chord. In equal temperament the only two intervals that are close to being in tune are the 4th and the 5th, all others are quite far off the mark. In my opinion, we, as humans, were not designed to harmonise within equal temperament. We just don't hear intervals this way. No matter how hard we try or how long we practice we will never be able to accurately sing or play a scale or individual tones within a chord tuned to the equal tempered ideal. The only exception to this would be when we are singing in unison, or in octaves, with a keyboard instrument. We might come close but that only counts with horse shoes and amateur big bands.

How then do we sing or play wind instruments together? How do we then decide what is in tune? The answer is, like every other thing connected to the human condition, that we must simply try to make the best of it. **We can however improve our chances to blend in a pleasing manner with other instruments by becoming adept at harmonizing with various just intervals.** By deciding to educate and then trust our ears we will always sound right, even though there may be a discrepancy to equal temperament. Real world tuning means blending with that which you hear as best you can. Melody or lead players blend with the bass. A section player blends with the lead player. The exact tuning of individual notes varies with each chord or key centre.

The exercises in this book, (along with the playback tracks on the CD), are designed to educate and sensitize your ears. By learning the art of blending with a variety of just intervals that represent real world musical situations, you learn to find the best fit for the richest sounding chord. You also learn how the various scale degrees within any given key centre can be slightly altered so as to be in tune with the root or lowest sounding tone. By repeatedly being exposed to perfect intonation, you refine your musical imagination. By singing along, you

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train your ears to recognise intervals and chords. You deepen your appreciation of the beauty of harmony and your role in it. By hearing exactly how the note you play or sing fits within the harmony, or with the bass, you become a more sensitive player. Knowing what is in tune, means being able to feel the expressiveness of varying degrees of sharp or flat. Intonation is an emotion packed tool which is largely overlooked. Much of what we think of and appreciate as a great sound is, in my opinion, a personal feeling and mastery of intonation.

I highly recommend that you sing each exercise before you play it. I highly recommend that you sing each exercise after you play it as well. Open your mouth *w i d e* and **live** the intervals you create. To blend with another is one of the greatest joys of making music.

What to listen for

In order to insure success while using this book, it is important that you know what is special about the tracks, and what you will be focusing on while playing with them. On the cover page is the statement “The place where Equal Temperament & Just Intonation meet”. What this means is, that with all of the intervals on the play-along CD’s, the lowest tones come from the equal tempered scale and the intervals above the lowest tones are of a rational number ratio to the lowest note. This means that while the lowest note will be in tune with your piano (where A=440 or 442 depending upon which version you have purchased), the upper note will not. Depending upon which interval you are hearing, the difference will vary from 2 cents to 17 cents, sharp or flat from equal tempered. You are to focus on the quality of the intervals heard on the track and what happens i.e. what you hear and feel when you play along with the tones on the accompanying exercises. The first and most important aspect of the play-along tracks is that you will not hear “beats” when the two tones are sounded. The intervals sound rich and placid. As stated earlier, the intervals are tuned to a perfect, (whole number) ratio of each other. This makes it much easier to hear how “in tune” you are when you play your additional third tone. Your job is to play at the same volume or quieter than the track, so that you can hear your tone in relation to the sounded intervals. You will need to be able to “bend” or alter your pitch slightly up or down while playing along in order to eliminate the “beats”. You will need to take your time. When the key centre of the interval changes after 30 seconds, *stop playing and listen for a moment*. You will need to readjust each time the key changes.

The ability to move your pitch up or down is very important and you will not have success without being able to do this. If you play a wind instrument, altering your pitch may be accomplished by making small variations in embouchure, air stream or tongue position, (voicing the tone using specific vowel shapes), If you play an un-fretted string instrument, by slightly altering the position of your finger on the fingerboard. Before playing along with the tracks, practice making subtle changes to the tuning of various tones on your instrument. If you are a woodwind player, then you will discover that the upper register can be altered more easily than the lower one. Some experienced woodwind players may have difficulty with bending the pitch if they play with a tight embouchure, or cannot change the position of the jaw. Playing with less “bite” or pressure of the teeth allows you a much greater flexibility of pitch. The muscles holding the jaw are very strong and tend to be hard wired to the breathing muscles and your present sense of pitch. Learning to open, or otherwise alter the position of the jaw, means learning a corresponding alteration in air support. It also means altering the mouthpiece tuning position. It is possible, for instance, to open the jaw, use more air (support) and play quietly at the same time.

Using the play-along tracks

The play-along tracks consist of a variety of harmonized twelve tone rows. As stated earlier, the lowest tone is equal tempered and the upper tone is just tuned to the bottom one. At first, simply play the exercises along with the appropriate track. Later, you may begin to do without reading by learning the exercise sequences, and then transposing them as you follow along the various 12 tone sequences. More on this later. Play the notes slowly and quietly, at first bending your notes a little higher or lower to find the best blend or position. Hold each note for at least one second, long enough to know whether you are flat or sharp. Your instrument will not naturally be in tune and you will have to adjust everything you play to blend perfectly. If you are not sure which way to alter your notes there is a guide on page 14 that will give you an idea where to start. The placement of your note(s) may change depending upon the interval being played. There is an exact and recognisable place for every scale degree you will play and it may take you some time to find it. **You will have 30 seconds to play along with an a given interval and in six minutes you will be taken through all 12 keys.** If you are unsure go back and repeat the track. If you get lost, sing along to find the interval. This you should do anyway. **You are a musician and musicians sing.** There are only two notes being sounded and the lowest one, coming from the left channel of your stereo, CD or mp3 player, corresponds to the key centre written in the exercises. For example if the lower note of the sounding interval is an A, the key centre will be three sharps even if the interval is minor, flat sixth or a flat seventh. The last interval of each series always has a C concert as the lower tone. There are several variations for each track and you should stay focused on one variation each time you play a track. Become aware of the intervals you are asked to play and their relationship to the root and other sounded intervals. You will find that each interval has a tendency to be high or low and that it is consistent throughout all of the transpositions of the of the exercise.

Playing “in tune” is not as simple as finding a fixed position for each note you play. If you were to play for example, a simple melody over a drone (pedal tone) you would indeed discover, (for that particular drone), that for all the notes of your melody there would be predictable alterations from the equal tempered tuning of your instrument. You would discover that the just major 3rd is (13.7 cents) lower than that which your instrument might naturally play. You would also discover that the just minor 3rd would need to be played (15.6 cents) higher than your instrument might naturally play it as well. The same can be said for sixths, both normal and flatted, as well as 2nds and 7ths. The just 4ths and 5ths are quite close to equal tempered but the tritone has several possibilities. *But changing the drone note to another scale degree under the same melody notes would necessitate that you change the tuning of each note of your melody to once again blend or sound in tune.* Even though another drone note may be “in tune” with the old drone, your notes would still have to change slightly. **In the real world, tuning is a dynamic relationship between melody, harmony and bass.**

Using the play-along tracks

Another complication that arises is that the perceived best position for your tone while playing with two (or more) tones is dependent upon the intervals the other tones create. You could be in tune with one of the tones of a chord but out of tune with the other. A good example of this is when consecutive major 3rds (or other consecutive like intervals) are played. For example, when a chord is created by stacking major 3rd intervals, where each major 3rd is tuned to the note directly below it, the resulting top note is a very flat minor 6th interval to the root. Although the resultant minor 6th interval is “just” or can be expressed as a whole number ratio, it sounds rough or sour. The numbers that express the ratio are quite high*. By comparison, when you play a minor 3rd on top of a perfect 4th the resulting top note is a very pleasing minor 6th and all tones in the chord are “in tune” with each other *and* the root.

Let’s do a little math. The following triads both have a minor 6th interval between the top note and the root:

major 3rd + major 3rd ($5/4 \times 5/4 = 25/16$)** = a very flat and sour sounding minor 6th interval

perfect 4th + minor 3rd ($4/3 \times 6/5 = 24/15$ or $8/5$) = accepted just minor 6th

Consecutive like intervals (b2, 2, b3, 3 & +4) do not create an octave when stacked one on top of the other. This means that chords built of consecutive like intervals can not sound pleasantly in tune. The series “major 3rd + major 3rd + major 3rd” does not equal an octave the way it does in equal temperament, nor does the series “minor 3rd + minor 3rd + minor 3rd + minor 3rd” create an octave either. Consecutive 4ths, 5ths or the other intervals do not in reality eventually “go full circle” to return to the same beginning tone. This is only possible with equal temperament.

Here is the bad news: The above discussion only touches lightly upon the complexity of the just tuning system. If you are interested to dig deeper into this world, I would highly recommend reading “Genesis of a Music” by Harry Partch. He is a pioneer of just intonation as it applies to fixed pitch instruments and has inspired many to carry the just intonation torch.

Ah, yes and here is the good news: You don’t need to be a mathematician to play in tune, with a little training, your ear does it automatically. Remember, your ears and your brain are designed to do this. It is a neat little feature built in to every human who is even remotely musical or should I say, every musician who is even remotely human...

* It is important to note that intervals that can be expressed in lower whole number ratios are more “consonant” sounding than intervals that must be expressed in higher order whole number ratios.

** Interval ratios are “added” together by multiplying them, top number times top and bottom number times bottom.

Track 1, an introduction just intervals

Bb Instruments

The musical score for Bb Instruments consists of six staves, each with a treble clef and a key signature of two sharps (F# and C#). The first five staves are connected by a brace on the left. Each staff contains a sequence of intervals, primarily octaves, indicated by curved lines connecting the notes. The intervals are: Staff 1: G4 to G5, B4 to B5, D5 to D6, F#5 to F#6. Staff 2: A4 to A5, C#5 to C#6, E5 to E6, G#5 to G#6. Staff 3: F#4 to F#5, A4 to A5, B4 to B5, D5 to D6. Staff 4: E4 to E5, G#4 to G#5, A4 to A5, C#5 to C#6. Staff 5: B3 to B4, D4 to D5, E4 to E5, G#4 to G#5. Staff 6: F#3 to F#4, A3 to A4, B3 to B4, D4 to D5. The notes are written as whole notes.

Music for F transposed and bass clef instruments may be found at:

http://www.beecroft.de/Jazz_Books/pi-additional.htm

Track 1, an introduction just intervals

E♭ Instruments

The musical score for E♭ Instruments consists of six staves, each containing two measures of music. The first five staves are connected by a brace on the left, and the sixth staff is separate. The music is written in treble clef with a key signature of two sharps (F# and C#). The notes are mostly half notes and whole notes, with some beamed eighth notes. The first measure of each staff is followed by a double bar line, and the second measure is followed by a double bar line. The sixth staff ends with a double bar line.

Track 1, an introduction just intervals

What did you notice when you played along? Were there some notes that were higher than you would naturally play them? Some that were lower? Some that felt fine, just as they were?

Could you hear beating when you purposefully played sharp and flat? This is very important.

It is also important that you match the played upper tones exactly and that you hear and feel through your instrument that they occupy a specific place. This is easier heard with the 5th, 3rds, 4th and 6ths. The 7ths take a little time to hear.

The following is once again the interval series, but with the cent markings for how much the just intervals are at variance with their equal tempered counterparts. The markings indicate how much you must alter equal temperament to achieve just tuned intervals.

5ths: +2 cents, maj 3rds: -14 cents, mi 3rds: +16 cents, maj 6ths: -16 cents, maj 2nds: +4 cents, mi 6ths: +14 cents, tritone: - 17.5 cents (or + 17.5 cents), b7: -4cents, 4th: -2 cents, maj7: -12 cents, mi 2: +12 cents. (These figures are approximate)

C Instruments

The image displays musical notation for just intervals on a C instrument, organized into six rows. Each row contains two staves, each with a treble clef and a key signature of one flat (Bb). The notes are connected by curved lines, and the intervals are labeled with their names, cent adjustments, and ratios. The intervals shown are: P5 (+2 cents, Ratio: 3/2), Major 3rd (-14 cents, Ratio: 5/4), Minor 3rd (+16 cents, Ratio: 6/5), Major 6th (-16 cents, Ratio: 5/3), Major 2nd (+4 cents, Ratio: 9/8), Minor 6th (+14 cents, Ratio: 8/5), Tritone (-17.5 cents, Ratio: 10/7), Flat 7 (-4 cents, Ratio: 16/9), Perfect 4th (-2 cents, Ratio: 4/3), Major 7th (-12 cents, Ratio: 15/8), and Minor 2nd (+12 cents, Ratio: 16/15).

