Music Theory
A Pocket Guide

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Preface

Throughout this pocket guide, you will find multiple approaches to various concepts covered through music theory fundamentals. Each approach follows a step-by-step process with sample demonstrations to reinforce the concepts. **I do not claim ownership of any of these processes**; they are simply a collection of techniques that I have learned from mentors, professors, and colleagues who are far-wiser than I am. I have created this pocket guide to share these ideas with students to simplify the tasks and help solidify the understanding of the theoretical application of these concepts.

This guide is organized into three parts: Part I, Extended Processes, outlines each subject in a highly detailed, lecture style overview to guide you through each concept. This part is worded in a way to teach each concept with no prior-knowledge needed; Part II, Shortened "Pocket-sized" Processes (where this guide gets its name), goes through each concept discussed in Part I on a far-briefer scale. Part II assumes background knowledge of the subject in question and, unlike Part I, serves as a refresher guide to remind you how to execute these techniques; Part III (**Coming Soon!**), Examples, will demonstrate each concept outlined in both previous parts with musical applications to solidify these concepts for your increased understanding.

Contents

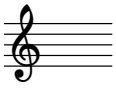
Part I

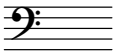
Extended Processes

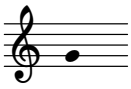
Chapter 1

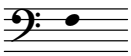
Identifying Written Pitches

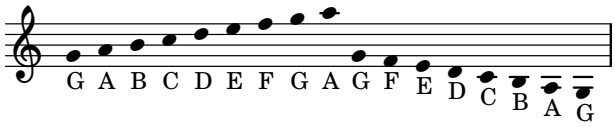
1. Identify the clef.
   - For this class, you'll be focusing on only two clefs:
     - Treble (G) clef:

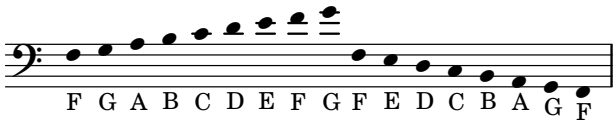
       
     - Bass (F) clef:

       
2. Locate your "reference pitch."
   - This is a line or a space that you know *for certain* how to identify.
   - The common reference pitches when learning the clefs are the pitches each clef highlights:
     - The treble clef highlights the pitch "G":

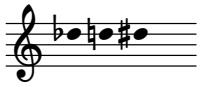
       
     - The bass clef highlights the pitch "F":

       
       * *The more comfortable you become with reading these clefs, the more reference pitches you will learn and your speed at identifying pitches will only get faster. It just takes time, patience, and practice!*
3. Count up or down from your reference pitch going up or down the musical alphabet with every line and space.

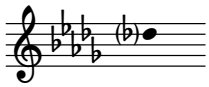




4. Once you've identified the letter of the pitch, look to see if it has an accidental.
    - Accidentals are either written next to the note:

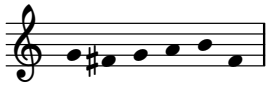


    - Or, they will be applied through the key signature (always double check!):

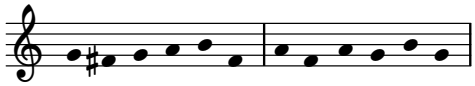


5. That's it! It seems tedious at first, but you'll build speed and efficiency through practice!

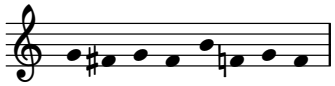
- A quick note about accidentals.
    - When a pitch has an accidental attached to it, *every* instance of that pitch *following* that accidental has the same accidental applied to it *even though it isn't printed next to the note*!



        * Notice the "F♯" at the beginning of this excerpt. Since the second "F" occurs before the barline, this second "F" is *still* considered an "F♯" because all accidentals *carry through* each measure.
    - Take a look at this:



        * The "F" in the second measure is considered to be an "F♮" because the barlines in music *reset* the accidentals. This means each measure is a blank slate where nothing carries through from previous measures (unless another accidental appears).
    - Accidentals can also be cancelled within a measure of music as well:



        * Notice the first "F♯," this causes every subsequent "F" to be ♯. However, the "F♮" towards the end of this measure *cancels* the preceding "F♯" resulting in every "F" *following* the "F♮" to be an "F♮."
        * *Of course, after the barline all of the added accidentals in the music reset back to normal.*

Chapter 2

Labeling the Keyboard

1. Become familiar and comfortable with drawing your own keyboard. This skill can be used anywhere which is why it is *so* important!

   - Notice the above keyboard looks *slightly* different than the traditional keyboard. I prefer to display the keyboard with the black keys going all the way to the bottom of the keyboard. This prevents "skipping" any black keys when counting half-steps and whole-steps.

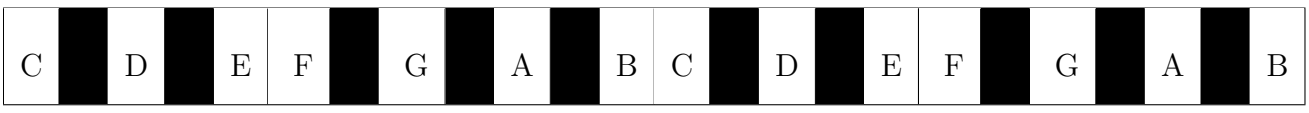
2. Label the left-most white key with the letter "C."

3. Then, as you go to the right of the keyboard, label each white key with the next letter in the musical alphabel:

   - Note, we only label the white keys. The black keys will make more sense below!

2.1 Navigating the Keyboard

- The keyboard is a "cyclic" organism.
  - This means that, even though the keyboard above has only seven white keys, we are still able to count well beyond (both to the left or the right) from this display.
  - For instance, when ascending (going to the right) up the keyboard, when we reach the "B" key, this whole keyboard repeats.
  - The same can be said for when descending (going to the left) down the keyboard; when the "C" key is reached, the whole keyboard repeats.



- Every adjacent column—*regardless of color or direction*—represents one half-step.
  - Therefore, there is one half-step between "E" and "F" as well as between "B" and "C."

2.2 The Black Keys

- The understanding of the half-step orientation of the keyboard is *crucial* for labeling and understanding the black keys.
- Let's use the "G" key for demonstration purposes.

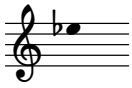
1. Find "G" on the keyboard.

2. the black key to the *right* of "G" (also referred to as "one half-step above") is labeled as "G♯."
   - Consequently, the black key to the *left* of "G" (also referred to as "one half-step below") is labeled as "G♭."

   - Therefore, every pitch with an accidental (♭/♯) must *first* be found relative to the white key letter the accidental is attached to.
   - This also means that each of these black keys will have more than one label!
     - Each black key will have a ♭ label as well as a ♯ label.
     - These are called **enharmonics**.
       - Enharmonics are defined as representing the same keyboard key with different labels (for example, G♭/F♯).
     - Also note, the white keys of the keyboard can have a ♭/♯ as well!
       - If we find "F" on the keyboard, we can spell—spell as in how you write the keyboard label—the key one half-step below "F" as "F♭" instead of the "E."
   - Because of the myriad possibility of labels the black keys can have, it's easiest and most efficient to just label the white keys and understand how to find and identify the black keys.

2.3 From Notation to the Keyboard

- How can we find the right keyboard key given a written musical pitch, such as:



1. First find *only* the **letter** of the written pitch (in other words, *temporarily* ignore the accidental if there is one.
   - In this case, the letter of this pitch is "E."
2. Find this letter on the keyboard:

3. Then, look to see if there is an accidental.
   - a 𝄫 means to move down (to the left) two half-steps on the keyboard from the white key identified in step 2.
   - a ♭ means to move down (to the left) one half-step on the keyboard from the white key identified in step 2.
   - a ♯ means to move up (to the right) one half-step on the keyboard from the white key identified in step 2.
   - a 𝄪 means to move up (to the right) two half-steps on the keyboard from the white key identified in step 2.
   - a ♮ means the white key identified in step 2 is the correct key.
     - Sometimes a blank notehead (one without an accidental) *still* has an accidental attached to it. Always be sure to *check the key signature*!
   - Since this note has a ♭ we will move one half-step down from "E" on the keyboard:

4. That's it!
   - Just be sure to always be aware of the key signature as well as if accidentals carry through measures etc.

Chapter 3

Meter

The Main Rule

- **All meters** can have *only* 2, 3, or 4 beats in them, **no more, no less**!

The Process

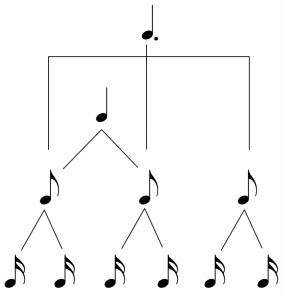
1. Look at the top number of the meter.
   - If the top number is a 2, 3, or 4, then it is a **simple** meter (see "Simple Meters" below).
   - If the top number is greater than 4 (remember, we can only have a meter with 2, 3, or 4 beats!), then it is a **compound** meter (see "Compound Meters" below).

3.1 Simple Meters

1. Isolate the meter as a fraction and simplify.
   (a) For example: $\mathbf{\frac{3}{8}}$ converts to $\frac{3}{8}$.
   (b) To simplify, simply replace the top number with a 1 $\left(\frac{\not{3}}{8} \rightarrow \frac{1}{8}\right)$.
      - But why do we do this?
      - By temporarily placing a 1 on the top of the meter, we create a fraction with a particular sound to it.
      - Sound? Yes! $\frac{1}{8}$ can be spoken as an "eighth."
      - Does "eighth" sound like a rhythm value that we've come across?
      - Yes! An eighth-note!
        - **By adding "note" after the name of the fraction produced in step 1.b, you identify the rhythm value that gets the beat.**
        - In the case of $\mathbf{\frac{3}{8}}$, the eighth-note gets the beat!
2. Once you've established what rhythmic value gets the beat you can identify how many beats occur in each measure (you have to do *a little bit* of math but don't worry, it's easy!).
   - All you have to do is figure out how many beats (it's easiest to think of it as a fraction, in this case $\frac{1}{8}$) fit into the original meter (again, easiest to think of as a fraction still like we made in step 1.a, $\frac{3}{8}$).
     - In this example, 3 $\frac{1}{8}$s fit into $\frac{3}{8}$ therefore, there are 3 beats in *every* measure of $\mathbf{\frac{3}{8}}$.
3. Since there are three beats per measure in this meter, $\mathbf{\frac{3}{8}}$ is considered to be a simple **triple** meter.

