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Music Theory Study 1

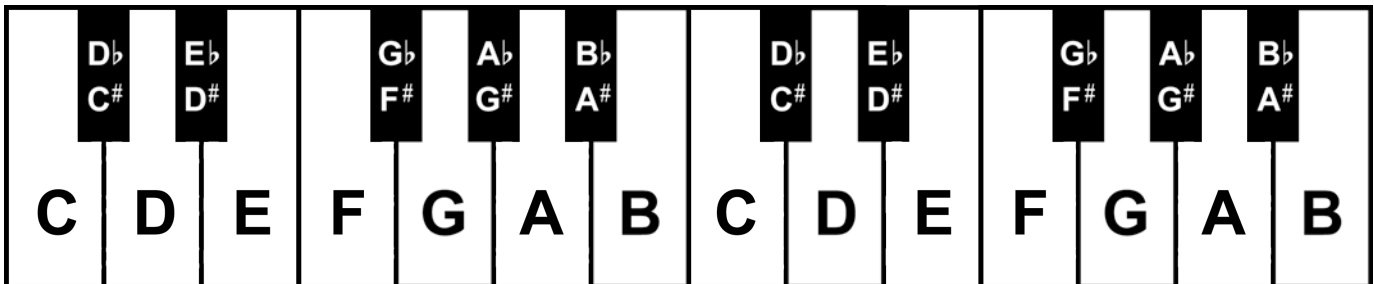
Basics of Music

BluesHarmonica.com Support Material

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Section 1 – Basics of Pitch

Ex. 1.1 – Piano Reference



Ex. 1.2 – Exercise: Fill out the following chart from the notes A to A, in *Ascending* order, using sharps (#) for the top row and flats (b) for the bottom row. All of these pitches are a **Half Step** (also known as a **Semi Tone**) apart. This is the smallest distance of measurement used in music.

	1	2	3	4	5	6	7	8	9	10	11	12	1
Sharps	A			C				E					A
Flats	A			C				E					A

Ex. 1.3 – Exercise: Fill out the following chart with sharps for the *Ascending* column and flats for the *Descending* column.

	1	2	3	4	5	6	7	8	9	10	11	12	1
Ascending	A			C				E					A
Descending	A					E				C			A

Ex. 1.4 – Standard Music Notation: **G Clef**



Ex. 1.5 – Standard Music Notation: Note Names on the Staff



Ex. 1.6 – Standard Music Notation: Ledger Lines & Octave (8va)

A musical staff in 4/4 time showing a scale from C4 to C5. The notes are: C4, D4, E4, F4, G4, A4, B4, C5, D5, E5, F5, G5, A5, B5, C6. The notes C5 through C6 are written on ledger lines above the staff. A dashed line above the staff is labeled "8va". Below the staff, the note names are written: A B C D E F G A B C D E F G A B C.

Ex. 1.7 – Standard Music Notation: **Flats** (lower a note by half step), **Sharps** (raise a note by half step) & **Enharmonic** (two spellings for the same pitch). The **Natural** sign (♮) is used after a flat or sharp in a measure to negate the change of pitch they cause.

A musical staff in 4/4 time showing a scale with various accidentals and enharmonic spellings. The notes are: C, C#, D♭, D, D#, E♭, E, F, F#, G♭, G, G#, A♭, A, A#, B♭, B, C, C#, D♭, D, D#, E♭, E. Below the staff, the note names are written: C C# D♭ D D# E♭ E F F# G♭ G G# A♭ A A# B♭ B C C# D♭ D D# E♭ E.

Ex. 1.8 – Exercise: Write the note name below each note.

A musical staff in 4/4 time showing a scale from C4 to C5 with ledger lines and an 8va marking. The notes are: C4, D4, E4, F4, G4, A4, B4, C5, D5, E5, F5, G5, A5, B5, C6. The notes C5 through C6 are written on ledger lines above the staff. A dashed line above the staff is labeled "8va".

Ex. 1.9 – Exercise: Write the note name below each note and circle the notes that are the same pitch (enharmonic).

