Scales and Key Signatures

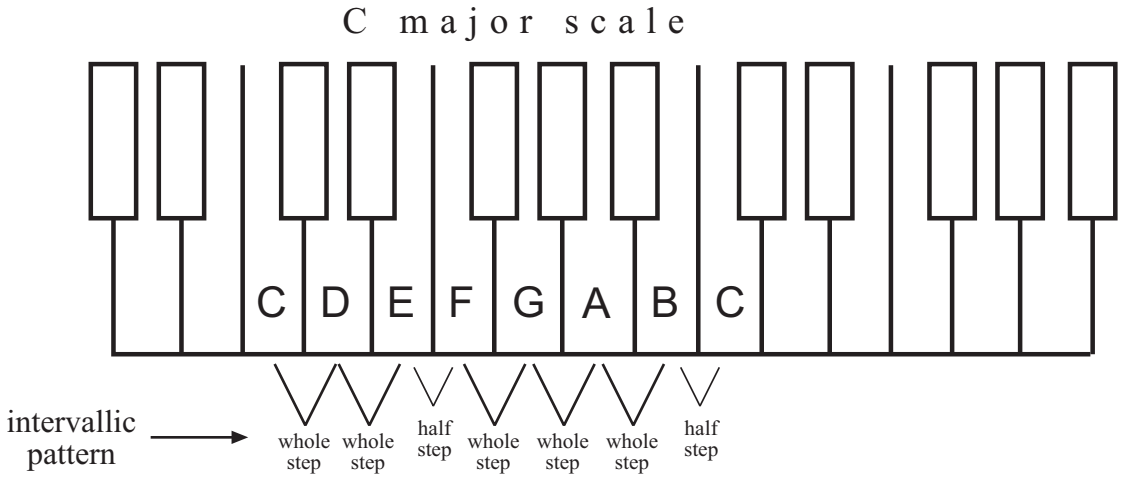
Major Scales

There are two basic ways to understand your scales - you can think of the intervallic "shape" of the scale (in other words, the pattern of whole steps and half steps), or you can think about the key signature (the specific sharps or flats that appear in the scale.) A good musician can do *both*, using one method to double-check the other!

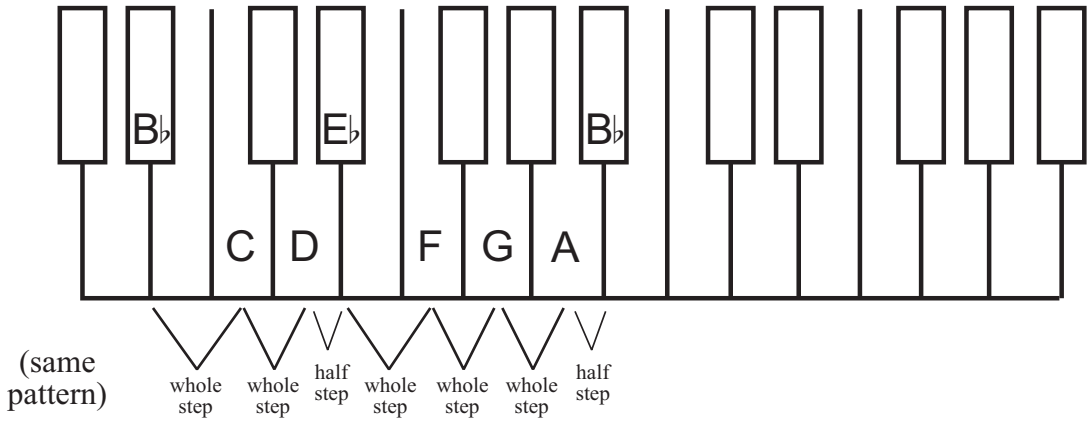
Intervallic Shape

Most people jot down the pattern for the major scale as W W H W W W H. If you were to say it out loud, you might say "whole whole half, whole whole whole half." What does this mean?

You can see the pattern by looking at a piano keyboard. You probably know that the C major scale is equal to all the white keys between C and C.

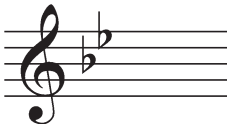


If you were going to construct a B-flat major scale, you would start on B-flat and count up in the same pattern. When you are first starting out it is very helpful to plot your scales out on a piano keyboard! I'll include a blank one as the last page of this packet.



Key Signatures and the "Circle of Fifths"

The "key signature," of course, is the set of sharps or flats that you put at the beginning of each musical staff. I'll show the key signature for B-flat major below. It means "every B note that follows is really a B-flat, and every E note is really an E-flat."



