Guidelines for report-writing

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How to write a good report

The goal and functions to a good scientific report.

A report is part of the scientific work. Regardless of its form and style, the functions of a report are: **information on the work performed, observed results and conclusions are drawn.** For the author, the report is a concentrate, while for the recipient it is a whole. Author and recipient have usually no immediate ability to communicate. Therefore, the report is an example of what is called one-way communication. The author should keep this in mind, and he/she must have a clear idea of who the report is written for and what is the main goal with it. From these criteria the reprot should be structured. Regarding the report's length, you should follow the rule to make it as short as possible. At the same time it must be rich enough so that the message clearly appears.

This booklet is intended to provide guidance in report writing, specifically targeted project and diploma students at the Department of biotechnology and Departement ofchemical engineering. This structure is very similar to the structure of major scientific reports. Even if you rarely should deviate from this setup, small changes can of course be considered.

The process

Research

Reading literature is a necessary part of a scientific work of several reasons: It will provide information on what has previously been done with the problem one shall work with and thereby clarify on what basis one can build further. In addition, a literature study will prevent than one makes unnecessary work.

However, please note that a one easily can be so bound by others' observations and opinions that one only sees what others have done before, and that ones work thus loses its originality.

A too extensive literature study in the early stages of your work may cause that both your original idea and research drive gets lost. In the world of chemistry, it is after all the results from the laboratory work that are the most important. The research work is still an important part of the work that cannot be neglected.

Some may find it useful to make a bibliography when the literature has been read and reviewed, so that important references will not be lost during the work. The literature list should include full bibliographic information, which is all that is necessary if the book or publication later will be presented in the bibliography in the report.

When you are writing the report, remember to write down from where the reference is taken. This work will be appreciated when you are about to finish your report work.

Planning and structuring your own experiments

It can often be difficult to schedule your labwork in detail in advance. Most people have experienced that laboratory work often takes a bit longer than expected, and that things may not go quite as planned. In addition, the results of an experiment may lead to new ideas and aspects that may cause the planned work to take new turns.

Despite this, good planning and structuring of the work to be performed in the laboratory is a prerequisite for the experiments to be successful. Chemicals and equipment must be available before the work commences and procedures must be reviewed carefully, and a risk assessment of the work must take place. It is also important to have formed an idea of how long an experiment might take.

Please remember that **the person performing the work itself is responsible** for making themselves aware of potential hazards of chemicals and equipment to be used. Safety data sheets for chemicals should be reviewed and all precautions must be taken before the experiments start. Remember that you are not only responsible for **your own**, but also **everyone else's** safety.

Writing a laboratory journal

Keeping a laboratory journal is an important part of the scientific work. In working life there are often heavy demands on you on keeping such records, so it is important to have established good routines early.

Use a notebook with good paper and sturdy binder that can withstand a little mess. A good rule is to write only on **one** side of each sheet. Then you have space to comment on the observations, make further calculations or editing the material at a later date. For later use of the notes, it is useful if your pages are dated.

Never trust your memory when it comes to experimental data and observations. Write down rather too much than too little. Ideas that pop up along the way should also be written down before they go into oblivion.

Procedures which you may have copied that are on loose sheets can conveniently be glued into the lab journal so you have everything in one place.

Do not forget to copy the important data during the work so you have a double copy in case you spill or otherwise lose irreplaceable results!

Journaling is either done in parallel with the experiment, or as soon as possible after successful trials. The experiments must be described in chronological order. Start out with a draft of the final report while the work is in progress. Do the illustrations, tables and graphs, at least working copies or drafts, and use them as a basis for the report.

A good rule is to write the journal with the thought that other people with similar professional background should be able to look up details in it and understand what has been done.

