

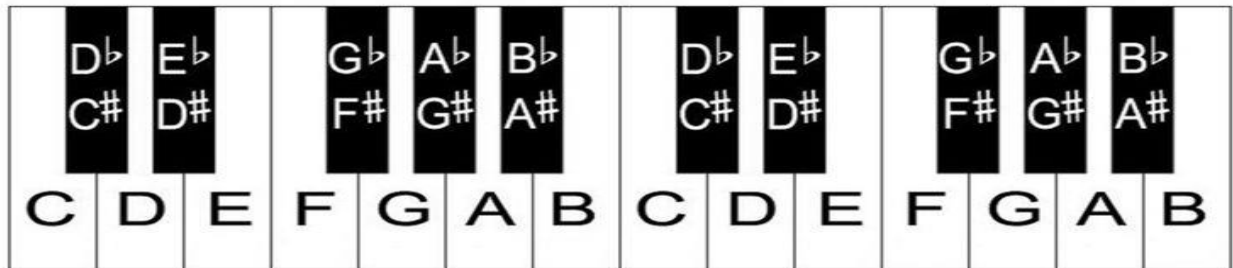
Not essential to our purposes, but just to finish out this thought- a note “one octave” lower vibrates at exactly one half the speed, meaning that a note exactly one octave higher vibrates at exactly twice the speed (if the instrument is “in tune”). Your ear can discern a very specific relationship between these notes, which we’ll discuss later.

Returning to C 4, the next “white” key on the piano to the right (D 4) has a pitch that is different from that of C 4, and we call the difference an “interval.” Starting with only white notes, the interval from C to D on a keyboard is called a major 2nd (M2). Continuing on, the interval from C to E is a major 3rd (M3). C to F is called a perfect 4th (P4), C to G is a perfect 5th (P5). C to A is called a major 6th (M6). C to B is called a major 7th (M7). C4 to C5 is called a perfect octave (P8).

Using the black keys now, the relationship of any pitch to the black key between it and the M2 above or below it is a minor 2nd (m2). As you look at the keyboard, you’ll notice there is no black key between E and F nor is there one between B and C. The interval E to F is a minor 2nd, as is the interval B to C.

Another term for a m2 is a “half step.” Another term for a M2 is a “whole step.” A whole step is made up of two half steps. Thus, there is a half step between C and C# or Db, and there is a whole step between C and D. Looking at larger intervals, a M3, described above, consists of two whole steps (C to E for example, F to A for another). A m3 consists of one and one-half steps (C to Eb or, looking carefully, E to G). C to F, two whole and one half step, is a P4. Three whole and one half step is a P5. C to Ab, four whole steps, is a m6. 5 whole steps is a m7 (C to Bb, D to C going up or to the right, etc.). And the last interval is one that has three names, depending on how it’s used melodically or harmonically, is three whole steps- called an augmented fourth, diminished fifth, or, generically a “tritone.” C to F#/Gb, E to B, etc.

Piano Keys and Notes



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If you play the guitar, you likely know that each fret is positioned to make a difference of a half step. Thus, on the first string of a guitar, the open string is the pitch E. When fretted at the first fret, the pitch is now F, a half step higher than E. The second fret is F#, a full step higher than E. And so on...

When you invert these intervals, going down or to the left, they change major to minor and add to nine. So, while C to B going up is a Major 7th, C to B going down is a minor 2nd. C to Bb up is a minor 7th. C to Bb down is a Major 2nd.

If this is making absolutely no sense to you, don't despair. It's easier when you hear it. This might help a little

:

The first two notes of "Happy Birthday" are a unison (Hap-py), the movement to the third note (birth) is a M2

The first two notes of "Oh When the Saints Go Marching In" is a M3

The beginning of "Here Comes the Bride" is a P4

The first two notes of the "Star Wars" theme is a P5

The first two notes of the "call sign" theme for NBC is a M6

The first two notes of "Somewhere" (West Side Story) is a m7

The first two notes of Mel Torme's "The Christmas Song" are P8

<https://www.musicnotes.com/blog/musical-intervals-train-your-ear-with-these-easy-songs/>

Now, there is a very strong intervallic (the adjective form of interval) relationship present in the P4 and P5. In western European music composition tradition, there is an important concept known as the "tonal center" or "key." This is more pertinent when speaking of harmony, which we're only briefly working with today. But it's also an important element of melody.

To understand this, we need to work for a minute with what we call scales. In music written prior to the Baroque, one would encounter this concept as a "mode." But for our purposes, we'll stick to a very specific pattern of intervallic relationships known as the Ionian mode or, today, as the "major scale." If you start on C and play every white note going up until you land an octave away, again on C, you'll hear a major scale. You might have been taught it in school or perhaps you learned it when you saw "The Sound of Music," Do-re-mi-fa-sol-la-ti-do. The relationship is as follows:

Do – re = M2

Re – mi = M2

Mi – fa = m2

Fa – sol = M2

Sol – la = M2

La – ti = M2

Ti – do = m2

And, equally importantly:

Do – mi = M3

Do – fa = P4

Do – sol = P5

Do – la = M6

Do – ti = M7

The terms “Do re mi” come from an educational technique known as “Solfege.” Another way to think of the degrees of the major scale is to assign numbers and positions to the pitches within the scale as follows:

Do = tonic or 1

Re = supertonic or 2

Mi = mediant or 3

Fa = subdominant or 4

Sol = dominant or 5

La = submediant or 6

Ti = leading tone or subtonic or 7

When you move from one pitch to another a P4 going up in pitch, there is a very strong tendency to hear the higher pitch as an “ending place” or as the more important and stable pitch. Think again of the melody of “Here Comes the Bride.” The first pitch lies a P4 below the second, and this establishes the second as the tonal center or “key.” This little melody actually starts on the dominant, or 5, and moves to the tonic or 1.

