



artsNOW

Integrated learning solutions

FUN WITH FRACTIONS Grade Band: 2-3 Content Focus: Music & Math



LEARNING DESCRIPTION

In this lesson, students will use fractions to describe the sounds that they hear in music. Students will then use fractions to create their own music.

LEARNING TARGETS

Essential Questions	"I Can" Statements
How can musical composition help us understand fractions?	I can create music to represent fractions. I can identify and write fractions based on musical examples.

GEORGIA STANDARDS

Curriculum Standards	Arts Standards
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<p>Grade 3: 3.NR.4: Represent fractions with denominators of 2, 3, 4, 6 and 8 in multiple ways within a framework using visual models.</p>	<p>Grade 3: ESGM3.CR.2 Compose and arrange music within specified guidelines.</p> <p>ESGM3.PR.2a. Perform steady beat and simple rhythmic patterns using body percussion and a variety of instruments with appropriate technique.</p> <p>ESGM3.RE.1b. Describe music using appropriate vocabulary (e.g. upward/downward, forte/piano, presto/largo, long/short), appropriate mood (e.g. happy/sad), and timbre adjectives (e.g. dark/bright, heavy/light).</p>
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SOUTH CAROLINA STANDARDS

Curriculum Standards	Arts Standards
<p>Grade 3: 3.NSF.1 Develop an understanding of fractions (i.e., denominators 2, 3, 4, 6, 8, 10) as numbers.</p> <p>a. A fraction $1 / b$ (called a unit fraction) is the quantity formed by one part when a whole is partitioned into b equal parts;</p> <p>b. A fraction a / b is the quantity formed by a parts of size $1 / b$</p>	<p>Anchor Standard 1: I can arrange and compose music.</p> <p>Anchor Standard 4: I can play instruments alone and with others.</p> <p>Anchor Standard 6: I can analyze music.</p>

KEY VOCABULARY

Content Vocabulary	Arts Vocabulary
<ul style="list-style-type: none"> • <u>Numerator</u> - The top number of a fraction • <u>Denominator</u> - The bottom number of a fraction 	<ul style="list-style-type: none"> • <u>Found sound</u> - Sounds created from unexpected sources; for example, using classroom objects (rulers, pencils, chairs, etc.) as musical instruments • <u>Timbre</u> - The quality of sound; the component of a tone that causes different instruments to sound different from each other, even when playing the same note; for example, instrumental timbre and vocal timbre • <u>Body percussion</u> - Sounds produced using the body (e.g., claps, snaps, pats, stamps)



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- Unpitched Instruments - Instruments that are tuned to specific pitches (e.g., drum, maracas, rhythm sticks, triangle, etc.)

MATERIALS

- Assortment of unpitched instruments (or found sound objects like an empty can or tapping two pencils together)
- Writing utensils
- Paper (or individual white boards) for students
- Fraction cards

INSTRUCTIONAL DESIGN

Opening/Activating Strategy

- Have students listen to various classroom instruments, body percussion, and/or found sounds and label them as same and different.
 - For example, perform two claps and have students identify these as “same.” Tap a chair once and a water bottle once and have students identify as “different.”
- Explain to students that timbre is the component of a tone that causes different instruments to sound different from each other, even when playing the same note; for example, instrumental timbre and vocal timbre.
 - Extend the opening to have students listen to various sounds performed on classroom instruments, body percussion, and/or found sound and describe the timbres, grouping instruments into families.
 - Families could be woods, metals, and drums (or other “families,” such as if sounds were produced by tapping, scraping, or shaking as appropriate).

Work Session

- Model the “sound detective” game.
 - Have students draw a short horizontal line on their whiteboard or blank paper.
 - Using a steady beat, play four of the same sounds on the same instrument.
 - Have students write the number “4” on their whiteboard under the line.
 - Identify this as the denominator indicating that there were four total sounds.
 - Lead students to understanding that 4 *identical* sounds were heard; thus, to represent the sound fractionally, they would write a 4 on top of the line as well (that is, 4 of the 4 sounds were the same).
 - Identify top number as numerator.
- Follow this same process for additional 4-beat patterns, changing the number of “different” sounds and challenging students to represent these sounds fractionally.
 - For example, if 3 of the 4 beats were played on a metal instrument, the sound could be represented as $\frac{3}{4}$.
- Explore other ways of making sounds different from each other (e.g., loud and soft sounds—dynamics).



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- Divide students into small groups. Distribute fraction cards to groups.
 - Have students create a rhythm representing the fraction on their card and perform for peers.
 - Have classmates identify what is heard. *The denominator will need to be identified beforehand.*

ELA Extension:

- Use children’s poems to further explore fractions.
 - Examples:
 - “Mary Had a Little Lamb” has two lines that include rhyming words, so 2/4 lines (or 1/2) of the poem uses rhyming words.
 - “Rain, Rain, Go Away” has four lines that use rhyming words, so 4/4 of the lines of the poem use rhyming words.
 - To aid musical skill development, have students play the rhythm of the poem on their instruments.
 - Assign rhyming words to the same instrument so students make the connection between the sounds in the words and the sounds the instrument makes.
 - Suggested poems include:

Rain, Rain go away.
Come again another day.
All the children want to play.
Rain, rain, go away.

Mary had a little lamb.
Its fleece was white as snow.
And everywhere that Mary went,
The lamb was sure to go.

Cock-a-doodle-doo,
My dame has lost her shoe,
My master’s lost his fiddling stick,
Sing cock-a-doodle-doo.

A wise old owl lived in the oak;
The more he saw the less he spoke.
The less he spoke the more he heard.
Why aren’t we all like that wise old bird?

Closing/Reflection

- Facilitate a class discussion reflecting on the process.
- Ask students how music helped them understand fractions.
- Ask students if they can think of other things from the lesson that they could represent in terms of fractions.
 - Examples could include three out of four students liked the sound of tapping on a can better than tapping two pencils together.

ASSESSMENTS

Formative

Teachers will assess students’ learning by observing whether students can identify body percussion, found sound, and/or unpitched percussion instrument sounds as the same and different and whether students can count sounds and represent them with numbers.

Summative



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CHECKLIST

- Students can create music to accurately represent fractions.
- Students can identify and write fractions based on musical examples.

DIFFERENTIATION

Acceleration:

- Challenge students to use higher denominators (beats in the musical composition) and more than two types of instruments.
- Students can create their own compositions and then represent them by writing the equation showing the addition of all fractions in their composition ($\frac{2}{8} + \frac{2}{8} + \frac{4}{8} = \frac{8}{8}$).
- Have students write poetry using rhyme schemes illustrating fractions.
- Divide students into pairs. Have them create rhythms representing the two fractions they are holding. Have classmates identify the two fractions heard.

Remediation:

- Have students work with a partner to write numbers describing the sounds heard.
- Have students work with a partner to identify rhyming words.
- Perform body percussion and other sounds in front of students so they can see and hear the same and different sounds and sound sources.

ADDITIONAL RESOURCES

NA

**This integrated lesson provides differentiated ideas and activities for educators that are aligned to a sampling of standards. Standards referenced at the time of publishing may differ based on each state's adoption of new standards.*

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