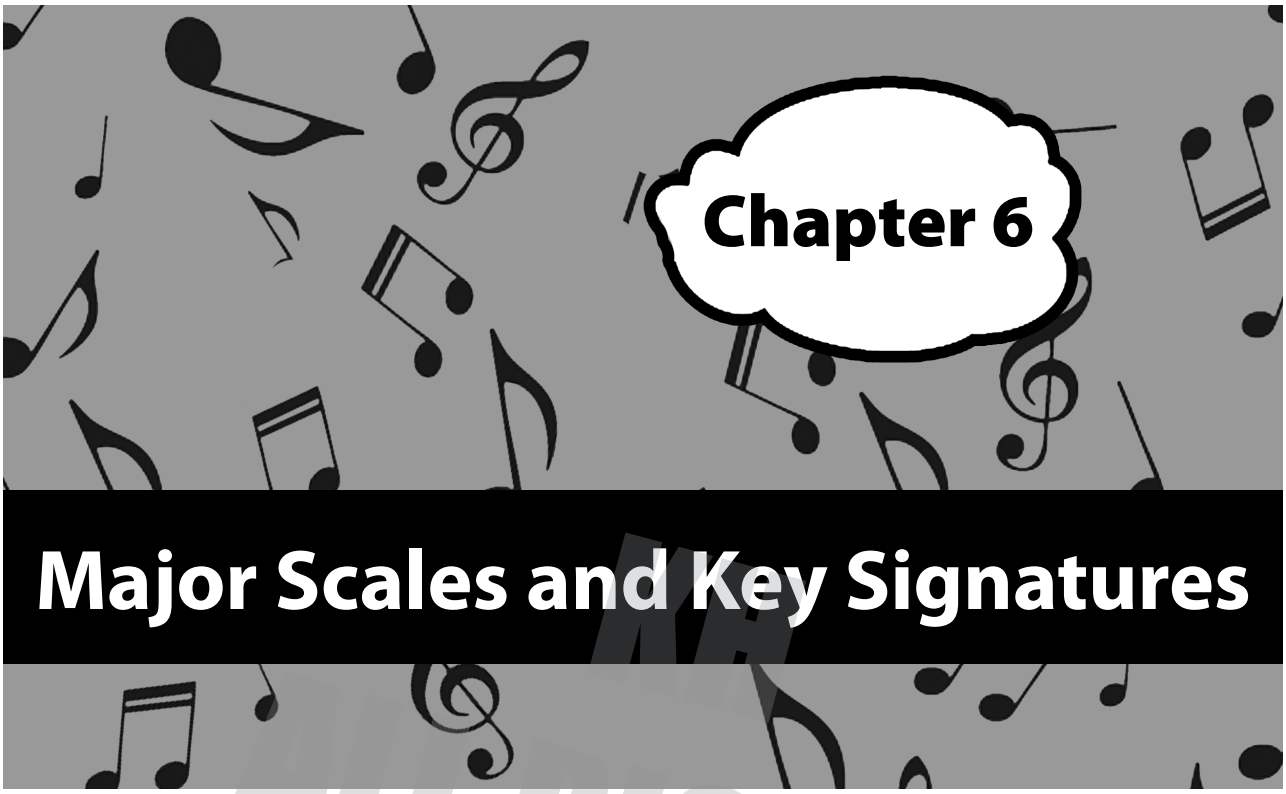


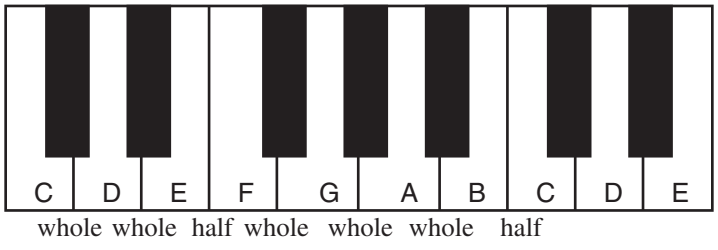
Chapter 6

Major Scales and Key Signatures

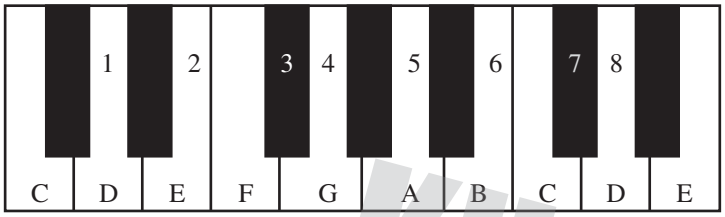
So, now you can use the letters A through G to name notes on the treble and bass staff and accidentals to create Major and minor seconds, aka, whole and half steps (If you can't do this yet, stop here, go back to the previous chapters, and practice until you can.). With this skill mastered, it is time to learn how those notes combine to create a simple piece of music. The first step in this direction is to understand the concept of the ***major scale*** and the system of ***key signatures***.

The Major Scale

A major scale is simply a sequence of eight notes that has two important characteristics: (1) it consists of all of the seven letter names in alphabetical order and ending on the same letter as the one started on, such as CDEFGABC or EFGABCDE; and (2) it contains the specific pattern of whole and half steps **WHOLE, WHOLE, half, WHOLE, WHOLE, WHOLE, half** (or you could think of these as M, M, m, M, M, M, m 2nds). This pattern happens naturally on the white keys of the keyboard when the sequence begins and ends on C (see keyboard below).



Because the white keys running from C to the next C an octave higher form a sequence of notes that have minor 2nds only between E-F (the 3rd and 4th notes) and B-C (the 7th and 8th notes), musicians call that series of notes a **C major scale**. This is the only major scale that consists solely of white keys. Starting on any note other than C requires the use of both white and black keys in order to maintain the correct whole and half-step pattern (score one for diversity). For example, if the sequence starts on D, the notes F and C would need sharps (#) in order to place the half steps between F# and G (notes 3 and 4) and C# and D (notes 7 and 8). See below.



Whole Whole half Whole Whole Whole half

At this point if you have access to a keyboard, you should play the C and D major scales to reinforce this concept with your fingers and your ears.

