

Unicode declarations for L^AT_EX documents.

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Contents

1	About this file	3
1.1	Usage	3
1.2	Requirements	3
1.3	Contributing to this document	4
1.4	The Emacs Lisp script	4
2	Notes	4
3	Blackboard, calligraphic, etc. possiblycomplete	4
3.1	Blackboard POSSIBLYCOMPLETE	5
3.1.1	Lowercase latin COMPLETE	5
3.1.2	Uppercase latin COMPLETE	6
3.1.3	Arabic numerals COMPLETE	6
3.1.4	Greek COMPLETE	7
3.2	Math calligraphic POSSIBLYCOMPLETE	7
3.2.1	Lowercase latin COMPLETE	7
3.2.2	Uppercase latin COMPLETE	8
4	Other letters or letterlike symbols incomplete	9
5	Greek alphabet incomplete	9
5.1	Normal COMPLETE	9
5.2	var-variants INCOMPLETE	10
6	Subscripts, superscripts, underscripts, and overscripts incomplete	11
6.1	Subscripts INCOMPLETE	11
6.1.1	Lowercase alphabet COMPLETE	11

6.1.2	Numeric	COMPLETE	11
6.1.3	Other	INCOMPLETE	12
6.2	Superscripts	INCOMPLETE	12
6.2.1	Uppercase alphabet		12
6.2.2	Lowercase alphabet		12
6.2.3	Numeric		13
6.2.4	Other		13
7	Punctuation and delimiters	incomplete	14
7.1	Dots	INCOMPLETE	14
7.2	Dashes	INCOMPLETE	14
7.3	Parentheses, braces and brackets	INCOMPLETE	14
7.4	Other paired delimiters		14
7.5	Whitespace		15
8	Logic	incomplete	15
8.1	Quantifiers	INCOMPLETE	15
8.2	Boolean algebra	INCOMPLETE	15
8.3	Entailment		15
9	Sets, relations and functions	incomplete	15
9.1	Sets	INCOMPLETE	15
9.2	Relation operators	INCOMPLETE	16
9.3	Function operators	INCOMPLETE	16
9.4	Relations	INCOMPLETE	16
9.4.1	Equality like		16
9.4.2	Order like		16
10	Generic or other operators		17
10.1	Arrows		17
10.2	“o”-operators		17
10.3	Small, halfwidth and fullwidth math symbols		18
10.4	Punctuation like		18
10.5	Others		18
11	Emoticons		19

1 About this file

In order to write \LaTeX documents using unicode in the source code, we must often tell \LaTeX what we want the unicode characters to be rendered as.

1.1 Usage

This file generates (via Org Babel tangling) the file `unicode.sty`.

To use it, either place it in the same directory as your `.tex` file, and require it via `\usepackage{unicode}`.

Alternatively, place it in your `texmf` directory to allow global usage on your system. That directory is commonly located at the following locations on various OS's.

- Linux
 - `~/texmf/tex/latex/local/`
- Mac OS X
 - `/Users/<user name>/Library/texmf/tex/latex/local/`
- Windows 10 (and miktex)
 - `C:\Users\<user name>\Appdata\Local\MikTeX\<number>\tex\latex\local\`
- Windows Vista/7
 - `C:\Users\<user name>\texmf\tex\latex\local\`
- Windows XP
 - `C:\Documents and Settings\<user name>\texmf\tex\latex\local\`

1.2 Requirements

This package depends upon the packages listed herein.

There are two ways to inform \LaTeX of unicode character translations;

- `\DeclareUnicodeCharacter`; this command does not work with XeLaTeX or LuaLaTeX, which I use.
- `\newunicodechar`; this command is provided by the `newunicodechar` package, which may not be pre-installed for all \LaTeX users.

This collection uses the second.

```
\usepackage{newunicodechar}
```

The unicode-math package “provides a complete implementation of unicode maths for XeLaTeX and LuaLaTeX”.

```
\usepackage{unicode-math}
```

1.3 Contributing to this document

This document is written in Emacs using Org mode. While the exported PDF version, etc., show a collection of L^AT_EX source blocks, these are in fact generated by an Emacs Lisp script below.

That means that contributions to this document should modify the Emacs Lisp script, not `unicode.sty` or the L^AT_EX source blocks themselves.

1.4 The Emacs Lisp script

In this document, several lists of unicode character, L^AT_EX translation pairs are declared, and then “wrapped” into `latex` source blocks, using this function to map the pairs into `newunicodechar` declarations.

```
generate-newunicodechars
```

2 Notes

:TODO: move the comments about missing characters here?

As discussed [here](#), the prime characters are redefined by `unicode-math` at `\begindocument`. To redefine them, we would need to override that by wrapping out `\newunicodechar` declarations in `\AtBeginDocument`. Unfortunately we would then lose prime collapsing. The better solution is to use a font which has prime, or else avoid using double primes, etc..

