

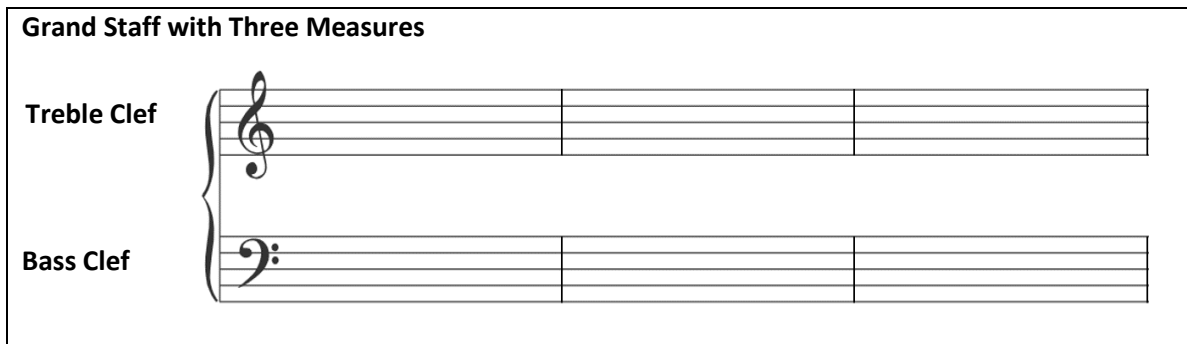
Music Theory: Note Values, Time Signature, and Meter

Music is a language of sounds written with its own alphabet of notes and rests arranged into a specific form to express rhythm and melody, much as letters are arranged into words and sentences to express thoughts. In addition to learning musical scales, an understanding of note values, time signature, and meter are fundamental aspects of reading and writing music. They are concepts that are often challenging for students just beginning to learn music theory. This handout is an introduction to note and rest values, time signature, and meter, and it provides visual representations as an aid in learning to read and write music.

Staff, Clef, and Measure

Notes and rests are arranged on a structure of five horizontal lines known as the staff. The clef is the symbol placed on the far-left side of the staff, and it represents the range of pitches. Commonly used clefs include bass clef, for lower pitches, and treble clef, for higher pitches. In this handout, the treble clef is used for all examples after this section. Notes are placed either on the lines or the spaces between the lines of the staff, and their placement denotes specific pitches of sound depending on the chosen clef. Different instruments may utilize a single staff and clef at once, or multiple staves and clefs joined together by a line and curved brace on the far-left side. The example below is a grand staff, commonly used for the piano, featuring a treble clef staff and bass clef staff joined together.

Grand Staff with Three Measures


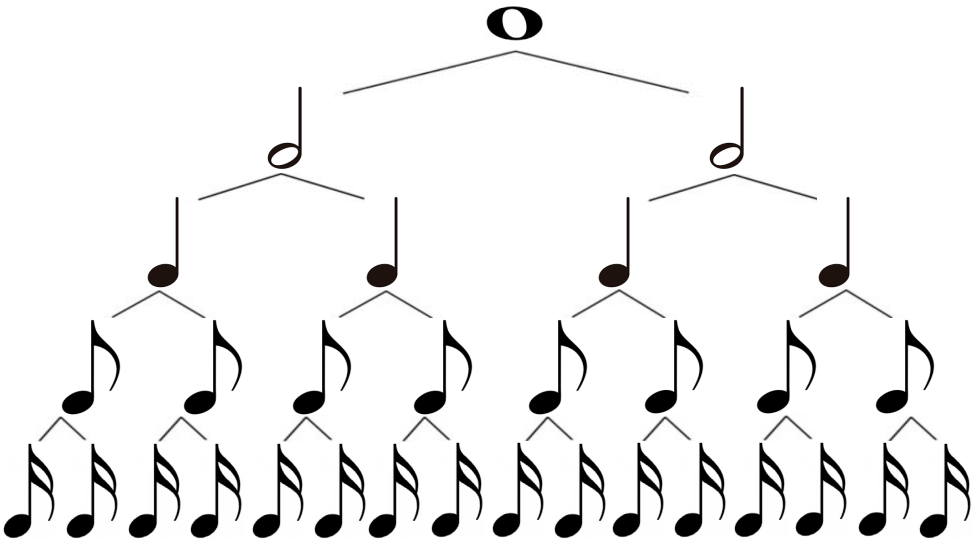






The diagram shows a grand staff with two staves. The top staff is labeled 'Treble Clef' and has a treble clef symbol. The bottom staff is labeled 'Bass Clef' and has a bass clef symbol. Both staves are divided into three measures by vertical bar lines. A brace on the left side connects the two staves.

From left to right, the musical staff uses vertical lines to create sections called measures, or sometimes bars. Each measure contains a certain number of beats, which are the most fundamental time units in music, and these beats are represented by notes or rests. The length of a measure is set by the number of note values assigned to it by the time signature.

