Data Collection and Graphic Representation

Informal comparing, classifying and counting activities can provide the mathematical beginnings for developing young learners' understanding of data, analysis of data and statistics. Children do this as they:

• Pose questions and gather data about themselves and their surroundings.

• Sort and classify objects according to their attributes and organize data about the objects.

• Represent data using concrete objects, pictures and graphs.

—NCTM 2000, p. 108

From one librarian:

At storytime children love asking questions and collecting data. At one program we asked:

Which kinds of shoes are we wearing today?

We sorted sneakers, sandals, boots and shoes and made a block graph of their findngs. On other days we've collected data on who's wearing solid-color shirts and who's wearing shirts with patterns; how many siblings we have; what pets we have. After we collect our data I always make sure to ask what children notice about the data before I present it. It seems as though the opportunities for collecting data are endless!

Charts and other graphic representations are useful tools that help young children organize, analyze and understand information in a visual form. For young children, graphic representation can be simple drawings. Data can be collected in a variety of ways and these representations help children answer questions, visualize data, and make comparisons and predictions. Some examples:

T- Charts help us analyze same and different between two objects or events.

Bar graphs help us compare things. We easily see less than, more than and same as.

Block Bar Graphs: 3-D bar graph made from building blocks or linking cubes can be arranged on paper, allowing each column of blocks to be identified in writing.

Pictographs are like bar graphs but pictures are used instead of bars.

Pie or circle graphs show how the whole collection of data is divided into parts or fractions having specific attributes.

Sorting Loops are shoelaces, yarn or string used for grouping sets of items.

Tally chart: Each mark on a tally sheet represents one object.

Concept maps: A diagram that shows the relationships among themes and ideas.

Many measuring devices display information in a graphic manner: thermometers, calendars, schedules, clocks and auto dashboard displays are all visual representations of data being collected in a different way and place.

Examples of graphic representation follow on the next two pages and throughout the manual.

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Examples of Graphic Representation

When Are Our Birthdays?

Children participate in making a pictograph, placing a figure in the column next to the month in which they were born. Suggested questions:

What do you notice about our pictograph?

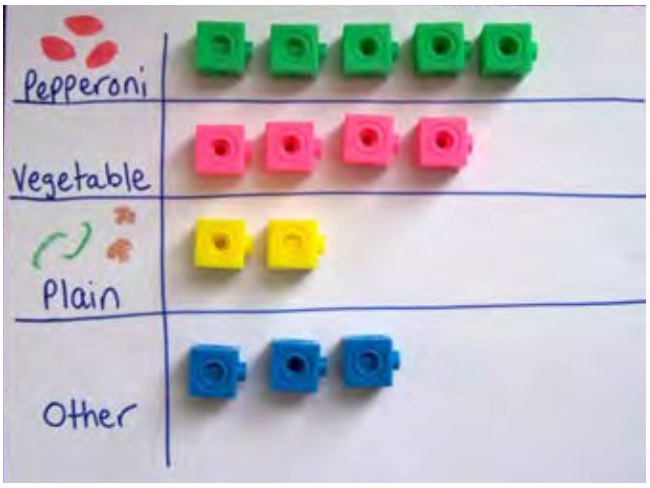
Which month has the most birthdays?

Which has the least? How do you know?

Is there a month when no one has a birthday?

Are there months with the same number of birthdays?

Let's count and write the numbers, telling us "How many?" for each month.



What's Our Favorite...?

Children discover the group's favorite and least favorite pizza topping (or anything else) by asking a question and making a block bar graph. Suggested questions:

What do you notice about our graph?

What is our favorite pizza topping?

Which is the least favorite?

How do we know?

Let's count and write the numbers, telling us "How many?" for each topping.

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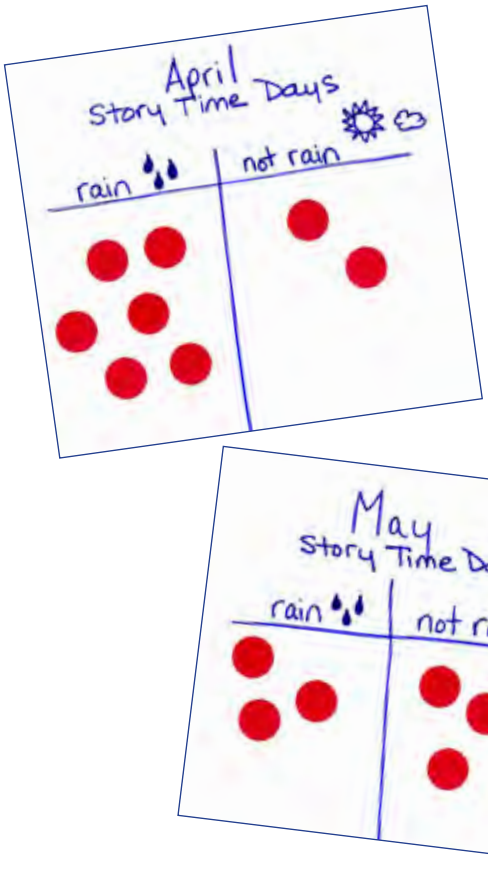


How Many...?

Children collect data and see how many times it rained on their story time day. Ask:

What do you notice about our T-chart?

Did we have more days with rain or without rain? How do we know?

Where Were We Born?

Children make a "live" pie graph to see who was born in their home state, who was born in other states and who was born in other countries.

To make the graph: Sort the group. Everyone born in Our (your home state) State makes a set (group), everyone born in Other States makes a group and everyone born in Other Countries makes a group.

Everyone joins hands to make a circle with each of the sorted groups standing together (see illustration).

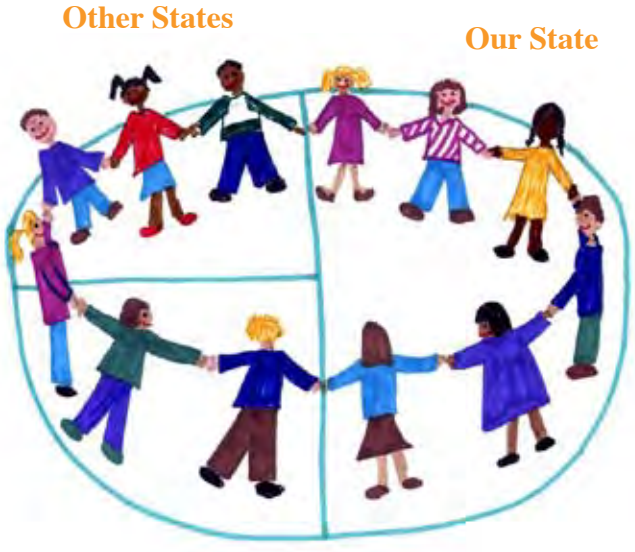
A piece of colored yarn is placed around the entire group so that each group is standing together on the edge of the circle.

Make the graph by placing yarn from the center of the circle to the edge of the circle, dividing the groups (see illustration above left). Ask:

What do you notice about our graph?

Where were most of us born? How do you know?

What else can we tell from looking at our graph?



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