A musical staff in 4/4 time showing a scale with various accidentals and enharmonic spellings. The notes are: C, C#, D♭, D, D#, E♭, E, F, F#, G♭, G, G#, A♭, A, A#, B♭, B, C, C#, D♭, D, D#, E♭, E.

Section 1 Questions

- 1) What is the smallest unit of measurement in music that we've studied so far?
- 2) The flat (♭) does what to a pitch?
- 3) The sharp (♯) does what to a pitch?
- 4) The natural (♮) does what to a pitch when used after an accidental (sharp or flat) in the same measure?
- 5) What do you think the distance of two half steps is called?
- 6) Why do you think we use the piano as reference in the study of music theory?

For More Information

- 1) *Note*, Wikipedia <http://en.wikipedia.org/wiki/Note>
- 2) *Twelve-Tone Music Scale* by Keith Enevoldsen <http://thinkzone.wlonk.com/Music/12Tone.htm>

Videos on Music

The following series of videos provide a large encompassing view of music. Though these videos are very general in their nature and do not directly teach music theory (nor do they have anything to do with the harmonica specifically), they do help to provide a different perspective on the understanding of music.

- 1) Basic
 - a) *How Music Works* (1: Melody, 2: Rhythm, 3: Harmony and 4: Bass)
<http://www.youtube.com/user/timegrinder>
- 2) Advanced:
 - a) *Leonard Bernstein - The Unanswered Question* (1: Musical Phonology, 2: Musical Syntax, 3: Musical Semantics, 4: The Delights & Dangers of Ambiguity, 5: XXth Century Crisis and 6: The Poetry Of Earth <http://www.youtube.com/watch?v=U3HLqCHO08s&feature=relmfu>)

Section 2 – The Major Diatonic Scale (The Harmonica's Scale)

Ex. 2.1 – C Major Diatonic Scale

Exercises:

- 1) Write the note names below each note
- 2) Write the interval (distance) from each note to the next. Hint: Two half steps equal one whole step.



Definition: **C Major Diatonic Harmonica**

- A) Harmonica = The instrument
- B) Diatonic = A system that uses 5 whole steps and 2 half steps for its construction
- C) Major = A mode within the diatonic system that places these half steps between the 3rd and 4th scale degrees and the 7th and 8th (octave) scale degrees.
- D) C = The starting and ending note of the scale, or the key in which you and all other musicians are playing in. The C Harmonica was meant to only be played in one key originally... in this case, the Key of C.

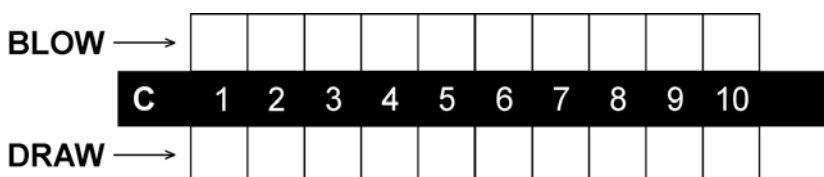
Ex. 2.2 – C Major Scale (Answer for Example 2.1)



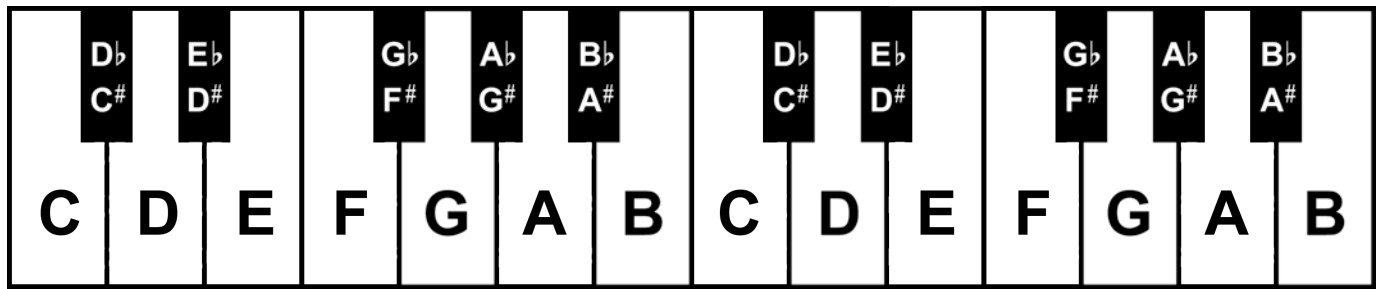
Ex. 2.3 – C Major Scale on the C Major Diatonic Harmonica including harmonica tablature (TAB). The notation illustrates the three ranges of the harmonica—Low (holes 1-4), Middle (holes 4-7) and High (holes 7-10).



