

The learner will understand and use data and simple probability concepts.

4

4.01 Collect, organize, describe and display data using Venn diagrams (three sets) and pictographs where symbols represent multiple units (2's, 5's, 10's).

Notes and textbook references

Students collect, organize, and display information in order to answer questions and to help see the relationships within data. They learn to summarize as well as answer factual questions. They learn to use their data to make predictions. Because we live in a world of information, students must have experiences that help them to evaluate that information and to decide about the usefulness of data. Graphing should not be taught as a separate unit but interwoven throughout the year; graphing skills are useful in all content areas and are among the most important applications of mathematics in all grades.

Data investigations are vehicles for applying mathematics in all content areas.

A. Ask students to survey classmates on a given question. Have students talk to at least 12 people. “What were the results of the poll? If you were to ask 12 students in another grade the same question, do you think the results would be the same?”

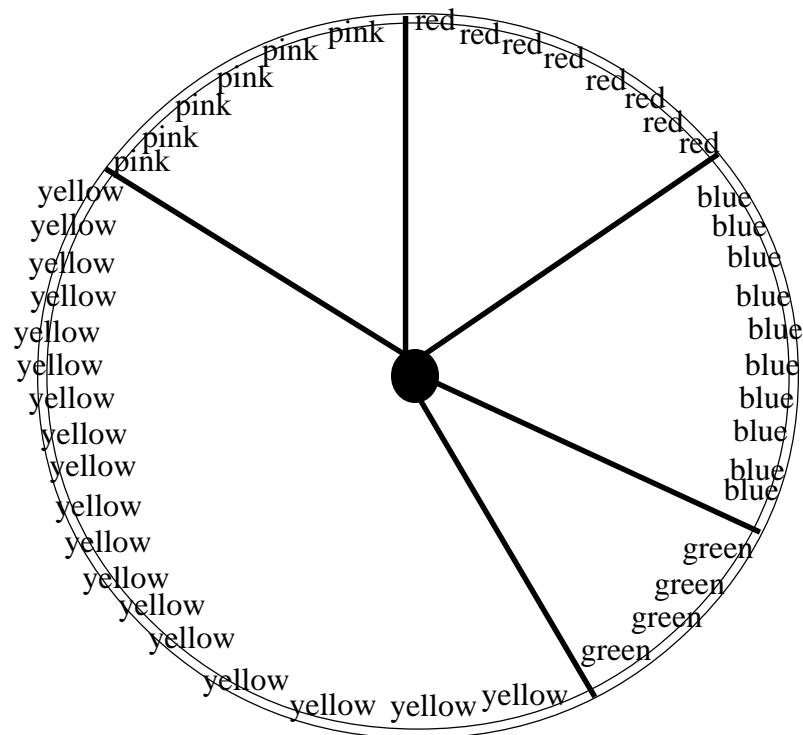
B. Have children complete a brief information sheet with basic information about themselves. Give the forms to a group of students and ask them to organize them so that they could make a display of who has birthdays each month, numbers of siblings, pets, etc. *Forms can be used for many activities since they ask for basic information which all students should know. Completing the form might be a part of a social studies lesson and using the data a part of math lessons. Using the form, students could make charts and graphs.*

See the Blackline Masters in the Week by Week Essentials for graphing grids and survey forms.

C. Conduct a taste test and graph the results. Use three different samples of the same food (for example, chocolate chip cookies or corn chips). Do not allow students to see the original containers until after the experiment. Have children agree on criteria for judging. Students should write sentences to explain the experiment and the results.

D. Give students a group of coins. Ask them to make a graph showing the coins you have. Ask students to write five questions for another child to answer about the graph.

E. Each child chooses favorite color jelly bean or Unifix cube. Have children arrange themselves shoulder to shoulder to create a circle graph determined by the color cube or jelly bean they have chosen. Leader stands in center of circle with a ball of yarn. Yarn is given to first person holding a respective color and passes to the center. Cut yarn and tape to center point of circle and to the outside edge. Next, the first person holding the second color passes yarn to center. Leader cuts and tapes second yarn in place. Repeat this process until circle graph is completed. Children return to their seats. Teacher places jellybeans (or overhead transparency chips) on overhead with circle to model the concrete graph participants have just completed. Children then create their own circle graph with a handful of jellybeans or cubes.



