

Guidelines for Graphics

General guidelines

Definition

Graphical matter includes figures, tables, pictures, and equations.

Basic Rules

Rule No. 1: The purpose of graphical matter is to convey information.

Rule No. 2: The default settings in your favorite software package are wrong.

Rule No. 3: Different publishers have different standards.

Corollary

The author or authors are responsible for using graphical matter to communicate. In discussing the graphical element, explicitly state the information to be conveyed and what inferences the reader is to draw. The tale the graphical matter has to tell may be obvious to you; it is not obvious to the reader.

Specific guidelines

Listed below are comments commonly made by faculty regarding the use of figures, tables, pictures, and equations in student reports. Not all comments apply in every case (see Rule 3). Ask your instructor for clarification.

Tables

1. Give the table a number and a title. This information is usually placed at the top of the table.
2. Include units.
3. Fractional numbers should be presented with a leading zero, e.g., the number 0.3432 should never be reported .3242.
4. For audiovisual presentations:
Tables used in a report may not be suitable for audiovisual presentation. Redo the table in larger type. If the audience cannot read the visual, don't present it. If the table involves so much information that they type size is too small to read, don't present it. Instead, extract important information and make a new table.

Figures

1. Give the figure a number and a title. This information is usually placed under the figure.
2. A figure title such as *Fig. 1: Velocity vs. Time* is usually unacceptable. The title should be descriptive, as in *Fig. 1: Wind Tunnel Calibration, Air Velocity as a Function of Fan Speed*.
3. Refrain from using too many significant digits on the axis scale markings.
4. If you include an equation of a curve-fit line, change the variables (x,y) in the equation to match the variable names of your figure.
5. If the figure is illustrating experimental results in a lab report, the figure should be dated and initialed by the members of the team that did the work.
6. Include units on axes.
7. Axis markings generally belong to the left and below the figure.
8. When your software gives you an unacceptable curve-fit, change the method of fitting a curve, or print the plot without a curve-fit and use a French curve to draw in the curve by hand.
9. Experimental data are shown with symbols; do not connect the dots. Show a trend line or curve-fit or theoretical curve with a line and no “data” symbols. The line should not obscure the experimental data.
10. Incorporate figures of your results in the *Results* section of your report. Change the scale of the figure to fit in the body of the report.
11. Carefully check that fonts and other graphical elements are not too small. Otherwise, your figure is violating its primary goal of conveying information. As a general guideline, don't use fonts smaller than 9-point.
12. Include a legend when two or more quantities are plotted on the same graph. Some of the choices available for establishing the legend are:
 - (a) Place a legend for the curves directly on the graph. Generally used for all simple plots. Another possibility is to use curve-labeling without a separate legend box.
 - (b) Label the curves with numerals (1, 2, 3, etc.) or letters (a, b, c, etc.) which are defined or explained in the figure title. Used if style (a) clutters the graph.
 - (c) You may have to choose a different style of legend for an audiovisual presentation.

Pictures

Photographs are often used when they shouldn't. In engineering reports, schematic drawings with labeled information are often better than a photo.

Equations

1. Usually, equations should be centered on the page.
2. Equations should be sequentially numbered.
3. In general, do not paste a section of Maple code into an engineering report except for supplemental appendix information. Even Maple codes that have been well documented contain too much Maple specific syntax to be useful to most readers. Derivations/analysis should always be incorporated into the text using standard equation editing tools. For guidance, examine engineering textbooks and technical articles and reports.