Ex. 2.4 – Exercise: Using Example 2.3 as reference, fill in the C Major Diatonic Harmonica diagram below with the notes of the C Major Diatonic Scale. Note that F and A are not available in the lower octave of the harmonica and B is not available in the upper octave of the harmonica (that's why there is no harmonica TAB associated with these notes of the scale... these notes will be recovered via the process of bending... we'll study this on the next page).



Ex. 2.5 – Exercise: Using our piano visual reference again, complete the chart below.

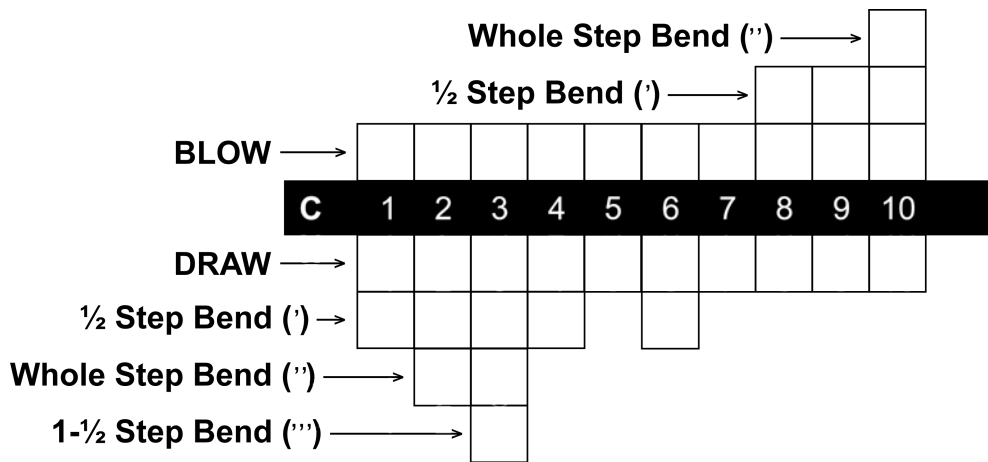


What notes are found between these notes from the following holes on the harmonica?

(Note that the draw reeds are higher in pitch than the blow reeds in holes 1 through 6 and the blow reeds are higher in pitch than the draw reeds in holes 7 through 10)

- Hole 1: Draw D and Blow C = D \flat
- Hole 2: Draw G and Blow E =
- Hole 3: Draw B and Blow G =
- Hole 4: Draw D and Blow C =
- Hole 5: Draw F and Blow E =
- Hole 6: Draw A and Blow G =
- Hole 7: Blow C and Draw B =
- Hole 8: Blow E and Draw D = E \flat
- Hole 9: Blow G and Draw F =
- Hole 10: Blow C and Draw A =

Ex. 2.6 – Exercise: Using your answers from Example 2.5, fill in the chart below to construct a complete representation of all of the available notes on the C Major Diatonic Harmonica with bends.



Ex. 2.7 – Now that we have all of the notes available to us with the technique of bending for the C Major Diatonic Scale, here are all of the notes represented on the staff (note that 2/3+ means that you can play either 2 draw G or 3+ G... your choice).