Thus, when you write out your B-flat major scale, you can follow the intervallic shape, writing it out like so:

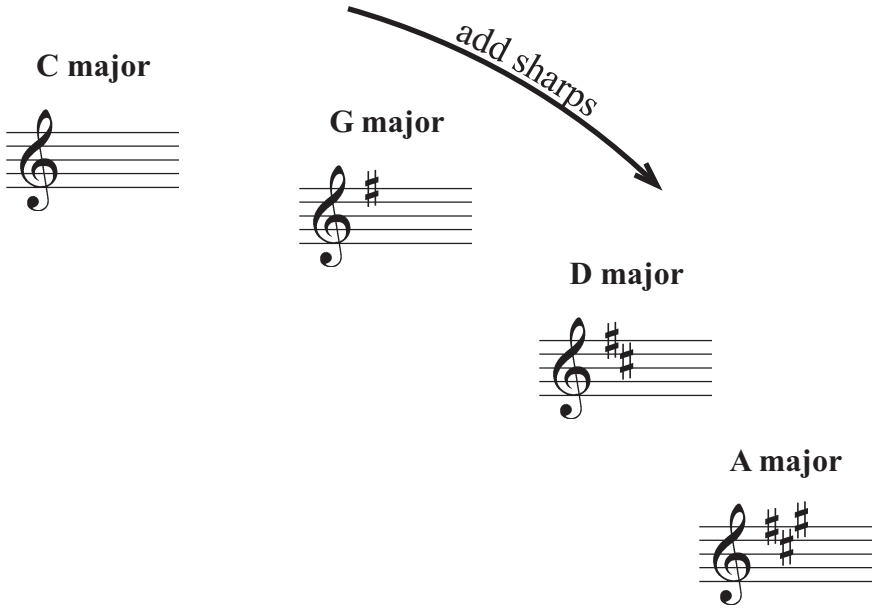
B♭ C D E♭ F G A B♭

And then, thinking of your key signature, you can say "I know that B-flat major has B-flat and E-flat. So I'm good!"

People learn their key signatures by memorizing the "circle of fifths." The circle of fifths is a map of all possible key signatures, organized in a clock-like circle with twelve positions. We'll just start the top part of it on this page.

At the twelve o'clock position, you put C major. It has no sharps or flats.

As we travel clockwise, we'll add sharps to each key. The first key gets one sharp, the next one gets two, and so on. (I'll explain exactly which sharps we are adding in a second.) Also, the keys are ascending by perfect fifths - the first key is C, then G, then D, et cetera.



So, which sharps are we adding? What's the pattern?

With each key, you keep all the sharps from the previous key. Plus, you raise the seventh scale-degree in the new key.

So, for instance, when you move from G (which has one sharp, F♯) to D major (two sharps) you keep that F♯ and you add the seventh degree, C♯. You can keep doing this until you've accumulated as many sharps as possible (C-sharp major, which is like C major only all seven notes are sharped.)

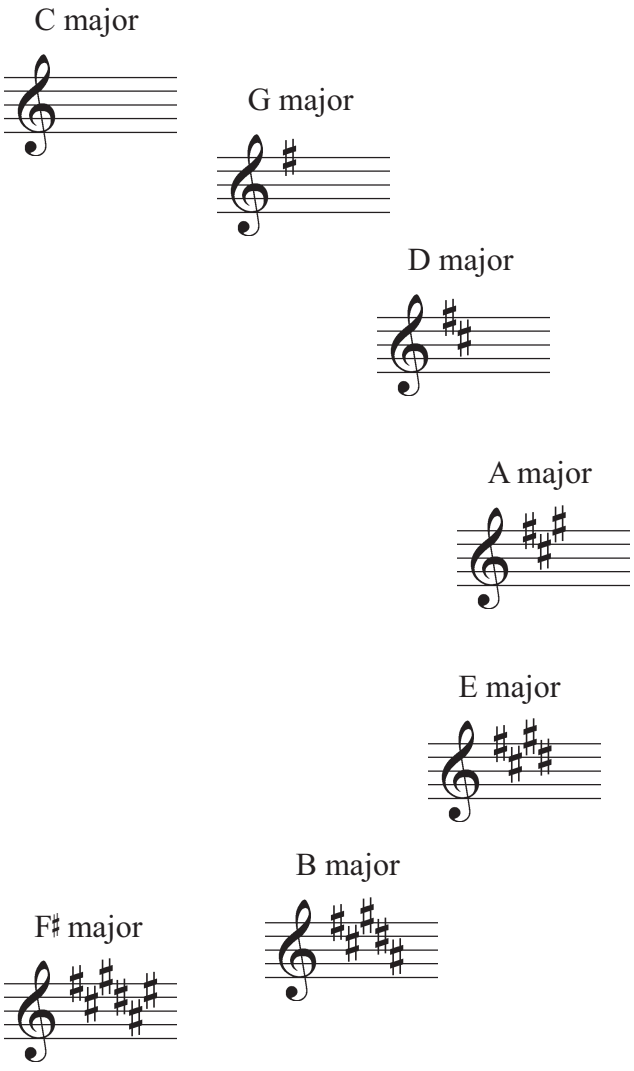
"sharp the seventh"

