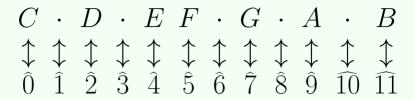
Definition: Note Integer Notation

• Is a notational system which maps the letter names for notes in the western system of music to an integer:



- The hat is added to denote that we are talking about the pitch produced by playing this note on a device which creates sound.
- We may also denote which octave band we are within by writing

$$\widehat{9}_4$$

Which represents an A4, the sound generated with a frequency of $440\mathrm{Hz}$

- We may consider elements such as $\widehat{12}$, $\widehat{-1}$ by moving circularly, so that $\widehat{12} \leftrightarrow C$ and $\widehat{-1} \leftrightarrow B$. But you can refer to any note using the elements in the initial mapping, so it is standard to use those numbers instead.
 - In other words, without considering which octave a note is in, we have the following equivalence for any $k \in \mathbb{Z}$ and $x \in \{0, \ldots, 12\}$

$$\widehat{x} = x + \widehat{12 \cdot k}$$

Which says if you add 12 semitones to any note, it will be the same note differing by an integer number of octaves