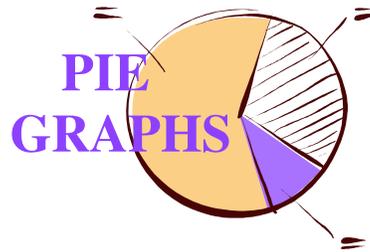


Algebra/Geometry Institute Summer 2005

Lesson Plan 3: Pie Graphs

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School: Cypress Park Elementary
Grade Level: 5th grade

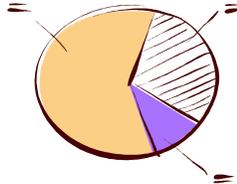


1 Teaching objective(s)

The students will gather, organize, and display data in an appropriate pie (circle) graph.

2 Instructional Activities

Tell the students, “Today we will be learning how to gather, organize, and display data using pie graphs.” Ask, “Can anyone tell me what a pie graph is? Can anyone tell me why a pie graph is also called a circle graph? Can anyone tell me what a pie (circle) graph is used for?” Give time for discussion. Show some examples of circle graphs to the students.



Tell the students that pie graphs are also called circle graphs because they are shaped as a circle and the entire circle is considered as the whole. Explain that pie graphs show the relationship of parts of a whole and always show how a whole is divided. For the students to have a better understanding, use the fraction circles on the overhead and show some examples to the class. Explain to them that even though different pieces may be used, all the pieces together must equal one whole. For example:

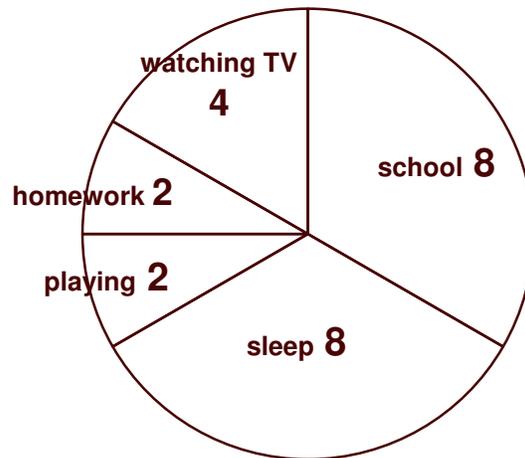
There are 24 hours in a day and you spend 8 hours at school, 8 hours sleeping, 2 hours studying, 2 hours playing, and 4 hours watching TV.

The teacher will show the students with the fraction circles that the pie graph is split into thirds because eight hours out of twenty-four hours is equal to one third. Show the students that one third is split into one sixth and two twelfths and explain that it is cut that way because two hours out

of twenty-four hours is equal to one twelfth and four hours out of twenty-four hours is equal to one sixth.

Here is what the pie graph should look like.

A 24 hour day



After showing the example to the class, ask the students if there are any questions on how to represent and show data on a pie graph. Give time for questions and answers. Ask, "Is there anything missing on the pie graph we just created on the overhead?" Give time for answers. Tell the students that it is very important to give their graph a title and labels. Point to the labels and title to make sure the students understand what each is. Tell them that the title and labels allow other people to understand what is being graphed.

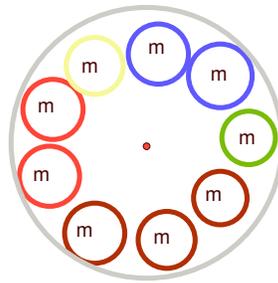
Now that the students have an understanding of what pie graphs represent, work an example together with the class, but have the students follow the steps at their desks. Pass out a compass, paper, markers, and fraction circles to each student. Tell the students that they will now create a pie graph together as a class with the information on the overhead (see attachment).

Tell the students that the first thing they need to do is draw a circle using the compass. Now, looking at the given information, they need to make fractions in order for them to know how the circle will be split (do these together). After finding fractions for the data set as a class, put the fraction pieces (tenths) on the overhead for them to see how they cut the circle and if they agree with their decisions. The students should notice that the pie graph will be cut into tenths. Tell the students to now draw the pieces on their pie graph using their fraction circles and label the correct value in each slice. They may lay the fraction pieces on their paper and trace them so they will have accurate angles. The teacher should walk around the room while the students are working to make sure they

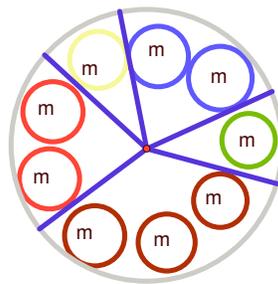
are displaying the data correctly. Remind the students to label and title their graphs. Give time to complete.

After completing the graphs, ask the students what part of the graph represents the whole? Explain that the whole is the total number of students or the total number of grades. Ask the students what the parts of the graph will represent. Explain that there will be five parts, each representing a letter grade (A, B, C, D, or F). Explain that they have just gathered, organized, and displayed data using a pie graph. Tell the students that they will now gather, organize, and display data on their own.

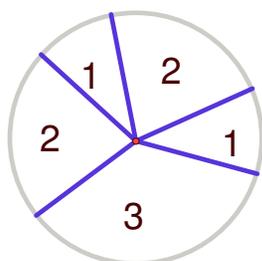
Pass out a small bag of M&M's, a small paper plate (with center point marked), markers, glue, and a ruler to each student. Tell the students to carefully open the bag of M&M's and sort them by color. Tell the students to think about what represents the whole and what represents the parts when creating their graph. After sorting the M&M's by color, tell the students to put the paper plate flat on the desk and line the M&M's around the inside edge of the plate. Here is what the plate may look like:



After lining up the M&M's on the plate, the students will draw a line from the edge of the plate next to one color to the center. Tell the students to only draw a line if the colors next to each other are different. Here is an example:



After the students have drawn their lines, the students will remove their M&M's one color at a time and put the value of the M&M in each piece. For example:



After placing the value of each color, the students may use their markers to color in each piece. Once the students have finished coloring, have the students glue the plate to a piece of paper and create a title for their graph.

3 Materials and Resources

Compass

Paper

Markers

Ruler

Fraction circles

Small bags of M&M's

Small paper plates

glue

Overhead

Transparency

Pictures of pie graphs

Textbook: Bassarear, Tom and Houghton Mifflin Company: Mathematics for Elementary School Teachers; Copyright 1997.

4 Assessment

- As the students are working on their pie graphs, the teacher will walk around the room and observe the students. The teacher will be looking for: students working independently and students drawing, labeling, and displaying correct data.
- The M&M pie graph will be taken up and graded for accuracy.
- The concept covered will be on the chapter test.

TRANSPARENCY

- Twenty students were given a final exam. After the test, the teacher graded each test and found that six students made an A, five students made a B, five students made a C, two students made a D, and two students made an F.

So the above information states:

A students = 6

B students = 5

C students = 5

D students = 2

F students = 2

Create a pie graph with the given information. Use a compass to draw your circle and use the fraction circles to slice the pie into tenths (trace the pieces). Your whole = 20 students, and your parts = the letter grade of each student. Remember to label and title your graph.