



More About Math

Data Saves the Day

Background for Leaders

This unit focuses on data collection and analysis skills for 6-8 year olds.

Through these activities and games children will explore sorting, collecting, analyzing, and representing data.

Data Collection

Children in first and second grade collect data by taking surveys, making observations or by conducting experiments. In each of these data collection activities children will need to keep track of their results in either a tally chart or an organized list. Allow children to use whatever method of data collection that they prefer and then discuss what works and what doesn't for.

To collect data through surveys children must start with a question, offer 2-4 answer choices, ask individuals to answer the survey question, and total up their results. Another way children can collect data is through observation. This means that children collect data based on what they see. This type of data collection may require children to sort objects based on common attributes such as color, shape, and size. Encourage children to come up with their own categories for sorting such as texture or purpose. Children can also collect data through experiments. Collecting data through an experiment means to see how many times a specified outcome occurs. For example, how many times does a student make a basket during a basketball game? This includes two categories: numbers of shots missed and number of shots made.

Data Display

Once students collect data, demonstrate how to display the data and analyze it for patterns. At this age children can display data in up to four categories using pictographs, bar graphs, circle graphs (pie charts), or diagrams. Children can also make more than one representation for a set of data and discuss why one representation might be better than another.

Children's understanding of pictographs at this age includes representations of multiples. For example on the pictograph of garden flowers, one flower can represent two flowers. If half of a flower were shown on the graph then half of a flower would equal 'one' since a whole flower equals 'two.' It is important to include a key when using a pictograph so that others can easily read it.

Data can also be represented in bar graphs. Bar graphs make it easy to compare data quickly to tell which category has the most and which category has the least. Children should recognize that a bar graph must have evenly spaced bars and intervals between numbers, otherwise the data will be difficult to read. Common intervals are ones, twos, fives, and tens.

Circle graphs (pie charts) are another way to represent data. A pie chart displays data and information in an easy-to-read 'pie-slice' format. The larger the slice, the more data is represented. Data is usually displayed in percentages, however, children this age are not familiar with the concept. Here's a simple way to help them understand percentages. If the circle graph shows 7 oranges in one section, 4 cherries in another section, and 2 apples in the last section, the oranges represent a larger percentage of the circle graph (or slice of the pie.)

Another type of data representation is a diagram. A diagram illustrates where most of the data is grouped (or clustered). For example in the Slugball diagram, the lines drawn on the field illustrate where the baseballs were hit. This helps children to see and understand where the most players need to be located.



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Data Analysis

Data analysis can be completed with data sets that children collect and display on their own or it can be done with premade data representations. Children should be able to look at a tally chart, table, bar graph, pictograph, circle graph, or diagram to compare data and answer simple **how many more, how many less, how many altogether** questions. Children should be able to use data representations to tell **which category has the most, which has the least, and which categories have the same amount**. It is important to ask children the purpose of the data: **Why would someone want this information? What patterns do you see if the data? What predictions can you make about the people surveyed? Etc...** Children should feel purposeful in the math that they are doing and see connections to how it is used in the real world.



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