A journal entry must conain:
a) Date

b) Title. Intention with the experiment
c) Chemicals/solutions/equipment. For chemicals you write down the producer and catalog number (eg. lot nr., batch nr., molecular weight and other important dates). A copy of the chemical-labels can also be glued in the journal. If you mix your own solutions, this must be described in detail. All details about weight and volume and other relevant data must be indicated in an orderly manner. It should be written down how and where solutions are stored. New solutions must be labeled with the date of preperation. For equipment specify manufacturer, type and so on.
d) Execution. Applied methods must be described in detail when first used. Later, a reference to this description is sufficient.
e) Results. The results must be described as clear as possible. Raw data in the form of computer printouts, spectra, graphs etc. are glued in the journal. Larger amount of raw data can be stored in separate folders.

The structrure of the report

The report's core traditionally consists of the following main paragraphs: Introduction, Materials and Methods, Results and Discussion. This structure is so common that one should rarely deviate from it without careful consideration.

The reader of the report should **not** have to read the entire report to find out what is the main issue in the mentionned work. The potential reader should get an idea from the title wether he/she should spend time on it or not. The summary should descide the matter. If the report is relevant to the reader, the reader must first be informed about the purpose of the work and its place in relation to what is previously known about the topic. Through a logical orderly presentation of the original research material the reader will be lead up to the discussion of the presented data and the conclusions.

A major report will therefore include the following key paragraphs in this order:
- Title
- Preface (with location, date and signature)
- Table of contets
- Summary
- Introduction
- Materials and Methods
- Results
- Discussion
- Conclusions
- Litereature
- Attachments (list of attachements)

Please note that even though this division is used, it can often be more natural to use headlines that are more descriptibe of the chapter's actual content.

It may, in some cases, be natural to skip or merge some of the chapters. In other cases it will be better with a more detailed division, but the presentation should follow the structure shown above.

Title

The title should provide accurate information about the report's main topic. It should be **informative**, **specific** and **croncrete**.

Enzymatic analysis of blood glucose is a better title than *Bloodsugar ananysis*

An effective way to construct a title is to start with a significant word or phrase, and then follow up with a descriptive statement covering the report's theme:

Simultaneous adaption: A new technique for the study of metabolic pathways.

Another option is to summarize the study's problem or significant results in **one** sentence:

The bacterial formation of methane by the reduction of one-carbon compounds by molecular hydrogen.

If a species or taxonomic unit of an animal, plant or micro-organism mentioned in the title of a scientific thesis, the Latin name should be used, and must be in *italic*.

In regard to catalogisation and referencing, the titles should not begin with phrases such as. Studies of…, Contributions to…, Attempted…, Investigation of…, etc.

Preface

The preface may contain information on how the research were conducted, financed and executed.

If someone have given you ideas to the work, this should be mentionned. Everyone who has supported the work, wether in the form of assistance under the experimenrtal or written work, or lending of materials and equipment for experiments should be mentionned in the preface. This also goes for the person or persons who have led the work, with thanks to those who should be thanked (expresses with **moderate** use of adjectives). These persons should be mentionned with titles.

In a short article the acknowledgements can be placed at the end.

It is common that the preface is signed with place, date and signature.

Table of content

The table of contents indicate page numbers for all chapters and subsections. It oftens corresponds to the **structure** of the material and is very **useful for the reader**. This is a good reason to make it rich.

For small reports, it is commen to have the attachements and their titles in the table of content. For large reports with many attachements, it is often better to only specify the page number for a own list of attachments in the table of contents. A list of attachemnets is then placed in front of the attachments.

Summary

The summary is one of the most important pieces in a report. From reading the summary the reader should be able to descide whether the report is interresting for a particular purpose or not.

The summary should be **brief** and must include a brief summary of **what is performed** and **the results**. Avoid using tables and literature references in the summary. The summary should not be numbered, and should have an own page.

The summery differs from the Discussion and Conclusion in the way that you will only find the results and no futher discussion and/or evaluation of them.

A summary should, in other words, contain information about the purpose of the survey, a brief description of the problem, methods used, special observations, results and conclusions.

Do not be afraid to cut and paste text from the main report in the summary. The summary should, after all, not contain any new information, only a summary of all important points from the report.

Introduction

This is the first chapter in the report, and the numbering of chapter starts here – if at all used.

Always start the report with a confirmation of its subject. Describe the practical, technical or scientific interest of the study, define the problems and determine your hypotheses.

