

Name/Title: Geometric Jamboree

Academic content: math (geometry)

Purpose of Event: Cognitive: to learn or review mathematical concepts such as area, perimeter, circumference, radius, diameter, and movement on a number line Affective: to practice responsible social behavior and following directions, to work with a partner as well as large group. Psychomotor: to understand the movement concept of effort integrated with the academic content of mathematics.

Prerequisites: Students should be familiar with the concepts of perimeter, area and movement on a coordinate plane.

Suggested Grade Level: 3-5

Materials Needed: Sidewalk chalk (at least one stick for each student), two dice (one with red and green (negative, positive) faces and one with number faces (1-4))

Physical activity: locomotor skills (walking, skipping, hopping, leaping)

Description of Idea

1. Before lesson begins, teacher should have 12-14 shapes drawn on the left side of the blacktop (e.g., square, rectangle, triangle) and a coordinate plane drawn on the right side. The shapes should be symmetrical with all straight sides-no circles! The coordinate plane should be big enough so that each interval is about a child's step apart with positive and negative numbers clearly marked. Use red for negatives and green for positives.

2. Dice should be prepared as well. You need to have three green sides, signifying positive, and one should have random numbers 1-4 on it. If you make them on your own, make them big enough for students to see from up to 10 ft. away.

3. Activity begins with students using the whole blacktop space and working together to measure perimeter and area (part 1). They then move to measure their own individual shape and explore how dividing a shape in half affects perimeter(part 2). Lastly, they will work some with a partner and some on their own to explore a coordinate plane and draw a shape on it (part 3).

Part 1:

Teacher should review area and perimeter. Students may not realize that we can measure with anything, not just standard units like centimeter, foot, inch, etc. We can actually use our own bodies to measure wherever we go!

- First we're going to work as a class to measure the blacktop using our arms and bodies! Everyone hold your arms out to the side, so that your fingertips are touching the person beside

you! Can we count how many of us it takes to fill up the whole side of this blacktop? The teacher writes down the number with chalk on that side. Repeat this process for the width of the blacktop. What unit did we use? How many students measured this way? Can anyone tell me what our perimeter is? What about our area? Good job!

- Now everyone is going to do a measurement on their own using steps! Using the chalk see how many steps it takes you to get from one side to the other and use your color chalk to write the number of steps on the ground (students will have different number of steps due to different stride lengths).

- Line up on this side of the blacktop! How many steps does it take you to walk across this side? Write it on the ground so you'll remember! As everyone starts to write, teacher asks, "so what was our unit this time?" Steps! Remember to always write your unit beside your measurement! Repeat this whole process, but have students use leaps as their measurement this time. Okay, so what was your unit this time? Good, leaps! Which number was smaller, the measurement in steps or leaps? Can anyone tell me why? Students should connect that we take greater strides with leaps, and so it takes less to fill the space we are measuring.

Part 2:

- I want everyone to look over here at the shapes drawn on this side of the blacktop (shapes consist of squares, parallelograms, triangles, etc). What are some of the shapes you see? Find a shape and stand in the center of it with your chalk? If you know the name of the shape you are standing on, write the name in the middle! We are going to measure the perimeter of the shape with our feet! Find a starting point and walk around the line of your entire shape. It might be hard to balance, so hold your arms out to the side if you need to! Once you are finished, write the perimeter on the outside of your shape-don't forget to include the unit feet! Lets divide our shapes in two with our chalk, by drawing right down the middle. Is there a reflection over the line, or even amount of space? Measure one side of the reflection with your feet, and write the distance down underneath. Now, do this to the other side of the reflection and write it down. What do you notice about the distances? Are they the same?

Part 3:

- Move over to the other side of the blacktop. Everyone find a dot on the ground to stand on. What are we standing on? a coordinate plane! Where is the y-axis? Where is the x-axis? Which way is positive and which way is negative? Can you hop two positive spaces on the x-axis? Two negative spaces on the x-axis? You should be back to where you started! Now, three positive spaces on the y-axis? Four negative spaces on the x-axis?

- Go back to the dot where you started with your chalk? Everyone will get a turn rolling a die, and follow what it tells you to do! We are going to mark where we move with our chalk. One student is given the green/red dice to roll and one is given the number one to roll. Example, dice lands on green and 3...which direction on the x-axis are we going to move? UP, 3! Everyone

needs to move three spaces up! Now, mark where you are standing with your chalk! Repeat 4-5 times so that all students have a turn with dice and they will have 5-6 dots in their color on the grid. Everyone connect the dots that they've marked to make a shape? How many sides does your shape have? What is it called? Let's all stand and look at how everyone's shapes are similar, just on different places! What are the perimeters of these shapes using the coordinate plane to count?

Variations:

Younger students might have trouble understanding area, so primarily focus on perimeter. Use smaller shapes and numbers on the coordinate plane for younger students, so that adding or multiplying is not as difficult.

Assessment Ideas:

Review and ask questions about all of the ways we can measure things using our bodies. See if students can make the connection that bigger strides equals a smaller perimeter and smaller strides equal a bigger perimeter. What units could we use at home to measure a doorframe, room, or spoon if we didn't have a ruler sitting around?

Teaching Suggestions:

Create a stick with chalk attached on the end for students who may have trouble gripping with hands or moving to the ground to write.

Submitted by **Carter Lister** in Greenville, SC. Thanks for contributing to PE Central! **Posted on PEC: 10/7/2013.**

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