3 Blackboard, calligraphic, etc. possiblycomplete

```
%-----  
% Blackboard, calligraphic, etc.  
%-----
```

These lists are most likely complete, unless I have missed some characters aside from latin letters, greek letters and arabic numerals which should be included.

3.1 Blackboard

possiblycomplete

```
%-----  
% Blackboard  
%-----
```

3.1.1 Lowercase latin

complete

```
%-----  
% Lowercase latin  
%-----
```

```
\newunicodechar{o}{\ensuremath{\mathbb{a}}}  
\newunicodechar{b}{\ensuremath{\mathbb{b}}}  
\newunicodechar{c}{\ensuremath{\mathbb{c}}}  
\newunicodechar{d}{\ensuremath{\mathbb{d}}}  
\newunicodechar{e}{\ensuremath{\mathbb{e}}}  
\newunicodechar{f}{\ensuremath{\mathbb{f}}}  
\newunicodechar{g}{\ensuremath{\mathbb{g}}}  
\newunicodechar{h}{\ensuremath{\mathbb{h}}}  
\newunicodechar{i}{\ensuremath{\mathbb{i}}}  
\newunicodechar{j}{\ensuremath{\mathbb{j}}}  
\newunicodechar{k}{\ensuremath{\mathbb{k}}}  
\newunicodechar{l}{\ensuremath{\mathbb{l}}}  
\newunicodechar{m}{\ensuremath{\mathbb{m}}}  
\newunicodechar{n}{\ensuremath{\mathbb{n}}}  
\newunicodechar{o}{\ensuremath{\mathbb{o}}}  
\newunicodechar{p}{\ensuremath{\mathbb{p}}}  
\newunicodechar{q}{\ensuremath{\mathbb{q}}}  
\newunicodechar{r}{\ensuremath{\mathbb{r}}}  
\newunicodechar{s}{\ensuremath{\mathbb{s}}}  
\newunicodechar{t}{\ensuremath{\mathbb{t}}}  
\newunicodechar{u}{\ensuremath{\mathbb{u}}}  
\newunicodechar{v}{\ensuremath{\mathbb{v}}}  
\newunicodechar{w}{\ensuremath{\mathbb{w}}}  
\newunicodechar{x}{\ensuremath{\mathbb{x}}}  
\newunicodechar{y}{\ensuremath{\mathbb{y}}}  
\newunicodechar{z}{\ensuremath{\mathbb{z}}}
```

3.1.2 Uppercase latin

complete

```
%-----  
% Uppercase latin  
%-----
```

```
\newunicodechar{A}{\ensuremath{\mathbb{A}}}  
\newunicodechar{B}{\ensuremath{\mathbb{B}}}  
\newunicodechar{C}{\ensuremath{\mathbb{C}}}  
\newunicodechar{D}{\ensuremath{\mathbb{D}}}  
\newunicodechar{E}{\ensuremath{\mathbb{E}}}  
\newunicodechar{F}{\ensuremath{\mathbb{F}}}  
\newunicodechar{G}{\ensuremath{\mathbb{G}}}  
\newunicodechar{H}{\ensuremath{\mathbb{H}}}  
\newunicodechar{I}{\ensuremath{\mathbb{I}}}  
\newunicodechar{J}{\ensuremath{\mathbb{J}}}  
\newunicodechar{K}{\ensuremath{\mathbb{K}}}  
\newunicodechar{L}{\ensuremath{\mathbb{L}}}  
\newunicodechar{M}{\ensuremath{\mathbb{M}}}  
\newunicodechar{N}{\ensuremath{\mathbb{N}}}  
\newunicodechar{O}{\ensuremath{\mathbb{O}}}  
\newunicodechar{P}{\ensuremath{\mathbb{P}}}  
\newunicodechar{Q}{\ensuremath{\mathbb{Q}}}  
\newunicodechar{R}{\ensuremath{\mathbb{R}}}  
\newunicodechar{S}{\ensuremath{\mathbb{S}}}  
\newunicodechar{T}{\ensuremath{\mathbb{T}}}  
\newunicodechar{U}{\ensuremath{\mathbb{U}}}  
\newunicodechar{V}{\ensuremath{\mathbb{V}}}  
\newunicodechar{W}{\ensuremath{\mathbb{W}}}  
\newunicodechar{X}{\ensuremath{\mathbb{X}}}  
\newunicodechar{Y}{\ensuremath{\mathbb{Y}}}  
\newunicodechar{Z}{\ensuremath{\mathbb{Z}}}
```

