What is a Time Signature?

A time signature is a group of two numbers stacked one on top of the other, such as this: $\frac{3}{2}$

The time signature appears at the beginning* of every piece of music, and is there to indicate the number of beats which will be in each bar of that piece.

The two numbers which make up a time signature have a very simple relationship - that of *quantity* and *quality*. The top number, which is called the "numerator", tells you *how many* items you are getting in each bar (the quantity), and the bottom number, called the "denominator", tells you *what type* of item you are getting (the quality).



Although the *precise* information which a time signature conveys is only to do with the number of beats in a bar, the time signature can also have implications for the speed and style of the piece.

*Unlike the clef and the key signature, both of which appear at the beginning of every line of the music, the time signature appears only once - at the beginning of the piece. However, it is possible for the time signature to change part way through a piece, in which case the new time signature will appear at the relevant point in the music.

A Trip to the Greengrocer's

One easy way to think about what a time signature means is to equate it with a trip to the greengrocer's shop!

Suppose I were to send you on an errand to the greengrocer's, and I had simply told you to "buy some fruit". Other than the fact that you'd know I wanted some fruit, you would have no idea what to buy. Should it, for example, be apples? Or should it be bananas? Or oranges? Or perhaps pears?

So if you were to simply take a guess at what I wanted you to buy, you might come back with, say, six apples. After all, I had not been explicit in my instructions to you. But if, on your return, I were to say to you, "I didn't want apples. I wanted bananas!" you would quite legitimately say to me, "Well you must *specify* what type of fruit you want!" So I would say to you, "OK then... please get me bananas!" and back to the shop you would go, to exchange the six apples for six bananas.

But if, on your return with the six bananas, I then say, "That's not enough. I wanted *eight* bananas. You've only brought six!" you would of course say, again quite legitimately, "Well you must *specify* how many pieces of fruit you want!"

So, in order to to avoid the confusion like we experienced above, we come up with a system. We agree that next time I send you to the greengrocer's to buy some fruit, I'll use a *code* to specify what type of fruit I would like you to get. The four types of fruit I like are apples, bananas, oranges and pears. So, keeping them in alphabetical order, I'll give a *code number* to each type of fruit. The numbers go like this:

Type of Fruit	Code Number
apples	2
bananas	4
oranges	8
pears	16

So now, if I were to say to you the numbers "three/sixteen", you would know that I would like you to get for me **three pears**. Or if I were to say to you "seven/eight", you would know that I'd like **seven oranges.** "Four/two" would indicate **four apples**, and "eight/four" would bring me my fabled **eight bananas**.

So what we've done is we've used a system of stating two different numbers for me to convey to you my preferences when I send you on a fruit-buying errand! These two numbers indicate the *quantity* of what I'd like you to buy for me (ie *how many* pieces of fruit I'd like - the "numerator") and the *quality* of what I'd like you to buy for me (ie the *type* of fruit I'd like - the "denominator").

Substituting the Note Values

Now that we have established how the code system for quantity and quality works for buying fruit (six bananas, three apples and so on), we can stop thinking in terms of fruit, and start thinking in terms of notes. But the principle is exactly the same - we need to have specified for us the *number* of beats in a bar (the numerator) and the *type* of note that each beat will be (the denominator). So substituting notes for fruit, the code numbers look like this:

Type of Note*	Code Number
minims	2
crotchets	4
quavers	8
semiquavers	16

If we now apply the same idea as we used when thinking about buying fruit from the greengrocer's, but this time apply it to notes instead, we can see quite easily that, for example, "seven/four" would mean that there are **seven crotchets** in a bar, or that "twelve/eight" would mean that there are **twelve quavers** in a bar.

Accordingly...



*There could, theoretically, be another number in this table. The number would be 32, and would represent demi-semiquavers. However, I have never had to play - or even seen - a time signature such as "7/32" or "15/32", so for all reasonable musical purposes we can operate with just the four numbers in the table above.

Some Shorthand for Time Signatures

The time signatures of 4/4 and 2/2 can both be written in an alternative way. The reasons behind this are rooted in history, and are largely tied up with the Christian church.

In earlier Christian music (music of more than about 400 years ago), the time signature of 3/4 (ie three crotchets in a bar) was considered to be "perfect" because it represented the "Holy Trinity" (In Christianity, the "Holy Trinity" is "The Father, The Son and The Holy Spirit"). This time signature was denoted by a circle*, because a circle was also considered to be "perfect":

0

So therefore, music which was *not* in 3/4 was considered to be "imperfect", and was denoted by a broken circle:

С

As you can see, the "broken circle" looks very much like a letter 'C'.

