

*Equal  
Temperaments*

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# *Equal Temperaments*

If 12 equal tones per octave (12ET) presented the perfect solution we could stop right there and proceed no further. However, the thirds and sixths of 12ET are quite horrible and full out harmony, especially with sustaining fixed instruments, has a horrible amount of harmonic distortion. Somewhat miraculously, a well tuned grand piano can mitigate this dissonance. I would conjecture that the overtone content due to the striking of the string is inharmonic, minimizing the dissonance of the thirds and sixths which are almost a seventh of a semitone out of tune. As well, the bell-like sounds of the piano gently fade away as the ear attempts to pull the pitches into tune. The perfect fourths, fifths, major seconds and minor sevenths of 12ET however are excellent, being only a few cents from just. Again we are dealing with the necessary choice of balance between the thirds and fifths (C-G-D-A-E). Without adding more notes there is no solution to this compromise of thirds and fifths regardless of the type of temperament used. Finally, in 12ET the tritone is excellent and ambiguous and without the irrational perfection of the square root of 2 it would be hard to imagine music of the last century, whether classical or jazz or so on. But, play a chord tuned to just intonation on the piano and it sounds out of tune! The voicing of the piano is designed for temperaments not tunings.

The advantages of 12ET are of course numerous, unlimited modulation and parallelism for starters. As well there is an even pitch center when moving between extremely related chords. In Meantone and some Well Tempered scales extremely related chords, chords at opposite ends of the scale around the wolf interval, are on a different plane pitch wise. Not only is it extreme to move from one of these chords to the other key wise, one also has to negotiate a rise or fall of the pitch between the two chords that are above and below an overall common center of pitch. This is best exemplified by the split keys introduced on harpsichords. Yes, this was to expand the number of chords available, especially in Meantone Temperaments, but between, say an E and Ab major chord, the split key as well exemplifies that the two chords are not on the same pitch plane as the ear is very quick to tell! In 12ET there is one pitch center common to all the chords. Not necessarily so with other temperaments. As an example, 24ET is really comprised of two 12ET scales offset by a quarter-tone or 50 cents. There are then two pitch centers and it is very noticeable when moving a chord from one 12ET set to the other 12ET set in the 24ET context.

How then to combine the advantages of equal temperament with better tuned thirds and sixths? The fourths and fifths in 12ET are barely 2 cents different from just. The major thirds and sixths are around 15 cents sharp and the minor thirds and sixths around 15 cents flat from just. If the thirds and sixths have to be compromised, this is the direction to compromise them in. Sharp major thirds/sixths are brighter leading to brighter major keys and flat minor thirds/sixths are depressed leading to more subdued minor keys. This is a very important quality of 12ET that we may take for granted or at least are not necessarily aware of as a quality of the music we compose and listen to. When in our search for better equal temperaments if everything is turned upside down with flat major thirds/sixths and fourths, sharp minor thirds/sixths and fifths then things can become quite skewered. What is desired then is to keep the fourths and fifths close to where they are, lower the major thirds/sixths and raise the minor thirds/sixths. How to do this?

Consonant harmony is primarily the domain of 2, 3 and 5 limit ratios. Pitch relations that aren't 2, 3 and 5 limit ratios sound out of tune regardless how we pretend we can become acclimatized to higher number limits. It is all very well to play in 17ET, 19ET or 22 ET but their dissonant characteristics quickly become apparent. It can be argued that the 7 limit ratios are pushing the bounds of consonant harmony but they are also almost completely removed from our experience. The 5 limit ratios of 64/45 and 45/32 are closer to the square root of 2 than the 7 limit ratios of 10/7 and 7/5. The minor seventh interval is made up of two perfect fourths and in no way implies the 7/4 ratio. If the equal temperament doesn't obey the physical conditions that have already been laid out then there is no point pretending that consonant harmony is

possible, and that in some way the inherent out of tune intervals are acceptable because of the mathematical construct of the temperament. This is putting the mathematical satisfaction of number deafly above the pleasure of the ear.

Harmonically we will have to go all the way up to 31ET before the above conditions are met and even then the fourth and fifth are a little flatter and sharper than we would like. 31ET gives us almost the best average 7 limit ratios we are going to get in an equal temperament below 53ET. To improve substantially on the average 11 limit ratios of 31ET we would have to go all the way to 96ET. The average 5 limit ratios of 31ET are a little higher than we would expect but much of that is from the major second being almost a true meantone between the 10/9 and 9/8 ratios (and similarly the minor seventh between the 16/9 and 9/5 ratios). Hard to imagine in the universe a necessity for 13 limit ratios! If we multiply the "average deviation from just" by the number of tones in the equal temperament then 31ET comes out on top for both the average 7 and 11 limit ratios. Again it's a little lower in the average 5 limit ratio multiplied by the size of the temperament but not by overmuch. So 31ET is by far our next best stop, especially if we wish to venture 7 and 11 limit ratios, but 31 notes is a lot more notes to deal with than just 12! With that in mind it is a long way to 43 ET and then the almost perfect 5 limit ratios of 53ET with not bad 7 limit ratios. 43ET sits very nicely between the almost pure thirds of 31ET and the almost pure fifths of 12ET. (See the "ET Average Deviation from Just" page)

All the tempered scales to 24ET are given though one can question the necessity of doing so as 31ET is the first equal temperament that holds out any improvement over 12ET. 31ET also forms the basis of Huygens' meantone temperament which is almost identical to 1/4 Syntonic Comma meantone temperament. Even 24ET questions the point. Dividing the semitone into 2, 3 or 4 equal parts brings us no closer to being in tune. The thirds and sixths of 24ET and 36ET are exactly as bad as 12ET and those of 48ET are hardly much better but now opposite to what they should be flat and sharp wise which is even worse! The choice of these divisions of the semitone for those wishing to open up new vistas belie that not much thought has gone into the problems inherent to equal temperaments and tuning.

34ET and 41ET on the 5 Limit average are slightly better than 31ET and 43ET but both 34ET and 41ET have intervals tempered in the wrong direction as do 46ET and 50ET. 50ET as well has intervals more out of tune than one should expect with this many notes.

Finally, all our problems of the 5 limit ratio are solved by the near perfection of 53ET whose step of 22.64 cents is in between the size of the Syntonic Comma of 21.51 cents and the Ditonic comma of 23.46 cents. The average 5 limit ratio deviation from just is approximately 1 cent. The 7 limit is not bad, the 13 limit is excellent though the 11 limit could be better. Notational, compositional and realization problems are staggering. As well, being the equivalent of 5 limit Just Intonation, the 53ET diatonic scale requires 8 notes instead of 7, as do those temperaments which have both the 10/9 and 9/8 major seconds available. 53ET in effect means we can modulate to 53 keys in the octave! As if there is not enough to do modulating the 7 diatonic notes of 12ET to 12 different keys, let alone 31 in 31ET, 43 in 43ET and 53 in 53ET. Yet 31ET, 43ET and 53ET are our only real options as concerning equal temperaments past 12ET. Looking at the "Average Deviation from Just" chart and multiplying the average deviation by the number of tones, we can see how excellent the 5 (and 13) limit ratios of 53ET are. We can also see, considering how many notes we are dealing with, that the next entry in the list is 12ET, which now no longer looks so bad. Yet if we want to explore in any way 7, 11 and even 13 limit ratios then 12ET is at the very, very bottom of the list for the 7, 11 and 13 limits. These ratio limits are not even remotely implied in 12ET, being for the most part removed by a third to half semitone from the pitches of 12ET.

And if the folly of 31ET, 43ET and 53ET isn't enough it is hard to imagine those that feel the need and necessity for 96ET other than attempting to approach the continuum!

**1 Tone Equal Temperament**

1ET	Ratio	Cents	+/- from 12ET
2^(1/1)	2	1200	0
2^(0/1)	1	0	0

5 Limit				+/- from Just	
				Avg.->	0.00
2/1	1200			0	
1/1	0			0	

7 Limit				+/- from Just	
				Avg.->	

**2 Tone Equal Temperament**

2ET	Ratio	Cents	+/- from 12ET
2^(2/2)	2	1200	0
2^(1/2)	1.414214	600	0
2^(0/2)	1	0	0

5 Limit				+/- from Just	
				Avg.->	9.78
2/1	1200			0	
45/32	590.22	64/45	609.78	9.78	-9.78
1/1	0			0	

7 Limit				+/- from Just	
				Avg.->	17.49
7/5	582.51	10/7	617.49	17.49	-17.49

**3 Tone Equal Temperament**

3ET	Ratio	Cents	+/- from 12ET
2^(3/3)	2	1200	0
2^(2/3)	1.587401	800	0
2^(1/3)	1.259921	400	0
2^(0/3)	1	0	0

5 Limit				+/- from Just	
				Avg.->	13.69
2/1	1200			0	
8/5	813.69			-13.69	
5/4	386.31			13.69	
1/1	0			0	

7 Limit				+/- from Just	
				Avg.->	35.08
14/9	764.92			35.08	
9/7	435.08			-35.08	

**4 Tone Equal Temperament**

4ET	Ratio	Cents	+/- from 12ET
2^(4/4)	2	1200	0
2^(3/4)	1.681793	900	0
2^(2/4)	1.414214	600	0
2^(1/4)	1.189207	300	0
2^(0/4)	1	0	0

5 Limit				+/- from Just	
				Avg.->	12.71
2/1	1200			0	
5/3	884.36			15.64	
45/32	590.22	64/45	609.78	9.78	-9.78
6/5	315.64			-15.64	
1/1	0			0	

7 Limit				+/- from Just	
				Avg.->	25.31
12/7	933.13			-33.13	
7/5	582.51	10/7	617.49	17.49	-17.49
7/6	266.87			33.13	

**5 Tone Equal Temperament**

5ET	Ratio	Cents	+/- from 12ET
2^(5/5)	2	1200	0
2^(4/5)	1.741101	960	-40
2^(3/5)	1.515717	720	20
2^(2/5)	1.319508	480	-20
2^(1/5)	1.148698	240	40
2^(0/5)	1	0	0

5 Limit				+/- from Just	
				Avg.->	27.07
2/1	1200			0	
16/9	996.09			-36.09	
3/2	701.96			18.04	
4/3	498.04			-18.04	
9/8	203.91			36.09	
1/1	0			0	

7 Limit				+/- from Just	
				Avg.->	17.85
7/4	968.83	12/7	933.13	-8.83	26.87
8/7	231.17	7/6	266.87	8.83	-26.87

1 ET

"keyboard mapping"				
0,1	-2	Unis.	0,0	
0,0	Unis.	-2	0,1	

1ET	Ratio	Cents
2^(1/1)	2	1200
2^(0/1)	1	0

11 Limit	+/- from Just	
	Avg.->	

13 Limit					+/- from Just	
					Avg.->	

2 ET

"keyboard mapping"				
0,2	+2	Unis.	0,0	
0,1	-2	-2	0,1	
0,0	Unis.	+2	0,2	

2ET	Ratio	Cents
2^(2/2)	2	1200
2^(1/2)	1.414214	600
2^(0/2)	1	0

11 Limit	+/- from Just	
	Avg.->	

13 Limit					+/- from Just	
					Avg.->	36.62
13/9	636.62	18/13	563.38		-36.62	36.62

3 ET

"keyboard mapping"				
0,3	-3	Unis.	0,0	
0,2	+2	-2	0,1	
0,1	-2	+2	0,2	
0,0	Unis.	-3	0,3	

3ET	Ratio	Cents
2^(3/3)	2	1200
2^(2/3)	1.587401	800
2^(1/3)	1.259921	400
2^(0/3)	1	0

11 Limit	+/- from Just	
	Avg.->	17.51
11/7	782.49	17.51
14/11	417.51	-17.51

13 Limit					+/- from Just	
					Avg.->	30.25
21/13	830.25				-30.25	
26/21	369.75				30.25	

4 ET

"keyboard mapping"				
0,4	+3	Unis.	0,0	
0,3	-3	-2	0,1	
0,2	+2	+2	0,2	
0,1	-2	-3	0,3	
0,0	Unis.	+3	0,4	

4ET	Ratio	Cents
2^(4/4)	2	1200
2^(3/4)	1.681793	900
2^(2/4)	1.414214	600
2^(1/4)	1.189207	300
2^(0/4)	1	0

11 Limit	+/- from Just	
	Avg.->	

13 Limit					+/- from Just	
					Avg.->	23.70
22/13	910.79				-10.79	
13/9	636.62	18/13	563.38		-36.62	36.62
13/11	289.21				10.79	

5 ET

"keyboard mapping"				
0,5	P4	Unis.	0,0	
0,4	+3	-2	0,1	
0,3	-3	+2	0,2	
0,2	+2	-3	0,3	
0,1	-2	+3	0,4	
0,0	Unis.	P4	0,5	

5ET	Ratio	Cents
2^(5/5)	2	1200
2^(4/5)	1.741101	960
2^(3/5)	1.515717	720
2^(2/5)	1.319508	480
2^(1/5)	1.148698	240
2^(0/5)	1	0

11 Limit	+/- from Just	
	Avg.->	

13 Limit					+/- from Just	
					Avg.->	16.76
26/15	952.26				7.74	
20/13	745.79				-25.79	
13/10	454.21				25.79	
15/13	247.74				-7.74	

6 Tone Equal Temperament

6ET	Ratio	Cents	+/- from 12ET
2^(6/6)	2	1200	0
2^(5/6)	1.781797	1000	0
2^(4/6)	1.587401	800	0
2^(3/6)	1.414214	600	0
2^(2/6)	1.259921	400	0
2^(1/6)	1.122462	200	0
2^(0/6)	1	0	0

5 Limit				+/- from Just	
				Avg.->	11.24
2/1	1200			0	
16/9	996.09	9/5	1017.60	3.91	-17.60
8/5	813.69			-13.69	
45/32	590.22	64/45	609.78	9.78	-9.78
5/4	386.31			13.69	
9/8	203.91	10/9	182.40	-3.91	17.60
1/1	0			0	

7 Limit				+/- from Just	
				Avg.->	27.92
7/4	968.83			31.17	
14/9	764.92			35.08	
7/5	582.51	10/7	617.49	17.49	-17.49
9/7	435.08			-35.08	
8/7	231.17			-31.17	

7 Tone Equal Temperament

7ET	Ratio	Cents	+/- from 12ET
2^(7/7)	2	1200	0
2^(6/7)	1.811447	1028.57	28.57
2^(5/7)	1.640671	857.14	-42.86
2^(4/7)	1.485994	685.71	-14.29
2^(3/7)	1.345900	514.29	14.29
2^(2/7)	1.219014	342.86	42.86
2^(1/7)	1.104090	171.43	-28.57
2^(0/7)	1	0	0

5 Limit				+/- from Just	
				Avg.->	21.73
2/1	1200			0	
16/9	996.09	9/5	1017.60	32.48	10.98
5/3	884.36			-27.22	
3/2	701.96			-16.24	
4/3	498.04			16.24	
6/5	315.64			27.22	
9/8	203.91	10/9	182.40	-32.48	-10.98
1/1	0			0	

7 Limit				+/- from Just	
				Avg.->	

8 Tone Equal Temperament

8ET	Ratio	Cents	+/- from 12ET
2^(8/8)	2	1200	0
2^(7/8)	1.834008	1050	+/- 50
2^(6/8)	1.681793	900	0
2^(5/8)	1.542211	750	+/- 50
2^(4/8)	1.414214	600	0
2^(3/8)	1.296840	450	+/- 50
2^(2/8)	1.189207	300	0
2^(1/8)	1.090508	150	+/- 50
2^(0/8)	1	0	0

5 Limit				+/- from Just	
				Avg.->	24.02
2/1	1200			0	
9/5	1017.60	15/8	1088.27	32.40	-38.27
5/3	884.36			15.64	
45/32	590.22	64/45	609.78	9.78	-9.78
6/5	315.64			-15.64	
10/9	182.40	16/15	111.73	-32.40	38.27
1/1	0			0	

7 Limit				+/- from Just	
				Avg.->	21.84
12/7	933.13			-33.13	
14/9	764.92			-14.92	
7/5	582.51	10/7	617.49	17.49	-17.49
9/7	435.08			14.92	
7/6	266.87			33.13	

6 ET

"keyboard mapping"				
0,6	x4		Unis.	0,0
0,5	P4	-2		0,1
0,4	+3		+2	0,2
0,3	-3		-3	0,3
0,2	+2		+3	0,4
0,1	-2		P4	0,5
0,0	Unis.		x4	0,6

6ET	Ratio	Cents
2^(6/6)	2	1200
2^(5/6)	1.781797	1000
2^(4/6)	1.587401	800
2^(3/6)	1.414214	600
2^(2/6)	1.259921	400
2^(1/6)	1.122462	200
2^(0/6)	1	0

11 Limit				+/- from Just	
				Avg.->	
					26.25
20/11	1035.00				-35.00
11/7	782.49				17.51
14/11	417.51				-17.51
11/10	165.00				35.00

13 Limit				+/- from Just	
				Avg.->	
					33.44
21/13	830.25				-30.25
13/9	636.62	18/13	563.38		-36.62 36.62
26/21	369.75				30.25

7 ET

"keyboard mapping"				
0,7	P5		Unis.	0,0
0,6	x4	-2		0,1
0,5	P4	+2		0,2
0,4	+3		-3	0,3
0,3	-3		+3	0,4
0,2	+2		P4	0,5
0,1	-2		x4	0,6
0,0	Unis.		P5	0,7

7ET	Ratio	Cents
2^(7/7)	2	1200
2^(6/7)	1.811447	1028.57
2^(5/7)	1.640671	857.14
2^(4/7)	1.485994	685.71
2^(3/7)	1.345900	514.29
2^(2/7)	1.219014	342.86
2^(1/7)	1.104090	171.43
2^(0/7)	1	0

11 Limit				+/- from Just	
				Avg.->	
					18.29
20/11	1035.00	11/6	1049.36		-6.42 -20.79
18/11	852.59				4.55
16/11	648.68	22/15	663.05		37.03 22.67
11/8	551.32	15/11	536.95		-37.03 -22.67
11/9	347.41				-4.55
11/10	165.00	12/11	150.64		6.42 20.79

13 Limit				+/- from Just	
				Avg.->	
					25.45
24/13	1061.43				-32.86
13/8	840.53	21/13	830.25		16.62 26.89
16/13	359.47	26/21	369.75		-16.62 -26.89
13/12	138.57				32.86

8 ET

"keyboard mapping"				
0,8	-6		Unis.	0,0
0,7	P5	-2		0,1
0,6	x4	+2		0,2
0,5	P4	-3		0,3
0,4	+3		+3	0,4
0,3	-3		P4	0,5
0,2	+2		x4	0,6
0,1	-2		P5	0,7
0,0	Unis.		-6	0,8

8ET	Ratio	Cents
2^(8/8)	2	1200
2^(7/8)	1.834008	1050
2^(6/8)	1.681793	900
2^(5/8)	1.542211	750
2^(4/8)	1.414214	600
2^(3/8)	1.296840	450
2^(2/8)	1.189207	300
2^(1/8)	1.090508	150
2^(0/8)	1	0

11 Limit				+/- from Just	
				Avg.->	
					16.04
20/11	1035.00	11/6	1049.36		15.00 0.64
11/7	782.49				-32.49
14/11	417.51				32.49
11/10	165.00	12/11	150.64		-15.00 -0.64

13 Limit				+/- from Just	
				Avg.->	
					16.95
24/13	1061.43	13/7	1071.70		-11.43 -21.70
22/13	910.79				-10.79
20/13	745.79				4.21
13/9	636.62	18/13	563.38		-36.62 36.62
13/10	454.21				-4.21
13/11	289.21				10.79
13/12	138.57	14/13	128.30		11.43 21.70

9 Tone Equal Temperament

9ET	Ratio	Cents	+/- from 12ET
2^(9/9)	2	1200	0
2^(8/9)	1.851749	1066.67	-33.33
2^(7/9)	1.714488	933.33	33.33
2^(6/9)	1.587401	800	0
2^(5/9)	1.469734	666.67	-33.33
2^(4/9)	1.360790	533.33	33.33
2^(3/9)	1.259921	400	0
2^(2/9)	1.166529	266.67	-33.33
2^(1/9)	1.080060	133.33	33.33
2^(0/9)	1	0	0

5 Limit				+/- from Just	
				Avg.->	23.53
2/1	1200.00			0	
15/8	1088.27			-21.60	
8/5	813.69			-13.69	
3/2	701.96			-35.29	
4/3	498.04			35.29	
5/4	386.31			13.69	
16/15	111.73			21.60	
1/1	0.00			0	

7 Limit				+/- from Just	
				Avg.->	23.59
12/7	933.13	7/4	968.83	0.20	-35.49
14/9	764.92			35.08	
9/7	435.08			-35.08	
7/6	266.87	8/7	231.17	-0.20	35.49

10 Tone Equal Temperament

10ET	Ratio	Cents	+/- from 12ET
2^(10/10)	2	1200	0
2^(9/10)	1.866066	1080	-20
2^(8/10)	1.741101	960	-40
2^(7/10)	1.624505	840	40
2^(6/10)	1.515717	720	20
2^(5/10)	1.414214	600	0
2^(4/10)	1.319508	480	-20
2^(3/10)	1.231144	360	-40
2^(2/10)	1.148698	240	40
2^(1/10)	1.071773	120	20
2^(0/10)	1	0	0

5 Limit				+/- from Just	
				Avg.->	19.70
2/1	1200			0	
15/8	1088.27			-8.27	
16/9	996.09			-36.09	
8/5	813.69			26.31	
3/2	701.96			18.04	
45/32	590.22	64/45	609.78	9.78	-9.78
4/3	498.04			-18.04	
5/4	386.31			-26.31	
9/8	203.91			36.09	
16/15	111.73			8.27	
1/1	0			0	

7 Limit				+/- from Just	
				Avg.->	17.73
7/4	968.83	12/7	933.13	-8.83	26.87
7/5	582.51	10/7	617.49	17.49	-17.49
8/7	231.17	7/6	266.87	8.83	-26.87

11 Tone Equal Temperament

11ET	Ratio	Cents	+/- from 12ET
2^(11/11)	2	1200	0
2^(10/11)	1.877862	1090.91	-9.09
2^(9/11)	1.763183	981.82	-18.18
2^(8/11)	1.655507	872.73	-27.27
2^(7/11)	1.554406	763.64	-36.36
2^(6/11)	1.459480	654.55	-45.45
2^(5/11)	1.370351	545.45	45.45
2^(4/11)	1.286665	436.36	36.36
2^(3/11)	1.208089	327.27	27.27
2^(2/11)	1.134313	218.18	18.18
2^(1/11)	1.065041	109.09	9.09
2^(0/11)	1	0	0