3.1.3 Arabic numerals

complete

```
%-----  
% Arabic numerals  
%-----
```

```
\newunicodechar{1}{\ensuremath{\mathbb{1}}}  
\newunicodechar{2}{\ensuremath{\mathbb{2}}}
```

```

\newunicodechar{3}{\ensuremath{\mathbb{3}}}
\newunicodechar{4}{\ensuremath{\mathbb{4}}}
\newunicodechar{5}{\ensuremath{\mathbb{5}}}
\newunicodechar{6}{\ensuremath{\mathbb{6}}}
\newunicodechar{7}{\ensuremath{\mathbb{7}}}
\newunicodechar{8}{\ensuremath{\mathbb{8}}}
\newunicodechar{9}{\ensuremath{\mathbb{9}}}
\newunicodechar{0}{\ensuremath{\mathbb{0}}}

```

3.1.4 Greek

complete

```

%-----
% Greek
%-----

```

There are unfortunately not many included in Unicode.

```

\newunicodechar{\Gamma}{\ensuremath{\mathbb{\Gamma}}}
\newunicodechar{\gamma}{\ensuremath{\mathbb{\gamma}}}
\newunicodechar{\Pi}{\ensuremath{\mathbb{\Pi}}}
\newunicodechar{\pi}{\ensuremath{\mathbb{\pi}}}
\newunicodechar{\Sigma}{\ensuremath{\mathbb{\Sigma}}}

```

3.2 Math calligraphic

possiblycomplete

```

%-----
% Math calligraphic
%-----

```

3.2.1 Lowercase latin

complete

```

%-----
% Uppercase latin
%-----

```

```

\newunicodechar{a}{\ensuremath{\mathcal{a}}}
\newunicodechar{b}{\ensuremath{\mathcal{b}}}
\newunicodechar{c}{\ensuremath{\mathcal{c}}}
\newunicodechar{d}{\ensuremath{\mathcal{d}}}
\newunicodechar{e}{\ensuremath{\mathcal{e}}}
\newunicodechar{f}{\ensuremath{\mathcal{f}}}

```

```

\newunicodechar{g}{\ensuremath{\mathcal{g}}}
\newunicodechar{h}{\ensuremath{\mathcal{h}}}
\newunicodechar{i}{\ensuremath{\mathcal{i}}}
\newunicodechar{j}{\ensuremath{\mathcal{j}}}
\newunicodechar{k}{\ensuremath{\mathcal{k}}}
\newunicodechar{l}{\ensuremath{\mathcal{l}}}
\newunicodechar{m}{\ensuremath{\mathcal{m}}}
\newunicodechar{n}{\ensuremath{\mathcal{n}}}
\newunicodechar{o}{\ensuremath{\mathcal{o}}}
\newunicodechar{p}{\ensuremath{\mathcal{p}}}
\newunicodechar{q}{\ensuremath{\mathcal{q}}}
\newunicodechar{r}{\ensuremath{\mathcal{r}}}
\newunicodechar{s}{\ensuremath{\mathcal{s}}}
\newunicodechar{t}{\ensuremath{\mathcal{t}}}
\newunicodechar{u}{\ensuremath{\mathcal{u}}}
\newunicodechar{v}{\ensuremath{\mathcal{v}}}
\newunicodechar{w}{\ensuremath{\mathcal{w}}}
\newunicodechar{x}{\ensuremath{\mathcal{x}}}
\newunicodechar{y}{\ensuremath{\mathcal{y}}}
\newunicodechar{z}{\ensuremath{\mathcal{z}}}

```

3.2.2 Uppercase latin

complete

```

%-----
% Uppercase latin
%-----

\newunicodechar{\mathcal{A}}{\ensuremath{\mathcal{A}}}
\newunicodechar{\mathcal{B}}{\ensuremath{\mathcal{B}}}
\newunicodechar{\mathcal{C}}{\ensuremath{\mathcal{C}}}
\newunicodechar{\mathcal{D}}{\ensuremath{\mathcal{D}}}
\newunicodechar{\mathcal{E}}{\ensuremath{\mathcal{E}}}
\newunicodechar{\mathcal{F}}{\ensuremath{\mathcal{F}}}
\newunicodechar{\mathcal{G}}{\ensuremath{\mathcal{G}}}
\newunicodechar{\mathcal{H}}{\ensuremath{\mathcal{H}}}
\newunicodechar{\mathcal{I}}{\ensuremath{\mathcal{I}}}
\newunicodechar{\mathcal{J}}{\ensuremath{\mathcal{J}}}
\newunicodechar{\mathcal{K}}{\ensuremath{\mathcal{K}}}
\newunicodechar{\mathcal{L}}{\ensuremath{\mathcal{L}}}
\newunicodechar{\mathcal{M}}{\ensuremath{\mathcal{M}}}

