

# Session 2. Text and Math

Digital Skills for Research

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## 1 Explore the interface of your desktop T<sub>E</sub>X editor

- line numbers are useful for fixing errors
- use the toolbar to insert typical commands, if you prefer

## 2 Text formatting

### 2.1 Languages

International language support

```
\usepackage[T1, T2A]{fontenc}  
\usepackage[french, russian, main=english]{babel}
```

**T1** encoding for Latin script

**T2A** encoding for Cyrillic script

- You might want to install languages to your local T<sub>E</sub>X distribution with  
`sudo apt install texlive-lang-polish`
- You might need to specifically import fonts for other languages.
- NB! main (or last one) in `\usepackage[french, russian, main=english]{babel}` is the language for automatic structural elements (e.g. Contents)

- In some templates short text snippets in non-main language are inserted with `\foreignlanguage{spanish}{}`.

Examples in Spanish and Russian:

Sección Introductoria

Спасибо.

Sección Introductoria Спасибо.

## 2.2 Fonts and colours

**font style** `roman` (serif), `bold`, `italics`, `typewriter`, `sans serif`, `small caps` respectively in `\textrm`, `\textbf`, `\textit`, `\texttt`, `\textsf`, `\textsc`

e.g. `ENCYCLOPEDIA GALACTICA`

`Don't Panic`

**font size** `\tiny`, `\scriptsize`, `\footnotesize`, `\small`, `\normalsize`, `\large`, `\Large`, `\LARGE`, `\huge`,  
e.g. cf. `\huge{text formatting}` and `\tiny{text formatting}`:

`text formatting`

`text formatting`

**underline** `Google srtikethrough!`

**font colour** `{\color{red!50!white}your_coloured_text}`

e.g. `my pink text`

## 2.3 Special characters

The following characters are reserved to have special meaning in L<sup>A</sup>T<sub>E</sub>X:

`$` `%` `&` `~` `^` `{` `}` `_` `\`

To print them literally you need to escape them with backslash (`\`), except

- for `\` itself use `$\backslash$`
- for `~` and `^` Use `\verb`

**Formatting conventions:**

- quotes: use `à` and `ó` `\lq` and `\rq`
- non-breaking space: `Fig.\ref{fig:logo}`
- dots: `\ldots`
- superscripts and subscripts: `2^2` and `CO_2`  $\rightarrow 2^2$ ,  $CO_2$   
e.g. Proceedings of the 11<sup>th</sup> conference...
- accents: `\^{a}`, `\'o`, `\v{c}`, `\"e`, `\~o`  $\rightarrow \hat{a}$ ,  $\acute{o}$ ,  $\check{c}$ ,  $\ddot{e}$ ,  $\tilde{o}$
- language-specific ligatures: `\ss{}`, `\l{}`, `\L{}`  $\rightarrow \text{ß}$ ,  $\text{ł}$ ,  $\text{Ł}$

**Useful tool: Detexify symbol table and classifier**

## 3 Math

### 3.1 Mathmode

- inline: `$your_formula$`
- on a separate line: `\[your_formula\]`
- special environment with a counter in label: `\begin{equation} ... \end{equation}`

This formula  $f(x) = 5x$  is incorporated in the body of text. It is the same as in the environment 1

$$f(x) = 5x$$

$$f(x) = 5x \tag{1}$$

### 3.2 Fractions

$$\frac{1 + \frac{4}{2}}{6} = 0,5$$

### 3.3 Brackets

$$\left(2 + \frac{9}{3}\right) \times 5 = 25$$

$$[2 + 3]$$

$$\{2 + 3\}$$

### 3.4 Standard functions

$$\sin x = 0, \cos x = 1, \ln x = 5$$

### 3.5 Symbols

$$2 \times 2 \neq 5$$

$$A \cap B, A \cup B$$

### 3.6 Characters from other scripts

$$\mathrm{tg} \, \Phi = 1$$

$$\epsilon, \phi$$

**Copy formatted formulas from html source code** (Inspect → Copy → Copy element):  
Second Law of Thermodynamics

$$\mathrm{d}S = \frac{\delta Q}{T} - \frac{1}{T} \sum_j \Xi_j \delta \xi_j$$

## Task 2. Reproduce a pdf formatting, inc. formulas

- Reproduce text formatting on this page
- Tick Task 2 as done in the Achievement Tracker