5 Limit				+/- from Just	
				Avg.->	16.08
2/1	1200			0	
15/8	1088.27			2.64	
16/9	996.09	9/5	1017.60	-14.27	-35.78
5/3	884.36			-11.63	
6/5	315.64			11.63	
9/8	203.91	10/9	182.40	14.27	35.78
16/15	111.73			-2.64	
1/1	0			0	

7 Limit				+/- from Just	
				Avg.->	17.11
7/4	968.83			12.99	
14/9	764.92			-1.28	
10/7	617.49			37.06	
7/5	582.51			-37.06	
9/7	435.08			1.28	
8/7	231.17			-12.99	



9 ET

"keyboard mapping"				
0,9	+6	Unis.	0,0	
0,8	-6	-2	0,1	
0,7	P5	+2	0,2	
0,6	x4	-3	0,3	
0,5	P4	+3	0,4	
0,4	+3	P4	0,5	
0,3	-3	x4	0,6	
0,2	+2	P5	0,7	
0,1	-2	-6	0,8	
0,0	Unis.	+6	0,9	

9ET	Ratio	Cents
2^(9/9)	2	1200
2^(8/9)	1.851749	1066.67
2^(7/9)	1.714488	933.33
2^(6/9)	1.587401	800
2^(5/9)	1.469734	666.67
2^(4/9)	1.360790	533.33
2^(3/9)	1.259921	400
2^(2/9)	1.166529	266.67
2^(1/9)	1.080060	133.33
2^(0/9)	1	0

11 Limit				+/- from Just	
				Avg.->	
					17.62
20/11	1035.00	11/6	1049.36	31.67	17.30
11/7	782.49			17.51	
16/11	648.68	22/15	663.05	17.98	3.62
11/8	551.32	15/11	536.95	-17.98	-3.62
14/11	417.51			-17.51	
11/10	165.00	12/11	150.64	-31.67	-17.30

13 Limit				+/- from Just	
				Avg.->	
					18.67
24/13	1061.43	13/7	1071.70	5.24	-5.04
22/13	910.79	26/15	952.26	22.54	-18.93
21/13	830.25			-30.25	
13/9	636.62			30.05	
18/13	563.38			-30.05	
26/21	369.75			30.25	
13/11	289.21	15/13	247.74	-22.54	18.93
13/12	138.57	14/13	128.30	-5.24	5.04

10 ET

"keyboard mapping"				
0,10	-7	Unis.	0,0	
0,9	+6	-2	0,1	
0,8	-6	+2	0,2	
0,7	P5	-3	0,3	
0,6	x4	+3	0,4	
0,5	P4	P4	0,5	
0,4	+3	x4	0,6	
0,3	-3	P5	0,7	
0,2	+2	-6	0,8	
0,1	-2	+6	0,9	
0,0	Unis.	-7	0,10	

10ET	Ratio	Cents
2^(10/10)	2	1200
2^(9/10)	1.866066	1080
2^(8/10)	1.741101	960
2^(7/10)	1.624505	840
2^(6/10)	1.515717	720
2^(5/10)	1.414214	600
2^(4/10)	1.319508	480
2^(3/10)	1.231144	360
2^(2/10)	1.148698	240
2^(1/10)	1.071773	120
2^(0/10)	1	0

11 Limit				+/- from Just	
				Avg.->	
					27.56
11/6	1049.36	21/11	1119.46	30.64	-39.46
18/11	852.59			-12.59	
11/9	347.41			12.59	
12/11	150.64	22/21	80.54	-30.64	39.46

13 Limit				+/- from Just	
				Avg.->	
					15.33
24/13	1061.43	13/7	1071.70	18.57	8.30
26/15	952.26			7.74	
13/8	840.53	21/13	830.25	-0.53	9.75
20/13	745.79			-25.79	
13/9	636.62	18/13	563.38	-36.62	36.62
13/10	454.21			25.79	
16/13	359.47	26/21	369.75	0.53	-9.75
15/13	247.74			-7.74	
13/12	138.57	14/13	128.30	-18.57	-8.30

11 ET

"keyboard mapping"				
0,11	+7	Unis.	0,0	
0,10	-7	-2	0,1	
0,9	+6	+2	0,2	
0,8	-6	-3	0,3	
0,7	P5	+3	0,4	
0,6	x4	P4	0,5	
0,5	P4	x4	0,6	
0,4	+3	P5	0,7	
0,3	-3	-6	0,8	
0,2	+2	+6	0,9	
0,1	-2	-7	0,10	
0,0	Unis.	+7	0,11	

11ET	Ratio	Cents
2^(11/11)	2	1200
2^(10/11)	1.877862	1090.91
2^(9/11)	1.763183	981.82
2^(8/11)	1.655507	872.73
2^(7/11)	1.554406	763.64
2^(6/11)	1.459480	654.55
2^(5/11)	1.370351	545.45
2^(4/11)	1.286665	436.36
2^(3/11)	1.208089	327.27
2^(2/11)	1.134313	218.18
2^(1/11)	1.065041	109.09
2^(0/11)	1	0

11 Limit				+/- from Just	
				Avg.->	
					16.38
21/11	1119.46			-28.55	
18/11	852.59			20.14	
11/7	782.49			-18.86	
16/11	648.68	22/15	663.05	5.86	-8.50
11/8	551.32	15/11	536.95	-5.86	8.50
14/11	417.51			18.86	
11/9	347.41			-20.14	
22/21	80.54			28.55	

13 Limit				+/- from Just	
				Avg.->	
					26.33
13/7	1071.70	24/13	1061.43	19.21	29.48
26/15	952.26			29.56	
13/8	840.53	22/13	910.79	32.20	-38.06
20/13	745.79			17.85	
13/9	636.62			17.93	
18/13	563.38			-17.93	
13/10	454.21			-17.85	
16/13	359.47	13/11	289.21	-32.20	38.06
15/13	247.74			-29.56	
14/13	128.30	13/12	138.57	-19.21	-29.48

**12 Tone Equal Temperament**

Major Scale Intervals -> 2 2 1 2 2 2 1

12ET	Ratio	Cents	+/- from 12ET
2^(12/12)	2	1200	0
2^(11/12)	1.887749	1100	0
2^(10/12)	1.781797	1000	0
2^(9/12)	1.681793	900	0
2^(8/12)	1.587401	800	0
2^(7/12)	1.498307	700	0
2^(6/12)	1.414214	600	0
2^(5/12)	1.334840	500	0
2^(4/12)	1.259921	400	0
2^(3/12)	1.189207	300	0
2^(2/12)	1.122462	200	0
2^(1/12)	1.059463	100	0
2^(0/12)	1	0	0

5 Limit				+/- from Just	
				Avg.->	10.61
2/1	1200			0	
15/8	1088.27			11.73	
16/9	996.09	9/5	1017.60	3.91	-17.60
5/3	884.36			15.64	
8/5	813.69			-13.69	
3/2	701.96			-1.96	
45/32	590.22	64/45	609.78	9.78	-9.78
4/3	498.04			1.96	
5/4	386.31			13.69	
6/5	315.64			-15.64	
9/8	203.91	10/9	182.40	-3.91	17.60
16/15	111.73			-11.73	
1/1	0			0	

7 Limit				+/- from Just	
				Avg.->	29.22
7/4	968.83			31.17	
12/7	933.13			-33.13	
14/9	764.92			35.08	
7/5	582.51	10/7	617.49	17.49	-17.49
9/7	435.08			-35.08	
7/6	266.87			33.13	
8/7	231.17			-31.17	

**13 Tone Equal Temperament**

13ET	Ratio	Cents	+/- from 12ET
2^(13/13)	2	1200	0
2^(12/13)	1.896155	1107.69	7.69
2^(11/13)	1.797702	1015.38	15.38
2^(10/13)	1.704361	923.08	23.08
2^(9/13)	1.615866	830.77	30.77
2^(8/13)	1.531966	738.46	38.46
2^(7/13)	1.452423	646.15	46.15
2^(6/13)	1.377009	553.85	-46.15
2^(5/13)	1.305512	461.54	-38.46
2^(4/13)	1.237726	369.23	-30.77
2^(3/13)	1.173460	276.92	-23.08
2^(2/13)	1.112531	184.62	-15.38
2^(1/13)	1.054766	92.31	-7.69
2^(0/13)	1	0	0

5 Limit				+/- from Just	
				Avg.->	24.23
2/1	1200			0	
15/8	1088.27			19.42	
16/9	996.09	9/5	1017.60	19.29	-2.21
5/3	884.36			38.72	
8/5	813.69			17.08	
3/2	701.96			36.51	
64/45	609.78			36.38	
45/32	590.22			-36.38	
4/3	498.04			-36.51	
5/4	386.31			-17.08	
6/5	315.64			-38.72	
9/8	203.91	10/9	182.40	-19.29	2.21
16/15	111.73			-19.42	
1/1	0			0	

7 Limit				+/- from Just	
				Avg.->	21.72
12/7	933.13			-10.05	
14/9	764.92			-26.45	
10/7	617.49			28.67	
7/5	582.51			-28.67	
9/7	435.08			26.45	
7/6	266.87			10.05	

12 ET

"keyboard mapping"			
0,12	8va	Unis.	0,0
0,11	+7	-2	0,1
0,10	-7	+2	0,2
0,9	+6	-3	0,3
0,8	-6	+3	0,4
0,7	P5	P4	0,5
0,6	x4	x4	0,6
0,5	P4	P5	0,7
0,4	+3	-6	0,8
0,3	-3	+6	0,9
0,2	+2	-7	0,10
0,1	-2	+7	0,11
0,0	Unis.	8va	0,12

12ET	Ratio	Cents
2^(12/12)	2	1200
2^(11/12)	1.887749	1100
2^(10/12)	1.781797	1000
2^(9/12)	1.681793	900
2^(8/12)	1.587401	800
2^(7/12)	1.498307	700
2^(6/12)	1.414214	600
2^(5/12)	1.334840	500
2^(4/12)	1.259921	400
2^(3/12)	1.189207	300
2^(2/12)	1.122462	200
2^(1/12)	1.059463	100
2^(0/12)	1	0

11 Limit				+/- from Just	
				Avg.->	27.23
21/11	1119.46			-19.46	
20/11	1035.00			-35.00	
11/7	782.49			17.51	
22/15	663.05			36.95	
15/11	536.95			-36.95	
14/11	417.51			-17.51	
11/10	165.00			35.00	
22/21	80.54			19.46	

13 Limit				+/- from Just	
				Avg.->	27.61
25/13	1132.10	13/7	1071.70	-32.10	28.30
22/13	910.79			-10.79	
21/13	830.25			-30.25	
13/9	636.62	18/13	563.38	-36.62	36.62
26/21	369.75			30.25	
13/11	289.21			10.79	
26/25	67.90	14/13	128.30	32.10	-28.30

13 ET

"keyboard mapping"			
0,13	-2	Unis.	0,0
0,12	8va	-2	0,1
0,11	+7	+2	0,2
0,10	-7	-3	0,3
0,9	+6	+3	0,4
0,8	-6	P4	0,5
0,7	P5	x4	0,6
0,6	x4	P5	0,7
0,5	P4	-6	0,8
0,4	+3	+6	0,9
0,3	-3	-7	0,10
0,2	+2	+7	0,11
0,1	-2	8va	0,12
0,0	Unis.	-2	0,13

13ET	Ratio	Cents
2^(13/13)	2	1200
2^(12/13)	1.896155	1107.69
2^(11/13)	1.797702	1015.38
2^(10/13)	1.704361	923.08
2^(9/13)	1.615866	830.77
2^(8/13)	1.531966	738.46
2^(7/13)	1.452423	646.15
2^(6/13)	1.377009	553.85
2^(5/13)	1.305512	461.54
2^(4/13)	1.237726	369.23
2^(3/13)	1.173460	276.92
2^(2/13)	1.112531	184.62
2^(1/13)	1.054766	92.31
2^(0/13)	1	0

11 Limit				+/- from Just	
				Avg.->	17.77
21/11	1119.46			-11.77	
20/11	1035.00	11/6	1049.36	-19.61	-33.98
18/11	852.59			-21.82	
16/11	648.68	22/15	663.05	-2.53	-16.90
11/8	551.32	15/11	536.95	2.53	16.90
11/9	347.41			21.82	
11/10	165.00	12/11	150.64	19.61	33.98
22/21	80.54			11.77	

13 Limit				+/- from Just	
				Avg.->	16.13
25/13	1132.10	13/7	1071.70	-24.41	35.99
22/13	910.79	26/15	952.26	12.29	-29.18
13/8	840.53	21/13	830.25	-9.76	0.52
20/13	745.79			-7.32	
13/9	636.62			9.54	
18/13	563.38			-9.54	
13/10	454.21			7.32	
16/13	359.47	26/21	369.75	9.76	-0.52
13/11	289.21	15/13	247.74	-12.29	29.18
26/25	67.90	14/13	128.30	24.41	-35.99

14 Tone Equal Temperament

14ET	Ratio	Cents	+/- from 12ET
2^(14/14)	2	1200	0
2^(13/14)	1.903390	1114.29	14.29
2^(12/14)	1.811447	1028.57	28.57
2^(11/14)	1.723946	942.86	42.86
2^(10/14)	1.640671	857.14	-42.86
2^(9/14)	1.561418	771.43	-28.57
2^(8/14)	1.485994	685.71	-14.29
2^(7/14)	1.414214	600	0
2^(6/14)	1.345900	514.29	14.29
2^(5/14)	1.280887	428.57	28.57
2^(4/14)	1.219014	342.86	42.86
2^(3/14)	1.160129	257.14	-42.86
2^(2/14)	1.104090	171.43	-28.57
2^(1/14)	1.050757	85.71	-14.29
2^(0/14)	1	0	0

5 Limit				+/- from Just	
				Avg.->	20.45
2/1	1200			0	
15/8	1088.27			26.02	
16/9	996.09	9/5	1017.60	32.48	10.98
5/3	884.36			-27.22	
3/2	701.96			-16.24	
45/32	590.22	64/45	609.78	9.78	-9.78
4/3	498.04			16.24	
6/5	315.64			27.22	
9/8	203.91	10/9	182.40	-32.48	-10.98
16/15	111.73			-26.02	
1/1	0			0	

7 Limit				+/- from Just	
				Avg.->	14.92
12/7	933.13	7/4	968.83	9.73	-25.97
14/9	764.92			6.51	
7/5	582.51	10/7	617.49	17.49	-17.49
9/7	435.08			-6.51	
7/6	266.87	8/7	231.17	-9.73	25.97

15 Tone Equal Temperament

15ET	Ratio	Cents	+/- from 12ET
2^(15/15)	2	1200	0
2^(14/15)	1.909683	1120	20
2^(13/15)	1.823445	1040	40
2^(12/15)	1.741101	960	-40
2^(11/15)	1.662476	880	-20
2^(10/15)	1.587401	800	0
2^(9/15)	1.515717	720	20
2^(8/15)	1.447269	640	40
2^(7/15)	1.381913	560	-40
2^(6/15)	1.319508	480	-20
2^(5/15)	1.259921	400	0
2^(4/15)	1.203025	320	20
2^(3/15)	1.148698	240	40
2^(2/15)	1.096825	160	-40
2^(1/15)	1.047294	80	-20
2^(0/15)	1	0	0

5 Limit				+/- from Just	
				Avg.->	22.36
2/1	0			1200	
15/8	1088.27			31.73	
9/5	1017.60			22.40	
16/9	996.09			-36.09	
5/3	884.36			-4.36	
8/5	813.69			-13.69	
3/2	701.96			18.04	
64/45	609.78			30.22	
45/32	590.22			-30.22	
4/3	498.04			-18.04	
5/4	386.31			13.69	
6/5	315.64			4.36	
9/8	203.91			36.09	
10/9	182.40			-22.40	
16/15	111.73			-31.73	
1/1	0			0	

7 Limit				+/- from Just	
				Avg.->	23.32
7/4	968.83	12/7	933.13	-8.83	26.87
14/9	764.92			35.08	
10/7	617.49			22.51	
7/5	582.51			-22.51	
9/7	435.08			-35.08	
8/7	231.17	7/6	266.87	8.83	-26.87

14 ET

"keyboard mapping"			
0,14	+2	Unis.	0,0
0,13	-2	-2	0,1
0,12	8va	+2	0,2
0,11	+7	-3	0,3
0,10	-7	+3	0,4
0,9	+6	P4	0,5
0,8	-6	x4	0,6
0,7	P5	P5	0,7
0,6	x4	-6	0,8
0,5	P4	+6	0,9
0,4	+3	-7	0,10
0,3	-3	+7	0,11
0,2	+2	8va	0,12
0,1	-2	-2	0,13
0,0	Unis.	+2	0,14

14ET	Ratio	Cents
2^(14/14)	2	1200
2^(13/14)	1.903390	1114.29
2^(12/14)	1.811447	1028.57
2^(11/14)	1.723946	942.86
2^(10/14)	1.640671	857.14
2^(9/14)	1.561418	771.43
2^(8/14)	1.485994	685.71
2^(7/14)	1.414214	600
2^(6/14)	1.345900	514.29
2^(5/14)	1.280887	428.57
2^(4/14)	1.219014	342.86
2^(3/14)	1.160129	257.14
2^(2/14)	1.104090	171.43
2^(1/14)	1.050757	85.71
2^(0/14)	1	0

11 Limit				+/- from Just	
				Avg.->	15.39
21/11	1119.46			-5.18	
20/11	1035.00	11/6	1049.36	-6.42	-20.79
18/11	852.59			4.55	
11/7	782.49			-11.06	
16/11	648.68	22/15	663.05	37.03	22.67
11/8	551.32	15/11	536.95	-37.03	-22.67
14/11	417.51			11.06	
11/9	347.41			-4.55	
11/10	165.00	12/11	150.64	6.42	20.79
22/21	80.54			5.18	

13 Limit				+/- from Just	
				Avg.->	24.74
25/13	1132.10			-17.81	
24/13	1061.43			-32.86	
26/15	952.26	22/13	910.79	-9.40	32.07
13/8	840.53	21/13	830.25	16.62	26.89
20/13	745.79			25.64	
13/9	636.62	18/13	563.38	-36.62	36.62
13/10	454.21			-25.64	
16/13	359.47	26/21	369.75	-16.62	-26.89
15/13	247.74	13/11	289.21	9.40	-32.07
13/12	138.57			32.86	
26/25	67.90			17.81	

15 ET

"keyboard mapping"			
0,15	-3	Unis.	0,0
0,14	+2	-2	0,1
0,13	-2	+2	0,2
0,12	8va	-3	0,3
0,11	+7	+3	0,4
0,10	-7	P4	0,5
0,9	+6	x4	0,6
0,8	-6	P5	0,7
0,7	P5	-6	0,8
0,6	x4	+6	0,9
0,5	P4	-7	0,10
0,4	+3	+7	0,11
0,3	-3	8va	0,12
0,2	+2	-2	0,13
0,1	-2	+2	0,14
0,0	Unis.	-3	0,15

15ET	Ratio	Cents
2^(15/15)	2	1200
2^(14/15)	1.909683	1120
2^(13/15)	1.823445	1040
2^(12/15)	1.741101	960
2^(11/15)	1.662476	880
2^(10/15)	1.587401	800
2^(9/15)	1.515717	720
2^(8/15)	1.447269	640
2^(7/15)	1.381913	560
2^(6/15)	1.319508	480
2^(5/15)	1.259921	400
2^(4/15)	1.203025	320
2^(3/15)	1.148698	240
2^(2/15)	1.096825	160
2^(1/15)	1.047294	80
2^(0/15)	1	0

11 Limit				+/- from Just	
				Avg.->	13.08
21/11	1119.46			0.54	
20/11	1035.00	11/6	1049.36	5.00	-9.36
18/11	852.59			27.41	
11/7	782.49			17.51	
16/11	648.68	22/15	663.05	-8.68	-23.05
11/8	551.32	15/11	536.95	8.68	23.05
14/11	417.51			-17.51	
11/9	347.41			-27.41	
11/10	165.00	12/11	150.64	-5.00	9.36
22/21	80.54			-0.54	

13 Limit				+/- from Just	
				Avg.->	20.40
25/13	1132.10			-12.10	
24/13	1061.43	13/7	1071.70	-21.43	-31.70
26/15	952.26			7.74	
22/13	910.79			-30.79	
21/13	830.25			-30.25	
20/13	745.79			-25.79	
13/9	636.62			3.38	
18/13	563.38			-3.38	
13/10	454.21			25.79	
26/21	369.75			30.25	
13/11	289.21			30.79	
15/13	247.74			-7.74	
13/12	138.57	14/13	128.30	21.43	31.70
26/25	67.90			12.10	

16 Tone Equal Temperament

16ET	Ratio	Cents	+/- from 12ET
2^(16/16)	2	1200	0
2^(15/16)	1.915207	1125	25
2^(14/16)	1.834008	1050	+/- 50
2^(13/16)	1.756252	975	-25
2^(12/16)	1.681793	900	0
2^(11/16)	1.610490	825	25
2^(10/16)	1.542211	750	+/- 50
2^(9/16)	1.476826	675	-25
2^(8/16)	1.414214	600	0
2^(7/16)	1.354256	525	25
2^(6/16)	1.296840	450	+/- 50
2^(5/16)	1.241858	375	-25
2^(4/16)	1.189207	300	0
2^(3/16)	1.138789	225	25
2^(2/16)	1.090508	150	+/- 50
2^(1/16)	1.044274	75	-25
2^(0/16)	1	0	0

5 Limit				+/- from Just	
				Avg.->	21.99
2/1	1200			0	
15/8	1088.27			36.73	
9/5	1017.60			32.40	
16/9	996.09			-21.09	
5/3	884.36			15.64	
8/5	813.69			11.31	
3/2	701.96			-26.96	
45/32	590.22	64/45	609.78	9.78	-9.78
4/3	498.04			26.96	
5/4	386.31			-11.31	
6/5	315.64			-15.64	
9/8	203.91			21.09	
10/9	182.40			-32.40	
16/15	111.73			-36.73	
1/1	0			0	

7 Limit				+/- from Just	
				Avg.->	17.93
7/4	968.83			6.17	
12/7	933.13			-33.13	
14/9	764.92			-14.92	
7/5	582.51	10/7	617.49	17.49	-17.49
9/7	435.08			14.92	
7/6	266.87			33.13	
8/7	231.17			-6.17	