Note and Rest Values

Note values indicate the duration that a specific pitch is to be played and are derived from the subdivision of a whole note, as shown in the following table.

Whole Note		 <p>Technically, notes can be divided infinitely, but these five are the most used.</p>
Half Note		
Quarter Note		
Eighth Note		
Sixteenth Note		

Notes are always divided evenly into halves. For example, a quarter note is both half the value of a half note and twice the value of an eighth note. When writing music, this logic is used to determine the combination of notes and rests that may fit into a measure based on the indicated time signature. It is important to remember that notes are only divided into halves, but a beat may be divided into halves or thirds depending on the meter indicated.

Rest values are used to indicate durations of silence or pauses and are derived from the subdivision of a whole rest, as represented in the following table. Rest values follow all the same conventions previously discussed for note values.

Whole Rest		
Half Rest		
Quarter Rest		
Eighth Rest		
Sixteenth Rest		
		Technically, rests can be divided infinitely, but these five are the most used.

Note values and rest values can be modified to extend their duration with the addition of a dot after the note or rest. This notation indicates that the duration should be extended by one half of the face value of the note or rest, allowing for the system of notes and rests that are divided into halves to be used in situations when a beat is divided into thirds based on the meter indicated.

Dotted Quarter Note



The dot indicates that the note should be played for its normal duration plus half. Therefore, the duration of a dotted quarter note can equally be described as a quarter note plus an eighth note or as three eighth notes.

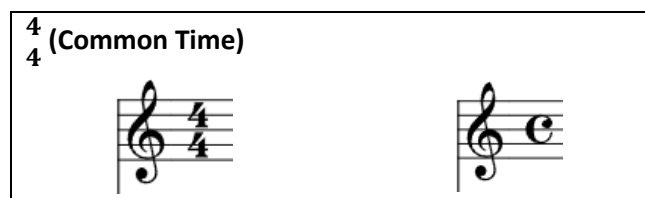
Time Signature and Simple Meter

The time signature is indicated to the right of the clef symbol and is composed of two numbers stacked together.

Example Time Signatures



The top number of the time signature represents the number of beats allowed in a measure. The bottom number represents the note value that is equivalent to one beat. This may be referred to as the “beat unit.” Another way of thinking about the bottom number is to view it as the number of beats per whole note. The most common time signature is $\frac{4}{4}$, which indicates that there are four beats per measure and that a quarter note is equivalent to one beat, or that a whole note is equal to four beats. This time signature represents simple quadruple meter. It may also be referred to as “common time” or simply written as “C,” as shown in the example below.





It should be noted that when reading or speaking the time signature, the numbers are read in sequence from top to bottom and not as a fraction. This means that $\frac{4}{4}$ time would be “four-four time,” not “four-quarters time.”

Meter, the rhythmic structure of music, can be determined from the time signature. In simple meter, a 2, 3, or 4 as the top number of the time signature indicates patterns of beats placed into groups of two, three, or four called simple duple, simple triple, or simple quadruple. When a simple meter is indicated, each beat can be divided evenly into halves, following the pattern of note subdivisions. The table below summarizes the meaning of each number in the time signature and states the specific values for $\frac{4}{4}$ time (simple quadruple meter) as an example.



Time Signature:		
Simple Meter	Meaning	In This Example
4	# of beats per measure	4 beats per measure
4	# of beats per whole note (what note value equals one beat)	4 beats per whole note (one quarter note equals one beat)

The following examples show two possible ways of composing one measure using $\frac{4}{4}$ time:

<p>Example 1</p> 	<p>Example 2</p> 
---	---

Notice how the first measure has the eighth notes grouped into pairs, a characteristic of simple meter. This is a visible reminder of how individual beats, represented by quarter notes in $\frac{4}{4}$ time, are divided into halves; two eighth notes are equivalent to one quarter note. The second measure matches exactly what is indicated by the time signature: four beats per measure, each represented by the note equal to one beat.

Now, consider the following example of $\frac{3}{4}$ time:

<p>$\frac{3}{4}$ Time (Simple Triple Meter)</p>	
	<p>3 Beats per measure</p> <p>4 Beats per whole note (one quarter note equals one beat)</p>
	

In this example, the top number indicates that there are three beats allowed per measure. The bottom number indicates that a whole note contains four beats and that a quarter note is equivalent to one beat. In certain time signatures, including this example, a whole note cannot be used in a measure because the number of beats it contains (4) exceeds the number of beats allowed (3). Therefore, when a $\frac{3}{4}$ time signature is indicated, each measure may be filled with three quarter notes or their equivalent, such as six eighth notes, as shown in the measure above.

Time Signature and Compound Meter

Compound meter differs from simple meter by using the top number of the time signature to indicate the number of divisions of a beat in each measure, rather than the number of whole beats per measure. The bottom number indicates the note value that is equal to one division of the beat, sometimes referred to as the division unit. The following table summarizes the meaning of each number when compound meter is indicated, and it states the specific values for $\frac{12}{8}$ time as an example.

