Mountain Dulcimer Music Theory Cheat Sheet
By: J.R. Lancaster

Disclaimer: I am not a trained musician nor do I really "know" music theory in any formal way. I may get some music theory things technically wrong here—but even if that's the case, the way things have been presented here should still be helpful to dulcimer players. I've been playing mountain dulcimer since around 2011. The purpose of this document is to capture all that dulcimer-relevant music theory and put it into one place, so mountain dulcimer students can get it more quickly than I did. Knowing the basics of how the instrument "works" musically will help you get more comfortable, jam more naturally, and generally help you get a lot more out of your playing.

Western Notes, Steps, Scales, Major and Minor Chords

Steps: A "step" is just a shift from one note to another. A "half step" (h) is the smallest shift in tone that can be easily noticed by the average listener. A "whole step" (W) is two half steps. For the most part, notes that are only a half step apart are thought to "sound bad" when played together—but there are exceptions.

Western Music Notes:	A →	B →	C →	D →	E →	F →	G →	A
Step Pattern:		W	**h**	W	W	**h**	W	W

NOTICE: Not every note is a full whole step above the note before it. There is a half step between B and C, and a half step between E and F. Why? Because all these rules are arbitrary. The notes and scales of Western music are based on a traditional and subjective Western sense of what "sounds" good. It's just important you remember where the half steps fall between the notes, because it'll trip you up later when figuring out scales and chords.

Sharps and Flats: For most notes, going up by a half step is not enough to fully change the note (with the exception of B to C and E to F). So what do we call it when we end up "in between" notes? If you are *above* a note by a half step, you've made the note "sharp" (#). If you are *below* a note by a half step, you've made the note "flat" (b).

A	+1 Half Step	=	A#
A	-1 Half Step	=	Ab

Note: There is some overlap in this system, so the same note can sometimes be named in different ways. For example, there is no difference between a A flat (one half step down from A) and G sharp (one half step up from G)—they're the exact same note. Because there are some notes that are *inherently* only a half step apart, it can also lead to some confusion there—for example, there really *is no such thing* as B#, because if you go a half step up from B, you're at C.

Scale: A scale is a series of notes that are believed to "sound good" together. Each scale is named after 1) the first note in the scale, the starting point; and 2) the step pattern applied to the first note to produce the list of notes in the scale.

Chord: A collection of notes within a scale that are believed to "sound good" when played together at the same time. Each chord is named after the 1) the first note in the scale from which the chord is derived, and 2) the pattern used to select which notes in the scale are included in the chord.

The most important Scales and Chords to learn at first are the Major Scales and Chords.

Major Scale Step Pattern:	**W**	W	**h**	W	**W**	W	h
Major Chord Pattern:	**1st**		**3rd**		**5th**		

	Scale	*Chord*
A Maj:	**A** B **C#** D **E** F# G# A	A C# E
B Maj:	**B** C# **D#** E **F#** G# A# B	B D# F#
C Maj:	**C** D **E** F **G** A B C	C E F
D Maj:	**D** E **F#** G **A** B C# D	D F# A
E Maj:	**E** F# **G#** A **B** C# D# E	E G# B
F Maj:	**F** G **A** A# **C** D E F	F A C
G Maj:	**G** A **B** C **D** E F# G	G B D

The second most important Chords to learn are the Minor Chords. Minor chords are created by "flattening" (going down in pitch) the "middle" note of a Major Chord by a half step. In Western music, Minor chords are generally felt to sound "sadder" or more negative than their Major equivalents.

Note	*Major Chord*	[flattened 3rd]	***Minor Chord***
A	A **C#** E	C# → C	**A C E**
B.	B **D#** F#	D# → D	**B D F#**
C	C **E** F	E → D#	**C D# F**
D	D **F#** A	F# → F	**D F A**
E	E **G#** B	G# → G	**E G B**
F	F **A** C	A → G#	**F G# C**
G	G **B** D	B → A#	**G A# D**

Diatonic Fretting and Modes: The Elegant Limitations of the Mountain Dulcimer

Dulcimers are Diatonically fretted, which means they are fretted to a specific scale—in this case, a Major Scale. Compare to a standard guitar which is Chromatically fretted, meaning it is fretted at every half step. The fretting on the guitar seems much more consistent and even across the neck—the mountain dulcimer's fretboard looks erratic by comparison.