17 Tone Equal Temperament

17ET	Ratio	Cents	+/- from 12ET
2^(17/17)	2	1200	0
2^(16/17)	1.920093	1129.41	29.41
2^(15/17)	1.843379	1058.82	-41.18
2^(14/17)	1.769730	988.24	-11.76
2^(13/17)	1.699024	917.65	17.65
2^(12/17)	1.631142	847.06	47.06
2^(11/17)	1.565972	776.47	-23.53
2^(10/17)	1.503407	705.88	5.88
2^(9/17)	1.443341	635.29	35.29
2^(8/17)	1.385674	564.71	-35.29
2^(7/17)	1.330312	494.12	-5.88
2^(6/17)	1.277162	423.53	23.53
2^(5/17)	1.226135	352.94	-47.06
2^(4/17)	1.177147	282.35	-17.65
2^(3/17)	1.130116	211.76	11.76
2^(2/17)	1.084964	141.18	41.18
2^(1/17)	1.041616	70.59	-29.41
2^(0/17)	1	0	0

5 Limit				+/- from Just	
				Avg.->	23.25
2/1	1200			0	
15/8	1088.27			-29.45	
16/9	996.09	9/5	1017.60	-7.85	-29.36
5/3	884.36			33.29	
8/5	813.69			33.37	
3/2	701.96			3.93	
64/45	609.78			25.52	
45/32	590.22			-25.52	
4/3	498.04			-3.93	
5/4	386.31			-33.37	
6/5	315.64			-33.29	
9/8	203.91	10/9	182.40	7.85	29.36
16/15	111.73			29.45	
1/1	0			0	

7 Limit				+/- from Just	
				Avg.->	16.06
7/4	968.83			19.41	
12/7	933.13			-15.48	
14/9	764.92			11.55	
10/7	617.49			17.81	
7/5	582.51			-17.81	
9/7	435.08			-11.55	
7/6	266.87			15.48	
8/7	231.17			-19.41	

16 ET

"keyboard mapping"			
0,16	+3	Unis.	0,0
0,15	-3	-2	0,1
0,14	+2	+2	0,2
0,13	-2	-3	0,3
0,12	8va	+3	0,4
0,11	+7	P4	0,5
0,10	-7	x4	0,6
0,9	+6	P5	0,7
0,8	-6	-6	0,8
0,7	P5	+6	0,9
0,6	x4	-7	0,10
0,5	P4	+7	0,11
0,4	+3	8va	0,12
0,3	-3	-2	0,13
0,2	+2	+2	0,14
0,1	-2	-3	0,15
0,0	Unis.	+3	0,16

16ET	Ratio	Cents
2^(16/16)	2	1200
2^(15/16)	1.915207	1125
2^(14/16)	1.834008	1050
2^(13/16)	1.756252	975
2^(12/16)	1.681793	900
2^(11/16)	1.610490	825
2^(10/16)	1.542211	750
2^(9/16)	1.476826	675
2^(8/16)	1.414214	600
2^(7/16)	1.354256	525
2^(6/16)	1.296840	450
2^(5/16)	1.241858	375
2^(4/16)	1.189207	300
2^(3/16)	1.138789	225
2^(2/16)	1.090508	150
2^(1/16)	1.044274	75
2^(0/16)	1	0

11 Limit				+/- from Just	
				Avg.->	17.08
21/11	1119.46			5.54	
20/11	1035.00	11/6	1049.36	15.00	0.64
18/11	852.59			-27.59	
11/7	782.49			-32.49	
16/11	648.68	22/15	663.05	26.32	11.95
11/8	551.32	15/11	536.95	-26.32	-11.95
14/11	417.51			32.49	
11/9	347.41			27.59	
11/10	165.00	12/11	150.64	-15.00	-0.64
22/21	80.54			-5.54	

13 Limit				+/- from Just	
				Avg.->	15.04
25/13	1132.10			-7.10	
24/13	1061.43	13/7	1071.70	-11.43	-21.70
26/15	952.26			22.74	
22/13	910.79			-10.79	
13/8	840.53	21/13	830.25	-15.53	-5.25
20/13	745.79			4.21	
13/9	636.62	18/13	563.38	-36.62	36.62
13/10	454.21			-4.21	
16/13	359.47	26/21	369.75	15.53	5.25
13/11	289.21			10.79	
15/13	247.74			-22.74	
13/12	138.57	14/13	128.30	11.43	21.70
26/25	67.90			7.10	

17 ET

"keyboard mapping"			
0,17	P4	Unis.	0,0
0,16	+3	-2	0,1
0,15	-3	+2	0,2
0,14	+2	-3	0,3
0,13	-2	+3	0,4
0,12	8va	P4	0,5
0,11	+7	x4	0,6
0,10	-7	P5	0,7
0,9	+6	-6	0,8
0,8	-6	+6	0,9
0,7	P5	-7	0,10
0,6	x4	+7	0,11
0,5	P4	8va	0,12
0,4	+3	-2	0,13
0,3	-3	+2	0,14
0,2	+2	-3	0,15
0,1	-2	+3	0,16
0,0	Unis.	P4	0,17

17ET	Ratio	Cents
2^(17/17)	2	1200
2^(16/17)	1.920093	1129.41
2^(15/17)	1.843379	1058.82
2^(14/17)	1.769730	988.24
2^(13/17)	1.699024	917.65
2^(12/17)	1.631142	847.06
2^(11/17)	1.565972	776.47
2^(10/17)	1.503407	705.88
2^(9/17)	1.443341	635.29
2^(8/17)	1.385674	564.71
2^(7/17)	1.330312	494.12
2^(6/17)	1.277162	423.53
2^(5/17)	1.226135	352.94
2^(4/17)	1.177147	282.35
2^(3/17)	1.130116	211.76
2^(2/17)	1.084964	141.18
2^(1/17)	1.041616	70.59
2^(0/17)	1	0

11 Limit				+/- from Just	
				Avg.->	13.70
21/11	1119.46			9.95	
20/11	1035.00	11/6	1049.36	23.83	9.46
18/11	852.59			-5.53	
11/7	782.49			-6.02	
16/11	648.68	22/15	663.05	-13.39	-27.76
11/8	551.32	15/11	536.95	13.39	27.76
14/11	417.51			6.02	
11/9	347.41			5.53	
11/10	165.00	12/11	150.64	-23.83	-9.46
22/21	80.54			-9.95	

13 Limit				+/- from Just	
				Avg.->	12.78
25/13	1132.10			-2.69	
24/13	1061.43	13/7	1071.70	-2.60	-12.88
22/13	910.79	26/15	952.26	6.86	-34.61
13/8	840.53	21/13	830.25	6.53	16.81
20/13	745.79			30.68	
13/9	636.62			-1.32	
18/13	563.38			1.32	
13/10	454.21			-30.68	
16/13	359.47	26/21	369.75	-6.53	-16.81
13/11	289.21	15/13	247.74	-6.86	34.61
13/12	138.57	14/13	128.30	2.60	12.88
26/25	67.90			2.69	

18 Tone Equal Temperament

18ET	Ratio	Cents	+/- from 12ET
2^(18/18)	2	1200	0
2^(17/18)	1.924448	1133.33	33.33
2^(16/18)	1.851749	1066.67	-33.33
2^(15/18)	1.781797	1000	0
2^(14/18)	1.714488	933.33	33.33
2^(13/18)	1.649721	866.67	-33.33
2^(12/18)	1.587401	800	0
2^(11/18)	1.527435	733.33	33.33
2^(10/18)	1.469734	666.67	-33.33
2^(9/18)	1.414214	600	0
2^(8/18)	1.360790	533.33	33.33
2^(7/18)	1.309385	466.67	-33.33
2^(6/18)	1.259921	400	0
2^(5/18)	1.212326	333.33	33.33
2^(4/18)	1.166529	266.67	-33.33
2^(3/18)	1.122462	200	0
2^(2/18)	1.080060	133.33	33.33
2^(1/18)	1.039259	66.67	-33.33
2^(0/18)	1	0	0

5 Limit				+/- from Just	
				Avg.->	16.52
2/1	1200			0	
15/8	1088.27			-21.60	
16/9	996.09	9/5	1017.60	3.91	-17.60
5/3	884.36			-17.69	
8/5	813.69			-13.69	
3/2	701.96			31.38	
45/32	590.22	64/45	609.78	9.78	-9.78
4/3	498.04			-31.38	
5/4	386.31			13.69	
6/5	315.64			17.69	
9/8	203.91	10/9	182.40	-3.91	17.60
16/15	111.73			21.60	
1/1	0			0	

7 Limit				+/- from Just	
				Avg.->	20.11
7/4	968.83			31.17	
12/7	933.13			0.20	
14/9	764.92			-31.58	
7/5	582.51	10/7	617.49	17.49	-17.49
9/7	435.08			31.58	
7/6	266.87			-0.20	
8/7	231.17			-31.17	

19 Tone Equal Temperament

Major Scale Intervals -> 3 3 2 3 3 2

19ET	Ratio	Cents	+/- from 12ET
2^(19/19)	2	1200	0
2^(18/19)	1.928352	1136.84	36.84
2^(17/19)	1.859271	1073.68	-26.32
2^(16/19)	1.792664	1010.53	10.53
2^(15/19)	1.728444	947.37	47.37
2^(14/19)	1.666524	884.21	-15.79
2^(13/19)	1.606822	821.05	21.05
2^(12/19)	1.549260	757.89	-42.11
2^(11/19)	1.493759	694.74	-5.26
2^(10/19)	1.440247	631.58	31.58
2^(9/19)	1.388651	568.42	-31.58
2^(8/19)	1.338904	505.26	5.26
2^(7/19)	1.290939	442.11	42.11
2^(6/19)	1.244693	378.95	-21.05
2^(5/19)	1.200103	315.79	15.79
2^(4/19)	1.157110	252.63	-47.37
2^(3/19)	1.115658	189.47	-10.53
2^(2/19)	1.075691	126.32	26.32
2^(1/19)	1.037155	63.16	-36.84
2^(0/19)	1	0	0

5 Limit				+/- from Just	
				Avg.->	10.38
2/1	1200			0	
15/8	1088.27			-14.58	
16/9	996.09	9/5	1017.60	14.44	-7.07
5/3	884.36			-0.15	
8/5	813.69			7.37	
3/2	701.96			-7.22	
64/45	609.78			21.80	
45/32	590.22			-21.80	
4/3	498.04			7.22	
5/4	386.31			-7.37	
6/5	315.64			0.15	
9/8	203.91	10/9	182.40	-14.44	7.07
16/15	111.73			14.58	
1/1	0			0	

7 Limit				+/- from Just	
				Avg.->	14.20
12/7	933.13	7/4	968.83	14.24	-21.46
14/9	764.92			-7.02	
10/7	617.49			14.09	
7/5	582.51			-14.09	
9/7	435.08			7.02	
7/6	266.87	8/7	231.17	-14.24	21.46



18 ET

"keyboard mapping"			
0,18	x4	Unis.	0,0
0,17	P4	-2	0,1
0,16	+3	+2	0,2
0,15	-3	-3	0,3
0,14	+2	+3	0,4
0,13	-2	P4	0,5
0,12	8va	x4	0,6
0,11	+7	P5	0,7
0,10	-7	-6	0,8
0,9	+6	+6	0,9
0,8	-6	-7	0,10
0,7	P5	+7	0,11
0,6	x4	8va	0,12
0,5	P4	-2	0,13
0,4	+3	+2	0,14
0,3	-3	-3	0,15
0,2	+2	+3	0,16
0,1	-2	P4	0,17
0,0	Unis.	x4	0,18

18ET	Ratio	Cents
2^(18/18)	2	1200
2^(17/18)	1.924448	1133.33
2^(16/18)	1.851749	1066.67
2^(15/18)	1.781797	1000
2^(14/18)	1.714488	933.33
2^(13/18)	1.649721	866.67
2^(12/18)	1.587401	800
2^(11/18)	1.527435	733.33
2^(10/18)	1.469734	666.67
2^(9/18)	1.414214	600
2^(8/18)	1.360790	533.33
2^(7/18)	1.309385	466.67
2^(6/18)	1.259921	400
2^(5/18)	1.212326	333.33
2^(4/18)	1.166529	266.67
2^(3/18)	1.122462	200
2^(2/18)	1.080060	133.33
2^(1/18)	1.039259	66.67
2^(0/18)	1	0

11 Limit				+/- from Just	
				Avg.->	16.58
21/11	1119.46			13.87	
20/11	1035.00	11/6	1049.36	31.67	17.30
18/11	852.59			14.07	
11/7	782.49			17.51	
16/11	648.68	22/15	663.05	17.98	3.62
11/8	551.32	15/11	536.95	-17.98	-3.62
14/11	417.51			-17.51	
11/9	347.41			-14.07	
11/10	165.00	12/11	150.64	-31.67	-17.30
22/21	80.54			-13.87	

13 Limit				+/- from Just	
				Avg.->	16.87
25/13	1132.10			1.23	
24/13	1061.43	13/7	1071.70	5.24	-5.04
22/13	910.79	26/15	952.26	22.54	-18.93
13/8	840.53			26.14	
21/13	830.25			-30.25	
20/13	745.79			-12.45	
13/9	636.62			30.05	
18/13	563.38			-30.05	
13/10	454.21			12.45	
26/21	369.75			30.25	
16/13	359.47			-26.14	
13/11	289.21	15/13	247.74	-22.54	18.93
13/12	138.57	14/13	128.30	-5.24	5.04
26/25	67.90			-1.23	

19 ET

"keyboard mapping"			
0,19	P5	Unis.	0,0
0,18	x4	-2	0,1
0,17	P4	+2	0,2
0,16	+3	-3	0,3
0,15	-3	+3	0,4
0,14	+2	P4	0,5
0,13	-2	x4	0,6
0,12	8va	P5	0,7
0,11	+7	-6	0,8
0,10	-7	+6	0,9
0,9	+6	-7	0,10
0,8	-6	+7	0,11
0,7	P5	8va	0,12
0,6	x4	-2	0,13
0,5	P4	+2	0,14
0,4	+3	-3	0,15
0,3	-3	+3	0,16
0,2	+2	P4	0,17
0,1	-2	x4	0,18
0,0	Unis.	P5	0,19

19ET	Ratio	Cents
2^(19/19)	2	1200
2^(18/19)	1.928352	1136.84
2^(17/19)	1.859271	1073.68
2^(16/19)	1.792664	1010.53
2^(15/19)	1.728444	947.37
2^(14/19)	1.666524	884.21
2^(13/19)	1.606822	821.05
2^(12/19)	1.549260	757.89
2^(11/19)	1.493759	694.74
2^(10/19)	1.440247	631.58
2^(9/19)	1.388651	568.42
2^(8/19)	1.338904	505.26
2^(7/19)	1.290939	442.11
2^(6/19)	1.244693	378.95
2^(5/19)	1.200103	315.79
2^(4/19)	1.157110	252.63
2^(3/19)	1.115658	189.47
2^(2/19)	1.075691	126.32
2^(1/19)	1.037155	63.16
2^(0/19)	1	0

11 Limit				+/- from Just	
				Avg.->	24.41
21/11	1119.46			17.38	
11/6	1049.36			24.32	
20/11	1035.00			-24.47	
18/11	852.59			-31.54	
11/7	782.49			-24.60	
16/11	648.68	22/15	663.05	-17.10	-31.47
11/8	551.32	15/11	536.95	17.10	31.47
14/11	417.51			24.60	
11/9	347.41			31.54	
11/10	165.00			24.47	
12/11	150.64			-24.32	
22/21	80.54			-17.38	

13 Limit				+/- from Just	
				Avg.->	10.70
25/13	1132.10			4.74	
13/7	1071.70	24/13	1061.43	1.98	12.26
26/15	952.26			-4.89	
22/13	910.79			-26.58	
13/8	840.53	21/13	830.25	-19.48	-9.20
20/13	745.79			12.11	
13/9	636.62			-5.04	
18/13	563.38			5.04	
13/10	454.21			-12.11	
16/13	359.47	26/21	369.75	19.48	9.20
13/11	289.21			26.58	
15/13	247.74			4.89	
14/13	128.30	13/12	138.57	-1.98	-12.26
26/25	67.90			-4.74	

**20 Tone Equal Temperament**

20ET	Ratio	Cents	+/- from 12ET
2^(20/20)	2	1200	0
2^(19/20)	1.931873	1140	40
2^(18/20)	1.866066	1080	-20
2^(17/20)	1.802501	1020	20
2^(16/20)	1.741101	960	-40
2^(15/20)	1.681793	900	0
2^(14/20)	1.624505	840	40
2^(13/20)	1.569168	780	-20
2^(12/20)	1.515717	720	20
2^(11/20)	1.464086	660	-40
2^(10/20)	1.414214	600	0
2^(9/20)	1.366040	540	40
2^(8/20)	1.319508	480	-20
2^(7/20)	1.274561	420	20
2^(6/20)	1.231144	360	-40
2^(5/20)	1.189207	300	0
2^(4/20)	1.148698	240	40
2^(3/20)	1.109569	180	-20
2^(2/20)	1.071773	120	20
2^(1/20)	1.035265	60	-40
2^(0/20)	1	0	0

5 Limit				+/- from Just	
				Avg.->	14.91
2/1	1200			0	
15/8	1088.27			-8.27	
16/9	996.09	9/5	1017.60	23.91	2.40
5/3	884.36			15.64	
8/5	813.69			26.31	
3/2	701.96			18.04	
45/32	590.22	64/45	609.78	9.78	-9.78
4/3	498.04			-18.04	
5/4	386.31			-26.31	
6/5	315.64			-15.64	
9/8	203.91	10/9	182.40	-23.91	-2.40
16/15	111.73			8.27	
1/1	0			0	

7 Limit				+/- from Just	
				Avg.->	17.07
12/7	933.13	7/4	968.83	26.87	-8.83
14/9	764.92			15.08	
7/5	582.51	10/7	617.49	17.49	-17.49
9/7	435.08			-15.08	
7/6	266.87	8/7	231.17	-26.87	8.83

20 ET

"keyboard mapping"			
0,20	-6	Unis.	0,0
0,19	P5	-2	0,1
0,18	x4	+2	0,2
0,17	P4	-3	0,3
0,16	+3	+3	0,4
0,15	-3	P4	0,5
0,14	+2	x4	0,6
0,13	-2	P5	0,7
0,12	8va	-6	0,8
0,11	+7	+6	0,9
0,10	-7	-7	0,10
0,9	+6	+7	0,11
0,8	-6	8va	0,12
0,7	P5	-2	0,13
0,6	x4	+2	0,14
0,5	P4	-3	0,15
0,4	+3	+3	0,16
0,3	-3	P4	0,17
0,2	+2	x4	0,18
0,1	-2	P5	0,19
0,0	Unis.	-6	0,20

20ET	Ratio	Cents
2^(20/20)	2	1200
2^(19/20)	1.931873	1140
2^(18/20)	1.866066	1080
2^(17/20)	1.802501	1020
2^(16/20)	1.741101	960
2^(15/20)	1.681793	900
2^(14/20)	1.624505	840
2^(13/20)	1.569168	780
2^(12/20)	1.515717	720
2^(11/20)	1.464086	660
2^(10/20)	1.414214	600
2^(9/20)	1.366040	540
2^(8/20)	1.319508	480
2^(7/20)	1.274561	420
2^(6/20)	1.231144	360
2^(5/20)	1.189207	300
2^(4/20)	1.148698	240
2^(3/20)	1.109569	180
2^(2/20)	1.071773	120
2^(1/20)	1.035265	60
2^(0/20)	1	0

11 Limit				+/- from Just	
				Avg.->	13.48
21/11	1119.46			20.54	
20/11	1035.00	11/6	1049.36	-15.00	-29.36
18/11	852.59			-12.59	
11/7	782.49			-2.49	
16/11	648.68	22/15	663.05	11.32	-3.05
11/8	551.32	15/11	536.95	-11.32	3.05
14/11	417.51			2.49	
11/9	347.41			12.59	
11/10	165.00	12/11	150.64	15.00	29.36
22/21	80.54			-20.54	

13 Limit				+/- from Just	
				Avg.->	12.53
25/13	1132.10			7.90	
13/7	1071.70	24/13	1061.43	8.30	18.57
26/15	952.26			7.74	
22/13	910.79			-10.79	
13/8	840.53	21/13	830.25	-0.53	9.75
20/13	745.79			-25.79	
13/9	636.62			23.38	
18/13	563.38			-23.38	
13/10	454.21			25.79	
16/13	359.47	26/21	369.75	0.53	-9.75
13/11	289.21			10.79	
15/13	247.74			-7.74	
14/13	128.30	13/12	138.57	-8.30	-18.57
26/25	67.90			-7.90	

**21 Tone Equal Temperament**

21ET	Ratio	Cents	+/- from 12ET
2^(21/21)	2	1200	0
2^(20/21)	1.935064	1142.86	42.86
2^(19/21)	1.872235	1085.71	-14.29
2^(18/21)	1.811447	1028.57	28.57
2^(17/21)	1.752633	971.43	-28.57
2^(16/21)	1.695728	914.29	14.29
2^(15/21)	1.640671	857.14	57.14
2^(14/21)	1.587401	800	0
2^(13/21)	1.535861	742.86	42.86
2^(12/21)	1.485994	685.71	-14.29
2^(11/21)	1.437747	628.57	28.57
2^(10/21)	1.391066	571.43	71.43
2^(9/21)	1.345900	514.29	14.29
2^(8/21)	1.302201	457.14	57.14
2^(7/21)	1.259921	400	0
2^(6/21)	1.219014	342.86	42.86
2^(5/21)	1.179434	285.71	85.71
2^(4/21)	1.141140	228.57	28.57
2^(3/21)	1.104090	171.43	71.43
2^(2/21)	1.068242	114.29	14.29
2^(1/21)	1.033558	57.14	-42.86
2^(0/21)	1	0	0

5 Limit		+/- from Just	
		Avg.->	16.30
2/1	1200	0	
15/8	1088.27	-2.55	
9/5	1017.60	10.98	
16/9	996.09	-24.66	
5/3	884.36	-27.22	
8/5	813.69	-13.69	
3/2	701.96	-16.24	
64/45	609.78	18.80	
45/32	590.22	-18.80	
4/3	498.04	16.24	
5/4	386.31	13.69	
6/5	315.64	27.22	
9/8	203.91	24.66	
10/9	182.40	-10.98	
16/15	111.73	2.55	
1/1	0	0	

7 Limit		+/- from Just	
		Avg.->	13.65
7/4	968.83	2.60	
12/7	933.13	-18.84	
14/9	764.92	-22.06	
10/7	617.49	11.08	
7/5	582.51	-11.08	
9/7	435.08	22.06	
7/6	266.87	18.84	
8/7	231.17	-2.60	

