STEMIST SCIENCE FAIR

COLLECTING AND RECORDING DATA

COLLECTING AND RECORDING DATA

Introduction

Now that you've learned about the scientific method, we're going to go into more detail about how to collect and record data! Data is so important! We use it to make informed conclusions and conduct further analysis, study and research! Something to consider when planning your project is what kind of data you will be collecting, quantitative or qualitative? Check out this video for more information! https://youtu.be/a7d78vzFMds

Quantitative Data vs. Qualitative Data

Quantitative data is number based and is a measure of values or counts and are expressed as numbers. Examples of quantitative data could be measuring "how many often something occurs", "how much of something is produced" or "how long it took for something to happen." Quantitative data is easier to statistically analyze.

Qualitative data is a measure of 'types' and is usually text based. Qualitative data may be represented by a name, symbol, rating scale, descriptive statements or categories. Qualitative data can be collected using interviews, written documents or observations. In our case, if we are measuring a scientific experiment for the science fair with qualitative data, we will probably be recording observations.

Did You Know?

Some types of qualitative data can be turned into quantitative data by recording the observation and turning it into a fraction or percentage from that sample size!

Collecting Data

Determine how you will be measuring yor data. Examples of what you could measure in your science experiment could be, but it not limited to, weight, height, temperature, distance, volume, etc.. Remember to keep a journal and record all of your findings and observations. A science journal is a type of science diary that you can keep over time while your experiment is taking place. In your journal, record your table and any other information that is applicable to your project. A table is organized in columns and rows and should always have labels or headings telling what the columns and rows represent. You will probably need a row for every time you did the experiment (trials) and a column telling what the independent variable was, and the dependent variable.

TRIAL	CONTROL	INDEPENDENT VARIABLE 1	INDEPENDENT VARIABLE 2	INDEPENDENT VARIABLE 3
1	DEPENDENT VARIABLE (OBSERVATION)	DEPENDENT VARIABLE (OBSERVATION)	DEPENDENT VARIABLE (OBSERVATION)	DEPENDENT VARIABLE (OBSERVATION)
2	DEPENDENT VARIABLE (OBSERVATION)	DEPENDENT VARIABLE (OBSERVATION)	DEPENDENT VARIABLE (OBSERVATION)	DEPENDENT VARIABLE (OBSERVATION)
3	DEPENDENT VARIABLE (OBSERVATION)	DEPENDENT VARIABLE (OBSERVATION)	DEPENDENT VARIABLE (OBSERVATION)	DEPENDENT VARIABLE (OBSERVATION)

Tip!

Be accurate and neat! When you are writing your tablees and charts, ensure that you record your data in the correct columns/rows and you are writing neatly. Most importantly, make sure you are recording your data as soon as you collect it!

4-H STEM

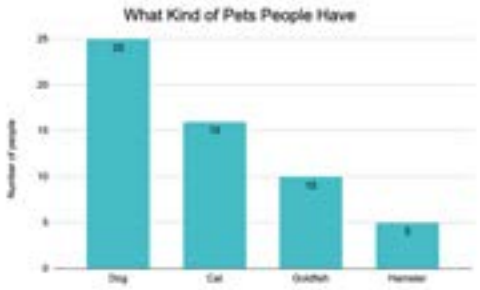
Resources: LCPS.org Types of Graphs
PBS.org Experimenting with Experiments

COLLECTING AND RECORDING DATA

Analyze Data and Results

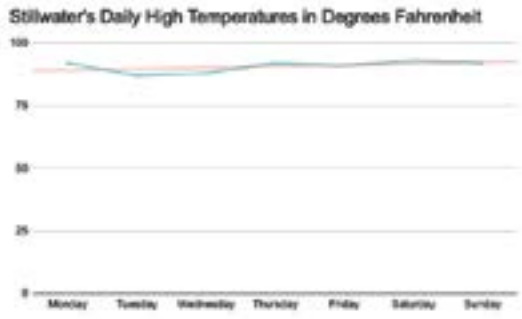
What did you learn from the experiment? Was your hypothesis supported or not supported? Why did the experiment work or not work? What did your results tell you? These are the questions you will need to ask yourself and answer while analyzing your data and results. Remember, it is okay if your hypothesis was not supported. As long as your experiment was done correctly and you can explain why you got the results you did everything is okay!

There are many different types of graphs and tables that you could use to present different types of data. Be sure to use a graph that will clearly represent your data and will be the best fit for your project.



Bar Graph

Used when comparing various items or ideas.

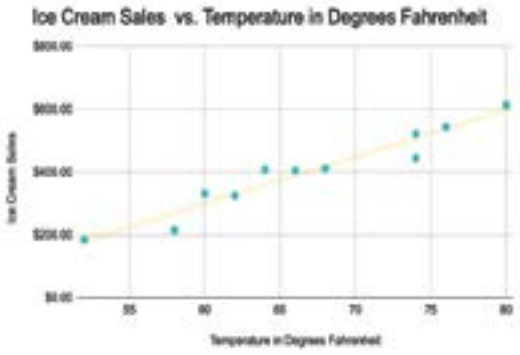


Line Graph:

Used to show change over time.

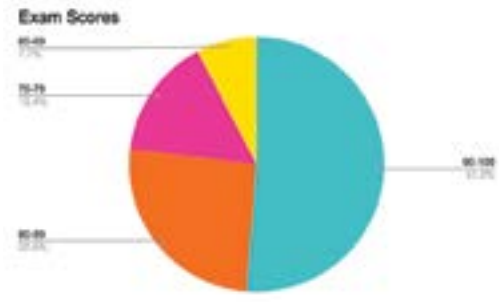
Pictograph:

Uses pictures to show data.



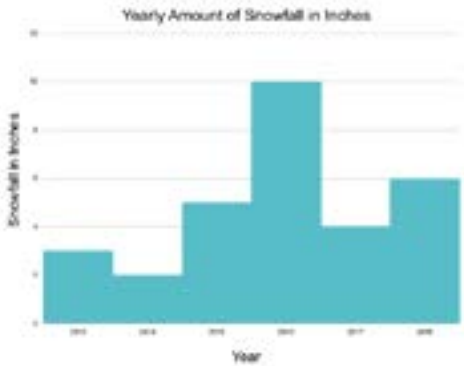
Scatterplot:

Used to determine if a correlation exists between two data sets, and how strong it is. Also used to calculate line or curve of best fit.



Circle Graph:

Also known as pie chart. Used to show parts or percentages of a whole.



Line Graph:

Shows frequency and is used to compare items of ideas; each bar represents an interval of values.

Resources: LCPS.org Types of Graphs
PBS.org Experimenting with Experiments

4-H STEM

OKLAHOMA EPSCOR www.okepscor.org