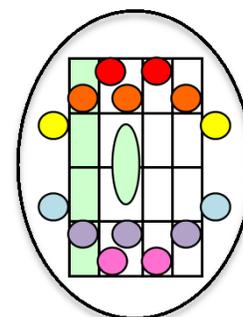# How to Read Key Maps

AKM 16

For Music Educators and Others Who are Able to Read Traditional Notation

From the Music Innovator's Workshop

Introduction

This unit provides an introduction to reading key maps for those who already know how to read traditional music notation. You will see how the maps provide, in a readily accessible visual format, information similar to that provided by traditional notes in their coded format.

Generically, key maps are modern tablatures that notate pitch by showing the placement of the fingers on the keyboard. The maps visualize rhythm on a vertical time line.
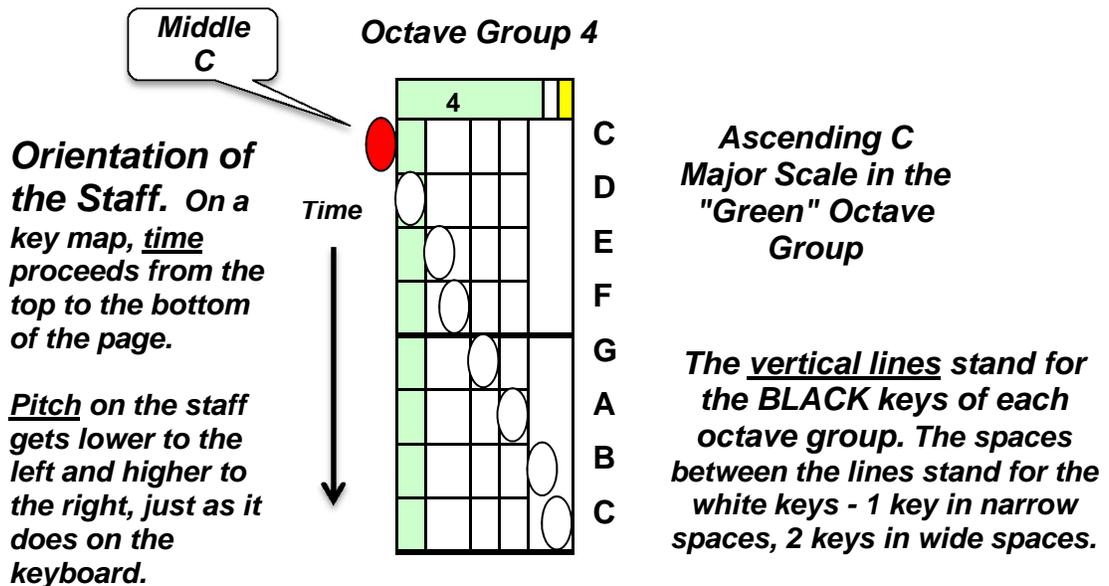
Key maps are not intended to replace traditional notation -- which is a work of genius in spite of its shortcomings. The best use of key maps is to help beginning students learn to play the keyboard before they have to learn to read traditional notation.

Experience shows us that learning to play the keyboard and learning to read traditional notation at the same time is a very difficult task for many students. With key maps, students can read and play real songs and pieces right from the beginning of study - with a minimum of stress and discomfort.

Another significant use of key maps is the bridge that they provide to the sharp and flat keys. One of the barriers to student progress is having to read music in keys with multiple sharps and flats. Unfortunately, many students never learn to read music in these keys - as they quit taking lessons before they get that far.

On the other hand, players reading key maps don't have to decide which notes are sharps and flats - because these notes are visually distinguished from the natural notes by their positions on the staff. Beginning students can start learning to play the Moonlight Sonata in its original key of C# Minor with its 4 sharps, B sharps, and double sharps, because the key of C# Minor on key maps is no harder to read than music in the key of C Major. Read on ... and see for yourself.

The Notation of Pitch on Key Maps

Middle C

Octave Group 4

Orientation of the Staff. *On a key map, <u>time</u> proceeds from the top to the bottom of the page.*

Time

<u>Pitch</u> on the staff gets lower to the left and higher to the right, just as it does on the keyboard.

4		

C
D
E
F
G
A
B
C

Ascending C Major Scale in the "Green" Octave Group

The <u>vertical lines</u> stand for the BLACK keys of each octave group. The spaces between the lines stand for the white keys - 1 key in narrow spaces, 2 keys in wide spaces.