21 ET

"keyboard mapping"			
0,21	+6	Unis.	0,0
0,20	-6	-2	0,1
0,19	P5	+2	0,2
0,18	x4	-3	0,3
0,17	P4	+3	0,4
0,16	+3	P4	0,5
0,15	-3	x4	0,6
0,14	+2	P5	0,7
0,13	-2	-6	0,8
0,12	8va	+6	0,9
0,11	+7	-7	0,10
0,10	-7	+7	0,11
0,9	+6	8va	0,12
0,8	-6	-2	0,13
0,7	P5	+2	0,14
0,6	x4	-3	0,15
0,5	P4	+3	0,16
0,4	+3	P4	0,17
0,3	-3	x4	0,18
0,2	+2	P5	0,19
0,1	-2	-6	0,20
0,0	Unis.	+6	0,21

21ET	Ratio	Cents
2^(21/21)	2	1200
2^(20/21)	1.935064	1142.86
2^(19/21)	1.872235	1085.71
2^(18/21)	1.811447	1028.57
2^(17/21)	1.752633	971.43
2^(16/21)	1.695728	914.29
2^(15/21)	1.640671	857.14
2^(14/21)	1.587401	800
2^(13/21)	1.535861	742.86
2^(12/21)	1.485994	685.71
2^(11/21)	1.437747	628.57
2^(10/21)	1.391066	571.43
2^(9/21)	1.345900	514.29
2^(8/21)	1.302201	457.14
2^(7/21)	1.259921	400
2^(6/21)	1.219014	342.86
2^(5/21)	1.179434	285.71
2^(4/21)	1.141140	228.57
2^(3/21)	1.104090	171.43
2^(2/21)	1.068242	114.29
2^(1/21)	1.033558	57.14
2^(0/21)	1	0

11 Limit				+/- from Just	
				Avg.->	16.49
21/11	1119.46			23.39	
20/11	1035.00	11/6	1049.36	-6.42	-20.79
18/11	852.59			4.55	
11/7	782.49			17.51	
22/15	663.05			22.67	
16/11	648.68			-20.11	
11/8	551.32			20.11	
15/11	536.95			-22.67	
14/11	417.51			-17.51	
11/9	347.41			-4.55	
11/10	165.00	12/11	150.64	6.42	20.79
22/21	80.54			-23.39	

13 Limit				+/- from Just	
				Avg.->	14.02
25/13	1132.10			10.76	
13/7	1071.70	24/13	1061.43	14.01	24.29
26/15	952.26			19.17	
22/13	910.79			3.50	
13/8	840.53	21/13	830.25	16.62	26.89
20/13	745.79			-2.93	
13/9	636.62			-8.05	
18/13	563.38			8.05	
13/10	454.21			2.93	
16/13	359.47	26/21	369.75	-16.62	-26.89
13/11	289.21			-3.50	
15/13	247.74			-19.17	
14/13	128.30	13/12	138.57	-14.01	-24.29
26/25	67.90			-10.76	

22 Tone Equal Temperament

22ET	Ratio	Cents	+/- from 12ET
2^(22/22)	2	1200	0
2^(21/22)	1.937969	1145.45	45.45
2^(20/22)	1.877862	1090.91	-9.09
2^(19/22)	1.819619	1036.36	36.36
2^(18/22)	1.763183	981.82	-18.18
2^(17/22)	1.708496	927.27	27.27
2^(16/22)	1.655507	872.73	-27.27
2^(15/22)	1.604160	818.18	18.18
2^(14/22)	1.554406	763.64	-36.36
2^(13/22)	1.506196	709.09	9.09
2^(12/22)	1.459480	654.55	-45.45
2^(11/22)	1.414214	600	0
2^(10/22)	1.370351	545.45	45.45
2^(9/22)	1.327849	490.91	-9.09
2^(8/22)	1.286665	436.36	36.36
2^(7/22)	1.246758	381.82	-18.18
2^(6/22)	1.208089	327.27	27.27
2^(5/22)	1.170620	272.73	-27.27
2^(4/22)	1.134313	218.18	18.18
2^(3/22)	1.099131	163.64	-36.36
2^(2/22)	1.065041	109.09	9.09
2^(1/22)	1.032008	54.55	-45.45
2^(0/22)	1	0	0

5 Limit				+/- from Just	
				Avg.->	9.82
2/1	1200			0	
15/8	1088.27			2.64	
9/5	1017.60			18.77	
16/9	996.09			-14.27	
5/3	884.36			-11.63	
8/5	813.69			4.50	
3/2	701.96			7.14	
45/32	590.22	64/45	609.78	9.78	-9.78
4/3	498.04			-7.14	
5/4	386.31			-4.50	
6/5	315.64			11.63	
9/8	203.91			14.27	
10/9	182.40			-18.77	
16/15	111.73			-2.64	
1/1	0			0	

7 Limit				+/- from Just	
				Avg.->	9.40
7/4	968.83			12.99	
12/7	933.13			-5.86	
14/9	764.92			-1.28	
7/5	582.51	10/7	617.49	17.49	-17.49
9/7	435.08			1.28	
7/6	266.87			5.86	
8/7	231.17			-12.99	

22 ET

"keyboard mapping"			
<b>0,22</b>	-7	Unis.	<b>0,0</b>
0,21	+6	-2	0,1
<b>0,20</b>	-6	+2	<b>0,2</b>
<b>0,19</b>	P5	-3	<b>0,3</b>
<b>0,18</b>	x4	+3	<b>0,4</b>
<b>0,17</b>	P4	P4	<b>0,5</b>
<b>0,16</b>	+3	x4	<b>0,6</b>
<b>0,15</b>	-3	P5	<b>0,7</b>
<b>0,14</b>	+2	-6	<b>0,8</b>
<b>0,13</b>	-2	+6	<b>0,9</b>
0,12	8va	-7	0,10
<b>0,11</b>	+7	+7	<b>0,11</b>
0,10	-7	8va	0,12
<b>0,9</b>	+6	-2	<b>0,13</b>
<b>0,8</b>	-6	+2	<b>0,14</b>
<b>0,7</b>	P5	-3	<b>0,15</b>
<b>0,6</b>	x4	+3	<b>0,16</b>
<b>0,5</b>	P4	P4	<b>0,17</b>
<b>0,4</b>	+3	x4	<b>0,18</b>
<b>0,3</b>	-3	P5	<b>0,19</b>
<b>0,2</b>	+2	-6	<b>0,20</b>
0,1	-2	+6	0,21
<b>0,0</b>	Unis.	-7	<b>0,22</b>

22ET	Ratio	Cents
2^(22/22)	2	1200
2^(21/22)	1.937969	1145.45
2^(20/22)	1.877862	1090.91
2^(19/22)	1.819619	1036.36
2^(18/22)	1.763183	981.82
2^(17/22)	1.708496	927.27
2^(16/22)	1.655507	872.73
2^(15/22)	1.604160	818.18
2^(14/22)	1.554406	763.64
2^(13/22)	1.506196	709.09
2^(12/22)	1.459480	654.55
2^(11/22)	1.414214	600
2^(10/22)	1.370351	545.45
2^(9/22)	1.327849	490.91
2^(8/22)	1.286665	436.36
2^(7/22)	1.246758	381.82
2^(6/22)	1.208089	327.27
2^(5/22)	1.170620	272.73
2^(4/22)	1.134313	218.18
2^(3/22)	1.099131	163.64
2^(2/22)	1.065041	109.09
2^(1/22)	1.032008	54.55
2^(0/22)	1	0

11 Limit				+/- from Just	
				Avg.->	13.39
21/11	1119.46			25.99	
20/11	1035.00	11/6	1049.36	1.37	-13.00
18/11	852.59			20.14	
11/7	782.49			-18.86	
16/11	648.68	22/15	663.05	5.86	-8.50
11/8	551.32	15/11	536.95	-5.86	8.50
14/11	417.51			18.86	
11/9	347.41			-20.14	
11/10	165.00	12/11	150.64	-1.37	13.00
22/21	80.54			-25.99	

13 Limit				+/- from Just	
				Avg.->	18.81
25/13	1132.10			13.35	
13/7	1071.70			19.21	
24/13	1061.43			-25.06	
26/15	952.26	22/13	910.79	-24.99	16.48
13/8	840.53	21/13	830.25	-22.35	-12.07
20/13	745.79			17.85	
13/9	636.62			17.93	
18/13	563.38			-17.93	
13/10	454.21			-17.85	
16/13	359.47	26/21	369.75	22.35	12.07
15/13	247.74	13/11	289.21	24.99	-16.48
13/12	138.57			25.06	
14/13	128.30			-19.21	
26/25	67.90			-13.35	

**23 Tone Equal Temperament**

23ET	Ratio	Cents	+/- from 12ET
2^(23/23)	2	1200	0
2^(22/23)	1.940626	1147.83	47.83
2^(21/23)	1.883014	1095.65	-4.35
2^(20/23)	1.827112	1043.48	43.48
2^(19/23)	1.772870	991.30	-8.70
2^(18/23)	1.720239	939.13	39.13
2^(17/23)	1.669169	886.96	-13.04
2^(16/23)	1.619616	834.78	34.78
2^(15/23)	1.571534	782.61	-17.39
2^(14/23)	1.524880	730.43	30.43
2^(13/23)	1.479610	678.26	-21.74
2^(12/23)	1.435685	626.09	26.09
2^(11/23)	1.393063	573.91	-26.09
2^(10/23)	1.351707	521.74	21.74
2^(9/23)	1.311579	469.57	-30.43
2^(8/23)	1.272642	417.39	17.39
2^(7/23)	1.234860	365.22	-34.78
2^(6/23)	1.198201	313.04	13.04
2^(5/23)	1.162629	260.87	-39.13
2^(4/23)	1.128114	208.70	8.70
2^(3/23)	1.094624	156.52	-43.48
2^(2/23)	1.062127	104.35	4.35
2^(1/23)	1.030596	52.17	-47.83
2^(0/23)	1	0	0

5 Limit		+/- from Just	
		Avg.->	16.96
2/1	1200	0	
15/8	1088.27	7.38	
9/5	1017.60	25.88	
16/9	996.09	-4.79	
5/3	884.36	2.60	
8/5	813.69	21.10	
3/2	701.96	-23.69	
64/45	609.78	16.31	
45/32	590.22	-16.31	
4/3	498.04	23.69	
5/4	386.31	-21.10	
6/5	315.64	-2.60	
9/8	203.91	4.79	
10/9	182.40	-25.88	
16/15	111.73	-7.38	
1/1	0	0	

7 Limit		+/- from Just	
		Avg.->	13.69
7/4	968.83	22.48	
12/7	933.13	6.00	
14/9	764.92	17.69	
10/7	617.49	8.60	
7/5	582.51	-8.60	
9/7	435.08	-17.69	
7/6	266.87	-6.00	
8/7	231.17	-22.48	



23 ET

"keyboard mapping"			
<b>0,23</b>	+7	Unis.	<b>0,0</b>
0,22	-7	-2	0,1
<b>0,21</b>	+6	+2	<b>0,2</b>
<b>0,20</b>	-6	-3	<b>0,3</b>
<b>0,19</b>	P5	+3	<b>0,4</b>
<b>0,18</b>	x4	P4	<b>0,5</b>
<b>0,17</b>	P4	x4	<b>0,6</b>
<b>0,16</b>	+3	P5	<b>0,7</b>
<b>0,15</b>	-3	-6	<b>0,8</b>
0,14	+2	+6	0,9
<b>0,13</b>	-2	-7	<b>0,10</b>
<b>0,12</b>	8va	+7	<b>0,11</b>
<b>0,11</b>	+7	8va	<b>0,12</b>
<b>0,10</b>	-7	-2	<b>0,13</b>
0,9	+6	+2	0,14
<b>0,8</b>	-6	-3	<b>0,15</b>
<b>0,7</b>	P5	+3	<b>0,16</b>
<b>0,6</b>	x4	P4	<b>0,17</b>
<b>0,5</b>	P4	x4	<b>0,18</b>
<b>0,4</b>	+3	P5	<b>0,19</b>
<b>0,3</b>	-3	-6	<b>0,20</b>
<b>0,2</b>	+2	+6	<b>0,21</b>
0,1	-2	-7	0,22
<b>0,0</b>	Unis.	+7	<b>0,23</b>

23ET	Ratio	Cents
2^(23/23)	2	1200
2^(22/23)	1.940626	1147.83
2^(21/23)	1.883014	1095.65
2^(20/23)	1.827112	1043.48
2^(19/23)	1.772870	991.30
2^(18/23)	1.720239	939.13
2^(17/23)	1.669169	886.96
2^(16/23)	1.619616	834.78
2^(15/23)	1.571534	782.61
2^(14/23)	1.524880	730.43
2^(13/23)	1.479610	678.26
2^(12/23)	1.435685	626.09
2^(11/23)	1.393063	573.91
2^(10/23)	1.351707	521.74
2^(9/23)	1.311579	469.57
2^(8/23)	1.272642	417.39
2^(7/23)	1.234860	365.22
2^(6/23)	1.198201	313.04
2^(5/23)	1.162629	260.87
2^(4/23)	1.128114	208.70
2^(3/23)	1.094624	156.52
2^(2/23)	1.062127	104.35
2^(1/23)	1.030596	52.17
2^(0/23)	1	0

11 Limit				+/- from Just	
				Avg.->	13.42
21/11	1119.46			-23.81	
20/11	1035.00	11/6	1049.36	8.48	-5.88
18/11	852.59			-17.81	
11/7	782.49			0.12	
22/15	663.05			15.21	
16/11	648.68			-22.60	
11/8	551.32			22.60	
15/11	536.95			-15.21	
14/11	417.51			-0.12	
11/9	347.41			17.81	
11/10	165.00	12/11	150.64	-8.48	5.88
22/21	80.54			23.81	

13 Limit				+/- from Just	
				Avg.->	14.53
25/13	1132.10			15.73	
13/7	1071.70			23.95	
24/13	1061.43			-17.95	
26/15	952.26			-13.13	
22/13	910.79			-23.83	
13/8	840.53	21/13	830.25	-5.75	4.53
20/13	745.79			-15.35	
13/9	636.62			-10.53	
18/13	563.38			10.53	
13/10	454.21			15.35	
16/13	359.47	26/21	369.75	5.75	-4.53
13/11	289.21			23.83	
15/13	247.74			13.13	
13/12	138.57			17.95	
14/13	128.30			-23.95	
26/25	67.90			-15.73	

24 Tone Equal Temperament

Major Scale Intervals -> 4 4 2 4 4 4 2

24ET	Ratio	Cents	+/- from 12ET
2^(24/24)	2	1200	0
2^(23/24)	1.943064	1150	+/- 50
2^(22/24)	1.887749	1100	0
2^(21/24)	1.834008	1050	+/- 50
2^(20/24)	1.781797	1000	0
2^(19/24)	1.731073	950	+/- 50
2^(18/24)	1.681793	900	0
2^(17/24)	1.633915	850	+/- 50
2^(16/24)	1.587401	800	0
2^(15/24)	1.542211	750	+/- 50
2^(14/24)	1.498307	700	0
2^(13/24)	1.455653	650	+/- 50
2^(12/24)	1.414214	600	0
2^(11/24)	1.373954	550	+/- 50
2^(10/24)	1.334840	500	0
2^(9/24)	1.296840	450	+/- 50
2^(8/24)	1.259921	400	0
2^(7/24)	1.224054	350	+/- 50
2^(6/24)	1.189207	300	0
2^(5/24)	1.155353	250	+/- 50
2^(4/24)	1.122462	200	0
2^(3/24)	1.090508	150	+/- 50
2^(2/24)	1.059463	100	0
2^(1/24)	1.029302	50	+/- 50
2^(0/24)	1	0	0

5 Limit				+/- from Just	
				Avg.->	10.61
2/1	1200			0	
15/8	1088.27			11.73	
16/9	996.09	9/5	1017.60	3.91	-17.60
5/3	884.36			15.64	
8/5	813.69			-13.69	
3/2	701.96			-1.96	
45/32	590.22	64/45	609.78	9.78	-9.78
4/3	498.04			1.96	
5/4	386.31			13.69	
6/5	315.64			-15.64	
9/8	203.91	10/9	182.40	-3.91	17.60
16/15	111.73			-11.73	
1/1	0			0	

7 Limit				+/- from Just	
				Avg.->	17.03
12/7	933.13	7/4	968.83	16.87	-18.83
14/9	764.92			-14.92	
7/5	582.51	10/7	617.49	17.49	-17.49
9/7	435.08			14.92	
7/6	266.87	8/7	231.17	-16.87	18.83

24 ET

"keyboard mapping"			
<b>0,24</b>	2-8va	Unis.	<b>0,0</b>
0,23	+7	-2	0,1
<b>0,22</b>	-7	+2	<b>0,2</b>
0,21	+6	-3	0,3
<b>0,20</b>	-6	+3	<b>0,4</b>
<b>0,19</b>	P5	P4	<b>0,5</b>
<b>0,18</b>	x4	x4	<b>0,6</b>
0,17	P4	P5	0,7
<b>0,16</b>	+3	-6	<b>0,8</b>
<b>0,15</b>	-3	+6	<b>0,9</b>
<b>0,14</b>	+2	-7	<b>0,10</b>
0,13	-2	+7	0,11
<b>0,12</b>	8va	8va	<b>0,12</b>
0,11	+7	-2	0,13
<b>0,10</b>	-7	+2	<b>0,14</b>
<b>0,9</b>	+6	-3	<b>0,15</b>
<b>0,8</b>	-6	+3	<b>0,16</b>
0,7	P5	P4	0,17
<b>0,6</b>	x4	x4	<b>0,18</b>
<b>0,5</b>	P4	P5	<b>0,19</b>
<b>0,4</b>	+3	-6	<b>0,20</b>
0,3	-3	+6	0,21
<b>0,2</b>	+2	-7	<b>0,22</b>
0,1	-2	+7	0,23
<b>0,0</b>	Unis.	2-8va	0,24

24ET	Ratio	Cents
2^(24/24)	2	1200
2^(23/24)	1.943064	1150
2^(22/24)	1.887749	1100
2^(21/24)	1.834008	1050
2^(20/24)	1.781797	1000
2^(19/24)	1.731073	950
2^(18/24)	1.681793	900
2^(17/24)	1.633915	850
2^(16/24)	1.587401	800
2^(15/24)	1.542211	750
2^(14/24)	1.498307	700
2^(13/24)	1.455653	650
2^(12/24)	1.414214	600
2^(11/24)	1.373954	550
2^(10/24)	1.334840	500
2^(9/24)	1.296840	450
2^(8/24)	1.259921	400
2^(7/24)	1.224054	350
2^(6/24)	1.189207	300
2^(5/24)	1.155353	250
2^(4/24)	1.122462	200
2^(3/24)	1.090508	150
2^(2/24)	1.059463	100
2^(1/24)	1.029302	50
2^(0/24)	1	0

11 Limit				+/- from Just	
				Avg.->	9.94
21/11	1119.46			-19.46	
20/11	1035.00	11/6	1049.36	15.00	0.64
18/11	852.59			-2.59	
11/7	782.49			17.51	
16/11	648.68	22/15	663.05	1.32	-13.05
11/8	551.32	15/11	536.95	-1.32	13.05
14/11	417.51			-17.51	
11/9	347.41			2.59	
11/10	165.00	12/11	150.64	-15.00	-0.64
22/21	80.54			19.46	

13 Limit				+/- from Just	
				Avg.->	12.32
25/13	1132.10			17.90	
24/13	1061.43	13/7	1071.70	-11.43	-21.70
26/15	952.26			-2.26	
22/13	910.79			-10.79	
13/8	840.53	21/13	830.25	9.47	19.75
20/13	745.79			4.21	
13/9	636.62			13.38	
18/13	563.38			-13.38	
13/10	454.21			-4.21	
16/13	359.47	26/21	369.75	-9.47	-19.75
13/11	289.21			10.79	
15/13	247.74			2.26	
13/12	138.57	14/13	128.30	11.43	21.70
26/25	67.90			-17.90	

**31 Tone Equal Temperament**

Major Scale Intervals -> 5 5 3 5 5 5 3

31ET	Ratio	Cents	+/- from 12ET
2^(31/31)	2	1200	0
2^(30/31)	1.955777	1161.29	-38.71
2^(29/31)	1.912532	1122.58	22.58
2^(28/31)	1.870243	1083.87	-16.13
2^(27/31)	1.828889	1045.16	45.16
2^(26/31)	1.788450	1006.45	6.45
2^(25/31)	1.748905	967.74	-32.26
2^(24/31)	1.710234	929.03	29.03
2^(23/31)	1.672418	890.32	-9.68
2^(22/31)	1.635438	851.61	-48.39
2^(21/31)	1.599276	812.90	12.90
2^(20/31)	1.563914	774.19	-25.81
2^(19/31)	1.529334	735.48	35.48
2^(18/31)	1.495518	696.77	-3.23
2^(17/31)	1.462450	658.06	-41.94
2^(16/31)	1.430113	619.35	19.35
2^(15/31)	1.398491	580.65	-19.35
2^(14/31)	1.367568	541.94	41.94
2^(13/31)	1.337329	503.23	3.23
2^(12/31)	1.307759	464.52	-35.48
2^(11/31)	1.278843	425.81	25.81
2^(10/31)	1.250566	387.10	-12.90
2^(9/31)	1.222914	348.39	48.39
2^(8/31)	1.195873	309.68	9.68
2^(7/31)	1.169431	270.97	-29.03
2^(6/31)	1.143573	232.26	32.26
2^(5/31)	1.118287	193.55	-6.45
2^(4/31)	1.093560	154.84	-45.16
2^(3/31)	1.069380	116.13	16.13
2^(2/31)	1.045734	77.42	-22.58
2^(1/31)	1.022611	38.71	38.71
2^(0/31)	1	0	0

5 Limit				+/- from Just	
				Avg.->	6.77
2/1	1200			0	
15/8	1088.27			-4.40	
16/9	996.09	9/5	1017.60	10.36	-11.14
5/3	884.36			5.96	
8/5	813.69			-0.78	
3/2	701.96			-5.18	
64/45	609.78			9.58	
45/32	590.22			-9.58	
4/3	498.04			5.18	
5/4	386.31			0.78	
6/5	315.64			-5.96	
9/8	203.91	10/9	182.40	-10.36	11.14
16/15	111.73			4.40	
1/1	0			0	

