Mathematical Typesetting

Inline equations can be inserted with $ 2+2=4 $

$ \cos(\theta) $

A single line equation can be inserted with

```
\begin{equation}
    V = \frac{d\epsilon}{dk}.
\end{equation}
```

$$V = \frac{d\epsilon}{dk}$$

\frac{ }{ } creates a fraction.

numerator ↑ denominator ↑

If our equation runs over several lines we can use

```
\begin{multline}
    V_{\rm G} \\ = 6
\end{multline}
```

$$V_{G} = 6$$

V_{\rm G}

creates a subscript ↑ ↖ what is inside { } will be in roman script

```
\begin{align}
    V &= 6 \\
\epsilon &= 3 \\
    \pi &\approx 3.14 .
\end{align}
```

$$V = 6$$
$$\epsilon = 3$$
$$\pi \approx 3.14$$

\sim	$\sim$	\neq	$\neq$	\gg	$\gg$
\equiv	$\equiv$	\ll	$\ll$	\sqrt{..}	$\sqrt{\cdots}$

Superscripts can be created using for example f^2 this will create f^2. To have a longer chain in the superscript we can use f^{101} which will give f^{101}.

We can nest all of them repeatedly, but we should be careful with the brackets.

For example

```
\begin{equation}

    2^{\frac{V_{n^3}}{6^{j}}\pi}

\end{equation}
```

which creates $2^{\frac{V_{n^3}}{6^{j}}\pi}$

Useful Commands

To break a line

\\ or \newline

To start a new page

\newpage

Quotation marks can be added like the following

``Opens the 'quotation' and to end it.''

Latex knows four types of dash.

-	son-in-law	hyphen
--	12--14	en-dash
---	form of punctuation	em-dash
-2	-2	minus sign

To create a tilde use \~{}

Ellipses ... \ldots

International language support is in extra package)

\usepackage[language]{babel}

this will change the automatic text strings

Emphasis :

```
\underline{this is underlined}
\emph{text}
\bf{bold text}
```

Figures

```
\usepackage{graphicx}                    (in the preamble)

\includegraphics[key=value,...]{file}
```

For keys we can use

- height
- width
- angle (counterclockwise rotation)
- scale

For example

```
\includegraphics[width=0.8\textwidth]{file.pdf}
\caption{...}
\label{fig1}
```