Section 2 Questions

- 1) Speaking of standard bending right now (not overbending). If you have a draw reed that is higher in pitch than the blow reed—which can you bend, the draw reed or the blow reed? (By the way, you don't have to know how to bend to participate in this discussion).
- 2) If you have a blow reed that is higher in pitch than the draw reed—which can you bend, the draw reed or the blow reed?
- 3) Which draw holes can you bend at least a half step on the harmonic?
- 4) Why can't you bend to a new note on the 5 draw?
- 5) What blow reeds can be bent on the harmonica?
- 6) Why can't you bend to a new note on the 7 blow?
- 7) What dictates how far you can bend on the harmonica?
- 8) Define what "C Major Diatonic Harmonica" means:
 - a) Diatonic =
 - b) Major =
 - c) C =

For More Information

- 1) *Diatonic Scale*, Wikipedia http://en.wikipedia.org/wiki/Diatonic_scale

Section 3 – Scale Degrees & Tuning System

Ex. 3.1 – Review Exercise: Fill in the notes for the C Major Diatonic Harmonica below.

BLOW	→											
		C	1	2	3	4	5	6	7	8	9	10
DRAW	→											

Ex. 3.2 – Another way of looking at the notes of the major scale is to number them—these are known as **Scale Degrees**. Add “st”, “rd” or “th” to the number to designate that you’re speaking of Scale Degrees (and not hole numbers in our case). Note that we commonly say that a Major Scale has 8 notes, but the final note is the same as the 1st note, just one octave higher. You’ll see this notated as 8 or 1 and they both carry the same meaning—same note name equals the same function in music theory terms.

C 1st D 2nd E 3rd F 4th G 5th A 6th B 7th C 8th
 1/2 1/2

Ex. 3.3 – Exercise: Instead of filling in the notes for the C Harmonica with pitch names, let’s this time fill in the chart with scale degrees. You can just use numbers for this charting, such as “1” instead of “1st”.

BLOW	→											
		C	1	2	3	4	5	6	7	8	9	10
DRAW	→											

Ex. 3.4 – Exercise: Now fill in the chart with Scale Degrees for the A Major Harmonica.

BLOW	→											
		A	1	2	3	4	5	6	7	8	9	10
DRAW	→											

To be able to fill in the actual pitches for this harmonica, and for other keys of harmonica, we’ll need to go through the process of how to build a Major Diatonic Scale from each of our twelve tones in music. Let’s do this now.

Ex. 3.5 – Exercise: Fill in the chart below with the notes for each **Major Diatonic Scale**. Reminder: Half steps are located between the 3rd and 4th scale degrees and the 7th and 8th (I've placed a thick line between these degrees of the scale in the chart as a reminder to you). For each scale, start by writing the alphabet, then fill in sharps or flats where appropriate. You may not use the same note name twice in a single scale. Double sharps and double flats are allowed.

	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th
C	C	D	E	F	G	A	B	C
G								
D								
A								
E			G#				D#	
B								
F#								
C#							B#	
G#		A#						G#
Ab								
Eb								
Bb			D					
F								

Ex. 3.6 – Here's the A Major Diatonic Scale notated on the staff using **Accidentals** (on the staff as they appear).

A 1st B 2nd C# 3rd D 4th E 5th F# 6th G# 7th A 8th

Ex. 3.7 – Here's the same A Major Diatonic Scale notated on the staff using the **Key Signature** of A (the three sharps you see at the beginning of the staff).

A 1st B 2nd C# 3rd D 4th E 5th F# 6th G# 7th A 8th

Ex. 3.8 – Exercise: Now that you know what notes are in the key of A and where the scale degrees are located (reference Ex. 3.4), fill in the diagram below with the notes of the A Major Diatonic Scale.

BLOW →

--	--	--	--	--	--	--	--	--	--

A **1** **2** **3** **4** **5** **6** **7** **8** **9** **10**

DRAW →

--	--	--	--	--	--	--	--	--	--

Section 3 Questions

- 1) Write the order of whole steps (1) and half steps (1/2) for the Major Scale: ___ ___ ___ ___ ___ ___ ___
- 2) What's another way of writing E#?
- 3) What's another way of writing B#?
- 4) What's another way of writing C \flat ?
- 5) What's another way of writing F \flat ?
- 6) Why do we use sharps for some keys and flats for others?

- 7) Why do you think it's valuable to know how to build a Major Scale?

