Basic Music Reading part 5: Scales

In Parts 1 through 4, you learned how to read choral music. But there was nothing in there to tell you **WHY** the notes are the way they are.

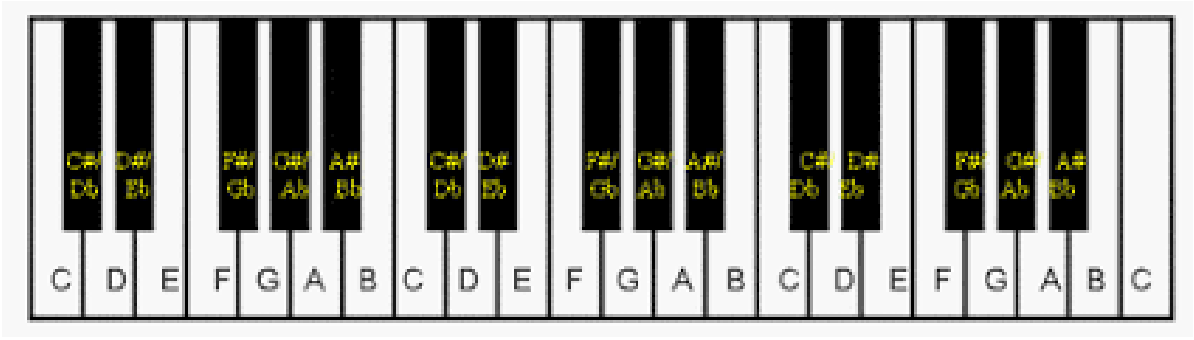
Did you ever wonder **why** all the songs you know happen to use the same notes as on a piano? I mean, what about yodeling? Is it music? Can you put it on paper? Or how about more primitive music or ancient music? It's still music, but you can never play it on a piano.

Try these links. They're definitely music, but there's nothing to do with an orchestra:
https://www.youtube.com/watch?v=49uYID_s7nY
https://www.youtube.com/watch?v=Y1xuHnhphNo
https://www.youtube.com/watch?v=ZLeMpbRUMso
https://www.youtube.com/watch?v=9Ei0HBjEU1M

Why do we restrict ourselves to singing the 88 notes on a piano? My guess is:

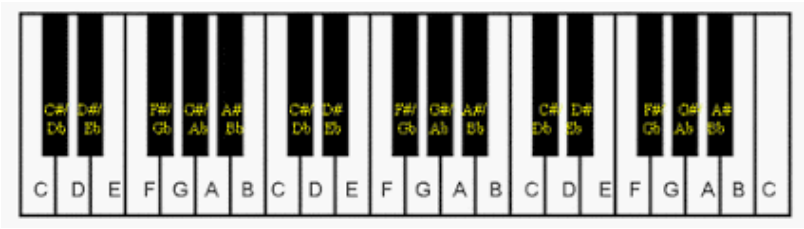
- It's easy to build orchestral instruments that play those notes.
- You want all the notes in the orchestra to be playing the same notes, right?
- The piano note frequencies have simple mathematical relationships.
- All you have to learn is 12 notes, then repeat them octave by octave.
- Whatever works in one octave also works just fine in every octave.
- Note combinations are consistent over the full range. A "C Major" chord sounds just as good in whatever octave you play it on the piano.

Here's a partial keyboard with the note names written in. Remember that the octaves are numbered. The lowest octave is #1, middle C is in octave 4, and the highest notes on the piano are octave #7.



Notic
e that keyboard has groups of 12 keys that repeat over and over. Each group of 12 keys is called an **octave**. It turns out that **all rules that work for one octave will always work for any other octave.** That's the beauty of the piano keyboard.

Ear Training:



<u>You need a keyboard or a piano app on your phone for this.</u>

Now that you know how to read notes, it's time to practice singing them. On your piano app, play any C note that you feel comfortable with.