7 Limit		+/- from Just	
		Avg.->	4.08
7/4	968.83	-1.08	
12/7	933.13	-4.10	
14/9	764.92	9.28	
10/7	617.49	1.87	
7/5	582.51	-1.87	
9/7	435.08	-9.28	
7/6	266.87	4.10	
8/7	231.17	1.08	

31 ET

"keyboard mapping"			
<b>0,31</b>	P5	Unis.	<b>0,0</b>
0,30	x4	-2	0,1
0,29	P4	+2	0,2
<b>0,28</b>	+3	-3	<b>0,3</b>
0,27	-3	+3	0,4
<b>0,26</b>	+2	P4	<b>0,5</b>
<b>0,25</b>	-2	x4	<b>0,6</b>
<b>0,24</b>	2-8va	P5	<b>0,7</b>
<b>0,23</b>	+7	-6	<b>0,8</b>
0,22	-7	+6	0,9
<b>0,21</b>	+6	-7	<b>0,10</b>
<b>0,20</b>	-6	+7	<b>0,11</b>
0,19	P5	8va	0,12
<b>0,18</b>	x4	-2	<b>0,13</b>
0,17	P4	+2	0,14
<b>0,16</b>	+3	-3	<b>0,15</b>
<b>0,15</b>	-3	+3	<b>0,16</b>
0,14	+2	P4	0,17
<b>0,13</b>	-2	x4	<b>0,18</b>
0,12	8va	P5	0,19
<b>0,11</b>	+7	-6	<b>0,20</b>
<b>0,10</b>	-7	+6	<b>0,21</b>
0,9	+6	-7	0,22
<b>0,8</b>	-6	+7	<b>0,23</b>
<b>0,7</b>	P5	2-8va	<b>0,24</b>
<b>0,6</b>	x4	-2	<b>0,25</b>
<b>0,5</b>	P4	+2	<b>0,26</b>
0,4	+3	-3	0,27
<b>0,3</b>	-3	+3	<b>0,28</b>
0,2	+2	P4	0,29
0,1	-2	x4	0,30
<b>0,0</b>	Unis.	P5	<b>0,31</b>

31ET	Ratio	Cents
2^(31/31)	2	1200
2^(30/31)	1.955777	1161.29
2^(29/31)	1.912532	1122.58
2^(28/31)	1.870243	1083.87
2^(27/31)	1.828889	1045.16
2^(26/31)	1.788450	1006.45
2^(25/31)	1.748905	967.74
2^(24/31)	1.710234	929.03
2^(23/31)	1.672418	890.32
2^(22/31)	1.635438	851.61
2^(21/31)	1.599276	812.90
2^(20/31)	1.563914	774.19
2^(19/31)	1.529334	735.48
2^(18/31)	1.495518	696.77
2^(17/31)	1.462450	658.06
2^(16/31)	1.430113	619.35
2^(15/31)	1.398491	580.65
2^(14/31)	1.367568	541.94
2^(13/31)	1.337329	503.23
2^(12/31)	1.307759	464.52
2^(11/31)	1.278843	425.81
2^(10/31)	1.250566	387.10
2^(9/31)	1.222914	348.39
2^(8/31)	1.195873	309.68
2^(7/31)	1.169431	270.97
2^(6/31)	1.143573	232.26
2^(5/31)	1.118287	193.55
2^(4/31)	1.093560	154.84
2^(3/31)	1.069380	116.13
2^(2/31)	1.045734	77.42
2^(1/31)	1.022611	38.71
2^(0/31)	1	0

11 Limit				+/- from Just	
				Avg.->	5.88
21/11	1119.46			3.12	
20/11	1035.00	11/6	1049.36	10.17	-4.20
18/11	852.59			-0.98	
11/7	782.49			-8.30	
16/11	648.68	22/15	663.05	9.38	-4.98
11/8	551.32	15/11	536.95	-9.38	4.98
14/11	417.51			8.30	
11/9	347.41			0.98	
11/10	165.00	12/11	150.64	-10.17	4.20
22/21	80.54			-3.12	

13 Limit			+/- from Just	
			Avg.->	14.19
25/13	1132.10		-9.52	
13/7	1071.70		12.17	
24/13	1061.43		-16.27	
26/15	952.26		15.48	
22/13	910.79		18.24	
13/8	840.53		11.09	
21/13	830.25		-17.35	
20/13	745.79		-10.30	
13/9	636.62		-17.26	
18/13	563.38		17.26	
13/10	454.21		10.30	
26/21	369.75		17.35	
16/13	359.47		-11.09	
13/11	289.21		-18.24	
15/13	247.74		-15.48	
13/12	138.57		16.27	
14/13	128.30		-12.17	
26/25	67.90		9.52	

**34 Tone Equal Temperament**

Major Scale Intervals -> 5 1 5 3 6 5 6 3

<b>34ET</b>	<b>Ratio</b>	<b>Cents</b>	<b>+/- from 12ET</b>
2^(34/34)	2	1200	0
2^(33/34)	1.959639	1164.71	-35.29
2^(32/34)	1.920093	1129.41	29.41
2^(31/34)	1.881345	1094.12	-5.88
2^(30/34)	1.843379	1058.82	-41.18
2^(29/34)	1.806179	1023.53	23.53
2^(28/34)	1.769730	988.24	-11.76
2^(27/34)	1.734017	952.94	-47.06
2^(26/34)	1.699024	917.65	17.65
2^(25/34)	1.664737	882.35	-17.65
2^(24/34)	1.631142	847.06	47.06
2^(23/34)	1.598225	811.76	11.76
2^(22/34)	1.565972	776.47	-23.53
2^(21/34)	1.534371	741.18	41.18
2^(20/34)	1.503407	705.88	5.88
2^(19/34)	1.473067	670.59	-29.41
2^(18/34)	1.443341	635.29	35.29
2^(17/34)	1.414214	600	0
2^(16/34)	1.385674	564.71	-35.29
2^(15/34)	1.357711	529.41	29.41
2^(14/34)	1.330312	494.12	-5.88
2^(13/34)	1.303466	458.82	-41.18
2^(12/34)	1.277162	423.53	23.53
2^(11/34)	1.251388	388.24	-11.76
2^(10/34)	1.226135	352.94	-47.06
2^(9/34)	1.201391	317.65	17.65
2^(8/34)	1.177147	282.35	-17.65
2^(7/34)	1.153392	247.06	47.06
2^(6/34)	1.130116	211.76	11.76
2^(5/34)	1.107310	176.47	-23.53
2^(4/34)	1.084964	141.18	41.18
2^(3/34)	1.063069	105.88	5.88
2^(2/34)	1.041616	70.59	-29.41
2^(1/34)	1.020596	35.29	35.29
2^(0/34)	1	0	0

<b>5 Limit</b>				<b>+/- from Just</b>	
				Avg.->	5.32
2/1	1200			0	
15/8	1088.27			5.85	
9/5	1017.60			5.93	
16/9	996.09			-7.85	
5/3	884.36			-2.01	
8/5	813.69			-1.92	
3/2	701.96			3.93	
45/32	590.22	64/45	609.78	9.78	-9.78
4/3	498.04			-3.93	
5/4	386.31			1.92	
6/5	315.64			2.01	
9/8	203.91			7.85	
10/9	182.40			-5.93	
16/15	111.73			-5.85	
1/1	0			0	

<b>7 Limit</b>				<b>+/- from Just</b>	
				Avg.->	15.10
7/4	968.83			-15.88	
12/7	933.13			-15.48	
14/9	764.92			11.55	
7/5	582.51	10/7	617.49	17.49	-17.49
9/7	435.08			-11.55	
7/6	266.87			15.48	
8/7	231.17			15.88	

34 ET

"keyboard mapping"			
<b>0,34</b>	-7	Unis.	<b>0,0</b>
0,33	+6	-2	0,1
0,32	-6	+2	0,2
<b>0,31</b>	P5	-3	<b>0,3</b>
0,30	x4	+3	0,4
<b>0,29</b>	P4	P4	<b>0,5</b>
<b>0,28</b>	+3	x4	<b>0,6</b>
<b>0,27</b>	-3	P5	<b>0,7</b>
<b>0,26</b>	+2	-6	<b>0,8</b>
<b>0,25</b>	-2	+6	<b>0,9</b>
0,24	2-8va	-7	0,10
<b>0,23</b>	+7	+7	<b>0,11</b>
<b>0,22</b>	-7	8va	<b>0,12</b>
0,21	+6	-2	0,13
<b>0,20</b>	-6	+2	<b>0,14</b>
0,19	P5	-3	0,15
0,18	x4	+3	0,16
<b>0,17</b>	P4	P4	<b>0,17</b>
0,16	+3	x4	0,18
0,15	-3	P5	0,19
<b>0,14</b>	+2	-6	<b>0,20</b>
0,13	-2	+6	0,21
<b>0,12</b>	8va	-7	<b>0,22</b>
<b>0,11</b>	+7	+7	<b>0,23</b>
0,10	-7	2-8va	0,24
<b>0,9</b>	+6	-2	<b>0,25</b>
<b>0,8</b>	-6	+2	<b>0,26</b>
<b>0,7</b>	P5	-3	<b>0,27</b>
<b>0,6</b>	x4	+3	<b>0,28</b>
<b>0,5</b>	P4	P4	<b>0,29</b>
0,4	+3	x4	0,30
<b>0,3</b>	-3	P5	<b>0,31</b>
0,2	+2	-6	0,32
0,1	-2	+6	0,33
<b>0,0</b>	Unis.	-7	<b>0,34</b>

34ET	Ratio	Cents
2^(34/34)	2	1200
2^(33/34)	1.959639	1164.71
2^(32/34)	1.920093	1129.41
2^(31/34)	1.881345	1094.12
2^(30/34)	1.843379	1058.82
2^(29/34)	1.806179	1023.53
2^(28/34)	1.769730	988.24
2^(27/34)	1.734017	952.94
2^(26/34)	1.699024	917.65
2^(25/34)	1.664737	882.35
2^(24/34)	1.631142	847.06
2^(23/34)	1.598225	811.76
2^(22/34)	1.565972	776.47
2^(21/34)	1.534371	741.18
2^(20/34)	1.503407	705.88
2^(19/34)	1.473067	670.59
2^(18/34)	1.443341	635.29
2^(17/34)	1.414214	600
2^(16/34)	1.385674	564.71
2^(15/34)	1.357711	529.41
2^(14/34)	1.330312	494.12
2^(13/34)	1.303466	458.82
2^(12/34)	1.277162	423.53
2^(11/34)	1.251388	388.24
2^(10/34)	1.226135	352.94
2^(9/34)	1.201391	317.65
2^(8/34)	1.177147	282.35
2^(7/34)	1.153392	247.06
2^(6/34)	1.130116	211.76
2^(5/34)	1.107310	176.47
2^(4/34)	1.084964	141.18
2^(3/34)	1.063069	105.88
2^(2/34)	1.041616	70.59
2^(1/34)	1.020596	35.29
2^(0/34)	1	0

11 Limit		+/- from Just	
		Avg.->	9.05
21/11	1119.46	9.95	
11/6	1049.36	9.46	
20/11	1035.00	-11.47	
18/11	852.59	-5.53	
11/7	782.49	-6.02	
22/15	663.05	7.54	
16/11	648.68	-13.39	
11/8	551.32	13.39	
15/11	536.95	-7.54	
14/11	417.51	6.02	
11/9	347.41	5.53	
11/10	165.00	11.47	
12/11	150.64	-9.46	
22/21	80.54	-9.95	

13 Limit				+/- from Just	
				Avg.->	6.11
25/13	1132.10			-2.69	
24/13	1061.43	13/7	1071.70	-2.60	-12.88
26/15	952.26			0.68	
22/13	910.79			6.86	
13/8	840.53	21/13	830.25	6.53	16.81
20/13	745.79			-4.61	
13/9	636.62			-1.32	
18/13	563.38			1.32	
13/10	454.21			4.61	
16/13	359.47	26/21	369.75	-6.53	-16.81
13/11	289.21			-6.86	
15/13	247.74			-0.68	
13/12	138.57	14/13	128.30	2.60	12.88
26/25	67.90			2.69	

36 Tone Equal Temperament

Major Scale Intervals -> 6 6 3 6 6 6 3

36ET	Ratio	Cents	+/- from 12ET
2^(36/36)	2	1200	0
2^(35/36)	1.961860	1166.67	-33.33
2^(34/36)	1.924448	1133.33	33.33
2^(33/36)	1.887749	1100	0
2^(32/36)	1.851749	1066.67	-33.33
2^(31/36)	1.816437	1033.33	33.33
2^(30/36)	1.781797	1000	0
2^(29/36)	1.747819	966.67	-33.33
2^(28/36)	1.714488	933.33	33.33
2^(27/36)	1.681793	900	0
2^(26/36)	1.649721	866.67	-33.33
2^(25/36)	1.618261	833.33	33.33
2^(24/36)	1.587401	800	0
2^(23/36)	1.557129	766.67	-33.33
2^(22/36)	1.527435	733.33	33.33
2^(21/36)	1.498307	700	0
2^(20/36)	1.469734	666.67	-33.33
2^(19/36)	1.441707	633.33	33.33
2^(18/36)	1.414214	600	0
2^(17/36)	1.387245	566.67	-33.33
2^(16/36)	1.360790	533.33	33.33
2^(15/36)	1.334840	500	0
2^(14/36)	1.309385	466.67	-33.33
2^(13/36)	1.284415	433.33	33.33
2^(12/36)	1.259921	400	0
2^(11/36)	1.235894	366.67	-33.33
2^(10/36)	1.212326	333.33	33.33
2^(9/36)	1.189207	300	0
2^(8/36)	1.166529	266.67	-33.33
2^(7/36)	1.144283	233.33	33.33
2^(6/36)	1.122462	200	0
2^(5/36)	1.101057	166.67	-33.33
2^(4/36)	1.080060	133.33	33.33
2^(3/36)	1.059463	100	0
2^(2/36)	1.039259	66.67	-33.33
2^(1/36)	1.019441	33.33	33.33
2^(0/36)	1	0	0

5 Limit				+/- from Just	
				Avg.->	10.35
2/1	1200			0	
15/8	1088.27			11.73	
9/5	1017.60			15.74	
16/9	996.09			3.91	
5/3	884.36			15.64	
8/5	813.69			-13.69	
3/2	701.96			-1.96	
45/32	590.22	64/45	609.78	9.78	-9.78
4/3	498.04			1.96	
5/4	386.31			13.69	
6/5	315.64			-15.64	
9/8	203.91			-3.91	
10/9	182.40			-15.74	
16/15	111.73			-11.73	
1/1	0			0	

7 Limit				+/- from Just	
				Avg.->	4.99
7/4	968.83			-2.16	
12/7	933.13			0.20	
14/9	764.92			1.75	
10/7	617.49			15.85	
7/5	582.51			-15.85	
9/7	435.08			-1.75	
7/6	266.87			-0.20	
8/7	231.17			2.16	



36 ET

"keyboard mapping"				
<b>0,36</b>	3-8va		Unis.	<b>0,0</b>
0,35	+7	-2	0,1	
0,34	-7	+2	0,2	
<b>0,33</b>	+6	-3	<b>0,3</b>	
0,32	-6	+3	0,4	
<b>0,31</b>	P5	P4	<b>0,5</b>	
<b>0,30</b>	x4	x4	<b>0,6</b>	
<b>0,29</b>	P4	P5	<b>0,7</b>	
<b>0,28</b>	+3	-6	<b>0,8</b>	
<b>0,27</b>	-3	+6	<b>0,9</b>	
0,26	+2	-7	0,10	
0,25	-2	+7	0,11	
<b>0,24</b>	2-8va	8va	<b>0,12</b>	
<b>0,23</b>	+7	-2	<b>0,13</b>	
0,22	-7	+2	0,14	
<b>0,21</b>	+6	-3	<b>0,15</b>	
0,20	-6	+3	0,16	
<b>0,19</b>	P5	P4	<b>0,17</b>	
0,18	x4	x4	0,18	
<b>0,17</b>	P4	P5	<b>0,19</b>	
0,16	+3	-6	0,20	
<b>0,15</b>	-3	+6	<b>0,21</b>	
0,14	+2	-7	0,22	
<b>0,13</b>	-2	+7	<b>0,23</b>	
<b>0,12</b>	8va	2-8va	<b>0,24</b>	
0,11	+7	-2	0,25	
0,10	-7	+2	0,26	
<b>0,9</b>	+6	-3	<b>0,27</b>	
<b>0,8</b>	-6	+3	<b>0,28</b>	
<b>0,7</b>	P5	P4	<b>0,29</b>	
<b>0,6</b>	x4	x4	<b>0,30</b>	
<b>0,5</b>	P4	P5	<b>0,31</b>	
0,4	+3	-6	0,32	
<b>0,3</b>	-3	+6	<b>0,33</b>	
0,2	+2	-7	0,34	
0,1	-2	+7	0,35	
<b>0,0</b>	Unis.	3-8va	<b>0,36</b>	

36ET	Ratio	Cents
2^(36/36)	2	1200
2^(35/36)	1.961860	1166.67
2^(34/36)	1.924448	1133.33
2^(33/36)	1.887749	1100
2^(32/36)	1.851749	1066.67
2^(31/36)	1.816437	1033.33
2^(30/36)	1.781797	1000
2^(29/36)	1.747819	966.67
2^(28/36)	1.714488	933.33
2^(27/36)	1.681793	900
2^(26/36)	1.649721	866.67
2^(25/36)	1.618261	833.33
2^(24/36)	1.587401	800
2^(23/36)	1.557129	766.67
2^(22/36)	1.527435	733.33
2^(21/36)	1.498307	700
2^(20/36)	1.469734	666.67
2^(19/36)	1.441707	633.33
2^(18/36)	1.414214	600
2^(17/36)	1.387245	566.67
2^(16/36)	1.360790	533.33
2^(15/36)	1.334840	500
2^(14/36)	1.309385	466.67
2^(13/36)	1.284415	433.33
2^(12/36)	1.259921	400
2^(11/36)	1.235894	366.67
2^(10/36)	1.212326	333.33
2^(9/36)	1.189207	300
2^(8/36)	1.166529	266.67
2^(7/36)	1.144283	233.33
2^(6/36)	1.122462	200
2^(5/36)	1.101057	166.67
2^(4/36)	1.080060	133.33
2^(3/36)	1.059463	100
2^(2/36)	1.039259	66.67
2^(1/36)	1.019441	33.33
2^(0/36)	1	0

11 Limit				+/- from Just	
				Avg.->	11.49
21/11	1119.46			13.87	
20/11	1035.00	11/6	1049.36	-1.66	-16.03
18/11	852.59			14.07	
11/7	782.49			-15.83	
22/15	663.05			3.62	
16/11	648.68			-15.35	
11/8	551.32			15.35	
15/11	536.95			-3.62	
14/11	417.51			15.83	
11/9	347.41			-14.07	
11/10	165.00	12/11	150.64	1.66	16.03
22/21	80.54			-13.87	

13 Limit				+/- from Just	
				Avg.->	6.97
25/13	1132.10			1.23	
24/13	1061.43	13/7	1071.70	5.24	-5.04
26/15	952.26			14.41	
22/13	910.79			-10.79	
13/8	840.53	21/13	830.25	-7.19	3.08
20/13	745.79			-12.45	
13/9	636.62			-3.28	
18/13	563.38			3.28	
13/10	454.21			12.45	
16/13	359.47	26/21	369.75	7.19	-3.08
13/11	289.21			10.79	
15/13	247.74			-14.41	
13/12	138.57	14/13	128.30	-5.24	5.04
26/25	67.90			-1.23	

41 Tone Equal Temperament

Major Scale Intervals -> 6 1 6 4 7 6 7 4

41ET	Ratio	Cents	+/- from 12ET
2^(41/41)	2	1200	0
2^(40/41)	1.966472	1170.73	-29.27
2^(39/41)	1.933506	1141.46	41.46
2^(38/41)	1.901093	1112.20	12.20
2^(37/41)	1.869223	1082.93	-17.07
2^(36/41)	1.837888	1053.66	53.66
2^(35/41)	1.807078	1024.39	24.39
2^(34/41)	1.776784	995.12	-4.88
2^(33/41)	1.746998	965.85	65.85
2^(32/41)	1.717712	936.59	36.59
2^(31/41)	1.688916	907.32	7.32
2^(30/41)	1.660603	878.05	78.05
2^(29/41)	1.632765	848.78	48.78
2^(28/41)	1.605393	819.51	19.51
2^(27/41)	1.578481	790.24	90.24
2^(26/41)	1.552019	760.98	60.98
2^(25/41)	1.526001	731.71	31.71
2^(24/41)	1.500419	702.44	102.44
2^(23/41)	1.475267	673.17	73.17
2^(22/41)	1.450535	643.90	43.90
2^(21/41)	1.426219	614.63	114.63
2^(20/41)	1.402310	585.37	85.37
2^(19/41)	1.378801	556.10	56.10
2^(18/41)	1.355687	526.83	126.83
2^(17/41)	1.332961	497.56	97.56
2^(16/41)	1.310615	468.29	68.29
2^(15/41)	1.288644	439.02	139.02
2^(14/41)	1.267041	409.76	109.76
2^(13/41)	1.245801	380.49	80.49
2^(12/41)	1.224916	351.22	151.22
2^(11/41)	1.204382	321.95	121.95
2^(10/41)	1.184192	292.68	92.68
2^(9/41)	1.164340	263.41	163.41
2^(8/41)	1.144821	234.15	134.15
2^(7/41)	1.125629	204.88	104.88
2^(6/41)	1.106759	175.61	175.61
2^(5/41)	1.088206	146.34	-53.66
2^(4/41)	1.069963	117.07	17.07
2^(3/41)	1.052026	87.80	-12.20
2^(2/41)	1.034390	58.54	-41.46
2^(1/41)	1.017050	29.27	29.27
2^(0/41)	1	0	0

5 Limit		+/- from Just	
		Avg.->	4.37
2/1	1200	0	
15/8	1088.27	-5.34	
9/5	1017.60	6.79	
16/9	996.09	-0.97	
5/3	884.36	-6.31	
8/5	813.69	5.83	
3/2	701.96	0.48	
64/45	609.78	4.86	
45/32	590.22	-4.86	
4/3	498.04	-0.48	
5/4	386.31	-5.83	
6/5	315.64	6.31	
9/8	203.91	0.97	
10/9	182.40	-6.79	
16/15	111.73	5.34	
1/1	0	0	

7 Limit		+/- from Just	
		Avg.->	3.31
7/4	968.83	-2.97	
12/7	933.13	3.46	
14/9	764.92	-3.94	
10/7	617.49	-2.85	
7/5	582.51	2.85	
9/7	435.08	3.94	
7/6	266.87	-3.46	
8/7	231.17	2.97	