- a 2 as the top number produces a "duple" meter.
- a 3 as the top number produces a "triple" meter.
- a 4 as the top number produces a "quadruple" meter.

4. Then refer to a modified rhythm tree to visually see all of the available subdivisions for the meter you're identifying.
   - A modified rhythm tree!?
   - Write out a full measure worth of beats (in the case of $\frac{\mathbf{3}}{\mathbf{8}}$ you would write 3 eighth-notes.
     - If you're feeling particularly lazy, you can complete a smaller rhythm tree based on just one of these beats. If you chose this option, be sure to remember that three of these trees fit in one measure in $\frac{\mathbf{3}}{\mathbf{8}}$.
   - Then write out the subdivisions beneath (and above!) to create an entire modified rhythm tree.
   - Once complete, you'll be looking at something like this:



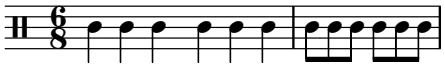
     - This shows you everything that can fit in one measure of music and can be very helpful!
5. Smile! You did it!

3.2 Compound Meters

- Let's demonstrate the process using the meter $\frac{\mathbf{6}}{\mathbf{8}}$.
- If we follow the same procedure as we did for the simple meters above, this meter would tells us that each measure has 6 beats and the ♪ gets the beat.
- Our top number is bigger than 4 and, according to our main rule, we have to *correct* the meter to satisfy this rule.
- How do we do this?

1. Take the top number of the meter and divide this number by **3**.
   $\frac{\mathbf{6}}{\mathbf{8}} \rightarrow \mathbf{6 \div 3 = 2}$
   - Though we are mathematically "dividing" by 3, what we are actually doing, in a musical sense, is ***grouping*** into 3.
2. The result from step one tells us how many *groups* of 3 this meter contains.
   - The result of our demonstration (4) in step 1 tells us that there are 2 groups of 3.
   - But 2 groups of what?
3. To determine what to group into a group of 3 in step 2, identify what originally gets the beat for this meter.

- Just like we did with the simple meters, we identify what originally gets the beat by putting a one at the top of the meter ($\frac{1}{8}$).
- Since the 𝅘𝅥𝅯 gets the beat, we are going to make 2 groups of 3 𝅘𝅥𝅯s.
  - The easiest way to put this on paper is to write out the number of noteheads dictated by the top number of the meter
  - Attach a stem to each of these noteheads (but no flag!).
  - Then, draw a beam connecting every three notes starting from the left.



- If done correctly, you will draw two groups of three eighth notes as shown in the second measure above.

4. Now we need to determine the *new* beat-value that gets the beat.
   - Take a single group of three from step 3 (in this case, 𝅘𝅥𝅯𝅘𝅥𝅯𝅘𝅥𝅯).
   - Now determine what ***singular*** beat-value contains this *entire* group of notes.
   - In this case, a 𝅗𝅥. contains 𝅘𝅥𝅯𝅘𝅥𝅯𝅘𝅥𝅯.
5. The beat value revealed in step 4 becomes the ***new beat-value***.
6. Then figure out how many of the new beat-values fit into each measure.
   - The amount of new beat-values determines whether its a duple, triple, or quadruple meter.
     - 2 results in a "duple" meter.
     - 3results in a "triple" meter.
     - 4 results in a "quadruple" meter.
   - Therefore, our $\mathbf{\frac{6}{8}}$ meter is classified as a compound ***duple*** meter.
7. Then you can complete a modified rhythm tree (like step 4 in the simple meters section) to calculate the subdivisions of each measure.
8. Smile! You did it!

$\frac{1}{1}$ = whole 𝅝 $\frac{1}{2}$ = half 𝅗𝅥 $\frac{1}{4}$ = quarter ♩ $\frac{1}{8}$ = eigth 𝅘𝅥𝅯 $\frac{1}{16}$ = sixteenth 𝅘𝅥𝅰 $\frac{1}{32}$ = thirty-second 𝅘𝅥𝅱

Chapter 4

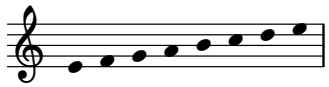
Scales

- **A few *very* important rules about major scales:**
  - Every major scale is comprised of the same pattern of half and whole steps: 2–2–1–2–2–2–1.
    - *From now on, this pattern will be referred to as the **phone number.***
    - Numbers are simply easier to remember, better resemble a phone number, and are *far* easier to say than W–W–H–W–W–W–H. If you don't believe me, try it. Do it. Say it out loud. Sounds silly right?
  - Every major scale will have one of every letter in the alphabet.
  - There will be no repeated letters ***especially adjacent notes.***
    - *The first and last notes being the only exception!*
  - No letters will be skipped, it will *always* follow the order of the alphabet.
  - There is no "set" or "official" way to create a major scale. This guide will talk about three different processes, in the order of my personal preference, that all work equally well!
- Each method described below will demonstrate the creation of an E major scale.

4.1 Major Scales

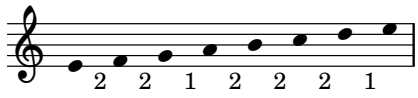
4.1.1 The Correction Method

1. First write out a "blank" scale starting on the given pitch (E) writing a note on every letter of the musical alphabet and stopping after you write the letter you started with:



   - Notice that, at this stage, we ignore all accidentals—you'll add those later!

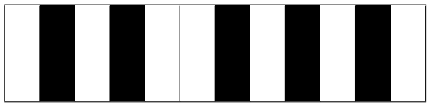
2. Then write the steps in the phone number ***between*** each note of the scale made in step one:



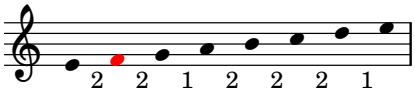
   - I know this sounds trivial but, trust me, it is *so* easy to get lost when you're counting out the scale!

3. Then refer to a keyboard—whether drawn or a physical keyboard—to identify the half and whole steps in the phone number.

- I've included a printed keyboard below. Notice, however, I've modified the layout of this keyboard by extended the black keys all the way to the bottom. It still operates exactly the same as a regular keyboard, except now it's *much* harder to skip over a black key or a white key!



4. This is where this method acquires it's name: we will *correct* each note of the scale (in steps 1 and 2) every time we advance through the phone number.
5. Since the given note is assumed to be correct, we want to figure out if the next note is correct or not (highlighted in red below).

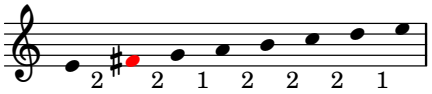


- This is tricky to illustrate on paper, but the first step in this particular scale will hopefully do the trick!

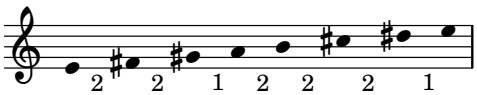
6. Now on the keyboard, starting on our starting pitch E, ascend (go up/move to the right) two half-steps on the keyboard (also written under the notes of your scale from step 2 in case you forgot!) and note which key you land on.

- Notice how we don't start counting our half steps *until* we move. That's why 1 falls on the F and not the E. This is ***crucial***.

7. Step 6 lands us on an F♯or G♭. There is a right and wrong answer!
   - Look back to the red highlighted note in step 5.
   - We ***must*** spell this note with the same letter as the highlighted note—remember, we *have* to follow the alphabet and we can't skip letters!
   - with this rule in mind, our only option is F♯!
8. Now *correct* the note in step 5 with what you identify in step 6.

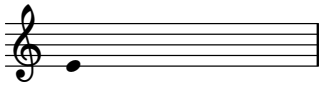


9. Now repeat steps 2–8 to finish correcting the rest of the scale.
   - You will have to ignore some of the specific notes in steps 2–8 when you move through other scales, these are simply examples to demonstrate the process!
10. When all is said and done you will create an E-major scale!
    - What's really cool about this method, is that if you don't end up with the same pitch you started with, something went wrong along the way. Be sure to check your work and be diligent! This may take a while at first, but it will only get faster from here!

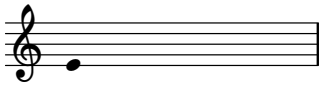


4.1.2 The Composition Method

1. Unlike the correction method, we will add each note of the scale as we progress through the phone number.
    - A word of caution: this method can be problematic if you aren't making absolute sure to not repeat any letters in the musical alphabet. Always be conscious of this rule!
2. Begin by writing the pitch of the scale that you are asked to write (remember, we are still working with the E-major scale).

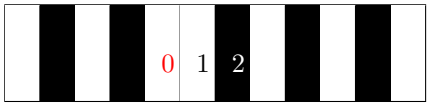


3. Now, off to the side write the phone number of the major scale (Don't omit this step!).

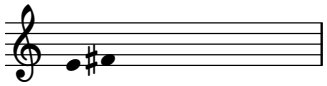


2–2–1–2–2–2–1

4. Refer to your keyboard and travel the appropriate amount of half-steps as per the phone number. In this case, we are moving two half-steps.

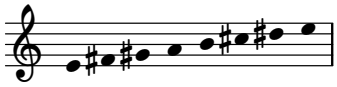


5. Identify which pitch you land on and add this note to our scale.
    - Once you add this pitch to the scale, be sure to cross out that number of the phone number.
        - *This keeps your brain on track so you don't repeat any of the steps of the phone number!*



~~2~~–2–1–2–2–2–1

6. Repeat steps 4 and 5 until you complete the phone number.



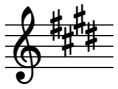
~~2–2–1–2–2–2–1~~

7. At this point you could be done, or you can double check your work by counting the half-steps between the notes and making sure you have every letter of the alphabet without any repeats!

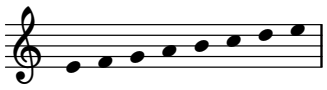
4.1.3 The Key Signature Method

A word of caution: This method *requires* a proficient and confident working knowledge of key signatures. Without that knowledge this will be a very challenging and ineffective method for you!

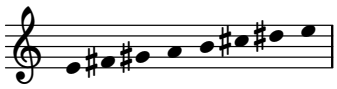
1. First, on the side or on a scratch piece of paper, write out the key signature for E-major.



2. Then write out the "blank" scale as shown in the correction method.



3. Then transfer the accidentals in the key signature to the corresponding notes of the scale.
   - For example, in this key there is an F♯, C♯, G♯, and D♯; therefore we will place a ♯ in front of the F, C, G, and D notes in the "blank" scale.



