Geometry Center Games

Summary

Eight geometry activities that will improve student's understanding of positional words and shapes.

Main Core Tie Mathematics Grade 1 Strand: GEOMETRY (1.G.) Standard 1.G.2

Additional Core Ties Mathematics Grade 1 Strand: MEASUREMENT AND DATA (1.MD.) Standard 1.MD.4 Mathematics Grade 1 Strand: GEOMETRY (1.G.) Standard 1.G.1

Materials

My Quilt - <u>Geometry Menu</u> packet

- <u>My Quilt</u> Glue Scissors 1" paper squares Geoshapes

> - <u>Geoshapes</u> Geoboards Geobands

Tangram Magic

- Tangram Magic

- Tangram Magician Paper tangram sets Glue sticks Pentomino Partners

- Pentomino Partners

Pentomino sets (6)

3 sets of letter dice (FLIPNT) (UVWXYZ)

Last Piece

- <u>Last Piece</u> Pentomino sets (6) 6 Piece Puzzle

- <u>Six Piece Puzzle</u> Six piece puzzle sets (6)

1 to 100 Puzzle

- <u>1 to 100 Puzzle</u>

- 1 to 100 puzzles (6)

Communication Game

- Communication Game

Private offices (6) Six bags of Attribute shapes Red, yellow, & blue crayons

Additional Resources

Books

- Math By All Means--geometry Grades 1-2
- , by Chris Confer; ISBN 0-941355-08-X
- Tangram Magician
- , by Lisa Campbell Ernst and Lee Ernst; ISBN 0-8109-3851-0
- Grandfather Tang's Story
 - , by Ann Tompert; ISBN 0-517-88558-1
- The Quilt Maker's Gift
- , by Jeff Brumbeau and Gail de Marcken; ISBN 0-439-30910-7
- The Quilt Maker's Journey
- , by Jeff Brumbeau and Gail de Marcken; ISBN 0-439-51219-0

Background for Teachers

After the students have experienced several class activities that introduce them to spatial relationships, it is good to let them have some independent study (e.g. rotating games or menus in tote trays). Explain all eight activities in a demonstration circle at the rug or on the overhead. Some games have already been played as a whole group, so those games are easy to review. Model each game and show how to record it. Students need to get checked by the teacher before moving to another game. It is okay to let the students free roam, because they get finished at different times. Some games may be on the floor, and other games could be set up on tables or students' desks. In each tote tray, have an example of the page in a sheet protector, so it can be found in the packet easily. Taking pictures of students (from previous years) playing the game may help students visualize the activity when they are working on their own.

These eight activities could be used at any time during the year. The spring is a good time to review shapes and positional words. Also, it would be good to have finished tangrams and pentominoes before doing these activities. They can all be used as a whole group activity or center activities.

Intended Learning Outcomes

5. Understand and use basic concepts and skills.

Instructional Procedures

Invitation to Learn

Explain the Geometry Menu. How many of you do literacy centers? How many of you regularly do math centers or science centers? A Math Menu is another name for a Math Center. The packet has eight games in it. Each game needs to be explained to the class. It may take about 30 minutes, but then it is ready to go for several sessions. Some of the games have been played as a class activity, so those games just need a quick review. They could be explained in a demonstration circle at the rug or on the overhead projector. When the games have been modeled and explained, the students may go to their places to start playing the games. The teacher monitors the class and listens (or asks) for students to use the positional words to explain where to put the pieces. The teacher checks off the games with an OK (on the front page) when the student raises a hand to signal a finished game. Then the student goes to another game that has an empty seat (free roaming). These games may take three or four days to complete with 20-30 minutes sessions. The teacher decides how long and

when to do the Geometry Menu.

Instructional Procedures

My Quilt

Using three colors of one inch squares (or squares cut in half like rectangles or triangles), design a quilt with a symmetrical pattern on the 5"x5" grid. Glue the papers onto the grid.

<u>Geoshapes</u>

Stretch three geobands onto a geoboard to make a square, rectangle, and triangle. None of the shapes can overlap each other. Record on the Geoshapes sheet by drawing those shapes in the same positions. Under the geoboard, write three sentences explaining where the shapes are on the geoboard. Use the words from the wordbank.

Tangram Magic

Look through the *Tangram Magician* book and choose a picture to make on the page in your packet. Place all seven pieces on the blank page before you glue it.

Pentomino Partners"

Each person needs to use their own pentomino set for their game board. The first person rolls the two dice (F, L, I, P, N, T) & (U, V, W, X, Y, Z) then places those two pentomino pieces on the game board. The next person would roll the dice and do the same on his/ her game board. As the partners take turns, they might roll a letter that they have already used. They don't roll again. They just miss that turn. The person that fills up their game board with all twelve pentomino pieces first is the winner. Last Piece

This is a partner game with two different colored pentomino sets, but just one game board (6" x 10" grid). Take turns putting a pentomino piece of your choice onto the game board. All spaces don't have to be filled in. Some squares might be "trapped". Don't overlap any pieces, or let them go outside of the grid. You are the winner, if you put the last complete pentomino piece in the grid. Play it two times.

6 Piece Puzzle

Solve two or more of the six puzzles. Draw lines to show the solutions to the puzzles on the appropriate base shapes.

1 to 100 Puzzle

On the *1 to 100-chart*, place the puzzle pieces with numbers on top of the same numbers on the chart. All the puzzle pieces are cut into pentomino shapes from an identical *1 to 100 chart*. Communication Game

Partners will each work on their page that is labeled: left, right, top, bottom. Partners will also get a bag of attribute shapes and a private office. The Communicator will describe the shape and where to put it on the page. The Builder cannot talk. After both partners have eight shapes on their page, they look at each other's shapes to see if they were built the same. Draw and color the shapes that you built. (Refer back to Puzzled? lesson.)

Extensions

Curriculum Extensions/Adaptations/ Integration

These independent games offer a good opportunity to partner with various students. The teacher can suggest that a particular student help another student who may not understand the concept yet. Peer tutors often can explain in a way that another young friend can comprehend.

ESL and special-needs students benefit from these hands-on games. They can watch others and learn. Many games are high interest because of the element of chance.

The *1 to 100* board game can be used to play the following: Take a bingo chip and put it on 45. Your partner puts a different colored chip on 55. Spin a spinner labeled: Left, Right, Top, Bottom. Also roll a number (1,1,2,2,3,3) die to see which direction to go. When you land on a number, tell your partner how many tens and how many ones. The first one to reach a border wins! The 1 to

100 game could also use a spinner with North, South, East, and West.

Family Connections

Since the directions are on all of the sheets in the Geometry Menu packet, they could be played at home with each student's family.

Get feedback on which game was their favorite and make a graph to send to school.

Assessment Plan

The teacher will walk around and ask questions to see if the students understand the positional words and shapes.

When a child is finished, he/she raises a hand to signal to the teacher to come and check his/her work. The teacher checks it off on the front-page retrieval.

If a student finishes all of the games and others are not finished, he/she can be a partner for someone who needs one. They could also do a favorite game again.

Bibliography

Fennell, R. (1990). Implementing the standards. Arithmetic Teacher, p. 18-22.

Francis Fennell emphasizes that classroom activities should involve physical material and provide opportunities for questioning, problem solving, and discussion.

Newton, D.P. (1995). Pictorial support for discourse comprehension. *British Journal of Educational Psychology*, 64(2), p. 221-229.

Drawing pictures and pictographs enhances the students' understanding of that content.

Authors

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