If possible, include an overview of what previous research have been done on the same field as your research. Neither go too far back in time nor give to much details on the previous reseach. But just enough so that the reader understands the background of the report and also its purpose. Preferably use your own words when quoting from the work of other reseachers. If you use direct quotes this must be marked with quotation marks ("…") in the text.

This chapter usually ends with a brief indication of what direction you have followed in your work.

Materials and methods

In scientific journals, this section may often be short. But project reports and thesis usually requires a more detailed description of the materials and methods that were used. **There should be a description of the experiments, with sufficient details for other researches to evaluate the work and reproduce the experiments**. Include all information about chemicals[1], solutions, equipement[2] and anything that were used. If micro-organisms have been used for tests, give a description of the tribes, and if possible their genetic background. Enter relevant data about the media, growing conditions, processing, etc. This section is usually written in passive past.

Present different methods for doing the research work, and **state why you have chosen a particular method**. If the theory behind it is important for the understanding of the method or the results, it is natural to describe this in the introduction.

Just as important as getting all the important details, is to avoid the unnecessary. **If you have used a well-known method or standard without modification, then use the methods name and refer to the original article where it is described**. If you have modified the method, the modification must be described.

If you have used software for simulation or statistical analysis of data, then this software and how it is used must be described. If you have written your own program code, it is natural to include this as an attachement.

A flow chart can be used to improve the overview in a long and complex research work.

[1] For chemicals: produser and catalog number.
[2] For equipement: name, serialnumer and produser

Results

The results should be presented in an **easy and understandable way**, and in a **natural and coherent** sequence. The presentation will provide the connection between the partial results. Inculde only data and illustrative material that is essential for your report.

The results presented should be processed material. Figures should either be presented in a **table** or **graphically**. This usually provides a good overview and is easy to understand.

a) Tables

Good tables are an instructive way to provide much information on a relatively small space. Use time on the design of the tables.

It should be possible in a single table to find values for all the variables that charachterize one single experiment. If the table gets so big that the report as a whole will be consideed as heavy reading – the table should be placed as an attachement and only a extract in the report. Sizes that have been constant during the entire research work should be listed above the table and not in the columns.

In any given table one should find headline, head and body. The headline (Table text) should inklude the table number and expalin what the table shows, as consice as possible, but at the same time so complete that the table can be understood **independent** of the text. Under the heading comes the head, with explanaitions of what is in each vertical column and the units used . All that is common to what is written in the columns should be written in the head or, if possible, in the header.

Like this:

Not:	Weight	**But:**	Weight (mg)
	3,7 mg		3,7
	4,9 mg		4,9

In the table itself, the body, one should use the repetition sign as seldom as posssible and never under numbers. To make it easier for the eye to follow the numbers across the rows from column to column, there should not be any gaps, *ie*. lack of numbers. One should therefore make it a rule that a zero (0) is written in the column to express and observation with zero as a result, while a short dash (-) denotes “no observation”. Spesific informations such as (-) meaning no observation should be included in a footnote below tha table.

b) Figures

Graphical representations of test results will often assist to make the report clearer. **Always ensure that the curves and shapes are supplied with sufficient text so that they can be be understood immidiately without a reading the report**. Be consistant with the numbers throughout the report (eg. not **fig.** one place and **Fig.** another place.)

When using graphical presentation one should be aware that independent variables are placed along the x-axis/abscisse. Also ensure that both the abscisse and the ordinant are provided with the correct dimentions. You can drwa some horizontal and vertical guidelines, since this helps the evaluation of the curves.

The essence of the figure must be presented clearly. Curves and diagrams should neither be overshadowed by too much text nor too many guides or large numbers.

If the figure is taken from another publication, the reference to the other publication must be included in the figure text.

Tables and figures should always be placed so that they can be studied while reading the report. What is really clear from the text should not be repeated in tables or figures. The same information should **not** be presented in **both** tables and figures. Symbols, labeling of axes and so on must be unambiguous.