4. That's it!
   - Always be sure to go back over your scale and check the phone number and all of the rules that were outlined at the beginning of this cheat sheet!

- Yes, the key signature method is much faster, but easiest or fastest isn't always the best. We want to learn the fundamental processes that govern these concepts and to learn those fundamentals I feel that it is crucial to understand the steps and why the steps are necessary to build these elements.

4.2 Minor Scales

- **A few *very* important rules about minor scales:**
  - The minor scale can exist in **three** different forms:
    - Natural minor
    - Harmonic minor
    - Melodic minor
  - *A detailed description of these various types of minor scales will be included below.*
- You should always create the *natural* minor scale first.
  - Like the major scale, the natural minor scale *also* follows a particular pattern.
- Every minor scale will have one of every letter in the alphabet.
- No letters in the alphabet will repeat.
- No letters in the alphabet will be skipped.
- The minor scale (all three forms) relate to a major scale/key two different ways:

- **Relative**.
  - A *relative* relationship (referred to as a *relative minor scale*, relates to the major key with the same ***key signature***.
    - Same key signature, different tonic.
    - A good way to think of this is to pretend the two relative related scales (major and minor) as being immediate siblings; they will be different (starting on different letters of the scale) but are still part of the same family (key signature).
- **Parallel**.
  - A *parallel* relationship (referred to as a *parallel minor scale*, relates to the major key with the same ***tonic***.
    - Same tonic, different key signature.
    - A good way to remember this is if you were to write out all of the *letters* of the two parallel related scales (major and minor) the letters will look identical, or *parallel*.

4.2.1 The Natural Minor Scale Pattern

- You will be pleased to know that you don't need to memorize this! The only scale pattern you'll need to memorize is the *major* scale pattern.
- Let's manipulate the major scale pattern to reveal the natural minor scale pattern:

1. Write out the major scale pattern: 2–2–1–2–2–2–1
2. Identify the 6th number in this sequence: 2–2–1–2–2–2–1
3. Now take this 6th number *as well as* the 7th number and **move them both to the front of the scale pattern**!
   - It will look like this (the 6th number colored red and the 7th number colored blue): 2–1–2–2–1–2–2
     - Notice the ***order*** of the 6th and 7th number stays the *same* as it was in the major scale pattern, it just moves to the front of the pattern.
       - In other words, we *rotated* the major scale pattern twice.
4. That's it! You know have a pattern to create a natural minor scale: 2–1–2–2–1–2–2

4.2.2 Writing Natural Minor Scales

The Pattern Method

- Writing natural minor scales follows the *exact same* procedures outlined above in the "Major Scale" section.

1. Choose either the "Correction Method" or "Compositin Method" from the "Major Scales" section above.
2. Apply all of the same steps *making absolute sure* you use the new natural minor scale pattern.
3. Really that's it! If you follow all of the steps with the new pattern, you will successfully create a natural minor scale!

The Key Signature Method

- Just like the "Pattern Method," the "Key Signature Method" follows the same process as the one outlined in the "Major Scales" section above.

1. First, write out a "blank" scale from tonic to tonic (not worrying about accidentals).
2. Then, identify the key signature of the minor scale you are looking to write.
    - If you are unsure on how to do this, refer to the "Writing Minor Key Signatures" section in the "Key Signatures" chapter.
3. Once the key signature has been established, apply each accidental to the blank scale created in step 1.
4. That's it!

4.2.3 The forms of Minor Scales

Minor scales come in three different forms: **natural**, **harmonic**, and **melodic**. When writing or identifying any form of a minor scale, ***always*** begin with the **natural minor scale**.

- **Natural minor**.
    - To write:
        1. follow the steps outlined in section **4.2.2**.
    - To determine if a scale is a natural minor scale:
        1. analyze and write out the half-step pattern of the written scale and then compare what you've analyzed to the natural minor half-step pattern (2–1–2–2–1–2–2).
- **Harmonic minor**.
    - To write:
        1. First, write out the natural minor scale from the tonic.
        2. Raise scale degree $\hat{7}$ by 1 half-step.
            * Make sure you keep the *letter* of scale degree $\hat{7}$ the *same*!
        3. That's it!
    - To identify if a scale is a harmonic minor scale:
        1. Write a natural minor scale from the tonic of the scale you are identifying.
        2. Compare scale degree $\hat{7}$ of the given scale to the natural minor scale you just wrote.
        3. If the given scale's scale degree $\hat{7}$ is 1 half-step higher than the natural minor scale you wrote, it is a harmonic minor scale!
- **Melodic minor**.
  The melodic minor scale is the ***only*** minor scale that is different going up than it is going down.
    - To write:
        1. First, write out the natural minor scale from the tonic both **ascending** and **descending**.
        2. In the ascending scale, raise scale degrees $\hat{6}$ and $\hat{7}$ by 1 half-step
            * Make sure you keep the *letter* of scale degree $\hat{7}$ the *same*!

(Continued on next page)

3. In the descending scale, lower the scale degrees you *just* raised (scale degrees $\hat{6}$ and $\hat{7}$) by one half-step.
    * The ***descending*** minor scale is *exactly* the same as the natural minor scale.
    * You **must** be certain to *correct* what you raised in step 2 with the appropriate accidentals in the descending melodic minor scale.
    * ***Do not forget to do this!***
4. That's it!

– To identify if a scale is a melodic minor scale:

1. Write a natural minor scale from the tonic of the scale you are identifying.
2. Compare scale degrees $\hat{6}$ and $\hat{7}$ of the given scale to the natural minor scale you just wrote.
3. If the given scale's scale degrees $\hat{6}$ and $\hat{7}$ is 1 half-step higher than the natural minor scale you wrote, it is a melodic minor scale!

4.3 Advice

- I know this may seem incredibly daunting at first, but if you commit yourself to the patience of following each of the steps in your preferred method, it will only get faster and easier for you!
- Not any one of these methods is better than the others. They each produce the same result (as you've seen).
    – I prefer the correction method myself, as I feel this method prevents the more common errors such as repeating letter names within a scale.
    – With that being said, though, everyone responds differently and you should work to become proficient and comfortable in *your* method of choice!
        * There's no wrong way to get the right answer! (Unless you cheat. Don't do that!).
- Please be patient. You *will* get this, I know you can do it! Take your time and work for understanding *not* speed!

Chapter 5

Key Signatures

5.1 Identifying Major Key Signatures

- If you don't see any sharps or flats, learn that this shows the key of C-major.

5.1.1 Flat Key Signatures

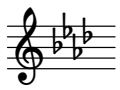
"Last flat, go back!"

- Before we begin identifying key signatures, it is imperative that we memorize one string of letters:

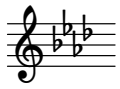
  B E A D G C F

  - This is the order that the ♭s appear in for every single "flat" key signature. This string of letters will be referred to from now on as "the order of flats."
    - Notice how I only suggest memorizing the order of flats. This is because this string of letters form an actual word: "bead." *More on sharps below.*
  - It would be a great idea to develop the habit of putting the word "flat" after each of the letters in the order of flats. This is because each of the letters in this string correspond to a physical flat on the staff and if we confuse a B with a B♭ then problems will arise.

- For this guide, our task will be to identify the major key for this key signature:



1. The first step is to identify whether or not this is a ♭ key signature or a ♯ key signature.
2. It is pretty clear that this key signature is a ♭ key signature due to the presence of ♭s.
3. Write the order of flats underneath the key signature.



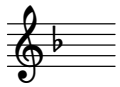
   B E A D G C F

4. Now identify which flat in this key signature is the *last* flat.
   - To do this you must first recognize that, though the key signature looks like one singular element, some of the key signatures are comprised of multiple elements (for instance, this key signature is comprised of four ♭s).

- Once the idea that key signatures are comprised of elements, compare the order of flats in the key signature with the string of letters we've identified as the order of flats.
- Notice you move to the right across the key signature just as you move across the right in the order of flats.
  - *This will be helpful in finding the last flat.*
- The last flat is the flat furthest to the right in the key signature. It does not matter if it's higher or lower than its neighbor, it only matters that this flat is the furthest to the right.
- For this key signature, D♭ is the last flat in our key signature.

5. After identifying D♭ as the last flat in the key signature, find D♭ in the order of flats:
   B E A D G C F
6. To identify the key of this key signature, move one letter to the left of the *last* flat that we identified in step 5.
   - Notice that the red letter (identified as the last flat in step 5) move one letter to the ***left***:
     B E A D G C F
   - This will be considered the "second-to-last flat."
7. Step 6 identifies the name of the key, but ***do not forget to make it flat!***
   - Therefore, this is the key of A♭-major.
     - ***Not A major!***

- **A quick note about the key of F-major.**



  - It is much, much, easier to memorize this key signature, however!
    - If we treat the order of flats as a *clyclic* pattern, look what happens when we go to the left of B:
      (**F**) B E A D G C F
    - So, if we find B♭ on our order of flats, we actually *can* move back a flat.
      F B E A D G C F → F B E A D G C F
    - We end up with F! This is a great way to double check if you're unsure! (Just be careful, when we go backwards past B in the order of flats, **we don't put "flat" after the letters**!).

5.1.2 Sharp Key Signatures

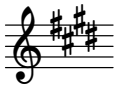
"The last sharp is one letter and one half-step below the tonic!"

- Instead of taxing your brain to remember two different strings of letters (a cognitively challenging concept!), we will refer back to the order of flats with a slight twist:
  - The order of sharps can be identified by writing the order of flats *backwards*!
    - Note the order of flats is written in red, and the order of sharps is written in black.

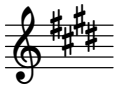
B E A D G C F | F C G D A E B

  - Just as we did with the flats, it would be a great idea to develop the habit of adding "sharp" after each letter of the order of sharps (F-sharp, C-sharp, G-sharp, etc.)

- For this guide, our task will be to identify the major key for this key signature:



1. The first step is to identify whether or not this is a ♭ key signature or a ♯ key signature.
2. It is pretty clear that this key signature is a ♯ key signature due to the presence of ♯s.
3. Write the order of sharps underneath the key signature.