Making Use of the "Octave Groups" of the Keyboard. *The visual patterns of the keys on the keyboard provide the basis for notating pitch on key maps.*

The term, "octave group" refers to each of 7 identical ascending 12-key patterns beginning with a C, making up most of the piano keyboard. (The named keys of adjacent octave groups are an octave apart -- thus the name, octave group.) Each octave group is made up of a pattern of 2 black keys and 3 black keys surrounded by the white keys of the group. These white keys are in order; C, D, E, F, G, A, and B.

The <u>5 vertical lines</u> of the above staff <u>stand for the 5 black keys</u> of the 4th octave group from the left of the keyboard. This is the octave group in the middle of the full keyboard and starts with middle C (shown in red). It is helpful to visualize the staff as a diagram of the keyboard, with the notes showing exactly where you place the tips of your fingers to play the music.

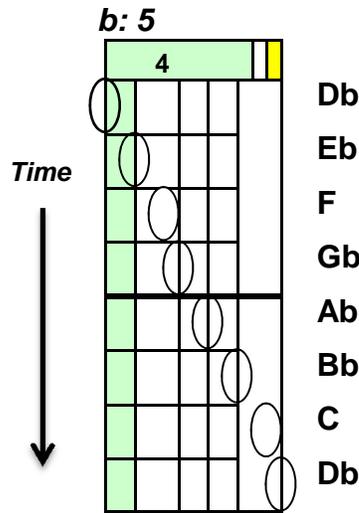## Traditional Notation for the Above Music
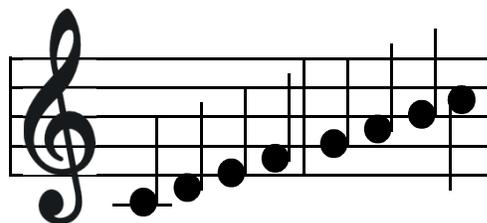
The Notation of Flats and Sharps

Octave Group 4

Ascending Db Major Scale in the "Green" Octave Group

b: 5

Time

Db

Eb

F

Gb

Ab

Bb

C

Db

Notes for the WHITE keys are identified by being __attached__ to the nearest vertical line(s)

Notes for the BLACK keys are __centered__ on the vertical lines -- and are TRANSPARENT.

## *Notation of Flats and Sharps.* *Beginning and intermdiate students have no need to deal with these indicators of tonality. Key maps clearly indicate which keys to play without any need to show which notes are flats or sharps. All 12 keys of each octave group are clearly indicated by the positions of the notes on the staff.*

However, there need not be any doubt about whether notes on a map are sharps, flats, naturals or doubles. As shown above the staff in the illustration, "b: 5" indicates that there are 5 flats in the piece. Such a key signature appears at the beginning of every piece. Changes to the key are indicated in the same way. The indicator carries with it the presumption that accidentals in flat keys will be flats, and in sharp keys will be sharps. For the rare accidentals that occur on white keys, their notes indicate this with the appropriate b/# signs.

Traditional Notation for the Above Music
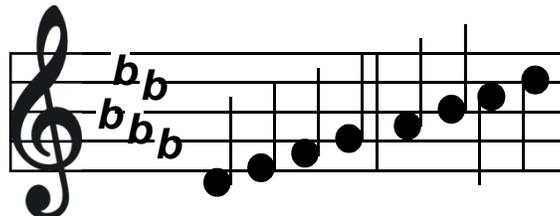
Moderato   #: 1 4/4   **Twinkle,Twinkle, Little Star**

