

How to Construct a Bar Graph

1. Create the horizontal x-axis and the vertical y-axis that define the bottom and the left side of the graph.
2. If you want the bars to be vertical, create a scale on the y-axis. If you want them to be horizontal, create a scale on the x-axis. Make sure the scale will accommodate all of your data. For example, if the largest quantity you plan to represent with a bar is 52 units, consider creating a scale with 11 divisions, each of which is 5 units long. You could also create a scale with 6 divisions, each of which is 10 units long.
3. Number the divisions of the scale.
4. Label the scale. For example, if each bar on the graph will represent the mass of an organism measured in grams, label the scale *Mass (grams)*.
5. Draw and label the bars. If appropriate, fill in each bar with a pattern or color. Create a legend that identifies the category of data represented by each pattern or color.
6. Title the graph.

How to Construct a Line Graph

1. Create the horizontal x-axis and the vertical y-axis of the graph.
2. Create scales on both the x- and y-axes. Make sure they will accommodate all of your data. For example, if the largest quantity you plan to measure on the x-axis scale is 42 units, consider creating an x-axis scale with 9 divisions, each of which is 5 units long.
3. Number the divisions of the scales.
4. Label the scales. For example, if the line on the graph will illustrate changes in the length of an organism measured in millimeters over a period of three years, label the x-axis scale *Time (years)* and the y-axis scale *Length (millimeters)*.

Raw data for a line graph usually appear in data table form. Quantities measured on the horizontal scale usually appear in the left-hand column. Quantities measured on the vertical scale usually appear in the right-hand column.

5. Locate the first quantity in the left-hand column of the table on the horizontal scale of the graph. Using a straightedge and a pencil, draw a faint vertical line from that point across the field of the graph.
6. Locate the first quantity in the right-hand column of the table on the vertical scale of the graph. Starting at that point, draw a faint horizontal line across the field of the graph.
7. Draw a small dot, or plot, where the two lines cross.
8. Repeat steps 5–7 for the remaining pairs of data in the table.
9. Connect the plots to form a smooth line or curve. (In some cases, the plots may not fall on the line or curve. You may need to draw the line or curve so that it passes near or between plots.)
10. If the graph will contain more than one line of data, label the line you just created.
11. Repeat steps 5–10 for each additional line of data.
12. Give the graph a title.