Getting started with LaTeX on a Linux or Sun computer

http://www1.maths.leeds.ac.uk/LaTeX.

LaTeX is a "typesetting" language for mathematics. It is freeware.

To produce a document, there are three stages.

1. In any (ascii) text editor, you type the words and commands that tell the program how you want the document to appear.

   So, for example, you type `$\alpha^2$` to produce α^2.

   ➠ The dollar signs mean that LaTeX will interpret what comes between them as maths.

2. The document is then processed by the `LaTeX` command.

3. You can preview the output on screen; after you are happy that no further edits are necessary, you can print the final version.

In LaTeX, we don't see the output in its final form when it is being typed in the text editor. But the good news is that

- a huge number of symbols, not found in most word processing programs, are available;
- the typesetting is done with more precision;
- labelling (of references, sections, tables, equations, figures, ...) is automatic;
- the files are easily portable between different operating systems.

Contents

1 Using LaTeX for the first time

1. Create a directory called latex and move into it, by typing

   ```
   mkdir latex
   cd latex
   ```

2. Open an input file called hello.tex using an editor such as emacs and type the following

   ```
   \documentclass{article}
   \begin{document}
   Hello World
   \end{document}
   ```

   Almost everything you may care to typeset, from a few equations to a thesis, goes in place of `Hello World`.

   ➠ To start from a more sophisticated file, download http://www1.maths.leeds.ac.uk/LaTeX/sample2e.tex

3. Process your file, hello.tex, by typing
   `latex hello`
   Files called hello.dvi and hello.log will be created in your directory. You may see processing information on the screen, but there is no need to look at this unless it stops with a question mark (including a line number), which usually indicates a typing error. When this occurs, it is best to type a q (carry on *q*uietly) to let it do the best it can – then try to fix the error.

4. In order to preview your work, type
   `xdvi hello &`

5. You can now modify your file, save it, and then re-latex it to see how it changes. You can leave the xdvi window open; it will update automatically.

6. When you are ready to print, type
   `dvips hello`
   Your system manager may have set things up so that your output will print directly when you use this command. If not, a file hello.ps will have been created that you can print using
   `lpr hello.ps`

7. As an alternative to **3.-6.**, you can type
   `pdflatex hello`
   which creates the file hello.pdf that you can view by typing
   `acroread hello.pdf &`
   or
   `xpdf hello.pdf &`
   However, pdf viewers are not usually as good at automatically updating your changes. With acroread, you'll have to close and reopen! xpdf is better; just type Ctrl L.

➥ As mentioned above, LATEX may stop processing the file with a ?. In most instances, you should just type a q. Using the preview window together with the line number quoted should help you to find the problem. Common mistakes include a missing { or }, or a missing $.

2   Basic text formatting

- Moving to a new line in your input file makes no difference, but LATEX begins a new paragraph whenever you leave a whole line blank.

- You use the **curly** brackets {   and } to start and end blocks of text. For example

To typeset	*you type*
I am *very* interested in **maths**	`I am {\em very} interested in {\bf maths}`
Computers are FUN	`Computers are {\Large FUN}`
THE SOLAR CYCLE add more here	`{\sc The Solar Cycle} {\tt add more here}`

- Here are some more font sizes:

`\tiny`	tiny font	`\large`	large font	`\huge`	huge
`\scriptsize`	very small font	`\Large`	larger font		
`\footnotesize`	quite small font	`\LARGE`	very large	`\Huge`	largest
`\small`	small font				
`\normalsize`	normal font				

- If you want to leave a space, type \ ("backslash space"). If you want to force a linebreak, type \\ ("double backslash"). If you want to force a pagebreak, type `\newpage`.

- The layout below left is achieved as shown below right.

My Life

so far

The official version
20th January 2012

```
\begin{center}
    {\Large My Life}

    \fbox{so far}
    \vskip1cm
    \underline{The official
version}\\ \today
\end{center}
```

- Start sections with something like `\section{More results}`. Start subsections with something like `\subsection{`

  ⟹ Sometimes, you may not want a section number (just a title): use a star to suppress it.
  For example, `\section*{Acknowledgements}`.

2.1 Basic maths

So far we haven't seen anything that you can't do using WYSIWYG software. Now, a big advantage of LaTeX is in typesetting maths without using pulldown menus and the like.

