

Square Dancing

Sixth Grade + Math and Dance

Adapted by L. Lang

CORE SUBJECT AREA

Math

ART FORM + ELEMENTS

Dance
Action
Body
Space
Energy

DURATION

45-60 minutes (1 class period)

OBJECTIVES

I can calculate absolute value on a horizontal and vertical number line.

I can express movement on a number line as addition using absolute value.

I can make a polygon in the coordinate plane using given vertices.

I can discuss the purpose of dance.

I can discuss shape as an element of dance.

I can collaborate with my peers to choreograph and perform a dance pattern.

MATERIALS NEEDED

Graph paper with large grids, square dance video, DanceSense: Elements of Dance, DanceSense: Understanding Dance

MSCCR STANDARDS

6.NS.C.5 - Understand that positive and negative numbers are used together to describe quantities having opposite directions or values ; use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.

6.NS.C.7.C - Understand the absolute value of a rational number as its distance from 0 on the number line.

7.NS.C.7.D - Distinguish comparisons of absolute value from statements about order.

6.G.A.3 - Draw polygons in the coordinate plane given coordinates for the vertices.

MSCCR CREATIVE ARTS STANDARDS

DA:Cr2.1.6 -Explore choreographic devices and dance structures to develop a dance study that supports an artistic intent. Explain the goal or purpose of the dance.

DA:Pr4.1.6 -Rene partner and ensemble skills in the ability to judge distance and spatial design. Establish diverse pathways, levels, and patterns in space. Maintain focus with partner or group in near and far space.

VOCABULARY

Coordinate plane, Number line, Vertical, Horizontal, Absolute value, Addition, Zero, Pairs, Opposite, Quantity/quantities, Value, Direction, Polygon, Vertices, Coordinates, Integer

RECOMMENDED RESOURCES

<http://ket.pbslearningmedia.org/resource/a043a463-51eb-4698-ae5543d9a6cc7a63/dancesense-elemnts-of-dance/>

<http://ket.pbslearningmedia.org/resource/55ef44f0-1d33-471388b885a15d6fe718/dancesense-understanding-dance/>

LESSON SEQUENCE

Students should have already been introduced to the idea that a graph has an "x" and a "y" axis and four quadrants in which points may be plotted using coordinate pairs. Students understand that the numbers to the left of the origin and underneath the origin are represented as negative integers, and the numbers to the right

and above the origin are represented as positive integers. Ask students why people dance. Allow some time for discussion, then show "Understanding Dance" from 8:50 to the end. Explain that most dances fall into one of three categories: artistic expression, ceremonial dance, and recreational. Tell students they're going to watch a video of a recreational dance, a traditional American square dance.

Show a square dance video of your choice. Ask students to describe the geometric patterns they observed in the dance. Show the beginning of the dance again, from the opening position of the dancers to the beginning figure of the dance (where each dancer follows pathways that create a square). Pass out graph paper.

Explain to the students how the dance relates to the students' graphs and the coordinate plane. Select 8 students to stand in a square dance formation in the classroom. Use tape to draw an x and a y-axis and position the dancers so each pair is standing at the end of an axis line, four steps from the center. The students at the ends of the y-axis will move four steps forward toward the origin first, while the students at the ends of the x-axis will separate from each other and move four steps to the outer corners first. Work with the students to translate what they saw on the video. Repeat until all students have moved through the pattern. Hint: Every dancer is moving in mirror image to their partner and to the dancer directly across from them in the formation.

Now divide the class into groups of four. Tell each group that they will choreograph a dance on their graph paper with four dancers performing geometric dance patterns. You can assign the dancers' starting positions and or parameters for the shapes the dance will create and the directions of the dancers' pathways, and/or the absolute value of their movements. Or, you can lead a class discussion to allow students to determine the requirements for the dance. Each group should graph its dance and practice it to make sure that their graphs accurately express the pathways that the dancers will follow. Groups will perform their dance patterns for each other. You might ask the audience to graph each dance and calculate the absolute value of the dancers' movements. You might ask the groups to exchange dance graphs and challenge them to figure out how to perform the others group's dance from the graphs.

After the groups have finished their first dances, pass out a second round of graph paper. Give the students vertices and have them draw the polygons on their graphs. They must connect the coordinate pairs by drawing lines from each coordinate pair to the next. Once they have drawn their polygons, have them create a new dance explaining how to get from one point to the next, using the dance skills they learned earlier. Have each group perform their new dances and the audience draw the polygon being demonstrated. Students should be able to identify that if a dancer takes 3 steps up and then 3 steps back, they end up where they started. Knowing that 3 steps up is a positive direction and 3 steps back is a negative direction, they can identify that +3 and -3 opposites or zero pairs, two numbers whose addition gives zero.

EXTENDED LEARNING ACTIVITIES

Identify 3 reasons people dance. What are some other dance moves, besides square dancing, you could apply to this activity.

SOURCES

Adapted from the pbslearningmedia.org lesson plan: The Absolute Value of Dance.

<https://mpb.pbslearningmedia.org/resources/ket-7dance/absolute-value-dance>

TIPS + FREQUENTLY ASKED QUESTIONS

Have the floor marked before students enter for the day. Have dance video previously picked and loaded.



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