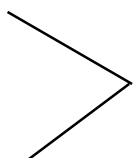
Grids For Graphing

1. Draw a permanent grid on laminated posterboard.

2. List choices on sentence strips.

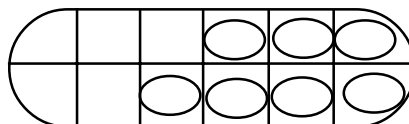


3. Trash Bag
Window Shade
Shower Curtain
Roll of Plastic

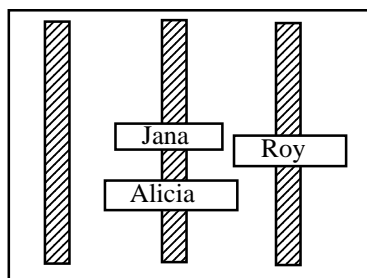


Cut open and use masking tape to make a grid

4. Make egg carton grids.

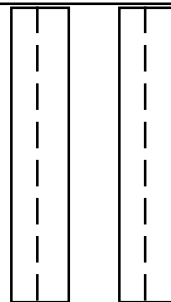


5. Use a long strip of masking tape and attach to the bottom of the board. Extend the tape, sticky side out, and attach to the top of the board. Students stick their markers to the tape.



6. Quick graphs for children can be made by using adding machine tape. Have the students fold the paper the long way to make two columns. Then fold from the bottom, in half each time, to create boxes. You may also use a strip of paper for each column.

7. Use a ruler or yarn and clothes pins on which the students write their names.

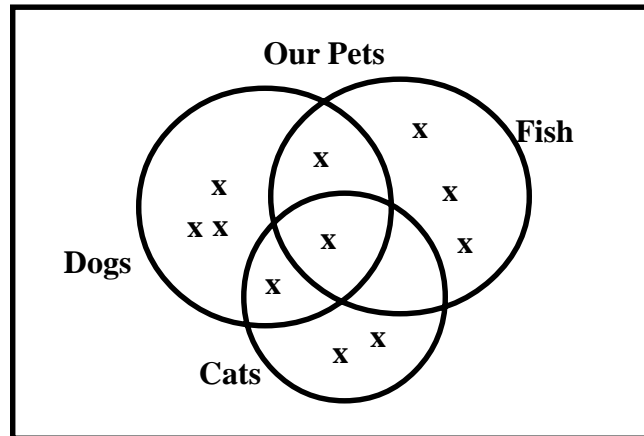


8. Photocopy each child's school picture. Use on any type of graph. Consider laminating the photocopy to make it more durable. Or make a cube for each child from a small milk carton. Attach a picture and write the child's name.

9. Attach magnetic tape to a marker (photo, tile, etc.) Use to graph on a magnetic surface such as a cookie sheet, file cabinet, or magnetic "hot pad" board.

10. Post-it notes, sticky dots and stickers make good markers.

F. Students should always have the opportunity to assist in the labeling of graphs. All graphs need a title. The horizontal and vertical axes should be clearly labeled and the data displayed accurately. By the end of the academic year students should be proficient in creating and labeling their own graphs independently.



G. Have students develop good questions to use in surveys of their classmates and other students in the school. They can use the data to prepare charts and graphs to share with the class.

H. Have the class graph the results of a survey such as this: “If you could choose, would you be younger, the same age, or older than you are?” Ask student to explain the results of the survey (how most people voted, etc.) Ask interpretation and opinion questions also: “Whom do you think most students said they wanted to be? If you asked people who are the teachers’ ages, do you think the results of the survey would be the same?”

I. Given a graph that was created by someone else, ask students to explain the information.

J. Have students make a display with information from the cafeteria about students’ favorite meals. Ask students if they think the students in their classroom would agree with the choices. Have students decide how to gather and compare information. Ask children to talk about what they learned from the two sets of information. Which lunches are the most popular? Why?

K. Have students make a display with information from the cafeteria about students’ favorite meals. Ask students to answer the question. “What is your favorite meal in the cafeteria?” Do you think that your choice

will be the choice that shows up the most on your class graph? Have students decide how to gather and compare information for their class graph and the school's graph. Then have students compare their graphs and talk about what they learned from the two sets of information.