| Violet	Indigo	Blue	Green	Yellow	Orange	Red
1	2	3	4	5	6	7
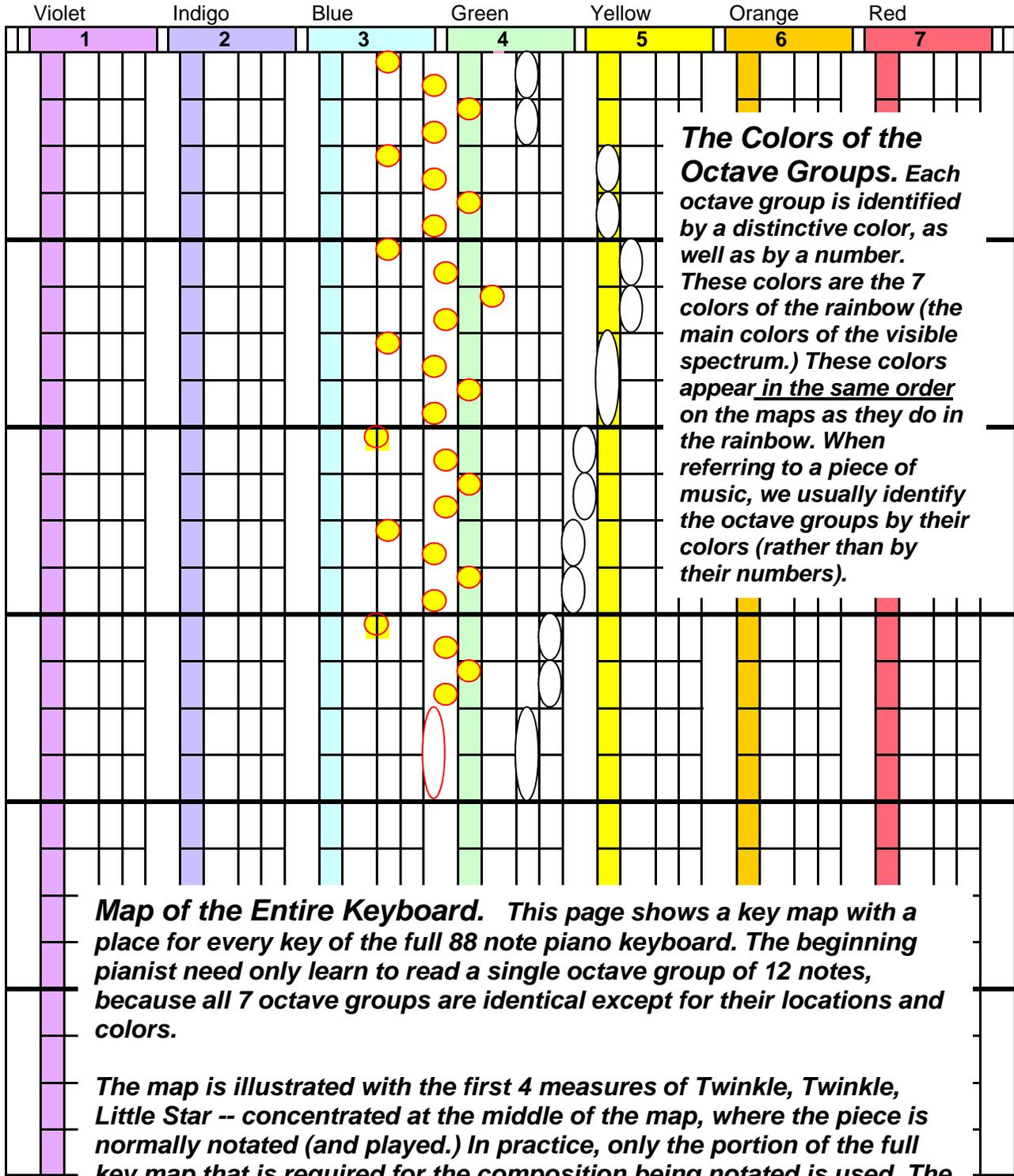
The Colors of the Octave Groups. *Each octave group is identified by a distinctive color, as well as by a number. These colors are the 7 colors of the rainbow (the main colors of the visible spectrum.) These colors appear in the same order on the maps as they do in the rainbow. When referring to a piece of music, we usually identify the octave groups by their colors (rather than by their numbers).*

Map of the Entire Keyboard. *This page shows a key map with a place for every key of the full 88 note piano keyboard. The beginning pianist need only learn to read a single octave group of 12 notes, because all 7 octave groups are identical except for their locations and colors.*