41 ET

"keyboard mapping"			
<b>0,41</b>	P4	Unis.	<b>0,0</b>
0,40	+3	-2	0,1
0,39	-3	+2	0,2
0,38	+2	-3	0,3
<b>0,37</b>	-2	+3	<b>0,4</b>
0,36	3-8va	P4	0,5
<b>0,35</b>	+7	x4	<b>0,6</b>
<b>0,34</b>	-7	P5	<b>0,7</b>
<b>0,33</b>	+6	-6	<b>0,8</b>
<b>0,32</b>	-6	+6	<b>0,9</b>
0,31	P5	-7	0,10
<b>0,30</b>	x4	+7	<b>0,11</b>
0,29	P4	8va	0,12
<b>0,28</b>	+3	-2	<b>0,13</b>
0,27	-3	+2	0,14
<b>0,26</b>	+2	-3	<b>0,15</b>
0,25	-2	+3	0,16
<b>0,24</b>	2-8va	P4	<b>0,17</b>
0,23	+7	x4	0,18
0,22	-7	P5	0,19
<b>0,21</b>	+6	-6	<b>0,20</b>
<b>0,20</b>	-6	+6	<b>0,21</b>
0,19	P5	-7	0,22
0,18	x4	+7	0,23
<b>0,17</b>	P4	2-8va	<b>0,24</b>
0,16	+3	-2	0,25
<b>0,15</b>	-3	+2	<b>0,26</b>
0,14	+2	-3	0,27
<b>0,13</b>	-2	+3	<b>0,28</b>
0,12	8va	P4	0,29
<b>0,11</b>	+7	x4	<b>0,30</b>
0,10	-7	P5	0,31
<b>0,9</b>	+6	-6	<b>0,32</b>
<b>0,8</b>	-6	+6	<b>0,33</b>
<b>0,7</b>	P5	-7	<b>0,34</b>
<b>0,6</b>	x4	+7	<b>0,35</b>
0,5	P4	3-8va	0,36
<b>0,4</b>	+3	-2	<b>0,37</b>
0,3	-3	+2	0,38
0,2	+2	-3	0,39
0,1	-2	+3	0,40
<b>0,0</b>	Unis.	P4	<b>0,41</b>

41ET	Ratio	Cents
2^(41/41)	2	1200
2^(40/41)	1.966472	1170.73
2^(39/41)	1.933506	1141.46
2^(38/41)	1.901093	1112.20
2^(37/41)	1.869223	1082.93
2^(36/41)	1.837888	1053.66
2^(35/41)	1.807078	1024.39
2^(34/41)	1.776784	995.12
2^(33/41)	1.746998	965.85
2^(32/41)	1.717712	936.59
2^(31/41)	1.688916	907.32
2^(30/41)	1.660603	878.05
2^(29/41)	1.632765	848.78
2^(28/41)	1.605393	819.51
2^(27/41)	1.578481	790.24
2^(26/41)	1.552019	760.98
2^(25/41)	1.526001	731.71
2^(24/41)	1.500419	702.44
2^(23/41)	1.475267	673.17
2^(22/41)	1.450535	643.90
2^(21/41)	1.426219	614.63
2^(20/41)	1.402310	585.37
2^(19/41)	1.378801	556.10
2^(18/41)	1.355687	526.83
2^(17/41)	1.332961	497.56
2^(16/41)	1.310615	468.29
2^(15/41)	1.288644	439.02
2^(14/41)	1.267041	409.76
2^(13/41)	1.245801	380.49
2^(12/41)	1.224916	351.22
2^(11/41)	1.204382	321.95
2^(10/41)	1.184192	292.68
2^(9/41)	1.164340	263.41
2^(8/41)	1.144821	234.15
2^(7/41)	1.125629	204.88
2^(6/41)	1.106759	175.61
2^(5/41)	1.088206	146.34
2^(4/41)	1.069963	117.07
2^(3/41)	1.052026	87.80
2^(2/41)	1.034390	58.54
2^(1/41)	1.017050	29.27
2^(0/41)	1	0

11 Limit		+/- from Just	
		Avg.->	6.95
21/11	1119.46	-7.27	
11/6	1049.36	4.30	
20/11	1035.00	-10.61	
18/11	852.59	-3.81	
11/7	782.49	7.75	
22/15	663.05	10.12	
16/11	648.68	-4.78	
11/8	551.32	4.78	
15/11	536.95	-10.12	
14/11	417.51	-7.75	
11/9	347.41	3.81	
11/10	165.00	10.61	
12/11	150.64	-4.30	
22/21	80.54	7.27	

13 Limit		+/- from Just	
		Avg.->	9.53
25/13	1132.10	9.36	
13/7	1071.70	11.23	
24/13	1061.43	-7.77	
26/15	952.26	13.59	
22/13	910.79	-3.47	
13/8	840.53	8.25	
21/13	830.25	-10.74	
20/13	745.79	-14.08	
13/9	636.62	7.28	
18/13	563.38	-7.28	
13/10	454.21	14.08	
26/21	369.75	10.74	
16/13	359.47	-8.25	
13/11	289.21	3.47	
15/13	247.74	-13.59	
13/12	138.57	7.77	
14/13	128.30	-11.23	
26/25	67.90	-9.36	

43 Tone Equal Temperament

Major Scale Intervals -> 7 7 4 7 7 4

43ET	Ratio	Cents	+/- from 12ET
2^(43/43)	2	1200	0
2^(42/43)	1.968019	1172.09	-27.91
2^(41/43)	1.936549	1144.19	44.19
2^(40/43)	1.905583	1116.28	16.28
2^(39/43)	1.875112	1088.37	-11.63
2^(38/43)	1.845128	1060.47	-39.53
2^(37/43)	1.815624	1032.56	32.56
2^(36/43)	1.786591	1004.65	4.65
2^(35/43)	1.758022	976.74	-23.26
2^(34/43)	1.729911	948.84	48.84
2^(33/43)	1.702249	920.93	20.93
2^(32/43)	1.675029	893.02	-6.98
2^(31/43)	1.648244	865.12	-34.88
2^(30/43)	1.621888	837.21	37.21
2^(29/43)	1.595953	809.30	9.30
2^(28/43)	1.570433	781.40	-18.60
2^(27/43)	1.545321	753.49	-46.51
2^(26/43)	1.520611	725.58	25.58
2^(25/43)	1.496296	697.67	-2.33
2^(24/43)	1.472369	669.77	-30.23
2^(23/43)	1.448825	641.86	41.86
2^(22/43)	1.425658	613.95	13.95
2^(21/43)	1.402861	586.05	-13.95
2^(20/43)	1.380429	558.14	-41.86
2^(19/43)	1.358355	530.23	30.23
2^(18/43)	1.336634	502.33	2.33
2^(17/43)	1.315261	474.42	-25.58
2^(16/43)	1.294229	446.51	46.51
2^(15/43)	1.273534	418.60	18.60
2^(14/43)	1.253169	390.70	-9.30
2^(13/43)	1.233131	362.79	-37.21
2^(12/43)	1.213412	334.88	34.88
2^(11/43)	1.194009	306.98	6.98
2^(10/43)	1.174916	279.07	-20.93
2^(9/43)	1.156129	251.16	-48.84
2^(8/43)	1.137642	223.26	23.26
2^(7/43)	1.119450	195.35	-4.65
2^(6/43)	1.101550	167.44	-32.56
2^(5/43)	1.083936	139.53	39.53
2^(4/43)	1.066603	111.63	11.63
2^(3/43)	1.049547	83.72	-16.28
2^(2/43)	1.032765	55.81	-44.19
2^(1/43)	1.016250	27.91	27.91
2^(0/43)	1	0	0

5 Limit				+/- from Just	
				Avg.->	6.16
2/1	1200			0	
15/8	1088.27			0.10	
16/9	996.09	9/5	1017.60	8.56	-12.95
5/3	884.36			8.66	
8/5	813.69			-4.38	
3/2	701.96			-4.28	
64/45	609.78			4.18	
45/32	590.22			-4.18	
4/3	498.04			4.28	
5/4	386.31			4.38	
6/5	315.64			-8.66	
9/8	203.91	10/9	182.40	-8.56	12.95
16/15	111.73			-0.10	
1/1	0			0	

7 Limit			+/- from Just	
			Avg.->	8.77
7/4	968.83		7.92	
12/7	933.13		-12.20	
14/9	764.92		-11.43	
10/7	617.49		-3.53	
7/5	582.51		3.53	
9/7	435.08		11.43	
7/6	266.87		12.20	
8/7	231.17		-7.92	

43 ET

"keyboard mapping"				
<b>0,43</b>	P5		Unis.	<b>0,0</b>
0,42	x4		-2	0,1
0,41	P4		+2	0,2
0,40	+3		-3	0,3
<b>0,39</b>	-3		+3	<b>0,4</b>
0,38	+2		P4	0,5
0,37	-2		x4	0,6
<b>0,36</b>	3-8va		P5	<b>0,7</b>
<b>0,35</b>	+7		-6	<b>0,8</b>
0,34	-7		+6	0,9
<b>0,33</b>	+6		-7	<b>0,10</b>
<b>0,32</b>	-6		+7	<b>0,11</b>
0,31	P5		8va	0,12
0,30	x4		-2	0,13
<b>0,29</b>	P4		+2	<b>0,14</b>
0,28	+3		-3	0,15
<b>0,27</b>	-3		+3	<b>0,16</b>
0,26	+2		P4	0,17
<b>0,25</b>	-2		x4	<b>0,18</b>
0,24	2-8va		P5	0,19
0,23	+7		-6	0,20
<b>0,22</b>	-7		+6	<b>0,21</b>
<b>0,21</b>	+6		-7	<b>0,22</b>
0,20	-6		+7	0,23
0,19	P5		2-8va	0,24
<b>0,18</b>	x4		-2	<b>0,25</b>
0,17	P4		+2	0,26
<b>0,16</b>	+3		-3	<b>0,27</b>
0,15	-3		+3	0,28
<b>0,14</b>	+2		P4	<b>0,29</b>
0,13	-2		x4	0,30
0,12	8va		P5	0,31
<b>0,11</b>	+7		-6	<b>0,32</b>
<b>0,10</b>	-7		+6	<b>0,33</b>
0,9	+6		-7	0,34
<b>0,8</b>	-6		+7	<b>0,35</b>
<b>0,7</b>	P5		3-8va	<b>0,36</b>
0,6	x4		-2	0,37
0,5	P4		+2	0,38
<b>0,4</b>	+3		-3	<b>0,39</b>
0,3	-3		+3	0,40
0,2	+2		P4	0,41
0,1	-2		x4	0,42
<b>0,0</b>	Unis.		P5	<b>0,43</b>

43ET	Ratio	Cents
2^(43/43)	2	1200
2^(42/43)	1.968019	1172.09
2^(41/43)	1.936549	1144.19
2^(40/43)	1.905583	1116.28
2^(39/43)	1.875112	1088.37
2^(38/43)	1.845128	1060.47
2^(37/43)	1.815624	1032.56
2^(36/43)	1.786591	1004.65
2^(35/43)	1.758022	976.74
2^(34/43)	1.729911	948.84
2^(33/43)	1.702249	920.93
2^(32/43)	1.675029	893.02
2^(31/43)	1.648244	865.12
2^(30/43)	1.621888	837.21
2^(29/43)	1.595953	809.30
2^(28/43)	1.570433	781.40
2^(27/43)	1.545321	753.49
2^(26/43)	1.520611	725.58
2^(25/43)	1.496296	697.67
2^(24/43)	1.472369	669.77
2^(23/43)	1.448825	641.86
2^(22/43)	1.425658	613.95
2^(21/43)	1.402861	586.05
2^(20/43)	1.380429	558.14
2^(19/43)	1.358355	530.23
2^(18/43)	1.336634	502.33
2^(17/43)	1.315261	474.42
2^(16/43)	1.294229	446.51
2^(15/43)	1.273534	418.60
2^(14/43)	1.253169	390.70
2^(13/43)	1.233131	362.79
2^(12/43)	1.213412	334.88
2^(11/43)	1.194009	306.98
2^(10/43)	1.174916	279.07
2^(9/43)	1.156129	251.16
2^(8/43)	1.137642	223.26
2^(7/43)	1.119450	195.35
2^(6/43)	1.101550	167.44
2^(5/43)	1.083936	139.53
2^(4/43)	1.066603	111.63
2^(3/43)	1.049547	83.72
2^(2/43)	1.032765	55.81
2^(1/43)	1.016250	27.91
2^(0/43)	1	0

11 Limit		+/- from Just	
		Avg.->	6.27
21/11	1119.46	-3.18	
11/6	1049.36	11.10	
20/11	1035.00	-2.44	
18/11	852.59	12.52	
11/7	782.49	-1.10	
22/15	663.05	6.72	
16/11	648.68	-6.82	
11/8	551.32	6.82	
15/11	536.95	-6.72	
14/11	417.51	1.10	
11/9	347.41	-12.52	
11/10	165.00	2.44	
12/11	150.64	-11.10	
22/21	80.54	3.18	

13 Limit		+/- from Just			
				Avg.->	6.79
25/13	1132.10			12.09	
24/13	1061.43	13/7	1071.70	-0.96	-11.24
26/15	952.26			-3.42	
22/13	910.79			10.14	
13/8	840.53	21/13	830.25	-3.32	6.96
20/13	745.79			7.70	
13/9	636.62			5.24	
18/13	563.38			-5.24	
13/10	454.21			-7.70	
16/13	359.47	26/21	369.75	3.32	-6.96
13/11	289.21			-10.14	
15/13	247.74			3.42	
13/12	138.57	14/13	128.30	0.96	11.24
26/25	67.90			-12.09	

46 Tone Equal Temperament

Major Scale Intervals -> 7 1 7 4 8 7 8 4

46ET	Ratio	Cents	+/- from 12ET
2^(46/46)	2	1200	0
2^(45/46)	1.970089	1173.91	-26.09
2^(44/46)	1.940626	1147.83	47.83
2^(43/46)	1.911603	1121.74	21.74
2^(42/46)	1.883014	1095.65	-4.35
2^(41/46)	1.854852	1069.57	-30.43
2^(40/46)	1.827112	1043.48	43.48
2^(39/46)	1.799787	1017.39	17.39
2^(38/46)	1.772870	991.30	-8.70
2^(37/46)	1.746356	965.22	-34.78
2^(36/46)	1.720239	939.13	39.13
2^(35/46)	1.694512	913.04	13.04
2^(34/46)	1.669169	886.96	-13.04
2^(33/46)	1.644206	860.87	-39.13
2^(32/46)	1.619616	834.78	34.78
2^(31/46)	1.595394	808.70	8.70
2^(30/46)	1.571534	782.61	-17.39
2^(29/46)	1.548031	756.52	-43.48
2^(28/46)	1.524880	730.43	30.43
2^(27/46)	1.502075	704.35	4.35
2^(26/46)	1.479610	678.26	-21.74
2^(25/46)	1.457482	652.17	-47.83
2^(24/46)	1.435685	626.09	26.09
2^(23/46)	1.414214	600	0
2^(22/46)	1.393063	573.91	-26.09
2^(21/46)	1.372229	547.83	47.83
2^(20/46)	1.351707	521.74	21.74
2^(19/46)	1.331492	495.65	-4.35
2^(18/46)	1.311579	469.57	-30.43
2^(17/46)	1.291963	443.48	43.48
2^(16/46)	1.272642	417.39	17.39
2^(15/46)	1.253609	391.30	-8.70
2^(14/46)	1.234860	365.22	-34.78
2^(13/46)	1.216392	339.13	39.13
2^(12/46)	1.198201	313.04	13.04
2^(11/46)	1.180281	286.96	-13.04
2^(10/46)	1.162629	260.87	-39.13
2^(9/46)	1.145242	234.78	34.78
2^(8/46)	1.128114	208.70	8.70
2^(7/46)	1.111243	182.61	-17.39
2^(6/46)	1.094624	156.52	-43.48
2^(5/46)	1.078253	130.43	30.43
2^(4/46)	1.062127	104.35	4.35
2^(3/46)	1.046243	78.26	-21.74
2^(2/46)	1.030596	52.17	-47.83
2^(1/46)	1.015183	26.09	26.09
2^(0/46)	1	0	0

5 Limit				+/- from Just	
				Avg.->	4.59
2/1	1200			0	
15/8	1088.27			7.38	
9/5	1017.60			-0.20	
16/9	996.09			-4.79	
5/3	884.36			2.60	
8/5	813.69			-4.99	
3/2	701.96			2.39	
45/32	590.22	64/45	609.78	9.78	-9.78
4/3	498.04			-2.39	
5/4	386.31			4.99	
6/5	315.64			-2.60	
9/8	203.91			4.79	
10/9	182.40			0.20	
16/15	111.73			-7.38	
1/1	0			0	

7 Limit				+/- from Just	
				Avg.->	6.65
7/4	968.83			-3.61	
12/7	933.13			6.00	
14/9	764.92			-8.39	
10/7	617.49			8.60	
7/5	582.51			-8.60	
9/7	435.08			8.39	
7/6	266.87			-6.00	
8/7	231.17			3.61	

46 ET

"keyboard mapping"			
0,46	-7	Unis.	0,0
0,45	+6	-2	0,1
0,44	-6	+2	0,2
0,43	P5	-3	0,3
0,42	x4	+3	0,4
0,41	P4	P4	0,5
0,40	+3	x4	0,6
0,39	-3	P5	0,7
0,38	+2	-6	0,8
0,37	-2	+6	0,9
0,36	3-8va	-7	0,10
0,35	+7	+7	0,11
0,34	-7	8va	0,12
0,33	+6	-2	0,13
0,32	-6	+2	0,14
0,31	P5	-3	0,15
0,30	x4	+3	0,16
0,29	P4	P4	0,17
0,28	+3	x4	0,18
0,27	-3	P5	0,19
0,26	+2	-6	0,20
0,25	-2	+6	0,21
0,24	2-8va	-7	0,22
0,23	+7	+7	0,23
0,22	-7	2-8va	0,24
0,21	+6	-2	0,25
0,20	-6	+2	0,26
0,19	P5	-3	0,27
0,18	x4	+3	0,28
0,17	P4	P4	0,29
0,16	+3	x4	0,30
0,15	-3	P5	0,31
0,14	+2	-6	0,32
0,13	-2	+6	0,33
0,12	8va	-7	0,34
0,11	+7	+7	0,35
0,10	-7	3-8va	0,36
0,9	+6	-2	0,37
0,8	-6	+2	0,38
0,7	P5	-3	0,39
0,6	x4	+3	0,40
0,5	P4	P4	0,41
0,4	+3	x4	0,42
0,3	-3	P5	0,43
0,2	+2	-6	0,44
0,1	-2	+6	0,45
0,0	Unis.	-7	0,46

46ET	Ratio	Cents
2^(46/46)	2	1200
2^(45/46)	1.970089	1173.91
2^(44/46)	1.940626	1147.83
2^(43/46)	1.911603	1121.74
2^(42/46)	1.883014	1095.65
2^(41/46)	1.854852	1069.57
2^(40/46)	1.827112	1043.48
2^(39/46)	1.799787	1017.39
2^(38/46)	1.772870	991.30
2^(37/46)	1.746356	965.22
2^(36/46)	1.720239	939.13
2^(35/46)	1.694512	913.04
2^(34/46)	1.669169	886.96
2^(33/46)	1.644206	860.87
2^(32/46)	1.619616	834.78
2^(31/46)	1.595394	808.70
2^(30/46)	1.571534	782.61
2^(29/46)	1.548031	756.52
2^(28/46)	1.524880	730.43
2^(27/46)	1.502075	704.35
2^(26/46)	1.479610	678.26
2^(25/46)	1.457482	652.17
2^(24/46)	1.435685	626.09
2^(23/46)	1.414214	600
2^(22/46)	1.393063	573.91
2^(21/46)	1.372229	547.83
2^(20/46)	1.351707	521.74
2^(19/46)	1.331492	495.65
2^(18/46)	1.311579	469.57
2^(17/46)	1.291963	443.48
2^(16/46)	1.272642	417.39
2^(15/46)	1.253609	391.30
2^(14/46)	1.234860	365.22
2^(13/46)	1.216392	339.13
2^(12/46)	1.198201	313.04
2^(11/46)	1.180281	286.96
2^(10/46)	1.162629	260.87
2^(9/46)	1.145242	234.78
2^(8/46)	1.128114	208.70
2^(7/46)	1.111243	182.61
2^(6/46)	1.094624	156.52
2^(5/46)	1.078253	130.43
2^(4/46)	1.062127	104.35
2^(3/46)	1.046243	78.26
2^(2/46)	1.030596	52.17
2^(1/46)	1.015183	26.09
2^(0/46)	1	0

11 Limit				+/- from Just	
				Avg.->	5.63
21/11	1119.46			2.28	
20/11	1035.00	11/6	1049.36	8.48	-5.88
18/11	852.59			8.28	
11/7	782.49			0.12	
16/11	648.68	22/15	663.05	3.49	-10.88
11/8	551.32	15/11	536.95	-3.49	10.88
14/11	417.51			-0.12	
11/9	347.41			-8.28	
11/10	165.00	12/11	150.64	-8.48	5.88
22/21	80.54			-2.28	

13 Limit				+/- from Just	
				Avg.->	7.49
25/13	1132.10			-10.36	
24/13	1061.43	13/7	1071.70	8.14	-2.14
26/15	952.26			12.96	
22/13	910.79			2.25	
13/8	840.53	21/13	830.25	-5.75	4.53
20/13	745.79			10.74	
13/9	636.62			-10.53	
18/13	563.38			10.53	
13/10	454.21			-10.74	
16/13	359.47	26/21	369.75	5.75	-4.53
13/11	289.21			-2.25	
15/13	247.74			-12.96	
13/12	138.57	14/13	128.30	-8.14	2.14
26/25	67.90			10.36	

48 Tone Equal Temperament

Major Scale Intervals -> 7 1 7 5 8 7 8 5 ( 8 8 4 8 8 8 4 )

