Our Favorite Things

Strand: Probability and Statistics

Topic: Collecting, organizing, and representing data in object graphs, picture graphs, and tables
Answering questions related to data

Primary SOL: K.11 The student will
a) collect, organize, and represent data; and
b) read and interpret data in object graphs, picture graphs, and tables.

Related SOL: K.1ab, K.2ab, K.12

Materials

- Letter to parents explaining the need for each student to bring in a favorite small item for the show-and-tell activity (sample attached)
- Five sheets of construction paper to use for category labels and the title for the object graph
- Small squares of paper about 2" x 2" (can use sticky notes)
- Butcher paper with a four-column graph drawn on it and with space for the columns to be labeled at the bottom and a title to be added to the top
- Chart paper

Vocabulary

category, compare, count, data, fewer, graph, more, object graph, picture graph, same, sort, table

Student/Teacher Actions: What should students be doing? What should teachers be doing?

1. Have each student bring in and share with the class one of their favorite things. After the sharing, discuss how the items could be sorted. Let the students suggest some ideas, but be prepared to help them narrow it down to four or fewer categories. (Possible categories include Toys, Games, Books, Other). Create these category labels on construction paper and lay them on the floor. Say: *"I wonder what was the most popular kind of favorite thing that you brought in?"* Ask: *"What could we do to find out?"* One at a time, let children place their object in a line next to or above the appropriate category label.
2. When all of the children have placed their favorite things, ask students to tell you what they notice when looking at the display. Ask the following questions if no one volunteers each idea: *Which category has the most things? Which category has the fewest things? How many things are in each category? How many things are in the whole display*? Explain to children that they just made a *graph*. A graph is something that helps us to quickly look at information to help us answer questions. Explain that a graph needs a title just like a book needs a title. The graph's title must explain what the graph shows. Have students suggest a title and then write it on a piece of paper and place the title at

the top of the graph. Explain that the information in a graph is called *data*. In the graph that was just made the *data* are each of our favorite things. Ask: *How did we organize our data so that we could easily see which was the most popular kind of favorite thing that was brought to school?* (It was lined up so that we could look at how long the lines were.) *When you were each holding your favorite things and we were spread out around the room, was it easy to see which kind of favorite thing was the most popular?* Tell children that the kind of graph they just made is called an *object graph* because it uses real objects to show our data. If possible, take a photo of the object graph to be able to display later, but keep the object graph in place for the remainder of this lesson.

3. Distribute small squares of paper, and have each student draw a picture of his/her favorite thing on it. Explain to students that they will now construct a picture graph of the same data they organized in the object graph. Display the graph you have prepared on the butcher paper. Add to the picture graph the same title and category labels that were used for the object graph. Have students bring up their squares, and guide them in placing the squares in the correct column on the graph. Once all students have placed their squares on the graph, ask them to tell you everything they notice about the graph, again using questions if students don't suggest these ideas: *Which category has the most things? Which category has the fewest things? How many things are in each category? How many things are in the whole graph*? Emphasize that the picture graph displays the same information or data as the object, but it *represents* their favorite things with pictures instead of the actual objects.

4. Remind students that they have made two kinds of graphs, and have them name and describe how to make each kind. Explain that they are going to see one more way that we can display our favorite-things data. On chart paper, draw a table with space for a title as well as the four categories.

5. Write the title at the top of the table and each of the categories in the left column. Tell students that an object graph uses objects and a picture graph uses pictures, but a table uses numbers to show the data. Ask students what number they think they would have to write to tell about the data in the first category, the second category, and so on. Help students compare the three types of data displays by asking the following questions: *Where do we look on our object graph to find out how many games were brought? Where do we look on our picture graph? Where do we look on our table? How do we know which was the most popular when we look at the table? Which was the least popular?*
6. Close the lesson by reviewing the following vocabulary: object graph, picture graph, table, data, category. Students can point to the various types of data displays or parts of the displays to show they understand each word. (For example: *Where is an object*

graph? Where do you see the categories on the picture graph? Where is the data on the table?)

7. Display the photo of the object graph, the picture graph, and the table to remind students of the three types of data displays they learned about.

Assessment

- **Questions**
  - Why do we use graphs?
  - What kinds of things could you graph?
  - If two more students came to our class and both brought books as their favorite things, how would our object graph (or picture graph or table) change?
  - What does data look like in an object graph? A picture graph? A table?

- **Journal/writing prompts**
  - We recorded the weather for 10 days. It was sunny for 5 days, cloudy for 3 days, and rainy for 2 days. Make a picture graph to show this data."
  - (Show the students a completed graph [object, picture, or table]). Write or draw a picture describing the data displayed in the graph. Use words such as *more, fewer, same.*

- **Other Assessments**
  - Give each student 16 or fewer buttons of different colors to sort and classify by color. Have them create an object graph with a title and labels for the color categories.
  - Give each student a clipboard with a piece of paper and a pencil. At the top of the paper, help each student write a question they would like to collect data for. (For this activity, limit the answers to two choices: Would you rather have pie or cake?) Have students survey 10 classmates to collect data and write their choices.

Extensions and Connections (for all students)

- Make an object graph about the types of shoes worn by students. Each student could take off one shoe to use when creating the graph. Or each student could draw a picture of their shoe to make a picture graph.
- On a daily basis, graph who is buying lunch and who brought lunch. Small photos of the students can be used. Students can place their pictures in the appropriate category. This can serve double duty as a way to also take attendance.
- Establish one day a week as your graphing day. Ask a question and have students vote. A graph can be quickly constructed by having clothespins containing each student's name or picture. Students clip their clothespin along sectioned strips of tagboard attached at the top to the wall, bulletin board, or chalk ledge with the categories labeled at the bottom. Ask questions that involve interpretation of the graph and create a table that matches the graph.

Strategies for Differentiation

- Use vocabulary cards or a flip book foldable with pictorial representations.
- Limit the number of data displays.
- Use fewer categories.
- Provide a checklist for the parts of a graph: title, data, category, object/picture

The following pages are intended for classroom use for students as a visual aid to learning.

Dear Parents,

Our class is getting ready to learn about data and graphs. We will be learning to make object graphs, picture graphs, and tables. As part of our unit we will be creating graphs and tables about our favorite things. Each child needs to bring in one small object that is a favorite thing. It can be a toy, game, book, or any other object. (Please, no food or pets.) Encourage your child to think about something small – no bigger than a shoebox. Help your child prepare to tell one sentence about why this object is special to them.

We will be doing this activity on _____ . Your child can bring in his or her favorite thing on or before that day. If possible, please label the item with your child's name. A clear resealable bag could be used for small items that are hard to label, and your child's name could be written on the bag.

Once we have completed the activity, your child will bring his or her favorite thing back home. Ask your child what we discovered about our favorite things. Ask them to tell you about object graphs, picture graphs, and tables. Listen for them to use the words *data* and *categories*.

Thanks for your help in making learning fun and memorable!

Sincerely,