



artsNOW

Integrated learning solutions

FRACTIONS AND BODY PERCUSSION

Grade Band: 4-5

Content Focus: Music & Math



LEARNING DESCRIPTION

In this lesson, students will explore how they can use body percussion to learn about, represent and compare fractions through music.

LEARNING TARGETS

Essential Questions	"I Can" Statements
How can I represent fractions using body percussion?	I can represent fractions in multiple ways within a framework using visual models.
How does music connect to math?	I can compare two fractions with different numerators and denominators by flexibly using a variety of tools and strategies.
	I can add fractions with like denominators.
	I can listen to, analyze, and describe music.



We bring learning to life.

	<p>I can compose a body percussion composition that represents fractions.</p> <p>I can connect music to math.</p>
--	---

GEORGIA STANDARDS

Curriculum Standards	Arts Standards
<p>Grade 4 4.NR.4.1 Using concrete materials, drawings, and number lines, demonstrate and explain the relationship between equivalent fractions, including fractions greater than one, and explain the identity property of multiplication as it relates to equivalent fractions. Generate equivalent fractions using these relationships.</p> <p>4.NR.4.2 Compare two fractions with the same numerator or the same denominator by reasoning about their size and recognize that comparisons are valid only when the two fractions refer to the same whole.</p> <p>4.NR.4.3 Compare two fractions with different numerators and/or different denominators by flexibly using a variety of tools and strategies and recognize that comparisons are valid only when the two fractions refer to the same whole.</p> <p>4.NR.4.6 Add and subtract fractions and mixed numbers with like denominators using a variety of tools.</p>	<p>Grade 4 ESGM4.RE.1 Listen to, analyze, and describe music. ESGM4.CR.2 Compose and arrange music within specified guidelines. ESGM4.PR.2 Perform a varied repertoire of music on instruments, alone and with others. ESGM4.CN.1 Connect music to the other fine arts and disciplines outside the arts.</p> <p>Grade 5 ESGM5.RE.1 Listen to, analyze, and describe music. ESGM5.CR.2 Compose and arrange music within specified guidelines. ESGM5.PR.2 Perform a varied repertoire of music on instruments, alone and with others. ESGM5.CN.1 Connect music to the other fine arts and disciplines outside the arts.</p>

SOUTH CAROLINA STANDARDS

Curriculum Standards	Arts Standards
<p>Grade 4 4.NSF.1 Explain why a fraction (i.e., denominators 2, 3, 4, 5, 6, 8, 10, 12, 25, 100), $\frac{a}{b}$, is equivalent to a fraction, $\frac{n \times a}{n \times b}$, by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are</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>



We bring learning to life.

the same size. Use this principle to recognize and generate equivalent fractions.

4.NSF.2 Compare two given fractions (i.e., denominators 2, 3, 4, 5, 6, 8, 10, 12, 25, 100) by creating common denominators or numerators, or by comparing to a benchmark fraction such as $\frac{1}{2}$ and represent the comparison using the symbols $>$, $=$, or $<$.

4.NSF.3 Develop an understanding of addition and subtraction of fractions (i.e., denominators 2, 3, 4, 5, 6, 8, 10, 12, 25, 100) based on unit fractions.

Anchor Standard 7: I can evaluate music.

Anchor Standard 9: I can relate music to other arts disciplines, other subjects, and career paths.

KEY VOCABULARY

Content Vocabulary	Arts Vocabulary
<ul style="list-style-type: none">● <u>Fractions</u> - Equal parts of a whole● <u>Numerator</u> - The top number in a fraction that represents how many parts of a whole are being considered● <u>Denominator</u> - The bottom number in a fraction. It represents the total number of equal parts into which the whole is divided● <u>Greater than ($>$)</u> - A number that is larger than another number● <u>Less than ($<$)</u> - A number that is smaller than another number● <u>Equal to ($=$)</u> - A number that has the same value as another number● <u>Equivalent fractions</u> - Different fractions that represent the same part of a whole; they have different numerators and denominators but the same value● <u>Least common denominator</u> - The smallest number that can be a common denominator for two or more fractions	<ul style="list-style-type: none">● <u>Steady beat</u> - Steady pulse● <u>Body percussion</u> - Stomping, patting, clapping, snapping, etc.)● <u>Pitch</u> - High/low sounds● <u>Rhythm</u> - Long/short sounds● <u>Dynamics</u> - Loud/soft sound● <u>Tempo</u> - Fast/slow sounds



We bring learning to life.

MATERIALS

- Paper
- Pencils
- Teacher access to computer and Internet

INSTRUCTIONAL DESIGN

Opening/Activating Strategy

- Choose a fractions song (see materials) for students to engage in a “Hear, Think, Wonder” listening routine. This listening routine is a modification of [Project Zero’s “See, Think, Wonder” Thinking Routine](#).
- Prepare students for the listening activity by telling students that they are going to listen to a song and answer three prompts about the song. Wait until the end of the listening activity before revealing the title and composer of the song.
 - The first prompt is “I hear”.
 - Students should focus on the different musical sounds such as tempo (fast/slow), dynamics (loud/soft), instruments, pitch (high/low), and lyrics (words to song). They may use words or draw a quick picture to answer.
 - Play the song audio only one time while students are listening in order to answer the prompt, “I hear”.
 - Students turn and talk to a neighbor and share their answers.
 - Students share out to the class. Validate the answers that students give.
 - Repeat the process for “I think” and “I wonder”.
 - For “I think”, the teacher can ask clarifying questions such as, “What did you hear in the music that made you think that?”.
- After the listening activity, encourage students to sing along with the recording. Provide a lyric sheet or turn on closed captions so that students can sing along with the video. (*The font of the closed caption can be enlarged by clicking on settings, then English, finally options.*)
 - Start by singing the chorus. Tell students that the chorus is the main idea of the song with repeating lyrics.
 - Lead students in finding the steady beat to the song during the verses by directing students to pat their legs or tap two fingers in a palm.
 - Demonstrate the four basic movements of body percussion (stomp, pat, clap, snap—or tap two fingers in palm if snapping is a challenge). Lead students in each of these movements doing them to the steady beat of the song.
- Transition into the lesson about fractions.