- You use the characters $ and $ to start and end blocks of mathematics,
- or $$ and $$ to start and end blocks of mathematics to be displayed, centred, on a line.

The equation $E = mc^2$ is so famous that we should put it on a line:

$$E = mc^2.$$

```
The equation $E=mc^2$ is so famous that we should put it on a
line: $$E=mc^2.$$
```

Notice that LaTeX puts ordinary letters into italic font if they are in a maths block (or a maths "environment").

- If you want your equation to have a number that you can refer to automatically, use `\begin{equation}...\end{equation}`. Here is an example.

The ideal gas law is
$$PV = nRT. \tag{1}$$

In (1), T is the temperature in Kelvin.
```
The ideal gas law is
\begin{equation}
  PV = nRT.
\label{pvnrt}
\end{equation}
In (\ref{pvnrt}), $T$ is the temperature in Kelvin.
```

  ⟹ You can use `\[...\]` instead of `$$...$$` for displayed (but not numbered) equations.
- Here are some symbols used in mathematics:

α	`\alpha`	θ	`\theta`	ν	`\nu`	β	`\beta`	π	`\pi`
ϕ	`\phi`	γ	`\gamma`	η	`\eta`	ξ	`\xi`	δ	`\delta`
κ	`\kappa`	ρ	`\rho`	χ	`\chi`	ϵ	`\epsilon`	λ	`\lambda`
τ	`\tau`	ψ	`\psi`	μ	`\mu`	σ	`\sigma`	ζ	`\zeta`
ω	`\omega`	Γ	`\Gamma`	Δ	`\Delta`	Ω	`\Omega`	Θ	`\Theta`
$\sum$	`\sum`	$\int$	`\int`	$\oint$	`\oint`	$\le$	`\le`	$\ge$	`\ge`
$\ll$	`\ll`	$\gg$	`\gg`	$\pm$	`\pm`	$\mp$	`\mp`	$\in$	`\in`

  There are lots more at http://www.sunilpatel.co.uk/latexsymbols.html. Try them!
- Here are some examples of LaTeX commands in action.

Command	*Example*	*Output*
`\int`	`$$K\ge\int_0^{\infty}f(x)d x$$`	$K \geq \int_0^{\infty} f(x)dx$
`\mathbf{...}`	`$$\sum_i x_i=\mathbf{v}$$`	$\sum_i x_i = \mathbf{v}$
`\frac{...}{...}`	`$$\frac{\gamma_{ij}}{\sigma_{ij}}\ne \hbar$$`	$\frac{\gamma_{ij}}{\sigma_{ij}} \neq \hbar$
☞	Can you guess how to do this?	$\zeta(2) = \sum_{i=1}^{\infty} \frac{1}{i^2}.$

2.2 Basic references

Put the following before `\end{document}`:

`\begin{thebibliography}{99}`

```
\bibitem{gardiner}
 W.  Gardiner,
 {\em Handbook of stochastic methods}
 Springer, Berlin, 1990.

\bibitem{kandp}
 Peter E. Kloeden and Eckhard Platen,
 {\em Numerical Solution of Stochastic Differential Equations}
 Springer, Berlin, 1992.

\end{thebibliography}
```

Now in your text you can type something like

```
    There are many good numerical methods for SDEs \cite{kandp}.
```

LATEX will take care of the numbering of the references automatically, but you will have to process the file twice after you add a new reference (the first time, a file is created that is read the second time).

3   More text formatting

3.1   Lists

1. Lists are easy without numbering

- Here is an item
- Here is another

```
\begin{itemize}
\item
Here is an item
\item
Here is another
\end{itemize}
```

2. or with numbering.

    (a) Here is an item
    (b) Here is another

```
\begin{enumerate}
\item
Here is an item
\item
Here is another
\end{enumerate}
```

Lists can be nested. In fact, the above is a nested list! LATEXuses numbers (1., 2., . . .) then letters ((a),(b),. . .) then roman numerals ((i),(ii),. . .).

  ▷ You can override the standard choice of the list marker. The easiest way is to add the label you want by hand inside square brackets. e.g. \item[*].
  ▷ I changed the markers in this list using
    \renewcommand{\labelitemi}{$\triangleright$}.

