Explore different types of graphs using a bag of candy and then extend the activity into other areas of math.

**Procedure:**

- Have students open their bag of candy and count the total number of candy pieces.
- Then, sort the candy into piles of different colors and count the number of pieces of each color. Record the number of pieces of each color on the scratch paper.
- On the graph paper, record the number of pieces of each color in different graph forms. Explore using line and bar graphs.
- Use colored pencils, pens or crayons to highlight the graphs.
- Compare all the graphs from your class and see how the numbers of pieces compare in the different bags. Did anyone have the same number of any of the colors in their bags?
- Enjoy the candy as a treat.

**Extensions:**

- With the same bag of candy introduce the concept of fractions. Figure out what fraction of the whole bag is each individual color.
- Use the bag of candy to talk about ratios. What is the ratio of each of the colors to the others or to the total amount?
- For older students, try graphing the number of candies as a pie chart.

**Materials**

(per team)
- 1 bag of candy with different colors
- scratch paper
- pencil
- graph paper for recording results
- colored pencils, pens or crayons

**Resources**

- Exploratorium Magazine, Vol. 19, No. 3, Fall 1995
- Exploratorium Science Snacks, www.exploratorium.org
- Family Math Sampler, EZUALS Program, Lawrence Hall of Science
- Family Math, by Jean Kerr Stemmark, Virginia Thompson and Ruth Cossey
- Fruztas, The Patterns of Chaos by John Briggs, 1992

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200 Second Avenue North • Seattle, WA 98129
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Printed on 100% post-consumer recycled paper.
Pattern Hunt

A pattern is a design that repeats. Mathematicians look for patterns in objects to learn more about that object. There are many different types of patterns in nature. Take a look at a snail shell. Do you see a pattern there? See if you can find things in nature that have the patterns listed below. Go on a nature pattern hunt. Do any of the items you find have more than one pattern? Can you find any other patterns besides those listed below?

Materials (per student or team)
- paper
- crayons
- tape

From a Circle to a Square to a Hexagon...

How many different shapes can you find in a circle of 12 dots?

Procedure:
- On a sheet of paper draw 12 dots to form a circle.
- Connect some of the dots to see what shapes you can make.
- Can you connect the dots to make a square? A hexagon (six sides)? A pentagon (five sides)?
- Use different colored pens or pencils to create each shape.

Materials (per student)
- paper
- different colored pens or pencils

Spiral

Hexagon

Concentric Circles

Branching

Story Graphing

Use three stories that have recently been read in your classroom to explore graphing.

Procedure:
- After reading three stories in your classroom, have the students pick which book they liked best.
- Using the paper and crayons have them vote for their favorite story by drawing a picture about the story or by illustrating the cover of the story.
- Collect their votes and arrange the pictures in three rows.
- Talk about what the graph tells. Which story was liked the most? Which was liked the least? Why?
- Graph subset: What scene is most often depicted from one book?
- You can try this activity with other things; favorite type of fruit, favorite color or favorite ice cream. Graph different topics several times during the year and compare the results at the end of the year. Do the results change over time? If so, why?

Materials (per student or team)
- 3 recently read stories
- paper
- crayons
- tape

Clothing Combinations

Predict and determine how many different outfits can be formed with different colored pairs of pants and shirts. Figuring out all the combinations that are possible is part of probability.

Procedure:
- Explain that a child was trying to figure out how many different outfits could be made with two different colored pairs of pants and three different colored shirts. Each outfit should be made up of one pair of pants and one shirt and no two outfits should be the same. Guide students to predict or guess how many different outfits can be put together. There are five different colors, but are there more than five different combinations?
- After predicting, give each student an outfit activity sheet similar to the illustration, two crayon colors for pants and three crayon colors for shirts. Allow students enough time to draw all of the different color combinations of outfits. You may want to have students cut out colored pants and shirts to try all the possible outfit combinations.
- How did students make sure they tried all possible combinations and that none were the same?

Materials (per student or team)
- outfit activity sheet similar to illustration
- 2 crayon colors for pants (e.g. blue and black)
- 3 crayon colors for shirts (e.g. orange, red and yellow)

Personal Measuring System

Throughout history objects have been measured in various ways. The earliest measuring devices were parts of the human body and this is a technique still used today. For instance, horses are measured in “hands.” One hand equals four inches, or ten centimeters. Surveyors and farmers use strides (the distance in one step) to measure the ground. One stride is about a yard. Try this activity to measure things in your classroom or on your playground based on your own measuring unit.

Procedure:
- Choose a part of the body to measure things in your classroom. Some examples include: length of your foot, circumference of your head, length of your arm from elbow to wrist, length of leg from knee to ankle, or any other section of the body you choose. Give your unit of measure a name.
- Cut a piece of string that is exactly the length of the body part you choose. Give your unit of measure a name.
- Try measuring things around your classroom or playground using this unit.
- Compare your results with others in your class. Which unit took more to measure an item? Were there any units that were larger than the item being measured?
- Have students divide their string into halves, fourths, eighths, and then mark on the string with the marker. Measure the items and record as fractions of units, such as, “The desk is 4 1/2 wrists long.”