Work Session

- Introduce or review grade level fraction concepts, such as equivalent fractions, comparing fractions, and adding and subtracting fractions. Use modeling, visual representations, and hands-on manipulatives to help students understand the concept of fractions.
- Transition to the concept of representing and comparing fractions through performing rhythmic movements called body percussion.
 - Remind students of the four basic movements of body percussion used in the activator (stomp, pat, clap, snap—or tap two fingers in palm if snapping is a challenge).



We bring learning to life.

- Students practice and perform body percussion to a steady beat using the [Body Percussion Grid 1 by Crescendo](#) as a guide. (**Any occurrence of the shoe can represent stomp.*)
 - Help students determine the fractions of the body movements in Body Percussion Grid 1 (ex: claps = $5/16$ if using the entire board)
 - Students will then compare the fractions using greater than, less than, and equal to.
- Divide students into small groups of three to four students and present the following group task:
 - Tell students that as a group, they will create their own body percussion composition using the [Create Your Own Beat Body Percussion Board](#).
 - Predetermine how many movements students should use/how many squares on the board (ex: the entire board, only 12 squares, only 8 squares, etc.). This number will represent the denominator.
 - Assign a different number of total movements for different groups.
 - Provide time for students to:
 - Compose their body percussion using the blank board.
 - Determine and write fractions based on the occurrence of body parts.
 - Students should add their fractions to ensure that they have the correct total number of movements assigned (i.e., $5/16 + 2/16 + 4/16 + 5/16 = 16/16$).
 - Compare the fractions using greater than, less than, and equal to.
 - Practice performing the body percussion composition to a steady beat.
- After a predetermined amount of work time, students will share their body percussion compositions with a partner group.
 - Groups will work to compare the occurrence of body parts in each of their compositions by finding the least common denominator. For example, one group used clapping 3 beats out of 16 total and their partner group used clapping 3 beats out of 8 total. Students should find the least common denominator and show that $3/16 < 6/16$.
 - Students should look for any occurrences of the same numerator in their fractions and be able to determine that because they have different denominators, the fractions are not equivalent.
 - Students should look for any occurrences of equivalent fractions when comparing compositions and be able to determine that the fraction of the movement in each composition is the same even though the occurrence of the movement is different in each composition.

Closing/Reflection

- Partner groups will share their body percussion composition with the class.
 - Remind performers to do their best. Remind audience members to give their attention to the performing group and applaud the group's effort after the performance.
 - Groups will share with the class what they learned when comparing their compositions.
- Together, the teacher and students will review how students used body percussion to represent and compare fractions.



We bring learning to life.

ASSESSMENTS

Formative

Teacher will assess student learning through:

- Observation of written responses during the listening activity.
- Observation of “turn and talk” and “sharing out” during the listening activity.
- Observation of students singing with a steady beat.
- Observation of students demonstrating the steady beat during the singing activity.
- Observation and questioning during the group task.
- Observation of groups comparing their compositions.

Summative

CHECKLIST

- Students can perform the body percussion to a steady beat.
- Students can correctly identify fractions based on the body parts used to create the body percussion compositions.
- Students can compare fractions using body percussion compositions by finding the least common denominator.
- Students can create a body percussion composition that represents fractions.

DIFFERENTIATION

Acceleration:

- Require a minimum number of movements in the composition.
- Have groups combine their compositions into one large composition after converting all fractions to the least common denominator. If the least common denominator was 16 for each, by combining the two compositions, the total number of movements will now be 32. Students should add all occurrences of each body percussion movement and reorder the movements from least to greatest. For example, after converting the fractions to use the least common denominator, one group has used clapping 2 times and the other group 4 times (using the new denominator of 32, $2/32 + 4/32 = 6/32$); one groups has used stomping 3 times and the other group 5 times ($3/32 + 5/32 = 8/32$). Students would then order/compare the movements from least to greatest, $6/32 < 8/32$.
- Have students simplify fractions where possible.

Remediation:

- Scaffold the lesson by working with students to compare two example compositions by finding the least common denominators before groups complete this task independently.
- Reduce the number of total squares/denominator to complete on the body percussion board.
- Limit the number of types of body percussion movements students should use in their compositions to a small number.

ADDITIONAL RESOURCES



We bring learning to life.

- [Project Zero's "See, Think, Wonder" Artful Thinking Routine](#)
- [Fractions Songs for Kids by NumberRock](#) (*chorus introduced at :30*)
- [The Fractions Song by Hopscotch](#) (*chorus introduced at :52*)
- [Fractions are Parts of a Whole by Jack Hartmann](#) (*chorus introduced at :15*)
- [Body Percussion Grid 1 by Crescendo](#)
- [Create Your Own Beat Body Percussion Board](#)

**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.*

Ideas contributed by: Rue Lee-Holmes. Updated by: Katy Betts.

Revised and copyright: August 2024 @ ArtsNOW



We bring learning to life.