The map is illustrated with the first 4 measures of Twinkle, Twinkle, Little Star -- concentrated at the middle of the map, where the piece is normally notated (and played.) In practice, only the portion of the full key map that is required for the composition being notated is used. The actual map for this song is shown on the next page along with the song in traditional notation. Notes with red borders identify keys to be played by the left hand.
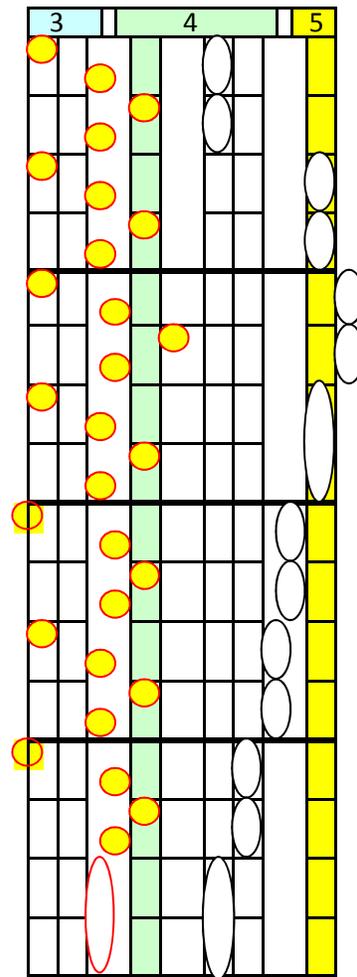
Traditional and Map Notation Compared

Twinkle, Twinkle Little Star
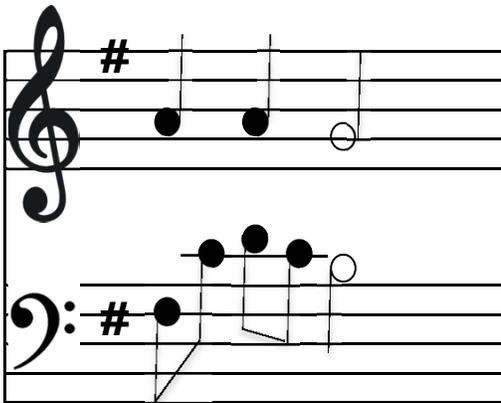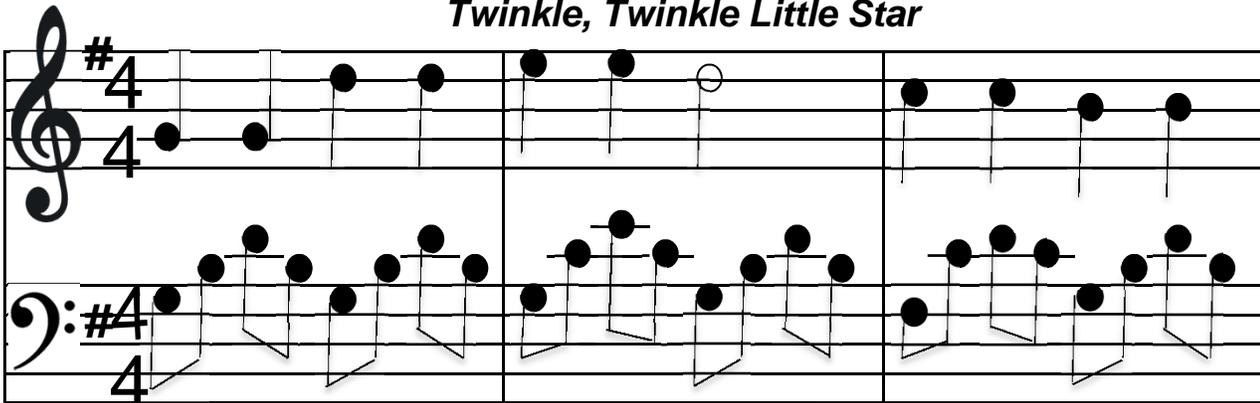
Twinkle, Twinkle Little Star

Moderato   #:1   4/4

The Colors of the Notes

The use of computers for writing music has opened up the opportunity to use color coding of the notes for all sorts of interesting purposes. Over the past decade we have experimented extensively with color coding the notes on maps. As it turns out, the basic (default) use of the color coding is to show clearly for which hand the notes are intended. This basic code shows pink notes for the left hand and white notes for the right hand, as shown at the right.

