In the sixth century BCE, the Greek scholar and philosopher Pythagoras decided to try to make things easier for everyone by standardizing musical tuning. He had already discovered pitch frequencies in musical instruments by vibrating different lengths of string, and he had defined what exactly an octave was, so he figured this was the next logical step and created something that is now called the *Pythagorean Circle*, which eventually led to the more common Circle of Fifths.

Each of the 12 points around the circle was assigned a pitch value. This roughly corresponds to the present system of an octave with 12 half-steps. The creation and use of the Circle of Fifths is the very foundation of Western music theory because it sets distances between notes, known as *intervals*. It also helps musicians recognize key signatures on sight. It’s just as essential in writing music because it is very helpful in composing and harmonizing melodies, building chords, and moving to different keys within a composition.

**Basic Intervals of Musical Harmony**

- **Perfect Fifth**
- **Major Third**
The Major Scale

The Major Scale

A note with a dot after it makes it 1.5 times as long as the same note without a dot.

How many quarter notes would equal a dotted half note? ______________

How many eighth notes would equal a dotted half note? ______________

Math Behind the Music Student Journal 2
Featured Composers

Franz Joseph Haydn is remembered as the first great symphony composer and is credited with essentially inventing the string quartet. Starting in about 1757 and continuing until 1806, three years before his death, Haydn composed 68 string quartets. As with his symphonies, Haydn used the quartets to develop the Classical Style, and like the symphonies, many of the quartets have been given individual names such as the 'Sun', the 'Prussian' and the 'Apponyi'.

Pyotr Iltch Tchaikovsky was born on May 7, 1840 in a small town in the Ukraine. (The English word for Pyotr is Peter.)

Peter taught himself to play the piano and complained he could not turn off the music he heard in his head. When he was forbidden from playing the piano, he would continue to tap out tunes on any available surface. One time he tapped so vigorously on a window that he broke it and cut his hand. Then his parents decided it was time to let him have piano lessons.

Tchaikovsky gave the world some of its most beautiful music. It incorporated the Russian spirit and flavor. His music was very popular because it was fun and exciting. The Russian people understood and loved his music, as did many Europeans. He was often asked to compose for special events.

Maurice Ravel was born on March 7, 1875, in Ciboure, France and became one of the most widely popular of all French composers. Ravel was admitted to the Paris Conservatoire at age 14 and continued to study there until his early 20s. During this time he composed some of his most renowned works including his String Quartet (1903), which is played in F major and includes four movements.

Ravel’s later works include orchestral pieces Rapsodie Espagnole and Boléro. He was commissioned by Sergey Diaghilev to create the ballet Daphnis et Chloé, which he completed in 1912 and became his most famous work. Eight years later, in 1920, he completed La Valse, a piece with varying credits as a ballet and concert work. He died in Paris in 1937.
(Source: www.biography.com)
Ludwig van Beethoven was born in 1770 into a very musical family in Bonn, now the capital of Germany. His father taught him to play the piano and organ. Ludwig played the piano exceptionally well at an early age. He performed his first public piano concert at the age of seven. By twelve years old, he was already composing music.

By the age of 18, Beethoven was the primary support for his family. He performed in concerts, gave piano lessons and composed music. He went to Vienna, Austria, to meet Mozart (his musical idol) who told his wife that this brilliant pianist would change how people thought about music for centuries.

When he was 26, Beethoven noticed an annoying ringing and buzzing in his ears. He went to many doctors who couldn’t help him. By the age of 48, he was almost completely deaf. Although he had to give up his career as a pianist and conductor, he continued to compose all the time.

Beethoven composed some of his grandest music when he was partially or completely deaf. He seemed to be writing music for an unseen audience. His music was often so difficult that many musicians had trouble playing it. People loved the sound of Beethoven’s music.

The composer died at the age of 56. Over 20,000 people attended his funeral. His music would not only be enjoyed but improve humanity. Beethoven was truly a hero.

Vocabulary

- **brilliant** – very bright or smart
- **essential** – something very important that needs to be in place
- **essentially** – for the most part
- **exceptionally** – refers to something that stands out
- **century** – one hundred years
- **chord** – three or more notes played together, usually based upon intervals of 3rds and 5ths
- **harmonize** – put notes together according to what kind of sound a composer wants to create
- **interval** – the distance between two notes based upon how many half steps they are apart
- **key** – the notes used in a section of music based upon a scale starting on a given note
- **philosopher** – a person who thinks and writes about life
- **primary** – most important
- **scale** – a set of notes upon which a musical composition is based
- **scholar** – a person who is an expert in a field of study
- **standardize** – come up with a set of rules that works across most common situations
- **waltz** – a popular European ballroom dance in triple meter

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