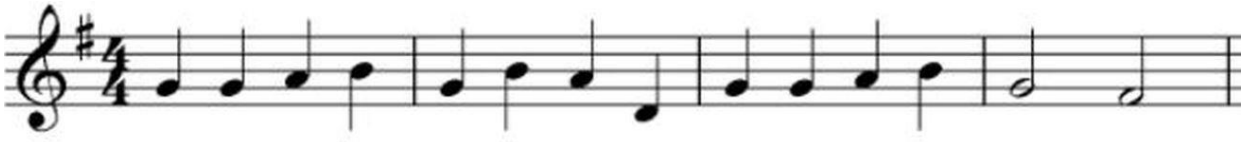
Now cup one ear with your hand, so you can hear yourself. Try to match what you're singing with the pitch of the keyboard. When you hit the right pitch you'll know it.

This is very hard for some new singers to do. Just keep practicing. You'll get it eventually.

Rinse and repeat with other notes. Continue until you have some idea about what your own personal musical range is. **Make a note of this**. The more you practice, the more your range will increase.

Keys and the Musical Scale:

In the score below, say the names of these notes and play them on your keyboard app.

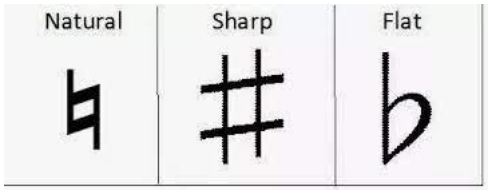


Yes, it's Yankee Doodle. The notes are: G G A B / G B A D / G G A B / G F

Whoops! It doesn't sound just exactly right. **There's something wrong with the last note**. On the keyboard, see the little black key between F and G ? It's marked "F# / Gb". Play that one instead. All better, right? You pronounce this note "F sharp". Oh look! On the left side of the staff, there's a "#" mark on the line where F notes go. <u>That's a clue.</u>

There are three kinds of mark called "accidentals" that change the pitch of a note:

- Sharp raises the note a half step.
- Flat lowers the note a half step
- Natural undoes a sharp or flat.



Okay, so obviously the "F sharp" key on the keyboard could also be called "G flat". But this particular written score would get very messy with a "G flat" note everywhere there was an F. It is MUCH easier to simply put that "#" sharp mark on the "F" line at the beginning of the score. This tells you that **every time** you see an F note, it really is an F sharp note.

In this example, the sharp sign at the beginning of the score is called the **key signature**. It

turns out that almost all music really needs to sharp or flat certain notes every time they show up. So you put all the "**do this every time**" sharps or flats in the **key signature** at the beginning of every line.

Exercise: On your keyboard, start at G, and play every white note until you get to the next higher G. It will just sound wrong unless you play F sharp instead of F. But, if you start with C and play every white note it sounds just fine. WHY! That brings us to **scales**.

Scales :

This section looks complicated, but fear not. It's just a formula that any child can handle.

Back to Yankee Doodle. Remember the notes are: G G A B / G B A D / G G A B / G F only now we know they should end with an F# instead of an F.

Do the same thing, but start one octave lower. Sounds perfectly fine. Then play it starting one octave higher. Still sounds perfectly fine.

Now play Yankee Doodle except, start on the next white key to the right. A A B C / A C B E / A A B C/ A G#. Oh, man. that sounds awful! Okay, kinda cool but way wrong. (pro tip: you just invented the Dorian Mode, which made Simon and Garfunkle rich).

Now instead, go 4 keys down, so you'd play C C D E/ C E D G / C C D E / C B Wow. That sounds just fine. And you didn't need to use any black keys. Why does it sound good even though you changed all the notes?

This is because every starting note requires its own **scale** with its own unique collection of sharps or flats. The scale for every starting note is called the **key**. Since there are 12 notes in every octave, that means there are 12 different keys, with 12 different sets of sharps or flats.

OMG. Sound confusing? It is. Coming up is solfege (do - re - me or 1 - 2 - 3) which is how singers dodge around the whole **key** situation. For now, let's re-invent the **Major Scale**.

Musical Steps:
The musical step is the number of keys you are moving. If you go from any piano key to the next key, that is a **half step**. If you go two steps from any piano key, that is a **full step**.

Intervals:
The distance between any two notes on the keyboard is the interval. There are certain distances that are used a lot.Instead of always counting the number of piano keys (half steps), most of the time it's easier to just give a name to that number of half steps. For example, three half steps is called a **major third**. Two half steps is a **minor third**. Eight half steps is a **major fifth** (actually, it's called a **perfect fifth**).