Often, it is unnecessary to use this color scheme to indicate which hand to use. (The reasons are many.) Then we are free to use note coloring for a variety of purposes, depending on what we want to show or emphasize. Often we find that the best use of the coloring is to highlight the notes that indicate fractional beats. Another frequent use is to indicate mode in the roots of chord symbols.
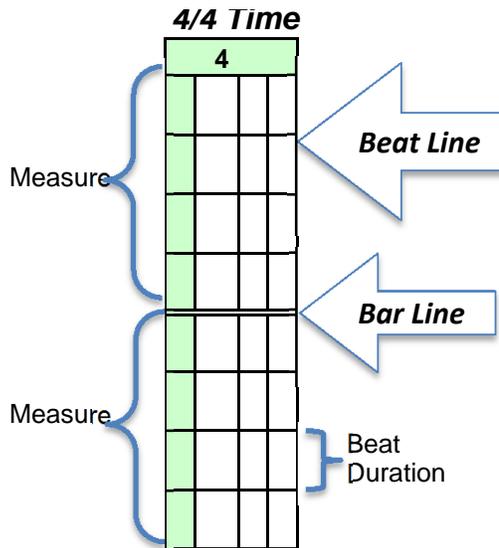
Rhythm and Meter on Key Maps

By the time you reach this page, you have probably already figured out how the rhythm on the key maps works. In case you missed an important detail, here is a summary of rhythm and musical time for the maps.
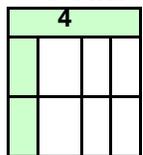
The Staff Measures Time Expressed in Beats. *In contrast to traditional notation, which takes its time from the note values, key maps are time lines that graphically measure out the time as expressed in beats. The notes receive their time values (in beats) from the staff.*

You will notice that the staff has some resemblance to an ordinary ruler used to measure distance. The horizontal beat lines are evenly spaced indicating the locations of the beats one after the other. Time runs evenly down the staff punctuated by the beat lines.
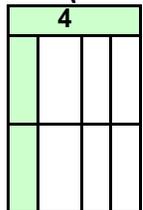
The bar lines provide an exception to this smooth progresssion of time, providing unmistakable visual marking of the length of each measure. The thick bar lines provide visual contrast from the beat lines.

4/4 Time

Measure

Beat Line

Bar Line

Measure

Beat Duration

Time

3/4 Time

6/8 (2 beat)

Moderato   #: 1   4/4

1/2 Beat (Eight Note)

1 Beat (Quarter Note)

2 Beats (Half Note)
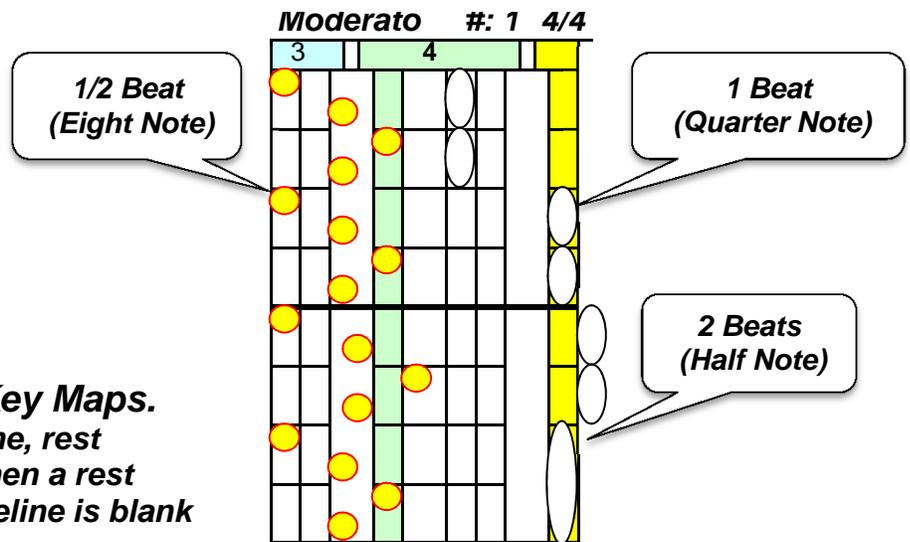
Treatment of Rests on Key Maps. *Because the map is a timeline, rest notation is unnecessary. When a rest occurs in the music, the timeline is blank for the duration of that rest.*

Additional Information

4/4 Time

Treatment of Staccato on Key Maps. *Key maps have the option of showing staccato with a short note followed by a short space, thus visualizing the staccato sound. See the at the right.*

Another option shows the staccato note with the same time value as in traditional notation. Then the staccato is indicated by coloring the note gray.

