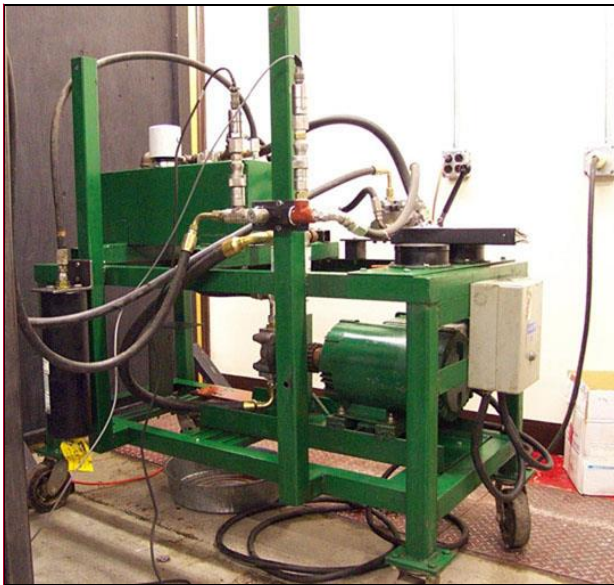


**Title of Report in Initial Capital Letters:  
Arial (24 points, Boldface) and  
No More Than Three Lines**

**Commented [MPA1]:** For this report, you are to use the formal report format. This format can be used for long reports (more than 10 pages) and is a good one for you to learn. A good instance would be the final report of your senior design project.

**Commented [MPA2]:** To hide comments, click on "Markup," which is under "View."

**Commented [MPA4]:** Replace all writing in blue with your own words. Note that the title is left justified, which is the custom for publications in the United States. If this report were for a European institution, a centered headline would be appropriate.



**Your Name**  
**Name of Your Department**  
**Name of Your Institution**  
**Date**

**Commented [MPA6]:** This page is the title page—although the page number often does not appear, it is roman numeral *i*.

# Title of Report in Initial Capital Letters: Arial (18 points, Boldface) and No More Than Three Lines

Your Name  
Name of Your Department  
Name of Your Institution  
Date

## Summary

Here you present a one- or two-paragraph summary of the report. This summary should stand alone (no reference to figures or tables in the text) and present the most important results of the work. Replace all writing in blue with your own writing. The line spacing for this paragraph is to be single-spaced, which is common in professional reports (note that graduate theses and dissertations are often space and a half). Please indent all paragraphs in this document. XXXXX  
XX  
XX  
XX  
XX  
XX  
XX  
XXXXXXXXXXXXXXXXXXXX.

XX  
XX  
XX  
XX  
XX  
XX  
XXXXXXXXXXXX.

Table of Contents

Summary	i
Introduction	1
Second Major Heading	X
First Subheading (If Subheadings Exist)	X
Second Subheading (If Subheadings Exist)	X
Third Subheading (If One Exists)	X
Third Major Heading	X
First Subheading (If Subheadings Exist)	X
Second Subheading (If Subheadings Exist)	X
Third Subheading (If One Exists)	X
Fourth Major Heading	X
Conclusions	X
Appendix A: Title of Appendix A	X
Appendix B: Title of Appendix B	X
References	X

**Commented [MPA7]:** Insert the page number here. Because you are inserting all the final page numbers, this page is usually the last page that you work on.

**Commented [MPA8]:** Insert the page number here. Because you are inserting all the final page numbers, this page is usually the last page that you work on.

**Commented [MPA9]:** Depending on your situation, you might have more or fewer headings.

**Commented [MPA10]:** Insert the page number here. Because you are inserting all the final page numbers, this page is usually the last page that you work on.

**Commented [MPA11]:** Insert your title here. Just listing Appendix A or Appendix B does not help the reader to understand what those appendices contain. Do not list any subheadings for the appendices, even if subheadings exist. Note that you might more or fewer appendices depending upon your situation.

## Introduction

Headings are 14 points, flush left, and boldfaced. Use initial capitals. A good typeface for the heading is Arial, because it holds bold facing well. To preserve hierarchy, allot three line skips before the heading and two line skips after. In the “Introduction,” make sure that you orient the audience with sufficient background to understand what the problem is and why the problem was addressed. In this format, you formally reference the problem memo. A good test for this section is to imagine how well it would orient you should you read it a year from now. Also in the “Introduction,” be sure to state what the topic includes and any limitations about the topic.

Indent all paragraphs. Also, you may place 6 points between paragraphs, but do not place more—that would upset the special hierarchy of the headings and subheadings. In addition, make sure that you use the paragraph of the “Introduction” to map the report. This mapping serves as a transition to the report's middle.

