

Definition: Musical Interval

The interval from \hat{x} to \hat{y} (where $\hat{x}, \hat{y} \in \mathbb{W}$) is the number of semitones you have to add to \hat{x} to get to \hat{y} , due to the interaction between NIN and SIN it follows that

$$\hat{x} + (y - x) = x \widehat{+} y - x = \hat{y}$$

Therefore in general the interval from \hat{x} to \hat{y} is $y - x$. And we define

$$I(\hat{x}, \hat{y}) \stackrel{\text{D}}{=} (y - x) \% 12$$

Taking it modulo 12 makes sure that the result is one of the elements of $\{0, \dots, 12\}$