The Major scale:
Start with any C, play only the white notes, and count the keys as you go. You will find that there is a black note between C and D, D and E, F and G, G and A, and A and B. There are no notes between E and F and between B and C. The steps with a black note in between (C - D, D - E, F - G, G - A, A - B) are called **whole steps** or **whole intervals**. The steps E-F and B-C are called **half steps** or **half intervals**.

So if you abbreviate whole steps as "W" and half steps as "H" then the intervals between notes in the **C major scal**e would be: **W W H W W W H**.

MAGIC: Once you learn the major scale formula (**W W H W W W H**) then **you can build a major scale starting from any note at all.** Want an A flat major scale? Eezy-peezy. F sharp major scale? No sweat. Just remember the **W W H W W W H** formula.

Try it: start on G. Next note is a Whole step = A. Then another Whole = B. Then **a Half step up to C**. Then Whole step to D, Whole step to E, a whole step to F sharp and **a Half step up to G**. Play it: sounds good. You just played the **G Major scale**.

It turns out that if you count the steps between adjacent notes you can make a major scale out of any note you want! The rule is: For any **major scale**, there is a half step between the third - fourth notes and seventh-eighth notes, and a whole step for all other notes. In other words, **W W H W W W H**.

Try it. Start on A. You get A - B - C sharp - D - E - F sharp -G sharp - A. OR - in other words, you just proved that **the A Major scale has three sharps**.

But what if you start on F? You get F - G - A - A sharp - C - D - E - F.... wait, what? It sounds perfectly fine, but when you write it down, it's got an A and an A sharp but no B. Won't work. You have to have one of every letter in a scale. **Flats to the rescue!** Instead of "A sharp" **call it "B flat"** and now you have a scale that makes sense to write. **So you write some scales with sharps and other scales with flats.** Just so when you spell the scale you get one of each letter.

♮ ♭ ♯

If you go through this **W W H W W W H** exercise for all 12 notes in an octave, you will end up needing to write some scales with sharps and some with flats. Please don't mix sharps and flats in the same key signature. Here's how your keys would come out:

- Key of C = no sharps, no flats
- Key of G = 1 sharp (F#)
- Key of D = 2 sharps (F#, C#)
- Key of A = 3 sharps (F#, C#, G#)
- Key of E= 4 sharps (F#, C#, G#, D#)
- Key of B = 5 sharps (F#, C#, G#, D#,A#)
- Key of F# = 6 sharps (F#, C#, G#, D#,A#, E#)
- Key of F = 1 flat (B♭)
- Key of Bb = 2 flats (B♭, E♭)

- Key of Eb = 3 flats (B♭, E♭. A♭)
- Key of Ab = 4 flats (B♭, E♭, A♭, D♭)
- Key of Db = 5 flats(B♭, E♭, A♭, D♭, G♭)
- Key of Gb = 6 flats(B♭, E♭, A♭, D♭, G♭, C♭)

Watch this video: https://www.youtube.com/watch?v=vIuzrV1dwPs

Minor Scales:

Okay, so it turns out to be pretty easy to build any major scale we want, using the **W W H W W W H** formula. But there are lots (**lots!**) of other kinds of scales, that use different note formulas. All you have to do is learn the other formulas.

The most popular "other" scale is the **Aeolian** or **Minor** scale. Major scales sound bright and happy. Minor scales sound mellow and sometimes a bit sad.

Here's how to build the most popular minor scale, called the Natural Minor:

Start with a C major scale (C D E F G A B C) but instead start on A. So your notes would be: A B C D E F G A. Hear the difference? Sounds kind of moody, doesn't it? That's because this is the **A minor scale.** (actually, the A Natural Minor scale). Look at the intervals: the half steps have moved to the 2nd - 3rd notes and the 5th - 6th notes, in other words **WHWWHWW**. Easy, right?

