

Exercise



Perfect Intervals

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Teaching Hints:

Tuning Each Instrument 1st Note:

Flute: If the pitch is sharp pull head joint out, if pitch is flat push head joint in.

Oboe: If all notes are flat take less reed in mouth, if all notes are sharp take more reed in mouth.

Clarinet: C is sharp. Have clarinets tune to G, tune C by adjusting with the barrel. High C and low C should be adjusted between the upper and lower joint. This will help the clarinet play more consistently in tune in the entire range.

Bassoon: Tune to upper B^b, adjust pitch with the bocal in is sharper out is flat. The bocal can only be adjusted a little bit in and out. If you are always sharp buy a longer bocal like a #3.

Alto & Bari Sax: It is difficult to tune to G. Low G is flat. High G is very sharp. Tune to concert A (your F[#]) instead. Adjust High G by adding low B and C keys

●●●^(DB)○○○ to lower the pitch and/or voice "oo".

Tenor Sax: Tune to concert A, which is your B.

Trumpet: Tune to upper C. Adjust tuning slide.

French Horn: See appendix

Double Horn Tuning Sequence

Trombone: Tune to High B^b, adjust main tuning slide. Tune B^b a little out from 1st position so when you have to go to 1st fast you do not hit your face with the slide. **Valves:** Tune F to F and G^b to G^b.

Baritone/Euphonium/Tuba: Tune to upper B^b. Use main tuning slide.

Brass Instruments: If your tuning slide will not move your instrument is broken, get it fixed immediately.

Concert F: 2nd note

Do not tune your band to concert F. There are too many inconsistencies among the instruments.

Flute, Bassoon, Low Alto & Bari are flat.

Trumpet, Trombone, Baritone, Tuba, High Horn, Octave Alto and Bari are sharp.

Solfege:

Do - Sol - Do

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Understanding Intonation: Pythagoras

For centuries, musicians have spoken of the problems of our tuning system. They have been perplexed and wondered, “How do we play in tune?”

Consider long ago during Roman times. Pythagoras (570 B.C. to 495 B.C.), who discovered the numerical basis for acoustics, heard hammers being struck by a blacksmith. The crash of the hammers against anvils created different intervals. Using bells, Pythagoras constructed the overtone series. Then he used mathematics to represent the intervals.

Vibrating Frequency	64	128	192	256	320	384	448	512
Note								
Order of Overtones	1	2	3	4	5	6	7	8
% of string used for pitch	1	1/2	1/3	1/4	1/5	1/6	1/7	1/8

Rehearsal Technique: Practice with a Drone

Play a drone with a tone generator such as “TE Tuner”, the app I like to use, or you can even use a Peterson Strobe Tuner.

Once your students have established a consistent pitch with the drone, have different sections play the drone. This will give everyone the chance to listen and play the different intervals. Students are practicing listening and hearing intervals in these exercises.

Later try my chorales, but for now start with one thing at a time—intervals before chords.

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Exercise

#2

Add the 7th

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Teaching Hints:

Concert B^b: The Root

Remind students to listen to B^b. It is easy to become distracted and not go back to the same note where they started. Ensure low B^b is in tune with high B^b.

Oboe:

Low B^b is a little flat. Not all Oboes have a mechanism to play low B^b use the following fingering in combination with covering the lower two holes of the bell with your knees.

●●●●●● With mechanism the fingering is ●●●●●●

Alto & Bari:

High D is moderately sharp, to lower pitch add the low B key ●●●●^(B)●●● and/or voice "oo".

Low D is flat, raise the pitch using the C[#] key ●●●●^(C#)●●● and/or voice "ee".

Concert A: Leading Tone**Learn more:**

Did you know the leading tone should be lowered in the chord to make it sound more in tune? Want to learn how to play more beautiful harmony? Learning how to play **Just Intonation** can be very difficult, but there is a solution. Practice this book to learn it then buy Just Chorales to apply it at

www.sevierband.com

Just Intonation: Major 7th

In the key of B^b the major seventh (leading tone) is A. Just Intonation says that the major seventh should be lowered 12 cents to be beatless (in tune).

A for concert pitch.

E for E instruments.

B for B^b instruments.

F[#] for E^b instruments.

Bass Trombone:

Low F use 1st valve 1st position (V1) or 2nd valve 2nd position (2/2). prefer 2V2).

Solfège:

Do - Ti - Do - Sol - Do

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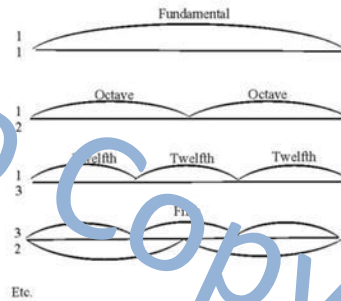
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Understanding Intonation: Reproducing Intervals

Using a monochord—a one-string sound board with a sliding bridge to produce pure tones—you can reproduce all of the following intervals with the proportions shown:

Fundamental 1:1
 Octave 2:1
 Fifth 3:2
 Fourth 4:3
 Major 3rd 5:4
 Minor 3rd 6:5
 Major 6th 3:2
 Minor 6th 8:5



Rehearsal Technique: Singing

Singing can be an amazing method to help students match pitch on their instrument. Use solfege to learn this exercise. Your band can instantly improve at matching pitch.

Solfege: Pronunciation:

Do = D "oh"

Re = R "ay"

Mi = M "ee"

Me = M "ay"

Mi = M "ee"

Fa = F "aa"

Sol = S "ohl"

La = L "aa"

Li = L "ee"

Te = T "ay"

Ti = T "ee"

This method will only help if the students can sing. If your students do not sing well, it can make things worse! Use your judgment. Be patient with the tone deaf students. They will improve but not immediately.