3.2   Footnotes

```
\footnote{This will appear at the bottom of this page.}
``` [1]

3.3   Comments and special characters

Everything that's on a line after a % will not appear.

```
%This won't appear on the screen or in the printed version.
This will appear.
```

---

[1]This will appear at the bottom of this page.

If you want to see the percent sign, you have to do something else! To typeset

123 is 50% of 246

you type

```
123 is 50\% of 246
```

There are 10 special symbols like this, shown at right.

To get	You type
%	\%
#	\#
$	\$
&	\&
{ }	\{ \}
_	_\
~	\~{}
^	\^\
\	$\backslash$

3.4 Organise the document

Once you have a document with a few sections, put the following on a line just after `\begin{document}`
   `\tableofcontents`
   and process your document twice. Now let's have a title page. In the preamble, add

```
\title{Experiments in MAPS}
\author{Stu Dent}
```

Then add `\maketitle` after `\begin{document}`.

3.5 Defining your own commands

To save typing, you can put definitions in your latex file, just before the line `\begin{document}`. Below are some that I include in most files.

```
\newcommand{\eps}{\epsilon}
\newcommand{\delt}{\Delta t}
\newcommand{\intinf}{\int_{-\infty}^{\infty}}
\renewcommand{\d}{{\textrm d}}
\newcommand{\de}{differential equation}
\newcommand\ssqrt[1]{{\left(#1\right)^{\frac12}}}
```

   Now,
   - if I type `\eps`, it is exactly as if I had typed `\epsilon`.
   - if I type `$\intinf\ssqrt{2\pi}x \d x$`, I get $\int_{-\infty}^{\infty} (2\pi)^{\frac{1}{2}} x \mathrm{d}x$.

Note that the command `\ssqrt` takes an argument.

➡ If you put `\renewcommand{\thefootnote}{\fnsymbol{footnote}}` somewhere (preferably in the preamble) then footnotes look like this[†] and that [‡].

3.6 Tables

The table at right is typeset as shown below.

Assignment	Out	Due date	Cutoff
1	Mon 20 Jan	Thu 2 Feb	Fri 3 Feb
2	Mon 27 Jan	Thu 9 Feb	Fri 10 Feb
3	Mon 6 Feb	Thu 16 Feb	Fri 17 Feb

```
\begin{tabular}{|c||l|ll|}
\hline
Assignment  &Out & Due date & Cutoff\\
\hline
1 & Mon 20 Jan & Thu 2 Feb & Fri 3 Feb\\
2 & Mon 27 Jan & Thu 9 Feb & Fri 10 Feb\\
3 & Mon 6 Feb & Thu 16 Feb & Fri 17 Feb\\
\hline
\end{tabular}
```

[†]this

[‡]this symbol

4   Figures

Suppose that a file called nicefig.ps and is in your latex directory. Make an input file like this

```
\documentclass{article}
\usepackage{graphicx}
\begin{document}
Welcome to a nice document.

\begin{figure}[h]
 \centerline{\includegraphics[width=12cm]{nicefig.ps}}
 \caption{This is my picture}
 \label{nice}
\end{figure}

This document contains a picture. It is called Figure \ref{nice}.
\end{document}
```

We have sized the figure by typing [width=12cm], and place it using h for here. The other options are [b]ottom [t]op and [p]age.

So long as you can get your figures in PostScript (.ps or .eps), it does not matter where they came from. They can be resized and repositioned. (For example, in MAPLE use "export to EPS" or "print to file".)

4.1   pdflatex

Nowadays it is often important to create a .pdf version of your document. You can do this directly using the Linux command

```
pdflatex hello.tex
```

However, if you have figures in your document, you need a .pdf version or a .jpg version of them. Here is an example

```
\documentclass[a4,10pt]{article}
\usepackage{graphicx}
\begin{document}

\title{Ivory Tower}
\author{A. Student}
\maketitle

\section*{Introduction}

The most famous building at the University of Leeds is the
Parkinson building. A drawing of its tower is \ref{logo}.
\begin{figure}[hbt]
\includegraphics[width=16.25cm]{logo.jpg}
\caption{University of Leeds logo}
\label{logo}
\end{figure}
\end{document}
```

This file is at http://maps.leeds.ac.uk/LaTeX/ivory.tex.
(You will also need the file http://maps.leeds.ac.uk/LaTeX/logo.jpg.

