Maths within Music

In music, tempo is the **speed** or **pace** of a given piece. It can be given as a number of beats per minute (BPM). A particular note value is specified as the beat, and marking indicates that a certain number of these beats must be played per minute.

For example, in this piece the tempo is 120 semi-quavers a minute. Tempo has a significant effect on the mood or difficulty of a piece.

Andante grazioso ($\flat$ = 120)

In music each different type of note is worth a different **fraction** of a whole beat. Depending on which notes you use you get different rhythms in your music. Composers are able to match different rhythms by working out which combinations of notes are equivalent to each other.

Symbol							
Name	Semibreve	Minim	Crotchet	Quaver	Semiquaver	Demi-semi-quaver	Hemi-demi-semi-quaver
Fraction of a beat	1	$\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{16}$	$\frac{1}{32}$	$\frac{1}{64}$

Now think about rhythm using equivalent fractions...

$\frac{1}{2} = \frac{2}{4} = 2 \times \frac{1}{4}$ so   ♩ lasts for the same amount of time as ♩ ♩

Also $\frac{1}{4} = \frac{4}{16} = 4 \times \frac{1}{16}$ so   ♩ lasts for the same amount of time as ♬♬