The result section should ideally not contain background information, detailed descriptions of methods or discussions. Each experiment will still be preceded by one or two sentences explaininng why you made this particular experiment.

All tables and figures that appear under Results will be discussed and described consecutively in the text. This will assist the readers to understand what has been done and the data they have been presented to shows. The reader will from the text understand the experiments that are conducted **without having to refer to** the Materialts and methods chapter or to the appendices too much.

Feel free to highligt the main results with a brief comment on specific observations, but the discussion of the results will come in a separate chapter. Sometimes it may still be necessary to discuss a scorecard to justify the next experiment. The general rule is that one should avoid having to much repetion in the chapters Results and Discussion. One must try to find a balance so that both chapters are understandable and interesting to the reader. Sometimes it can be natural to write the results and discussion in a joint chapter.

Results may not be presented in a way that indicate more **accuracy** than the method implies. If possible, the accuracy is indicated in standard statistical terms. If results from a statistical analayss are shown, you must mention the statistical methods that have been used.

Do not omit important negative results. Time-consuming accidents during reseach and dead ends that have cost a lot of work to no use, may be important for the author, but there are nothing to publish unless your experiences may be usefull for others.

When a presentation of the results is to be evaluated, the following must be rembered:

1. Text in tables and figures should be so descriptive that they can be read without reading the continuous text. The Figure text is placed **below the figure** and the table text is in genereal placed **above the table**.

2. Data to be included in the appendix are:

- Table of measuerments that are processed futher
- Calibration curves
- Examples of routine calculations

3. Use references to appendices and the introduction so that it is easy to verify calculations and results.

4. Check that all results have resonalble values. Literature values can often found as a control on their own results

Use good time to write a good results chapter.

Discussion

The discussion is traditionally written as a separate chapter, but in some contexts it may be natural to write the results and discussion as one chapter, or with a separate discussion section where more overarching and cohesive relations are discussed.

The discussion will explain if the results support the current hypothesis and what the outcome is. Do the results give an answer to the questions that led to your research? What have you found that's new and what are the weaknesses in the data? Are there anything that should have been done differently, and what do you propose to do next to create more clarity?

In the discussion the results are to be discussed and put in relation to what is previously known, explanations of problems are to be found or proposed, and possible causual links should be pointed out. At the same time one should be careful not to go beond the material or the accuracy of what the methods allows. Nor should one take up disuccion of the major problems in a far broader scope than one’s own material has been able to shed light on.

Discuss briefly the logical consequesces of your results for practical applications or further studies. Suggestions for further work are always welcome.

Compare your results with previous observations and experiments. Do not forget your references by comparison with literature values. Include observations that do not correspond to your own. If the reason for the divergence is not known, it is enough to comment this briefly.

Do not construct too far-reaching hypothesis and be very carful to make explanations that are to firm. (Eg. write “The reason for this may be…” rather than “ the reason for this is…”.)

Conclusion

The conclusion should follow as a natural unifying part after the discussion. It is written at the same time as the summary and contains **only** a brief version of the conclusion that have been drawn under the research work. The conclusion should therefore **not** be a repetition of the summary, but the summary must naturally contain the main conclusions.

Literature and references

The literature list is sorted depending on the type of refernce used in the report (see below).

This list shall not appear as a numbered chapter.

I. The main parts of a complete reference to a **periodical publication** are:

a) Name of all the authors (Surname forst, followed by the first letter of their first name)

b) Year of publishing

c) The publication title

d) Name of journal (in italics) with volume number (in bold) followd by inclusive page numbers (first to last page) for the article. Note that the page numbers in the litterature list are only to show the scope of the thesis/article, not the page or pages that are of special interest. Be consistent if you choose to use abbreviations for journals.

II. The main parts of a complete reference to a **book** are:

a) Name of the all the authors (Surname forst, followed by the first letter of their first name)

b) Year of publishing

c) The book's title (in italics), edition nr.

d) name of publisher and place of publication

e) number of pages in the book

III. The main parts in a complete reference to an **internet adress** is:

a) Author/editor (last name first, the the first letter of the first name)

b) Year

c) Online title (in italics) [online]

d) Source: Organization or another responsible for the Internat adress

e) Available from: URL

f) date of download/page last visisted

Write “no date” if the electronic publishing date is not available. It may be hard to find the author, since it is often organizations/companies that publish information on the Internet, then specify the lowest organizational unit as a writer.