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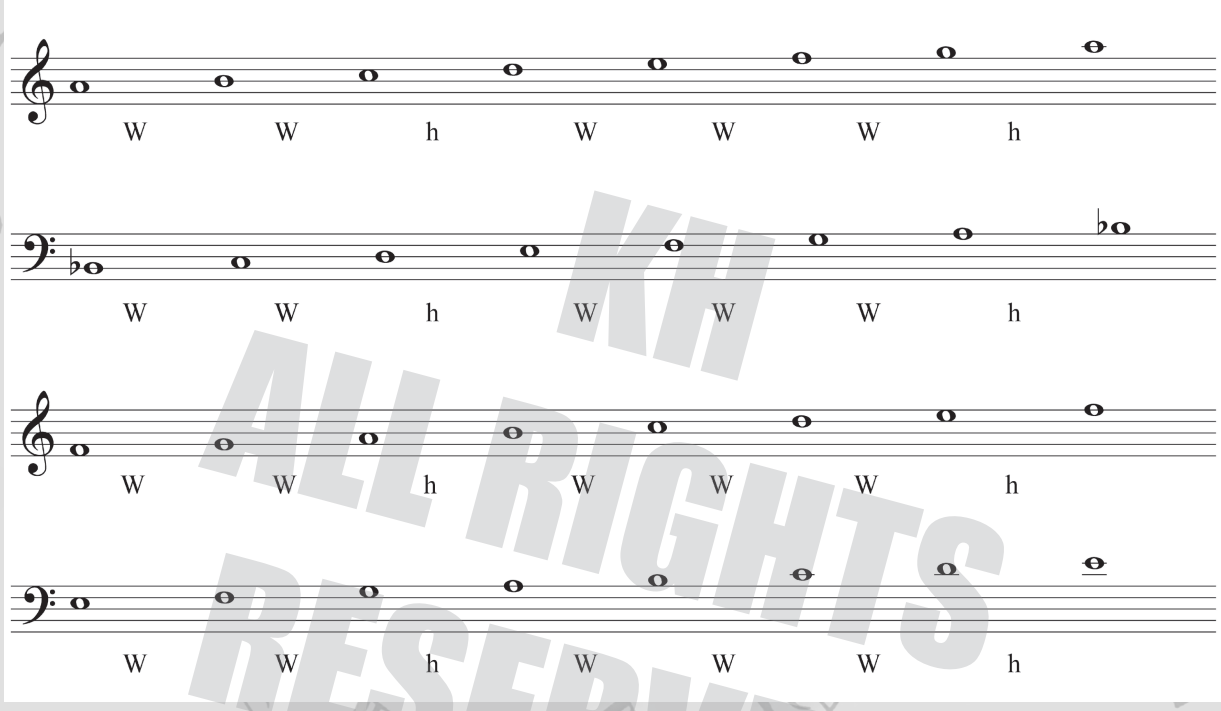
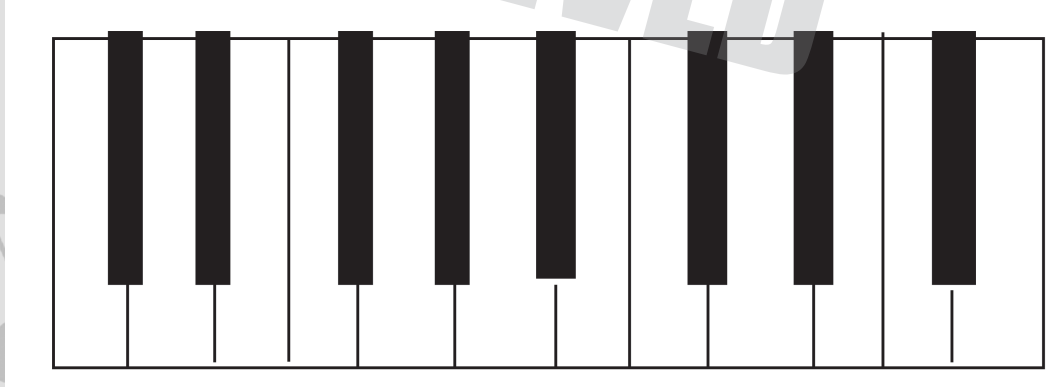
LET'S TRY IT!

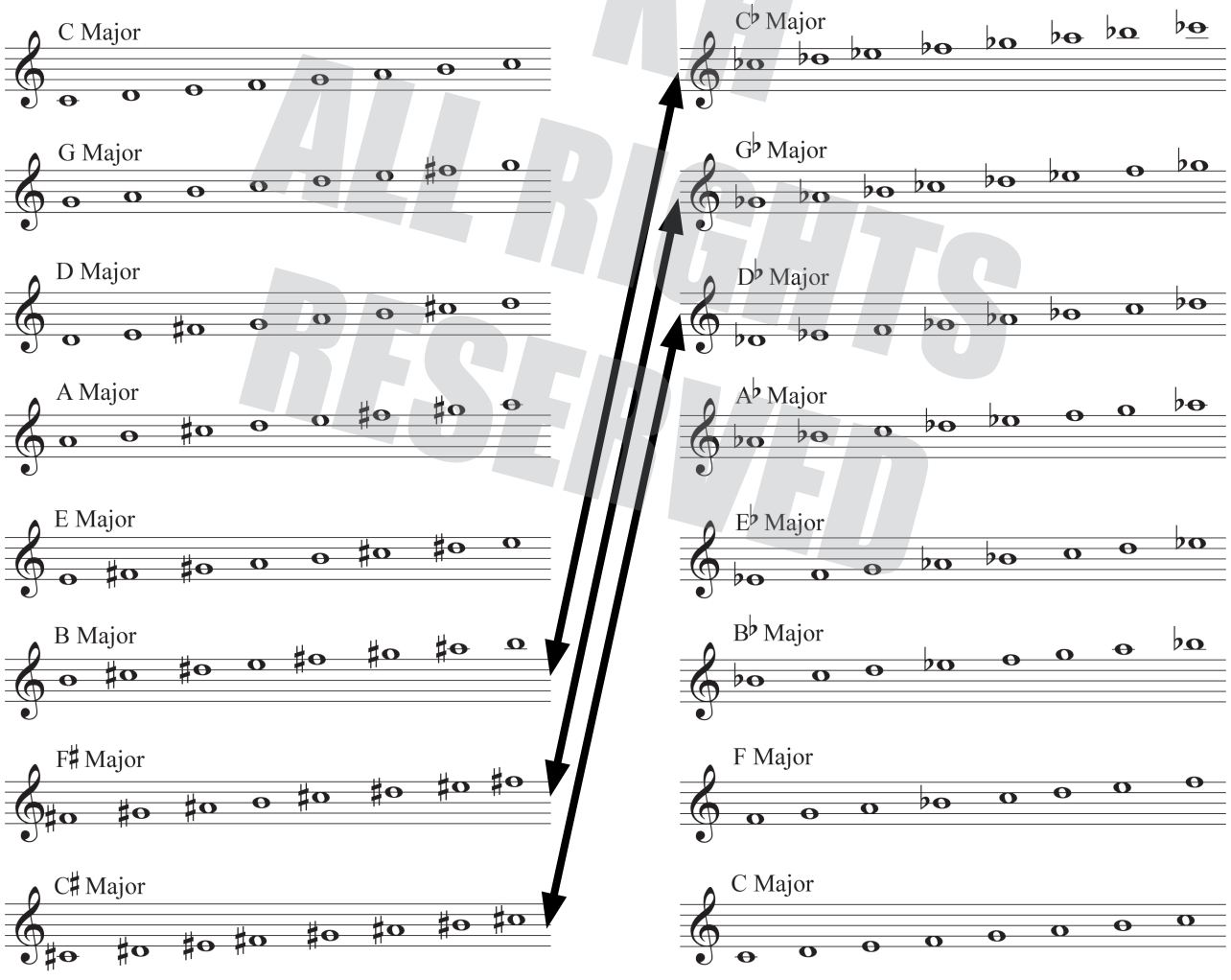
Add sharps or flats to each series of notes below to create the whole and half-step (M/m 2nd) pattern of a major scale as indicated. Use the picture of a keyboard for a reference. Be careful of clef changes!