```



```

\newunicodechar{\mathcal{N}}{\ensuremath{\mathcal{N}}}
\newunicodechar{\mathcal{O}}{\ensuremath{\mathcal{O}}}
\newunicodechar{\mathcal{P}}{\ensuremath{\mathcal{P}}}
\newunicodechar{\mathcal{Q}}{\ensuremath{\mathcal{Q}}}
\newunicodechar{\mathcal{R}}{\ensuremath{\mathcal{R}}}
\newunicodechar{\mathcal{S}}{\ensuremath{\mathcal{S}}}
\newunicodechar{\mathcal{T}}{\ensuremath{\mathcal{T}}}
\newunicodechar{\mathcal{U}}{\ensuremath{\mathcal{U}}}
\newunicodechar{\mathcal{V}}{\ensuremath{\mathcal{V}}}
\newunicodechar{\mathcal{W}}{\ensuremath{\mathcal{W}}}
\newunicodechar{\mathcal{X}}{\ensuremath{\mathcal{X}}}
\newunicodechar{\mathcal{Y}}{\ensuremath{\mathcal{Y}}}
\newunicodechar{\mathcal{Z}}{\ensuremath{\mathcal{Z}}}

```

4 Other letters or letterlike symbols incomplete

```

\newunicodechar{\ell}{\ensuremath{\ell}}

```

5 Greek alphabet incomplete

5.1 Normal complete

```

\newunicodechar{\alpha}{\ensuremath{\alpha}}
\newunicodechar{\Alpha}{\ensuremath{\Alpha}}
\newunicodechar{\beta}{\ensuremath{\beta}}
\newunicodechar{\Beta}{\ensuremath{\Beta}}
\newunicodechar{\gamma}{\ensuremath{\gamma}}
\newunicodechar{\Gamma}{\ensuremath{\Gamma}}
\newunicodechar{\delta}{\ensuremath{\delta}}
\newunicodechar{\Delta}{\ensuremath{\Delta}}
\newunicodechar{\epsilon}{\ensuremath{\epsilon}}
\newunicodechar{\Epsilon}{\ensuremath{\Epsilon}}
\newunicodechar{\zeta}{\ensuremath{\zeta}}
\newunicodechar{\Zeta}{\ensuremath{\Zeta}}
\newunicodechar{\eta}{\ensuremath{\eta}}
\newunicodechar{\Eta}{\ensuremath{\Eta}}
\newunicodechar{\theta}{\ensuremath{\theta}}
\newunicodechar{\Theta}{\ensuremath{\Theta}}
\newunicodechar{\iota}{\ensuremath{\iota}}

```

```

\newunicodechar{I}{\ensuremath{\Iota}}
\newunicodechar{\kappa}{\ensuremath{\kappa}}
\newunicodechar{K}{\ensuremath{\Kappa}}
\newunicodechar{\lambda}{\ensuremath{\lambda}}
\newunicodechar{\Lambda}{\ensuremath{\Lambda}}
\newunicodechar{\mu}{\ensuremath{\mu}}
\newunicodechar{M}{\ensuremath{\Mu}}
\newunicodechar{\nu}{\ensuremath{\nu}}
\newunicodechar{N}{\ensuremath{\Nu}}
\newunicodechar{\xi}{\ensuremath{\xi}}
\newunicodechar{\Xi}{\ensuremath{\Xi}}
\newunicodechar{o}{\ensuremath{\omicron}}
\newunicodechar{O}{\ensuremath{\Omicron}}
\newunicodechar{\pi}{\ensuremath{\pi}}
\newunicodechar{\Pi}{\ensuremath{\Pi}}
\newunicodechar{\rho}{\ensuremath{\rho}}
\newunicodechar{P}{\ensuremath{\Rho}}
\newunicodechar{\sigma}{\ensuremath{\sigma}}
\newunicodechar{\Sigma}{\ensuremath{\Sigma}}
\newunicodechar{\tau}{\ensuremath{\tau}}
\newunicodechar{T}{\ensuremath{\Tau}}
\newunicodechar{v}{\ensuremath{\upsilon}}
\newunicodechar{\Upsilon}{\ensuremath{\Upsilon}}
\newunicodechar{}{\ensuremath{\phi}}
\newunicodechar{\Phi}{\ensuremath{\Phi}}
\newunicodechar{\chi}{\ensuremath{\chi}}
\newunicodechar{X}{\ensuremath{\Chi}}
\newunicodechar{\psi}{\ensuremath{\psi}}
\newunicodechar{\Psi}{\ensuremath{\Psi}}
\newunicodechar{\omega}{\ensuremath{\omega}}
\newunicodechar{\Omega}{\ensuremath{\Omega}}

```

5.2 var-variants

incomplete

Note that some of the default Agda input entries are in this list, rather than the default above.

