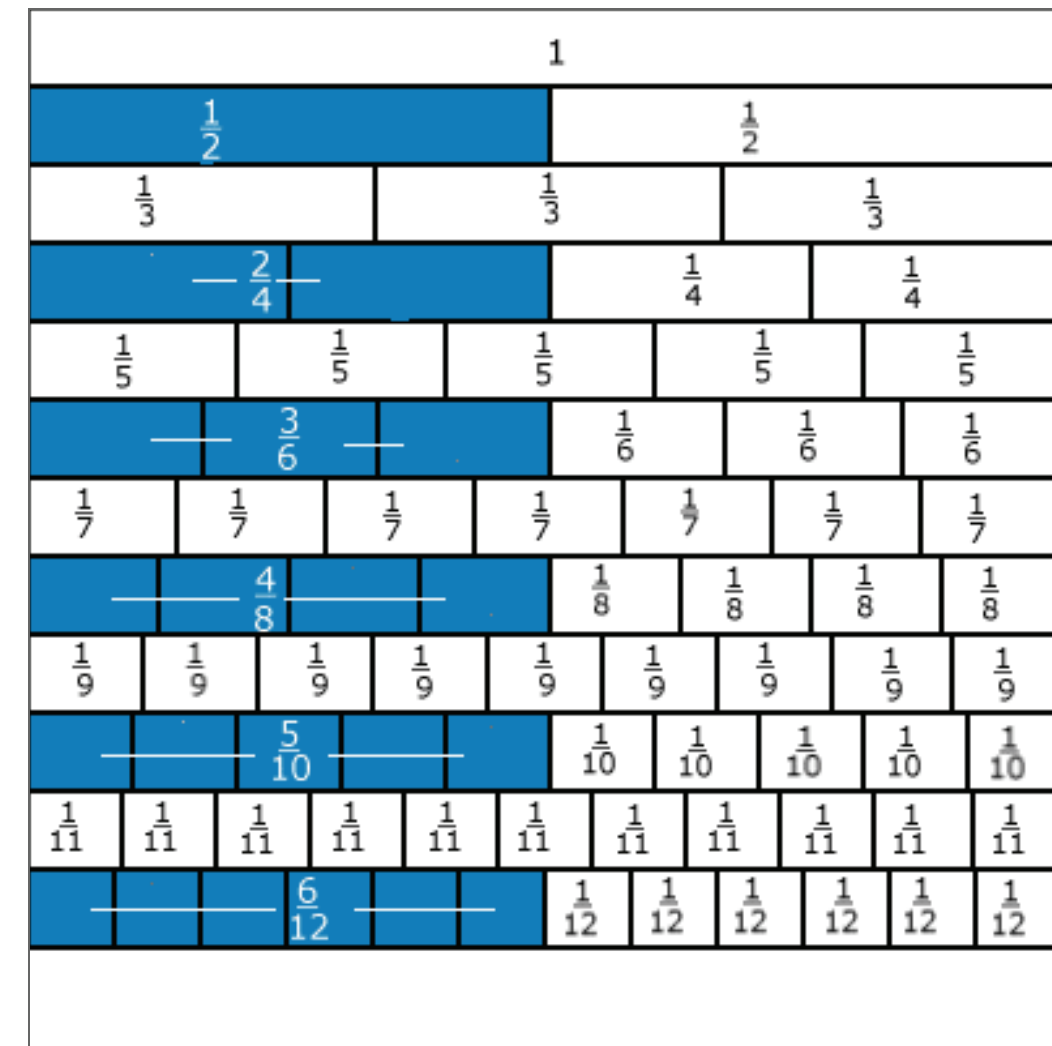


Reflections/Notes:

Form/Structure/Organization • Relationships • Patterns • Musical Notation • Rhythm • Fractions



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Idea Contributed by Emily Threlkeld

In a Fraction of a Beat!

Through movement and music accompaniment, students will explore fractions in the organization of sound.

Essential Question: How are beats in music organized, so that they are grouped in different rhythms? How do the rhythms fit together to divide the sound equally, but with lengths of different size?

Process

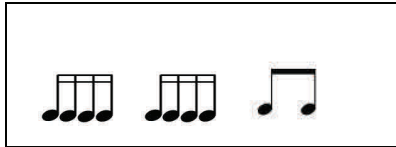
- Briefly review the rectangles shown below (or use Note Knacks™) to demonstrate. Use movement to review the groupings of two and three with simple counting – emphasis will be on beat one. Example: One two, one two, one two.... Or One two three, one two three, one two three.



