

Data Tables and Graphing

Data tables and graphs are used when collecting and analyzing scientific data. A well-organized data table and graph can help to interpret results from an experiment.

Guidelines for data tables:

- Use a ruler to create straight lines
- Data tables should have a brief and descriptive title
- Columns (vertical) and rows (horizontal) should be labeled and include units.

Guidelines for graphs

- Use a ruler to create straight lines
- Graphs should have a descriptive title
- Axis should be labeled and include units
 - Independent variable (x axis)
 - Dependent variable (y axis)
- Include a key when necessary
- Use an appropriate scale that allows all data to be included on the graph. Scales do not always need to begin at zero.
- To determine an appropriate scale determine the smallest and largest value that will need to be included on the graph.

Types of Graphs

Line graphs- Used to show how one variable affects another.

Scatter Plot (line of best fit)- Plot the data points but do not connect all points. Draw a 'line of best fit' that represents the trend of the data.

Bar graphs- Used to show relationship between groups. The information is not continuous and one group does not have to affect the other.

Pie chart- Used to compare the parts of a whole.

Putting your skills to work:

On a separate piece of paper (graph paper if available) create a data table and appropriate graph for the following problems (the actual data given in the problems is fictitious). Provide a brief analysis/conclusion of the data:

1. As a class determine the different ethnicities represented in the classroom.
2. The California parks department has been collecting data on average monthly temperatures ($^{\circ}\text{C}$) and dissolved oxygen levels in the water (ppm) for Crystal Springs reservoir beginning in January of 2009. The initial average temperature in January was 14°C with dissolved oxygen reading 12 ppm. February and March both averaged temperatures of 13°C with February having DO levels of 13 ppm and March had DO levels of 13.5ppm. April averaged 15°C with DO at 12.5 ppm; May averaged 16°C and DO level of 11ppm; June and July averaged temperatures of 17°C and DO levels of 10ppm. August recorded the highest average temperature of the year at 20°C and DO levels of 8ppm. September had an average temperature of 19°C and DO levels of 8.5ppm. October has an average temp of 16°C and a DO level of 11 ppm. November and December reported average temperatures of 14°C and DO levels of 12 ppm.
3. A family is making a monthly budget and wants to know how they spend their money. They divided the budget into 5 categories; entertainment, groceries, dining out, utilities, house payment. The receipts added up to \$125 for entertainment, \$375 groceries, \$200 dining out, \$320 utilities, and \$2,300 for the house payment.
4. Bernice is interested in purchasing a car that is fuel-efficient. He has gathered information on a number of different car types and gas mileages (miles per gallon). Toyota Prius 45mpg, Honda Civic Hybrid 43mpg, Honda Insight 41 mpg, Toyota Echo 38 mpg, Volkswagen Jetta 42 mpg, Toyota Celica 36 mpg.