Legato

Staccato
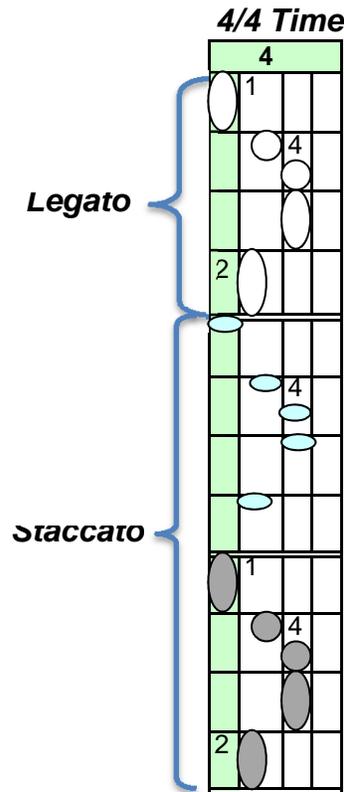
The Location of Finger Numbers. *In traditional notation, the finger numbers are normally placed above or below the notes to which they apply. On a key map, because of the map's vertical orientation, the finger numbers are placed to the right or left of the notes to which they apply.*

This right/left placement is treated as a rule to avoid confusion in situations like the one shown in the example where the finger 4 is indicated for the F. Without the rule, one wouldn't know whether the 4 is for the F or for the G.

Naming Conventions for the Black Keys. *In traditional notation, the black keys are referred to as sharps and flats, with each black key, therefore, having two names. Unfortunately, we must always choose between a sharp or flat name when referring to an individual black key. For beginners, who have no need to understand the complexities of tonality, this situation can be both inconvenient and confusing.*

We have found some relief for this situation in the key maps. For beginners, we refer to the black keys by their "addresses." By using addresses, we leave the conventional names for the black keys intact for later use. The addresses for the black keys, and for their notes as well, are 1, 2, 3, 4, and 5. These numbers refer to the order of the black keys in an octave group, reading from left to right. Thus, Key 1 is C#/Db, Key 2 is D#/Eb, and so on.

This is a helpful development for students learning to play the keyboard from key maps, because the black keys are used from the very beginning of instruction. There is no need to delay using these keys as is often done with beginning piano courses. Because the black keys are the means by which we identify all of the white keys, and because the black keys are so very easy to read and play from the maps, it's clearly helpful to have the simplified black key addresses for beginning students.

Naming Conventions for the Duration of Notes/Sounds.
In traditional notation, the naming conventions all refer to the grandaddy of all notes: the whole note. The whole note is the <u>standard unit of time</u> in traditional music. Beacuse the whole note is much longer in duration than most of the notes used in music, the durations of nearly all of the notes that we play must be expressed as fractions. These are expressed as 3/4 note, 1/2 note, 1/4 note, and so on. Many of us are not really comfortable with fractions, and would prefer to use whole numbers whenever feasible. In fact, we often round numbers that we work with to make life just a little bit more comfortable. If we must use fractions, we would prefer to use larger rather than smaller fractions.

So the question is, must we be doomed to live with fractions dominating our musical time? Not necessarily. Key maps use the "beat" as the standard unit of measure for time. This does not eliminate fractions from music, but at least it cuts their use way down. For music where the whole note gets 4 beats: In key maps, the three-quarter note becomes a 3 beat note; half note becomes a 2 beat note; quarter note becomes a 1 beat note; and the eighth note becomes a 1/2 beat note.

This reduction of fractions surely must seem trivial to the experienced musician, but to the 5 or 6 or 7 year old child it can make a great deal of difference - and to a great many adult students as well.

Converting Traditional Rhythm to Key Map Rhythm.
In music where the eighth note gets 1 beat, the eighth note is written as a 1 beat note. In music where the quarter note gets one beat, the quarter note is written as a 1 beat note. And in music where the half note gets one beat (cut time), the half note is written as a 1 beat note.