P5, +2 cents, Ratio: $\frac{3}{2}$ Major 3rd, -14 cents, Ratio: $\frac{5}{4}$

Minor 3rd, +16 cents, Ratio: $\frac{6}{5}$ Major 6th, -16 cents, Ratio: $\frac{5}{3}$

Major 2nd, +4 cents, Ratio: $\frac{9}{8}$ Minor 6th, +14 cents, Ratio: $\frac{8}{5}$

Tritone, -17.5 cents, Ratio: $\frac{10}{7}$ Flat 7, -4 cents, Ratio: $\frac{16}{9}$

Perfect 4th, -2 cents, Ratio: $\frac{4}{3}$ Major 7th, -12 cents, Ratio: $\frac{15}{8}$

Minor 2nd, +12 cents, Ratio: $\frac{16}{15}$

Track 2, Perfect 5ths, a good, clean start.

This track contains the following sequence of tones. To the left of the staves is a letter that refers to the transposition. **C*** is for Concert or non transposing instruments, **Bb*** is for Bb saxophones or clarinet, **Eb*** is for Eb saxophones or clarinet. This sequence is a series of perfect 5ths randomly transposed throughout all 12 keys.

The image shows three staves of music, each representing a different transposition: C*, Bb*, and Eb*. Each staff contains a sequence of 12 chords, each consisting of two notes a perfect fifth apart. The notes are written in treble clef. The C* staff starts with a C4 and G4 chord. The Bb* staff starts with a Bb3 and F4 chord. The Eb* staff starts with an Eb3 and Bb3 chord. The sequence of intervals is: C-G, D-A, E-B, F-C, G-A, A-B, B-C, C-D, D-E, E-F, F-G, G-A.

Note: recorded tones may sound in an other octave than written.

The exercises below are written out in the key of C. Everything you will play is then written out on the following pages. Later you may also memorise the exercises and transpose them for each pair of intervals in the sequence. But for now, I recommend that you read the written out and transposed sequences that follow this page and concentrate upon blending. To help with transposition, the notes of each exercise variation are annotated with scale degree numbers. Sing the exercises first. If you can't sing it, you don't hear it, and if you don't hear it, you can't play it.

Exercises to be played along with track 2

The image shows two staves of musical exercises. The first staff contains two sequences of notes: 1 2 3 4 5 4 3 2 1 and 1 2 b3 4 5 4 b3 2 1. The second staff contains two sequences of notes: 5 6 7 6 5 and 5 6 b7 6 5. The notes are written in treble clef.

Do not rush through the sequences. Enjoy each note. Alternate between the first and second notes, the second and third notes etc. Make sure you are really in tune. Go forward and back along the series, make jumps or improvise with the notes. Play each tone at least a full second. Longer is better. Invent your own variations to the play-along tracks but remember; **play slowly, listen and expect to change the tuning of your pitches!**

Track 2, Perfect 5ths, a good, clean start.

Exercise 1

Play the examples in all registers of your instrument. Pay extra attention to the 3rd scale degree. In just intonation it is almost 14 cents lower than the equal temperament counterpart.

The image shows a musical score for three staves, labeled C, Bb, and Eb. Each staff contains a sequence of notes across three measures. The first measure is in C major (one sharp), the second in Bb major (two flats), and the third in Eb major (three flats). The notes are as follows:

Staff	Measure 1 (C Major)	Measure 2 (Bb Major)	Measure 3 (Eb Major)
C	C4, D4, E4, F4, G4, A4, B4, C5	Bb3, C4, D4, Eb4, F4, G4, Ab4, Bb4	Ab3, Bb3, C4, Db4, Eb4, F4, G4, Ab4
Bb	Bb3, C4, D4, Eb4, F4, G4, Ab4, Bb4	Bb3, C4, D4, Eb4, F4, G4, Ab4, Bb4	Ab3, Bb3, C4, Db4, Eb4, F4, G4, Ab4
Eb	Ab3, Bb3, C4, Db4, Eb4, F4, G4, Ab4	Ab3, Bb3, C4, Db4, Eb4, F4, G4, Ab4	Ab3, Bb3, C4, Db4, Eb4, F4, G4, Ab4

A musical score for the song 'The Rose Tree'. It consists of three staves. The first staff is in G major (one sharp) and has a treble clef. The second and third staves are in D major (two sharps) and have treble clefs. The music is written in a simple, folk-like style with eighth and quarter notes. The first staff has a key signature change to D major in the second measure. The second staff has a key signature change to D major in the second measure. The third staff has a key signature change to D major in the second measure. The music is divided into three measures by double bar lines.

The image displays three staves of musical notation for the song 'The Rose Tree'. Each staff begins with a treble clef and a key signature of three sharps (F#, C#, G#). The first staff contains the melody for the first line of the song, the second staff contains the melody for the second line, and the third staff contains the melody for the third line. The notation includes various musical symbols such as notes, rests, and bar lines, indicating the pitch and rhythm of the melody.

A musical score for the song 'The Rose Tree'. It consists of three staves. The top staff is in treble clef with a key signature of three sharps (F#, C#, G#). The middle and bottom staves are in treble clef with a key signature of two flats (Bb, Eb). The music is written in a simple, folk-like style with eighth and quarter notes. The score is divided into three measures by double bar lines. The first measure shows a melody in the top staff and accompaniment in the middle and bottom staves. The second measure continues the melody and accompaniment. The third measure concludes the piece with a final chord in the top staff and a final note in the bottom staff.

Track 2, Perfect 5ths, a good, clean start.

Exercise 2

In this exercise pay extra attention to the flatted 3rd scale degree. In just intonation it is 16 cents higher than the equal temperament counterpart. You will probably have to bring it up.

The musical score for Exercise 2 consists of three systems, each containing three staves. The first system is labeled with 'C', 'Bb', and 'Eb' on the left. Each staff contains a scale run with a key signature change indicated by a double bar line. The second system also consists of three staves with similar scale runs and key signature changes. The third system consists of three staves with scale runs and key signature changes. The notation includes various accidentals (sharps, flats, naturals) and double bar lines to indicate measure boundaries and key signature changes.

Track 2, Perfect 5ths, a good, clean start.

Exercise 3

In the following two exercises you should pay attention to the 6th and the 7th scale degrees. Both of these intervals can be lowered significantly to find a good blend.

Exercise 3 musical score, consisting of four systems of three staves each. The staves are labeled C, Bb, and Eb on the left. Each system contains three measures of music, separated by double bar lines. The notes are quarter notes, and the key signatures change between measures. The first measure of each system is in C major (C, D, E, F, G, A, B). The second measure is in Bb major (Bb, C, D, Eb, F, G, Ab). The third measure is in Eb major (Eb, F, G, Ab, Bb, C, Db). The notes are: C, D, E, F, G, A, B; Bb, C, D, Eb, F, G, Ab; Eb, F, G, Ab, Bb, C, Db.

Track 2, Perfect 5ths, a good, clean start.

Exercise 4

The flatted 7th is an interesting interval in that there are several possible tunings, all of which sound good. The tunings are: 31 cents flat, 4 cents flat and 18 cents sharp. Keep in mind that tuning is dependent upon the chord tones being sounded and as such will vary.

The musical score for Exercise 4 consists of three systems, each containing three staves. The staves are labeled on the left as C, Bb, and Eb. Each staff begins with a treble clef. The first system has key signatures of one sharp (F#), two sharps (F#, C#), and three sharps (F#, C#, G#) respectively. The second system has key signatures of one sharp (F#), two sharps (F#, C#), and three sharps (F#, C#, G#) respectively. The third system has key signatures of one sharp (F#), two sharps (F#, C#), and three sharps (F#, C#, G#) respectively. The notation includes various intervals and accidentals, including flats and naturals, across the staves.

Track 2, Perfect 5ths, a good, clean start.

The first system of musical notation consists of three staves. The first staff begins with a treble clef and a key signature of two sharps (F# and C#). The second staff begins with a treble clef and a key signature of four sharps (F#, C#, G#, and D#). The third staff begins with a treble clef and a key signature of four sharps (F#, C#, G#, and D#). Each staff contains a sequence of notes, primarily half notes, with some quarter notes and rests. The system is divided into three measures by double bar lines.

The second system of musical notation consists of three staves. The first staff begins with a treble clef and a key signature of one sharp (F#). The second staff begins with a treble clef and a key signature of two sharps (F# and C#). The third staff begins with a treble clef and a key signature of two sharps (F# and C#). Each staff contains a sequence of notes, primarily half notes, with some quarter notes and rests. The system is divided into three measures by double bar lines.

The third system of musical notation consists of three staves. The first staff begins with a treble clef and a key signature of three sharps (F#, C#, and G#). The second staff begins with a treble clef and a key signature of three sharps (F#, C#, and G#). The third staff begins with a treble clef and a key signature of three sharps (F#, C#, and G#). Each staff contains a sequence of notes, primarily half notes, with some quarter notes and rests. The system is divided into three measures by double bar lines.

The fourth system of musical notation consists of three staves. The first staff begins with a treble clef and a key signature of four sharps (F#, C#, G#, and D#). The second staff begins with a treble clef and a key signature of four sharps (F#, C#, G#, and D#). The third staff begins with a treble clef and a key signature of four sharps (F#, C#, G#, and D#). Each staff contains a sequence of notes, primarily half notes, with some quarter notes and rests. The system is divided into three measures by double bar lines.

Track 3, Major thirds, how low can you go?

Learning to hear the correct placement of this interval within a chord or in relation to one other note is important. It is the difference between a chord or interval that sounds rich and full and one that sounds strident and unsettled. When we try to match the just 3rd it feels quite low. We must adjust our note about 14 cents downward from the equal tempered 3rd our modern instruments would naturally play. The following exercises may be a little unsettling, as it is quite surprising how far some pitches must be adjusted. You might find yourself saying “Hey! What the heck was that?” Be prepared to adjust the major 7th and the flatted 7th interval as well.

This track contains the following sequence of tones:

* Notes may sound one octave higher or lower than written.

Exercises to be played along with track 3

Transpositions of all the exercises sequences are on the following pages.

Track 3, Major thirds, how low can you go?

Exercise 1

The image displays a musical score for a 12-part choir, organized into four systems of three staves each. The parts are labeled C, Bb, and Eb, with the remaining parts in each system being unlabeled. The score is written in a single system, with measures separated by bar lines. The key signature changes from Bb to B and back to Bb across the measures. The notation includes whole notes, half notes, and quarter notes, with some measures containing multiple notes on a single staff.

Track 3, Major thirds, how low can you go?

Exercise 2

Exercise 2 is a musical exercise consisting of four systems of three staves each. The staves are labeled C, Bb, and Eb on the left. Each system contains three measures of music, separated by double bar lines. The notes are quarter notes, and the exercise focuses on major thirds. The key signatures change between measures: the first measure is in Bb major (two flats), the second measure is in C major (no sharps or flats), and the third measure is in Eb major (three flats). The notes in each measure are as follows:

System	Staff	Measure 1 (Bb major)	Measure 2 (C major)	Measure 3 (Eb major)
System 1	C	C4, D4, E4, F4	G4, A4, B4, C5	D4, E4, F4, G4
	Bb	Bb3, C4, D4, Eb4	C4, D4, E4, F4	D4, Eb4, F4, G4
	Eb	Bb3, C4, D4, Eb4	C4, D4, E4, F4	D4, Eb4, F4, G4
System 2	C	C4, D4, E4, F4	G4, A4, B4, C5	D4, E4, F4, G4
	Bb	Bb3, C4, D4, Eb4	C4, D4, E4, F4	D4, Eb4, F4, G4
	Eb	Bb3, C4, D4, Eb4	C4, D4, E4, F4	D4, Eb4, F4, G4
System 3	C	C4, D4, E4, F4	G4, A4, B4, C5	D4, E4, F4, G4
	Bb	Bb3, C4, D4, Eb4	C4, D4, E4, F4	D4, Eb4, F4, G4
	Eb	Bb3, C4, D4, Eb4	C4, D4, E4, F4	D4, Eb4, F4, G4
System 4	C	C4, D4, E4, F4	G4, A4, B4, C5	D4, E4, F4, G4
	Bb	Bb3, C4, D4, Eb4	C4, D4, E4, F4	D4, Eb4, F4, G4
	Eb	Bb3, C4, D4, Eb4	C4, D4, E4, F4	D4, Eb4, F4, G4

Track 3, Major thirds, how low can you go?

