Definition: Musical Interval

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

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

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

$$I\left(\widehat{x}, \widehat{y}\right) \overset{\text{D}}{=} (y - x)$$

Examples

- $I\left(\widehat{4}, \widehat{9}\right) = 9 - 4 = 5$