For the rest of this document, I'm going to focus mostly on the notes and chords that can be found on the first seven frets of the instrument. I'm focusing this document towards new learners, and I think it's helpful to limit yourself to this lower half of the instrument at first. After the seventh fret, the instrument's notes basically repeat themselves—the seventh fret is where you hit an octave, similar to the twelfth fret of a guitar.

Fretboard Step Pattern

O → 1 → 1+ → 2 → 3 → 4 → 5 → 6 → 6+ → 7
W h h h W W h h h

You'll notice the step pattern isn't matched to the Major Scale. Originally the dulcimer *was* perfectly fretted to a Major Scale (W W h W W W h), but over time the addition of the "half" frets (1+ and 6+) caused the instrument to deviate from that a bit. We'll talk about that later.

So what's the point of Diatonic fretting? Diatonic fretting means it's hard to find a "wrong note" on the dulcimer—it's easy for anyone to pick up and play something that sounds nice, even if they have no idea what they're doing. The fretboard being "locked in" to a major scale ensures this. On the other hand, it limits the notes that are available to you. Instead of having every half step at your fingertips like you would with a Chromatic instrument—every note, flat, and sharp—there are always going to be notes totally missing from your fretboard in any given tuning.

This is why there is no clearly established "standard" tuning on the mountain dulcimer. Dulcimer players have to change their tuning regularly based on what notes they need. So instead of of "standard tuning," you'll hear dulcimer players talk about "modes."

Modes: Mixolydian, Ionian, and so on.

"Modes" are specific patterns of tuning that can be applied to the strings. They are *not* specific tunings, but *patterns* of tuning—so you can have a completely different tuning than someone else but still be in the same "mode." The "patterns" will be explained below based on note position within a Major Scale.

Mode	Pattern	Common Tunings
Mixolydian	Melody and Bass line are tuned to the same note, with the bass line exactly one octave lower. The Middle line is tuned to the 5th Note of a Major Scale based on the Melody line note.	DdAD GgDG CcGC
Ionian	Melody and middle line are tuned to the same note. The Bass line is tuned to the 4th note of a Major Scale based on the Melody line note.	AaAD GgGC DdDG
Aeolian	Middle line is set to the 6th note of a Major Scale based on the Melody line note. Bass line is set to the 2nd note of a Major Scale based on the Melody line note, but an octave lower.	CcAD B(f)b(f)GC GgEA

Other Modes: Dorian (GgAD), Lydian (DdGC), Phyrgian (FfAD)

Mixolydian is by far the most common mode, with Ionian as a close(ish) second. Mixolydian DdAD, in particular, is so prevalent that it is sometimes called "standard" tuning. Beginners should focus on learning to play Mixolydian mode tunings first, so I will focus on Mixolydian modes for the rest of this document.

The Half Frets: Certain frets on the mountain dulcimer are referred to as "half frets." The most common is the six-and-a-half fret (6+). The earliest dulcimers lacked this fret, but today it has become standard—it'll be hard to find a dulcimer that doesn't have the 6+.

The next most common is the one-and-a-half fret (1+). It is not standard—you'll probably need to take your dulcimer to a luthier if you want it added. But it's the most common modification people make to their dulcimers and I highly recommend it.

Why do people do this? Well, it's to help address some of the limitations imposed on the dulcimer by Diatonic fretting. When it was first invented by Scotch-Irish immigrants to the Appalachian mountains of America, it was mostly meant to play the kind of Celtic music native to those people. Over time, American Celtic music evolved into "mountain music" and then into what we now call "country" music through a long history of intermingling with the blues and spiritual music styles of Black America.

As the dulcimer evolved from a Celtic instrument to a "country" instrument, it needed access to more notes to accompany the bluesier sounds of those newer musical styles—leading first to the addition of the 6+ fret. Nowadays the 1+ fret is becoming more commonly used for the same reasons. We call them "half" frets, instead of renumbering altogether, to reflect this history—and make sure dulcimer notation remains consistent across all the generations of dulcimer music.