Exercise 3

The image displays three staves of musical notation for the song 'The Rose Tree'. Each staff begins with a treble clef and a key signature of one sharp (F#). The first staff contains the melody, while the second and third staves provide harmonic accompaniment. The music is divided into three measures by double bar lines. The first measure is in the key of D major (F#). The second measure is in the key of A major (F# and C#). The third measure is in the key of B minor (B, F, and C natural). The notation includes various note values, rests, and accidentals (sharps and naturals) to indicate the specific pitches and durations of the notes.

[illegible][illegible]

Track 3, Major thirds, how low can you go?

Exercise 4

C Bb Eb

First system of musical notation for Exercise 4, featuring three staves labeled C, Bb, and Eb. Each staff contains a sequence of notes: C4, D4, Eb4, F4, G4, A4, Bb4, C5, D5, Eb5, F5, G5, A5, Bb5, C6. The notes are grouped in measures of four, with bar lines after the fourth and eighth notes.

Second system of musical notation for Exercise 4, featuring three staves. Each staff contains a sequence of notes: C4, D4, Eb4, F4, G4, A4, Bb4, C5, D5, Eb5, F5, G5, A5, Bb5, C6. The notes are grouped in measures of four, with bar lines after the fourth and eighth notes.

Third system of musical notation for Exercise 4, featuring three staves. Each staff contains a sequence of notes: C4, D4, Eb4, F4, G4, A4, Bb4, C5, D5, Eb5, F5, G5, A5, Bb5, C6. The notes are grouped in measures of four, with bar lines after the fourth and eighth notes.

Fourth system of musical notation for Exercise 4, featuring three staves. Each staff contains a sequence of notes: C4, D4, Eb4, F4, G4, A4, Bb4, C5, D5, Eb5, F5, G5, A5, Bb5, C6. The notes are grouped in measures of four, with bar lines after the fourth and eighth notes.

Track 4, Minor thirds, a little higher please.

The minor third represents another problem for tuning. It must be brought up 16 cents to sound rich. This is a little tough on the chops so you might wish to go easy on these exercises. This interval is a little deceiving as there is a tendency to hear the minor 3rd interval as the top two notes of a major triad. Check the notes you sing with your instrument to make sure you really hear the correct root.

This track contains the following sequence of tones:

[illegible]

Exercises to be played along with track 4

Track 4, Minor thirds, a little higher please.

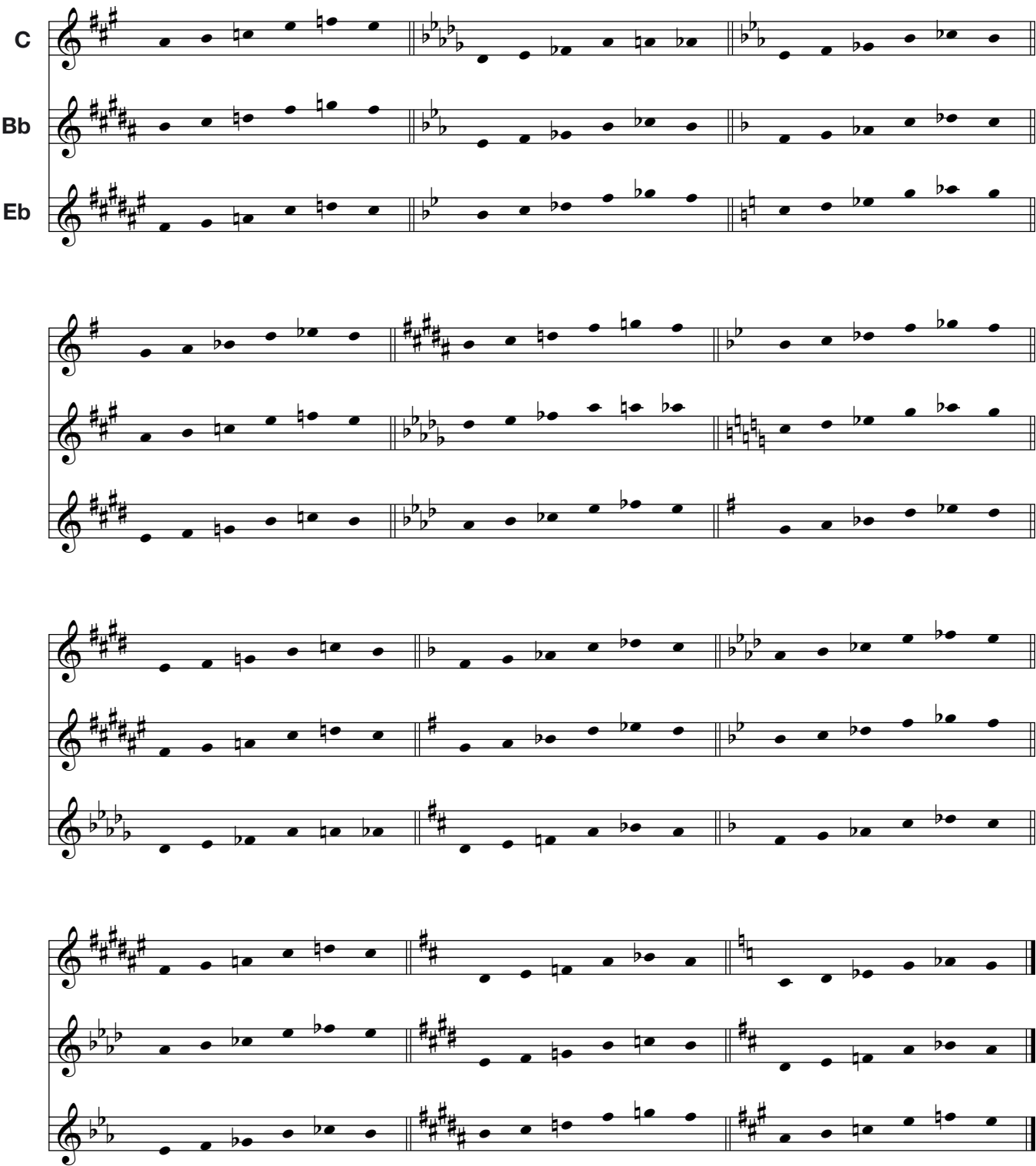
Exercise 1

The image displays a musical score for Exercise 1, Track 4, consisting of three systems of three staves each. The staves are labeled C, Bb, and Eb on the left. Each staff begins with a treble clef. The first system shows a progression of notes across the three staves, with key signatures of two sharps (F# and C#) for C, three sharps (F#, C#, and G#) for Bb, and four sharps (F#, C#, G#, and D#) for Eb. The second system continues this progression, with key signatures of one sharp (F#) for C, two sharps (F# and C#) for Bb, and one sharp (F#) for Eb. The third system shows a progression with key signatures of two sharps (F# and C#) for C, three sharps (F#, C#, and G#) for Bb, and two sharps (F# and C#) for Eb. The notes are primarily eighth and quarter notes, with some rests, and the system concludes with a double bar line.

Track 4, Minor thirds, a little higher please.

Exercise 2


Exercise 2 is a musical score for three staves, labeled C, Bb, and Eb. The score is divided into four systems, each containing three staves. The key signature for the first system is C major (no sharps or flats). The second system is in D major (two sharps). The third system is in E major (three sharps). The fourth system is in F major (one sharp). The notation consists of quarter notes and eighth notes, with accidentals (sharps, flats, and naturals) indicating the specific pitches. The exercise focuses on playing minor thirds, as indicated by the title.



Track 4, Minor thirds, a little higher please.

Exercise 3

Exercise 3 is a musical exercise for three staves, labeled C, Bb, and Eb. The exercise consists of four systems of three staves each, each system containing three measures of music. The notes are written in treble clef. The key signature for the first system is C major (no sharps or flats). The key signature for the second system is Bb major (two flats). The key signature for the third system is Eb major (three flats). The key signature for the fourth system is C major (no sharps or flats). The exercise is designed to practice minor thirds, a little higher please.



Track 4, Minor thirds, a little higher please.

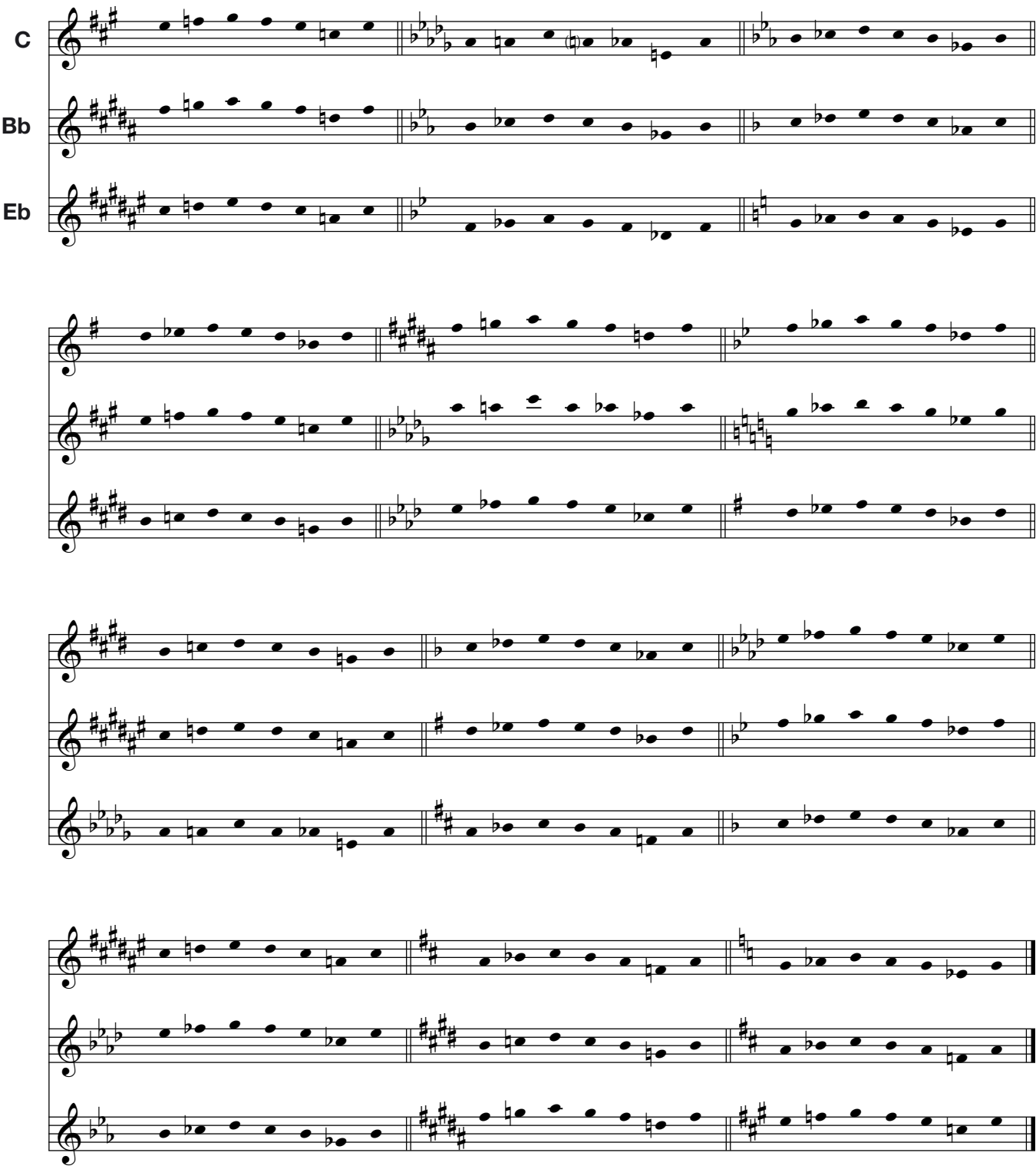
Exercise 4

The musical score for Exercise 4 consists of three staves, each with a different key signature: C major, Bb major, and Eb major. The notation includes various musical symbols such as treble clefs, key signatures, and musical notes. The score is organized into four systems, each containing three staves. The first system shows the initial key signatures and the beginning of the musical phrases. The subsequent systems show the progression of the exercise, with changes in key signature and musical notation. The notation includes various musical symbols such as treble clefs, key signatures, and musical notes. The score is organized into four systems, each containing three staves. The first system shows the initial key signatures and the beginning of the musical phrases. The subsequent systems show the progression of the exercise, with changes in key signature and musical notation.

