

## 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*

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