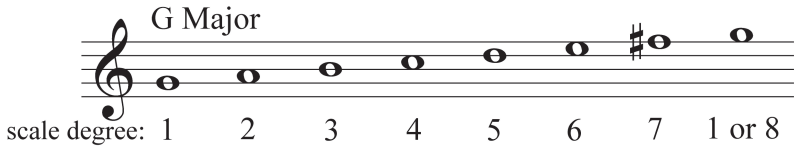
The 15 Major Scales

Despite the title above, there are actually only twelve different sounding major scales—one beginning on each of the twelve different white and black keys on the keyboard (yes, a scale may begin on a black key!). Each major scale takes its name from the note it starts on. The major scale beginning on B-flat is called the B-flat major scale and the one beginning on G is called the G major scale and so on. As mentioned before, each major scale is a different combination of white and black keys (except C major which contains no black keys), always in the whole and half-step pattern of W-W-h-W-W-W-h. However, even though there are only twelve different *sounding* major scales, three of these are written two different ways due to ***enharmonic equivalence***. Therefore, there are actually fifteen different *looking* major scales. See below for a picture of all possible major scales as they appear on a treble staff. The enharmonically equivalent scales are shown by arrows.

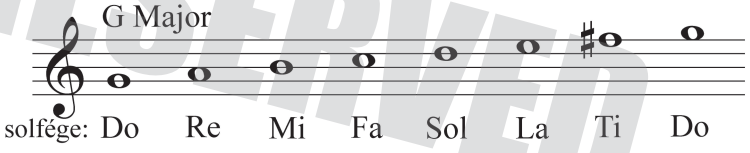


Scale Degrees and Solfége

Because there are seven different notes in a major scale, there are seven ***scale degrees***. The numerical name for a scale degree comes from its position in the order of the scale from low to high. For example, the first note of the scale is the first scale degree, which is followed by the second scale degree and so on. See below.

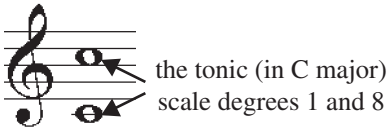


In addition to naming scale degrees by number, there are other naming systems as well. One of those systems is ***solmization syllables*** or ***solfége*** in French (and you thought the only foreign language in music was Italian). You may well be familiar with these syllables from their use in such films as *The Sound of Music* and *Close Encounters of the Third Kind*. The solfége syllables for a major scale are: ***Do*** (scale degree 1), ***Re*** (scale degree 2), ***Mi*** (scale degree 3), ***Fa*** (scale degree 4), ***Sol*** (scale degree 5, often pronounced "so" without the "l"), ***La*** (scale degree 6), and ***Ti*** (scale degree 7) with ***Do*** (technically both scale degree 1 and 8) returning after ***Ti*** (pronounced tea, a drink with jam and bread). In countries that speak French or Spanish, solfége syllables are used instead of letters to name the notes on the staff, with C=Do, D=Re, E=Mi, F=Fa, G=Sol, A=La, and B=Ti. This is a practice known as "fixed Do." Most English speaking countries use "moveable Do," which means that the first note of *any* scale becomes Do. See below.

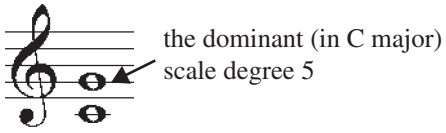


Scale Degrees and Word Names

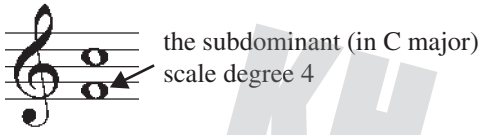
Each scale degree also has a word name (many people have three names, why shouldn't a scale degree?). The word name for the first scale degree (***do***), the one that the scale is named for, is the ***tonic.***



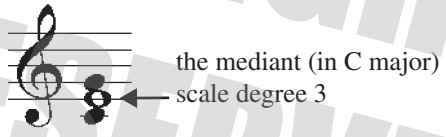
The word name for the fifth scale degree (***sol***)—five notes higher than the tonic—is the ***dominant***.



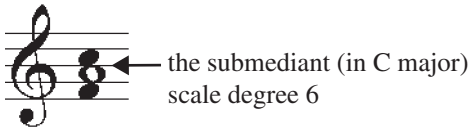
The word name for the fourth scale degree (***fa***) is the ***subdominant*** (*sub* as in *sub*marine or *sub*par, meaning below) because it is five notes *below* the tonic (it is also one step *below* the dominant).



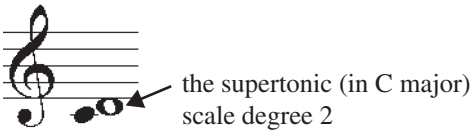
The other four scale degrees (3 and 6; 2 and 7) have names that reflect where they are in relation to the tonic, dominant, and subdominant. The third scale degree (***mi***) falls in the middle between the tonic and the dominant and is called the ***mediant*** (think of the median on a highway).



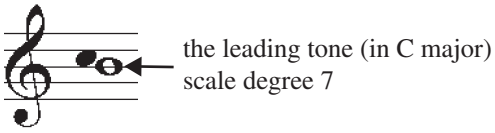
The sixth scale degree (***la***) falls in the middle between the tonic and the subdominant and is therefore called the ***submediant.***



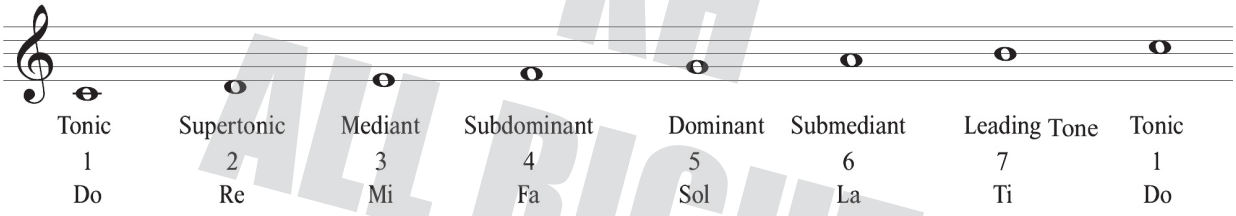
The second scale degree (***re***) is a step *above* the tonic and is therefore called the ***supertonic***. (*super* as in *super*structure, meaning above).



The seventh scale degree (***ti***) is a step *below* the tonic, so following the previous logic it should be called the subtonic. Here, though, the pattern changes. The seventh scale degree is a half step away from the tonic. When we hear the seventh scale degree in the context of a piece of music, it seems to "lead" back to the tonic (Play a C major scale on a keyboard and pause on the note B. Can you hear the tendency of the music to return to C?). Because of the tendency for the seventh scale degree to lead back to the tonic it is called the ***leading tone***.



To summarize, here are the names, numbers, and solfége syllables of the scale degrees in scale order (low to high) using the C major scale as an example.



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LET'S TRY IT!

For each scale degree named below, provide the missing two names. The first one is done for you as an example.

1. **scale degree 2**	**re**	**supertonic**
2. _____	**la**	_____
3. _____	_____	**subdominant**
4. _____	_____	**tonic**
5. _____	**mi**	_____
6. **scale degree 5**	_____	_____
7. _____	_____	**submediant**
8. _____	**sol**	_____
9. **scale degree 7**	_____	_____
10. _____	_____	**mediant**
11. _____	**do**	_____
12. **scale degree 6**	_____	_____
13. _____	**fa**	_____
14. _____	_____	**leading tone**
15. **scale degree 1**	_____	_____
16. _____	_____	**dominant**
17. _____	**ti**	_____
18. **scale degree 3**	_____	_____
19. _____	**do**	_____
20. _____	_____	**supertonic**

LET'S TRY IT!

