HUMBOLDT-UNIVERSITÄT ZU BERLIN

LaTeX for Linguists

LaTeX 2: Math mode & new commands

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Contents

Math mode 1

- LaTeX has a special mode for **formulae**.
- Text is in **italics**, **blanks** and **line breaks** are **ignored**.
- With the command `\textrm{ }` inside the math mode, text in upright mode with blanks can be used.

```
$You shouldn't use text in math mode.$

$You shouldn't use \textrm{ text in math } mode.$
```

$You shouldn't use text in math mode.$

$You shouldn't use \textrm{ text in math } mode.$

Math environments

Two different math environments can be used for the math mode:

- for **inline** formulae: `$ test test $`

```
If $2^2+\sqrt{2}=c^4$, what is the value of $c$?
```

If $2^2 + \sqrt{2} = c^4$, what is the value of c?

- **display** style (*math environment* in narrow sense): `\[ ... \]`

```
If $2^2+\sqrt{2}=c^4$, what is the value of $c$?
```

If

$$2^2 + \sqrt{2} = c^4$$

, what is the value of c?

Equation environment

For **numbered equations**: `equation` environment

```
\begin{equation}
\label{eq:FirstEq}
\lim_{n \to \infty}
\sum_{k=1}^n \frac{1}{k^2}
= \frac{\pi^2}{6}
\end{equation}
```

$$\lim_{n \to \infty} \sum_{k=1}^{n} \frac{1}{k^2} = \frac{\pi^2}{6} \tag{1}$$

For **cross references** to numbered equations `\eqref{ }` can be used.

```
see \eqref{eq:FirstEq}

see \ref{eq:FirstEq}
```

see (1)
see 1

Math packages

Some symbols can be used only when specific math packages are loaded.

Math packages from the American Mathematical Society (AMS)

```
\usepackage{amsmath}
\usepackage{amsfonts}
\usepackage{amssymb}
\usepackage{amstext}
\usepackage{mathrsfs}
```

Customizing your commands

You can create your own commands!

```
$\langle e, t \rangle$

$\langle \langle e,t \rangle , \langle
\langle e,t \rangle ,t \rangle \rangle$
```

$\langle e, t \rangle$

$\langle \langle e, t \rangle, \langle \langle e, t \rangle, t \rangle \rangle$

Defining a command with **one argument** (for semantic types):

```
\newcommand{\type}[1]{\langle #1 \rangle}
```

The argument of the new command will be in angled brackets:

```
$\type{e,t}$

$\type{\typem{e,t},\typem{\typem{e,t},t}}$
```

$\langle e, t \rangle$

$\langle \langle e, t \rangle, \langle \langle e, t \rangle, t \rangle \rangle$

`\typem{ }` can be embedded in further `\typem{ }` commands!

Defining a command with **one argument** (for graphemes):

```
\newcommand{\ab}[1]{$\langle$#1$\rangle$}
```

The argument of the new command will be in angled brackets, but not in math mode:

```
\ab{buying a house}
```

(2) a. ⟨buying a house⟩ [mit `ab`]

b. ⟨*buyingahouse*⟩ [mit `typem`]

`\ab{ }` cannot embed further `\ab{ }` commands!

Defining a command **without arguments** (for abbreviations):

```
\newcommand{\ra}{$\rightarrow$}

P \ra\ Q
```

$P \rightarrow Q$

Defining a command with **more than one argument**:

```
\newcommand{\citegen}[3]{#1's #2 (#3)}

\citegen{Abney}{dissertation}{1987} is considered a milestone in NP Syntax.
```

Abney's dissertation (1987) is considered a milestone in NP Syntax.

Exercise

Go to
`https://github.com/langsci/latex4linguists/blob/master/1-2.md`
and follow the instructions of the **five blocks** in your `.tex` file.

Quellen I

- Grafik: File Extensions – xkcd, A webcomic of romance, sarcasm, math, and language
  `https://xkcd.com/1301/`
  [Zugriff: 10.04.2017]
- Link: Akzente und Sonderzeichen in LaTeX.
  `https://de.wikibooks.org/wiki/LaTeX/_Akzente_und_Sonderzeichen`
  [Zugriff: 10.10.2017]
- Link: LaTeX/Special Characters.
  `https://en.wikibooks.org/wiki/LaTeX/Special_Characters`
  [Zugriff: 02.01.2019]
- Link: CTAN – The Comprehensive TeX Archive Network .
  `http://www.ctan.org/`
  [Zugriff: 02.01.2019]
- Software: `MiKTeX`
  `https://miktex.org/`
  [Zugriff: 10.04.2017]
- Software: `TeXstudio`
  `https://www.texstudio.org/`
  [Zugriff: 10.04.2017]

Literatur I

Freitag, C. and A. Machicao y Priemer (2015). LaTeX-Einführung für Linguisten. Manuskript.

Knuth, D. E. (1986). *The TEXbook*. Boston: Addison-Wesley.

Kopka, H. (1994). *LATEX: Einführung*, Volume 1. Bonn: Addison-Wesley.

Machicao y Priemer, A. (2018). Hinweise für Seminararbeiten. Manuskript.

Machicao y Priemer, A. and R. Kerkhof (2016). LaTeX-Einführung für Linguisten – Slides. Presentation at the 7th linguistischer Methodenworkshop in the Humboldt-Universität zu Berlin – 22–24 February 2016.