artsNOW
Integrated learning solutions

MOVING WITH MATHEMATICS
Grade Band: 2-3
Content Focus: Dance & Math

LEARNING DESCRIPTION

In this lesson, students will explore the concepts of fractions 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?	I can choreograph dances that match mathematical and movement criteria. I can correctly solve math problems involving fractions. I can identify the fraction and movement type in performances.

GEORGIA STANDARDS

Curriculum Standards	Arts Standards
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.	**Grade 3:** ESD3.CR.1 Demonstrate an understanding of the choreographic process. ESD3.CR.2 Demonstrate an understanding of dance as a form of communication. ESD3.PR.1 Identify and demonstrate movement elements, skills, and terminology in dance ESD3.RE.1 Demonstrate critical and creative thinking in dance.

SOUTH CAROLINA STANDARDS

Curriculum Standards	Arts Standards
3.NSF.1 Develop an understanding of fractions (i.e., denominators 2, 3, 4, 6, 8, 10) as numbers. 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; b. A fraction a / b is the quantity formed by a parts of size 1 / b ; c. A fraction is a number that can be represented on a number line based on counts of a unit fraction; d. A fraction can be represented using set, area, and linear models. 3.NSF.2 Explain fraction equivalence (i.e., denominators 2, 3, 4, 6, 8, 10) by demonstrating an understanding that: a. two fractions are equal if they are the same size, based on the same whole, or at the same point on a number line; b. fraction equivalence can be represented using set, area, and linear models; c. whole numbers can be written as fractions (e.g., 4 = 4 / 1 and 1 = 4 / 4); d. fractions with the same numerator or same denominator can be compared by reasoning about their size based on the same whole.	**Anchor Standard 1:** I can use movement exploration to discover and create artistic ideas and works. **Anchor Standard 2:** I can choreograph a dance. **Anchor Standard 3:** I can perform movements using the dance elements. **Anchor Standard 7:** I can relate dance to other arts disciplines, content areas, and careers.

KEY VOCABULARY

Content Vocabulary	Arts Vocabulary
• Fraction - A number representing part of a whole • Numerator - Represents the number of parts out of the whole that are being considered • Denominator - Represents the total parts of something	• Choreographer - A person who creates dances • Beat - Basic unit of musical time; can be heard as a regular pulse underlying music • Dance composition/choreography - Creating the movements in dances • Chassé - A gliding dance step with a pattern of step-together-step • Locomotor - A movement that travels through space • Non-locomotor - A movement that does not travel through space • Pathway - 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.
    - 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 (i.e., ½ of eight beats is four beats, ¼ of eight beats is two beats, ¾ of four beats, ¼ of four beats, etc).
    - Guide students in choreographing a dance in which ½ uses locomotor movements and ½ 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 ¾ non-locomotor movement and ¼ locomotor movement.
        - Example 2: Create an eight-beat dance in which ¼ of your dance is locomotor movement, ½ of your dance is locomotor, and ¼ of your dance combines locomotor and non-locomotor movements.

Closing/Reflection

- 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 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 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 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 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.

ATLANTA BALLET
Centre for Dance Education