## Second Major Heading

Headings are 14 points, flush left, and boldfaced. Use initial capitals. A good typeface for the heading is Arial, because it holds bold facing well. To preserve hierarchy, allot three line skips before the heading and two line skips after. At least one paragraph should follow a heading before a subheading exists. The typeface given here for the text portion of this report is Times New Roman (on a Macintosh, Times would a comparable choice). Book Antiqua would also be a professional choice, especially for the single column format of a thesis. On a Macintosh, comparable typefaces to Book Antiqua are New Century Schoolbook and Palatino. In industry, the recommended spacing for a report is single spacing.

## First Subheading

Subheadings should be 12 points and boldfaced. Insert two line skips before the sub-subheading and one line skip after. Use initial capitals. Note that subheadings are typically listed in the Table of Contents. Be conservative with subheadings in a report. A report is often an argument and, as such, requires series of uninterrupted paragraphs to state assertions and present evidence for those assertions. For the length of report that you have, avoid sub-subheadings, because they are often unnecessary. Rather than having sub-subheadings, which would be a third-level, have your paragraphs show the arrangement of your ideas.

XXXXXXXXXXXXXXXXXXXXXXXXXXXXX  
XXXXXXXXXXXXXXXXXXXXXXXXXXXXX  
XXXXXXXXXXXXXXXXXXXXXXXXXXXXX  
XXXXXXXXXXXXXXXXXXXXXXXXXXXXX..

**Commented [MPA12]:** Please indent all paragraphs. Do not follow the primitive format of not indenting paragraphs and skipping a full line between paragraphs. Every major book and journal publisher in the world indents paragraphs. The no-indent format arose in the 1960s when the first word processors were developed—these word processors could not indent paragraphs and therefore authors had to resort to line skips. The no-indent format distorts the line spacing awarded to headings and, when equations and illustrations are present, makes it unclear where paragraphs end and where they begin. If you want to skip a little space—say 3 pts—between paragraphs, that is fine, but be consistent throughout the report.

## Second Subheading

If you have one sub-subheading, you must have a second. Otherwise, the first sub-subheading has nothing to be parallel with. Do not allow a heading or subheading to stand as a widow line at the bottom of a page. If the situation occurs, force a line break before the heading or subheading.

## Third Heading

Headings are 14 points, flush left, and boldfaced. Use initial capitals. A good typeface for the heading is Arial, because it holds bold facing well. To preserve hierarchy, allot three line skips before the heading and two line skips after. At least one paragraph should follow a heading before a subheading exists.

Another formatting consideration concerns the incorporation of figures and tables. Shown in Figure 1 is a common format that serves reports well. Note that the word *figure* is not abbreviated. In a single column document, such an abbreviation makes no sense. A period is the powerful piece of punctuation—its primary use is to end sentences. Do not dilute its power by having it do menial tasks such as saving three letters from a word that is short to begin with.

Following standard convention, the formal introduction of Figure 1 occurred in the text before the figure appeared. In the introduction of an illustration, using pointers such as *below* or *on the next page* is undesired. Your technical reader knows where the illustration is supposed to be placed—after the paragraph that introduces it or on the next page if not enough space exists below the paragraph. Note that you should *not* break paragraphs in a Microsoft Word document to insert an illustration. To distinguish the figure caption from the text, you should place the figure caption in a smaller typeface, as was done in Figure 1. Recommended for the line spacing of the caption is single spacing. For the caption, a nice touch is to place the name in the bold sans serif of the headings and have the caption's text in the serif typeface of the chapter's text. As is common in reports, the caption begins with a phrase and is followed by a sentence (or two) that explains unusual details.

Tables are presented in a different fashion. For instance, Table 1 presents an example. The heading for the table goes above and is 11 points. The heading is a single phrase. If there are unusual details, those are explained in footnotes beneath the table. Note each line skip above and below that separates each illustration and its caption (or heading) from the text.

XX  
XX  
XX  
XX Note that these X's  
actually will not appear in your report XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  
XX  
XX  
XX  
XXXXXXXXXXXXXXXXXXXX.



**Figure 1.** Title of figure in 11 point type beneath the illustration [Knost, 2004]. Feel free to add a sentence or two to point out important features.

**Table 1.** Heading for table in 11-point type [CRC Handbook, 1969].

Planet	Diameter (km)	Gravity (earth ratio)	Year (earth days)	Temperature (K)
Mercury	5,100	0.40	88	700
Venus	12,600	0.90	225	700
Earth	12,800	1.00	365	350
Mars	6,900	0.40	687	320
Jupiter	143,600	2.70	4,333	150
Saturn	120,600	1.20	10,759	138
Uranus	53,400	1.00	30,686	90
Pluto*	12,700	???	90,885	80

\*Corresponding data on Neptune not available.