The same thing happens, although not as strongly, when you move down a P4. Think of the opening of “I’ve Been Workin’ on the Railroad.” It starts by going down a P4 and back up several times:

“I’ve” is on the tonic (1)

“Been” is on the dominant (5)

“Work” is on the tonic (1)

“In” is on the dominant (5)

“On” is on the tonic (1)

“The” is on the supertonic (2)

“Rail” is on the median (3)

“Road” returns to the tonic (1)

For our purposes going forward in this essay, I’m going to dispense with the terms “tonic,” and so on, and use only numbers. Thus, the first phrase of “I’ve Been Workin’ on the Railroad” is described as 1-5-1-5-1-2-3-1. In the key of C, the notes would be C-G-C-G-C-D-E-C.

Can you hear in your mind’s ear, so to speak, how this movement sets up “C” or 1 or the tonic as being the strongest pitch, the tonal center? When the melody returns to the C at the end of the phrase (“road”) our ear feels a sense of “home,” or center. This sense of a tonal center is intrinsic to all music written in the western musical tradition, including classical, pop, folk, rock, jazz, and so on. In the early 20th century, composers experimented with undermining this idea, creatively pushing the boundaries with the goal of eliminating this altogether. They had some success, and “tone row” technique is still used today, but it really hasn’t caught on outside of certain styles. Certain eastern traditions have never embraced the idea of a tonal center or, for that matter, the same identity of pitch that the west has. This is why traditional music of Japan and other Asian cultures sounds so very different to us.

The second aspect of melody is rhythm. This is the division of time between notes. For this aspect, we start with the relative length of time that the note is to be held. And to do this, we identify something

we call a “beat” as a division of time. In music, we start with a minute and set a tempo marking on how many beats there are per minute. Thus, a tempo marking of 60 would mean the melody is to be played at one beat per second (this is a pretty slow tempo).

In western music, we use a visual notational system that tells us what not to play or sing and how long, relatively, to play or sing it. Rhythm is notated in a system based on what we call a “whole” note. A whole note is divided in divisions of two, so we have half notes, quarter notes, eighth notes, and sixteenth notes, generally (there are further divisions, but these are relatively uncommon). One more common aspect is that when we add a dot after a note, the player or singer knows to hold this pitch by half again as long.

In common time, there are four beats in what we call a “measure.” A measure indicates to the player/singer where the stress should be on each beat. So, in common time, there are four beats per measure, each quarter note is to be held for one beat, and typically there is an emphasis on beat one and three in each measure (although this can be changed, and often is). If we’re playing at a tempo marking of 60, then each quarter note is to be held for one second. A whole note would be held for four seconds, or four beats. A half note would be held for two seconds or two beats. An eighth note would be held for half a second or half a beat. A sixteenth note would be held for one quarter of a second or one quarter of a second.

A dotted half note would be held for three beats or three seconds. A dotted quarter note would be held for one and a half beats. And so on.

Let’s have a go at “Twinkle Twinkle Little Star” in common time (there is no metronome marking indicated, but we’ll assume it’s around quarter note = 120 or the upper end of “moderato”).

Twinkle Twinkle Little Star

The image shows the musical notation for the song "Twinkle Twinkle Little Star" in common time (C). The music is written on three staves. The first staff starts with a treble clef and a common time signature 'C'. The melody consists of quarter notes and half notes. The lyrics are: "Twinkle, twin-kle, lit - tle star, how I won-der what you are!". The second staff starts with a measure rest of 5 measures, indicated by a '5' above the staff. The melody continues with quarter notes and half notes. The lyrics are: "Up a - bove the sky so high, like a dia-mond in the sky.". The third staff continues the melody with quarter notes and half notes. The lyrics are: "Twin-kle, twin-kle, lit - tle star, how I won - der what you are!". The piece ends with a double bar line.

Note that the notes for “star,” “are,” and “are” are half notes, while all the rest are quarter notes. Each line and space on the staff represents a particular note or pitch. In this case, the song is written in the key of C Major and the notes are

CCGGAAG,
FFEEDDC,
(Second line, measure 5 start) GGFFEE D,
GGFFEE D,
(Third line, measure 9 start) CCGGAAG,
FFEEDDC

Below I've pasted the "score" to "I've Been Workin' on the Railroad." This includes every type of rhythmic value from whole notes to sixteenth notes, dotted rhythms, and even something called a "triplet." Given that you know the song, try singing it in your head while you follow the sheet music- and let us know how it goes. We can go over it in the session if we need to.



I've been wor- kin' on the rail- road, All the live- long day. I've been wor- kin' on the



rail- road, Just to pass the time a- way. Don't you hear the whis- tle blo- wing,



Rise up so ear- ly in the morn? Don't you hear the cap- tain shou- ting: "Di- nah blow your



horn!" Di- nah won't you blow, Di- nah won't you blow? Di- nah won't you blow your



horn, your horn? Di- nah won't you blow, Di- nah won't you blow?



Di- nah won't you blow your horn? Some- one's in the Kit- chen with Di- nah.



Some- one's in the kit- chen I know, I know, Oh some- one's in the kit- chen with Di- nah,



Strum- min' on the old ban- jo. Fee Fi fid- dle- dee I o, Fee fi fid- dle- dee I



o, I o, I Fee fi fid- dle- dee I o, Strum- min' on the old ban- jo.