

# Voluminous Dance

*Fifth Grade + Math and Dance*

## CORE SUBJECT AREA

Math

## ART FORM + ELEMENTS

Dance  
Space

## MSCCR STANDARDS

CCSS.MATH.CONTENT.5.MD.C.3 Recognize volume as an attribute of solid figures and understand concepts of volume measurement.

CCSS.MATH.CONTENT.5.MD.C.4 Measure volumes by counting unit cubes, using cubic cm, cubic in., cubic ft., and improvised units.

CCSS.MATH.CONTENT.5.G.A.2 Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

## MSCCR CREATIVE STANDARDS

DA:Pr5.1.5.c. Collaborate with peer ensemble members to repeat sequences, synchronize actions, and refine spatial relationships to improve performance quality. Apply Feedback from others to establish personal performance goals.

DA:Pr6.1.5.b. Identify, explore, and select production elements that heighten and intensify the artistic intent of a dance and

are adaptable for various performance spaces.

## DURATION

90 minutes

## OBJECTIVE

TSW recognize volume in three-dimensional figures.

TSW measure volume by multiplying the length, width, and height needed to create a dance space.

TSW graph points in the first quadrant of the coordinate plane.

TSW collaborate with peers to perform a dance sequence.

## MATERIALS NEEDED

Graph paper  
Pencils  
Tape  
Measures

## VOCABULARY

Volume  
Positive space  
Negative space  
Coordinate plane  
First quartile  
Positive integer

## RECOMMENDED RESOURCES

- Graph on floor with 1 foot squares (created with strips of duct tape)
- Video found at <https://www.youtube.com/watch?v=N0bqO13EVm>
- Overhead projector

## LESSON SEQUENCE

### Introduction

- TTW begin reviewing by the rules of a dance lesson with the students:
  1. Start dancing only when you are instructed to do so, and stop when you are instructed to do so.
  2. Use your body appropriately; do not touch anyone or anything, and handle your body in a way that does not harm yourself, someone else, or anyone's belongings.
- TTW ask if the students if they can think of some ways that dancing is beneficial to a person.
  - TSW offer various answers.
- TTW explain to the students that dancing is beneficial because it is a form of exercise that helps keep a person's body healthy.
  - TTW play the video found at <https://www.youtube.com/watch?v=N0bqO13EVml>
  - TTW explain to the student that the dance they just watched is a line dance
- TTW ask the students the following question: "What does the dance we just watched have to do with math?"
  - The students will offer various answers.
- TTW ask the students if they noticed the parts of the video where the leader asked the students to take one step back or one step left.
  - TTW explain to the students that this relates to math because the students are making moves that could be graphed on a coordinate plane.
  - TTW tell the students that this dance also relates to math because the dancers' bodies take up a certain amount of volume while performing the dance.
- TTW review positive and negative space with the students.
  - TSW stand up and find their own area in which they can move freely.
  - TTW explain that the area around their bodies is positive space while the empty area around their bodies is negative space.
  - TSW practice positioning their bodies in a way that creates positive space (ex. Arms wide and standing straight) and negative space (ex. Scrunched up and crouched down close to the floor.)

### Transition

- TTW choose a student volunteer to come to the coordinate plane dance floor in the open area of the room.
  - TTW explain to the students that this area represents the first quartile of the coordinate plane, which is the area with all positive integers above zero.
- TTW ask the students volunteer to perform a brief series of moves on the first quartile (ex. Take two steps to the left, one step forward, three steps back.)
  - As the students steps onto the different squares, other students will make where they stepped with a piece of paper laid in the square.
- TTW explain to the students that they can use these steps to determine the length and width of the area the dancer need to perform the line dance.
  - TT and the students work together to determine how many feet of space that dancer needs on the floor to perform their dance.

- TTW explain to the students that a dancer's height also must be considered when planning how much space you need to perform a dance.
  - TT and the students will measure the volunteer dancer from their toes to the tips of their fingers with their arms stretched above their head.
  - TTW explain to the students that they should round up to the next foot instead of rounding down so that the dancer has the required amount of room to perform and is not cut short.
- TT and the students will use the information on the length, width, and height of the dance space to calculate how much space the dancer needs to perform the dance.
  - TTW guide the students in multiplying the length, width, and height.

### Description

- TTW split the students into small groups of four.
  - TTW distribute graph paper and tape measures to the students.
- TSW stand on the tips of their toes and stretch their arms as high as they can.
  - The students will measure their group members from toe to fingertip.
  - TSW round up to the next foot to account for space needed for their bodies (ex. If the student is 5'2 from toe to fingertip, round up to 6 feet because rounding down to 5 feet would not give the dancer enough space).
  - The students will record their measurements on paper.
- The students will use their graph paper to create the first quartile of the coordinate plane and graph out the dance steps they are going to perform.
  - TSW assume the squares on the paper represent one foot.
- TSW use the tallest group member's height as the height for their volume equation.
- TSW multiply the length x width x to find the space needed to perform their dance.
- TSW practice the line dance they choreographed on their graph paper.
- Before the students perform, they will explain to their classmates how they found the volume of the space they need to perform their dance, and why they needed this volume/
  - TSW lead their classmates in performing their line dance.

### EXTENDED LEARNING ACTIVITIES

This lesson could coordinate with a PE unit on movement in math.

### SOURCES

Line dance video found at <https://www.youtube.com/watch?v=N0bqO13EVml>.

### TIPS + FREQUENTLY ASKED QUESTIONS

Have a wide open floor space to create the dance floor.