Also, `varbeta` is missing here; it requires a choice of some other package to add support for it.

```

\newunicodechar{\varepsilon}{\ensuremath{\varepsilon}}
\newunicodechar{\vartheta}{\ensuremath{\vartheta}}

```

```

\newunicodechar{\mathscr}{\ensuremath{\varkappa}}
\newunicodechar{\mathvarpi}{\ensuremath{\varpi}}
\newunicodechar{\mathvarsigma}{\ensuremath{\varsigma}}
\newunicodechar{\mathvarphi}{\ensuremath{\varphi}}

```

6 Subscripts, superscripts, underscripts, and over- scripts incomplete

Note that while the alphabetic lists are complete, **there are missing letters**, because unfortunately Unicode does not have characters for every letter subscript and superscript.

6.1 Subscripts incomplete

Note there are no uppercase letter subscripts.

6.1.1 Lowercase alphabet complete

```

\newunicodechar{\mathsub_a}{\ensuremath{{}_a}}
\newunicodechar{\mathsub_e}{\ensuremath{{}_e}}
\newunicodechar{\mathsub_h}{\ensuremath{{}_h}}
\newunicodechar{\mathsub_i}{\ensuremath{{}_i}}
\newunicodechar{\mathsub_j}{\ensuremath{{}_j}}
\newunicodechar{\mathsub_k}{\ensuremath{{}_k}}
\newunicodechar{\mathsub_l}{\ensuremath{{}_l}}
\newunicodechar{\mathsub_m}{\ensuremath{{}_m}}
\newunicodechar{\mathsub_n}{\ensuremath{{}_n}}
\newunicodechar{\mathsub_o}{\ensuremath{{}_o}}
\newunicodechar{\mathsub_p}{\ensuremath{{}_p}}
\newunicodechar{\mathsub_r}{\ensuremath{{}_r}}
\newunicodechar{\mathsub_s}{\ensuremath{{}_s}}
\newunicodechar{\mathsub_t}{\ensuremath{{}_t}}
\newunicodechar{\mathsub_u}{\ensuremath{{}_u}}
\newunicodechar{\mathsub_v}{\ensuremath{{}_v}}
\newunicodechar{\mathsub_x}{\ensuremath{{}_x}}

```

6.1.2 Numeric complete

```

\newunicodechar{\mathsub_0}{\ensuremath{{}_0}}
\newunicodechar{\mathsub_1}{\ensuremath{{}_1}}

```

```

\newunicodechar{₂}{\ensuremath{{}_2}}
\newunicodechar{₃}{\ensuremath{{}_3}}
\newunicodechar{₄}{\ensuremath{{}_4}}
\newunicodechar{₅}{\ensuremath{{}_5}}
\newunicodechar{₆}{\ensuremath{{}_6}}
\newunicodechar{₇}{\ensuremath{{}_7}}
\newunicodechar{₈}{\ensuremath{{}_8}}
\newunicodechar{₉}{\ensuremath{{}_9}}

```

6.1.3 Other

incomplete

```

\newunicodechar{₊}{\ensuremath{{}_+}}

```

6.2 Superscripts

incomplete

6.2.1 Uppercase alphabet

```

\newunicodechar{ᵃ}{\ensuremath{{}^A}}
\newunicodechar{ᵇ}{\ensuremath{{}^B}}
\newunicodechar{ᵈ}{\ensuremath{{}^D}}
\newunicodechar{ᵉ}{\ensuremath{{}^E}}
\newunicodechar{ᵍ}{\ensuremath{{}^G}}
\newunicodechar{ᵒ}{\ensuremath{{}^H}}
\newunicodechar{ᵒ}{\ensuremath{{}^I}}
\newunicodechar{ᵐ}{\ensuremath{{}^J}}
\newunicodechar{ᵏ}{\ensuremath{{}^K}}
\newunicodechar{ᵐ}{\ensuremath{{}^L}}
\newunicodechar{ᵐ}{\ensuremath{{}^M}}
\newunicodechar{ᵐ}{\ensuremath{{}^N}}
\newunicodechar{ᵐ}{\ensuremath{{}^O}}
\newunicodechar{ᵐ}{\ensuremath{{}^P}}
\newunicodechar{ᵐ}{\ensuremath{{}^R}}
\newunicodechar{ᵐ}{\ensuremath{{}^T}}
\newunicodechar{ᵐ}{\ensuremath{{}^U}}
\newunicodechar{ᵐ}{\ensuremath{{}^V}}
\newunicodechar{ᵐ}{\ensuremath{{}^W}}