“Take baby steps as you teach your students to tune.”

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Exercise

#3

Major 6th

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Teaching Hints:

Just Intonation: Major 6th

Lower the major 6th by 16 cents. See more at www.sevierband.com

Clarinet:

Throat tone A is moderately sharp. It is also a difficult note to have good tone on and play in tune. Lower pitch by adding right hand to the fingering,



Baritone:

G is very sharp. This is a half-hole note. Try using voicing to bring the pitch down. *Voicing* means to change the shape of your mouth to affect the pitch: "ee" raises pitch, "oo" lowers pitch.

Alto Sax & Bari:

High E is Sharp, to lower pitch add the low C key and/or voice "oo". Low E is flat, to raise the pitch use the D[#] key and/or voice "ee".

French Horn:

On E the fingering on F horn is flat, but if you use the B^b side it is more in tune.

On D it is flat on F and sharp on the B^b side, so use your hand to adjust it. Farther in lowers the pitch and farther out raises the pitch.

Trombone:

Physics: Each position away from 1st gets 6% larger. So the distance between 2nd and 3rd is 6% larger than 1st to 2nd. Make sure as you go further out that each position gets exponentially larger.

Valves: Physics effects valves even more. F valve is the same as being in 6th position so the difference between 1 and 2 is the same distance as 6 to 7 with valves. See Bass Trombone Fingering Chart.

Solfege:

Do - Ti - Do - Ti - La - Do

Understanding Intonation: Pythagorean Scale

Theoretically, taking the mathematical ratio for 12 perfect fifths and adding them together should produce the same exact note where we started, or at least the same note up 7 octaves. But we get:

C1	G1	D2	A2	E3	B4	F#4	C#5	G#5	D#6	A#7	F7	
to	to	to	to	to	to	to	to	to	to	to	to	
G1	D2	A3	E3	B4	F#4	C#5	G#5	D#6	A#7	F7	C8	
3/2	3/2	3/2	3/2	3/2	3/2	3/2	3/2	3/2	3/2	3/2	3/2	
1.5 x	1.5 x	1.5 x	1.5 x	1.5 x	1.5 x	1.5 x	1.5 x	1.5 x	1.5 x	1.5 x	1.5 =	129.746

On the other hand, add the ratios of 7 octaves, and we get:

C1 to C2	C2 to C3	C3 to C4	C4 to C5	C5 to C6	C6 to C7	C7 to C8	
2/1 x	2/1 x	2/1 x	2/1 x	2/1 x	2/1 x	2/1 =	128

The octaves do not match. C8 overshoots the octave by about a quarter of a half step. This can create an excruciating octave to the ears which is so out of tune that it renders the note unusable. Pythagorean tuning also creates fast beating thirds, sixths and smaller diatonic semitones, i.e. seconds and sevenths.

Technique: When should I teach intonation?

“Always!”

When do you recommend using these exercises?

I have used these exercises from beginning band to college level. Obviously, some of the notes are too high for beginning band, but by the end of the year, if they can play with a steady tone, try some of the easier exercises.

At the college level, this is a great way for students to truly understand pitch tendencies and how to make the chords beautiful with **just intonation**.

Shameless plug: Try out my other chorales and exercises at:

www.sevierband.com

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For more exercises and arrangements go to

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Exercise

#4

Perfect 4th

For more exercises and arrangements go to
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Teaching Hints:

Concert B^b: Octaves

Listen to and adjust octaves to match pitch.

Oboe:

There are several fingerings for High B^b find the one that works best for your Oboe and is the most in tune.

●●●●●● or ●●●●●● or ●●●●●●

Tuning Single Reed Mouthpieces:

If you have the correct embouchure, formation of inside of mouth, reed combination then you should play the following note (this can help with better tone):

Clarinet C above the staff.

Bass Clarinet F at the top of the staff.

Alto Sax A in the staff.

Tenor Sax G at the top of the staff.

Bari Sax D at the top of the staff.

Brass Mouthpiece Exercises:

Play some of these exercises with just your mouthpiece. Listening and matching pitch with your lips and air is the best way to make sure you are always in tune.

Solfège:

Do - Sol - Do

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Example



Chorale Example #1

I - vi - ii - V - I

Notes to adjust in Bb Major	Scale Degree	3rd	6th	7th
Concert	D	G	A	
F	A	D	E	
Bb	E	A	B	
Eb	B	E	F	
Adjust by		-14	-16	-12

Teaching Hints:

Key:

I have these chorales in every key. Yes you can look through and see why some keys are much harder for bands to play in tune. I have hints to help adjust pitch in certain keys so that you are playing in tune.

Example:

Alto saxophone is moderately sharp on D. In the key of concert D that puts alto saxophones playing the major third on a note that is moderately sharp already. You will have to use an alternate fingering to be able to play that in tune because you are almost 50 cents off between the two.

Example:

Trumpet D is moderately sharp, Trombone C above the staff is moderately flat. They are supposed to be playing the exact same note. They are going to have to listen and adjust if it is going to sound the same.

132 Chorales and Hints at www.sevierband.com

Example

#2

**Chorale #2 Key of F
I - IV - V - I**

Notes to adjust in F Major	Scale Degree	3rd	6th	7th
	Concert	A	D	E
	F	E	A	B
	Bb	B	E	F#
	Eb	F#	B	C#
	Adjust by	-14	-16	-12

Teaching Hints:

Key:

Key of F shows a few problems; Alto sax is flat on B, trumpets are sharp on E which is the same sounding note.

You start to see why some keys are harder to play in than others with pitch tendencies added into just intonation.

132 Chorales and Hints at www.sevierband.com