Practice singing the following song accompanied by your instructor or the available recording. It is designed to help you remember the whole and half-step pattern of a major scale.

Whole and Half Too-Step

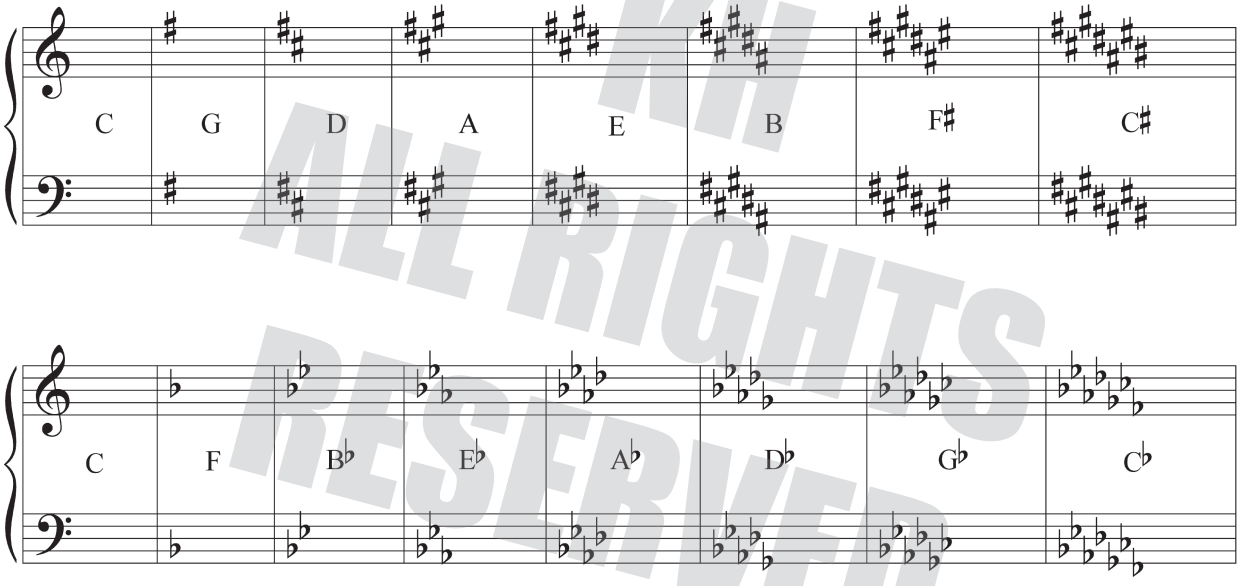
Track 5

Cheerfully ♩= 120

John Alan Gerhold
(ASCAP)

Major Key Signatures

When a piece of music consists of only (or mostly) the notes of a particular major scale—such as E major—the music is said to be "in the *key* of E major." This means (look again at the E major scale on the earlier page) that any A's, E's, or B's in the piece will be natural (white keys) and any F's, C's, G's, or D's will be sharp (black keys). The fact that the key of E major will contain four sharps (F, C, G, D) is a constant. It will always be true. Since this is the case, a composer composing in the key of E major can list these sharps at the very beginning, just after the first clef. Such a list of the sharps or flats that will appear in a given piece of music is called the ***key signature***. All fifteen major keys have a key signature. Every student of music should memorize these key signatures, not simply be familiar with them. See below for the major key signatures in order of increasing numbers of sharps and increasing numbers of flats.



Memorizing the above table of key signatures may seem daunting. After all, you must remember not only the number of sharps or flats that are in a given key, but also which letter names should be sharped or flatted, and in what order to list them on the staff. To help with this memorization you must now learn the ***Circle of 5ths***.

The Circle of 5ths

The Circle of 5ths is simply the twelve different notes on the piano keyboard (seven white keys and five black keys) organized in a pattern so that each note is five scale steps away from its nearest neighbor. Compare the picture of the Circle of 5ths below with the face of a clock.

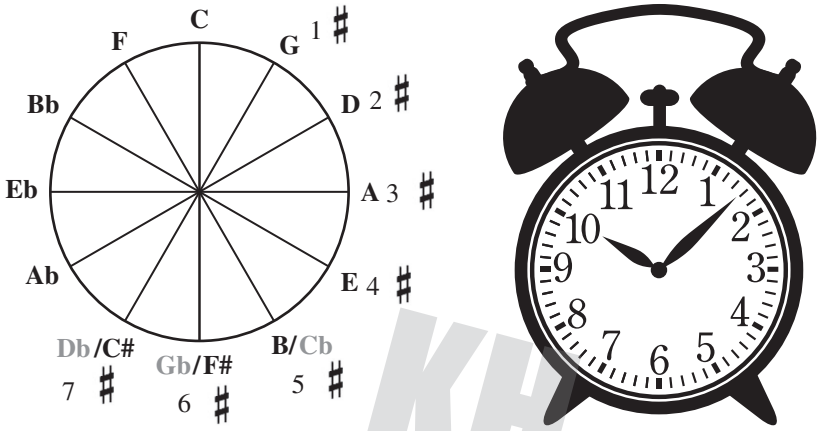


Image © jara3000, 2012. Used under license of Shutterstock, Inc.

The important connection to make in comparing these two pictures is that the numbers of the hours from one to seven o'clock is the same as the number of sharps in each major key in the same location. For example, the key of D major is in the two o'clock position on the Circle of 5ths and D major has two sharps in its key signature. B major is in the five o'clock position and the key of B major has five sharps. This relationship will hold true for any key between one o'clock (G major) and seven o'clock (C# major).

You don't see them very often, but there are novelty clocks that run backwards (counterclockwise). In fact, Disney makes one with a picture of Goofy on the face (Get it? A Goofy clock runs backwards!). On this clock, the numbers 1 through 7 are on the opposite side (beginning on the left) and go counterclockwise. These numbers would match the number of flats in the various key signatures that contain flats. So, moving counterclockwise from C major (zero flats) to F major (one flat) to B-flat major (two flats) and so on all the way to C-flat (seven flats), which is seven positions (hours on the Goofy clock) counterclockwise from C major.

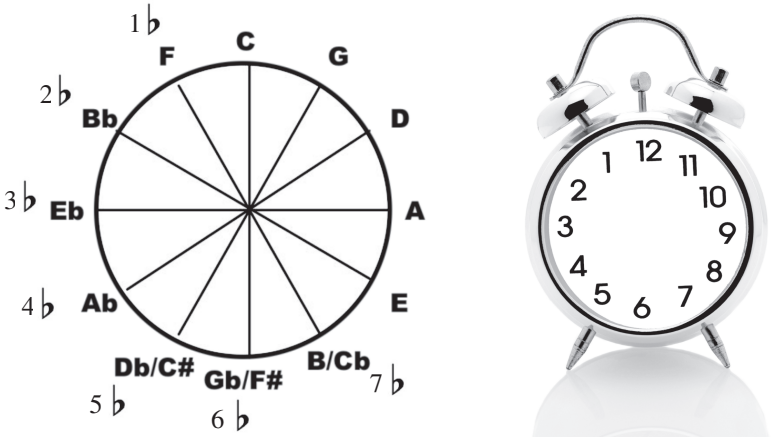
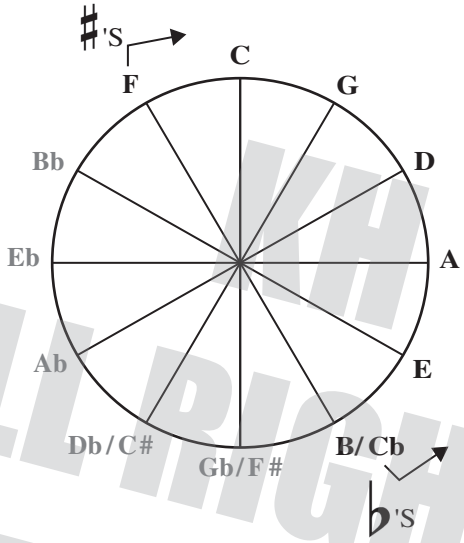


Image © Steve Cukrov, 2012. Used under license of Shutterstock, Inc.