```

6.2.2 Lowercase alphabet

```

\newunicodechar{ᵃ}{\ensuremath{{}^a}}
\newunicodechar{ᵇ}{\ensuremath{{}^b}}

```

```

\newunicodechar{c}{\ensuremath{\{ \}^{\{c\}}}}
\newunicodechar{d}{\ensuremath{\{ \}^{\{d\}}}}
\newunicodechar{e}{\ensuremath{\{ \}^{\{e\}}}}
\newunicodechar{f}{\ensuremath{\{ \}^{\{f\}}}}
\newunicodechar{g}{\ensuremath{\{ \}^{\{g\}}}}
\newunicodechar{h}{\ensuremath{\{ \}^{\{h\}}}}
\newunicodechar{i}{\ensuremath{\{ \}^{\{i\}}}}
\newunicodechar{j}{\ensuremath{\{ \}^{\{j\}}}}
\newunicodechar{k}{\ensuremath{\{ \}^{\{k\}}}}
\newunicodechar{l}{\ensuremath{\{ \}^{\{l\}}}}
\newunicodechar{m}{\ensuremath{\{ \}^{\{m\}}}}
\newunicodechar{n}{\ensuremath{\{ \}^{\{n\}}}}
\newunicodechar{o}{\ensuremath{\{ \}^{\{o\}}}}
\newunicodechar{p}{\ensuremath{\{ \}^{\{p\}}}}
\newunicodechar{r}{\ensuremath{\{ \}^{\{r\}}}}
\newunicodechar{s}{\ensuremath{\{ \}^{\{s\}}}}
\newunicodechar{t}{\ensuremath{\{ \}^{\{t\}}}}
\newunicodechar{u}{\ensuremath{\{ \}^{\{u\}}}}
\newunicodechar{v}{\ensuremath{\{ \}^{\{v\}}}}
\newunicodechar{w}{\ensuremath{\{ \}^{\{w\}}}}
\newunicodechar{x}{\ensuremath{\{ \}^{\{x\}}}}
\newunicodechar{y}{\ensuremath{\{ \}^{\{y\}}}}
\newunicodechar{z}{\ensuremath{\{ \}^{\{z\}}}}

```

6.2.3 Numeric

```

\newunicodechar{0}{\ensuremath{\{ \}^{\{0\}}}}
\newunicodechar{1}{\ensuremath{\{ \}^{\{1\}}}}
\newunicodechar{2}{\ensuremath{\{ \}^{\{2\}}}}
\newunicodechar{3}{\ensuremath{\{ \}^{\{3\}}}}
\newunicodechar{4}{\ensuremath{\{ \}^{\{4\}}}}
\newunicodechar{5}{\ensuremath{\{ \}^{\{5\}}}}
\newunicodechar{6}{\ensuremath{\{ \}^{\{6\}}}}
\newunicodechar{7}{\ensuremath{\{ \}^{\{7\}}}}
\newunicodechar{8}{\ensuremath{\{ \}^{\{8\}}}}
\newunicodechar{9}{\ensuremath{\{ \}^{\{9\}}}}

```

6.2.4 Other

```

\newunicodechar{+}{\ensuremath{\{ \}^{\{+\}}}}

```

7 Punctuation and delimiters

incomplete

7.1 Dots

incomplete

```
\newunicodechar{...}{\ensuremath{\ldots}}
\newunicodechar{...}{\ensuremath{\cdots}}
\newunicodechar{:}{\ensuremath{\vdots}}
```

7.2 Dashes

incomplete

```
\newunicodechar{--}{\ensuremath{\text{--}}}
\newunicodechar{---}{\ensuremath{\text{---}}}
```

7.3 Parentheses, braces and brackets

incomplete

Note there are a few different braces I translate the same way. Braces and parentheses themselves are special characters in Agda, so they cannot be used in names.

```
\newunicodechar{(}{\ensuremath{(!)}}
\newunicodechar{)}{\ensuremath{(!)}}
\newunicodechar{<}{\ensuremath{\langle}}
\newunicodechar{>}{\ensuremath{\rangle}}
\newunicodechar{<<}{\ensuremath{\langle\!\langle}}
\newunicodechar{>>}{\ensuremath{\rangle\!\rangle}}
\newunicodechar{{}{\ensuremath{\{}}}
\newunicodechar{}}{\ensuremath{\}}}
\newunicodechar{{}{\ensuremath{\{}}}
\newunicodechar{}}{\ensuremath{\}}}
```

7.4 Other paired delimiters

```
\newunicodechar{⌈}{\ensuremath{\ulcorner}}
\newunicodechar{⌋}{\ensuremath{\urcorner}}
\newunicodechar{⌌}{\ensuremath{\llcorner}}
\newunicodechar{⌍}{\ensuremath{\lrcorner}}
\newunicodechar{⌈}{\ensuremath{\lceil}}
\newunicodechar{⌋}{\ensuremath{\rceil}}
\newunicodechar{⌊}{\ensuremath{\lfloor}}
\newunicodechar{⌋}{\ensuremath{\rfloor}}
```