G major, one sharp G A B C D E F♯ G

D major, two sharps D E F♯ G A B C♯ D

"sharp the seventh"

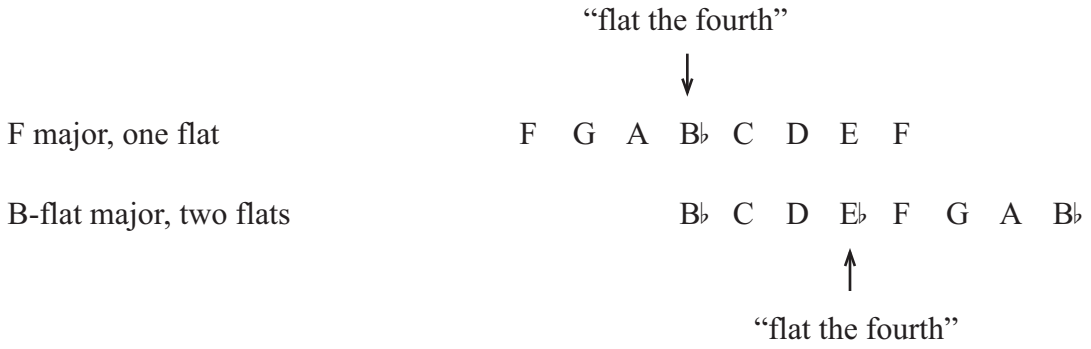
Here's the whole sharp side of the circle.



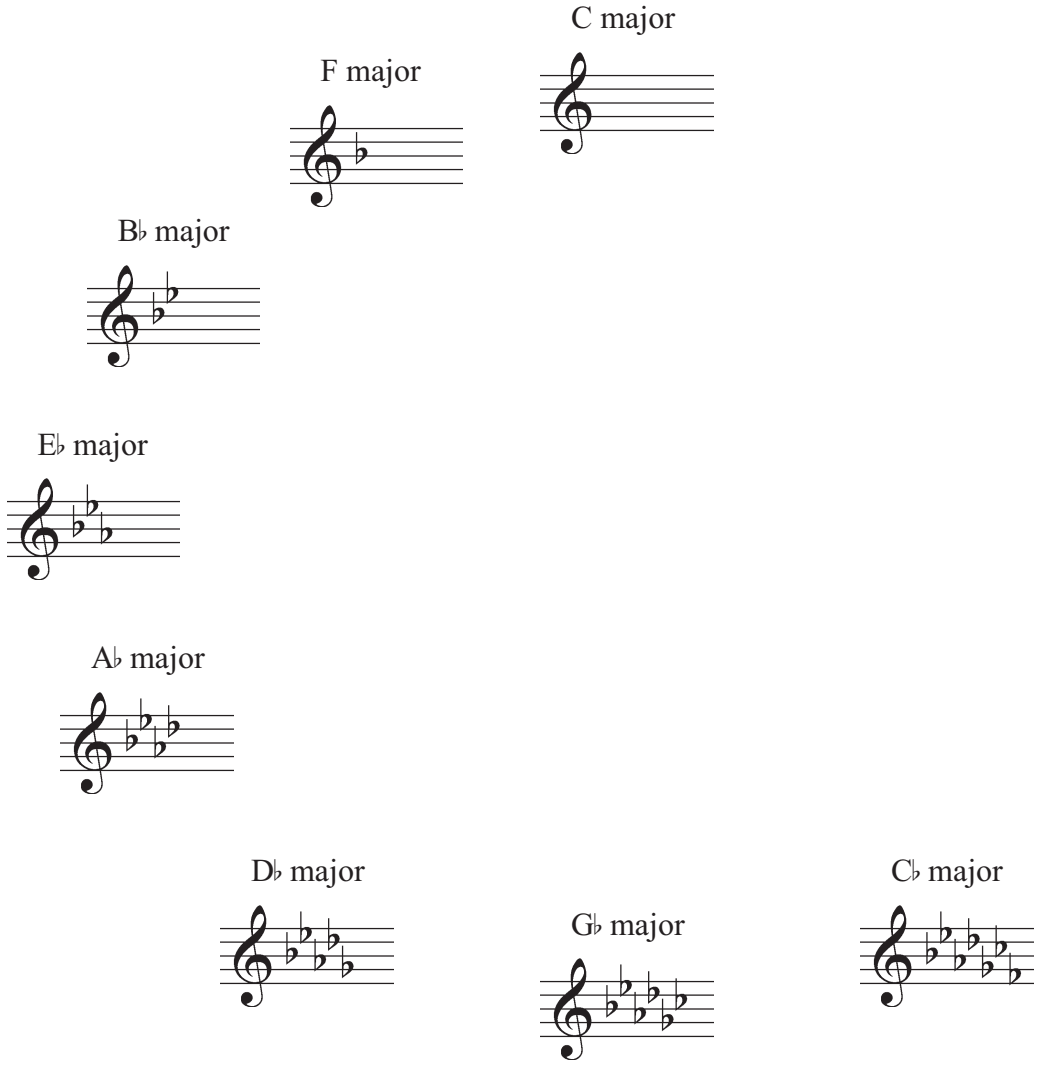
The flat side of the circle works the same way, with a few simple differences:

Each key moves *down* by perfect fifth, starting at C, to F, B-flat, etc.

With each key you will add a flat to the fourth scale-degree. To move from F major (one flat) to B-flat major (two flats), you need to add a flat on the fourth degree - E♭.

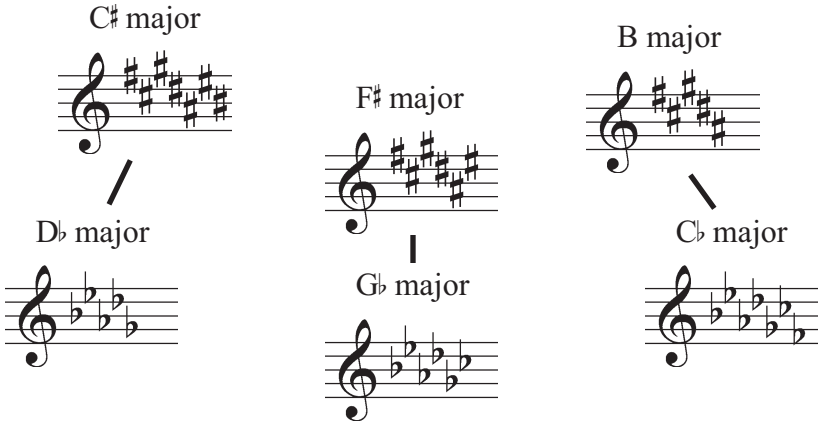


Here's the flat side of the circle...



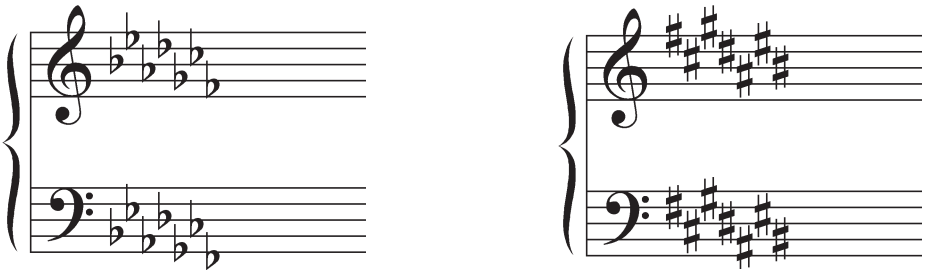
Enharmonically-related keys

Now, I told you there were 12 positions in the circle, like a clock, and yet you may have noticed that both the "sharp side" and "flat side" curl around past six o'clock. There are a few overlapping keys! These are "enharmonically related," meaning that they are drawn differently on the staff but played on the same keys of the piano. So, we'll need to make our circle more like an overlapping spiral, and fill in both the sharp version and the flat version of these keys.