By memorizing the Circle of 5ths and remembering its resemblance to a clock face, you will find it easy (or at least easi*er*) to remember how many sharps and flats are in each major key. Remember, keys on the right side of the Circle of 5ths, one to seven o'clock (G to C# major), contain sharps; and keys on the left side, one to seven on a Goofy clock (F to Cb major), contain flats. Of course, C major at the 12 o'clock position contains nothing but naturals.

In addition to information about how many sharps or flats are in a particular key, the Circle of 5ths also shows the order those sharps and flats appear on the staff. To see how, look again at the complete circle.



Notice how the natural notes are all grouped together in the order **FCGDAEB** going clockwise? This is the order the sharps appear in key signatures. In other words, if there is only one sharp in the key signature (which represents the key of G major), that sharp is the first letter in the above order—**F**. If there are four sharps in the key signature (which represents the key of E major), then those sharps will be the first four in the sequence, or **FCGD**. As you can see, if there are any sharps at all, **F** will be one of them and will appear in the key signature first (from left to right).

As for the order of the flats, simply read the sequence of sharps (**FCGDAEB**) backwards, to get the pattern **BEADGCF** (Ta-Da!). We add flats to key signatures in the same manner as sharps, that is, if there is one flat in the key signature, that flat is **B**. If there are three flats in the key signature those flats are **BEA**, and so on. Just as **F** will always be the first sharp, **B** will always be the first flat. After that, just follow the order of the letters as they appear on the Circle of 5ths: clockwise for sharps and counterclockwise for flats.

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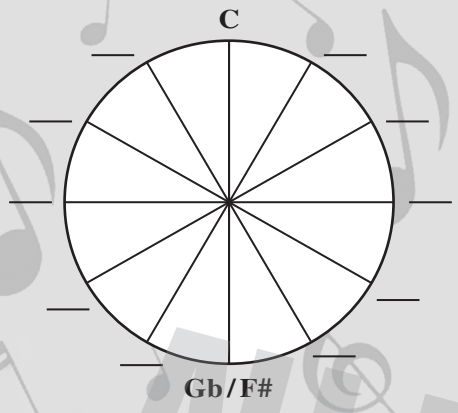
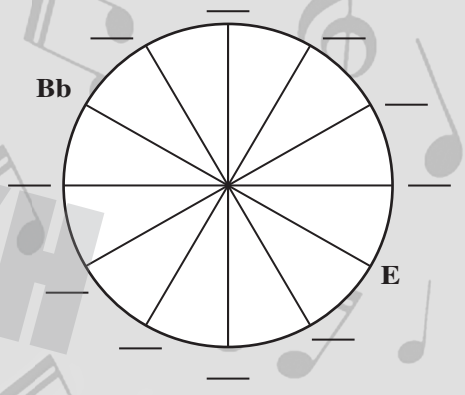
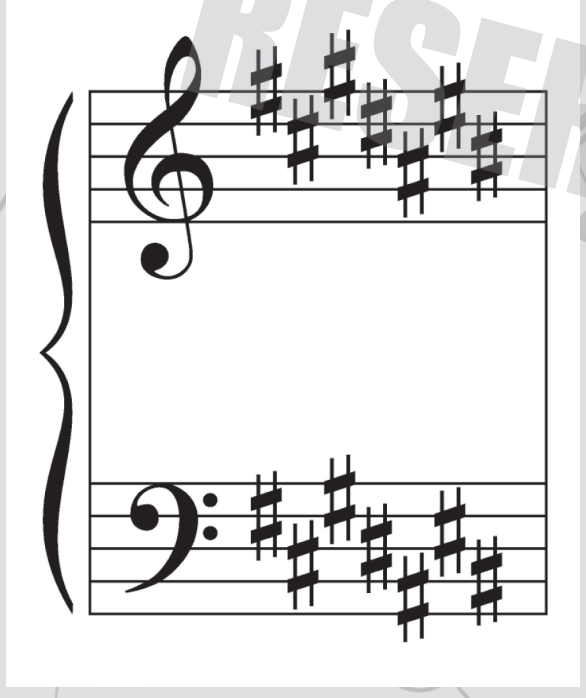
LET'S TRY IT!

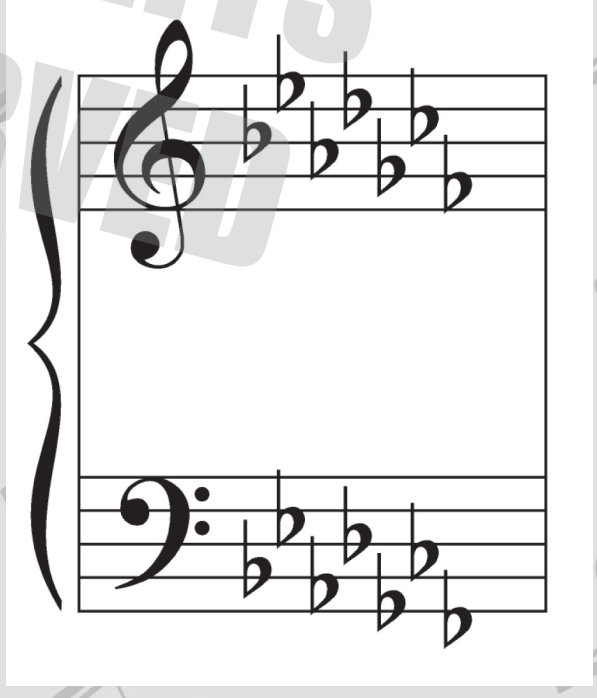
Complete the Circle of 5ths diagrams below by writing the letter names of the keys in the correct order along with the number of flats or sharps in each key signature as appropriate.





On the grand staves below, write the letter name next to each sharp or flat in the key signatures for C# Major and Cb Major.





The Circle of 5ths is the proverbial "picture worth a thousand words." You can use it to remember ***how many*** sharps or flats are in any given key (think of its resemblance to a clock face). You can also use it to remember ***the proper order*** of those sharps and flats. If you can draw the Circle of 5ths, proving you know it thoroughly, you have a powerful tool for remembering key signatures stored in your head (which is a pretty good place to keep anything—except screwdrivers).