F C G D A E B

4. Now identify which sharp in this key signature is the *last* sharp.
   - To do this you must first recognize that, though the key signature looks like one singular element, some of the key signatures are comprised of multiple elements (for instance, this key signature is comprised of four ♯s).
   - Once the idea that key signatures are comprised of elements, compare the order of sharps in the key signature with the string of letters we've identified as the order of sharps.
   - Notice you move to the right across the key signature just as you move across the right in the order of sharps.
     - *This will be helpful in finding the last sharp.*
   - The last sharp is the sharp furthest to the right in the key signature. It does not matter if it's higher or lower than its neighbor, it only matters that this sharp is the furthest to the right.
   - For this key signature, D♯ is the last sharp in our key signature.
   - After identifying D♯ as the last sharp in the key signature, find D♯ in the order of sharps. Unlike flat key signatures, we are far less concerned about the order of sharps at this point.
5. Now find a D♯ on the keyboard:

6. Once we've found the last sharp on the keyboard, ascend (go up, go to the right on the keyboard) one half-step.

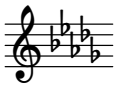
7. The note we land on (after executing step 6) is the name of the key!
   - Be careful here, though. Going up a half step doesn't always land on a white key!
   - **If moving up a half step in step 6 falls on a black key**:
     - A black key on the keyboard can be spelled as a ♭ pitch or a ♯ pitch (for instance, F♯/G♭).
     - The correct choice is the spelling where the pitch letter name goes ***up*** the musical alphabet by one letter.
       * For example, if the last sharp in our key signature is an E♯, going up one half step on the keyboard results in either an F♯ or G♭. The correct answer is F♯ because the letter F follows letter E in the musical alphabet (spelling it as a G♭ would skip the letter F).

5.2 Writing Major Key Signatures

5.2.1 Flat Key Signatures

- For this guide, our task will be to write the key signature for D♭-major.

1. Write out the order of flats.
   B E A D G C F
2. Find the key you're looking to write in the order of flats (in this case we are looking for D♭-major).
   B E A D G C F
3. Once the key is identified in the order of flats, move ***to the right*** one flat.
   B E A D G C F
   - Notice how this is different than identifying flat key signatures!
   - When *identifying* major key signatures, the flat associated with the key is the *second to last* flat.
   - Since we only know the name of the key, that only tells us what the second to last flat is. Step 3 identifies the *last* flat of the key signature which tells us how many flats to include in the key signature.
     - ***This is a crucial difference to understand!***
4. Now it's time to write the key signature on the staff.
   - You always start at the left of the order of flats.
   - The key signature includes *every* flat to the left of the red flat in step 3 ***including*** the red letter!
   - Therefore, the key of D♭ major has a total of 5 flats.



5.2.2 Sharp Key Signatures

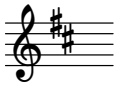
- For this guide, our task will be to write the key signature for D-major.

1. Write out the order of sharps.
   F C G D A E B
2. Find the key we are looking to write on the keyboard (in our example, our key is D-major so we are looking to find a D (another example: for the key of F♯-major, you would look for an F♯ on the keyboard, etc).

3. Now go down (descend or go to the left on the keyboard) one half-step from this note.

- Note how this is backwards from *identifying* already given sharp key signatures.
- When we identified sharp key signatures, we had to go a half step ***up*** from the last sharp in the key signature.
- Therefore, our goal is to figure out what this last sharp should be and, to do that, we have to go down a half step from the pitch of the key.
  - When you get stronger with your scales, you'll learn that the last sharp is the seventh scale degree in a major key.

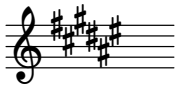
4. Oftentimes, step 3 lands us on a black key on the keyboard. In this case we are presented with a C♯/D♭.
   - Which spelling we choose follows the same rules as identifying sharp key signatures from above!
   - The note in step 3 needs to be spelled correctly and therefore cannot share the same letter as the key signature. In our current example that only leaves the option as C♯.
     - Note, sometimes step 3 lands on a white keyboard key. These are a little trickier. For instance, in the key of F♯-major, step 3 would land on *what looks like* an F♮.
     - With the rules we've outline above, the resultant note in step 3 cannot share the same letter, in fact, ***this note will always be one letter of the musical alphabet <u>below</u> the letter of the key.***
     - This would result in identifying this note as an E♯.
     - Just be careful!
5. Now find the note from step 3 on our order of sharps.
   F C G D A E B
   - Remember, there's an invisible "sharp" after each letter in the order of sharps!
6. Just like the flat key signatures, we need to include every sharp to the left of the red letter *including* the red letter.
7. Then we transfer this information to the staff.



8. That's it!

An Alternative Sharp Key Method

Let's look at this key signature:



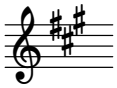
- To identify sharp key signatures:
  1. Find the last sharp in the key signature on the order of sharps.
     F C G D A E B
  2. Move to the *right* two letters on the order of sharps.
     - If you run out of letters, like we will here, loop back to the front!

     F C G D A E B (Loop back around!) F C G D A E B
  3. The letter you land is the same letter as the key.

4. Check the key signature to see if the letter you land on in step 2 needs to be ♯ or ♮.
5. This key signature is F♯-major!

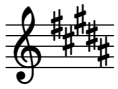
- To write sharp key signatures The goal is to write the key signature for A-major.

1. Find the letter of the key on the order of sharps.
   F C G D A E B
2. Move to the *left* two letters on the order of sharps.
   F C G D A E B F C G D A E B
3. The letter you land on is the *last sharp* of the key signature.
4. Then write the key signature with all of the sharps up to, and including, the last sharp that you identified in step 3!



5.3 Identifying Minor Key Signatures

Unlike the major keys, the minor keys don't have a system for identification. Instead, we identify minor key signatures based on either their relative major key, or their parallel major key. To demonstrate both techniques, we will identify this key signature:



5.3.1 Relative Minor Key Signatures

1. First, Identify the *major* key of this key signature.
   - The key signature printed above is the key of B-major.
     - For a refresher on how to do this, see section **5.1**.
2. Once the major key has been identified, go *down* 3 half-steps *and* 3 letters. from the major tonic.

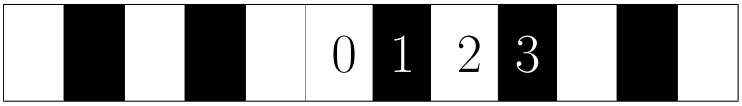
   - The reason we have to go down 3 half-steps *and* 3 letters is because this outlines an interval of a minor-third.
     - Descending a minor-third from tonic brings us to scale-degree $\hat{6}$ of the major scale (see section **6.3.2** for intervals attached to ascending and descending scales).
     - Scale-degree $\hat{6}$ of a major scale is the tonic of the relative minor scale
   - The note we land on could be spelled as either a G♯ or an A♭.
   - The letter A is only 2 letters away from our major tonic B, therefore G♯ is the correct note.
     - The key signature is also a wonderful indication of whether you should spell this note with a ♭ or a ♯.
3. The note you land on in step 2 is the tonic of the minor key signature!
   - Therefore, this key of this key signature is G♯ minor.

- **An important note:**
  - Going *down* 3 half-steps and letters ***only applies when going from major to minor***!
  - To identify the relative major key from a minor key, this process is *reversed*. You go ***up*** 3 half-steps and 3 letters to identify the tonic of the major key.

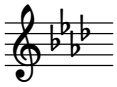
5.4 Writing Minor Key Signatures

This section will demonstrate how to write the key for F-minor.

1. First, we need to find the relative major key.
   (a) Go *up* 3 half-steps and 3 letters from the minor tonic.



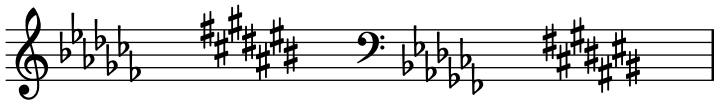
   - Since we have to spell this as 3 letters away from F, we must spell this as an A♭.
2. Write the major key signature of the tonic identified in step 1.a.
3. That's it!
   - Therefore, our key signature will look like this:



5.5 Order of Sharps and Flats

Note: the order of sharps and flats *do not change* from major to minor!

- Below is an example of what key signatures that have all of the sharps and flats look like in both treble and bass clef.
- What's super nice about key signatures is that, no matter how many flats or sharps are in the key signature, they will *never* deviate from this pattern!.
- Therefore, if you practice (and I suggest you do) writing the sharp and flat key signatures that have 7 accidentals, you'll understand where on the staff all of the accidentals go!



Chapter 6

Intervals

6.1 The Chart

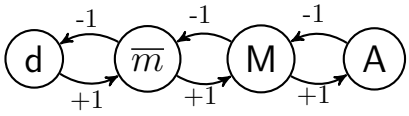
- Commit the following chart to memory as we will be referencing this chart to identify and write intervals.

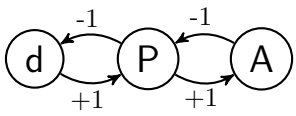
Interval name:	PU	$\overline{m}$2	M2	$\overline{m}$3	M3	P4	TT	P5	$\overline{m}$6	M6	$\overline{m}$7	M7	P8
Number of half-steps:	0	1	2	3	4	5	6	7	8	9	10	11	12

  - Where: $\overline{m}$ = **minor**, M = **major**, d or $\circ$ = **diminished**, and A or + = **augmented**.
    - TT, representing the tri-tone, is simply a place-holder in our chart. The interval(s) produced with 6 half-steps are most commonly the A4 or d5. The TT is cleaner and forces you to make a distinct choice about the specific interval size!
      - *In other words, if you label an interval with TT, it will be marked **wrong** because there isn't enough information! **Every** interval must have both a **quality** and a **size**; the TT has neither! It's as informative as telling someone to "turn" at a six-way intersection.*

- This chart tells us how many half-steps (bottom row) are in each of the most-common intervals (top row).
  - For instance, there are 4 half-steps in a M3, 7 half-steps in a P5, and so on.

- It is also crucial to note the "flow-chart" of interval qualities:



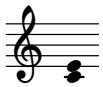


  - Where the "+1" and "-1" refer to increasing or decreasing, respectively, by 1 half-step.
    - For instance, increasing a minor interval by 1 half-step produces a major interval *of the same size*, whereas decreasing a perfect interval by 1 half-step produces a diminished interval *of the same size*.

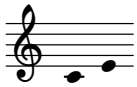
6.2 Definitions

- **Size**:
  - This refers to the *number* of the interval (for example, the size of a M**2** is 2).

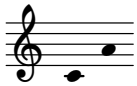
- **Quality**:
  - The quality of an interval is whether it is perfect, major, minor, diminished, or augmented. *This is completely separate from* ***size****.*
- **Harmonic**:
  - This is when the two notes of an interval happen at the *same time*.



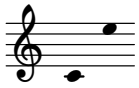
- **Melodic**:
  - This is when the two notes of an interval happen in *succession* (think of how a *melody* is created with a stream of notes).



