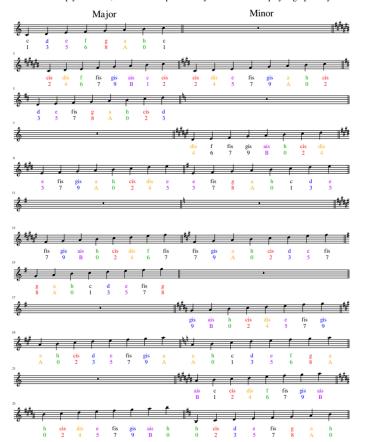# All scales with cross as sign

In the empty measures, scales that are preceded by a # cannot be displayed graphically
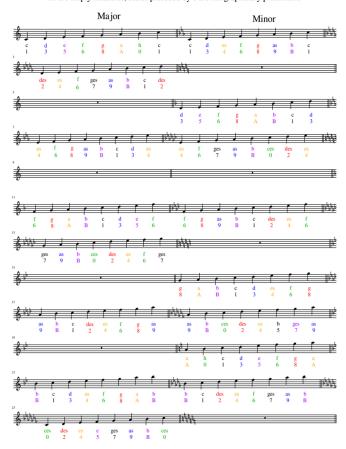
Hamburg Music Notation (HMN) without signs

MuseScore Addon by Robert Ipach. Musescore Vers. 3.4.1-hmnBeta.7 Homepage HMN https://hamburgmusicnotation.com

All scales with b as sign

In the empty measures, scales preceded by b are not graphically presentable

Hamburg Music Notation (HMN) simplifies reading and writing notes and calculating with the duodecimal system using music as an example.

The principle of well-tempering the twelve tones of Western music, developed by Johann Sebastian Bach, was transferred to graphic representation. For the eight basic notes of the scale (white keys) the usual oval note head (♩) was chosen and for the five " sign notes" (black keys) the cross sign (♪). This procedure allows a representation without the use of accidentals (see center of the illustration). The representation starts with the octave in this case (C4) and the note C=1 on the first line as it is usual in the soprano clef. All notes of this notation always have the same relative position on lines and auxiliary lines. This achieves a radical simplification of the notation and makes it easier to read and write music for all instruments without the need of additional clefs. That's why we use the term general clef for this. Also the harmony theory can be radically simplified. This is made possible by the fact that the tones of western music are structured and designated according to the duodecimal system. This enables the application of the basic arithmetic operations of this number system. On the figure only a few basics of the theory of harmony, which are particularly important for the practice of music, have been presented. Possibly even more significant is that the basic arithmetic operations of the duodecimal number system can be experienced and learned directly through the example of music. It is estimated that only half of the people who make their living from music are able to read notes perfectly. It is our intention to enable everyone to read and write music.

Structure of Western music based on 10 tones (decimal 12 tones) We use zero with a dot in the middle (0) as the digit for duodecimal zero.

The duodecimal number series from 1-10 (1,2,3,4,5,6,7,8,9,A,B,0) defines the 10 tones of western music in HamburgMusicNotation (HMN) and contains the prime numbers 5,7 and B. Octaves build up after the addition of 10 (12) tones. Prime numbers repeat after 10 additions in the duodecimal system.

Examples: Circle of fourths 5, A,13,18,21,26,2B,34,39,42,47,50,55. Circle of fifths 7,12,19,24,2B,36,41,48,53,5A,65,70,77.

The duodecimal structure of Western music can be read directly from the example of the octaves and the circle of fourths and fifths in the illustration of the Stuart & Sons keyboard with duodecimal labeling. As an example for chords the triad was chosen, which starts from the root of all 10 keys in the major and minor variant and repeats the root in the next higher octave. The underlying duodecimal mathematical structure is evident. This applies to all chords.

A nomenclature corresponding to the mathematical structure is to be demanded.

Major and minor triads with repeated root

Major   ### Minor