Remembering the Order of Sharps and Flats—Another Strategy

Just like with learning the letter names on the treble and bass staff, you may find using a slogan or phrase as a memory aid helpful in remembering the order of the sharps and flats. One such phrase is "**F**ather **C**harles **G**oes **D**own **A**nd **E**nds **B**attle" for the order of the sharps and "**B**attle **E**nds **A**nd **D**own **G**oes **C**harles' **F**ather" for the order of the flats (notice these are the same sentences with reversible words).

LET'S TRY IT!

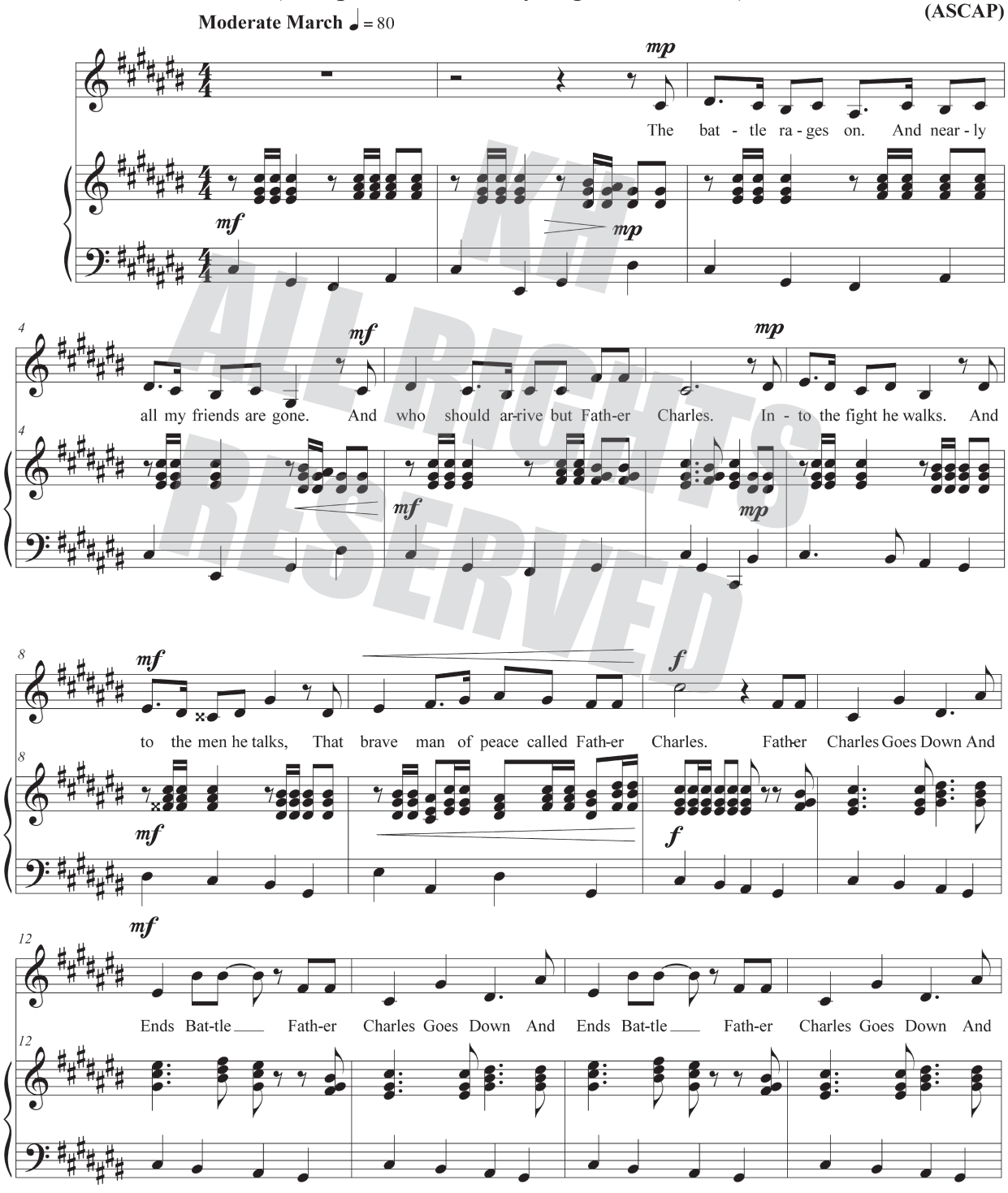
Practice singing the following song accompanied by your instructor or the available recording. It is designed to help you remember the "Father Charles" phrase and the order of the sharps and flats that occur in key signatures.

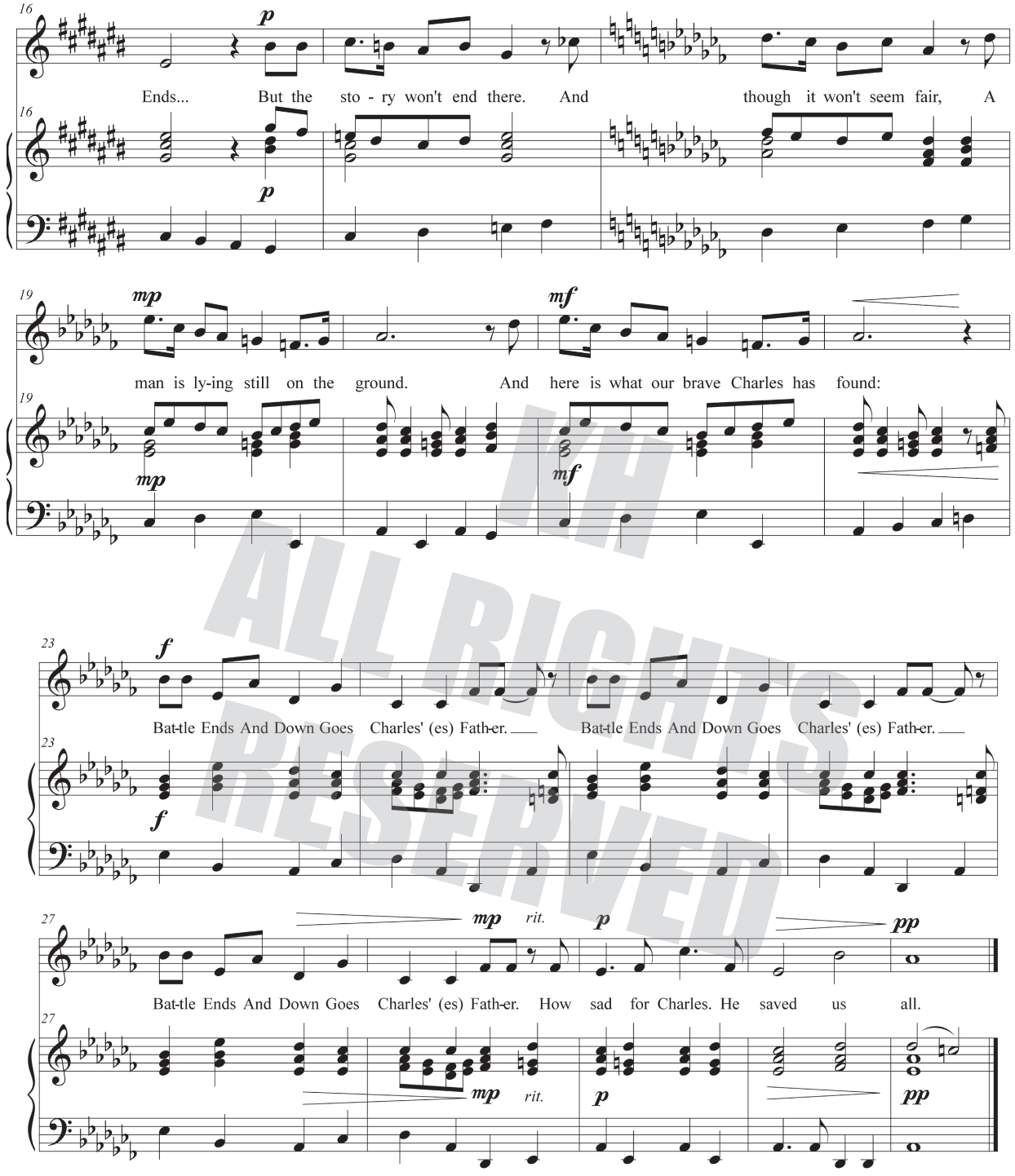
Track 6

Father Charles

(Sharps and Flats Key Signature Order)