5   Using Packages

We have just seen a package that we need to load to insert a figure. There are lots more that you might use. In each case, you need to insert a line \usepackage{something} after \documentclass{article} and before \begin{document}. (This part of the input file is called the "preamble".)

5.1 More Maths

`\usepackage{amsmath}`

This lets you do lots of things with formatting equations.

- LaTeX automatically puts everything in a maths environment in italics. But sometimes you want to include normal text. Here's how (you need to put the space before and after the text in by hand).

$$x \le y \quad \text{for all} \quad y \in Q. \tag{2}$$

```
\begin{equation}
   x\le y  \quad \text{for all} \quad y \in Q.
\end{equation}
```

- Sometimes an equation is too long to fit on one line.

$$
\begin{aligned}
p_{n+1} = \frac{1}{1+\frac12 k_1+\frac13 k_2}\Big((1-\frac12 k_1 + \frac14 k_4)p_n \\
+ \frac18\Delta t(f(Y_1) + 2f(Y_2) + 2f(Y_3) + 2f(Y_4) + f(Y_5)) + \epsilon\Delta W\Big).
\end{aligned}
\tag{3}
$$

In (3), the first line is left-aligned and the second is right-aligned.

```
\begin{multline}
   p_{n+1} = \frac1{1+\frac12k_1+\frac13k_2}
   \Big((1-\frac12k_1+\frac14k_4)p_n \\
   + \frac18\Delta t  (f(Y_1) + 2f(Y_2) + 2f(Y_3) + 2f(Y_4) + f(Y_5))
   + \epsilon\Delta W\Big).
\label{broken}
\end{multline}
In \eqref{broken}, the first line is left-aligned and the second
is right-aligned.
```

- A multiline aligned environment with every line numbered is `\begin{align}...\end{align}`.

- A multiline aligned environment with no numbers at all is `\begin{align*}...\end{align*}`.

- Now for another common type of equation, with cases.

$$f(x) = \begin{cases} 0 & x \le 0 \\ x^2 & x > 0. \end{cases} \tag{4}$$

```
\begin{equation}
 f(x) =
 \begin{cases}
    0 & x \le 0\\[1ex]
    x^2 & x > 0.
 \end{cases}
\end{equation}
```

- To **align** multiline equations and give the whole group one number, use the `{split}` environment inside an `{equation}`. The symbol & is used to align all the equals signs.

$$\begin{aligned}
W(t) &= y_1(t)y_2'(t) - y_2(t)y_1'(t) \\
&= \mathrm{e}^{-2t}(1-2t)\mathrm{e}^{-2t} - t\mathrm{e}^{-2t}(-2)\mathrm{e}^{-2t} \\
&= \mathrm{e}^{-4t}.
\end{aligned} \tag{5}$$

The quantity calculated in (5), known as the Wronskian, is positive.

```
\begin{equation}
 \begin{split}
   W(t) &= y_1(t)y'_2(t) - y_2(t)y'_1(t)\\
        &= {\rm e}^{-2t}(1-2t){\rm e}^{-2t}
         -t{\rm e}^{-2t}(-2){\rm e}^{-2t}\\
        &= {\rm e}^{-4t}.
 \end{split}
\label{wron}
\end{equation}
The quantity calculated in \eqref{wron}, known as the Wronskian,
is positive.
```

- There is a useful wrapper called `subequations`.

$$K\frac{N_2 - n_{\mathrm{p}}}{n_{\mathrm{p}}} = M^* \tag{6a}$$

$$\frac{N_1 - n_{\mathrm{e}}}{N_2 - n_{\mathrm{p}}} = \frac{k_6}{k_3} \tag{6b}$$

```
\begin{subequations}
\begin{align}
   K\frac{N_2-n_{\rm p}}{n_{\rm p}} &= M^*\\
   \frac{N_1-n_{\rm e}}{N_2-n_{\rm p}} &= \frac{k_6}{k_3}
\end{align}
\label{av}
\end{subequations}
```