One last thing: Making proper signatures

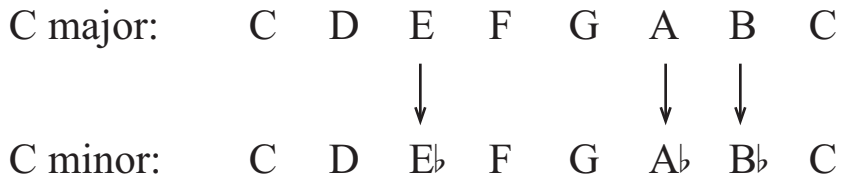
When you make a key signature, you can't just plunk the accidentals on the staff wherever you feel like it. You are supposed to follow a certain pattern. Study these C-flat major and C-sharp major key signatures below as a model.



OK! You are ready to start filling out your own circle of fifths, for practice. Find your blank circle-of-fifths worksheet (both the treble clef and bass clef versions) and fill in all the keys. Include the "C major" "F major" etc. labels above each key.

Minor Scales

I think it is easiest to learn the minor scale as a transformation of the major. Start with a major scale and then lower the third, sixth, and seventh scale degrees.



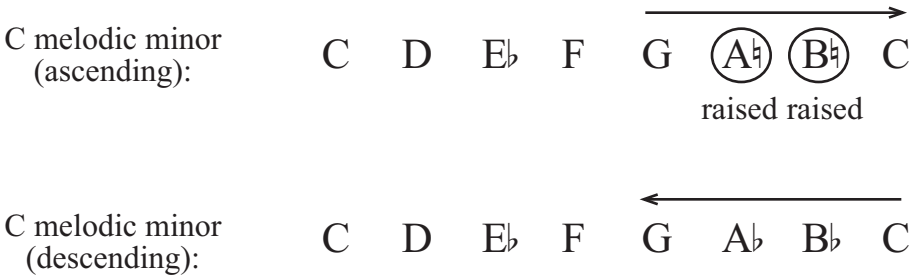
This is the normal or "natural" version of the scale. There are two variants of the scale that are traditionally taught - the "harmonic minor" and "melodic minor." I think these are somewhat silly and useless, but I'll explain them below.

Harmonic Minor

There are certain situation where you don't want your seventh-scale degree (or "leading tone") to be a whole step below the root. You want it to be a half-step below, like in the major scale. In the "harmonic minor" scale you raise the seventh scale-degree back up.

Melodic Minor

Melodic minor is different when it is ascending and when it is descending. When it is going up, the sixth and seventh scale degrees are raised, as if it were a major scale. On the way down, however, the sixth and seventh are lowered, like with the natural minor.

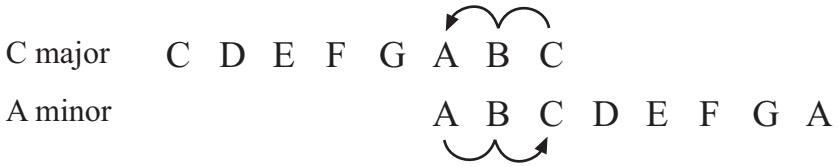


Relative Minors

It turns out that major and minor scales lock together in a certain pattern. A minor, for instance, uses all white notes just like C major, only it is starting on A.

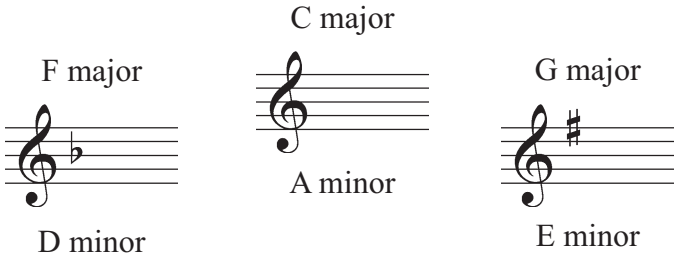
A B C D E F G A

Thus, if you start on a major key and count down (from the top) to the sixth scale degree, you've found the starting point of the that key's "relative minor."



You can also start by thinking of a minor scale and then counting up a minor third to the relative major.

Thus, every key signature on our circle of fifths can serve double duty. It not only represents a major key, but a minor key as well. I'll fill out the very top of the circle here with both the major and minor key labels.



Go back to your circle of fifths and try to fill in all of your relative minor keys. You may have to sketch out the actual scales in order to get it right.

Memorize Your Key Sigs!

Now you are ready to start memorizing your key signatures. You should be able to quickly answer questions like "What is the signature for E-flat major?" (E♭, A♭, B♭), as well as "What is the minor key with two sharps?" (B minor.)

One good exercise is to practice sketching out the circle of fifths from scratch, on a blank piece of paper.

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