John Alan Gerhold
(ASCAP)



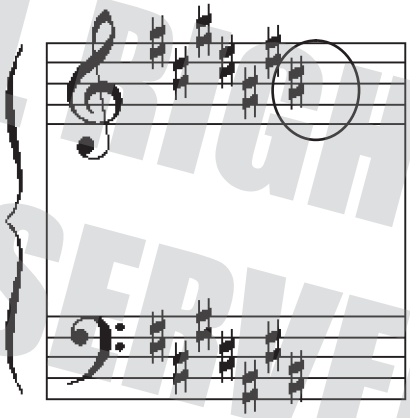


Tricks of the Trade

There are many skills in reading music that musicians must be able to do both quickly *and* accurately. Obviously, knowing the name of a particular note and how to play it on your particular instrument falls into this category. So, too, does being able to play that note at the appropriate time and for the right duration (this means you need to understand how rhythm works). Recognizing key signatures is also one of these skills. The Circle of 5ths is an excellent way to organize your knowledge of key signatures so that you will be able to write them yourself (like on a test, maybe?). However, the Circle of 5ths is not the best tool in the toolbox for naming the key by looking at the key signature. Instead, there are some simple tricks for accomplishing this task that are quick to learn and easy to use. The nice thing about these tricks is that you don't have to understand why or how they work in order to use them (like a computer).

Recognizing Key Signatures with Sharps

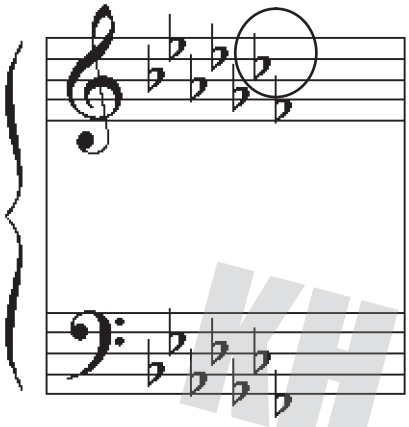
When trying to identify the major key of a key signature consisting of sharps, there are two steps: (1) look at the last sharp (reading from left to right) and (2) name the note a half step higher than that sharp. The name of that note is the name of the key. See the example below.



Step 1—The last sharp (circled) is B#. **Step 2**—The note a half step higher than B# is C#; therefore, this is the key signature for the key of C# major. Another way of saying this is that B# is the *leading tone* in the key of C#.

Recognizing Key Signatures with Flats

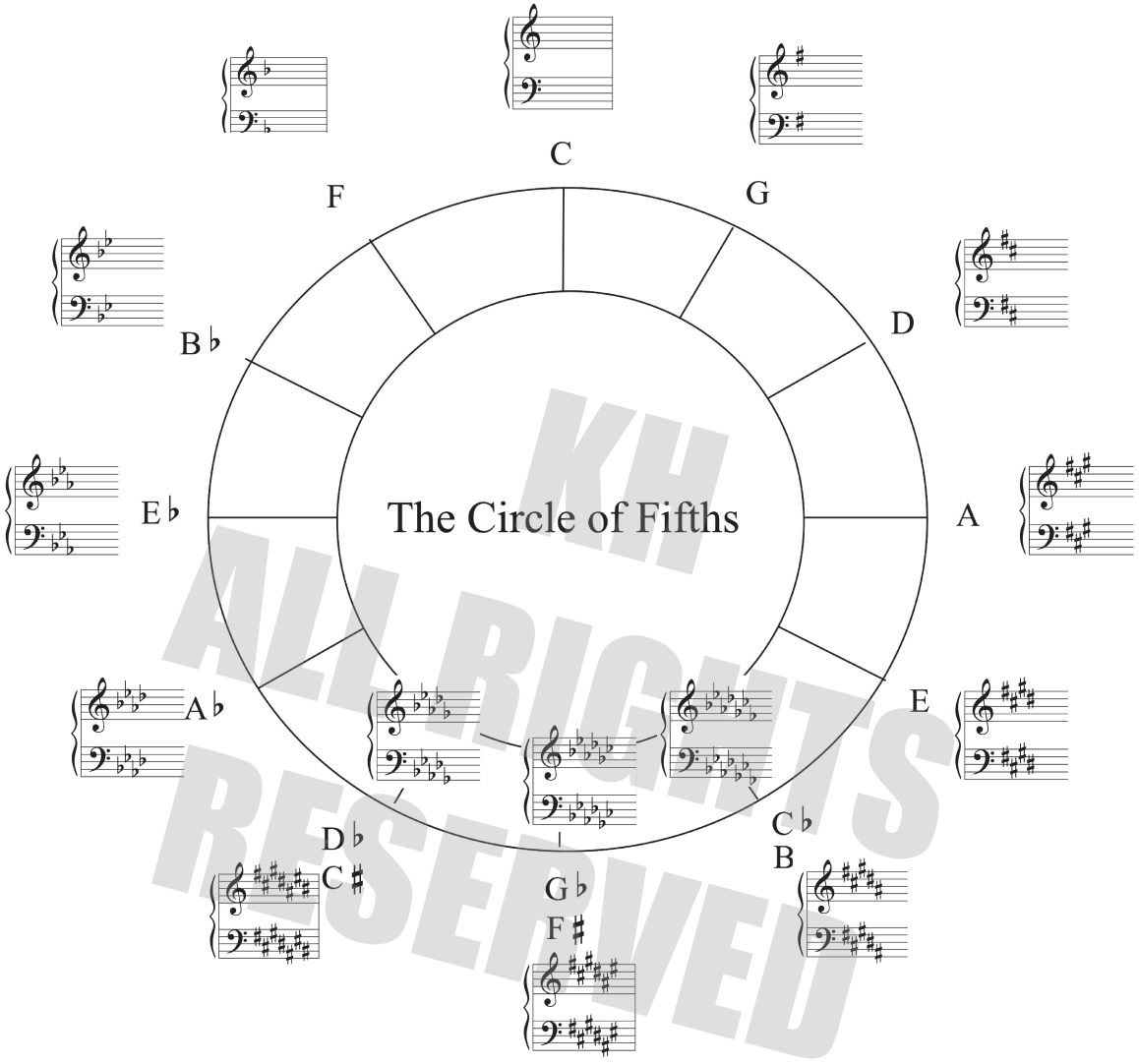
When trying to identify the major key of a key signature consisting of flats there is only one step: (1) look at the second-to-the-last (penultimate) flat (still reading from left to right). The name of that flat is the name of the key. See the example below.



