



artsNOW

Integrated learning solutions

MOVING WITH MATHEMATICS

Grade Band: 4-5

Content Focus: Dance & Math



LEARNING DESCRIPTION

In this lesson, students will explore the concepts of fractions, percentages, and decimals by creating dances using locomotor and non-locomotor movements.

LEARNING TARGETS

Essential Questions	"I Can" Statements
How can movement and choreography enhance understanding of fractions, decimals, and percentages?	<p>I can choreograph dances that match mathematical and movement criteria.</p> <p>I can correctly solve math problems involving fractions and percentages.</p> <p>I can identify the fraction/percentage and movement type in performances.</p>



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GEORGIA STANDARDS

Curriculum Standards	Arts Standards
<p>Grade 4: 4.NR.4: Solve real-life problems involving addition, subtraction, equivalence, and comparison of fractions with denominators of 2, 3, 4, 5, 6, 8, 10, 12, and 100 using part-whole strategies and visual models.</p> <p>4.NR.5: Solve real-life problems involving addition, equivalence, comparison of fractions with denominators of 10 and 100, and comparison of decimal numbers as tenths and hundredths using part-whole strategies and visual models.</p> <p>Grade 5: 5.NR.3: Describe fractions and perform operations with fractions to solve relevant, mathematical problems using part-whole strategies and visual models.</p>	<p>Grade 4: ESD4.CR.1 Demonstrate an understanding of the choreographic process.</p> <p>ESD4.CR.2 Demonstrate an understanding of dance as a form of communication.</p> <p>ESD4.PR.1 Identify and demonstrate movement elements, skills, and terminology in dance</p> <p>ESD4.RE.1 Demonstrate critical and creative thinking in dance.</p> <p>Grade 5: ESD5.CR.1 Demonstrate an understanding of the choreographic process.</p> <p>ESD5.CR.2 Demonstrate an understanding of dance as a form of communication.</p> <p>ESD5.PR.1 Identify and demonstrate movement elements, skills, and terminology in dance</p> <p>ESD5.RE.1 Demonstrate critical and creative thinking in dance.</p>

SOUTH CAROLINA STANDARDS

Curriculum Standards	Arts Standards
<p>Grade 4: 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 $<$.</p> <p>Grade 5: 5.NSF.3 Understand the relationship between fractions and division of whole numbers by interpreting a fraction as the numerator divided by the denominator (i.e., $a \div b = \frac{a}{b}$).</p>	<p>Anchor Standard 1: I can use movement exploration to discover and create artistic ideas and works.</p> <p>Anchor Standard 2: I can choreograph a dance.</p> <p>Anchor Standard 3: I can perform movements using the dance elements.</p> <p>Anchor Standard 7: I can relate dance to other arts disciplines, content areas, and careers.</p>



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KEY VOCABULARY

Content Vocabulary	Arts Vocabulary
<ul style="list-style-type: none">● <u>Fraction</u> - A number representing part of a whole● <u>Numerator</u> - Represents the number of parts out of the whole that are being considered● <u>Denominator</u> - Represents the total parts of something● <u>Percentage</u> - A way to express a number as a fraction of 100	<ul style="list-style-type: none">● <u>Choreographer</u> - A person who creates dances● <u>Beat</u> - Basic unit of musical time; can be heard as a regular pulse underlying music● <u>Dance composition/choreography</u> - Creating the movements in dances● <u>Chassé</u> - A gliding dance step with a pattern of step-together-step● <u>Locomotor</u> - A movement that travels through space● <u>Non-locomotor</u> - A movement that does not travel through space● <u>Pathway</u> - The designs traced on the floor as a dancer travels across space; the designs traced in the air as a dancer moves various body parts

MATERIALS

- Sound source and music
- Paper and pencils
- Written criteria for choreography on cards

INSTRUCTIONAL DESIGN

Opening/Activating Strategy

- Begin the lesson by engaging students in movement that introduces students to the locomotor and non-locomotor movement.
- Have students arrange themselves in a circle with enough personal space to move freely without touching a neighbor.
 - Turn on instrumental music with a steady beat.
- First, have students bring awareness to their bodies by leading them through gentle stretches starting from the head and moving to the toes (e.g., head circles, shoulder shrugs, toe touches, etc.).
- Introduce non-locomotor movements to students by directing them in the following movements.