7.5 Whitespace

Non-breaking space. Though it may appear as a normal space, it is in fact a \sim in the \LaTeX .

```
\newunicodechar{ }{\ensuremath{\sim}}
```

I am a very long line whose words are separated by non-breaking spaces so I should run off the page at

8 Logic

incomplete

8.1 Quantifiers

incomplete

```
\newunicodechar{\forall}{\ensuremath{\forall}}
```

```
\newunicodechar{\exists}{\ensuremath{\exists}}
```

8.2 Boolean algebra

incomplete

```
\newunicodechar{\equiv}{\ensuremath{\equiv}}
```

```
\newunicodechar{\neg}{\ensuremath{\neg}}
```

```
\newunicodechar{\neq}{\ensuremath{\neq}}
```

```
\newunicodechar{\vee}{\ensuremath{\vee}}
```

```
\newunicodechar{\wedge}{\ensuremath{\wedge}}
```

```
\newunicodechar{\Rightarrow}{\ensuremath{\Rightarrow}}
```

```
\newunicodechar{\Rightarrow}{\ensuremath{\Rightarrow}}
```

```
\newunicodechar{\Leftrightarrow}{\ensuremath{\Leftrightarrow}}
```

8.3 Entailment

```
\newunicodechar{\vdash}{\ensuremath{\vdash}}
```

```
\newunicodechar{\dashv}{\ensuremath{\dashv}}
```

```
\newunicodechar{\vDash}{\ensuremath{\vDash}}
```

9 Sets, relations and functions

incomplete

9.1 Sets

incomplete

```
\newunicodechar{\emptyset}{\ensuremath{\emptyset}}
```

```
\newunicodechar{\emptyset}{\ensuremath{\emptyset}}
```

```
\newunicodechar{\in}{\ensuremath{\in}}
```

```
\newunicodechar{\notin}{\ensuremath{\notin}}
```

```
\newunicodechar{\ni}{\ensuremath{\ni}}
```

```

\newunicodechar{\cap}{\ensuremath{\cap}}
\newunicodechar{\cup}{\ensuremath{\cup}}
\newunicodechar{\uplus}{\ensuremath{\uplus}}
\newunicodechar{\uplus}{\ensuremath{\uplus}}

```

9.2 Relation operators

incomplete

```

\newunicodechar{\top}{\ensuremath{\top}}
\newunicodechar{\bot}{\ensuremath{\bot}}
\newunicodechar{\sqcup}{\ensuremath{\sqcup}}
\newunicodechar{\sqcap}{\ensuremath{\sqcap}}

```

9.3 Function operators

incomplete

```

\newunicodechar{\circ}{\ensuremath{\circ}}

```

9.4 Relations

incomplete

9.4.1 Equality like

Along with negations where they exist. Note that equivalences are within the 8 section.

```

\newunicodechar{\neq}{\ensuremath{\neq}}
\newunicodechar{\doteq}{\ensuremath{\doteq}}
\newunicodechar{\stackrel{?}{=}}{\ensuremath{\stackrel{?}{=}}}
\newunicodechar{\cong}{\ensuremath{\cong}}
\newunicodechar{\ncong}{\ensuremath{\ncong}}
\newunicodechar{\simeq}{\ensuremath{\simeq}}
\newunicodechar{\nsimeq}{\ensuremath{\nsimeq}}
\newunicodechar{\approx}{\ensuremath{\approx}}
\newunicodechar{\napprox}{\ensuremath{\napprox}}
\newunicodechar{\sim}{\ensuremath{\sim}}
\newunicodechar{\nsim}{\ensuremath{\nsim}}
\newunicodechar{\coloneqq}{\ensuremath{\coloneqq}}

```

9.4.2 Order like

```

\newunicodechar{\leq}{\ensuremath{\leq}}
\newunicodechar{\nleq}{\ensuremath{\nleq}}
\newunicodechar{\geq}{\ensuremath{\geq}}
\newunicodechar{\ngeq}{\ensuremath{\ngeq}}

```



```

\newunicodechar{<}{\ensuremath{\nless}}
\newunicodechar{>}{\ensuremath{\ngtr}}
\newunicodechar{≤}{\ensuremath{\leqq}}
\newunicodechar{≲}{\ensuremath{\lneqq}}
\newunicodechar{≥}{\ensuremath{\geqq}}
\newunicodechar{≳}{\ensuremath{\gneqq}}
\newunicodechar{≲}{\ensuremath{\lesssim}}
\newunicodechar{≳}{\ensuremath{\gtrsim}}
\newunicodechar{⊂}{\ensuremath{\sqsubset}}
\newunicodechar{⊆}{\ensuremath{\sqsubseteq}}
\newunicodechar{⊃}{\ensuremath{\sqsupset}}
\newunicodechar{⊇}{\ensuremath{\sqsupseteq}}
\newunicodechar{⌊}{\ensuremath{\mid}}