Track 4, Minor thirds, a little higher please.

Exercise 5

Exercise 5 is a musical exercise for three staves, labeled C, Bb, and Eb. The exercise consists of four systems of three staves each, each system containing three measures of music. The notes are written in treble clef. The key signature for the first system is C major (no sharps or flats). The key signature for the second system is Bb major (two flats). The key signature for the third system is Eb major (three flats). The key signature for the fourth system is C major (no sharps or flats). The exercise is designed to practice minor thirds, which are intervals of three half steps. The notes are written in a way that they are easy to read and play.



Track 5, Major 6th, a big leap.

This interval must be brought down 16 cents to sound rich and in tune. If you have difficulty finding the notes with your voice, it may be that one of the two notes is out of your range. If you have to transpose the note pair an octave higher or lower, take care that you do not switch the notes around to make a minor 3rd interval.

This track contains the following sequence of tones:

Exercises to be played along with track 5

The image shows two staves of musical notation for the 'Scale of the Blues' exercise. The first staff contains two measures of music. The first measure starts with a double bar line, followed by notes on the first line (F4, G4, A4, B4, A4, G4, F4) with fingerings 1, 2, 3, 4, 5, 6, 5, 4, 3. The second measure starts with a double bar line, followed by notes on the first line (F4, G4, A4, B4, A4, G4, F4) with fingerings 1, 2, b3, 4, 5, 4, b3, 2, 1. The second staff contains two measures of music. The first measure starts with a double bar line, followed by notes on the first line (F4, G4, A4, B4, A4, G4, F4) with fingerings 1, 2, b3, 4, b5, 4, b3, 2, 1. The second measure starts with a double bar line, followed by notes on the first line (F4, G4, A4, B4, A4, G4, F4) with fingerings 1, b3, b5, 6, b5, b3, 1. The third staff contains two measures of music. The first measure starts with a double bar line, followed by notes on the first line (F4, G4, A4, B4, A4, G4, F4) with fingerings 1, 7, 6, 5, 4, 5, 6.

Track 5, Major 6th, a big leap..

Exercise 1

Exercise 1 is a musical exercise consisting of four systems of three staves each. The staves are labeled C, Bb, and Eb. Each system contains three measures of music, separated by double bar lines. The notes are written in a treble clef. The key signature for each system is indicated by the number of sharps or flats at the beginning of the first staff. The notes are written in a treble clef. The notes are written in a treble clef. The notes are written in a treble clef.

The exercise is divided into four systems, each with three staves. The staves are labeled C, Bb, and Eb. Each system contains three measures of music, separated by double bar lines. The notes are written in a treble clef. The key signature for each system is indicated by the number of sharps or flats at the beginning of the first staff. The notes are written in a treble clef. The notes are written in a treble clef. The notes are written in a treble clef.

Track 5, Major 6th, a big leap..

Exercise 2

Exercise 2 musical score, featuring three systems of three staves each, labeled C, Bb, and Eb. The score consists of 12 measures of music, divided into four groups of three measures each. The key signature for the first system is C major (no sharps or flats). The second system is in Bb major (two flats). The third system is in Eb major (three flats). The fourth system is in C major (no sharps or flats). The music is written in treble clef and consists of eighth notes and quarter notes, with a final double bar line at the end of the fourth system.

Track 5, Major 6th, a big leap..

Exercise 3

Exercise 3 is a musical exercise consisting of four systems of three staves each. The staves are labeled C, Bb, and Eb. The exercise is written in treble clef and features a sequence of notes and rests across the staves, with various key signatures and accidentals (sharps, flats, and naturals) indicating a complex harmonic structure. The notes are primarily eighth and sixteenth notes, with some rests. The exercise is divided into four systems, each containing three staves. The first system is labeled C, Bb, and Eb. The second system is unlabeled. The third system is unlabeled. The fourth system is unlabeled. The exercise is a single melodic line with a major 6th interval leap, as indicated by the title.

The musical score for Exercise 3 is presented in four systems, each with three staves. The staves are labeled C, Bb, and Eb. The first system shows a sequence of notes and rests across the three staves, with various key signatures and accidentals. The second system continues the sequence. The third system continues the sequence. The fourth system continues the sequence. The exercise is a single melodic line with a major 6th interval leap, as indicated by the title.

Track 5, Major 6th, a big leap..

Exercise 4

Exercise 4 is a musical exercise consisting of 12 measures, organized into four systems of three staves each. The staves are labeled C, Bb, and Eb. The exercise is written in treble clef and features a sequence of notes and rests across the staves, with key signatures and accidentals indicating the progression of the exercise.

The exercise is divided into four systems, each containing three staves (C, Bb, Eb). The notes and rests are as follows:

System	Staff	Measure 1	Measure 2	Measure 3
System 1	C	C4, D4, E4, F4, G4, A4, B4, C5	C5, B4, A4, G4, F4, E4, D4, C4	C4, D4, E4, F4, G4, A4, B4, C5
	Bb	Bb3, Ab3, Gb3, Fb3, Eb3, D4, C4, Bb3	Bb3, Ab3, Gb3, Fb3, Eb3, D4, C4, Bb3	Bb3, Ab3, Gb3, Fb3, Eb3, D4, C4, Bb3
	Eb	Eb3, D4, C4, Bb3, Ab3, Gb3, Fb3, Eb3	Eb3, D4, C4, Bb3, Ab3, Gb3, Fb3, Eb3	Eb3, D4, C4, Bb3, Ab3, Gb3, Fb3, Eb3
System 2	C	C4, D4, E4, F4, G4, A4, B4, C5	C5, B4, A4, G4, F4, E4, D4, C4	C4, D4, E4, F4, G4, A4, B4, C5
	Bb	Bb3, Ab3, Gb3, Fb3, Eb3, D4, C4, Bb3	Bb3, Ab3, Gb3, Fb3, Eb3, D4, C4, Bb3	Bb3, Ab3, Gb3, Fb3, Eb3, D4, C4, Bb3
	Eb	Eb3, D4, C4, Bb3, Ab3, Gb3, Fb3, Eb3	Eb3, D4, C4, Bb3, Ab3, Gb3, Fb3, Eb3	Eb3, D4, C4, Bb3, Ab3, Gb3, Fb3, Eb3
System 3	C	C4, D4, E4, F4, G4, A4, B4, C5	C5, B4, A4, G4, F4, E4, D4, C4	C4, D4, E4, F4, G4, A4, B4, C5
	Bb	Bb3, Ab3, Gb3, Fb3, Eb3, D4, C4, Bb3	Bb3, Ab3, Gb3, Fb3, Eb3, D4, C4, Bb3	Bb3, Ab3, Gb3, Fb3, Eb3, D4, C4, Bb3
	Eb	Eb3, D4, C4, Bb3, Ab3, Gb3, Fb3, Eb3	Eb3, D4, C4, Bb3, Ab3, Gb3, Fb3, Eb3	Eb3, D4, C4, Bb3, Ab3, Gb3, Fb3, Eb3
System 4	C	C4, D4, E4, F4, G4, A4, B4, C5	C5, B4, A4, G4, F4, E4, D4, C4	C4, D4, E4, F4, G4, A4, B4, C5
	Bb	Bb3, Ab3, Gb3, Fb3, Eb3, D4, C4, Bb3	Bb3, Ab3, Gb3, Fb3, Eb3, D4, C4, Bb3	Bb3, Ab3, Gb3, Fb3, Eb3, D4, C4, Bb3
	Eb	Eb3, D4, C4, Bb3, Ab3, Gb3, Fb3, Eb3	Eb3, D4, C4, Bb3, Ab3, Gb3, Fb3, Eb3	Eb3, D4, C4, Bb3, Ab3, Gb3, Fb3, Eb3

Track 5, Major 6th, a big leap..

Exercise 5

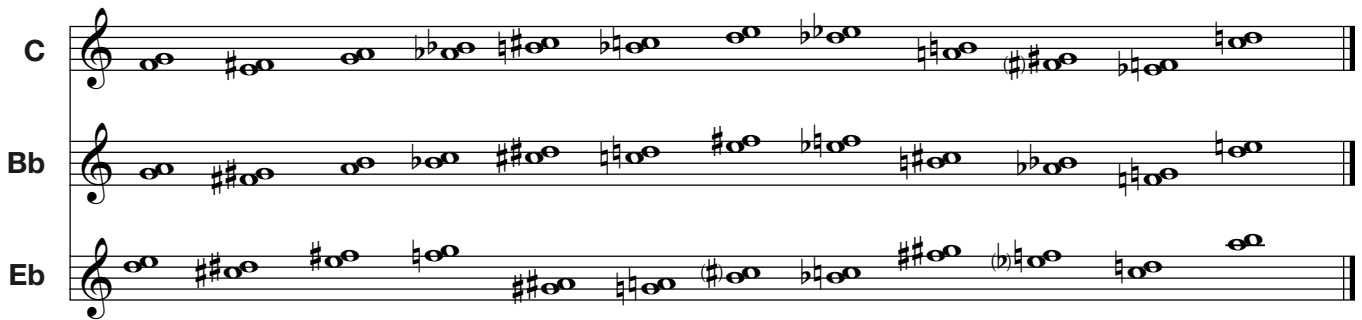
Exercise 5 is a musical exercise consisting of 12 staves, organized into four groups of three staves each. The staves are labeled C, Bb, and Eb on the left. Each staff contains a sequence of notes, primarily eighth notes, with key signatures changes indicated by sharps and flats. The exercise is divided into four measures, each containing three staves. The notes are as follows:

- Measure 1: C (C4, D4, E4, F4, G4, A4, B4, C5), Bb (Bb3, C4, D4, Eb4, F4, G4, Ab4, Bb4), Eb (Eb3, F3, G3, Ab3, Bb3, C4, Db4, Eb4).
- Measure 2: C (C4, D4, E4, F4, G4, A4, B4, C5), Bb (Bb3, C4, D4, Eb4, F4, G4, Ab4, Bb4), Eb (Eb3, F3, G3, Ab3, Bb3, C4, Db4, Eb4).
- Measure 3: C (C4, D4, E4, F4, G4, A4, B4, C5), Bb (Bb3, C4, D4, Eb4, F4, G4, Ab4, Bb4), Eb (Eb3, F3, G3, Ab3, Bb3, C4, Db4, Eb4).
- Measure 4: C (C4, D4, E4, F4, G4, A4, B4, C5), Bb (Bb3, C4, D4, Eb4, F4, G4, Ab4, Bb4), Eb (Eb3, F3, G3, Ab3, Bb3, C4, Db4, Eb4).

Track 6, Major seconds - a little more difficult to find your place.

The major 2nd interval is the first dissonant pair so far. At first sing along and identify the lower, then the upper note of the pair. Sing back and forth between the two to be sure you have the pitches.

This track contains the following sequence of tones:



Track 6, Major seconds - a little more difficult to find your place.

Exercise 1

The image displays a musical score for three voices (C, Bb, Eb) and three instruments (flute, clarinet, bassoon) in 2/4 time. The score is divided into four systems, each containing three staves. The key signature changes from one sharp (F#) to two flats (Bb, Eb) and back to one sharp (F#). The music consists of eighth and sixteenth notes, with some rests and accidentals.

Track 6, Major seconds - a little more difficult to find your place.

Exercise 2

Exercise 2 is a musical exercise for three staves, labeled C, Bb, and Eb. The exercise is divided into four systems, each containing three measures. The notes are written in treble clef. The key signatures and scales are as follows:

- System 1:** C (C major), Bb (Bb major), Eb (Eb major).
- System 2:** C (C major), Bb (Bb major), Eb (Eb major).
- System 3:** C (C major), Bb (Bb major), Eb (Eb major).
- System 4:** C (C major), Bb (Bb major), Eb (Eb major).