- **Simple**:
  - When the two notes of an interval have a size *less than or equal to* 8.



- **Compound**:
  - When the two notes of an interval have a size *greater* than 8.

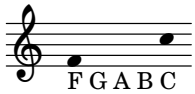


6.3 Identifying Intervals

6.3.1 The Half-Step Method

1. Find or draw a keyboard!

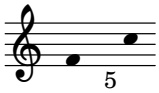
2. Calculate the size of the interval.
   - ***Always do this first!***
   - How to calculate the *size* of an interval?
     (a) *Including the pitches that are printed*, write out every musical letter between the two pitches in the interval.



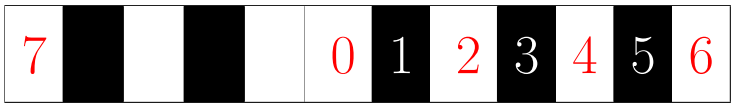
     (b) Count the number of letters you have written down.
       - In the above example, there are 5 letters.

(c) The number from step (b) tells you the size of the interval!

- Once you've found the size of the interval, write the size beneath the interval to keep yourself on track.



3. Next, count the number of *half-steps* between the two notes of the interval.



4. On the chart, locate the number of half-steps from step 3 on the interval chart.

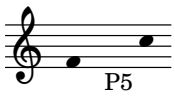
Interval name:	PU	$\overline{m}2$	M2	$\overline{m}3$	M3	P4	TT	P5	$\overline{m}6$	M6	$\overline{m}7$	M7	P8
Number of half-steps:	0	1	2	3	4	5	6	7	8	9	10	11	12

5. Then compare the number of half-steps to its respective interval size.

Interval name:	PU	$\overline{m}2$	M2	$\overline{m}3$	M3	P4	TT	P5	$\overline{m}6$	M6	$\overline{m}7$	M7	P8
Number of half-steps:	0	1	2	3	4	5	6	7	8	9	10	11	12

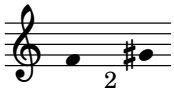
6. If the ***size*** of the interval you're analyzing (what you found in step 2) matches the size of the interval on the chart (colored in blue), then that interval is the correct answer.

- This is a little confusing in words, but in the case of our interval in step 2, we found the size to be 5.
- So we look to the cell above 7 half-steps (what we counted in step 3) and see "P5" written.
- Compare the number (size) in "P5" (5) to the size from step 2.
- If these numbers match—which, in this case, they do!—then we call the interval whatever is in the upper cell: a P5!



7. If the ***size*** of the interval you're analyzing (what you found in step 2) does **not** match the size of the interval on the chart then we have to correct it:

- Let's look at a different interval (the size already provided for you):



(a) Because this particular interval spans 3 half-steps, find the 3 on our interval chart:

Interval name:	PU	$\overline{m}2$	M2	$\overline{m}3$	M3	P4	TT	P5	$\overline{m}6$	M6	$\overline{m}7$	M7	P8
Number of half-steps:	0	1	2	3	4	5	6	7	8	9	10	11	12

(b) Notice the interval attached to 3 half-steps on our chart: a $\overline{m}3$.

Interval name:	PU	$\overline{m}2$	M2	$\overline{m}3$	M3	P4	TT	P5	$\overline{m}6$	M6	$\overline{m}7$	M7	P8
Number of half-steps:	0	1	2	3	4	5	6	7	8	9	10	11	12

(c) The *size* of the interval we are analyzing was identified as 2, however, an interval with 3 half-steps points to an interval with the size 3.

- ***You must spell the interval with the same size as it is written in the music. You cannot change the size to fit the chart!***

(d) Find the *next closest* interval that matches the size of the interval you're analyzing and note how many half-steps this interval has.

Interval name:	PU	$\overline{m}2$	M2	$\overline{m}3$	M3	P4	TT	P5	$\overline{m}6$	M6	$\overline{m}7$	M7	P8
Number of half-steps:	0	1	2	3	4	5	6	7	8	9	10	11	12

- The next closest interval with the correct size of 2 is the M2 and it has 2 half-steps in it.

(e) Now ask yourself what you have to do to the half-steps in the next closest interval to ***match*** the number of half-steps in the interval you're analyzing.

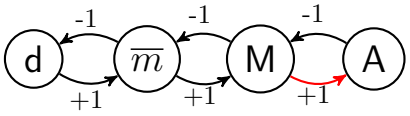
- In this case, we have to add 1 (+1) half-step to the M2's 2 half-steps to reach the 3 half-steps.

(f) Then refer to your quality flow-chart from above (since we are referencing the M2, we will look at image with the M intervals, not the P intervals):

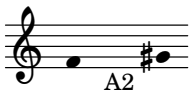
i. Find the quality of the reference interval (step 7.d) on the chart.
   - In this case, our reference interval was a M2, so find the M.

ii. Move the direction you calculated in step 7.e.
   - We had to add 1 half-step (+1) to our M2 so follow the +1 arrow attached to the M on the chart.
   - Don't forget to move the right number of arrows! +/- 1 = 1 arrow, +/- 2 = 2 arrows, and so on.

iii. Where you land becomes the quality of the interval you're analyzing.



8. Place the corrected quality (step 7.e.iii) in front of the size of the interval:

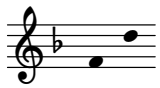


9. Take a deep breath and release all of that tension! You did it!

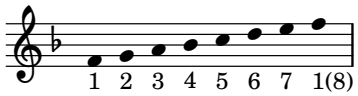
6.3.2 The Scale Method

- Note: this method works *best* if you have an efficient and confident working knowledge of major scales.
- This method also works best when *both* pitches of the intervals belong to the same scale.
  - Otherwise it requires you to modify one (or both) of the notes temporarily to make it fit into a scale, quickly adding multiple extraneous steps.

- Let's discuss this method with this particular interval:



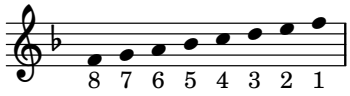
1. Since our interval is ascending, begin by writing a major scale starting on the *bottom* or *lowest* note of the interval.
   - Follow this up with labeling the scale-degree numbers under the notes of the scales (trust me).



   - Before we continue, let's discuss the significance of writing out the scale and labeling the scale degree numbers:
     - In an ***ascending*** major scale, every pitch produces either a **major** or **perfect** interval when ***starting from*** scale degree $\hat{1}$.
     - The size of the interval is the same as the scale degree of the top note.
       - For instance, the interval from $\hat{1}$ to $\hat{7}$ produces a M7 (again, notice the size and the scale degree).
     - below is a chart that displays the bottom note, the top note, and the interval they produce:

Bottom note	Top note	Interval
$\hat{1}$	$\hat{1}$	PU
$\hat{1}$	$\hat{2}$	M2
$\hat{1}$	$\hat{3}$	M3
$\hat{1}$	$\hat{4}$	P4
$\hat{1}$	$\hat{5}$	P5
$\hat{1}$	$\hat{6}$	M6
$\hat{1}$	$\hat{7}$	M7
$\hat{1}$	$\hat{8}$	P8

   - in a ***descending*** major scale, every pitch produces either a **minor** or **perfect** interval when starting from the ***top*** note ($\hat{1}$ or $\hat{8}$ in this case).
     - Unfortunately, unlike the ascending scale, the scale-degree numbers don't tell us the interval size.
     - You can fix this if you count the scale-degrees backwards from $\hat{1}$ down to $\hat{8}$ as you descend the scale.



       - **Note: if you count the scale-degrees backwards, these are not the new scale-degree numbers! This is only for reference!**
     - The descending scale assumes the top note (highest note) of the interval as $\hat{1}$ of the major scale.
     - After understanding this little detail, the process is the same as the ascending scale (see below for a reference chart):
       - The left column (the top note of the interval) will be labeled as a "$\hat{1}$" but remember that this is the ***highest*** note of the scale, not the bottom note!
       - Each scale-degree in the middle column (bottom note), will follow our *modified* scale-degrees where we wrote them backwards.

Top note	Bottom note	Interval
$\hat{1}$	$\hat{1}$	PU
$\hat{1}$	$\hat{2}$	$\overline{m}2$
$\hat{1}$	$\hat{3}$	$\overline{m}3$
$\hat{1}$	$\hat{4}$	P4
$\hat{1}$	$\hat{5}$	P5
$\hat{1}$	$\hat{6}$	$\overline{m}6$
$\hat{1}$	$\hat{7}$	$\overline{m}7$
$\hat{1}$	$\hat{8}$	P8

2. Find the scale degree of the upper note in the key of the bottom note.
   - In our interval, the top note is scale-degree $\hat{6}$.
3. The scale degree number tells you what the interval is!
   - In this case, our interval is a M6.

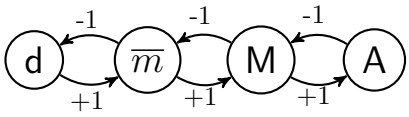
- Note how this method does not account for any diminished or augmented intervals.
  - The diminished or augmented intervals will not fit this procedure and will be represented as an interval that doesn't "fit" into a major key without an accidental.
- Do whatever is most comfortable for you!

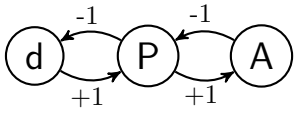
6.4 Writing Intervals

- Don't forget the chart!

Interval name:	PU	$\overline{m}2$	M2	$\overline{m}3$	M3	P4	TT	P5	$\overline{m}6$	M6	$\overline{m}7$	M7	P8
Number of half-steps:	0	1	2	3	4	5	6	7	8	9	10	11	12

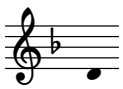
- or the interval quality flow-chart!



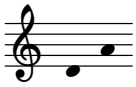


- The task for this demonstration is to "Write a d5 **above** a D."

1. write out the pitch given in the question first.



2. Look at the size of the interval you are asked to write, **immediately** draw this pitch next to the starting pitch.
   - Don't bother counting half-steps, or worrying about accidentals, *just put the note with the proper size!*



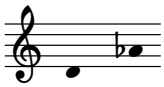
3. Now refer to the chart to figure out how many half-steps to count.
   - This operates in the same fashion as step 7 in the "Half-Step Method" portion of the "Identifying Intervals" section.
   - Since a d5 doesn't appear on the interval chart, we must go to the closest interval that *is* listed on the chart the **shares the same size**.