For More Information

- 2) *Degree (Music)*, Wikipedia [http://en.wikipedia.org/wiki/Degree_\(music\)](http://en.wikipedia.org/wiki/Degree_(music))
- 3) *Key Signature*, Wikipedia http://en.wikipedia.org/wiki/Key_signature

Section 4 – Review & Application

Ex. 4.1 – Exercise: “When the Saints Go Marching In” is notated below. Write the note names below each note and their corresponding hole numbers on the C Harmonica (middle octave).

Ex. 4.2 – Exercise: “When the Saints Go Marching In” is notated below again, but sounds one octave higher (the 8va designation). Write the note names below each note again and the hole numbers for the upper octave of the instrument.

Ex. 4.3 – Exercise: Notate “When the Saints Go Marching In” for the lower octave of the instrument and write the corresponding pitches and hole numbers. Hint: Write the note names first (from what you’ve done above) and then the notes on the staff.

Ex. 4.4 – Exercise: Notated below is “When the Saints Go Marching In” again. Start by writing out the note names and then below the note names write the scale degrees (reference Ex. 3.2).

Ex. 4.5 – Exercise: Notate “When the Saints Go Marching In” below in the Key of A. Follow the order of completion below. Hint: You’ll find it helpful to write the A Major Scale in the margins for reference.

1. Write the scale degrees (same as Ex. 4.4)
2. Write the note names
3. Write the notes on the staff with accidentals (reference Ex. 3.7 and 3.8)
4. Write the harmonica TAB (reference Ex. 3.8)

You now have the skill set to walk into a music store, pick up any sheet music that’s in a Major Key, for any instrument, and arrange it for the harmonica. Let’s do exactly that. Notated below is a song written for the E \flat Alto Saxophone.

Ex. 4.6 – Song Example

Ex. 4.7 – Exercise: The first step is to identify the Key. The Key signature has one flat, which would put you in the Key of ___ Major (reference Ex. 3.5). Hint: Though not always the case, a song will commonly start and end with the chord that represents the key of the song.

Ex. 4.8 – Exercise: The second step is to write the Major Scale of that Key for reference, along with its Scale Degrees.

Pitch:							
Scale Degree:							

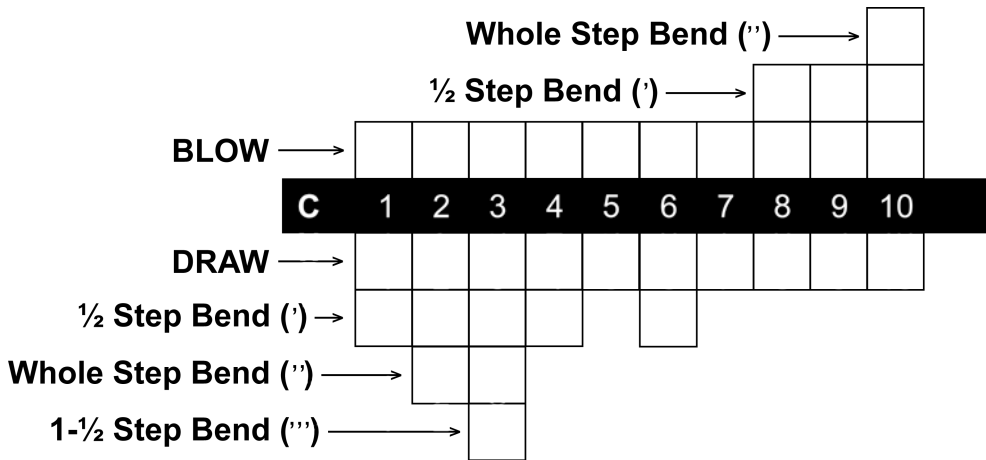
Ex. 4.9 – Exercise: Write the pitch names below each note and their corresponding Scale Degrees.

Ex. 4.10 – Exercise: We now have the most important piece of information, the Scale Degrees—we can write this song in any key now. If you would like to play this melody in 1st Position, you'll want to transpose this to the Key of C. Write the C Major Scale below and its Scale Degrees.

Pitch:							
Scale Degree:							

Ex. 4.11 – Exercise: Below is the same with rhythm notation (the slashed note heads you see) as a placeholder right now—we'll write the pitches on the staff later. Write the Scale Degrees below each note and the corresponding notes of the C Major Scale.