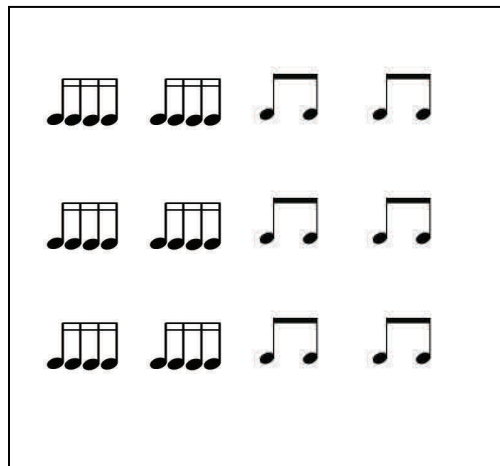
- Introduce poem below. To facilitate student success in learning the chant aurally, begin by speaking the entire chant, then speak the first phrase and have students echo. Continue speaking each phrase and having students echo. Then combine 2 phrases and have students echo. Once students are comfortable with this, speak the entire chant.

Betty Botter had some butter that was bitter
Betty Botter had some butter that was bitter
It would make her batter bitter
So she bought some better butter for her

- Choose a volunteer to determine the rhythm of the first line (using rhythm syllables) and notate on board as shown below:



- Choose another volunteer to notate the second line (same rhythm).
- Choose two more volunteers to notate the third and fourth line. The class then assesses the accuracy of the rhythms, and corrects where needed.
- Speak the entire rhyme with rhythm syllables while patting.
- Draw rectangles around the eighth notes, and indicate that the students are to snap these. Draw a circle around the quarter note, for the students to clap. Have the students snap the sixteenth notes.



Materials

Visuals of circle and rectangle graphs to display for the class.
White board and markers
Visuals for each student to refer to when listening of the rectangle.
Note Knacks™
Paper and pencils

Vocabulary

Meter

The rhythmic pattern made by grouping together strong and weak beats.

Measure

The notes and rests contained between two bar lines on the music staff.

Time Signature

The fraction placed on the staff to indicate the number of beats in a measure and the note that gets one beat. For example, in 3/4 time, there are three beats in the measure and the quarter note gets one beat.

Whole

All of something, complete.

Half

One of two equal parts of a whole

Third

One of three equal parts of a whole

Fraction

Part of a whole. The bottom number (the denominator) says how many parts the whole is divided into. The top number (the numerator) says how many you have.

Classroom Tips

The students may need assistance initially when writing the beats. Help as needed. This activity can take several class periods.

- Write each beat as a fraction = 1/16, = 1/8, and so forth. Write the first and the fourth lines as fraction addition problems: 2/16 + 2/8 = 4/4. Solve the problem and reduce to get the time signature answer.
- Other operations that can be done include changing the composition of one or more of the beats, and creating more number sentences.
- Distribute paper and pencils and have the children work in small groups to create a measure of music that contains four beats, which they can then write out with fractions.
- Circulate around the room and have the students explain what they have done and clap their rhythms for you.

[Extensions:

- Non-pitched percussion instruments, or found sounds, can be added to the performance of Betty Botter, with each level of body percussion being replaced by an instrument.
- The poem can be performed as a two-part canon at two beats, vocally and/or with instruments.
- The number sentences created can become rondo sections, and the poem can become a performance piece. It can be videoed and replayed for assessment.
- The combination of math and rhythm is endless, the math sentences that can be created go on and on.]

Assessment

- The students will write the correct rhythm on the board received from the teacher's dictation.
- The students will assess whether the student's rhythm was written correctly.
- The students will write their own measure and math sentence to be assessed by performance.

Common Core Georgia Performance Standards

MATHEMATICS

GRADE 4

MCC4.OA.1: Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.

MCC4.NF.1: Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.

MCC4.NF.2: Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as $1/2$. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model.

MUSIC

GRADE 4

M4GM.2: Performing on instruments, alone and with others, a varied repertoire of music

M4GM.3: Reading and notating music

M4GM.5: Composing and arranging music within specified guidelines

M4GM.8: Understanding relationships between music, the other arts, and disciplines outside the arts

National Standards

MUSIC

Standard 2: Performing on instruments, alone and with others, a varied repertoire of music

Standard 4: Composing and arranging music within specified guidelines

Standard 5: Reading and notating music.

Standard 6: Listening to, analyzing, and describing music.

Standard 8: Understanding relationships between music, the other arts, and disciplines outside the arts.