48ET	Ratio	Cents	+/- from 12ET
2^(48/48)	2	1200	0
2^(47/48)	1.971326	1175	-25
2^(46/48)	1.943064	1150	+/- 50
2^(45/48)	1.915207	1125	25
2^(44/48)	1.887749	1100	0
2^(43/48)	1.860684	1075	-25
2^(42/48)	1.834008	1050	+/- 50
2^(41/48)	1.807714	1025	25
2^(40/48)	1.781797	1000	0
2^(39/48)	1.756252	975	-25
2^(38/48)	1.731073	950	+/- 50
2^(37/48)	1.706255	925	25
2^(36/48)	1.681793	900	0
2^(35/48)	1.657681	875	-25
2^(34/48)	1.633915	850	+/- 50
2^(33/48)	1.610490	825	25
2^(32/48)	1.587401	800	0
2^(31/48)	1.564643	775	-25
2^(30/48)	1.542211	750	+/- 50
2^(29/48)	1.520100	725	25
2^(28/48)	1.498307	700	0
2^(27/48)	1.476826	675	-25
2^(26/48)	1.455653	650	+/- 50
2^(25/48)	1.434784	625	25
2^(24/48)	1.414214	600	0
2^(23/48)	1.393938	575	-25
2^(22/48)	1.373954	550	+/- 50
2^(21/48)	1.354256	525	25
2^(20/48)	1.334840	500	0
2^(19/48)	1.315703	475	-25
2^(18/48)	1.296840	450	+/- 50
2^(17/48)	1.278247	425	25
2^(16/48)	1.259921	400	0
2^(15/48)	1.241858	375	-25
2^(14/48)	1.224054	350	+/- 50
2^(13/48)	1.206505	325	25
2^(12/48)	1.189207	300	0
2^(11/48)	1.172158	275	-25
2^(10/48)	1.155353	250	+/- 50
2^(9/48)	1.138789	225	25
2^(8/48)	1.122462	200	0
2^(7/48)	1.106370	175	-25
2^(6/48)	1.090508	150	+/- 50
2^(5/48)	1.074873	125	25
2^(4/48)	1.059463	100	0
2^(3/48)	1.044274	75	-25
2^(2/48)	1.029302	50	+/- 50
2^(1/48)	1.014545	25	25
2^(0/48)	1	0	0

5 Limit				+/- from Just	
				Avg.->	7.92
2/1	1200			0	
15/8	1088.27			11.73	
15/8	1088.27			-13.27	
9/5	1017.60			7.40	
16/9	996.09			3.91	
5/3	884.36			-9.36	
8/5	813.69			11.31	
3/2	701.96			-1.96	
45/32	590.22	64/45	609.78	9.78	-9.78
4/3	498.04			1.96	
5/4	386.31			-11.31	
6/5	315.64			9.36	
9/8	203.91			-3.91	
10/9	182.40			-7.40	
16/15	111.73			-11.73	
1/1	0			0	

7 Limit		+/- from Just	
		Avg.->	7.97
7/4	968.83	6.17	
12/7	933.13	-8.13	
14/9	764.92	10.08	
10/7	617.49	7.51	
7/5	582.51	-7.51	
9/7	435.08	-10.08	
7/6	266.87	8.13	
8/7	231.17	-6.17	



48 ET

"keyboard mapping"			
<b>0,48</b>	4-8va	Unis.	<b>0,0</b>
0,47	+7	-2	0,1
0,46	-7	+2	0,2
0,45	+6	-3	0,3
<b>0,44</b>	-6	+3	<b>0,4</b>
0,43	P5	P4	0,5
0,42	x4	x4	0,6
<b>0,41</b>	P4	P5	<b>0,7</b>
<b>0,40</b>	+3	-6	<b>0,8</b>
<b>0,39</b>	-3	+6	<b>0,9</b>
0,38	+2	-7	0,10
<b>0,37</b>	-2	+7	<b>0,11</b>
0,36	3-8va	8va	0,12
<b>0,35</b>	+7	-2	<b>0,13</b>
0,34	-7	+2	0,14
<b>0,33</b>	+6	-3	<b>0,15</b>
0,32	-6	+3	0,16
<b>0,31</b>	P5	P4	<b>0,17</b>
0,30	x4	x4	0,18
0,29	P4	P5	0,19
<b>0,28</b>	+3	-6	<b>0,20</b>
0,27	-3	+6	0,21
0,26	+2	-7	0,22
<b>0,25</b>	-2	+7	<b>0,23</b>
0,24	2-8va	2-8va	0,24
<b>0,23</b>	+7	-2	<b>0,25</b>
0,22	-7	+2	0,26
0,21	+6	-3	0,27
<b>0,20</b>	-6	+3	<b>0,28</b>
0,19	P5	P4	0,29
0,18	x4	x4	0,30
<b>0,17</b>	P4	P5	<b>0,31</b>
0,16	+3	-6	0,32
<b>0,15</b>	-3	+6	<b>0,33</b>
0,14	+2	-7	0,34
<b>0,13</b>	-2	+7	<b>0,35</b>
0,12	8va	3-8va	0,36
<b>0,11</b>	+7	-2	<b>0,37</b>
0,10	-7	+2	0,38
<b>0,9</b>	+6	-3	<b>0,39</b>
<b>0,8</b>	-6	+3	<b>0,40</b>
<b>0,7</b>	P5	P4	<b>0,41</b>
0,6	x4	x4	0,42
0,5	P4	P5	0,43
<b>0,4</b>	+3	-6	<b>0,44</b>
0,3	-3	+6	0,45
0,2	+2	-7	0,46
0,1	-2	+7	0,47
<b>0,0</b>	Unis.	4-8va	<b>0,48</b>

48ET	Ratio	Cents
2^(48/48)	2	1200
2^(47/48)	1.971326	1175
2^(46/48)	1.943064	1150
2^(45/48)	1.915207	1125
2^(44/48)	1.887749	1100
2^(43/48)	1.860684	1075
2^(42/48)	1.834008	1050
2^(41/48)	1.807714	1025
2^(40/48)	1.781797	1000
2^(39/48)	1.756252	975
2^(38/48)	1.731073	950
2^(37/48)	1.706255	925
2^(36/48)	1.681793	900
2^(35/48)	1.657681	875
2^(34/48)	1.633915	850
2^(33/48)	1.610490	825
2^(32/48)	1.587401	800
2^(31/48)	1.564643	775
2^(30/48)	1.542211	750
2^(29/48)	1.520100	725
2^(28/48)	1.498307	700
2^(27/48)	1.476826	675
2^(26/48)	1.455653	650
2^(25/48)	1.434784	625
2^(24/48)	1.414214	600
2^(23/48)	1.393938	575
2^(22/48)	1.373954	550
2^(21/48)	1.354256	525
2^(20/48)	1.334840	500
2^(19/48)	1.315703	475
2^(18/48)	1.296840	450
2^(17/48)	1.278247	425
2^(16/48)	1.259921	400
2^(15/48)	1.241858	375
2^(14/48)	1.224054	350
2^(13/48)	1.206505	325
2^(12/48)	1.189207	300
2^(11/48)	1.172158	275
2^(10/48)	1.155353	250
2^(9/48)	1.138789	225
2^(8/48)	1.122462	200
2^(7/48)	1.106370	175
2^(6/48)	1.090508	150
2^(5/48)	1.074873	125
2^(4/48)	1.059463	100
2^(3/48)	1.044274	75
2^(2/48)	1.029302	50
2^(1/48)	1.014545	25
2^(0/48)	1	0

11 Limit		+/- from Just	
		Avg.->	5.65
21/11	1119.46	5.54	
11/6	1049.36	0.64	
20/11	1035.00	-10.00	
18/11	852.59	-2.59	
11/7	782.49	-7.49	
22/15	663.05	11.95	
16/11	648.68	1.32	
11/8	551.32	-1.32	
15/11	536.95	-11.95	
14/11	417.51	7.49	
11/9	347.41	2.59	
11/10	165.00	10.00	
12/11	150.64	-0.64	
22/21	80.54	-5.54	

13 Limit		+/- from Just	
		Avg.->	7.27
25/13	1132.10	-7.10	
13/7	1071.70	3.30	
24/13	1061.43	-11.43	
26/15	952.26	-2.26	
22/13	910.79	-10.79	
13/8	840.53	9.47	
21/13	830.25	-5.25	
20/13	745.79	4.21	
13/9	636.62	-11.62	
18/13	563.38	11.62	
13/10	454.21	-4.21	
26/21	369.75	5.25	
16/13	359.47	-9.47	
13/11	289.21	10.79	
15/13	247.74	2.26	
13/12	138.57	11.43	
14/13	128.30	-3.30	
26/25	67.90	7.10	

50 Tone Equal Temperament

Major Scale Intervals -> 8 8 5 8 8 8 5

50ET	Ratio	Cents	+/- from 12ET
2^(50/50)	2	1200	0
2^(49/50)	1.972465	1176	-24
2^(48/50)	1.945310	1152	-48
2^(47/50)	1.918528	1128	28
2^(46/50)	1.892115	1104	4
2^(45/50)	1.866066	1080	-20
2^(44/50)	1.840375	1056	-44
2^(43/50)	1.815038	1032	32
2^(42/50)	1.790050	1008	8
2^(41/50)	1.765406	984	-16
2^(40/50)	1.741101	960	-40
2^(39/50)	1.717131	936	36
2^(38/50)	1.693491	912	12
2^(37/50)	1.670176	888	-12
2^(36/50)	1.647182	864	-36
2^(35/50)	1.624505	840	40
2^(34/50)	1.602140	816	16
2^(33/50)	1.580083	792	-8
2^(32/50)	1.558329	768	-32
2^(31/50)	1.536875	744	44
2^(30/50)	1.515717	720	20
2^(29/50)	1.494849	696	-4
2^(28/50)	1.474269	672	-28
2^(27/50)	1.453973	648	48
2^(26/50)	1.433955	624	24
2^(25/50)	1.414214	600	0
2^(24/50)	1.394744	576	-24
2^(23/50)	1.375542	552	-48
2^(22/50)	1.356604	528	28
2^(21/50)	1.337928	504	4
2^(20/50)	1.319508	480	-20
2^(19/50)	1.301342	456	-44
2^(18/50)	1.283426	432	32
2^(17/50)	1.265757	408	8
2^(16/50)	1.248331	384	-16
2^(15/50)	1.231144	360	-40
2^(14/50)	1.214195	336	36
2^(13/50)	1.197479	312	12
2^(12/50)	1.180993	288	-12
2^(11/50)	1.164734	264	-36
2^(10/50)	1.148698	240	40
2^(9/50)	1.132884	216	16
2^(8/50)	1.117287	192	-8
2^(7/50)	1.101905	168	-32
2^(6/50)	1.086735	144	44
2^(5/50)	1.071773	120	20
2^(4/50)	1.057018	96	-4
2^(3/50)	1.042466	72	-28
2^(2/50)	1.028114	48	48
2^(1/50)	1.013959	24	24
2^(0/50)	1	0	0

5 Limit				+/- from Just	
				Avg.->	7.35
2/1	1200			0	
15/8	1088.27			-8.27	
16/9	996.09	9/5	1017.60	11.91	-9.60
5/3	884.36			3.64	
8/5	813.69			2.31	
3/2	701.96			-5.96	
45/32	590.22	64/45	609.78	9.78	-9.78
4/3	498.04			5.96	
5/4	386.31			-2.31	
6/5	315.64			-3.64	
9/8	203.91	10/9	182.40	-11.91	9.60
16/15	111.73			8.27	
1/1	0			0	

7 Limit		+/- from Just	
		Avg.->	5.32
7/4	968.83	-8.83	
12/7	933.13	2.87	
14/9	764.92	3.08	
10/7	617.49	6.51	
7/5	582.51	-6.51	
9/7	435.08	-3.08	
7/6	266.87	-2.87	
8/7	231.17	8.83	

50 ET

<b>"keyboard mapping"</b>				
<b>0,50</b>	+2	Unis.	<b>0,0</b>	
0,49	-2	-2	0,1	
0,48	4-8va	+2	0,2	
0,47	+7	-3	0,3	
0,46	-7	+3	0,4	
<b>0,45</b>	+6	P4	<b>0,5</b>	
0,44	-6	x4	0,6	
0,43	P5	P5	0,7	
<b>0,42</b>	x4	-6	<b>0,8</b>	
0,41	P4	+6	0,9	
<b>0,40</b>	+3	-7	<b>0,10</b>	
<b>0,39</b>	-3	+7	<b>0,11</b>	
0,38	+2	8va	0,12	
<b>0,37</b>	-2	-2	<b>0,13</b>	
0,36	3-8va	+2	0,14	
0,35	+7	-3	0,15	
<b>0,34</b>	-7	+3	<b>0,16</b>	
0,33	+6	P4	0,17	
<b>0,32</b>	-6	x4	<b>0,18</b>	
0,31	P5	P5	0,19	
0,30	x4	-6	0,20	
<b>0,29</b>	P4	+6	<b>0,21</b>	
0,28	+3	-7	0,22	
0,27	-3	+7	0,23	
<b>0,26</b>	+2	2-8va	<b>0,24</b>	
0,25	-2	-2	0,25	
<b>0,24</b>	2-8va	+2	<b>0,26</b>	
0,23	+7	-3	0,27	
0,22	-7	+3	0,28	
<b>0,21</b>	+6	P4	<b>0,29</b>	
0,20	-6	x4	0,30	
0,19	P5	P5	0,31	
<b>0,18</b>	x4	-6	<b>0,32</b>	
0,17	P4	+6	0,33	
<b>0,16</b>	+3	-7	<b>0,34</b>	
0,15	-3	+7	0,35	
0,14	+2	3-8va	0,36	
<b>0,13</b>	-2	-2	<b>0,37</b>	
0,12	8va	+2	0,38	
<b>0,11</b>	+7	-3	<b>0,39</b>	
<b>0,10</b>	-7	+3	<b>0,40</b>	
0,9	+6	P4	0,41	
<b>0,8</b>	-6	x4	<b>0,42</b>	
0,7	P5	P5	0,43	
0,6	x4	-6	0,44	
<b>0,5</b>	P4	+6	<b>0,45</b>	
0,4	+3	-7	0,46	
0,3	-3	+7	0,47	
0,2	+2	4-8va	0,48	
0,1	-2	-2	0,49	
<b>0,0</b>	Unis.	+2	<b>0,50</b>	

<b>50ET</b>	<b>Ratio</b>	<b>Cents</b>
<b>2^(50/50)</b>	<b>2</b>	1200
<b>2^(49/50)</b>	<b>1.972465</b>	1176
<b>2^(48/50)</b>	<b>1.945310</b>	1152
<b>2^(47/50)</b>	<b>1.918528</b>	1128
<b>2^(46/50)</b>	<b>1.892115</b>	1104
<b>2^(45/50)</b>	<b>1.866066</b>	1080
<b>2^(44/50)</b>	<b>1.840375</b>	1056
<b>2^(43/50)</b>	<b>1.815038</b>	1032
<b>2^(42/50)</b>	<b>1.790050</b>	1008
<b>2^(41/50)</b>	<b>1.765406</b>	984
<b>2^(40/50)</b>	<b>1.741101</b>	960
<b>2^(39/50)</b>	<b>1.717131</b>	936
<b>2^(38/50)</b>	<b>1.693491</b>	912
<b>2^(37/50)</b>	<b>1.670176</b>	888
<b>2^(36/50)</b>	<b>1.647182</b>	864
<b>2^(35/50)</b>	<b>1.624505</b>	840
<b>2^(34/50)</b>	<b>1.602140</b>	816
<b>2^(33/50)</b>	<b>1.580083</b>	792
<b>2^(32/50)</b>	<b>1.558329</b>	768
<b>2^(31/50)</b>	<b>1.536875</b>	744
<b>2^(30/50)</b>	<b>1.515717</b>	720
<b>2^(29/50)</b>	<b>1.494849</b>	696
<b>2^(28/50)</b>	<b>1.474269</b>	672
<b>2^(27/50)</b>	<b>1.453973</b>	648
<b>2^(26/50)</b>	<b>1.433955</b>	624
<b>2^(25/50)</b>	<b>1.414214</b>	600
<b>2^(24/50)</b>	<b>1.394744</b>	576
<b>2^(23/50)</b>	<b>1.375542</b>	552
<b>2^(22/50)</b>	<b>1.356604</b>	528
<b>2^(21/50)</b>	<b>1.337928</b>	504
<b>2^(20/50)</b>	<b>1.319508</b>	480
<b>2^(19/50)</b>	<b>1.301342</b>	456
<b>2^(18/50)</b>	<b>1.283426</b>	432
<b>2^(17/50)</b>	<b>1.265757</b>	408
<b>2^(16/50)</b>	<b>1.248331</b>	384
<b>2^(15/50)</b>	<b>1.231144</b>	360
<b>2^(14/50)</b>	<b>1.214195</b>	336
<b>2^(13/50)</b>	<b>1.197479</b>	312
<b>2^(12/50)</b>	<b>1.180993</b>	288
<b>2^(11/50)</b>	<b>1.164734</b>	264
<b>2^(10/50)</b>	<b>1.148698</b>	240
<b>2^(9/50)</b>	<b>1.132884</b>	216
<b>2^(8/50)</b>	<b>1.117287</b>	192
<b>2^(7/50)</b>	<b>1.101905</b>	168
<b>2^(6/50)</b>	<b>1.086735</b>	144
<b>2^(5/50)</b>	<b>1.071773</b>	120
<b>2^(4/50)</b>	<b>1.057018</b>	96
<b>2^(3/50)</b>	<b>1.042466</b>	72
<b>2^(2/50)</b>	<b>1.028114</b>	48
<b>2^(1/50)</b>	<b>1.013959</b>	24
<b>2^(0/50)</b>	<b>1</b>	0

<b>11 Limit</b>		<b>+/- from Just</b>	
		Avg.->	6.96
21/11	1119.46	8.54	
11/6	1049.36	6.64	
20/11	1035.00	-3.00	
18/11	852.59	11.41	
11/7	782.49	9.51	
22/15	663.05	8.95	
16/11	648.68	-0.68	
11/8	551.32	0.68	
15/11	536.95	-8.95	
14/11	417.51	-9.51	
11/9	347.41	-11.41	
11/10	165.00	3.00	
12/11	150.64	-6.64	
22/21	80.54	-8.54	

<b>13 Limit</b>				<b>+/- from Just</b>	
				Avg.->	5.58
25/13	1132.10			-4.10	
13/7	1071.70			8.30	
24/13	1061.43			-5.43	
26/15	952.26			7.74	
22/13	910.79			1.21	
13/8	840.53	21/13	830.25	-0.53	9.75
20/13	745.79			-1.79	
13/9	636.62			11.38	
18/13	563.38			-11.38	
13/10	454.21			1.79	
16/13	359.47	26/21	369.75	0.53	-9.75
13/11	289.21			-1.21	
15/13	247.74			-7.74	
13/12	138.57			5.43	
14/13	128.30			-8.30	
26/25	67.90			4.10	

53 Tone Equal Temperament

Major Scale Intervals -> 8 1 8 5 9 8 9 5

53ET	Ratio	Cents	+/- from 12ET
2^(53/53)	2	1200	0
2^(52/53)	1.974014	1177.36	-22.64
2^(51/53)	1.948365	1154.72	-45.28
2^(50/53)	1.923050	1132.08	32.08
2^(49/53)	1.898064	1109.43	9.43
2^(48/53)	1.873402	1086.79	-13.21
2^(47/53)	1.849061	1064.15	-35.85
2^(46/53)	1.825036	1041.51	41.51
2^(45/53)	1.801323	1018.87	18.87
2^(44/53)	1.777918	996.23	-3.77
2^(43/53)	1.754817	973.58	-26.42
2^(42/53)	1.732017	950.94	-49.06
2^(41/53)	1.709512	928.30	28.30
2^(40/53)	1.687301	905.66	5.66
2^(39/53)	1.665377	883.02	-16.98
2^(38/53)	1.643739	860.38	-39.62
2^(37/53)	1.622382	837.74	37.74
2^(36/53)	1.601302	815.09	15.09
2^(35/53)	1.580496	792.45	-7.55
2^(34/53)	1.559960	769.81	-30.19
2^(33/53)	1.539692	747.17	47.17
2^(32/53)	1.519686	724.53	24.53
2^(31/53)	1.499941	701.89	1.89
2^(30/53)	1.480452	679.25	-20.75
2^(29/53)	1.461216	656.60	-43.40
2^(28/53)	1.442231	633.96	33.96
2^(27/53)	1.423492	611.32	11.32
2^(26/53)	1.404996	588.68	-11.32
2^(25/53)	1.386741	566.04	-33.96
2^(24/53)	1.368723	543.40	43.40
2^(23/53)	1.350939	520.75	20.75
2^(22/53)	1.333386	498.11	-1.89
2^(21/53)	1.316061	475.47	-24.53
2^(20/53)	1.298961	452.83	-47.17
2^(19/53)	1.282084	430.19	30.19
2^(18/53)	1.265426	407.55	7.55
2^(17/53)	1.248984	384.91	-15.09
2^(16/53)	1.232756	362.26	-37.74
2^(15/53)	1.216738	339.62	39.62
2^(14/53)	1.200929	316.98	16.98
2^(13/53)	1.185325	294.34	-5.66
2^(12/53)	1.169924	271.70	-28.30
2^(11/53)	1.154723	249.06	49.06
2^(10/53)	1.139720	226.42	26.42
2^(9/53)	1.124911	203.77	3.77
2^(8/53)	1.110295	181.13	-18.87
2^(7/53)	1.095869	158.49	-41.51
2^(6/53)	1.081630	135.85	35.85
2^(5/53)	1.067577	113.21	13.21
2^(4/53)	1.053705	90.57	-9.43
2^(3/53)	1.040015	67.92	-32.08
2^(2/53)	1.026502	45.28	45.28
2^(1/53)	1.013164	22.64	22.64
2^(0/53)	1	0	0

5 Limit		+/- from Just	
		Avg.->	1.03
2/1	1200	0	
15/8	1088.27	-1.48	
9/5	1017.60	1.27	
16/9	996.09	0.14	
5/3	884.36	-1.34	
8/5	813.69	1.41	
3/2	701.96	-0.07	
64/45	609.78	1.54	
45/32	590.22	-1.54	
4/3	498.04	0.07	
5/4	386.31	-1.41	
6/5	315.64	1.34	
9/8	203.91	-0.14	
10/9	182.40	-1.27	
16/15	111.73	1.48	
1/1	0	0	

7 Limit		+/- from Just	
		Avg.->	5.16
7/4	968.83	4.76	
12/7	933.13	-4.83	
14/9	764.92	4.90	
10/7	617.49	-6.17	
7/5	582.51	6.17	
9/7	435.08	-4.90	
7/6	266.87	4.83	
8/7	231.17	-4.76	

