Bodacious Buttons

Summary

Students will learn about sorting and graphing.

Main Core Tie

Mathematics Kindergarten

Strand: MEASUREMENT AND DATA (K.MD) Standard K.MD.3

Additional Core Ties

Mathematics Kindergarten

Strand: COUNTING AND CARDINALITY (K.CC) Standard K.CC.5.

Materials

Bodacious Button

A set of 48 attribute buttons with attribute cards

Collect Data - Button Week

Unifix® cubes & elastics to group into hundred flats

Button Week Table

Venn Diagram

- *The Button Box*

Venn Diagrams for each table

Boxes of buttons with attribute cards/ *Button Weekly Table*

Bull's Eye Graph

- *Bull's Eye Graphs*

Box of buttons

Probability

- *Button Up* worksheet

Button die

Box of buttons

Additional Resources

Books

- *The Button Box*

, by Margarette Reid; ISBN 0-525-44590

- *Grandma's Button Box*

, by Linda Williams Aber; ISBN 1-57565-110-6

- *Frog and Toad Are Friends*

, by Arnold Lobel; ISBN 0-06-444020-6

Background for Teachers

Sorting objects by attributes and describing the similarities and differences are important first steps before a student can represent and make sense of the data. Before teaching this lesson, give students the opportunity to sort with a Venn Diagram. For this lesson, try to have most of the supplies ready before the students go to their desks. Take pictures of their discoveries and activities and mount them so they can be reviewed later. It is important to model how to complete the *Bull's Eye Graph.*

Intended Learning Outcomes

1. Demonstrate a positive learning attitude.
5. Understand and use basic concepts and skills.
6. Communicate clearly in oral, artistic, written, and nonverbal form.

Instructional Procedures

Invitation to Learn

Who has the Bodacious Button?

Pass out all 48 attribute buttons, some students may have 2 and some may have 1. (Tell the students that beforehand to avoid problems.) Ask students to tell about the attributes of the buttons (*2- holes, 4-holes, large, small, triangle, square, circle, red, yellow, blue, and green*). Have cards for each of the attributes and keep them upside down in groups of holes, size, shape, and color. The color cards should be last. Ask the class to stand up. Turn over an attribute card for each group. Students look at their button(s) to see if they are still in the running for Bodacious Button. If not, the student sits down. The last person standing has the bodacious button! (Clap) Check it and play again with different card combinations.

Instructional Procedures

Graph

It is important to get all of the 48 buttons back from the first game. Students can bring them up to a graph that has two columns: “I am wearing buttons today.” “I am *not* wearing buttons today.” Place the buttons on the graph to show the data. Talk about the data and compare the columns. (If some students had 2 or more buttons, they put the extra ones in a basket.)

Collect Data—Button Week

- Each day, pass out Unifix® cubes to each table.
- Students take a cube for each button they are wearing that day.
- Call for one student at each table to collect all the cubes and put them into tens and ones.
- As each table captain brings them up, guide the class to regroup when it is possible to make more tens.
- Count them and stack the Unifix® cubes on the chalk tray each day. (Leave them there all week.) Record the data on a class table.
- On Friday, combine all the Unifix® cubes into hundreds (by wrapping 10 tens with two rubber bands to make a flat), tens, and ones to see how many buttons the class wore for the whole week.

How Many Buttons Worn?	
Monday	55
Tuesday	86
Wednesday	116
Thursday	179
Friday	287

Venn Diagram

- Read *The Button Box*.
- Distribute a box of buttons to each table.
- Have the students look at the buttons and describe their attributes. Write down the list of attributes.
- Pass out two cards to each table with attributes like: little/gold, black/small, white/4-holes, 2-holes/plastic, shiny/textured, big/shank.
- Pass out the 12” x 18” Venn Diagrams or sorting hoops to each table and put an attribute card in

each of the two circles.
Students put the buttons in the correct spaces. (Some may go in the intersecting space.)
After a few minutes, stop and have the class walk around and see everyone's Venn Diagrams. (Cards may be taken away to see if others can tell how the diagram was sorted.)

Bull's Eye Graph

Students put the buttons back into the boxes.
Pass out a large poster-sized *Bull's Eye Graph*. Model how to find all the buttons in the box that are *round* and put them on the outside ring of the graph. (All buttons that are not round should be left in the box.)
After the students have seen you model the first step, they can go to their desks and follow directions as a table group.
Take the *white* buttons from the round ring and slide them to the next ring, leaving all the round buttons that are not white in the outer ring.
Move the *2-holed* buttons from the white ring to the next smallest ring, and from that ring, move the very *smallest* button(s) to the center ring. This is a different way to graph data.
Model how to carefully pick up the poster board and pour the buttons into the box again.

Probability

Using a permanent marker, make button dice on blank cubes with 6 attributes: 2-holed, 4-holed, shank, metal, white, textured.
With your *Button Up* worksheet, place an x at the top of the column (with a crayon) to predict which button will reach the top first.
Put buttons on the graph to correspond to what is rolled on the die. This is a real graph.
When one column is filled up, you stop and record with a pencil what your graph looked like.
See if your prediction is correct.
Describe the graph to someone else. Use comparative words.

Extensions

Make a journal about Button Week by recording your activities. Students should include the results of the activity. If you do this activity in February or March, the students are capable of describing in writing what the class did. Gifted and talented students love to extend their learning by creating a class book with cooperative learning groups.
Act out *Frog and Toad are Friends*. Use real buttons to match the text. ESL and special needs students benefit from acting out a story. Visual and kinesthetic activities increase their understanding of the vocabulary and main idea.

Family Connections

Have students create a graph about their family's buttons worn on one day.
Graph how many pockets each family member has. Bring the graph back to school and let each student interpret his/her graph for the class.

Assessment Plan

As the students make individual *Button Up Graphs* with the probability dice, ask each student to interpret his/her own graph. They should be able to verbally state relationships, such as one column is two more than another column, a certain button is the least or most, etc.
During the button sorting with the Venn Diagram, check with each student to see if sorting is done correctly.
Observe students as they form tens and ones with the Unifix® cubes to see if they understand the regrouping concept.

Bibliography

Research Basis

Fennell, F. (1990). Implementing the Standards—Probability. *Arithmetic Teacher*, 18-22.
Fennell emphasizes that classroom activities should involve physical materials and provide opportunities for questioning, problem solving, and discussion.
Chen, A. (1999). Schema Induction in Children's Analogical Problem Solving. *Journal of Educational Psychology*, 91(4), 703-715.
One of the more powerful findings of instructional strategies is that graphic and symbolic representations of similarities and differences enhance students' understanding of content.

Authors

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