

# Tables & Graphs

## Tables and Graphs

Before conducting a meaningful investigation, it is important to learn how to organize the data you have collected. By organizing data, a scientist can more easily interpret what has been observed. Making sense of observations is called *data interpretation*. Since most of the data scientists collect is quantitative, data tables (charts) are usually used to organize the information. A data table organizes data into rows and columns. Graphs are created from data tables. They allow the investigator to get a visual image of the observations which simplifies interpretation and drawing conclusions. Since drawing conclusions is the final step of any investigation, tables, graphs, and data interpretation are extremely important. **Valid conclusions depend on good organization and clear interpretation of data.**

Data tables are relatively simple to make and convey information with precision. All data tables have a **title** that includes both the independent and dependent variables. When making the data tables, **column headings** are used to organize the table. A table must show the independent variable and the number of trials. Totals or averages should also be included. Additionally, they form the basis for most graphs. Tables make the information easier to analyze.

**HINT: Create a table in your journal to collect data as you perform your experiment.**

Title:				
Trial	Specific Independent Variable 1	Specific Independent Variable 2	Specific Independent Variable 3	Specific Independent Variable 4
1				
2				
3				
Average				

**Graphs** are used so that a project observer or judge can **quickly comprehend** the results of the project at a glance. Two types of graphs are typically used when organizing scientific data – bar graphs and line graphs. **Bar graphs** are often used to display data that does not occur in a continuous manner, such as car colors or food preference of a given population. This is the type of data that comes from research questions asking about variables that will be counted. **Line graphs** are often used to display data that occurs in a continuous manner over time, such as population changes or one person's growth. Other types of graphs are Pie, Time Line, Histogram, and Flow Charts.

Graphs should include the following **labeled**:

1. **TITLE** - The title is a short description of the data being displayed (Includes IV/DV/units).
2. **HORIZONTAL AXIS** - The Independent Variable
3. **VERTICAL AXIS** - The Dependent Variable (include units)

**Glue a piece of graph paper in your journal. Create a rough draft graph of the data collected. If only one graph is completed, the averages must be graphed.**

## Science Fair Rubric Checklist – Table(s) and Graph(s)

<i>Expectations – Table(s) and Graph(s)</i>	<i>Points</i>
<ul style="list-style-type: none"> <li>▪ Computer program used to create chart and graph</li> <li>▪ Printed in color</li> <li>▪ Covers entire page (chart and graph are on separate pages)</li> <li>▪ Manipulate font sizes to enlarge and make the chart/graph easy to read</li> <li>▪ Manipulate colors of font or cells of chart/graph to go with color theme of trifold</li> <li>▪ Chart               <ul style="list-style-type: none"> <li>○ Title of chart includes IV and DV</li> <li>○ Column headings correctly labeled</li> <li>○ Borders</li> </ul> </li> <li>▪ Graph               <ul style="list-style-type: none"> <li>○ Appropriate type of graph (line, bar, etc.)</li> <li>○ Title of graph includes IV and DV (includes the word average if applicable)</li> <li>○ One graph must be the average data if more than one graph is created</li> <li>○ Y-axis labeled appropriately</li> <li>○ X-axis labeled appropriately</li> </ul> </li> <li>▪ Rough drafts located in journal (handwritten)</li> <li>▪ Rubric stapled on front (left corner)</li> <li>▪ Parent signature on final drafts</li> </ul>	<b>20</b>
<b><i>SCORE</i></b>	