Step 1—The second-to-the-last flat (circled) is Cb. Therefore, this is the key signature for the key of Cb major.

Remember—the trick for sharps is different from the trick for flats!

Finally, here is a picture of the Circle of Fifths that also shows the correct key signature for each major scale.



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CHAPTER SIX EXERCISES

1) Define the following terms from the chapter in your own words.

1. ***major scale*** _____

_____

2. ***key signature*** _____

_____

3. ***scale degree*** _____

_____

4. ***solmization syllables*** _____

_____

5. ***solfége*** _____

_____

6. ***tonic*** _____

_____

7. ***dominant*** _____

_____

8. ***subdominant*** _____

_____

9. ***mediant*** _____

_____

10. ***submediant*** _____

_____

11. ***supertonic*** _____

_____

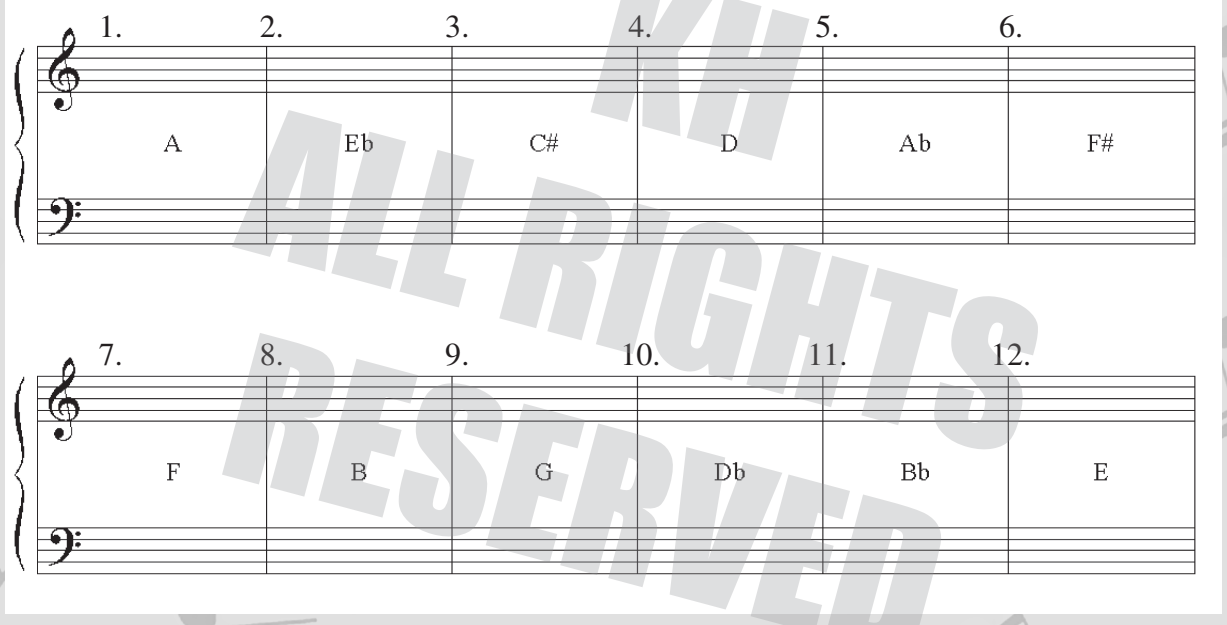
12. ***leading tone*** _____

_____

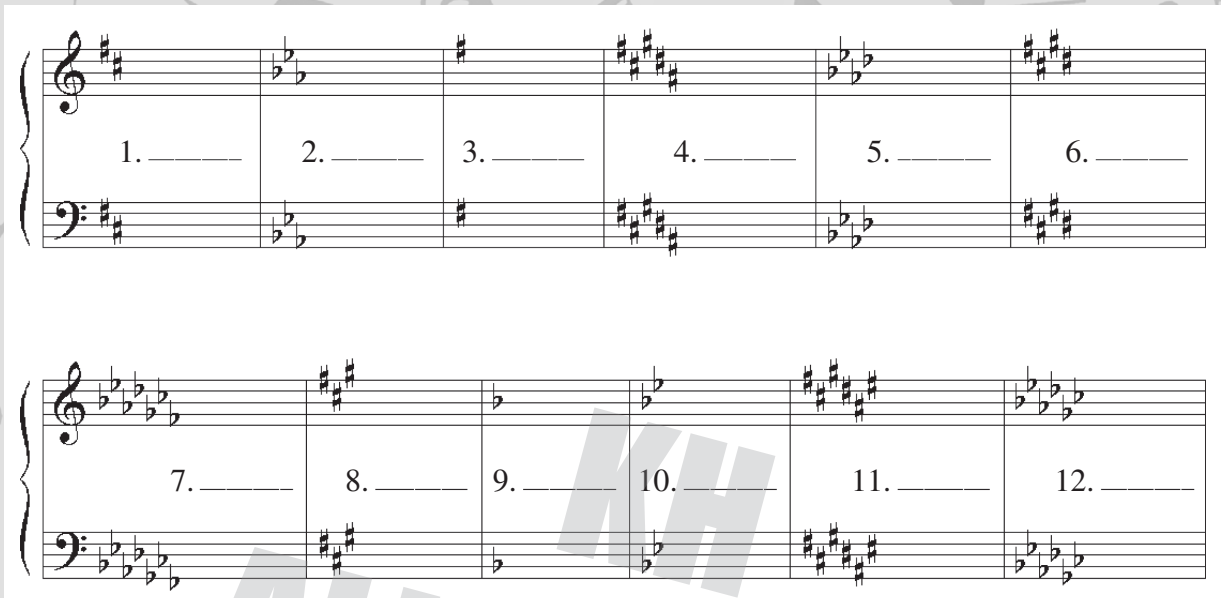
13. ***Circle of 5ths*** _____

_____

2) Write the key signatures specified by the letter in each measure.

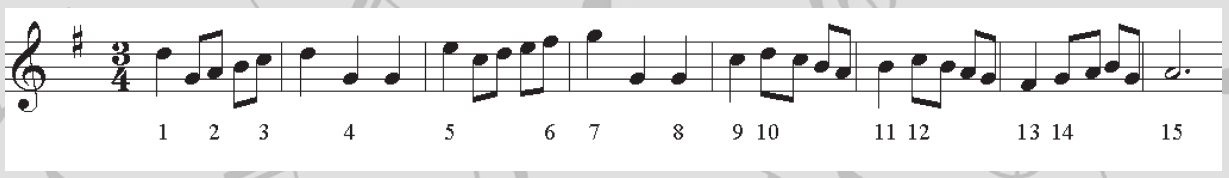


3) **Write the letter name of each key signature in the blanks provided.**



4) **Draw the Circle of 5ths until you are able to draw it from memory (at least three times).**

5) **In the spaces provided, write all three names (scale degree, solmization syllable, and word name) of each numbered note of the melody in G major below. Remember: in the key of G major, the note G becomes "Do." The first one is done for you as an example.**



1.	scale degree 5	sol	dominant
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			