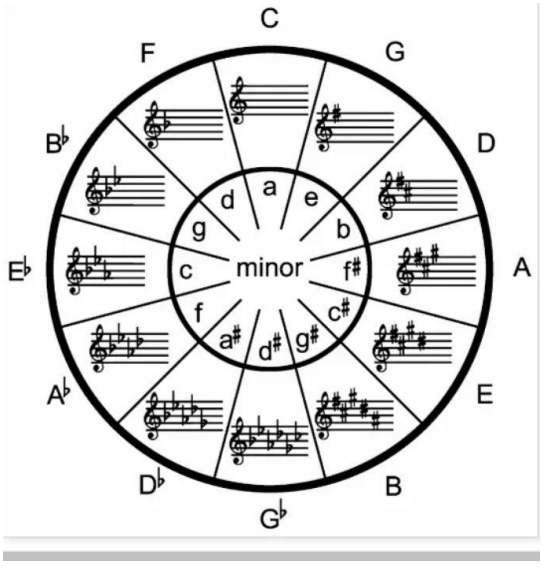
A trick: Notice that the C major scale could turn into a minor scale just by starting on A instead of C. This always works: you can convert any major scale into a minor scale by just starting 3 keys lower. The name for this is the relative minor key. Every major key has a relative minor.

Amazingly enough, there is a simple graphic to show how many sharps or flats in any key, and also what minor scales are just major scales started on a different note. It's called the **Circle of Fifths**.

Major keys are on the outside of the circle. The **relative minor** key is on the inside, and the key signature is in between.

So C major = a minor, G major = e minor, etc.

To help you learn the sequences, just remember "Father Christmas Gave Dad An Electric Blanket". You'll see this sequence over and over in the circle of fifths.



The Singer's Secret Weapon: Solfege:

Singers are way better than pianos. Play a scale on a piano and you get the same notes every time. But as a singer, you can build your own scale starting with any note at all. All you have to remember is the scale formula; **WWHWWWH** for major scales and **WHWWHWW** for minor scales. In other words, you build the scale by singing the **intervals,** without the note names**. This is called "solfege"**.

Try this: Play a **C major** scale a few times. Then just play the low C and sing the rest of the scale without the keyboard. Not hard at all, is it?

Now step down to B and sing the B major scale without using the keyboard. Easy, right?

Now pick any other note, and then sing its scale. When you get it, it will sound just perfect. **Welcome to the singer's secret weapon**!

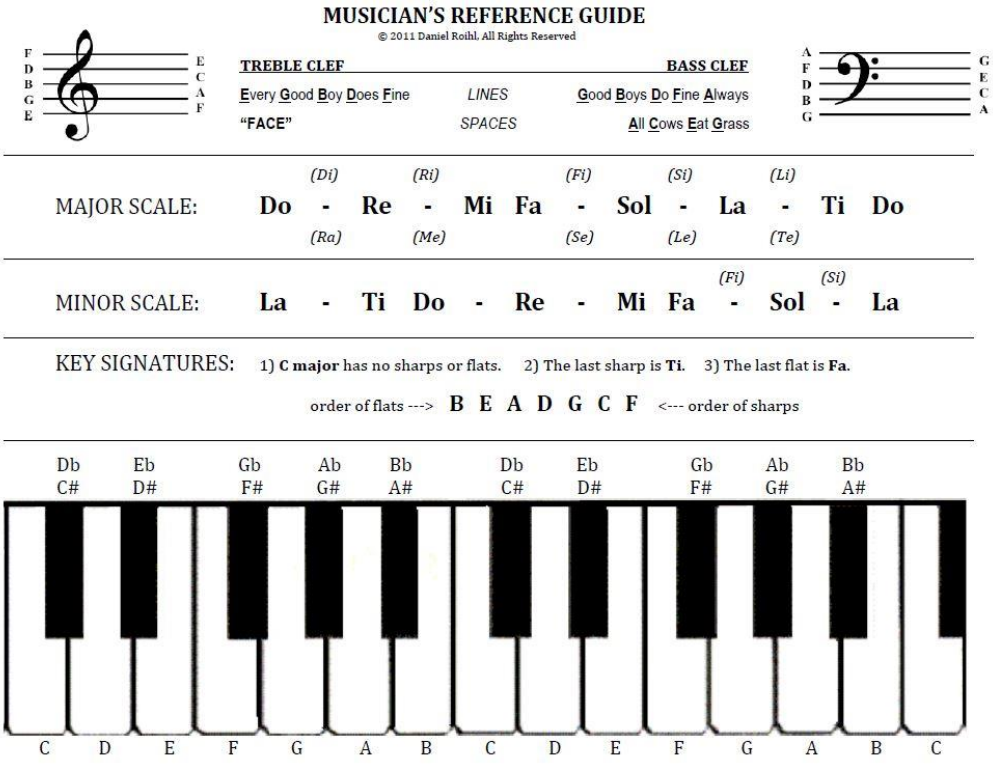
Solfege is learning to hear the intervals between scale notes. **Once you can hear the difference between a Whole Step and a Half Step, you can create any scale if somebody gives you the starting note**. Remember Julie Andrews singing "Doh a deer, a female deer" in Sound of Music? Her character was teaching solfege singing.

