

Chapter 3

[This chapter is titled “Carrying On” which doesn’t really describe what’s in the chapter, and the information below doesn’t belong to any section, it’s just presented with no preamble at the beginning of the chapter. But I found it interesting ...]

1 Modes

As \TeX processes your input text, it is always in one of three modes: paragraph mode, math mode, or left-to-right mode (called LR mode for short)¹.

- Paragraph mode is \TeX ’s normal mode—the one it’s in when processing ordinary text. In paragraph mode, \TeX regards your input as a sequence of words and sentences to be broken into lines, paragraphs, and pages.
- \TeX is in math mode when it’s generating a mathematical formula. More precisely, it enters math mode upon encountering a command like `$` or `\(` or `\[` or `\begin{equation}` that begins a mathematical formula, and it leaves math mode after finding the corresponding command that ends the formula. When \TeX is in math mode it considers letters in the input file to be mathematical symbols and ignores any space characters between them—e.g. *is* would be treated as the product of *i* and *s*.
- In LR mode, as in paragraph mode, \TeX considers your input to be a string of words with spaces between them. However, unlike paragraph mode, \TeX produces output that keeps going from left to right; it never starts a new line in LR mode. The `\mbox` command (Section 2.2.1) causes \TeX to process its argument in LR mode, which is what prevents the argument from being broken across lines.

Different modes can be nested within one another as seen, for example, when you put an `\mbox` command inside a mathematical formula.

¹Paragraph mode corresponds to the vertical and ordinary horizontal modes in *The \TeX book*, and LR mode is called restricted horizontal mode there. \LaTeX also has a restricted form of LR mode called picture mode that is described in Section 7.1.