A very short guide to beginning LaTeX

The material preceding the begin-document command (in the source file) is the "preamble". There must be a preamble. You should be able to use this one for most ordinary purposes.

Type your text.

Leave a blank line to get a new paragraph.

1. This heading is how to begin a section with a heading

Here is what math looks like (it's called math mode): $\sum_{i=1}^{n} x_i^3 = (\frac{n(n+1)}{2})^2$. Or, if you prefer to display it (also called math mode),

$$\sum_{i=1}^{n} x_i^3 = \left(\frac{n(n+1)}{2}\right)^2.$$

Math is enclosed in \$...\$ or for display in \$\$$\cdots$\$\$. Spaces inside math mode are ignored. Spaces outside math mode are not ignored but multiple spaces are collapsed to one. Notice the `\ldots` or `\cdots` commands for low or centered dots. Also `\cdot` for a single dot, as in $x \cdot y$. Some things (mostly math things, like subscripts x_i or superscripts x^i) can only appear in math mode, others only in text mode.

(The `\left` and `\right` LaTeX commands are optional. They are used when you need a bigger size for bracketing.)

`\bigskip` skips one line. There are also `\medskip` and `\smallskip`. You'll note that LaTeX commands begin with a backslash: \.

1.1. **Enumerate.** (Illustration of subsection.)

The enumerate environment gives automatic sequential numbering or lettering:

(1) First item (numbered).
(2) Second item (numbered).
    (a) Sublist item.
    (b) Sublist item
(3) More items?

Finally, at the end, there must be an end-document command (in the source file).

1.2. **Declarations.**

Declarations are things like Theorem, Example, Lemma, Definition. These were defined in the preamble (top of the file) so you can use them. Here is the structure (see the .tex file):

Theorem 1. *Write the statement of your theorem here. For instance: $x = y^2$ if the Moon is made of green cheese.*

Proof. Write your proof here.

Assume the Moon is made of green cheese. Blah blah $\sin(e^{2y+1})$ and therefore $x = y^2$. □

Notice how I got a multisymbol exponent. I used braces: $\{2y + 1\}$. The braces are LaTeX's way of making a single object. If you enclose something in braces, it becomes a single object for subscripts, superscripts, and anything else. A more complicated example: $\sin_{e^{2y+1}}$ (though if you have this notation with sin, something is strange!).

LaTex uses the following brackets: ( ), [ ], and for actual braces { } see the .tex file.