Interval name:	PU	$\overline{m}2$	M2	$\overline{m}3$	M3	P4	TT	P5	$\overline{m}6$	M6	$\overline{m}7$	M7	P8
Number of half-steps:	0	1	2	3	4	5	6	7	8	9	10	11	12

   - The "P5" is the closest interval to a "d5."
   - Therefore, in order to figure out how many half-steps are in a d5 we must refer to our interval quality flow-chart to see if we have to add or decrease half-steps from our known interval on the chart.
     - According to our flow-chart, to get from a P interval to a d interval, we must *decrease* the number of half-steps by 1 bringing us from 7 to 6 half-steps.

4. Once the number of half-steps has been identified, count up from the bottom note the amount of half-steps figured out in step 3.

5. The key on the keyboard that you land on tells you what the top note of the interval will be.
   - This can be complicated!
   - The keyboard key you land on ***must be spelled as the same letter that we wrote in step 2!***
     - If you change the interval size to match the keyboard key, you are *changing the* ***entire*** *interval!*
   - A 5th above the original starting note we have already identified as an A, therefore, we need to spell the upper-note as *some kind of an A*.
     - Spelling this note as G♯ would resulted in an interval with the size of a 4 and, even though it would sound the same, would have been entirely incorrect.



6. That's it!
   - Though our example was done with an ascending interval, this process works exactly the same with descending intervals as well!

6.4.1 Inversions

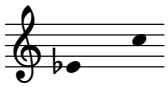
- Before understanding the musical properties of inversions, it is important to understand the mathematical and theoretical logistics of inversions.

- Below are two tables, one demonstrating what happens to each quality after inversion (represented by the double-sided arrow) and the other showing what happens to each interval's size after inversion.

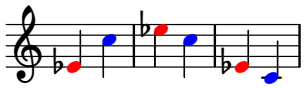
Quality		
M	$\leftrightarrow$	$\overline{m}$
d	$\leftrightarrow$	A
P	$\leftrightarrow$	P

Size		
1	$\leftrightarrow$	8
2	$\leftrightarrow$	7
3	$\leftrightarrow$	6
4	$\leftrightarrow$	5

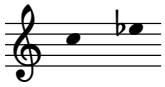
  - *Where the size of 1 is equivalent to a U.*
- These charts can be read both left to right as well as right to left.
- The size of the original interval and the size of the inverted interval will always add to 9.
- We will demonstrate interval inversion with this interval of a M6:



1. To invert this interval, move one of the pitches up or down one octave so that it *crosses* the pitch that stays constant.
   - There are two possibilities for inversion.
   - Notice the color of the pitches below and where they end up after inversion.



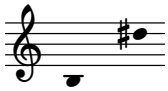
     - Notice every E♭ is red and every C is blue *even though they change registers.*
     - The second measure in this example inverts the interval so that the E♭ moves *above* the C.
     - The third measure in this example inverts the interval so that the C moves *below* the E♭.
       - Either inversion (measure 2 or 3) will produce the **same** answer!
2. Now identify the interval of the inverted interval.



   - This new interval is a $\overline{m}3$.
     - We can look at our charts above to see if our new interval was identified correctly:
       - The size of the original interval, 6, plus the size of the inverted interval, 3, add up to 9.
       - The quality of the original interval, M, flips to $\overline{m}$ for the inverted interval.

6.4.2 Compound Intervals

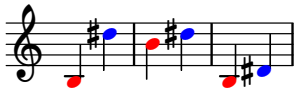
- Compound intervals are intervals that have a size *greater than* 8.
- Let's demonstrate how to identify a compound interval with this example:



1. Just like with identifying simple meters, always write down the size first!

- In this case, our interval size is 10.

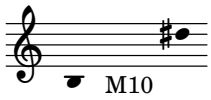
2. Now move one of the pitches either up or down an octave so that it is closer to the other pitch.
   - By doing this, it produces an interval that exists on our interval chart above.
     - You can move either pitch, it will produce the same answer.
     - Note, you are not *crossing* the pitches like we did in inversions, just bringing them closer together



   - Notice the colors and placement of the pitches in measures 2 and 3 above.

3. Identify the interval of the smaller interval.
   - This new, smaller, interval is a M3.

4. Now, take *only* the ***quality*** from step 3, and place it in front of the size we identified in step 1.
   - The quality from step 3 (M) plus the size from step 1 (10), results in labeling this interval as a M10.



Chapter 7

Chords

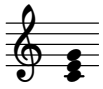
Chords exist when multiple notes happen simultaneously. For the most part, chords consist of stacked intervals of a third, but this isn't *always* the case. Depending on the style of music, chords can consist of many notes each with their own analytical labels. Despite the plethora of chord possibilities, there are two important types you should be aware of as they dominate the majority of the common-practice music you will be studying in the music theory classroom: **triads** and **seventh chords**.

7.1 Triads

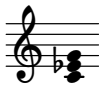
7.1.1 Triad Qualities

All triads consist of three notes and the combination of these notes form four distinct triad types or **qualities**. Each of the four triad qualities consist of two stacked intervals of a third. The bottom interval occurs between the bottom note (the **root**) and the middle note (the **third**) and the top interval occurs between the middle note (the **third**) and the top note (the **fifth**). These thirds can either be **minor** (3 half-steps) or **major** (4 half-steps). The best way to illustrate the interval construction of a triad is to display the half-steps of the two intervals as a fraction: $\frac{top\ interval}{bottom\ interval}$. Below you will find the combination of these intervals that make up each of the four triad types:

- **Major**
  - $\mathbf{\frac{3}{4}}$
  - To remember this, just remember the quality of the third in the bottom interval: a *major* third.

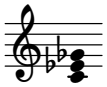


- **Minor**
  - $\mathbf{\frac{4}{3}}$
  - To remember this, just remember the quality of the third in the bottom interval: a *minor* third.

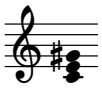


(continued on next page)

- **Diminished**
  - $\mathbf{\frac{3}{3}}$
  - To remember this, think about what the word "diminish" means (to make *smaller*). This triad consists of *both* of the smallest kinds of thirds that can exist in a triad (the minor-third, with 3 half-steps).



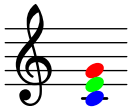
- **Augmented**
  - $\mathbf{\frac{4}{4}}$
  - To remember this, think about what the word "augment" means (to make *bigger*). This triad consists of *both* of the biggest kinds of thirds that can exist in a triad (the major-third, with 4 half-steps).



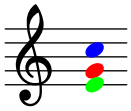
7.1.2 Triad Position

When referring to triads, the word *position* describes which part of the chord (**root, third, fifth**) is on the *bottom*. The pitch on the bottom of a triad (also applicable to chords with more than three pitches) is called the **bass** note. The bass note is *not always the same as the root*! To remember the distinction, think of the what word with the same pronunciation (*base*) means: the lowest part of something (synonymous with foundation and support). The *bass* note is the note we look to to determine the triad position. There are three different positions a triad can be written in: **root position**, **first inversion**, and **second inversion**. See below for an illustration of each of the three positions (notice the colors of the triad parts from the beginning of this paragraph and how they apply to the written music):

- Root Position
  - The **Root** is in the bass of the triad.

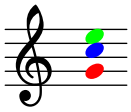


- First Inversion
  - The **Third** is in the bass of the triad.



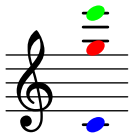
  - Notice the blue note (the root) did not change pitch, it just *inverted* to its new place *above* the rest of the notes of the triad (this is the same idea as interval inversions described above).

- Second Inversion
  - The **Fifth** is in the bass of the triad.



  - Notice the green note (the third) did not change pitch, it just *inverted* to its new place *above* the rest of the notes of the triad (this is the same idea as interval inversions described above).

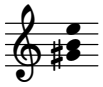
Triad positions are identified *only by the bass note*! The pitches above the bass note can be in any register or order and it will not affect the position of the triad. For instance, let's rearrange this triad one more time:



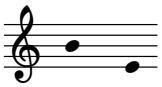
Notice how this is *still* considered a root position triad because the **root** is in the bass.

7.1.3 Triad Identification

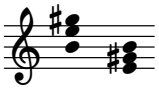
- Let's demonstrate these steps on this chord:



1. Reorder the triad to be in root position (if already in root position, skip to step 2).
   - Identifying chord quality will *only* work when a triad is in root position
   - If not in root position
     (a) On scratch paper, put the other two notes of the triad (the ones that aren't already in the bass) in the bass (aim for putting this towards the bottom of the staff to make your life easier).



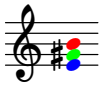
     (b) Put the remaining two notes in the chord above each new bass note



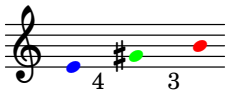
     - Notice that when we added the remaining pitches above the note, we chose the *next closest* occurrence of that note above the new bass note. In other words, we are trying to make these chords as compact as possible.

     (c) Look for the ***snowman*** to find the root position.
     - *Snowman* refers to the positioning of the noteheads in the chord. When a chord is considered to be in "snowman form," the chord is in stacked thirds (all lines, or all spaces). This creates the image that looks like a snowman!
     - The snowman chord shows us the root position triad.

2. Once the snowman (root position triad) is identified, label the parts of the triad (**root, third, fifth**).



3. Now identify the half-steps between the two thirds in the triad.



4. Use the information from step 3 to identify the quality of the triad.

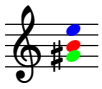
   (a) Put the number of half-steps into a fraction being extra careful with which is on the bottom and which is on the top.

   - $\frac{3}{4}$

   (b) Compare this fraction to the triad types at the beginning of this chapter.

   - This matches the "Major" triad quality.

5. Once the quality is identified, refer back to the original orientation of the triad and identify which part of the triad is in the bass to figure out the position of the triad.



   - In this case, the third is in the bass.
   - Because the third is in the bass, this triad is in **first inversion**.

6. That's it!

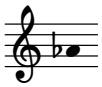
   - Our demonstration triad is a **Major** triad in **first inversion**.

7.1.4 Writing Triads

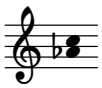
- Let's demonstrate these steps with creating an A♭ diminished triad.

1. First draw out the triad with the name of the chord in the bass.

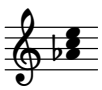
   (a) Draw the root (the name of the chord).



   (b) Draw a third up from the root (this will be the third).



   (c) Draw a third up from the third (this will be the fifth).

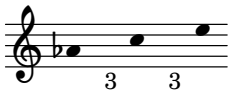


   - Don't worry about accidentals at this point, we will correct those later!