- Finally, you can modify the default equation number to include the section number, remove it altogether or choose it by hand using `\tag`.

$$\begin{aligned}
x + y - z &= 2 \\
x - y + z &= 0
\end{aligned} \tag{5.7}$$

and by hypothesis

$$x + y + z = 1. \tag{H}$$

```
\numberwithin{equation}{section}
\begin{align}
x+y-z &=  2\\
x-y+z &=  0\notag\\
\intertext{and by hypothesis}
x+y+z &=  1.\tag{H}
\end{align}
```

5.2 Better lists

With \usepackage{enumerate}, you can change the format of the numbering by hand:

```
\begin{enumerate}[(a)]
\item ...  ...
\end{enumerate}
```

makes a list whose labels run (a), (b), (c), ...; while

```
\begin{enumerate}[I/]
\item ...  ...
\end{enumerate}
```

starts a list whose labels run I/, II/, III/, ...

With \usepackage{paralist}, you can have lists with less space between items, for example: \begin{compactitem} instead of \begin{itemize}. There is also compactenum and compactdesc.

5.3 Colours

To use colours, you need \usepackage{color}. Here we go!

```
\textcolor{red}{Here is some coloured text},
\fcolorbox{blue}{green}{some with a frame}
\colorbox{yellow}{and some with a coloured background}.
```

Here is some coloured text, some with a frame and some with a coloured background .

5.4 Making documents to your taste

- You control things for the whole document right at the first line: \documentclass[11pt]{article}. Try \documentclass[12pt,twocolumn]{article} or \documentclass[]{report}. If you are using report class, the command \chapter{Introduction} starts a new chapter. As always, LaTeX takes care of the numbering, tables of contents and so on automatically.

- You can remove the page numbers with
\pagestyle{empty}
or move them to the top (with more information)
\pagestyle{headings}

- Try this for a fancier pagestyle:

```
\usepackage{fancyheadings}
 \lhead[\today]{}
 \rhead[]{\today}
 \rfoot[\bf Continued ...]{\bf Continued ...}
 \pagestyle{fancy}
```

(...and put \rfoot[]{} just before \end{document}.

- You might prefer this

```
\usepackage{lastpage}
\cfoot{\thepage\ of \pageref{LastPage}}
```

- For double spacing, put this in the preamble:

```
\usepackage{setspace}
\doublespacing
```

- For different fonts, try one of these in the preamble:

```
\usepackage{bookman}
\usepackage{chancery}
\usepackage{charter}
\usepackage{newcent}
\usepackage{palatino}
\usepackage{times}
```

5.5   Squeezing more in

To get more text on the page, try

```
\usepackage[vmargin=25mm,hmargin=15mm]{geometry}
```
in the preamble. To make the section titles use less space, try
```
\usepackage[compact]{titlesec}.
```
If you are using the package `graphicx`, you can make a part of the document smaller (or bigger), as follows:
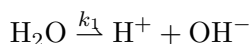
```
\scalebox{0.9}{
...
}
```

5.6   Chemical reactions

The amsmath and amssymb packages have quite a lot of arrows and symbols useful for Chemistry. For example

$$0 \to A \xrightarrow{f} B \xrightarrow[g]{h} C \rightleftharpoons 0$$

$$H_2O \xrightleftharpoons{k_1} H^+ + OH^-$$

is typeset as follows:

```
\[
   0 \xrightarrow{} A \xrightarrow{f} B\xrightarrow[g]{h} C \rightleftharpoons 0
\]
\[
  {\rm H}_2{\rm O} \overset{k_1}{\rightharpoonup}
  {\rm H}^+ + {\rm OH}^-
\]
```
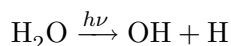
If you're tired of taking so long to write H_2O, the mhchem package could be for you! You can download it yourself and put it in the same directory as your .tex files. Now, with `\usepackage[version=3]{mhchem}` in the preamble, you just type

```
$$\cee{H2O ->[h\nu] OH + H } $$
```
to get

$$H_2O \xrightarrow{h\nu} OH + H$$

For some more examples, written by Roisin Commane, look at the web page.