Ex. 4.12 – Exercise: Using Example 2.6 as a reference, fill in the C Major Diatonic Harmonica chart with bends below.



Ex. 4.13 – Exercise: I've now placed the pitches of our melody on the staff for you, as well as the Note Names and Scale Degrees you worked out in Example 4.11. Using Example 4.12 as reference, fill in the TAB (hole numbers) for two octaves on the harmonica (lower range and higher range). Play it when you're done to check your work (If you have not learned how to bend yet, skip the lower octave version).

Section 4 Questions

- 1) How is Example 4.5 different from Example 4.1?
- 2) How is Example 4.5 the same as Example 4.1?
- 3) Why did I ask you to write TAB for both octaves for Example 4.13?
- 4) What do all keys of harmonica have in common? Circle the options below that apply.
 - a) Pitches (Notes)
 - b) Scale Degrees
 - c) Blow and Draw Patterns

Section 5 – Completed Exercises

Ex. 1.2

	1	2	3	4	5	6	7	8	9	10	11	12	1
Sharps	A	A#	B	C	C#	D	D#	E	F	F#	G	G#	A
Flats	A	B \flat	B	C	D \flat	D	E \flat	E	F	G \flat	G	A \flat	A

Ex. 1.3

	1	2	3	4	5	6	7	8	9	10	11	12	1
Ascending	A	A#	B	C	C#	D	D#	E	F	F#	G	G#	A
Descending	A	A \flat	G	G \flat	F	E	E \flat	D	D \flat	C	B	B \flat	A

Ex. 1.8

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

Ex. 1.9

C C# D D# E F F# G G# A A# B C

Ex. 2.1

C D E F G A B C

1 1 1/2 1 1 1 1 1/2

Ex. 2.4 & 2.6

Blow → C E G C E G C E G C

Draw → D G B D F A B D F A

Half Step Draw Bend → D \flat G \flat B \flat D \flat A \flat

Whole Step Draw Bend → F A

Minor 3rd Draw Bend → A \flat

← Whole Step Blow Bend (B to B \flat)

← Half Step Blow Bend (B to B \flat)

Ex. 3.1

Blow →

C	E	G	C	E	G	C	E	G	C
---	---	---	---	---	---	---	---	---	---

C

1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	----

Draw →

D	G	B	D	F	A	B	D	F	A
---	---	---	---	---	---	---	---	---	---

Ex. 3.3

Blow →

1	3	5	1	3	5	1	3	5	1
---	---	---	---	---	---	---	---	---	---

C

1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	----

Draw →

2	5	7	2	4	6	7	2	4	6
---	---	---	---	---	---	---	---	---	---

Ex. 3.4

Blow →

1	3	5	1	3	5	1	3	5	1
---	---	---	---	---	---	---	---	---	---

C

1	2	3	4	5	6	7	8	9	10
---	---	---	---	---	---	---	---	---	----

Draw →

2	5	7	2	4	6	7	2	4	6
---	---	---	---	---	---	---	---	---	---

Ex. 3.5

	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th
C	C	D	E	F	G	A	B	C
G	G	A	B	C	D	E	F#	G
D	D	E	F#	G	A	B	C#	D
A	A	B	C#	D	E	F#	G#	A
E	E	F#	G#	A	B	C#	D#	E
B	B	C#	D#	E	F#	G#	A#	B
F#	F#	G#	A#	B	C#	D#	E#	F#
C#	C#	D#	E#	F#	G#	A#	B#	C#
G#	G#	A#	B#	C#	D#	E#	F##	G#
A^b	A ^b	B ^b	C	D ^b	E ^b	F	G	A ^b
E^b	E ^b	F	G	A ^b	B ^b	C	D	E ^b
B^b	B ^b	C	D	E ^b	F	G	A	B ^b
F	F	G	A	B ^b	C	D	E	F

Ex. 3.8—A Major Diatonic Scale.