2. Figure out the half-step orientation for the quality you're trying to write (refer to the triad types above).

   - We are working to write a diminished triad which has a half-step relationship of $\frac{3}{3}$.

3. Now place these numbers under chord to keep ourselves organized.



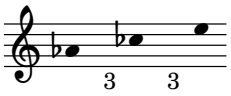
4. Now refer to the keyboard and trace out the half-steps.

   (a) Find the root on the keyboard:

   (b) Now count 3 half-steps above the root to find the third:

   (c) Be sure to *spell* this pitch properly in the chord.

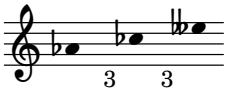
   - By writing out the triad without accidentals, we are *forcing* ourselves to spell the third and fifth appropriately.
   - Since the letter of the third of this chord is a "C," we **must spell this note with the *same* letter!**
   - We can spell this note as a C♭.



   (d) From the *same* pitch you landed on in step 4.b, count up the remaining half-steps to find the fifth of the chord.

   - On the keyboard, count up 3 half-steps from the third (C♭):

   - Just like in step 4.c, we *must* spell this note with the right letter.
   - Step 1.c told us that this note *needs* to be spelled as some kind of a "E."
   - This note on the keyboard can be achieved with an E𝄫.

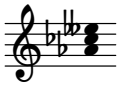


5. Double check that the letters of your chord are 3 letters apart from each other (starting from the root).

6. If the chord needs to be placed in an inversion, identify which part of the chord needs to be put in the bass and re-write the chord.

7. That's it!

   - Your final product!

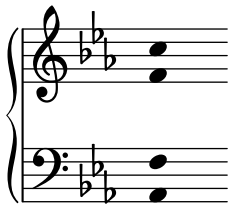


Chapter 8

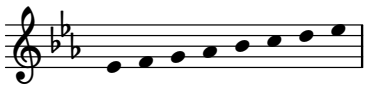
Roman Numerals

8.1 Identifying Roman Numerals

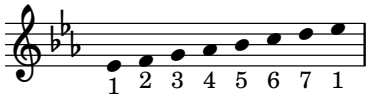
Roman numerals are a tool that we use to analyze the harmonies of all kinds of music. This takes everything we learned in the "Triads" section and provides more specificity to the triads we analyze. Let's work through this demonstration with this example:



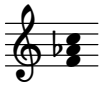
1. Write out the scale in the key of the example.
    - Could be *major* or *minor*.



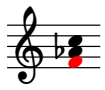
2. Label scale degree numbers of the scale.



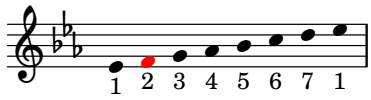
3. Identify the pitches that belong together.
    - For instance, which notes belong to the same chord.
4. Write down *distinct* letter names found in step 3.
    - A♭, F, and C
5. On scratch paper, place the notes found in step 4 into stacked thirds (snowman form).



6. Once in stacked thirds, identify the root of the chord.



7. Determine the scale degree of the root based on the scale written and labeled in steps 1 and 2.



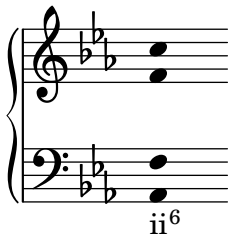
   - The scale degree number of the root *becomes* the Roman Numeral.
     - For example, F is scale degree $\hat{2}$ in our key and becomes II or ii (notice the upper and lower cases!).

8. Determine the quality of the chord in step 5.

   - If major *or* augmented:
     - The Roman Numeral is **upper case**.
       - If augmented, be sure to include $^{+}$ after Roman Numeral and *before* inversion number.
   - If minor *or* diminished:
     - The Roman Numeral is **lower case**.
       - If diminished, be sure to include $^{\circ}$ after Roman Numeral and *before* inversion number.

9. Check the bass note of the chord being analyzed (**NOT** the chord you put into stacked thirds on scratch paper).

   - If the root of the chord is on the bottom:
     - You're done!
   - If the third of the chord is on the bottom:
     - Add a ^{6} after the Roman Numeral.
   - If the fifth of the chord is on the bottom:
     - Add a $^{6}_{4}$ after the Roman Numeral.



10. Smile, and move on to the next one!

Writing Chords from a Roman Numeral

1. Write out the scale in the key of the question.
   - Could be *major* or *minor*.
2. Label scale degree numbers of the scale.
   - Note, if you are confident with doing these first two steps in your head, you're welcome to skip steps 1 and 2!
3. The Roman Numeral corresponds to the scale degree of the *root* of the chord you are trying to write.
   - For example, Roman Numeral VI (or vi) means the root of the chord is scale degree $\hat{6}$ from steps 1 and 2.
4. Write a snowman chord with the root reflecting the scale degree identified in step 3 ***(pay attention to the key signature for accidentals!).***
5. Double check the quality of the chord based on the Roman Numeral and add any accidentals if needed.
6. Place the triad in the proper inversion if needed
   - No numbers after the Roman Numeral
     - Leave chord in root position
   - If there is a ^{6} after the Roman Numeral
     - Place the triad in first inversion by rewriting only the root of the chord up one octave
   - If there is a $^{6}_{4}$ after the Roman Numeral
     - Place the triad in second inversion by rewriting the root *and third* of the chord up one octave
7. Smile, and move on to the next one!

Chapter 9

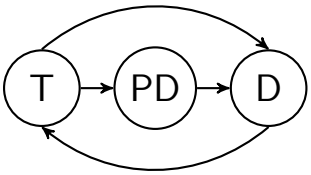
Tonal Areas

Chord progressions formed by a succession of Roman numerals is anything but arbitrary. In fact, Roman numerals fit into three different categories: **tonic**, **pre-dominant** (or subdominant), and **dominant**. These categories are referred to as **tonal areas** and follow a specific path between these areas.

9.1 Traversing the Tonal Areas

As mentioned above, these tonal areas follow a certain path:

- The **tonic** area (T):
  - Can go to Pre-dominant.
  - Can go to Dominant.
- The **pre-dominant** area (PD):
  - *In most cases* goes to Dominant.
    - Sometimes can go to tonic, but usually not for a long enough time to consider it a solidified move.
- The **dominant** area (D):
  - Can *only* go to the tonic area.



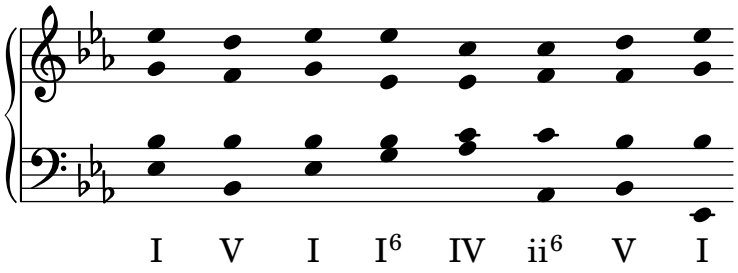
9.2 Chord Categorization

Certain chords (Roman numerals) fit into certain tonal areas. What places a chord inside of its respective tonal area is the presence of certain scale degrees. The two main scale degrees that dictate chordal placement into the tonal areas are $\hat{1}$ and $\hat{7}$. Others, of course, matter but these two are the strongest because of their strength within the key.

For now, as you're just starting out, you can set aside chord qualities and therefore upper- and lower-case Roman numerals when figuring out which chord belongs in which area. For now, we will demonstrate with all upper-case roman numerals—*but remember, the quality will matter when you're analyzing music so* ***always*** *represent the Roman numerals with the proper case, using all upper-case is just for demonstrative purposes.* Below is a chart that shows the most common and agreed upon placement of the roman numerals into the three respective tonal areas:

T	**PD**	**D**
I, VI, (III)	II, IV	V VII (III)

Notice the III chord in parenthesis. This chord is unique because it shares two pitches (its root and third) with the I chord (in the tonic area) as well as shares two pitches (its third and fifth) with the V chord. Because of the ambiguity of which chord it wants to be, composers have used it in both tonic and dominant contexts. It's not a chord that appears in common-practice music all-too-often, so don't worry if it's lack of identity doesn't make any sense to you! Now that we understand what Roman numerals fit into each tonal area, we can follow the chart in section **9.1** to generate chord progressions!



Part II

Shortened "Pocket-sized" Processes

1.1 Identifying Written Pitches

1. Identify the clef.
2. Locate a reference pitch you know for certain.
3. Count up or down from your reference pitch going up or down the musical alphabet with every line and space.
4. Apply the accidental if one is written.

1.2 The Keyboard

1. Draw the keyboard.

2. Label the left-most white key with the letter "C."
3. Moving to the right, label each white key as you would ascend through the musical alphabet.

The Black Keys

1. The black key to the *left* of a white key is labelled as a ♭ version of that white key.
2. The black key to the *right* of a white key is labelled as a ♯ version of that white key.

From Notation to the Keyboard

1. Find the letter of the note you're trying to find on the keyboard.
2. If there is a ♭ next to the note, move 1 half-step to the *left*.
3. If there is a ♯ next to the note, move 1 half-step to the *right*.

1.3 Meter

Remember: *all* meters can have **only** 2, 3, or 4 beats.

- If the top number of a meter is a 2, 3 or 4 then it is considered a **simple** meter.
  - To find the number of beats and what gets the beat:
    1. The top number tells you how many beats are in the meter.
    2. Replace the top number with a 1 to reveal the fraction that gets the beat in that meter.
       - $\frac{2}{8} \rightarrow \frac{1}{8}$, for instance.
       - The $\frac{1}{8}$ note, or the ♪ gets the beat.
- If the top number of a meter is *greater* than 4 then it is considered a **compound** meter.
  - To find the number of beats and what gets the beat:
    1. Divide the top number by 3.
       - The answer from step 1 tells us how many beats and how many groups of 3 are in each measure.

2. Replace the top number with a 1 to reveal the note value that needs to be put into these groups of 3.
   * $\frac{6}{8} \rightarrow \frac{1}{8}$, for instance.
   * The $\frac{1}{8}$ note, or the ♪ gets gets placed into groups of 3.
   * The number of groups is revealed in step 1.
3. To determine the note-value of the *true* beat, identify what note-value contains 3 of the note-value revealed in step 2.

1.4 Scales

1.4.1 Major Scales

1. Write a blank scale starting on tonic.
2. Write the major scale phone number between each note of the scale (2–2–1–2–2–2–1).
3. Starting on the tonic, refer to the keyboard to count the half-steps between each note.
   - Be sure to correct the notes that need accidentals as you go!
   - Make sure you don't skip or repeat any letters!