Watch this video: https://www.youtube.com/watch?v=drnBMAEA3AM
This one's better: https://www.youtube.com/watch?v=y1rrSYMd2Qw

Most singers identify the scale notes with either numbers (1 through 8) , or with "do re me fa sol la ti do". Numbers are probably easier, but whatever you like will work. Just remember:

- For any **major** scale, the half steps are between me - fa and ti- do (3 - 4 and 7 - 8).
- For any **minor** scale, the half steps are between re - mi and sol-la (2 - 3 and 5 - 6).

Pro tip: many people find it easier to sing a minor scale by just singing a major scale but starting on the note "la" (or note 6).



Learning Solfege (ear training):

Sorry, there are no shortcuts. You just have to learn the sound of whole step and half step intervals.

Some things to try:

- Play scales on a piano and sing with each note. Works well, but you need a piano and you need to be able to play all the different scales.
- Loop the song "Do A Deer" about a thousand times and sing along with it:
  https://www.youtube.com/watch?v=drnBMAEA3AM
- Practice partial scales on the piano, usually 1 - 3 - 5 - 8 (do - mi - sol - do). This works pretty well for me. The 1 - 3 - 5 - 8 steps somehow feel very natural.
- Sing incremental steps up and down:
  1
  1 - 2 - 1
  1 - 2 - 3 - 2 - 1
  1 - 2 - 3 / 4 - 3 - 2 - 1
  1 - 2 - 3 / 4 - 5 - 4 - 3 - 2 - 1
  1 - 2 - 3 / 4 - 5 - 6 - 5 - 4 - 3 - 2 - 1
  1 - 2 - 3 / 4 - 5 - 6 - 7 - 6 - 5 - 4 - 3 - 2 - 1
  1 - 2 - 3 / 4 - 5 - 6 - 7 - 6 - 5 - 4 - 3 - 2 - 1
  1 - 2 - 3 / 4 - 5 - 6 - 7 / 8 / 7 - 6 - 5 - 4 - 3 - 2 - 1

Notice that I put a "**/**" to show the <u>half steps</u> between **3 & 4** and **7 & 8**. Practice with a piano at first, then by just playing a starting note.

- Sing the incremental steps **starting with a random piano note**. Take your time. Do this about a thousand times.
- Use the **"cup your hand over your ear"** trick. This is the only way to hear what you actually sound like. Or you could just record your voice, but that takes a lot of time.
- Sing "skips" like thirds (1 - 3 - 1), or fifths (1 - 5 - 1), and so forth.
- Try to sing simple songs like Yankee Doodle or Mary Had a Little Lamb, but starting on a different note each time. <u>Guaranteed to drive spouses crazy but the kids will love it</u>.
- Google "solfege" and try to stay awake.
  Start with https://www.youtube.com/watch?v=3FpJFrsSt70 which is actually a very good introduction to "movable do" solfege, although it goes way too fast to understand the first time through.
- Good ear training video: https://www.youtube.com/watch?v=Wzqa44N-sIU
- A really good one: https://www.youtube.com/watch?v=nl01K-yCSY8
- Best scale building video ; https://www.youtube.com/watch?v=vIuzrV1dwPs