IV. The main parts of the referende to a **specific article or chapter with its own writers in an edited book**:

a) Name of the all the authors (Surname first, followed by the first letter of their first name)

b) Year of publishing

c) Article/chapter title

d) The book’s editor(s) followed by (red.) or (ed.)

e) The book’s title (in italics)

f) Name of publisher and location

g) Number of pages

V. in cases where it is necessary to refer to **the currently assigned laboratory project**, this is done by:

a) Labwork in subject…

b) Year

c) Name of the task

d) University and place

Examples:

Periodical publications:

Lipman, F. (1944), Enzymatic synthesis of acetylphosphate, *J. Biol. Chem*., **155**, 55-70. (Alternate: **155**:55-70)

Books:

Lehninger, A.L. (1971), *Biochemistry*, 2nd ed., Worth Publishers, New York, 245 pp.

Specific article/chapter with separate authors in an edited book:

Crane, R.K. (1962), Hexokinases and pentokinases. Boyer, P.D. (Ed.), *The enzymes*, 2nd ed., Academic Press, New York, p. 47-52.

Internet adress:

Holland, M. (1996), Harvard System [online]. Source: Bournemouth University. Available from: http://www.bournemoth.ad.uk/service-depts/lis/LIS_Pub/

harvardsyst.html [Downloaded 15. april 1996]

Note that there are **many ways** to write a bibliography. The most important thing is that you are always constistent. Check that **all** references in the text really stands in the bibliography and that there are no references in the list that do not appear in the text.

References to the literature **list in the continuous text** are mainly done in two ways: referral by number or referral by author name and year (Harvard system).

1) Referral by number

Every single book or publication of the list gets a number and any references in the text mentions only the number. The first book / publication as mentioned in the report are numbered as number 1, the second as number 2, etc. Literature list is thus not alphabetically ordered, but sorted by when the publication is mentioned in the report

The references in the printed text are often numbered with a specific font, places as superscript[7], put in brackets **(7)** or **[7]**. This method saves space, but have no other benefits. In contrast to the Harvard system (see below), the reader must refer to the literature list in order to find out what **(7)** stands for.

2) The Harvard System

Author's last name and year is placed in brackets behind the information that are taken from the book or article.

Examples:

In the following method luozym was absorbed to bentonite (Alderton and Fevold, 1945).

Kornberg (1999) claims that…

If there are two authours, both are mentionned. When there are **more** than two authors, it is wrong to mention them all. Here are only the first named author followed by *et al.* and the year as follows:

Alginate is a polysaccharide found naturally in brown algae (Alderton *et al*., 1945).

Or, like this:

Studies of Skjåk-Bræk *et al*. (1989) have shown that …

If it is, at the same place, reffered to several publications, the references are arranged chronologically with a semicolon between refferals:

These criteria can be met by the use of alginate from marine brown algae, or by enzymatic modification of alginate (Skjåk-Bræk and Martinsen, 1991; Skjåk-Bræk *et al*., 2000).

Note that the references in the text neither incluces first names nor titles, if it is not necessary to avoid confusion.

3) Other

As a general rule, you only refer to publications you have **read yourself**. If you need to refer to a publication that is **inaccessible** for you, you have to indicate that you have not read the original text that it is refered to. One then give the bibliographic data as completely as possible, adding in brackets one of these expresions:

(Not seen. Quoted by…) (Not seen, Quoted…) (As Cited by…)

The example:

Polesovsky (1951, quoted by DeLey 1964)

indicates that the information originally comes from Polesovsky, but that you have not had the opportunity to view the original article, and thus relied on DeLey's reproduction. Note that the same applies if you have only read a summery (abstract) of the article.

When quoting from an article on a **forreign language**, you must be sure tho mention in the text or in the bibliography if you are quoting from the original article, a translated version or a summary of the article.