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- Bending and Stretching: Bend the knees and stretch up high.
- Twisting: Twist the torso to the left and right.
- Swinging: Swing the arms gently from side to side.
- Swaying: Sway the body from side to side with feet planted.
- Turning: Spin in place, both directions.
- Invite students to create their own movement.
- Introduce non-locomotor movements to students by directing them in the following movements.
 - Walking: Walk around the room with different styles (tiptoeing, heel walking, big steps, small steps).
 - Jumping: Jump in place, then move forward and backward.
 - Chassé: Step-together-step by gliding.
 - Invite students to create their own movement.
- Combine locomotor and non-locomotor movements.
 - Traveling with Twists: Walk across the room while twisting the torso.
 - Sway and slide: Sway the upper body while sliding sideways across the room.
 - Step and turn: Take three steps forward, then turn in place (repeat, moving in different directions).
 - Invite students to create their own movement.
- Debrief the difference between locomotor and non-locomotor movements with students. Check for understanding by stating different types of movements and see if students can identify which type of movement it is.

Work Session

- Tell students that in this lesson they will be using locomotor and non-locomotor movements to choreograph a dance that they will perform for the class.
- Turn on music and help students find the steady beat by walking in place.
 - Now, count the beats into eight beat sections.
 - Have students count the eight beats along with you.
 - Practice adding some locomotor and non-locomotor movements as you complete the eight count.
- Divide the sections into fractions or percentages (i.e., 50% of eight beats is four beats, 25% of eight beats is two beats, 3/4 of four beats, 1/4 of four beats, etc).
 - Guide students in choreographing a dance in which 50% or $\frac{1}{2}$ uses locomotor movements and $\frac{1}{2}$ uses non-locomotor movements. Help students think about the different patterns they could use to arrange movements.
- Break students into groups and pass out cards with criteria on them.
 - Students will create a movement sequence or dance using the learned movements from the warm-up (or movements that they create) and the criteria assigned to them.
 - Example 1: Create a four-step dance combination that is $\frac{3}{4}$ non-locomotor movement and $\frac{1}{4}$ locomotor movement.
 - Example 2: Create a 32 beat dance in which 25% of your dance must be locomotor movement, 50% of your dance must be locomotor, and 25% of your dance must combine locomotor and non-locomotor movements.
 - Students should express their choreography math equation using $>$, $<$, or $=$.

Closing/Reflection



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- The students will perform their choreography for their classmates. Discuss appropriate audience participation and etiquette prior to performances.
- After each group performs, the audience will identify the fractions, percentages, or decimal equivalents that the group illustrated using locomotor and non-locomotor movements.

ASSESSMENTS

Formative

Teachers will assess students' learning by observing students' ability to identify locomotor and non-locomotor movements in the activator, understanding of fractions and percentages, and collaboration with their groups to choreograph a dance based on fractions that uses locomotor and non-locomotor movements.

Summative

CHECKLIST

- Students can choreograph dances that correctly match mathematical and movement criteria (fractions and locomotor/non-locomotor movements).
- Students can identify the fraction/percentage and movement type being performed.

DIFFERENTIATION

Acceleration:

- Challenge students by incorporating other types of dance elements such as levels.
- Have students write their own math problem and choreograph a dance based on their problem.

Remediation:

- Scaffold the lesson by analyzing a math problem and choreographing a dance together that correctly matches the fractions or percentages to locomotor and non-locomotor movements.
- Have students all use the same mathematical criteria. Solve the problem together as a class and then have students choreograph their dances.

ADDITIONAL RESOURCES

NA

Ideas contributed by: Melissa Dittmar-Joy. Updated by Katy Betts.

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