The exercise is designed to help students find their place in the scale, particularly for major seconds.

Track 6, Major seconds - a little more difficult to find your place.

Exercise 3

C

Bb

Eb

The musical score for Exercise 3 is organized into four systems, each containing three staves. The staves are labeled C, Bb, and Eb. The music is written in eighth notes and rests, with various key signatures and accidentals. The first system starts with a C major key signature (one sharp) and a common time signature. The second system starts with a Bb major key signature (two flats) and a common time signature. The third system starts with an Eb major key signature (three flats) and a common time signature. The fourth system starts with a C major key signature (one sharp) and a common time signature. The music is written in a way that allows for a comparison of the same melodic line across different key signatures.

Track 6, Major seconds - a little more difficult to find your place.

Exercise 4

Exercise 4 consists of four systems of three staves each, labeled C, Bb, and Eb. Each system contains three measures of music, with a double bar line after the first and second measures. The notes are as follows:

System	Staff	Measure 1	Measure 2	Measure 3
System 1	C	C4, D4, E4, F#4, G4, A4, B4, C5	C4, D4, E4, F#4, G4, A4, B4, C5	C4, D4, E4, F#4, G4, A4, B4, C5
	Bb	Bb3, C4, D4, Eb4, F4, G4, Ab4, Bb4	Bb3, C4, D4, Eb4, F4, G4, Ab4, Bb4	Bb3, C4, D4, Eb4, F4, G4, Ab4, Bb4
	Eb	Eb3, F3, G3, Ab3, Bb3, C4, Db4, Eb4	Eb3, F3, G3, Ab3, Bb3, C4, Db4, Eb4	Eb3, F3, G3, Ab3, Bb3, C4, Db4, Eb4
System 2	C	C4, D4, E4, F#4, G4, A4, B4, C5	C4, D4, E4, F#4, G4, A4, B4, C5	C4, D4, E4, F#4, G4, A4, B4, C5
	Bb	Bb3, C4, D4, Eb4, F4, G4, Ab4, Bb4	Bb3, C4, D4, Eb4, F4, G4, Ab4, Bb4	Bb3, C4, D4, Eb4, F4, G4, Ab4, Bb4
	Eb	Eb3, F3, G3, Ab3, Bb3, C4, Db4, Eb4	Eb3, F3, G3, Ab3, Bb3, C4, Db4, Eb4	Eb3, F3, G3, Ab3, Bb3, C4, Db4, Eb4
System 3	C	C4, D4, E4, F#4, G4, A4, B4, C5	C4, D4, E4, F#4, G4, A4, B4, C5	C4, D4, E4, F#4, G4, A4, B4, C5
	Bb	Bb3, C4, D4, Eb4, F4, G4, Ab4, Bb4	Bb3, C4, D4, Eb4, F4, G4, Ab4, Bb4	Bb3, C4, D4, Eb4, F4, G4, Ab4, Bb4
	Eb	Eb3, F3, G3, Ab3, Bb3, C4, Db4, Eb4	Eb3, F3, G3, Ab3, Bb3, C4, Db4, Eb4	Eb3, F3, G3, Ab3, Bb3, C4, Db4, Eb4
System 4	C	C4, D4, E4, F#4, G4, A4, B4, C5	C4, D4, E4, F#4, G4, A4, B4, C5	C4, D4, E4, F#4, G4, A4, B4, C5
	Bb	Bb3, C4, D4, Eb4, F4, G4, Ab4, Bb4	Bb3, C4, D4, Eb4, F4, G4, Ab4, Bb4	Bb3, C4, D4, Eb4, F4, G4, Ab4, Bb4
	Eb	Eb3, F3, G3, Ab3, Bb3, C4, Db4, Eb4	Eb3, F3, G3, Ab3, Bb3, C4, Db4, Eb4	Eb3, F3, G3, Ab3, Bb3, C4, Db4, Eb4

Track 6, Major seconds - a little more difficult to find your place.

Exercise 5

C

Bb

Eb

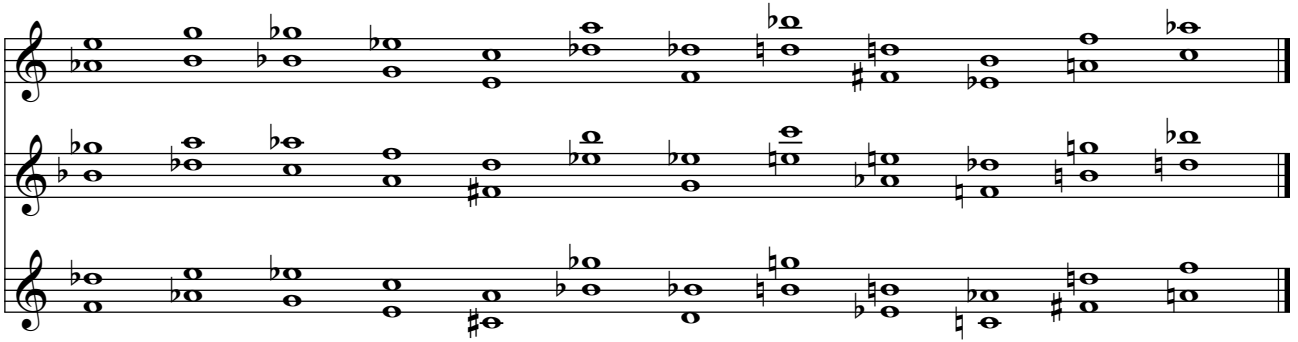
The musical score for Exercise 5 is organized into four systems, each containing three staves. The staves are labeled C, Bb, and Eb. The music is written in eighth notes and rests. The key signatures for each system are as follows:

- System 1: C (one flat), Bb (two flats), Eb (three flats)
- System 2: C (one flat), Bb (two flats), Eb (three flats)
- System 3: C (one sharp), Bb (two flats), Eb (three flats)
- System 4: C (two sharps), Bb (two flats), Eb (three flats)

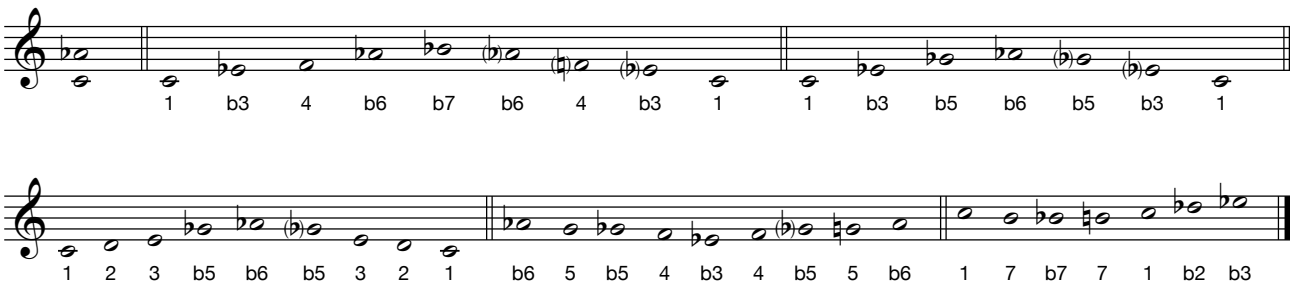
Track 7, Minor 6th, a love story...

This interval has a tendency to sound like a major 3rd. It is also a pretty large leap. This interval will need to be played higher to be in tune.

This track contains the following sequence of tones:



Exercises to be played along with track 7



Track 7, Minor 6th, a love story....

Exercise 1

The musical score for Exercise 1 is presented in four systems, each containing three staves. The staves are labeled C, Bb, and Eb on the left. The music is written in treble clef with a key signature of one flat (Bb). The notation includes various intervals and chords, with some measures featuring accidentals (sharps and flats) to indicate specific notes. The score is divided into measures by vertical bar lines, and some measures contain repeat signs (double bar lines with dots). The overall structure suggests a sequence of exercises or a short piece of music.

Track 7, Minor 6th, a love story....

Exercise 2

C

Bb

Eb

The musical score for Exercise 2 consists of three systems, each containing three staves. The staves are labeled C, Bb, and Eb. The music is written in treble clef. The first system has a key signature of two flats (Bb, Eb). The second system has a key signature of one flat (Bb). The third system has a key signature of one sharp (F#). The music is written in a style that suggests a love story, with a focus on the minor 6th interval.

Track 7, Minor 6th, a love story....

Exercise 3

C

Bb


Eb

The musical score consists of four systems of three staves each. The first system is labeled with 'C', 'Bb', and 'Eb' on the left. Each staff contains a sequence of notes and rests, with key signatures and accidentals changing between measures. The second system continues the sequence. The third system also continues the sequence. The fourth system concludes the exercise, with some notes marked with an 'x' in the middle staves. The notation includes various accidentals (sharps, flats, naturals) and rests, indicating a complex harmonic exercise.

Track 7, Minor 6th, a love story....

Exercise 4

C Bb Eb



Track 7, Minor 6th, a love story....

Exercise 5

The musical score for Exercise 5 is presented in four systems, each containing three staves. The staves are labeled C, Bb, and Eb on the left. The music is written in treble clef with a key signature of three flats (Bb, Eb, Ab). The notation consists of eighth and sixteenth notes, often beamed together in groups of four or six. The score is divided into measures by vertical bar lines, with repeat signs (double bar lines with dots) indicating specific sections. The first system covers measures 1-3, the second system measures 4-6, the third system measures 7-9, and the fourth system measures 10-12. The overall structure is a continuous melodic exercise across the three staves.

Track 8, Tritone, the devils interval?

This interval pair is highly active. There are two possibilities for this interval but the CD contains only the flatter version as it sounds slightly smoother and is easier to harmonise other tones with. The interval makes up the 3rd and b7th of dominant chords.

This track contains the following sequence of tones:

Exercises to be played along with track 8

The image displays the 'Scale of the Blues' in G major, consisting of two staves of music. The first staff is in treble clef and shows the ascending scale: G (finger 1), A (2), B (3), C# (4), D# (5), E (4), F# (3), G (2), A (1). It then shows the descending scale: G (1), F# (7), E (6), D# (5), C# (6), B (7), A (1). The second staff is in treble clef and shows the ascending scale: G (7), A (6), Bb (b6), Cb (b5), D (4), Eb (b5), F (b6), G (6), A (7). It then shows the descending scale: G (7), F (1), E (2), D (b3), C (4), B (b3), A (2), G (1). The final part of the second staff shows the descending scale: F (2), E (4), D# (4), C# (5), B (7), A (5), G (4), F (2).

Track 8, Tritone, the devils interval?

Exercise 1

The musical score for Exercise 1 consists of four systems, each containing three staves. The staves are labeled C, Bb, and Eb on the left. Each staff begins with a treble clef. The key signatures vary across the systems: the first system is in C major (no sharps or flats), the second in Bb major (two flats), the third in Eb major (three flats), and the fourth in C major (no sharps or flats). The notation includes various intervals, including tritones, and is divided into measures by bar lines. The exercise is designed to explore the tritone interval across different keys and staves.

Track 8, Tritone, the devils interval?

Exercise 2

C

Bb

Eb

The musical score for Exercise 2 is organized into four systems, each containing three staves. The staves are labeled C, Bb, and Eb. The first system shows a sequence of eighth notes with various accidentals, including tritones. The second system continues the pattern with more complex key signatures. The third system introduces a new set of intervals, and the fourth system concludes the exercise with a final sequence of notes. The notation is clear, with sharp and flat symbols used to indicate the specific pitches and intervals.

Track 8, Tritone, the devils interval?