If you want to play country music on your dulcimer, I strongly encourage you to find a luthier who can add the 1+ fret for you. In Mixolydian DdAD, for example, there is no way to play such classics as Wildwood Flower without the 1+ fret. It's pretty easy to do yourself if you have the courage to try it, but on the other hand, luthiers don't charge much for adding one fret—one time a guy charged me $50.00 for it. Pretty reasonable.

Fretboard Diagram: Mixolydian, DdAD

1+ Fret darkened because it is not standard. If you don't have it on your fretboard, ignore it here.

Fret	Melody	Middle	Bass
Open	D	A	D
1	E	B	E
1+	F	C	F
2	F#	C#	F#
3	G	D	G
4	A	E	A
5	B	F#	B
6	C	G	C
6+	C#	G#	C#
7	D	A	D

Missing Notes in Mixolydian DdAD

Standard Dulcimer F, A#, B#, D#,
With 1+ Fret A#, B#, D#

Missing Major and Minor Chords in Mixolydian DdAD

Standard Dulcimer Bmaj., Cmaj., Cmin., Dmin., Fmaj., Fmin., Gmin.
With 1+ Fret Bmaj., Cmin., Gmin.

Fretboard Diagram: Mixolydian, GgDG

1+ Fret darkened because it is not standard. If you don't have it on your fretboard, ignore it here.

Fret	Melody	Middle	Bass
Open	G	D	G
1	A	E	A
1+	A#	F	A#
2	B	F#	B
3	C	G	C
4	D	A	D
5	E	B	E
6	F	C	F
6+	F#	C#	F#
7	G	D	G

Missing Notes in Mixolydian GgDG

Standard Dulcimer A#, B#, D#, G#
With 1+ Fret B#, D#, G#

Missing Major and Minor Chords in Mixolydian GgDG

Standard Dulcimer Bmaj., Cmin., Emaj., Fmin.
With 1+ Fret Bmaj., Cmin., Emaj., Fmin.
1+ doesn't add any chords in GgDG, but it makes some easier.

Symmetry, Chord Shapes, and Chord Inversions: Fun Qualities of Mixolydian Mode

Because the Melody and Bass lines are tuned to the same note in Mixolydian tunings, we can say the dulcimer's fretboard is "symmetrical" in Mixolydian tunings. This leads to a few fun qualities that are very helpful to beginning learners studying the Mixolydian mode.

First, there are two common "chord shapes" that show up all across the fretboard. These are the "L-Shaped" chords and the "X-Shaped" chords. In my experience, chords that do not fit the "L" or "X" shaped paradigms are very hard to play in terms of finger placement—but you may not have the same problem as me.

"L-Shaped" G Maj. Chord in DdAD: 3 3 5

Fret	Melody	Middle	Bass
Open	D	A	D
1	E	B	E
1+	F	C	F
2	F#	C#	F#
3	G	D	G
4	A	E	A
5	B	F#	B
6	C	G	C
6+	C#	G#	C#
7	D	A	D

"X-Shaped" G Maj. Chord in DdAD: 3 1 0

Fret	Melody	Middle	Bass
Open	D	A	D
1	E	B	E
1+	F	C	F
2	F#	C#	F#
3	G	D	G
4	A	E	A
5	B	F#	B
6	C	G	C
6+	C#	G#	C#
7	D	A	D

So the "L-Shaped" chords are, unsurprisingly, shaped like the letter "L." The "X-Shaped" chords, though, are only shaped like a diagonal line—so why are they called "X-Shaped?" The answer is in the Symmetry of the Mixolydian Mode. Chords can be *mirrored* across the strings and remain the *same chord*.

Here are the same two chords from before, with their mirrored forms included.

"L-Shaped" G Maj. Chord in DdAD: 5 3 3 / 3 3 5

Fret	Melody	Middle	Bass
Open	D	A	D
1	E	B	E
1+	F	C	F
2	F#	C#	F#
3	G	D	G
4	A	E	A
5	B	F#	B
6	C	G	C
6+	C#	G#	C#
7	D	A	D

"X-Shaped" G Maj. Chord in DdAD: 0 1 3 / 3 1 0

Fret	Melody	Middle	Bass
Open	D	A	D
1	E	B	E
1+	F	C	F
2	F#	C#	F#
3	G	D	G
4	A	E	A
5	B	F#	B
6	C	G	C
6+	C#	G#	C#
7	D	A	D

When you see the overall chord shape, with the mirrored form included, it becomes obvious why they call it an "X-Shaped" Chord.

