Groovy Graphing

Materials: objects or data for graphing, paper, pencil, ruler, markers

Background Information: Graphs are drawings that show information with lines, shapes, and colors. People use graphs to show data in visual ways, compare amounts of things, and to identify patterns, trends, or relationships between variables. Graphs are useful because they can be easier to understand than numbers and words alone. Some common types of graphs include bar graphs, line graphs, pictographs, and circle graphs (also called pie charts).

STEM Career Connection: Sports Statisticians collect data about player and team performance and use graphs, tables, charts, and other visual representations of information to analyze information, identify patterns and trends, and communicate their findings to other people - players, coaches, and trainers.


Challenge:
1. Gather objects or data for graphing.
   a. Collect data by tallying how many of something you find or see at home, while riding in the car, or while on a walk. Ask family/friends simple questions, for example, their favorite color, favorite fruit, how many brothers/sisters, etc.
   b. Use a set of objects like a package of M&Ms or Skittles, a handful of mixed cereal (like Lucky Charms), Rainbow Goldfish, Legos, or beads, etc.
2. If you are using a collection of objects, sort the objects into groups - by color, size, type, etc. Count how many items there are in each group.
3. Choose the type of graph that is best for the data. Bar graphs and pictographs are useful for comparisons of groups of things, so one of those is probably best for this type of data.
4. Set up your graph.
   a. For pictographs, draw an x-axis (horizontal line along the bottom of the graph). Label the x-axis with the groups of things you are graphing (for example, colors of M&Ms). See sample pictograph below.
   b. For bar graphs, draw an x-axis (horizontal line along the bottom of the graph) and a y-axis (vertical line usually along the left-hand side of the graph). Label the x-axis with the groups of things you are graphing (for example, colors of M&Ms). Label the y-axis with numbers starting at the bottom and working your way up. Be sure to go high enough to show the largest group you have. See sample bar graph below.

5. Add data to your graph.
   a. For pictographs, draw a picture to represent each item in each category (for example, a small circle for each M&M of each color).
   b. For bar graphs, draw a bar as tall as the number of items in that category (for example, if there are 4 red M&Ms, draw a bar the height of the 4 along the y-axis).

6. Make conclusions about your data. What group is the biggest, which is the smallest? What overall trends or patterns do you notice? Why do you think that trend or pattern exists?
Types of Graphs

**Bar Graph**
- compares choices by how much or how many

**April Snack Sales**
- candy
- chips
- soda
- fruit
- nuts

**Line Graph**
- shows one variable over time

**January Book Sales**
- Week 1
- Week 2
- Week 3
- Week 4

**Circle or Pie Graph**
- shows parts to the whole (percentages)

**How Students Get to School**
- Walkers: 90
- Bus Riders: 180
- Parents Drop Off: 30

**Pictograph**
- shows how many with an icon or picture

**Pets Owned at Hill School**
- Each picture equals 10 animals
  - Dogs
  - Cats
  - Fish
  - Birds
  - Rabbits