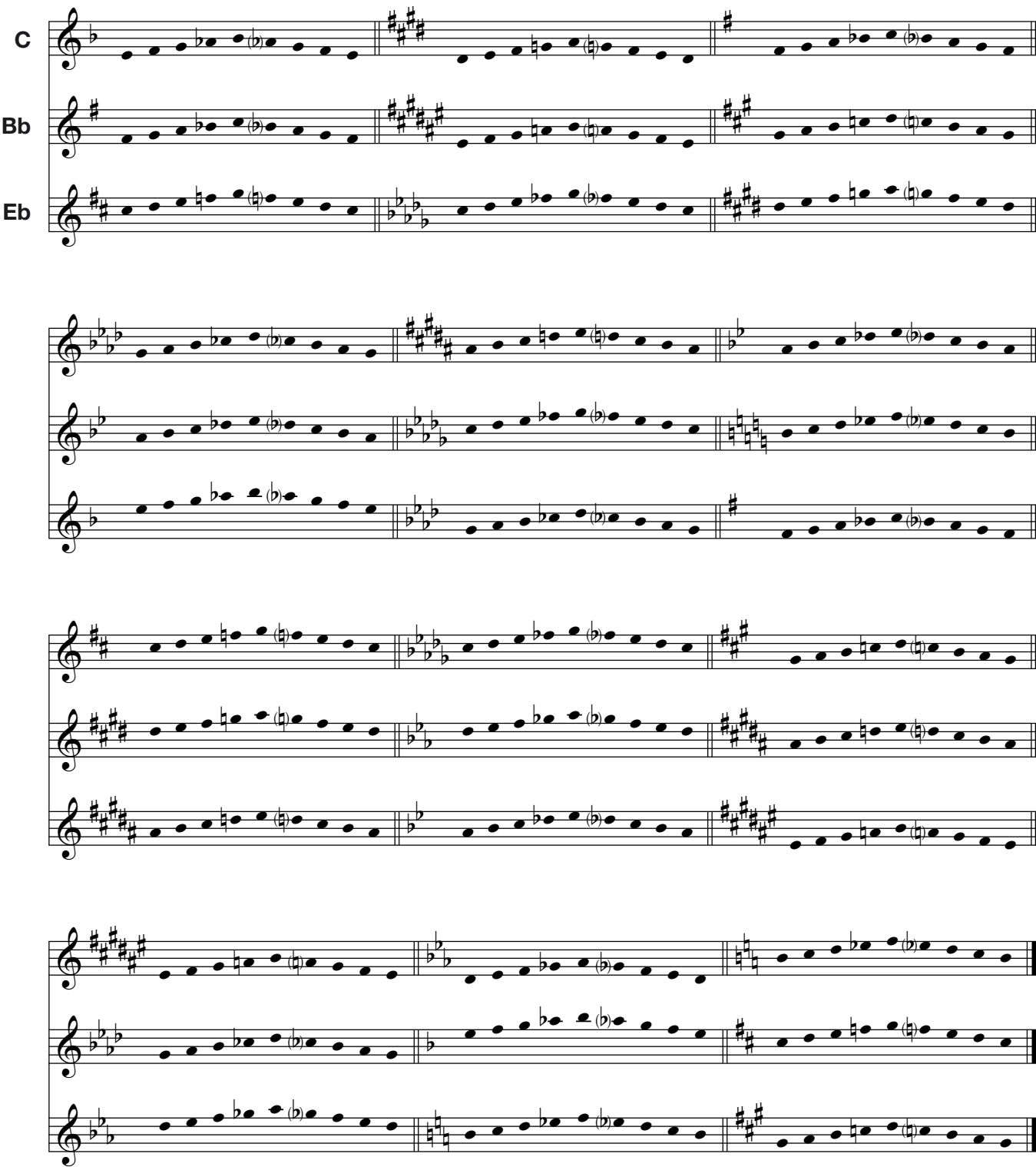
Exercise 3

The musical score for Exercise 3 consists of three systems, each containing three staves. The staves are labeled C, Bb, and Eb on the left. Each staff begins with a treble clef. The first system has a key signature of one flat (Bb). The second system has a key signature of two flats (Bb, Eb). The third system has a key signature of three flats (Bb, Eb, Ab). The music is written in a single melodic line across the three staves, with various intervals and tritones highlighted. The notation includes sharp and flat accidentals, and the piece concludes with a double bar line.

Track 8, Tritone, the devils interval?

Exercise 4

Exercise 4 is a musical score for three staves, labeled C, Bb, and Eb. The score is divided into four systems, each containing three staves. The notation is in treble clef and includes various accidentals (sharps, flats, naturals) and tritone markings (tr). The first system shows the initial key signature and the beginning of the exercise. The second system continues the progression, featuring a key signature change to three sharps. The third system shows further key signature changes and the use of tritone markings. The fourth system concludes the exercise with a final key signature of three sharps and a tritone marking.



Track 8, Tritone, the devils interval?

Exercise 5

The musical score for Exercise 5 consists of three systems, each containing three staves. The staves are labeled C, Bb, and Eb on the left. Each staff begins with a treble clef. The first system has a key signature of one flat (Bb). The second system has a key signature of two flats (Bb, Eb). The third system has a key signature of three flats (Bb, Eb, Ab). The music is written in a single melodic line across the three staves, with various accidentals (sharps, flats, naturals) and a final double bar line at the end of each system.

Track 9, b7 interval, Mixolydian, Diminished, Altered & Suspended

You will probably hear the top note of this pair first. Often this interval is heard as inverted. This usually occurs because one note of the pair is out of your natural singing range. To clearly hear the dominant 7 function in its various forms is very important for jazz improvisers.

This track contains the following sequence of tones:

Track 9 contains the following sequence of tones across three staves (C, Bb, Eb):

- C Staff:** C4, D4, E4, F4, G4, A4, B4, C5, B4, A4, G4, F4, E4, D4, C4.
- Bb Staff:** Bb3, C4, D4, Eb4, F4, G4, Ab4, Bb4, C5, Bb4, Ab4, G4, F4, Eb4, Bb3.
- Eb Staff:** Eb3, F4, G4, Ab4, Bb4, C5, Bb4, Ab4, G4, F4, Eb4, D4, C4, Bb3, Eb3.

Exercises to be played along with track 9

Exercises to be played along with track 9:

- 1 2 3 5 b7 6 5 3 | 1 #9 b9 b7 6 1 b7
- b7 1 b9 #9 3 | 3 #4 5 6 b7 | 6 5 #4 3 #9
- #9 b9 1 b7 6 | 1 2 4 5 b7 5 4 2 1 | 1 b3 4 b5 b7 b5 4 b3 1
- 2 3 #4 6 b7 6 #4 3 2 | b7 b9 3 5 6 #4 #9 1

Track 9, $b7$ interval, Mixolydian, Diminished, Altered & Suspended

Exercise 1

C

Bb

Eb

The musical score for Exercise 1 is organized into four systems, each containing three staves. The staves are labeled C, Bb, and Eb. The music is written in a single melodic line across the staves, using eighth and sixteenth notes. The first system is in the key of Bb (one flat). The second system is in the key of Eb (two flats). The third system is in the key of F# (three sharps). The fourth system is in the key of C# (four sharps). The music features various accidentals (sharps, flats, naturals) and bar lines, indicating a complex harmonic structure.

Track 9, b7 interval, Mixolydian, Diminished, Altered & Suspended

Exercise 2

C

Bb

Eb

First system of musical notation for Exercise 2, featuring three staves labeled C, Bb, and Eb. The notation consists of eighth and quarter notes with various accidentals (flats, naturals, and sharps) across three measures.

Second system of musical notation for Exercise 2, featuring three staves continuing the sequence from the first system.

Third system of musical notation for Exercise 2, featuring three staves continuing the sequence from the second system.

Fourth system of musical notation for Exercise 2, featuring three staves continuing the sequence from the third system.

Track 9, b7 interval, Mixolydian, Diminished, Altered & Suspended

Exercise 3

The musical score for Exercise 3 consists of four systems, each containing three staves. The first system is labeled with 'C', 'Bb', and 'Eb' on the left. The notation includes various key signatures (one flat, two flats, three flats, one sharp, two sharps, three sharps) and musical notes (quarter, eighth, and sixteenth notes) with accidentals (sharps, flats, naturals). The score is divided into measures by vertical bar lines, with repeat signs at the end of each system.

Track 9, $b7$ interval, Mixolydian, Diminished, Altered & Suspended

Exercise 4

Exercise 4 is a musical exercise consisting of four systems of three staves each. The staves are labeled C, Bb, and Eb. The exercise is written in treble clef and features a variety of intervals and accidentals, including sharps, flats, and naturals, across the four systems.

The exercise is organized into four systems, each containing three staves. The staves are labeled C, Bb, and Eb. The notation includes various intervals and accidentals, such as sharps, flats, and naturals, across the four systems.

Track 9, $b7$ interval, Mixolydian, Diminished, Altered & Suspended

Exercise 5

Exercise 5 is a musical exercise consisting of four systems of three staves each. The staves are labeled C, Bb, and Eb. Each system contains three measures of music, with a double bar line after the first measure and a repeat sign at the end of the third measure. The notes are quarter notes, and the exercise explores various intervals and scales, including Mixolydian, Diminished, Altered, and Suspended.

The exercise is organized into four systems, each with three staves labeled C, Bb, and Eb. The notation includes various accidentals (sharps, flats, naturals) and a double bar line with a repeat sign at the end of each system.

System 1:

- C:** Measure 1: Bb, C, D, Eb, F. Measure 2: G, A, B, C, D, Eb, F. Measure 3: G, A, B, C, D, Eb, F.
- Bb:** Measure 1: Bb, C, D, Eb, F. Measure 2: G, A, B, C, D, Eb, F. Measure 3: G, A, B, C, D, Eb, F.
- Eb:** Measure 1: Bb, C, D, Eb, F. Measure 2: G, A, B, C, D, Eb, F. Measure 3: G, A, B, C, D, Eb, F.

System 2:

- C:** Measure 1: Bb, C, D, Eb, F. Measure 2: G, A, B, C, D, Eb, F. Measure 3: G, A, B, C, D, Eb, F.
- Bb:** Measure 1: Bb, C, D, Eb, F. Measure 2: G, A, B, C, D, Eb, F. Measure 3: G, A, B, C, D, Eb, F.
- Eb:** Measure 1: Bb, C, D, Eb, F. Measure 2: G, A, B, C, D, Eb, F. Measure 3: G, A, B, C, D, Eb, F.

System 3:

- C:** Measure 1: Bb, C, D, Eb, F. Measure 2: G, A, B, C, D, Eb, F. Measure 3: G, A, B, C, D, Eb, F.
- Bb:** Measure 1: Bb, C, D, Eb, F. Measure 2: G, A, B, C, D, Eb, F. Measure 3: G, A, B, C, D, Eb, F.
- Eb:** Measure 1: Bb, C, D, Eb, F. Measure 2: G, A, B, C, D, Eb, F. Measure 3: G, A, B, C, D, Eb, F.

System 4:

- C:** Measure 1: Bb, C, D, Eb, F. Measure 2: G, A, B, C, D, Eb, F. Measure 3: G, A, B, C, D, Eb, F.
- Bb:** Measure 1: Bb, C, D, Eb, F. Measure 2: G, A, B, C, D, Eb, F. Measure 3: G, A, B, C, D, Eb, F.
- Eb:** Measure 1: Bb, C, D, Eb, F. Measure 2: G, A, B, C, D, Eb, F. Measure 3: G, A, B, C, D, Eb, F.

