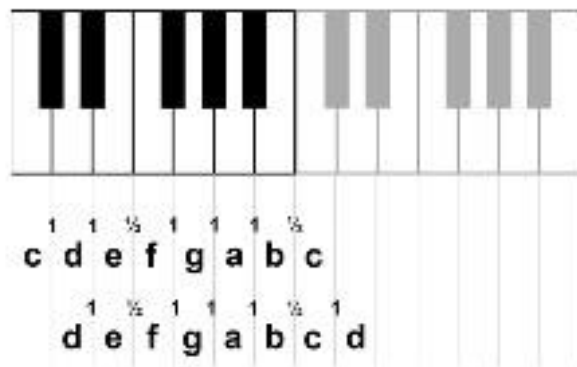


Using the keyboard from a piano  
you can see well where are  
the whole and half distances  
of the major scale.  
Just look at the scale of C.

You can write these whole and half distances as a formula.  
Each step to a next key is a half step:  
between c and d is a black key, so that's 1 step,  
there is no black key between e and f and between b and c,  
so that's a half step.

You get the formula  $1\ 1\ \frac{1}{2}\ 1\ 1\ 1\ \frac{1}{2}$ .

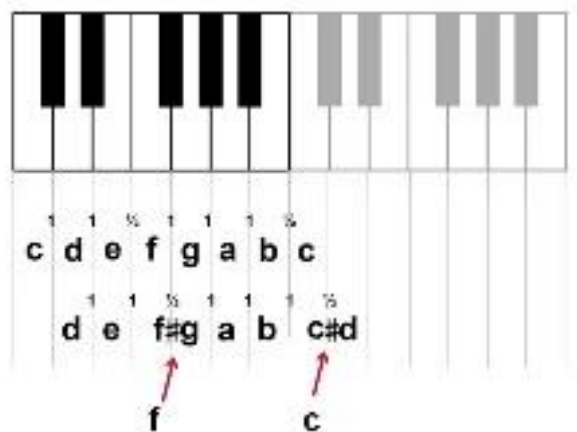
With this formula you can make  
the other major scales.



When you move a key on the piano and you play the next 8 white keys you get d e f g a b c d.

We are going to change the notes to the formula we found.

We raise the notes f and c to f sharp and c sharp to make the formula correct.

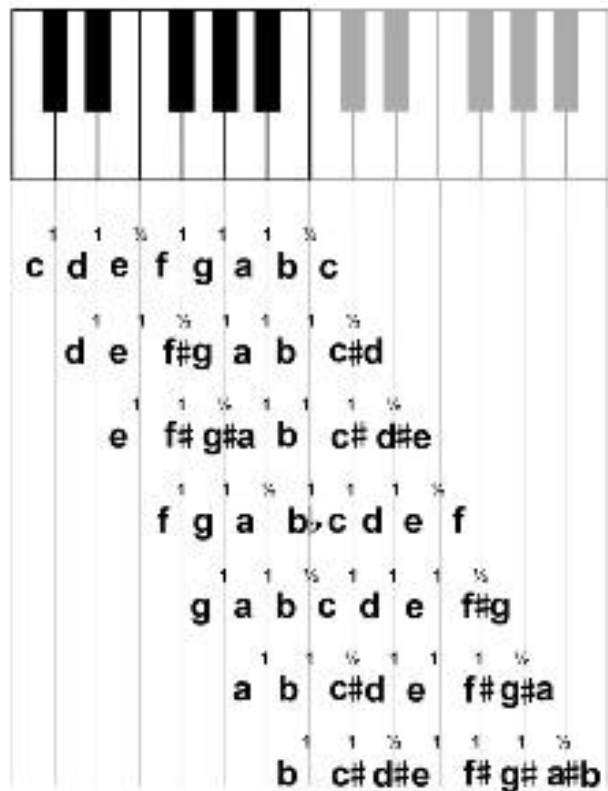


Because you change the f into f sharp the half step from f sharp to g is correct again and because you change the c into c sharp the half step from c sharp to d also match.



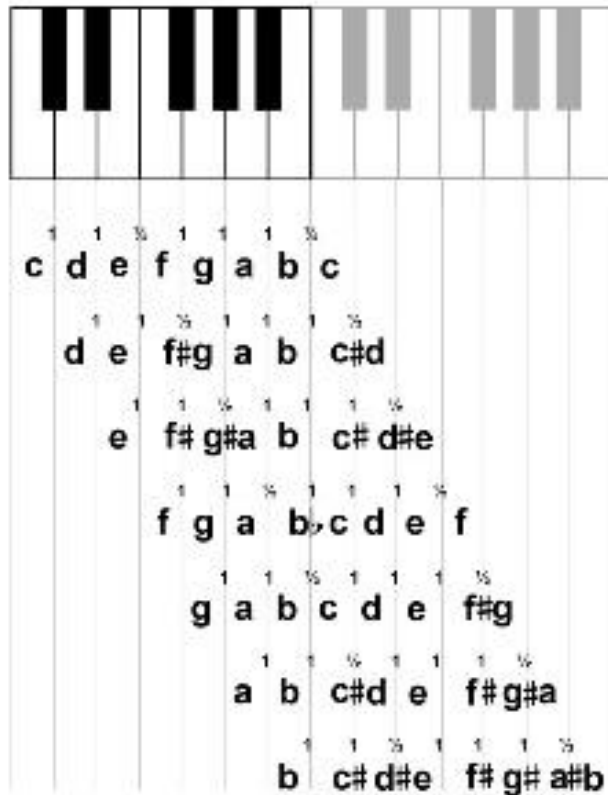
In this way you can apply the formula from any note where you start from on the piano and translate this to the fretboard of your guitar.