Time Signature:		
Compound Meter	Meaning	In This Example
12	# of beat divisions per measure (value must be at least 6 and a multiple of three)	12 beat divisions per measure
8	Note value equal to one beat division	Eighth note equals one beat division

Compound meter also differs from simple meter by allowing a beat to be divided into three equal parts. This means that the top number of a time signature indicating compound meter will have a minimum value of 6 and always be a multiple of three. Values of 6, 9, and 12 in the top number indicate compound duple, compound triple, and compound quadruple, respectively. If needed, the top number may be divided by three to determine the total number of beats, rather than beat divisions, in a measure of compound meter. Compound meters often use 4, 8, or 16 as the bottom number to indicate that a quarter note, eighth note, or sixteenth note is equal to one division of the beat. Because the beats are divided evenly into thirds instead of halves, dotted notes may be used to indicate the value equal to one beat.

Now, consider the following example of $\frac{12}{8}$ time with two possible ways to write one measure:

$\frac{12}{8}$ Time (Compound Quadruple Meter)

12 Beat divisions per measure
8 Eighth note equals one beat division

Notice how the first measure has eighth notes grouped in threes, a characteristic of compound meter. This is a visible reminder of how individual beats, represented by dotted quarter notes in $\frac{12}{8}$ time, can be divided into thirds; three eighth notes are equivalent to one dotted quarter note. The second measure uses dotted quarter notes to express four beats of time represented by four notes rather than four beats of time represented by twelve shorter notes. These two types of notations may be used in conjunction within a single measure if the combination of their values equals the indicated divisions of the beat. For this reason, many combinations of note and rest values are possible in certain time signatures, allowing for a high variability of expression.

Certain time signatures may have overlapping qualities that help illustrate how beats are divided either into halves for simple meter or thirds for compound meter and how meter impacts the grouping of notes, such as in the following example.

Simple Triple Meter	Compound Duple Meter

When $\frac{3}{4}$ time (simple triple) is compared to $\frac{6}{8}$ time (compound duple), both could have a total of six eighth notes in each measure. However, simple triple meter receives three groupings of two eighth notes, and compound duple meter receives two groupings of three eighth notes. If using quarter notes, simple triple would have three while compound duple would have two dotted quarter notes; both situations are equivalent to six eighth notes.

The following table serves to summarize the concepts discussed and examples provided within this handout:

Meter and Time Signature Reference Table				
Type of Meter		Characteristics		
<u>Simple/Compound</u>	<u>Duple/Triple/Quadruple</u>	<u>Beat Division</u>	<u>Beat Grouping</u>	<u>Time Signatures</u>
Simple	Duple	2	2	$\frac{2}{2}$ $\frac{2}{4}$ $\frac{2}{8}$ $\frac{2}{16}$
Simple	Triple	2	3	$\frac{3}{2}$ $\frac{3}{4}$ $\frac{3}{8}$ $\frac{3}{16}$
Simple	Quadruple	2	4	$\frac{4}{4}$ $\frac{4}{8}$ $\frac{4}{16}$
Compound	Duple	3	2	$\frac{6}{4}$ $\frac{6}{8}$ $\frac{6}{16}$
Compound	Triple	3	3	$\frac{9}{4}$ $\frac{9}{8}$ $\frac{9}{16}$
Compound	Quadruple	3	4	$\frac{12}{4}$ $\frac{12}{8}$ $\frac{12}{16}$

Additional Resources

While this handout is meant to provide a general overview of concepts for beginning music students, it is not an exhaustive list of all related concepts and special cases. Students are encouraged to explore the topics of musical scales, accidentals, dynamics, tempo, counting rhythm, accents, and syncopation through the following resources to gain a more complete understanding of music theory fundamentals.

- [Open Music Theory: I. Fundamentals](#) – Online e-text with fundamentals and more
- [Musictheory.net](#) – Quick lessons, practice material, and tools for writing music

Practice Problems

1. State the notes that are equivalent to the image shown.



2. State the name of the time signature and what meter is indicated. If simple meter, state the number of beats per measure and what note equals one beat. If compound meter, state the number of beat divisions per measure and what note value is equal to one division of the beat.

a. 2
4

b. 3
8

c. 6
4

d. 12
16

Answers

1.
 - a. 3 quarter notes, or 1 half note + 1 quarter note
 - b. 3 sixteenth notes, or 1 eighth note + 1 sixteenth note
 - c. 3 thirty-second notes, or 1 sixteenth note + 1 thirty-second note

2.
 - a. Two-four time, simple duple, 2 beats per measure, quarter note equals a beat
 - b. Three-eight time, simple triple, 3 beats per measure, eighth note equals a beat
 - c. Six-four time, compound duple, 6 beat divisions per measure, quarter note is a beat division
 - d. Twelve-sixteen time, compound quadruple, 12 beat divisions per measure, sixteenth note is a beat division