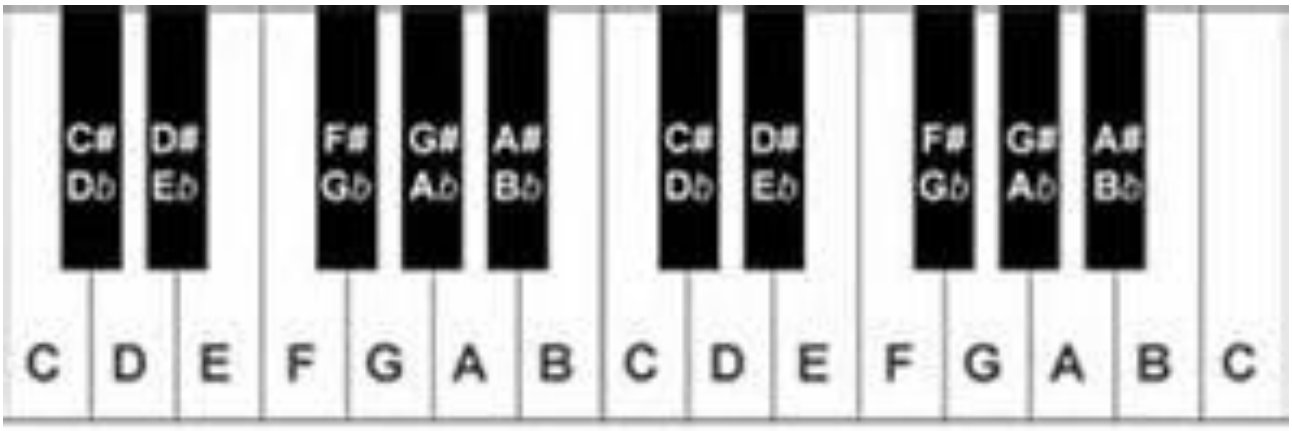
Constructing Major Scales

by Dennis Winge

All music theory begins with the "1, 2, 3" or "do, re, mi" of a major scale. Everything, even other scales that have nothing to do with the major scale, gets named in relationship to it. Therefore it's essential that you understand how to construct a major scale as your first step in understanding music theory.

I. Definitions

The major scale is constructed using whole and half-steps. A whole step = 2 half-steps, and a half step is simply the distance between 2 adjacent notes. Use the following diagram to help you see that the distance between d and d# is a half-step and the distance between eb (the same note as d#) and f is a whole-step.



II. Constructing a C Major Scale

The formula for creating a major scale is "whole, whole, half, whole, whole, whole, half."

This means if we start on c, we must go up 2 adjacent notes to get to the next note, which is d. That's the first "whole" and let's follow the whole formula through:

whole: c to d

whole: d to e

half: e to f

whole: f to g

whole: g to a

whole: a to b

half: b to c - Note that you're back where you started at c. If you didn't get back there, something would have been wrong, because as you can see from the keyboard diagram, the same notes repeat over and over.

The result is:

1	2	3	4	5	6	7
c	d	E	F	g	a	B

III. Constructing a G major scale

When you start on g and follow the formula above it looks like this:

whole: g to a

whole: a to b

half: b to c

whole: c to d

whole: d to e

whole: e to f# - Note that e to f is a half-step, but the formula calls for a whole step, so you need to go one more half-step above f which is f#.

half: f# to g

The result is:

1	2	3	4	5	6	7
g	a	b	c	d	e	f#

Note that the key of G has one note different from the key of C, namely the note f#. If all the notes had been exactly the same as C, it wouldn't be in a different key at all; it would still be the key of C. All keys have a unique combination of sharps and flats that gives that key its identity.

And speaking of f#, how do you know whether to call it f# or gb? Well, the short answer is that you must use all the letters for each key. If you called it gb the scale would go "g, a, b, c, d, e, gb, g" and there would be no letter f. Plus you'd have used the letter g twice, once for "g" and once for "gb" which doesn't make sense.

IV. A Little Tip for Constructing the Scale

You don't always have to remember where you are in the "whole, whole, half" formula if you can remember this short-cut. Between the 3rd and the 4th notes of the scale is a half-step, and between the 7th and 8th notes is also a half-step. All the other notes are a whole-step apart. So repeat after me, out loud: "Between 3 and 4 and also 7 and 8 are half-steps. Everything else is a whole step." Say it out loud 3 more times, it's that important. :)

For example, let's do the key of F.

The note f is 1

go up a whole to get to 2 which is g

go up a whole to get to 3 which is a

go up a *half* to get to 4 which is bb

go up a whole to get to 5 which is c

go up a whole to get to 6 which is d

go up a whole to get to 7 which is e

go up a *half* to get to 8 which is f.

3 to 4 and 7 to 8 are *half-steps* apart.

The result is:

1	2	3	4	5	6	7
f	g	a	bb	c	d	e

V. Do the work and be rewarded for life

Construct the remaining scales: D, A, E, B, F# or Gb, Db, Ab, Eb, and Bb. It only takes a few minutes to do and will serve you the rest of your life. Some people when they first learn music theory scour the internet for videos and article such as this one, but there is no substitute for doing the work yourself. It's a little like when I was a kid the math teacher had a us write out the answers to problems like these:

7 + 7 + 7 + 7 =

5 + 5 + 5 + 5 + 5 + 5 + 5 =

It was only after a few days of this long-hand torture that she said there was a short-cut we could learn that would allow us to instantly know that the answers were 28 and 35, respectively. The short-cut was called the multiplication table. Yes, it would require memorizing, but it would be a lot less time-consuming to know that 7 x 4 = 28 and 5 x 7 = 35 than it would be to do it long-hand. However, having spent a few days doing it long-hand made a) us much more motivated to learn the short-cuts, b) we understood what was happening beneath the short-cuts.

The same is true with music theory. There are short-cuts you will learn (like the Circe of Fifths, for example) but if you try to learn them first without doing the basic work, the same

two things will be true as in my example above. Stated positively, spend some time writing out the 12 major scales and you will be

a) motivated to learn the relevant short-cuts

b) you will understand the theory behind the short-cuts.

So just do it! :) Good luck and have fun.