## Fourth Major Heading

Headings are 14 points, flush left, and boldfaced. Use initial capitals. A good typeface for the heading is Arial, because it holds bold facing well. To preserve hierarchy, allot three line skips before the heading and two line skips after. At least one paragraph should follow a heading before a subheading exists. The typeface given here for the text portion of this report is Times New Roman (on a Macintosh, Times would a comparable choice). Book Antiqua would also be a professional choice, especially for the single column format of a thesis. On a Macintosh, comparable typefaces to Book Antiqua are New Century Schoolbook and Palatino. In industry, the typical line spacing for a report is single spacing.

## Conclusions

This section summarizes the document and provides closure. The difference between this summary and the summary that you write on the title page is that the summary in the "Conclusion" is for someone who has read the report. XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX  
XX  
XX  
XX  
XX  
XX  
XX  
XX  
XXXXXXXXXXXXXXXXXXXX. In this section, a good idea is to use your last sentence to emphasize an important detail or result in the report.

## **Appendix A: Title of Appendix A**

Titles of appendices are 14 points, flush left, and boldfaced. Use initial capitals. A good typeface for the heading is Arial, because it holds bold facing well. To preserve hierarchy, allot three line skips before the heading and two line skips after. Illustrations in this appendix are labeled Figure A-1, Figure A-2, Table A-1, Table A-2, and so forth. Note that each appendix begins on a new page. Also note that each appendix should be introduced somewhere in the text portion of the report.

## **Appendix B: Title of Appendix B**

Titles of appendices are 14 points, flush left, and boldfaced. Use initial capitals. A good typeface for the heading is Arial, because it holds bold facing well. To preserve hierarchy, allot three line skips before the heading and two line skips after. Illustrations in this appendix are labeled Figure B-1, Figure B-2, Table B-1, Table B-2, and so forth. Note that each appendix begins on a new page. Also note that each appendix should be introduced somewhere in the text portion of the report. Finally, depending on your situation, you might have more or fewer appendices.

## References

Chyu, M. K., "Heat Transfer and Pressure Drop for Short Pin-Fin Arrays with Pin-Endwall Fillet," *Journal of Turbomachinery*, vol. 112 (1990), pp. 926-932.

Clements, Terry C., "Request for Testing of Centrifugal Fan with Adjustable Inlet Guide Vanes," memo to Pat Hodges (Birmingham, AL: Sewel Manufacturing, 24 August 2005).

Couch, Eric, "Request for a Design Recommendation for the Internal Cooling Channels in Gas Turbine Vanes and Blades," memo to Jesse Christophal (East Hartford, CT: Pratt & Whitney, 31 August 2005).

*CRC Handbook of Chemistry and Physics*, 75th ed. (New York: Chemical Rubber Publishing Company, 1995), chap. 14, p. 3.

Han, J. C., and Y. M. Zhang, "High Performance Heat Transfer Ducts with Parallel Broken and V-Shaped Broken Ribs," *International Journal of Heat and Mass Transfer*, vol. 35 no. 2 (1992), pp. 513-523.

Kays, W., and Crawford, M., *Convective Heat and Mass Transfer* (McGraw Hill: New York, New York, 1993).

Knost, Daniel, "Experiment to Measure the Internal Pressure of a Soda Can," photograph (Blacksburg, VA: Virginia Tech, 9 April 2004).

Steeper, Richard, "Request for Testing on a Scaled Model of an Emergency Gate Valve System," memo to Lee Paulson (State College, PA: Pennsylvania Valve Company, 31 August 2005).

Petersen, Robbie T., "Request for Recommendation of Air Flow Rate for the Polar Air Conditioner," memo to Pat Green (Pittsburgh, PA: Canada Cooling, 19 September 2005).

Walsh, S., S. Brewton, T. Beirne, R. Bellonio, A. Dunigan, J. Hodges, and A. Wilder, *Design of a Test Rig to Simulate Flow Through a Ribbed Cooling Passage* (Blacksburg, VA: Virginia Tech, May 2003).

**Commented [MPA13]:** Left-justified, as is the format in the United States. Note that the spacing afforded to this heading is the same as the spacing afforded to the appendices and the "Contents," which is three line skips before and two line skips afterwards.

**Commented [MPA14]:** Given here are some common reference citations for ME 4006 reports. Also given are reference citations for reference listings that appeared in this template.

**Commented [MPA15]:** This page is the last page in the report. Following this page is the back cover, which would be a cover stock.