When you start from the f the b becomes b flat to get the formula right.



You can continue like this until you get back to c and then you have an overview of a number of scales with flats and sharps.

Now we just need the other ones to calculate.



In the overview we have made we compare the scales with one sharp and with one flat with the scale without sharps and flats.

The scale of C has no sharps and flats.  
 The scale of G has one sharp.  
 The scale of F has one flat.

**We start by comparing the scale of C and G.**

**c d e f g a b c  
g a b c d e f# g**

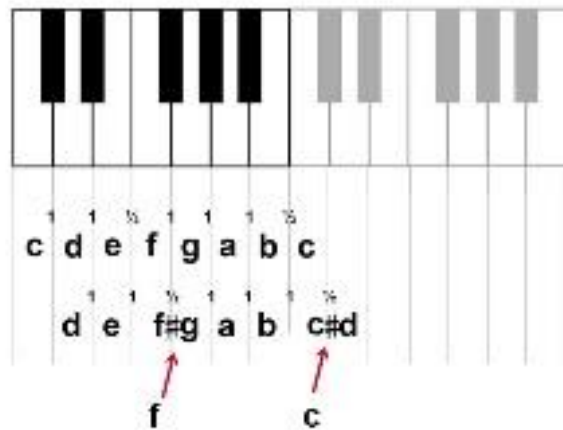
**We see that the first note of the G scale is the fifth note  
of the C scale.**

**We also see that the seventh note of the G scale  
a semitone is raised (from f to f#).**

**The formula we then get is:**

**The fifth note of the previous scale is the first note of the  
next scale and the seventh note has changed a semitone.**

We already had reasoned out the scale of D on page two.  
We're going to give it another go with the formula we just have found.



Scale G: g a b c d e f# g  
Scale D: d e f#g a b c#d

5th note  
becomes 1st

7th tone  
becomes semitone  
raised

With each new scale  
a sharp is added,  
because you take the sharp  
of the previous scale with you.

**So the formula of the major scales (ionian mode)  
with the sharps is correct.**

**In the same way you can change the scales with the flats  
when you compare the scale of C with the scale  
of F (see page 3)**

**c d e f g a b c  
f g a b<sub>b</sub> c d e f**

**Here's the formula:  
The 4th note of the previous scale becomes the 1st note  
of the next scale and the 4th tone becomes  
lowered by a semitone.**



## Major scales (ionian mode) with the sharps

The fifth note of the previous scale is the first note of the next scale  
and the seventh note is raised a semitone

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

The note e# is the same as f

The note b# is the same as c

## Major scales (ionian mode) with the flats

The fourth note of the previous scale is the first note of the next scale  
and the fourth note is lowered a semitone

Flats

0	c	d	e	f	g	a	b	c
1	f	g	a	b $\flat$	c	d	e	f
2	b $\flat$	c	d	e $\flat$	f	g	a	b $\flat$
3	e $\flat$	f	g	a $\flat$	b $\flat$	c	d	e $\flat$
4	a $\flat$	b $\flat$	c	d $\flat$	e $\flat$	f	g	a $\flat$
5	d $\flat$	e $\flat$	f	g $\flat$	a $\flat$	b $\flat$	c	d $\flat$
6	g $\flat$	a $\flat$	b $\flat$	c $\flat$	d $\flat$	e $\flat$	f	g $\flat$
7	c $\flat$	d $\flat$	e $\flat$	f $\flat$	g $\flat$	a $\flat$	b $\flat$	c $\flat$

The note c $\flat$  is the same as b

The note f $\flat$  is the same as e

## Major scales (ionian mode)

### Sharps

c	d	e	f	g	a	b	c
g	a	b	c	d	e	f#	g
d	e	f#	g	a	b	c#	d
a	b	c#	d	e	f#	g#	a
e	f#	g#	a	b	c#	d#	e
b	c#	d#	e	f#	g#	a#	b
f#	g#	a#	b	c#	d#	e#	f#
c#	d#	e#	f#	g#	a#	b#	c#

### Flats

c	d	e	f	g	a	b	c
f	g	a	b <sub>b</sub>	c	d	e	f
b <sub>b</sub>	c	d	e <sub>b</sub>	f	g	a	b <sub>b</sub>
e <sub>b</sub>	f	g	a <sub>b</sub>	b <sub>b</sub>	c	d	e <sub>b</sub>
a <sub>b</sub>	b <sub>b</sub>	c	d <sub>b</sub>	e <sub>b</sub>	f	g	a <sub>b</sub>
d <sub>b</sub>	e <sub>b</sub>	f	g <sub>b</sub>	a <sub>b</sub>	b <sub>b</sub>	c	d <sub>b</sub>
g <sub>b</sub>	a <sub>b</sub>	b <sub>b</sub>	c <sub>b</sub>	d <sub>b</sub>	e <sub>b</sub>	f	g <sub>b</sub>
c <sub>b</sub>	d <sub>b</sub>	e <sub>b</sub>	f <sub>b</sub>	g <sub>b</sub>	a <sub>b</sub>	b <sub>b</sub>	c <sub>b</sub>