```

10 Generic or other operators

10.1 Arrows

```

\newunicodechar{→}{\ensuremath{\rightarrow}}
\newunicodechar{←}{\ensuremath{\leftarrow}}
\newunicodechar{↑}{\ensuremath{\uparrow}}
\newunicodechar{↓}{\ensuremath{\downarrow}}
\newunicodechar{→}{\ensuremath{\longrightarrow}}
\newunicodechar{←}{\ensuremath{\longleftarrow}}

```

10.2 “o”-operators

```

\newunicodechar{⊕}{\ensuremath{\oplus}}
\newunicodechar{⊖}{\ensuremath{\ominus}}
\newunicodechar{⊗}{\ensuremath{\otimes}}
\newunicodechar{⊘}{\ensuremath{\oslash}}
\newunicodechar{⊙}{\ensuremath{\odot}}
\newunicodechar{⊙}{\ensuremath{\circledcirc}}
\newunicodechar{⊗}{\ensuremath{\circledast}}
\newunicodechar{⊖}{\ensuremath{\circledequal}}
\newunicodechar{⊖}{\ensuremath{\circleddash}}

```

10.3 Small, halfwidth and fullwidth math symbols

For small characters, we use `scalebox` on the corresponding symbols, and `raisebox` to correct for height.

```
\newunicodechar{*}{\ensuremath{\raisebox{.4\height}{\scalebox{.6}{*}}}}
\newunicodechar{+}{\ensuremath{\raisebox{.4\height}{\scalebox{.6}{+}}}}
\newunicodechar{-}{\ensuremath{\raisebox{.4\height}{\scalebox{.6}{-}}}}
\newunicodechar{<}{\ensuremath{\raisebox{.4\height}{\scalebox{.6}{<}}}}
\newunicodechar{>}{\ensuremath{\raisebox{.4\height}{\scalebox{.6}{>}}}}
\newunicodechar{=}{\ensuremath{\raisebox{.4\height}{\scalebox{.6}{=}}}}
\newunicodechar{\}{\ensuremath{\raisebox{.4\height}{\scalebox{.6}{\backslash}}}}
```

For fullwidth characters, we place them in a 1em box. Note the “plain T_EX” method for obtaining a non-raised tilde here.

```
\newunicodechar{+}{\ensuremath{\makebox[1em]{+}}}
\newunicodechar{<}{\ensuremath{\makebox[1em]{<}}}
\newunicodechar{=}{\ensuremath{\makebox[1em]{=}}}
\newunicodechar{>}{\ensuremath{\makebox[1em]{>}}}
\newunicodechar{^}{\ensuremath{\makebox[1em]{\textasciicircum}}}
\newunicodechar{|}{\ensuremath{\makebox[1em]{|}}}
\newunicodechar{~}{\ensuremath{\makebox[1em]{\char`~}}}
\newunicodechar{¬}{\ensuremath{\makebox[1em]{\lnot}}}
```

So far, I haven’t devised a good solution for the halfwidth arrows. I just substitute the regular arrows in.

```
\newunicodechar{←}{\ensuremath{\leftarrow}}
\newunicodechar{↑}{\ensuremath{\uparrow}}
\newunicodechar{→}{\ensuremath{\rightarrow}}
\newunicodechar{↓}{\ensuremath{\downarrow}}
```

10.4 Punctuation like

```
\newunicodechar{}{\ensuremath{\ratio}}
\newunicodechar{}{\ensuremath{\fcmp}}
```

10.5 Others

Probably some of these belong somewhere else.

```
\newunicodechar{·}{\ensuremath{\cdot}}
\newunicodechar{∞}{\ensuremath{\infty}}
```

11 Emoticons

I have not found a reliable way to produce emoticons in L^AT_EX. In LuaLaTeX and XeLaTeX, it should work to just use the unicode characters themselves, making sure to use a font that supports them. DejaVu Sans does so.

```
\newfontfamily\DejaSans{DejaVu Sans}
```

So these characters can only be used if you use LuaLaTeX or XeLaTeX.

```
\newunicodechar{☺}{{\DejaSans ☺}}
\newunicodechar{☻}{{\DejaSans ☻}}
\newunicodechar{☹}{{\DejaSans ☹}}
\newunicodechar{☼}{{\DejaSans ☼}}
\newunicodechar{}{{\DejaSans  }}
```