The time signature 4/4 is known as "Common Time", and of course means that there are **four crotchets** in a bar. It normally looks like this:

However, because it's not 3/4 time, 4/4 time was considered to be "imperfect" and was represented by a *broken* circle... or, if you prefer, a letter 'C':

C

This letter "C" (in place of a time signature) simply means that you are in 4/4 time.

The time signature 2/2 is known as "Cut Common Time", and of course means that there are **two minims** in a bar. It normally looks like this:

2/2 time is also known as "Alla Breve" (which is an Italian phrase meaning "with brevity"). 4/4 and 2/2 are mathematically equivalent, and indeed bars of music in either of these two time signatures look identical. But the difference is that if you were playing to a metronome (or following a conductor) in 2/2 time, each beat you heard from your metronome (or saw from your conductor) would be a *minim*, not a crotchet. So the implication here is that music in "Cut Common Time" (2/2) would go much faster than music in "Common Time" (4/4).

Cut Common Time (2/2) is represented by a broken circle (ie a letter 'C') with a line through it:

This letter 'C' with a line through it (in place of a time signature) simply means that you are in 2/2 time.

*Although we still use the broken circle (or letter 'C') to represent the time signatures of 4/4 and 2/2, we no longer use the complete circle to represent the time signature of 3/4.

How Time Signatures Affect Style

Although there are no absolutes about this, it is true that time signatures can have implications for both the tempo and the style of the piece of music they relate to.

We have already seen, for example, that music in 2/2 (or \mathfrak{e}) would probably go faster than music in 4/4 (or \mathfrak{e}). But as well as implying speed, time signatures can imply the style of music too. For instance, the dance known as a "waltz" is always in 3/4 time. So if you are playing a piece of music in 3/4, there is a good chance that it will be a waltz.

In addition, most march music is written in either 2/4 or 2/2. This is because a march is instructed simply "left, right, left, right" etc, so it makes sense that if the people marching to the music are stepping in a repeating pattern of two (left, right), then the music should also be felt in a repeating pattern of two. So if you are playing a march, there is a very good chance it will be in either 2/4 or 2/2.

Many hymns and carols are written in 4/2. The reason for this is again historic - many years ago, when composers of religious music changed from writing on parchment to writing on paper, they found that the paper seemed to get weakened when holding large dots of black ink, and they would often accidentally tear holes in the paper when trying to fill in black notes using feather quill pens. So they used notes such as minims and semibreves (which are just outlines) to avoid damaging the paper. Consequently, if you find yourself having to play sacred music, you may well have to read in 4/2 (see the example below).

Another example could be blues music. A great deal of blues music is written in the time signature 12/8, which again gives implications for the tempo and the style of the piece. 12/8 is usually played with the twelve quavers being grouped together in bunches of three ("triplets"), giving a sense of four slow beats in a bar, with each beat being divided into three even quavers.

However, it must be observed that these associations between the time signature and the likely tempo or style of the music are only general, and there will be many exceptions to them. You will find many pieces of religious music and hymns in time signatures other than 4/2. And it is perfectly possible to play music in 3/4 which is *not* a waltz, or music in 12/8 which is *not* the blues.



Time Signatures Do Not Limit Notes

Although a time signature clearly states how many beats there are in a bar, and the type of notes that those beats will be, it does not in any way limit the music to just those notes. For example, the time signature of 3/4 states that there are three crotchets in a bar. But that does not mean that you may *only* play three crotchets in every single bar of the music.

Rather, a time signature of 3/4 tells you that all the notes and rests in a bar will *add up* to the three crotchets stated in the time signature. Any combination of notes and rests in a bar of 3/4 is permitted, as long as the total value of those notes and rests is three crotchets.

For instance, this is not correct:



because in this example, in the first bar the total value of the notes and rests is two crotchets plus one semiquaver (ie two and a quarter crotchets in total - there are three semiquavers missing), and in the second bar, the total value is two quavers plus three crotchets (ie four crotchets in total there is one crotchet too many). In both of those bars, the total value should be three crotchets, because the time signature at the beginning of the music is 3/4.

But this *is* correct:



because in this example all the notes and rests in both bars add up to the time signature (3/4).