If you get well-acquainted with these commonly repeating chord shapes, you'll learn your chords very quickly. If you get comfortable including mirrored forms of the same chord in a single piece of music, you'll also quickly learn to produce a much fuller and more diverse sound. Mirroring a chord gives it a very different overall sound quality, despite it remaining the same chord.

Mixolydian DdAD Major and Minor Chords

Not an exhaustive list. Also, a chord may be possible to play in the tuning even if there are no L or X shaped versions of it.

	L-Shaped	X-Shaped
A Maj.	4 4 6+ / 6+ 4 4	4 2 1 / 1 2 4
A Min.	4 4 6 / 6 4 4	4 1+ 1 / 1 1+ 4
B Maj.	[none]	[none]
B Min.	5 5 7 / 7 5 5	O 1 2 / 2 1 O
C Maj.	1+ 1+ 1 / 1 1+ 1+	6 4 1+ / 1+ 4 6
C Min.	[none]	[none]
D Maj.	2 O O / O O 2	2 3 4 / 4 3 2
D Min.	1+ O O / O O 1+	1+ 3 4 / 4 3 1+
E Maj.	[none]	8 6+ 5 / 5 6+ 8
E Min.	1 1 3 / 3 1 1	3 4 5 / 5 4 3
F Maj.	1+ 1+ 4 / 4 1+ 1+	9 7 6 / 6 7 9
F Min.	[none]	9 6+ 6 / 6 6+ 9
G Maj.	3 3 5 / 5 3 3	3 1 O / O 1 3
G Min.	[none]	[none]

Mixolydian GgDG Major and Minor Chords

Not an exhaustive list. Also, a chord may be possible to play in the tuning even if there are no L or X shaped versions of it.

	L-Shaped	X-Shaped
A Maj.	[none]	[none]
A Min.	1 1 3 / 3 1 1	3 4 5 / 5 4 3
B Maj.	[none]	[none]
B Min.	2 2 4 / 4 2 2	4 5 6+ / 6+ 5 4
C Maj.	6 6 5 / 5 6 6	10 8 6 / 6 8 10
C Min.	[none]	[none]
D Maj.	4 4 6+ / 6+ 4 4	1 2 4 / 4 2 1
D Min.	4 4 6 / 6 4 4	1 1+ 4 / 4 1+ 1
E Maj.	[none]	[none]
E Min.	5 5 7 / 7 5 5	O 1 2 / 2 1 O
F Maj.	[none]	1 1+ 3 / 3 1+ 1 6 4 3 / 3 4 6
F Min.	[none]	[none]
G Maj.	O O 2 / 2 O O	2 3 4 / 4 3 2
G Min.	8 7 7 / 7 7 8	1+ 3 4 / 4 3 1+

"Incomplete" Chords: I do not know the proper name for them, I've just always known them as "incomplete" chords. If you want to play a Major Chord, but don't have easy access to the 3rd note, you can just drop it and replace it by playing the 1st note again. This means a "barre" chord—a chord where you hold the same fret on every note—is always an effective way to play an "incomplete chord" in the Mixolydian mode. So, for example, if you need a D Maj. chord but can't reach an F#, or just want a different sound, you can just strum the open strings (DdAD). It sounds fine as a stand-in for a complete Major chord and allows you to add some variety.

Conclusion

That's everything I wanted to include in this document, which is meant only to cover the very basics of *music theory* as it applies to dulcimer, and to give beginners a good reference to learn note positions on the fretboards and Major/Minor chords. I hope it's useful to you! For further reading study I'd recommend Hal Leonard's *Dulcimer Songbook* by Jim Schustedt, Mel Bay's *Complete Dulcimer Handbook* by Mark Biggs, and Mel Bay's *Dulcimer Chord Encyclopedia* by James Major. I especially recommend the Mel Bay books—and the *Chord Encyclopedia* above all.

Good luck!