L. Have students place information on a graph to record daily attendance, temperature each day at noon, weather each day at noon (children decide categories), number of books checked out of the library by students in the class, etc.

M. Have students record growth of a plant (or bean sprouts) each Monday, Wednesday and Friday for several weeks. Draw a picture and describe what is observed. Amaryllis plants are an excellent source for daily graphing activities.

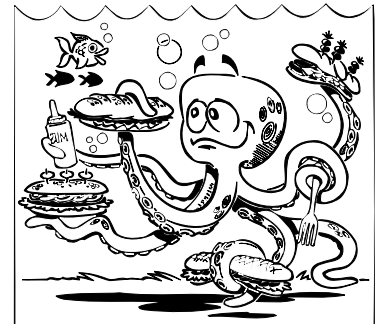
N. Ask students if they think more children are absent on Fridays than any other days. Check attendance records by days for six weeks. Explain.

O. Allow students to predict from what food group they will eat during lunchtime for one week. Have students use a chart to record what they have eaten for lunch from the four food groups. Record this for a week, then discuss results with the class. Make a class graph of all students' results, and have students compare the class graph to their own.

P. For the month of February, encourage students to fill out a graph at home for brushing their teeth. They need to record morning, lunch, supper and bedtime brushings. Have students bring these to school and discuss results.

Q. Have children record what they have for lunch each day according to the four food groups. The children may want to record in another way the next week. Use this information to analyze and compare what everyone is eating.

Notes and textbook references



4.02 Conduct simple probability experiments; describe the results and make predictions.

A. Introduce probability using terms such as “likely” and “unlikely”. Have students, in a group, generate lists of events that are likely to happen and unlikely to happen. Discussions like this will help students begin to understand concepts such as probability and chance.

Likely	Unlikely
I will eat lunch today. We will use the play yard this week. The sun will rise tomorrow.	I will grow wings and fly. It will snow in July. Four students have tails.

B. Give students various models of solids. Ask child to predict which ones will roll straight down a ramp and which ones either will not roll or will roll crooked. Have students experiment and record. Ask student to describe what happened. Based on the experiment, ask the student to predict whether other solids will roll straight. Use wooden blocks and plastic solid models as well as cans, cups, cones, cylinders and cubes from home.

C. Give student an eye dropper and a cup of water. Ask student to predict how many drops of water will go on a nickel, on a dime, and on a penny before the water spills off. Ask child if there is a way to do the experiment so that after checking one coin the student will be able to make improved predictions about the others. For example, a student might begin with the smallest coin and revise predictions for the penny and nickel after counting drops on a dime. This is a good cooperative learning lesson. Divide class into groups of three or four students and compare results obtained by each group. Ask student if the experiment were repeated, what might the number of drops be for each coin. Why? What would happen if soap were added to the water and the experiment repeated?

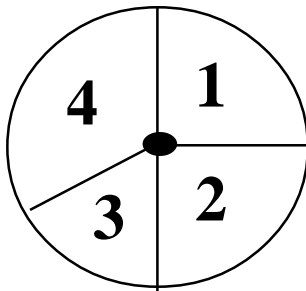
D. Ask students, “What numbers could be rolled on a number cube? Are there any other possibilities?” Have students roll the cube 20 times and record what number shows each time. Making a chart and keeping a record such as this is difficult for students. For many children this activity

will be appropriate only as a group lesson. “Tell about the experiment. If you rolled the cube 20 more times, do you think you would have the same record? Why? Would you like to try this again?” Ask how this information helps you in a game like “Nutty Buddies” in Week 29 of the Week by Week Essentials?

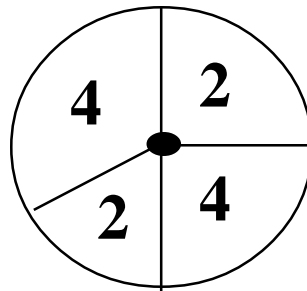
Notes and textbook references

E. “How many jumping jacks can most people do in one minute?” Ask student to plan an experiment, carry it out, and report the results.

F. Make a spinner with unequal sections. Which number is most likely to come up when we spin? Why? If this were a game spinner, and the number determined how many spaces you moved, would it be a fair game?



Spinner A



Spinner B

If the game was a race, which spinner would you rather use? Why?

*Notes and textbook
references*