Track 9, $b7$ interval, Mixolydian, Diminished, Altered & Suspended

Exercise 6

C

Bb

Eb

Track 9, b7 interval, Mixolydian, Diminished, Altered & Suspended

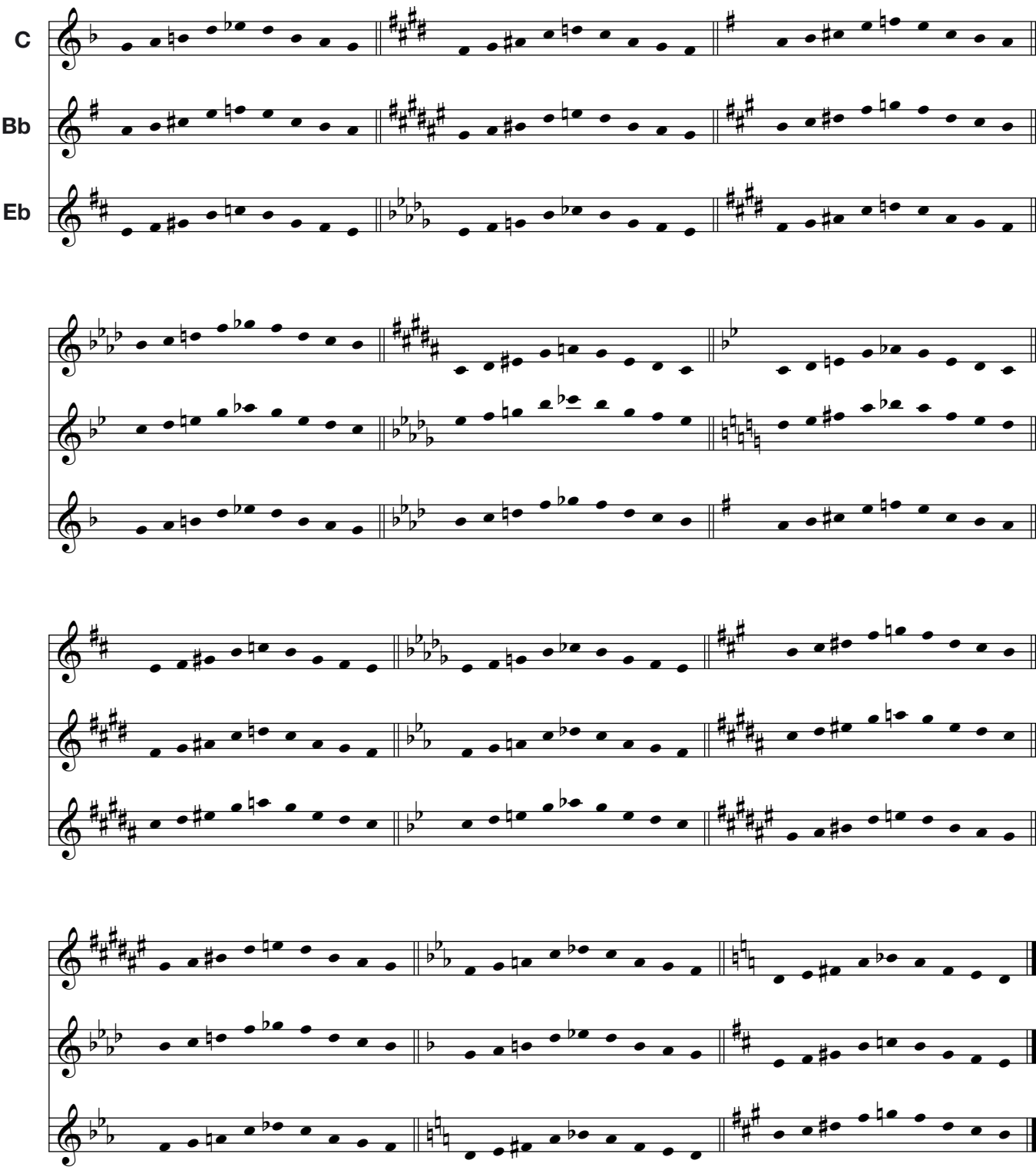
Exercise 7

The image displays a musical score for Exercise 7, organized into three systems, each consisting of three staves. The first system is labeled with 'C', 'Bb', and 'Eb' on the left, indicating the key signatures for the three staves. Each staff begins with a treble clef. The notation is written in a single melodic line across the three staves, with various key signatures (C, Bb, Eb, and others) and time signatures (4/4 and 3/4) indicated by the number of sharps and flats at the beginning of each staff. The notes are primarily eighth and sixteenth notes, often beamed together, with frequent use of accidentals (sharps, flats, naturals) to indicate chromatic movement. Bar lines are used to divide the music into measures. The second and third systems follow a similar pattern, each with three staves and treble clefs, continuing the melodic exercise across different key signatures and rhythmic patterns.

Track 9, $b7$ interval, Mixolydian, Diminished, Altered & Suspended

Exercise 8

Exercise 8 is a musical exercise consisting of four systems of three staves each. The staves are labeled C, Bb, and Eb. Each system contains three measures of music, with a double bar line after the second measure. The music is written in treble clef and features a variety of intervals and accidentals, including flats, sharps, and naturals, illustrating the concepts of Mixolydian, Diminished, Altered, and Suspended intervals.



Track 9, $b7$ interval, Mixolydian, Diminished, Altered & Suspended

Exercise 9

C

Bb

Eb



Track 10, Major 7th, the terrible beauty.

Of all the intervals this one might be the most confusing. Once again one of the two tones might be out of your singing range and it is not so easy to hear whether you are singing the root or the 7th. There is a tendency to hear the upper note more readily than the lower.

This track contains the following sequence of tones:

C
Bb
Eb

Exercises to be played along with track 10

The image displays three staves of musical notation, likely for guitar, showing a sequence of notes with their corresponding fret numbers and accidentals. The notation is in treble clef.

Staff 1: The first staff shows a sequence of notes starting with a double bar line. The notes are: 7 (F), 1 (G), 2 (A), 3 (B), #4 (C#), 3 (B), 2 (A), 1 (G), 7 (F), followed by a double bar line, then 3 (B), #4 (C#), #5 (D#), 6 (E), 7 (F), 6 (E), #5 (D#), #4 (C#), and 3 (B).

Staff 2: The second staff shows a sequence of notes starting with a double bar line. The notes are: 2 (D), b3 (C), 3 (D), 4 (E), b5 (D), 4 (E), 3 (D), b3 (C), 2 (D), followed by a double bar line, then #4 (C#), 5 (D), #5 (E), 6 (F), b7 (E), 6 (F), #5 (E), 5 (D), and #4 (C#).

Staff 3: The third staff shows a sequence of notes starting with a double bar line. The notes are: #4 (C#), 5 (D), #6 (E), 7 (F), 1 (G), 7 (F), #6 (E), 5 (D), #4 (C#), followed by a double bar line, then 7 (F), 1 (G), #2 (A), 3 (B), #4 (C#), 5 (D), #4 (C#), followed by another double bar line, then 7 (F), #2 (A), #4 (C#), 5 (D), 3 (B), 1 (G), and #2 (A).

Track 10, Major 7th, the terrible beauty.

Exercise 1

Exercise 1 is a musical exercise consisting of four systems of three staves each. The staves are labeled C, Bb, and Eb. The exercise is written in treble clef and features a series of eighth notes and quarter notes, with various accidentals (sharps, flats, and naturals) indicating chromatic movement. The exercise is divided into four measures, each containing a different sequence of notes and accidentals.

The exercise is divided into four measures, each containing a different sequence of notes and accidentals. The first measure starts with a C major triad (C, E, G) and moves to a Bb major triad (Bb, D, F). The second measure starts with a Bb major triad (Bb, D, F) and moves to an Eb major triad (Eb, G, Bb). The third measure starts with an Eb major triad (Eb, G, Bb) and moves to a C major triad (C, E, G). The fourth measure starts with a C major triad (C, E, G) and moves to a Bb major triad (Bb, D, F).

Track 10, Major 7th, the terrible beauty.

Exercise 2

The musical score for Exercise 2 is presented in four systems, each containing three staves. The staves are labeled C, Bb, and Eb on the left. The key signature is C major (no sharps or flats). The time signature is 4/4. The music consists of a series of eighth and sixteenth notes, often beamed together, creating a flowing, melodic line. The notation includes various accidentals (sharps, flats, naturals) and dynamic markings (p, f, mf, sfz, sfz sfz). The score is divided into measures by vertical bar lines, with repeat signs (double bar lines with dots) indicating specific sections. The overall structure is a continuous melodic exercise across the four systems.

Track 10, Major 7th, the terrible beauty.

Exercise 3

The musical score for Exercise 3 is presented in four systems, each containing three staves. The staves are labeled C, Bb, and Eb. The notation includes treble clefs, key signatures (one sharp for C, one flat for Bb, and two flats for Eb), and various note patterns, including eighth and sixteenth notes, rests, and accidentals. The score is divided into measures by bar lines, with repeat signs (double bar lines with dots) indicating specific sections. The overall structure suggests a complex harmonic exercise involving chromatic and diatonic movement across the three staves.

Track 10, Major 7th, the terrible beauty.

Exercise 4

The musical score for Exercise 4 is presented in three systems, each containing three staves. The staves are labeled C, Bb, and Eb. The music is written in treble clef and features a complex sequence of notes, including many accidentals (sharps, flats, and naturals), suggesting a chromatic or diatonic exercise. The first system shows the initial patterns for each staff. The second system continues the patterns, with some staves showing more complex chromatic movement. The third system concludes the exercise, with some staves ending on a final note or a double bar line. The overall structure is a series of interconnected melodic lines across the three staves.

Track 10, Major 7th, the terrible beauty.

Exercise 5

The musical score for Exercise 5 consists of three systems, each containing three staves. The first system is labeled with 'C', 'Bb', and 'Eb' on the left. Each staff begins with a treble clef. The first staff has a key signature of two sharps (F# and C#). The second staff has a key signature of three sharps (F#, C#, and G#). The third staff has a key signature of four sharps (F#, C#, G#, and D#). The second system also has three staves, each starting with a treble clef. The first staff has a key signature of one sharp (F#). The second staff has a key signature of two sharps (F# and C#). The third staff has a key signature of three sharps (F#, C#, and G#). The third system has three staves, each starting with a treble clef. The first staff has a key signature of three sharps (F#, C#, and G#). The second staff has a key signature of two sharps (F# and C#). The third staff has a key signature of one sharp (F#). The music is written in a style that suggests a specific harmonic exercise, with various accidentals and key changes throughout.

Track 10, Major 7th, the terrible beauty.

Exercise 6

The musical score for Exercise 6 is presented in four systems, each containing three staves. The staves are labeled C, Bb, and Eb on the left. The key signature is C major (one sharp, F#). The time signature is 4/4. The score consists of a series of eighth and sixteenth notes, with some measures containing accidentals (sharps and flats) to create a specific harmonic progression. The notation is written in a standard musical staff format with a treble clef and a key signature of one sharp (F#).

The first system shows the initial notes for each staff. The second system continues the progression. The third system shows a change in the harmonic structure. The fourth system concludes the exercise with a final cadence.

Track 10, Major 7th, the terrible beauty.

Exercise 7

Exercise 7 is a musical score for three staves, labeled C, Bb, and Eb. The score is divided into four systems, each containing three staves. The notation is in treble clef and includes various accidentals (sharps, flats, naturals) and rests. The first system shows the initial key signature of C major (one sharp). The second system introduces a key change to Bb major (two flats). The third system returns to C major. The fourth system introduces a key change to Eb major (three flats). The notation is complex, featuring many accidentals and rests, suggesting a challenging exercise for the student.



Track 11, Perfect 4

Quartal harmony

This track contains the following sequence of tones:

C

Bb

Eb

Exercises to be played along with track 11

Track 11, Perfect 4

Exercise 1

C

Bb

Eb

Exercise 1 musical score for three staves (C, Bb, Eb). The score consists of three measures of music. The first measure is in C major (one sharp). The second measure is in Bb major (two flats). The third measure is in Eb major (three flats). The notes are: C major (C4, D4, E4, F4, G4, A4, B4, C5), Bb major (Bb3, C4, D4, Eb4, F4, G4, Ab4, Bb4), and Eb major (Eb3, F3, G3, Ab3, Bb3, C4, Db4, Eb4).

Track 11, Perfect 4

Exercise 2

C

Bb

Eb

The musical score for Exercise 2 consists of three staves, each with a treble clef. The first staff is labeled 'C' and contains a key signature of three sharps (F#, C#, G#). The second staff is labeled 'Bb' and contains a key signature of two sharps (F#, C#). The third staff is labeled 'Eb' and contains a key signature of two flats (Bb, Eb). Each staff contains three measures of music, separated by double bar lines. The notes are primarily eighth and sixteenth notes, with various accidentals (sharps, flats, naturals) indicating chromatic movement. The first measure of each staff shows a sequence of notes moving up and down the scale. The second measure continues this sequence with more chromaticism. The third measure shows a final sequence of notes, often ending with a natural sign. The overall structure is a chromatic exercise across three different tonalities.

Track 11, Perfect 4

Exercise 3

C

Bb

Eb

The musical score for Exercise 3, Track 11, Perfect 4, is presented in four systems, each containing three staves. The staves are labeled C, Bb, and Eb. The first system shows a sequence of notes in C major, Bb major, and Eb major. The second system continues the sequence with similar key signatures. The third system shows a change in key signature for the C staff to C major, while Bb and Eb remain in their respective major keys. The fourth system concludes the exercise with a final sequence of notes in the same key signatures.