4/4 Time

Traditional   **5**   **Key Map**

Whole Note — 4 Beat Note

Three-quarter Note — 3 Beat Note

Half Notes — 2 Beat Notes

Quarter Notes — 1 Beat Notes

Eighth Notes — Half Beat Notes
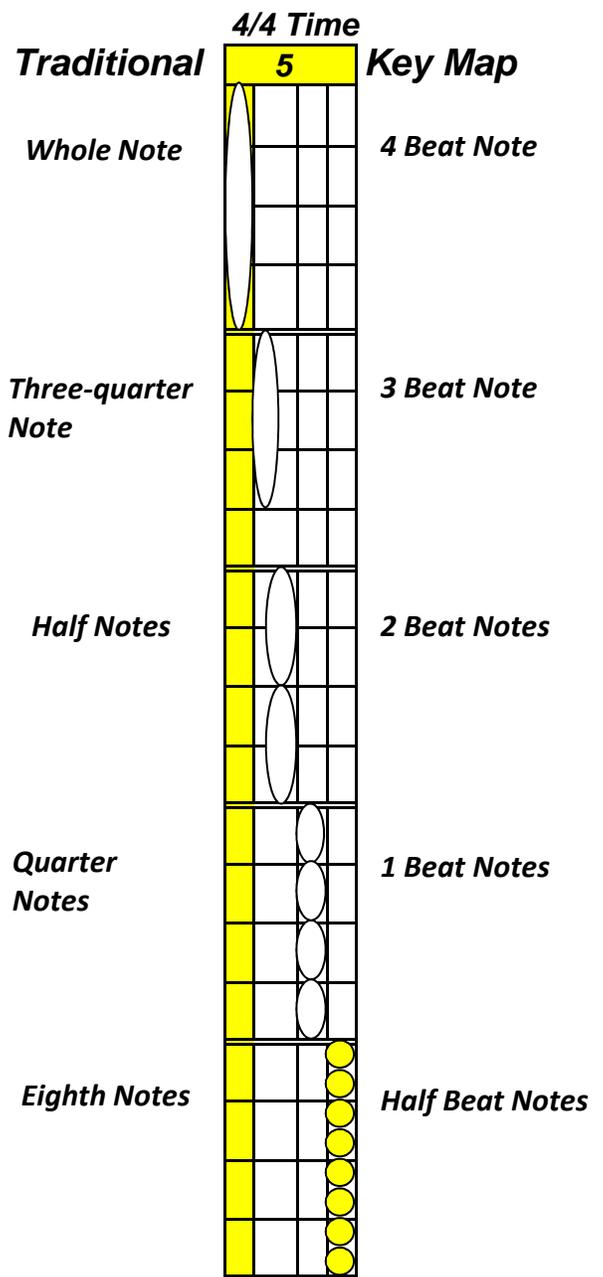
AESTHETICS -- PROPORTIONALITY

Violet	Indigo	Blue	Green	Yellow	Orange	Red
1	2	3	4	5	6	7

Sheet Music as a Visual Art Form. *As a final thought in this unit, let's consider key maps as an art form. Music, of course, is one of the greatest art forms of all time. Could the visual expression of music also be an art form?*

From the very beginning of the development of key maps many years ago, the idea of visual music as an art form has been a driving force. Every effort has been made to make the maps aesthetically pleasing to the eye. The use of line and color, proportion and symmetry have been carefully considered.

The Proportionality of Pitch Expressed Visually. *Proportionality and symmetry are well known components of what we call beauty. It is also well known that music is beautifully proportioned in many ways. For pitch, there is a compounded doubling of vibrations for every octave of higher pitch. This doubling takes place in 12 equal steps called half-steps or semitones. Each of these half-steps results from a compounded increase of vibrations of just over 6%. These features of music are easy to see in the pitch notation of key maps:*

Octaves

6 Equal Whole-Steps Span an Octave

12 Equal Half-Steps Span an Octave

Reveals Major Scale Pattern of Whole-Steps and Half-Steps

All Major Thirds Have Same Visual Span

Major Triads

All Minor Thirds Have Same Visual Span

Minor Triads

AESTHETICS -- PROPORTIONALITY -- Concluded

Violet	Indigo	Blue	Green	Yellow	Orange	Red
1	2	3	4	5	6	7

The Proportionality of Time Expressed Visually. The proportionality of time on key maps is possibly so obvious as to hardly require mentioning. But it is too important to avoid mentioning. Time proportionality is one of the great beauties of key maps.

Key map notes express time directly by their vertical dimension. For any given note length, the time is directly proportional to the time of any other note length. In any given passage of music, a 2 beat note is half as long (in measured distance, that is, millimeters) as is a 4 beat note. The 2 beat note is twice as long in size as a 1 beat note.

To be clear, this proportionality relates to notes in the same piece or passage of music. There is no fixed physical size to the length of a 1 beat note until the appropriate physical size is selected for the musical passage being written. Physical size is determined by the needs of the music, the available page size, and the type of audience for the piece. In other words, the determination of the length of a 1 beat note for a given piece of music is simply a practical matter.

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