1.4.2 Minor Scales

- **Always** start with the natural minor scale.

1. Write a blank scale starting on tonic.
2. Write the natural minor scale phone number between each note of the scale (2–1–2–2–1–2–2).
3. Starting on the tonic, refer to the keyboard to count the half-steps between each note.
   - **Harmonic Minor**:
     (a) Write the natural minor scale.
     (b) Raise scale degree $\hat{7}$ by 1 half-step.
   - **Melodic Minor**:
     (a) Write the natural minor scale.
     (b) Raise scale degrees $\hat{6}$ and $\hat{7}$ by 1 half-step in the *ascending* melodic minor scale.
     (c) Notate the descending melodic minor scale *exactly the same* as the natural minor scale.

1.5 Key Signatures

1.5.1 Identifying Major Key Signatures

- **Flat key signatures**;
  1. Find the last flat in the key signature (furthest to the right).
  2. Go one flat to the left (second to last flat.
     – For the key signature with only 1 flat:
       * Memorize this as F-major, or
       * Loop back around the order of flats to land on "F."
- **Sharp key signatures**:
  1. Find the last sharp in the key signature (furthest to the right).

2. Find this note on a keyboard.
3. Go *up* 1 half-step.
   - Be absolute sure to spell the note in step 3 as 1 letter above the last sharp of the key signature.

- **Minor key signatures**:

1. Find the major key of the key signature
2. On a keyboard, go *down* 3 half-steps and 3 letters from the major key.
   - When trying to figure out a major key signature from a minor key:
     (a) Find the name of the minor key on the keyboard.
     (b) Go *up* 3 half-steps and 3 letters from the minor key.

1.5.2 Writing Major Key Signatures

- **Flat key signatures**:

1. Find the name of the key on the order of flats.
2. Move one letter to the *right*.
3. Include every flat up to and including the flat one letter to the right in the key signature.

- **Sharp key signatures**:

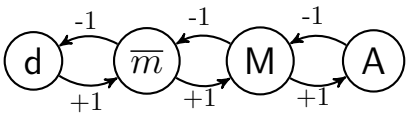
1. Find the name of the key on a keyboard.
2. Go down 1 half-step on the keyboard.
3. Spell this note 1 letter below the key.
4. Find this key on the order of sharps.
5. The key signature will have all the sharps to the left, and including, the sharp found on the keyboard.

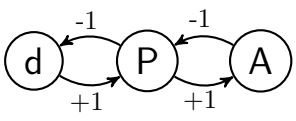
- **Writing minor key signatures**:

1. Find the major key of the key signature.
2. On a keyboard, go *up* 3 half-steps and 3 letters from the minor key.
3. Write the major key signature for the note found in step 2.

1.6 Intervals

Interval name:	PU	$\overline{m}2$	M2	$\overline{m}3$	M3	P4	TT	P5	$\overline{m}6$	M6	$\overline{m}7$	M7	P8
Number of half-steps:	0	1	2	3	4	5	6	7	8	9	10	11	12





1.6.1 Identifying Intervals

The Half-step Method

1. Identify the *size* of the interval.
2. Count the number of *half-steps* between the two notes of the interal.
3. Find the number of half-steps on the chart.
4. Compare the number of half-steps to the interval with the same size as what you identifying in step 1.
   - If the interval above the number of half-steps doesn't match the size of the interval in step 1:
     (a) find the *closest* interval with the same size.
     (b) Then identify if you had to add or subtract half-steps.
     (c) Follow the addition or subtraction of half-steps necessary on the quality flow chart to identify the appropriate quality of the interval.

The Scale Method

- If the interval is *ascending*:

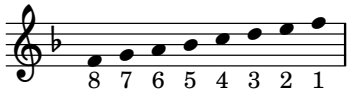
Ascending Intervals		
Bottom note	Top note	Interval
$\hat{1}$	$\hat{1}$	PU
$\hat{1}$	$\hat{2}$	M2
$\hat{1}$	$\hat{3}$	M3
$\hat{1}$	$\hat{4}$	P4
$\hat{1}$	$\hat{5}$	P5
$\hat{1}$	$\hat{6}$	M6
$\hat{1}$	$\hat{7}$	M7
$\hat{1}$	$\hat{8}$	P8

1. Write a major scale starting on the bottom note of the interval.
2. Find the scale degree of the upper note in the key of the bottom note.
3. The scale degree number tells you the size of the interval.
4. The quality, if the upper-note is *diatonic*, will match the chart above.
5. If the lower-note is chromatic, adjust the half-step size accordingly on the quality flow chart to identify the appropriate quality.

- If the interval is *desceding*:

Descending Intervals		
Top note	Bottom note	Interval
$\hat{1}$	$\hat{1}$	PU
$\hat{1}$	$\hat{2}$	$\overline{m}2$
$\hat{1}$	$\hat{3}$	$\overline{m}3$
$\hat{1}$	$\hat{4}$	P4
$\hat{1}$	$\hat{5}$	P5
$\hat{1}$	$\hat{6}$	$\overline{m}6$
$\hat{1}$	$\hat{7}$	$\overline{m}7$
$\hat{1}$	$\hat{8}$	P8

1. Write a major scale starting on the top note of the interval.
2. Label the scale degrees of the scale *backwards*.



3. Find the scale degree of the bottom note in the key of the bottom note.
4. The scale degree number tells you the size of the interval.
5. The quality, if the lower-note is *diatonic*, will match the chart above.
6. If the lower-note is chromatic, adjust the half-step size accordingly on the quality flow chart to identify the appropriate quality.

1.6.2 Writing Intervals

1. Write a notehead with the appropriate size (don't worry about accidentals).
2. Count half-steps on the keyboard.
3. Apply any needed accidentals to the note you wrote in step 1; **do not change the letter of this note, the size *cannot* change!**

1.6.3 Inversions

1. Move one of the pitches up or down so that it *crosses over* the note that isn't moving.
2. Identify the interval of the inverted interval.

- Or:

1. The inverted interval's size will add to 9 when added to the original interval.
2. The quality will change according to this chart:

Quality		
M	$\leftrightarrow$	$\overline{m}$
d	$\leftrightarrow$	A
P	$\leftrightarrow$	P

1.6.4 Compound Intervals

1. Calculate the size.
2. Move one of the pitches either up or down anoctave so that it is closer to the other pitch (doesn't matter which one moves).
3. Identify the interval of the new, smaller interval.
4. Take the *quality* of the smaller interval, and place it in front of the larger size in step 1.

1.7 Triads

1.7.1 Identify Triads

1. Reorder the triad so that it is in snowman form (root position).
2. Label which pitch is the root, third, and fifth.
3. Count the half-steps between the root and the third.
4. Count the half-steps between the third and the fifth.
5. Use these two half-step distances to determine the quality of the triad.
   - Major: $\frac{3}{4}$
   - Minor: $\frac{4}{3}$
   - Diminished: $\frac{3}{3}$
   - Augmented: $\frac{4}{4}$
6. Refer back to the original (not reordered) triad.
7. Identify which part of the triad is in the bass (think base!) to identify its inversion.
   - If root is in the bass: **root position**.
   - If third is in the bass: **first inversion**.
   - If fifth is in the bass: **second inversion**.

1.7.2 Writing Triads

1. Draw a "blank" triad with the name of the chord in the bass.
2. Determine the half-step distances needed based on the desired quality.
3. Count the half-steps *starting with the root/base*.
4. Add any accidentals needed ***without changing the letters of the triad!***

1.8 Roman Numerals

1.8.1 Identifying Roman Numerals

1. Write out the scale in the key of the example.
   - Could be *major* or *minor*.
2. Label scale degree numbers of the scale.

3. Write down *distinct* letter names of the chord being analyzed.
4. On scratch paper, place the notes found in step 3 into stacked thirds (snowman form)
5. Once in stacked thirds, identify the root of the chord.
6. Determine the scale degree of the root based on the scale written and labeled in steps 1 and 2.
    - The scale degree number *becomes* the Roman Numeral.
7. Determine the quality of the chord.
    - If major *or* augmented:
        - The Roman Numeral is capitalized.
            - If augmented, be sure to include $^{+}$ after Roman Numeral and *before* inversion number.
    - If minor *or* diminished:
        - The Roman Numeral is lower case.
            - If diminished, be sure to include $^{\circ}$ after Roman Numeral and *before* inversion number.
8. Check the bass note of the chord being analyzed (**NOT** the chord you put into stacked thirds on scratch paper).
    - If the root of the chord is on the bottom:
        - You're done!
    - If the third of the chord is on the bottom:
        - Add a ^{6} after the Roman Numeral and before the $^{\circ}$ or $^{+}$.
    - If the fifth of the chord is on the bottom:
        - Add a $^{6}_{4}$ after the Roman Numeral and before the $^{\circ}$ or $^{+}$.

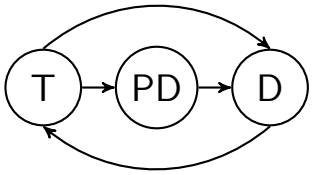
1.8.2 Writing Roman Numerals

1. Write out the scale in the key of the question.
    - Could be *major* or *minor*.
2. Label scale degree numbers of the scale.
    - Note, if you are confident with doing these first two steps in your head, you're welcome to skip steps 1 and 2!
3. The Roman Numeral corresponds to the scale degree of the *root* of the chord you are trying to write.
    - For example, Roman Numeral VI (or vi) means the root of the chord is scale degree $\hat{6}$ from steps 1 and 2.
4. Write a snowman chord with the root reflecting the scale degree identified in step 3 ***(pay attention to the key signature for accidentals!).***
5. Double check the quality of the chord based on the Roman Numeral and add any accidentals if needed.
6. Place the triad in the proper inversion if needed
    - No numbers after the Roman Numeral
        - Leave chord in root position
    - If there is a ^{6} after the Roman Numeral
        - Place the triad in first inversion by rewriting only the root of the chord up one octave
    - If there is a $^{6}_{4}$ after the Roman Numeral
        - Place the triad in second inversion by rewriting the root *and third* of the chord up one octave
7. Smile, and move on to the next one!

1.9 Tonal Areas

1.9.1 Traversing the Tonal Areas

- The flow of tonal areas:



1.9.2 Chord Categorization

- Chords in each tonal area:

T	**PD**	**D**
I, VI, (III)	II, IV	V VII (III)