Personal communications received by letter or verbally are not recognized in the litterature list, but should be mentionned in the text by using the abbreiviations pers.comm. Together with the name of person, title, year and company (if applicable).

Eg: Annual production of bioprotein at Tjeldbergodden in 2001 was 10 000 tonnes (production manager Ari magnussen, Norferm, 2001[pers.comm.]).

Appendix/Attachements

The data and informaton that the appendix contain are usually only of interest for those who want to control the work in detail, or maybe repeat the work.

In this part we will find the observation data, calculations, calibration curves and such to keep the report well arranged.

The appendix/attachemnets shoud contain all the original data and calculation exaples for each type of calculation that is performed. The attachments should be self explanatory. In other words, all attachements should have a title, table and figures must have a explaining text and, if necessary, explanatory comments. Calibration curves are placed in the attachmenst.

References to the attachemnest in the main report should be made both by attachement No. and page No. Please note that **all** attachements must be reffered to in the main report.

The style of the report

General

A **short**, yet **comprehensive** report, will generally be more clear, more concise and often more readable than one which is rich in words. The text must contain precisely those facts that are worth preserving for the future because they describe new observations of interest, or because they are necessary as a basis for conclusions. A writer must not include details only because he / she has had particularly great job with them. The author must ask themselves whether the facts are of interest and value to others and whether they mean anything for the main case in the report.

The desire to write short, should not make you to write in telegram style. It is uncomfortable to read, and will appear very unclear. And by all means - do not be so bound by the desire to write short that you kill any kind of personal style.

It is also important for the look and readability of that the sections are not too short, this will make the presentation appear chopped. But they must also not become be too long. An entire page that is not divided into sections seems so compact that the reader loses courage. Begin a new paragraph each time a new fact of the matter or a new way of thinking will be discussed. Proper use of tables and graphs can also be of help to make the report short and at the same time clearer.

With todays use of computers the author has great freedom of choice when it comes to selecting the **layout** of the report. The most important thing is that the report is clear and that the layout is completed so that it is easy to distinguish between main and sub-chapters.

Avoid using too many degrees of under numbered paragraphs. This is especially in concern to short reports.Then it is often enough to use descriptive headlines without numbering of the chapters. Make sure the header's content covers the essence of the corresponding text. Use a different font size and / or font for the headings for the various levels. The name of the main chapter can with advantage be placed as a header in the top right corner of each page, making it easier to navigate in the report.

Some specific language issues

Many have learned that one should avoid the use of pronoun first person singular (**I, me**) when writing a report. Usually it is best to avoid using these, but if one still select the use of **I**, this must be implemented consistently from the first page to the last.

There are several ways to avoid the word "**I**" on. The most commont is to resort to passive forms of the verb. Many authors, however, have a tendency to exaggerate the use of passive form. This is unfortunate; partly because the reader can come in doubt on who or what is the real subject.

Passive form can be used if it is irrelevant who performs the action. In the disription of an analytical method, for example, no matter who is adding 0.5 ml HCI. Here, passive form (… were added) or a verbal noun (the addition of…) may be appropriate.

Adjectives, adverbs, jargon

A good rule is to be moderate in the use of adjectives and adverb. **Very good**, for example, is not always better than **good**. Avoid using words **like extreme, fantastic, phenomenal, terrible, very** etc. and little words such as **enough, well, then, so** etc.

Be consistent in orthography. Do not for instance use both specialisation and specialization in the same report.

Obviously and **of course**, is very often unnecessary. The term **in fact** has rarely any feature that defends its place.

Be wary of phrases such as: regularly, from time to time, for several hours, etc. Set the time and dates and be as exact as possible.

As an example, we can construct a sentence that contains some of the "blemishes" as mentioned above:

> Because there are very many unmeasurable sources of error that probably can mean very much for the uncertainty in the results, it's probably not really quite right to spend so awful lot of time on a completely wasted, absolutely accurate calculation of standard deviation.

Or stripped:

> Because many other unmeasurable sources of error can mean a lot of uncertainty in the results, it is not appropriate to spend time on an exact calculation of standard deviation.

