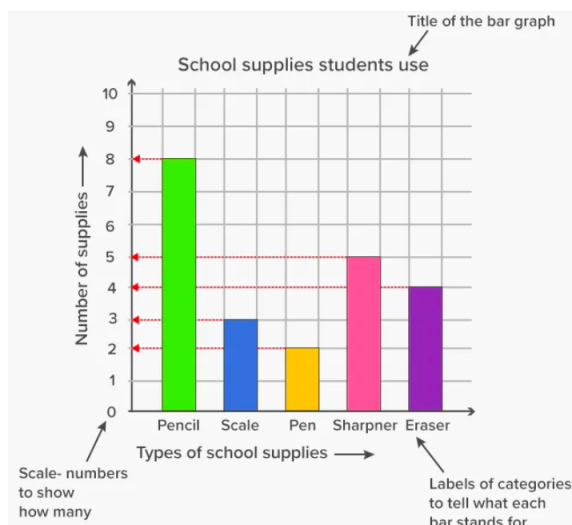


Graphing

In **math**, a **graph** can be defined as a pictorial representation or a diagram that represents data or values in an organized manner. The points on the **graph** often represent the relationship between two or more things. We will be exploring 3 kinds of graphs:

- **Bar graphs** to show numbers that are independent of each other. Example data might include things like the number of people who preferred Soccer, Rugby, Basketball or Hockey
- **Pie charts** to show you how a whole is divided into different parts. You might, for example, want to show how a budget had been spent on different items in a particular year.
- **Line graphs** show you how numbers have changed over time. They are used when you have data that are connected, and to show trends, for example, average night time temperature in each month of the year.

Reading Graphs



1. **Graph Title:** The **title** appears at the **top** of the **graph** and should describe the **graph**.

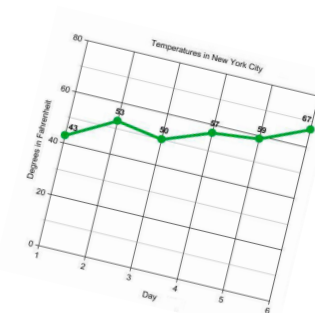
2. **Axis Labels:** The labels that appear along the X and Y-axes describing what is being measured. The line running along the bottom of the graph is called the horizontal or X-axis, and the line up the side is called the vertical or Y-axis. Both axis' need labels (for example Number of Students, and Types of supplies, or Degrees Fahrenheit and Day)

3. **Scale:** The distance between two numbers on a graph indicate the **unit of measurement** being applied. This unit must remain uniform throughout the graph; if you begin with days, you can not change to weeks. In

the examples here, you see numbers & temperatures evenly up the Y axis and, items & days spread evenly across the X axis. Time is usually on the X axis.

A few other Guidelines:

- When Graphing you always use a **RULER**. All lines are created neatly with a ruler, including: underlining your title, the tops of each bar in a bar graph, and lines between points.
- Notice that the points (or top of a bar in a bar graph) are directly above the variable on the X axis. In a line graph they are **ON** the line, **not** in the space. A bar graph uses the space, and on the X axis, that is where the category is described.
- Graphs should cover between 60-80% of the page. Leaving some area around the graph is necessary, so labels are not crowded but use most of your page.
- **Colour** often helps to display data more effectively. Once you have plotted your lines, it can be beneficial to add colour to highlight your line, different sections, or even different results within your graph.



Where Do Canadians Travel outside of Canada and the USA?

Bar Graphs are good when your data is in categories. It allows comparison and contrast to be easily accessible in a visual format.

Estimated data from 2019 statistics shows us some of the most popular destinations for Canadian travellers. Using this data, create a Bar Graph to illustrate these findings.

Remember all Graphs need to include:

- Title
- Axis labels for both X & Y
- Scale using uniform measurement
- Should take up the majority of the page.
- Uses a RULER for everything :)



Country	Number of Canadian Visitors
Mexico	1 200 000
Cuba	900 000
United Kingdom	750 000
Dominican Republic	590 000
China	550 000

Once you have created your X and Y axis it will be important to decide on the scale of unit you will use for the Y axis. For this graph - ***THIS may be the most challenging part of creating the graph.***

Will you have 10 thousand visits as your unit per section (grid)? 100 thousand? 500 thousand? What fits and also creates a graph that is scaled to fit your page?

Consider: How many spaces do you have from your X axis towards the top of the paper? How wide is the range of numbers you are looking to graph? How can you figure out what unit to use?

For Example, you can not use one space per person if you are looking at a population of 450 - you just don't have 450 spaces!

1. Count how many spaces you have. Example: I have 30 spaces
2. Find the top number you need to represent Example: 475 people
3. Calculate - (475 divided by 30=15.7) I need each square to represent a value of 16. This is an awkward number to work with.
4. You need to discover - What would be the ***next most reasonable*** number to work with? Probably 20.
5. Additionally, in some cases you are able to move your X axis lower on the page so that you have a few *more* spaces to work with that creates a "nice" number.
This set up planning is IMPORTANT! Take your time with this part, and the actual graphing will go smoothly!