5.7   Multilingual typesetting

LaTeX works in lots of languages. To enable some of them, you need this:

```
\usepackage[bahasa,turkish,german,greek,american,spanish,british]{babel}
```

The default language for the document is the last one before the]. It affects lots of things, such as the name of Figures. Let's just see how it works with the command `\today`. In british, it is 20th January 2012.

If I type	I get
\selectlanguage{american}\today	January 20, 2012
\selectlanguage{bahasa}\today	20 Januari 2012
\selectlanguage{german}\today	20. Januar 2012
\selectlanguage{greek}\today	20 Ιανουαρίου 2012
\selectlanguage{turkish}\today	20 Ocak 2012

6   Advanced references: BIBTEX

When you use BIBTEX you store your list of references in a separate file. In your input file, you still type something like `\cite{kandp}`. But at the end of the input file, instead of the list of references, you just need to type two lines:

```
\bibliographystyle{unsrt}
\bibliography{bmc}
```

There are two advantages. Firstly you can use the same list of references, stored in a file called bmc.bib in this example, for many different documents (papers, thesis, presentations,...). LATEX picks out the ones that are cited and puts them in an order and in a format determined, in this case, by `unsrt`. Secondly, there are lots of bibliography styles, and you control the style of all the references, and the order they appear in (by order of citation or alphabetical), simply by changing one word in your input file! Try `alpha`, `abbrv apalike` or `plain` instead of `unsrt`. Many journals have their own style that you can use, just by changing this one word. LATEXwill take care of including only the references you cite.

You need to process you file with BIBTEX and well as LATEX. It's best to click each one in turn several times, starting with LATEX, to make sure all the relevant files have been created and read. Your BiBTeX file, in this case called BMC.BIB, has entries that look like this:

```
@book{kandp,
author={Peter E. Kloeden and Eckhard Platen},
title={Numerical Solution of Stochastic Differential Equations},
publisher={Springer},
place={Berlin},
year=1992
}
@article{dhsiamrev,
author={Desmond J. Higham},
title={An Algorithmic Introduction to Numerical Simulation of
Stochastic Differential Equations},
journal={SIAM Review},
volume={43},
pages={525--546},
year=2001,
}
```

Creating your archive, even if you have to do so from scratch, is easy thanks to http://scholar.google.co.uk. In the scholar preferences, choose the last option Show links to import citations into BiBTeX.

6.1   natbib

If, instead of your citations appearing in the text as

The results of recent studies [3,4,5,9] suggest that
you prefer
The results of recent studies [3-5,9] suggest that
or
The results of recent studies[3−5,9] suggest that
or even
The results of recent studies [Jones 1990,1991,1992; James 1994] suggest that
then `natbib` is for you! Depending in what is installed on the system, there are lots of journal styles available. Try `\bibliographystyle{unsrt}`. Put `\usepackage[sort&compress,super]{natbib}` in your preamble to get the second-to-last format. To get the last, you need `\usepackage{natbib}` in the preamble, and `\citep` instead of `\cite` in the text.

7   Using Linux setup and commands with LATEX

7.1   a2ps

If you want to save paper by printing two pages per side, just type `a2ps hello.tex`

7.2 gnuplot

Using gnuplot, you can create figures in LaTeX. Here is an example

```
set term latex
set out 'sine.tex'
set label '$\sum_{i=1}^{\infty}\nu_i$'
plot[-10:10]sin(x)
```

In your input file, just type `input sine.tex`.

7.3 BiBTeX: Keeping a single list of references for all your LaTeX documents.

- Create a directory of the called Bibliography:
  `mkdir ~/Bibliography`
- Include the following line in the file .cshrc that you will find in your home directory:
  `setenv BIBINPUTS .:$HOME/Bibliography//:`
- In the directory Bibliography, make a file called, say, AllRefs.bib containing entries like these two:
  ```
  @book{kandp,
  author={Peter E. Kloeden and Eckhard Platen},
  title={Numerical Solution of Stochastic Differential Equations},
  publisher={Springer},
  place={Berlin},
  year=1992
  }
  @article{hllm,
      author={Salman Habib and Katja Lindenberg and Grant Lythe
        and Carmen {Molina-Par\''\i s}},
      journal ={J. Chem. Phys.},
      title = {Diffusion-limited reaction in one dimension}
      volume = {115},
      pages = {73-89},
      year = {2001}
  }
  ```
- Instead of the list of references, just put the following before `\end{document}`:
  `\bibliographystyle{unsrt}`
  `\bibliography{AllRefs}`
  Anywhere else in the document, just use `\cite{kandp}` or `\cite{hllm}`.