Track 11, Perfect 4

Exercise 4

C

Bb

Eb

The image displays a musical score for Exercise 4, consisting of three staves labeled C, Bb, and Eb. Each staff begins with a treble clef and a key signature of three sharps (F#, C#, G#). The notation includes various musical symbols such as eighth notes, quarter notes, and half notes, along with accidentals (sharps, flats, and naturals) and dynamic markings (p, f, mf, sf, ff). The score is organized into four systems, each containing three staves. The first system shows the initial key signature and the beginning of the exercise. The second system introduces a key change to one sharp (F#). The third system changes the key signature to one flat (Bb). The fourth system changes the key signature to two flats (Bb, Eb). The notation is complex, with many notes and accidentals, suggesting a challenging exercise for the student.

Track 11, Perfect 4

Exercise 5

The musical score for Exercise 5 is presented in four systems, each containing three staves. The staves are labeled C, Bb, and Eb. The notation is as follows:

- System 1:**
 - C:** Treble clef, key signature of three sharps (F#, C#, G#). Notes: D4, E4, F#4, G#4, A4, B4, C5, B4, A4, G#4, F#4, E4, D4.
 - Bb:** Treble clef, key signature of three sharps. Notes: D4, E4, F#4, G#4, A4, B4, C5, B4, A4, G#4, F#4, E4, D4.
 - Eb:** Treble clef, key signature of three flats (Bb, Eb, Ab). Notes: D4, Eb4, Fb4, Gb4, Ab4, Bb4, C5, Bb4, Ab4, Gb4, Fb4, Eb4, D4.
- System 2:**
 - C:** Treble clef, key signature of three sharps. Notes: D4, Eb4, Fb4, Gb4, Ab4, Bb4, C5, Bb4, Ab4, Gb4, Fb4, Eb4, D4.
 - Bb:** Treble clef, key signature of three sharps. Notes: D4, Eb4, Fb4, Gb4, Ab4, Bb4, C5, Bb4, Ab4, Gb4, Fb4, Eb4, D4.
 - Eb:** Treble clef, key signature of three flats. Notes: D4, Eb4, Fb4, Gb4, Ab4, Bb4, C5, Bb4, Ab4, Gb4, Fb4, Eb4, D4.
- System 3:**
 - C:** Treble clef, key signature of three sharps. Notes: D4, Eb4, Fb4, Gb4, Ab4, Bb4, C5, Bb4, Ab4, Gb4, Fb4, Eb4, D4.
 - Bb:** Treble clef, key signature of three sharps. Notes: D4, Eb4, Fb4, Gb4, Ab4, Bb4, C5, Bb4, Ab4, Gb4, Fb4, Eb4, D4.
 - Eb:** Treble clef, key signature of three flats. Notes: D4, Eb4, Fb4, Gb4, Ab4, Bb4, C5, Bb4, Ab4, Gb4, Fb4, Eb4, D4.
- System 4:**
 - C:** Treble clef, key signature of three sharps. Notes: D4, Eb4, Fb4, Gb4, Ab4, Bb4, C5, Bb4, Ab4, Gb4, Fb4, Eb4, D4.
 - Bb:** Treble clef, key signature of three sharps. Notes: D4, Eb4, Fb4, Gb4, Ab4, Bb4, C5, Bb4, Ab4, Gb4, Fb4, Eb4, D4.
 - Eb:** Treble clef, key signature of three flats. Notes: D4, Eb4, Fb4, Gb4, Ab4, Bb4, C5, Bb4, Ab4, Gb4, Fb4, Eb4, D4.

Track 11, Perfect 4

Exercise 6

C

Bb

Eb

Track 11, Perfect 4

Exercise 7

C Bb Eb

The musical score for Exercise 7 consists of three staves, each with a treble clef. The first staff is labeled 'C' and has a key signature of three sharps (F#, C#, G#). The second staff is labeled 'Bb' and has a key signature of three sharps (F#, C#, G#). The third staff is labeled 'Eb' and has a key signature of three flats (Bb, Eb, Ab). Each staff contains three measures of music, separated by double bar lines. The notes are as follows:

Staff	Measure 1	Measure 2	Measure 3
C	F#, C#, G#	F#, C#, G#	F#, C#, G#
Bb	F#, C#, G#	F#, C#, G#	F#, C#, G#
Eb	Bb, Eb, Ab	Bb, Eb, Ab	Bb, Eb, Ab

Track 11, Perfect 4

Exercise 8

C Bb Eb

The musical score for Exercise 8 is written for three staves, labeled C, Bb, and Eb. The score is organized into four systems, each containing three staves. The first system begins with a treble clef and a key signature of one sharp (F#). The second system introduces a key signature of two sharps (F# and C#). The third system introduces a key signature of three sharps (F#, C#, and G#). The fourth system introduces a key signature of four sharps (F#, C#, G#, and D#). The notation includes various note values, including quarter, eighth, and sixteenth notes, as well as rests. The exercise is a perfect fourth exercise, meaning it focuses on the interval of a perfect fourth between notes.

Track 11, Perfect 4

Exercise 9

C Bb Eb

The musical score for Exercise 9 consists of three staves, each with a treble clef. The first staff is labeled 'C' and has a key signature of three sharps (F#, C#, G#). The second staff is labeled 'Bb' and has a key signature of three sharps (F#, C#, G#). The third staff is labeled 'Eb' and has a key signature of three flats (Bb, Eb, Ab). Each staff contains three measures of music, separated by double bar lines. The notes are written in a way that suggests a specific harmonic progression, with some notes being tied across measures. The overall structure of the exercise is designed to explore the relationship between these three different harmonic contexts.

Track 11, Perfect 4

Exercise 10

C Bb Eb

The first system of musical notation consists of three staves. The top staff is labeled 'C' and contains a sequence of notes with various accidentals (sharps, flats, naturals) and bar lines. The middle staff is labeled 'Bb' and contains a sequence of notes with various accidentals (sharps, flats, naturals) and bar lines. The bottom staff is labeled 'Eb' and contains a sequence of notes with various accidentals (sharps, flats, naturals) and bar lines.

The second system of musical notation consists of three staves. Each staff contains a sequence of notes with various accidentals (sharps, flats, naturals) and bar lines.

The third system of musical notation consists of three staves. Each staff contains a sequence of notes with various accidentals (sharps, flats, naturals) and bar lines.

The fourth system of musical notation consists of three staves. Each staff contains a sequence of notes with various accidentals (sharps, flats, naturals) and bar lines.

Track 11, Perfect 4

Exercise 11

C

Bb

Eb

The musical score for Exercise 11 consists of three systems, each with three staves labeled C, Bb, and Eb. Each staff contains three measures of music, separated by double bar lines. The notes are half notes, and the key signature changes between measures. The first measure of each staff is in C major (one sharp), the second measure is in Bb major (two flats), and the third measure is in Eb major (three flats).

Track 11, Perfect 4

Exercise 12

The musical score for Exercise 12 is presented in four systems, each containing three staves. The staves are labeled C, Bb, and Eb. The notation is as follows:

- System 1:**
 - C:** Treble clef, key signature of three sharps (F#, C#, G#). Notes: F#4, A4, B4, G#4, F#4, E4, D4, C4.
 - Bb:** Treble clef, key signature of three sharps (F#, C#, G#). Notes: F#4, A4, B4, G#4, F#4, E4, D4, C4.
 - Eb:** Treble clef, key signature of three flats (Bb, Eb, Ab). Notes: Bb4, Ab4, Gb4, Fb4, Eb4, D4, C4, Bb4.
- System 2:**
 - C:** Treble clef, key signature of three sharps (F#, C#, G#). Notes: F#4, A4, B4, G#4, F#4, E4, D4, C4.
 - Bb:** Treble clef, key signature of three sharps (F#, C#, G#). Notes: F#4, A4, B4, G#4, F#4, E4, D4, C4.
 - Eb:** Treble clef, key signature of three flats (Bb, Eb, Ab). Notes: Bb4, Ab4, Gb4, Fb4, Eb4, D4, C4, Bb4.
- System 3:**
 - C:** Treble clef, key signature of three sharps (F#, C#, G#). Notes: F#4, A4, B4, G#4, F#4, E4, D4, C4.
 - Bb:** Treble clef, key signature of three sharps (F#, C#, G#). Notes: F#4, A4, B4, G#4, F#4, E4, D4, C4.
 - Eb:** Treble clef, key signature of three flats (Bb, Eb, Ab). Notes: Bb4, Ab4, Gb4, Fb4, Eb4, D4, C4, Bb4.
- System 4:**
 - C:** Treble clef, key signature of three sharps (F#, C#, G#). Notes: F#4, A4, B4, G#4, F#4, E4, D4, C4.
 - Bb:** Treble clef, key signature of three sharps (F#, C#, G#). Notes: F#4, A4, B4, G#4, F#4, E4, D4, C4.
 - Eb:** Treble clef, key signature of three flats (Bb, Eb, Ab). Notes: Bb4, Ab4, Gb4, Fb4, Eb4, D4, C4, Bb4.

Track 12, Minor 2nd, too close for comfort?

Minor 2nds

This track contains the following sequence of tones:

Exercises to be played along with track 11

Track 12, Minor 2nd, too close for comfort?

Exercise 1

The musical score for Exercise 1 is presented in four systems, each containing three staves. The staves are labeled C, Bb, and Eb on the left. The key signature is Bb major (two flats). The time signature is common time (C). The notation consists of eighth and sixteenth notes, often beamed together in groups of four or eight. The exercise explores the interval of a minor second (one semitone) between notes, which is described as 'too close for comfort' in the title. The first system shows the C, Bb, and Eb staves. The second system shows the C, Bb, and Eb staves. The third system shows the C, Bb, and Eb staves. The fourth system shows the C, Bb, and Eb staves. The exercise is divided into four measures, each with a double bar line and repeat dots at the end.

Track 12, Minor 2nd, too close for comfort?

Exercise 2

The musical score for Exercise 2 is presented in four systems, each containing three staves. The staves are labeled C, Bb, and Eb on the left. The music is written in treble clef and consists of a series of eighth notes. The key signature changes between systems: the first system is in Bb major (two flats), the second in Eb major (three flats), the third in B major (two sharps), and the fourth in Eb major (three flats). The exercise focuses on the minor 2nd interval, which is highlighted by the specific note choices and the key signature changes.

Track 12, Minor 2nd, too close for comfort?

Exercise 3

The image displays a musical score for three staves, labeled C, Bb, and Eb. The score is organized into four systems, each containing three staves. The notation includes various accidentals (sharps, flats, naturals) and a key signature of two flats (Bb and Eb). The first system shows a sequence of chords and notes, with the second system continuing the progression. The third and fourth systems show further developments of the musical ideas, with the final system concluding with a double bar line. The notation is complex, featuring many accidentals and a key signature of two flats.

Track 12, Minor 2nd, too close for comfort?

Exercise 4

The musical score for Exercise 4 consists of three systems, each containing three staves. The staves are labeled C, Bb, and Eb on the left. Each staff begins with a treble clef. The first system has a key signature of two flats (Bb and Eb). The second system has a key signature of one flat (Bb). The third system has a key signature of one sharp (F#). The music is written in a single melodic line across the three staves, with various intervals and accidentals. The notation includes eighth and sixteenth notes, rests, and sharp and flat accidentals. The score is divided into measures by vertical bar lines, with repeat signs at the end of each system.

Track 12, Minor 2nd, too close for comfort?

Exercise 5

The image displays a musical score for Exercise 5, titled "Track 12, Minor 2nd, too close for comfort?". The score is written for three staves, labeled C, Bb, and Eb, indicating the instruments or voices. The music is in 4/4 time and consists of four systems, each containing three staves. The notation includes various musical symbols such as treble clefs, key signatures (one flat for C, two flats for Bb, and three flats for Eb), and a series of notes and rests. The notes are primarily eighth and sixteenth notes, often beamed together. The key signature changes between systems: the first system is in C major (one flat), the second system is in Bb major (two flats), the third system is in Eb major (three flats), and the fourth system is in C major (one flat). The score is presented in a clean, professional layout with clear notation and a consistent font.