And slightly transformed:

> Many unmeasurable erros do not allow calculation of standard deviation.

Abbreveations

In a continuous text, titles should not be abbreviated. Use professor, senior engineer, *etc*.

Metrical measurments can be abbreviated when they come after a number.
For eksample: It was 3,5 mm long. But: Some meters higher up.

Common abbreviations:

No./ Nos.	**Number/numbers**
Ppm.	**Parts per milllion**
Cf	**Confer,** compare
Ca.	approximately
E.g	**Exempli gratia**, for example
Et al.	**et alii**, and other
Etc	**et cetera**
Ibid.	**ibidem**, at the same place
Id.	**idem**, the same

i.e.	**id est**, in other words
loc.cit	**loco citato**, on the given place
n. sp.	**nova species**, new art
P.	**pagina**, page
Op.cit	**opere citato**, in the refered publication
Sp.	**species**

These abbreviations are written in *italic*.

Their use is only appropriate in special circumstances in which brevity is at a premium, such as in footnotes. If you do use one, make sure you punctuate it correctly. Here is an example.

The recommended form is this:

> Several British universities were founded in the Victorian era; for example, the University of Manchester was established in 1851.

The following version is not wrong, but it is poor style:

> Several British universities were founded in the Victorian era; *e.g.*, the University of Manchester was established in 1851.

The abbreviation *ca.* `approximately' is properly used only in citing a date which is not known exactly, and then usually only if the date is given in parentheses:

> The famous Basque cemetery of Argiñeta in Elorrio (*ca.* ad 883) shows tombs with sun-discs but no crosses.
> Roger Bacon (*ca.* 12141294) was known as "the Admirable Doctor".

The golden rule, when it comes to the latin abbreviations is that you do not use them unless you are certain that you know their meaning, and how to use them properly. And if you choose to use them, be consistant.

Use of symbols

Symbols for physical units are written in lower case (with no period after) execept those that are derived from personal names: kg, mm, mg, atm, etc.

The sign for percentage , %, should only be used in connection with numbers, or if you have to take the space available in consideration. Do not write: “Expressed in %, this is…”. Do not use % over a coloumn in a table if there is space to write with letters.

Numbers and dates

Spell out single digit whole numbers. Use numerals for numbers greater that *nine*.

I used five different methods.
During the experiment I used 10 different solutions.

Always spell out simple fractions and use hyphens with them.

Only one-half of the colonies reacted. Not: Only ½ of the colonies reacted.

A mixed fraction can be expressed in figures unless it is the first word of a sentence.

We expect a 5 ½ percent increase.
Five and one-half percent was the maximum allowable interest.

The simplest way to express large numbers is the best. Round numbers are usually spelled out. Be careful to be consistant within a sentence.

You can earn from one million to five million dollars.
You can earn from $5 hundred to $5 million.

Write decimals in figures. Put a zero in front of a decimal unless the decimal itself begins with a zero.

The plant grew 0.79 of a foot in one year.
The plant grew only .07 of a foot this year because of the drought.

With numbers that have decimal points, use a comma only when the number has five or more digits before the decimal point. Place the comma in front of the third digit to the left of the decimal point. When writing out such numbers, use the comma where it would appear in the figure format. Use the word *and* where the decimal point appears in the figure format.

$15,768.13: Fifteen thousand, seven hundred sixty-eight dollars and thirteen cents
$1054.21: One thousand fifty-four dollars and twenty-one cents

For numbers with more than five digits, use a comma to divide the number in groups of three.

12,154 345,456 2345,567

Exceptions: page numbers, serial numbers, binary numbers, temperatures, acoustic frequencies, degrees of freedom, and numbers to the right of a decimal point.

When using dates:

The meeting is scheduled for June 30.
The meeting is scheduled for the 30th of June.
We have had tricks played on us on April 1.
The 1st of April puts some people on edge.

Write out a number if it begins a sentence.

Twenty-nine people won an award for helping their communities.
That 29 people won an award for helping their communities was fantastic!

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