53 ET

"keyboard mapping"				
<b>0,53</b>	P4		Unis.	<b>0,0</b>
0,52	+3	-2	0,1	
0,51	-3	+2	0,2	
0,50	+2	-3	0,3	
0,49	-2	+3	0,4	
<b>0,48</b>	4-8va	P4	<b>0,5</b>	
0,47	+7	x4	0,6	
0,46	-7	P5	0,7	
<b>0,45</b>	+6	-6	<b>0,8</b>	
<b>0,44</b>	-6	+6	<b>0,9</b>	
<b>0,43</b>	P5	-7	<b>0,10</b>	
0,42	x4	+7	0,11	
<b>0,41</b>	P4	8va	<b>0,12</b>	
0,40	+3	-2	0,13	
<b>0,39</b>	-3	+2	<b>0,14</b>	
0,38	+2	-3	0,15	
0,37	-2	+3	0,16	
<b>0,36</b>	3-8va	P4	<b>0,17</b>	
0,35	+7	x4	0,18	
<b>0,34</b>	-7	P5	<b>0,19</b>	
0,33	+6	-6	0,20	
0,32	-6	+6	0,21	
<b>0,31</b>	P5	-7	<b>0,22</b>	
0,30	x4	+7	0,23	
0,29	P4	2-8va	0,24	
0,28	+3	-2	0,25	
<b>0,27</b>	-3	+2	<b>0,26</b>	
<b>0,26</b>	+2	-3	<b>0,27</b>	
0,25	-2	+3	0,28	
0,24	2-8va	P4	0,29	
0,23	+7	x4	0,30	
<b>0,22</b>	-7	P5	<b>0,31</b>	
0,21	+6	-6	0,32	
0,20	-6	+6	0,33	
<b>0,19</b>	P5	-7	<b>0,34</b>	
0,18	x4	+7	0,35	
<b>0,17</b>	P4	3-8va	<b>0,36</b>	
0,16	+3	-2	0,37	
0,15	-3	+2	0,38	
<b>0,14</b>	+2	-3	<b>0,39</b>	
0,13	-2	+3	0,40	
<b>0,12</b>	8va	P4	<b>0,41</b>	
0,11	+7	x4	0,42	
<b>0,10</b>	-7	P5	<b>0,43</b>	
<b>0,9</b>	+6	-6	<b>0,44</b>	
<b>0,8</b>	-6	+6	<b>0,45</b>	
0,7	P5	-7	0,46	
0,6	x4	+7	0,47	
<b>0,5</b>	P4	4-8va	<b>0,48</b>	
0,4	+3	-2	0,49	
0,3	-3	+2	0,50	
0,2	+2	-3	0,51	
0,1	-2	+3	0,52	
<b>0,0</b>	Unis.	P4	<b>0,53</b>	

53ET	Ratio	Cents
2^(53/53)	2	1200
2^(52/53)	1.974014	1177.36
2^(51/53)	1.948365	1154.72
2^(50/53)	1.923050	1132.08
2^(49/53)	1.898064	1109.43
2^(48/53)	1.873402	1086.79
2^(47/53)	1.849061	1064.15
2^(46/53)	1.825036	1041.51
2^(45/53)	1.801323	1018.87
2^(44/53)	1.777918	996.23
2^(43/53)	1.754817	973.58
2^(42/53)	1.732017	950.94
2^(41/53)	1.709512	928.30
2^(40/53)	1.687301	905.66
2^(39/53)	1.665377	883.02
2^(38/53)	1.643739	860.38
2^(37/53)	1.622382	837.74
2^(36/53)	1.601302	815.09
2^(35/53)	1.580496	792.45
2^(34/53)	1.559960	769.81
2^(33/53)	1.539692	747.17
2^(32/53)	1.519686	724.53
2^(31/53)	1.499941	701.89
2^(30/53)	1.480452	679.25
2^(29/53)	1.461216	656.60
2^(28/53)	1.442231	633.96
2^(27/53)	1.423492	611.32
2^(26/53)	1.404996	588.68
2^(25/53)	1.386741	566.04
2^(24/53)	1.368723	543.40
2^(23/53)	1.350939	520.75
2^(22/53)	1.333386	498.11
2^(21/53)	1.316061	475.47
2^(20/53)	1.298961	452.83
2^(19/53)	1.282084	430.19
2^(18/53)	1.265426	407.55
2^(17/53)	1.248984	384.91
2^(16/53)	1.232756	362.26
2^(15/53)	1.216738	339.62
2^(14/53)	1.200929	316.98
2^(13/53)	1.185325	294.34
2^(12/53)	1.169924	271.70
2^(11/53)	1.154723	249.06
2^(10/53)	1.139720	226.42
2^(9/53)	1.124911	203.77
2^(8/53)	1.110295	181.13
2^(7/53)	1.095869	158.49
2^(6/53)	1.081630	135.85
2^(5/53)	1.067577	113.21
2^(4/53)	1.053705	90.57
2^(3/53)	1.040015	67.92
2^(2/53)	1.026502	45.28
2^(1/53)	1.013164	22.64
2^(0/53)	1	0

11 Limit					+/- from Just	
				Avg.->	8.07	
21/11	1119.46					-10.03
11/6	1049.36	20/11	1035.00	-7.85	6.51	
18/11	852.59					7.79
11/7	782.49					9.96
22/15	663.05	16/11	648.68	-6.45	7.92	
15/11	536.95	11/8	551.32	6.45	-7.92	
14/11	417.51					-9.96
11/9	347.41					-7.79
12/11	150.64	11/10	165.00	7.85	-6.51	
22/21	80.54					10.03

13 Limit					+/- from Just	
				Avg.->	3.45	
25/13	1132.10					-0.02
24/13	1061.43	13/7	1071.70	2.72	-7.55	
26/15	952.26					-1.32
22/13	910.79					-5.13
13/8	840.53	21/13	830.25	-2.79	7.48	
20/13	745.79					1.38
13/9	636.62					-2.66
18/13	563.38					2.66
13/10	454.21					-1.38
16/13	359.47	26/21	369.75	2.79	-7.48	
13/11	289.21					5.13
15/13	247.74					1.32
13/12	138.57	14/13	128.30	-2.72	7.55	
26/25	67.90					0.02









96 ET

<b>"keyboard mapping"</b>			
<b>0,47</b>	<b>+7</b>	<b>-2</b>	<b>0,49</b>
0,46	-7	+2	0,50
0,45	+6	-3	0,51
0,44	-6	+3	0,52
0,43	P5	P4	0,53
0,42	x4	x4	0,54
0,41	P4	P5	0,55
<b>0,40</b>	<b>+3</b>	<b>-6</b>	<b>0,56</b>
0,39	-3	+6	0,57
0,38	+2	-7	0,58
0,37	-2	+7	0,59
0,36	3-8va	5-8va	0,60
<b>0,35</b>	<b>+7</b>	<b>-2</b>	<b>0,61</b>
0,34	-7	+2	0,62
0,33	+6	-3	0,63
0,32	-6	+3	0,64
<b>0,31</b>	<b>P5</b>	<b>P4</b>	<b>0,65</b>
0,30	x4	x4	0,66
0,29	P4	P5	0,67
0,28	+3	-6	0,68
0,27	-3	+6	0,69
0,26	+2	-7	0,70
<b>0,25</b>	<b>-2</b>	<b>+7</b>	<b>0,71</b>
0,24	2-8va	6-8va	0,72
0,23	+7	-2	0,73
0,22	-7	+2	0,74
<b>0,21</b>	<b>+6</b>	<b>-3</b>	<b>0,75</b>
0,20	-6	+3	0,76
0,19	P5	P4	0,77
<b>0,18</b>	<b>x4</b>	<b>x4</b>	<b>0,78</b>
0,17	P4	P5	0,79
<b>0,16</b>	<b>+3</b>	<b>-6</b>	<b>0,80</b>
<b>0,15</b>	<b>-3</b>	<b>+6</b>	<b>0,81</b>
0,14	+2	-7	0,82
0,13	-2	+7	0,83
0,12	8va	7-8va	0,84
0,11	+7	-2	0,85
0,10	-7	+2	0,86
<b>0,9</b>	<b>+6</b>	<b>-3</b>	<b>0,87</b>
0,8	-6	+3	0,88
0,7	P5	P4	0,89
0,6	x4	x4	0,90
0,5	P4	P5	0,91
0,4	+3	-6	0,92
0,3	-3	+6	0,93
0,2	+2	-7	0,94
0,1	-2	+7	0,95
<b>0,0</b>	<b>Unis.</b>	<b>8-8va</b>	<b>0,96</b>

96ET	Ratio	Cents
2 <sup>4</sup> (47/96)	1.404039	587.5
2 <sup>4</sup> (46/96)	1.393938	575
2 <sup>4</sup> (45/96)	1.383910	562.5
2 <sup>4</sup> (44/96)	1.373954	550
2 <sup>4</sup> (43/96)	1.364069	537.5
2 <sup>4</sup> (42/96)	1.354256	525
2 <sup>4</sup> (41/96)	1.344513	512.5
2 <sup>4</sup> (40/96)	1.334840	500
2 <sup>4</sup> (39/96)	1.325237	487.5
2 <sup>4</sup> (38/96)	1.315703	475
2 <sup>4</sup> (37/96)	1.306237	462.5
2 <sup>4</sup> (36/96)	1.296840	450
2 <sup>4</sup> (35/96)	1.287510	437.5
2 <sup>4</sup> (34/96)	1.278247	425
2 <sup>4</sup> (33/96)	1.269051	412.5
2 <sup>4</sup> (32/96)	1.259921	400
2 <sup>4</sup> (31/96)	1.250857	387.5
2 <sup>4</sup> (30/96)	1.241858	375
2 <sup>4</sup> (29/96)	1.232924	362.5
2 <sup>4</sup> (28/96)	1.224054	350
2 <sup>4</sup> (27/96)	1.215247	337.5
2 <sup>4</sup> (26/96)	1.206505	325
2 <sup>4</sup> (25/96)	1.197825	312.5
2 <sup>4</sup> (24/96)	1.189207	300
2 <sup>4</sup> (23/96)	1.180652	287.5
2 <sup>4</sup> (22/96)	1.172158	275
2 <sup>4</sup> (21/96)	1.163725	262.5
2 <sup>4</sup> (20/96)	1.155353	250
2 <sup>4</sup> (19/96)	1.147041	237.5
2 <sup>4</sup> (18/96)	1.138789	225
2 <sup>4</sup> (17/96)	1.130596	212.5
2 <sup>4</sup> (16/96)	1.122462	200
2 <sup>4</sup> (15/96)	1.114387	187.5
2 <sup>4</sup> (14/96)	1.106370	175
2 <sup>4</sup> (13/96)	1.098410	162.5
2 <sup>4</sup> (12/96)	1.090508	150
2 <sup>4</sup> (11/96)	1.082662	137.5
2 <sup>4</sup> (10/96)	1.074873	125
2 <sup>4</sup> (9/96)	1.067140	112.5
2 <sup>4</sup> (8/96)	1.059463	100
2 <sup>4</sup> (7/96)	1.051841	87.5
2 <sup>4</sup> (6/96)	1.044274	75
2 <sup>4</sup> (5/96)	1.036761	62.5
2 <sup>4</sup> (4/96)	1.029302	50
2 <sup>4</sup> (3/96)	1.021897	37.5
2 <sup>4</sup> (2/96)	1.014545	25
2 <sup>4</sup> (1/96)	1.007246	12.5
2 <sup>4</sup> (0/96)	1	0

11 Limit	+/- from Just	
11/8	551.32	-1.32
15/11	536.95	0.55
14/11	417.51	-5.01
11/9	347.41	2.59
11/10	165.00	-2.50
12/11	150.64	-0.64
22/21	80.54	-5.54

13 Limit	+/- from Just	
18/13	563.38	-0.88
13/10	454.21	-4.21
26/21	369.75	5.25
16/13	359.47	3.03
13/11	289.21	-1.71
15/13	247.74	2.26
13/12	138.57	-1.07
14/13	128.30	-3.30
26/25	67.90	-5.40

(foldout)

25-52 Tone Equal Temperament

ET	Ratio	Cents	5 Limit	+/- from Just	Step		
25	2^(15/25)	1.515717	720.00	3/2	701.96	18.04	48.00
	2^(8/25)	1.248331	384.00	5/4	386.31	-2.31	
	2^(7/25)	1.214195	336.00	6/5	315.64	20.36	
26	2^(15/26)	1.491664	692.31	3/2	701.96	-9.65	46.15
	2^(8/26)	1.237726	369.23	5/4	386.31	-17.08	
	2^(7/26)	1.205165	323.08	6/5	315.64	7.44	
27	2^(16/27)	1.507954	711.11	3/2	701.96	9.16	44.44
	2^(9/27)	1.259921	400.00	5/4	386.31	13.69	
	2^(7/27)	1.196864	311.11	6/5	315.64	-4.53	
28	2^(16/28)	1.485994	685.71	3/2	701.96	-16.24	42.86
	2^(9/28)	1.249567	385.71	5/4	386.31	-0.60	
	2^(7/28)	1.189207	300.00	6/5	315.64	-15.64	
29	2^(17/29)	1.501294	703.45	3/2	701.96	1.49	41.38
	2^(9/29)	1.240004	372.41	5/4	386.31	-13.90	
	2^(8/29)	1.210717	331.03	6/5	315.64	15.39	
30	2^(18/30)	1.515717	720.00	3/2	701.96	18.04	40.00
	2^(10/30)	1.259921	400.00	5/4	386.31	13.69	
	2^(8/30)	1.203025	320.00	6/5	315.64	4.36	
32	2^(19/32)	1.509164	712.50	3/2	701.96	10.54	37.50
	2^(10/32)	1.241858	375.00	5/4	386.31	-11.31	
	2^(8/32)	1.189207	300.00	6/5	315.64	-15.64	
33	2^(19/33)	1.490460	690.91	3/2	701.96	-11.05	36.36
	2^(11/33)	1.259921	400.00	5/4	386.31	13.69	
	2^(9/33)	1.208089	327.27	6/5	315.64	11.63	
35	2^(20/35)	1.485994	685.71	3/2	701.96	-16.24	34.29
	2^(11/35)	1.243396	377.14	5/4	386.31	-9.17	
	2^(9/35)	1.195110	308.57	6/5	315.64	-7.07	
37	2^(22/37)	1.510048	713.51	3/2	701.96	11.56	32.43
	2^(12/37)	1.252078	389.19	5/4	386.31	2.88	
	2^(10/37)	1.206034	324.32	6/5	315.64	8.68	

ET	Ratio	Cents	5 Limit	+/- from Just	Step		
38	2^(22/38)	1.493759	694.74	3/2	701.96	-7.22	31.58
	2^(12/38)	1.244693	378.95	5/4	386.31	-7.37	
	2^(10/38)	1.200103	315.79	6/5	315.64	0.15	
39	2^(23/39)	1.504979	707.69	3/2	701.96	5.74	30.77
	2^(13/39)	1.259921	400.00	5/4	386.31	13.69	
	2^(10/39)	1.194503	307.69	6/5	315.64	-7.95	
40	2^(23/40)	1.489677	690.00	3/2	701.96	-11.96	30.00
	2^(13/40)	1.252664	390.00	5/4	386.31	3.69	
	2^(11/40)	1.209994	330.00	6/5	315.64	14.36	
42	2^(25/42)	1.510722	714.29	3/2	701.96	12.33	28.57
	2^(14/42)	1.259921	400.00	5/4	386.31	13.69	
	2^(11/42)	1.199061	314.29	6/5	315.64	-1.36	
44	2^(26/44)	1.506196	709.09	3/2	701.96	7.14	27.27
	2^(14/44)	1.246758	381.82	5/4	386.31	-4.50	
	2^(12/44)	1.208089	327.27	6/5	315.64	11.63	
45	2^(26/45)	1.492548	693.33	3/2	701.96	-8.62	26.67
	2^(14/45)	1.240663	373.33	5/4	386.31	-12.98	
	2^(12/45)	1.203025	320.00	6/5	315.64	4.36	
47	2^(27/47)	1.489128	689.36	3/2	701.96	-12.59	25.53
	2^(15/47)	1.247594	382.98	5/4	386.31	-3.33	
	2^(12/47)	1.193600	306.38	6/5	315.64	-9.26	
49	2^(29/49)	1.507164	710.20	3/2	701.96	8.25	24.49
	2^(16/49)	1.253994	391.84	5/4	386.31	5.52	
	2^(13/49)	1.201891	318.37	6/5	315.64	2.73	
51	2^(30/51)	1.503407	705.88	3/2	701.96	3.93	23.53
	2^(16/51)	1.242913	376.47	5/4	386.31	-9.84	
	2^(13/51)	1.193255	305.88	6/5	315.64	-9.76	
52	2^(30/52)	1.491664	692.31	3/2	701.96	-9.65	23.08
	2^(16/52)	1.254335	392.31	5/4	386.31	5.99	
	2^(13/52)	1.205165	323.08	6/5	315.64	7.44	

Good Equal Temperaments after 53Et - 65, 77, 84, 87, 89, 96 Et

**ET Average Deviation from Just**

12, 13-24, 31, 34, 36, 41, 43, 46, 48, 50, 53, 96

ET	5 Limit
53	1.04
96	2.68
41	4.37
46	4.59
34	5.32
43	6.16
31	6.77
50	7.35
48	7.92
22	9.82
36	10.35
19	10.38
12	10.61
24	10.61
20	14.91
21	16.30
18	16.52
23	16.96
14	20.45
16	21.99
15	22.36
17	23.25
13	24.23

ET	7 Limit
41	3.31
31	4.08
96	4.49
36	4.99
53	5.16
50	5.32
46	6.65
48	7.97
43	8.77
22	9.40
21	13.65
23	13.69
19	14.20
14	14.92
34	15.01
17	16.06
24	17.03
20	17.07
16	17.93
18	20.11
13	21.72
15	23.32
12	29.22

ET	11 Limit
96	2.59
46	5.63
48	5.65
31	5.88
43	6.27
41	6.95
50	6.96
53	8.07
34	9.05
24	9.94
36	11.49
15	13.08
22	13.39
23	13.42
20	13.48
17	13.71
14	15.39
21	16.49
18	16.58
16	17.08
13	17.77
19	24.41
12	27.23

ET	13 Limit
96	3.01
53	3.45
50	5.58
34	6.11
43	6.79
36	6.97
48	7.27
46	7.49
41	9.53
19	10.70
24	12.32
20	12.53
17	12.78
21	14.02
31	14.19
23	14.53
16	15.04
13	16.13
18	16.87
22	18.81
15	20.40
14	24.74
12	27.61

ET	5 Limit	ET * Dev.
53	1.04	54.86
12	10.61	127.37
41	4.37	179.12
34	5.32	181.02
19	10.38	197.13
31	6.77	209.96
46	4.59	211.15
22	9.82	215.97
24	10.61	254.73
96	2.68	257.57
43	6.16	264.85
14	20.45	286.32
18	16.52	297.36
20	14.91	298.17
13	24.23	315.00
15	22.36	335.44
21	16.30	342.39
16	21.99	351.80
50	7.35	367.58
36	10.35	372.54
48	7.92	380.22
23	16.96	390.04
17	23.25	395.29

ET	7 Limit	ET * Dev.
31	4.08	126.52
41	3.31	135.53
36	4.99	179.64
22	9.40	206.89
14	14.92	208.94
50	5.32	266.17
19	14.20	269.84
17	16.06	273.07
53	5.16	273.60
13	21.72	282.41
21	13.65	286.59
16	17.93	286.83
46	6.65	305.94
23	13.69	314.94
20	17.07	341.34
15	23.32	349.85
12	29.22	350.63
18	20.11	362.02
43	8.77	377.10
48	7.97	382.80
24	17.03	408.60
96	4.49	430.77
34	15.01	510.42

ET	11 Limit	ET * Dev.
31	5.88	182.15
15	13.08	196.18
14	15.39	215.41
13	17.77	230.98
17	13.71	232.99
24	9.94	238.53
96	2.59	248.85
46	5.63	258.94
20	13.48	269.56
43	6.27	269.59
48	5.65	271.01
16	17.08	273.21
41	6.95	284.85
22	13.39	294.54
18	16.58	298.36
34	9.05	307.74
23	13.42	308.56
12	27.23	326.75
21	16.49	346.33
50	6.96	347.99
36	11.49	413.63
53	8.07	427.86
19	24.41	463.82

ET	13 Limit	ET * Dev.
53	3.45	182.90
19	10.70	203.25
34	6.11	207.70
13	16.13	209.63
17	12.78	217.19
16	15.04	240.66
20	12.53	250.55
36	6.97	250.87
50	5.58	279.00
96	3.01	289.25
43	6.79	291.76
21	14.02	294.47
24	12.32	295.72
18	16.87	303.74
15	20.40	305.97
12	27.61	331.34
23	14.53	334.13
46	7.49	344.43
14	24.74	346.33
48	7.27	348.97
41	9.53	390.79
22	18.81	413.82
31	14.19	439.78

Major Scale Intervals

ET	P5	+3rd	Tone / 2 = Semitone	Tone / 2 ≠ Semitone	8 Note Diatonic Scale
12ET	7	* 4 mod 12 = 4	2 2 1 2 2 2 1		
19ET	11	* 4 mod 19 = 6		3 3 2 3 3 3 2	
24ET	14	* 4 mod 24 = 8	4 4 2 4 4 4 2		
31ET	18	* 4 mod 31 = 10		5 5 3 5 5 5 3	
36ET	21	* 4 mod 36 = 12	6 6 3 6 6 6 3		
43ET	25	* 4 mod 43 = 14		7 7 4 7 7 7 4	
( 48ET )	( 28 )	* 4 mod 48 = 16 )	( 8 8 4 8 8 8 4 )		
50ET	29	* 4 mod 50 = 16		8 8 5 8 8 8 5	
( 96ET )	( 56 )	* 4 mod 96 = 32 )	( 16 16 8 16 16 16 8 )		
41ET	24	* - 8 mod 41 = 13			6 1 6 4 7 6 7 4
53ET	31	* - 8 mod 53 = 17			8 1 8 5 9 8 9 5
46ET	27	* 21 mod 46 = 15			7 1 7 4 8 7 8 4
34ET	20	----- 11			5 1 5 3 6 5 6 3
48ET	28	----- 15			7 1 7 5 8 7 8 5
96ET	56	----- 31			15 1 15 9 16 15 16 9

(ascending P5 x 4 = major third)  
 $( P5^4 / 2^2 ) = +3rd$

(descending P5 x 8 = dim4th = major third)  
 $( (1/P5)^8 * 2^5 ) = +3rd (^4th)$

$( P5^{21} / 2^{12} ) = +3rd$

2 x 17Et Parallel Tonality

2 x 12Et Parallel Tonality (1/4 Semitone Apart)

2 x 12Et Parallel Tonality (1/8 Semitone Apart)