LaTeXwill take care of including only the references you cite. The order (by order of citation or alphabetical) and format that they appear in depend on the choice of `\bibliographystyle`.

You need to process you file with BIBTEX and well as LATEX. It's best to run each one in turn several times, starting with LATEX, to make sure all the relevant files have been created and read.

There are lots of bibliography styles, and you can change in a flash by changing one word in your input file! Try `alpha`, `abbrv apalike` or `plain` instead of `unsrt`. Many journals have their own style that you can use, just by changing this one word in your input file!

7.4 Storing style files so that you can use them from any directory

1. Create a subdirectory of the latex directory called INPUTS:
   `cd ~/latex`
   `mkdir INPUTS`
2. Include the following line in the file .cshrc that you will find in your home directory:
   `setenv TEXINPUTS .:$HOME/latex/INPUTS//:`
   Now you can store figures or style files that you might want to use from any part of your filespace. For example, I keep the following files in my directory latex/INPUTS:
   ```
   elsart3.cls     revtex4.cls  revtex.sty    siam10.clo
   elsart.cls      revtex4.ins  10pt.rtx      siamltex.sty
   elsart-num.bst  revsymb.sty  siamltex.cls  siamdoc.tex
   ```
   The first line of the latex file for an article submitted to a SIAM journal is
   `\documentclass[]{siamltex}`. The first line of the latex file for an article submitted to an Elsevier journal

is `\documentclass[]{elsart}`. The first line of the latex file for an article submitted to a Physical Review journal is `\documentclass[twocolumn]{revtex4}`.

7.5 redoing Figures

You can convert Figures from one format to another using the command CONVERT:

- `convert logo.jpg logo.eps`
- `convert logo.jpg logo.gif`
- `epstopdf nicefig.eps`

➠ A Linux program for manipulating images is GIMP.

8 More things to try

- `\begin{flushright}`
  `The way this text comes out might seem strange to you, unless you happen to`
  `like white space to the left of your text.`
  `\end{flushright}`

- To temporarily get around LATEX's way of formatting things, you can use `\verb!...!` in a line. For blocks of code, use

  `\begin{verbatim}...\end{verbatim}`.

  Everything inside the environment, including line breaks, appears just as you type it. We used both a lot in this document. You might use it to include a program printout in a LATEX document.

- Put the following in the preamble

  `\hyphenation{fortran,er-go-no-mic}`

  to indicate that the word "fortran" should not be broken across a line (hyphenated) and to indicate where the word "ergonomic" can be broken.

- Here is another table example.

	Disease	
Exposure	Yes	No
Yes	a	b
No	c	d

Table 1: A table with formatting

```
\begin{table}[!h] \centering
  \begin{tabular}{lcc}
    \hline
    &\multicolumn{2}{c}{Disease}\\
    \cline{2-3}    Exposure& Yes & No\\
    \hline
    Yes     & $a$ & $b$\\
    No      & $c$ & $d$\\
    \hline
  \end{tabular}
  \caption{A table with formatting}
  \label{tab:better}
\end{table}
```

- We are on page 13; the first displayed equation was on page 3.

  `We are on page \pageref{tab:better}; the first displayed equation was on page \pageref{pvnrt}.`

- With `\usepackage{varioref}`, type `\vref{results}` instead of `\ref{results}`.

- To get a multicolumn table of contents:

```
\usepackage{multicol}
\addtocontents{toc}{\protect\begin{multicols}{2}}
```

9   More Help

- On-line manuals and more links are at http://www1.maths.leeds.ac.uk/LaTeX.
  Email latex@maths.leeds.ac.uk with any specific questions.
- The linux command info latex will give you lots of help pages.
- The most popular book is *LATEX: a document preparation system*, by Leslie Lamport.
- A short book with a sample article and sample report is *Learning LATEX* by David F. Griffiths and Desmond J. Higham.
- A more advanced book is *The LATEX Companion* by Goosens, Mittlebach and Samarin.
- Use Google!

END