A	C#	E	A	C#	E	A	C#	E	A	
A	1	2	3	4	5	6	7	8	9	10
B	E	G#	B	D	F#	G#	B	D	F#	

Ex. 4.1

C E F G C E F G C E F G E C E D

4+ 5+ 5 6+ 4+ 5+ 5 6+ 4+ 5+ 5 6+ 5+ 4+ 5+ D 4

Ex. 4.2

8va-----

C E F G C E F G C E F G E C E D

7+ 8+ 9 9+ 7+ 8+ 9 9+ 7+ 8+ 9 9+ 8+ 7+ 8+ D 8

(8va)-----

E E D C C E G G F F E F G E D D C

8+ 8+ 8 7+ 7+ 8+ 9+ 9+ 9 9 8+ 9 9+ 8+ 8 8 7+

Ex. 4.3

C E F G C E F G C E F G E C E D

1+ 2+ 2" 2 1+ 2+ 2" 2 1+ 2+ 2" 2 2+ 1+ 2+ D 1

E E D C C E G G F F E F G E D D C

2+ 2+ 1 1+ 1+ 2+ 2 2 2" 2" 2+ 2" 2 2+ 1 1 1+

Ex. 4.4

C E F G C E F G C E F G E C E D

1st 3rd 4th 5th 1st 3rd 4th 5th 1st 3rd 4th 5th 3rd 1st 3rd D 2nd

E E D C C E G G F F E F G E D D C

3rd 3rd 2nd 1st 1st 3rd 5th 5th 4th 4th 3rd 4th 5th 3rd 2nd 2nd 1st

Ex. 4.5

1st 3rd 4th 5th 1st 3rd 4th 5th 1st 3rd 4th 5th 3rd 1st 3rd 2nd
 A C# D E A C# D E A C# D E C# A C# B
 4+ 5+ 5 6+ 4+ 5+ 5 6+ 4+ 5+ 5 6+ 5+ 4+ 5+ 4

3rd 3rd 2nd 1st 1st 3rd 5th 5th 4th 4th 3rd 4th 5th 3rd 2nd 2nd 1st
 C# C# B A A C# E E D D C# D E C# B B A
 5+ 5+ 4 4+ 4+ 5+ 6+ 6+ 5 5 5+ 5 6+ 5+ 4 4 4+

Ex. 4.8

Pitch:	F	G	A	BB	C	D	E	F
Scale Degree:	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	1 st

Ex. 4.9

F C F

C C D C F E C C D C G F C C
 5th 5th 6th 5th 1st 7th 5th 5th 6th 5th 2nd 1st 5th 5th

B^b F C F

C A F E D B^b B^b A F G F
 5th 3rd 1st 7th 6th 4th 4th 3rd 1st 2nd 1st

Ex. 4.10

Pitch:	C	D	E	F	G	A	B	C
Scale Degree:	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	1 st

Ex. 4.11

G G A G C B G G A G D C G G
 5th 5th 6th 5th 1st 7th 5th 5th 6th 5th 2nd 1st 5th 5th

G E C B A F F E C D C
 5th 3rd 1st 7th 6th 4th 4th 3rd 1st 2nd 1st

Ex. 4.12

									E ^b	G ^b	B ^b	← Whole Step Blow Bend
									E ^b	G ^b	B	← Half Step Blow Bend
Blow →	C	E	G	C	E	G	C	E	G	C		
	C 1 2 3 4 5 6 7 8 9 10											
Draw →	D	G	B	D	F	A	B	D	F	A		
Half Step Draw Bend →	D ^b	G ^b	B ^b	D ^b		A ^b						
Whole Step Draw Bend →		F	A									
Minor 3rd Draw Bend →			A ^b									

Ex. 4.13

G 5th 5th A 6th 5th C 1st 7th G G A G D C G G
 High = 6+ 6+ 6 6+ 7+ 7 6+ 6+ 6 6+ 8 7+ 6+ 6+
 Low = 2 2 3" 2 4+ 3 2 2 3" 2 4 4+ 2 2

G 5th E 6th C 1st B 7th A 6th F 4th F 4th E 3rd C 1st D 2nd C 1st
 9+ 8+ 7+ 7 7 6 9 9 8+ 7+ 8 7+
 6+ 5+ 4+ 3 3" 5 5 5+ 4+ 4 4+

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