Accessible PDFs with LaTeX for ~~DUMMIES~~ Teachers

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Why LaTeX?

- LaTeX is the de facto standard for the communication and publication of math and science. Chances are you *will* encounter LaTeXin STEM!
- LaTeX is widely used in publishing because it clearly separates presentation from content.
- LaTeXtypesets technical symbols and mathematics beautifully.

Why Accessibility?

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More Accessibility — placeholder

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Accessible PDF Output is (Recently) Possible!

- Thanks to *years* of dilligent work by the LaTeXproject developers:

  `https://www.latex-project.org`

- See this presentation at PDF Days 2025 Berlin:

  `https://www.latex-project.org/news/2025/10/30/pdfadays`

- Also check out the many solution posters from the conference:

  `https://pdfa.org/the-winning-technical-poster-at-pdf-days-europe-2025`

- Our slides walk you through a few basic steps to get things working.

Step 1: Use `lualatex`

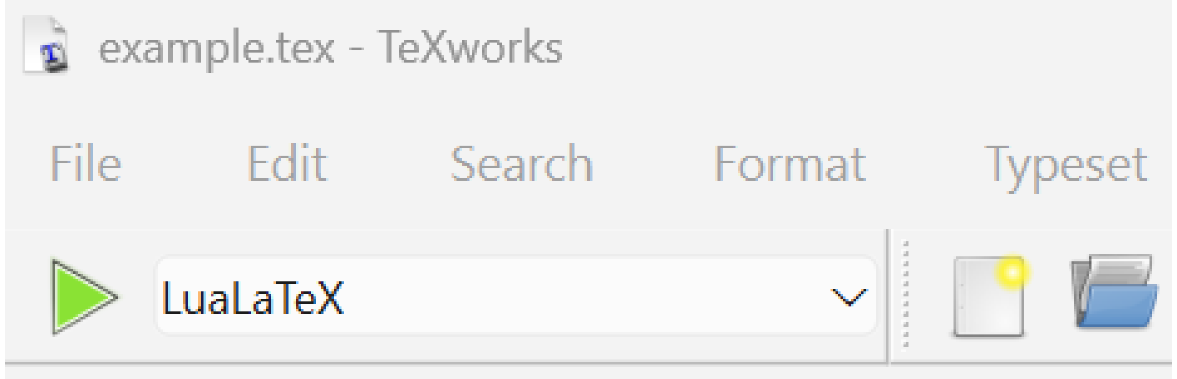
- LaTeXcan be processed by many different rendering engines (`pdflatex`, `lualatex`, ...)
- `lualatex` is currently the best engine to use for accessibility.
- On many GNU/Linux systems simply install with:

  ```
  sudo apt install texlive-luatex
  ```

Using `lualatex` with MiKTeX on Macs and Windows Systems

1. Install MiKTeX (`https://miktex.org/download`)

2. Open the installed TeXworks editor and select the LuaLaTeX engine from the dropdown (see figure below).



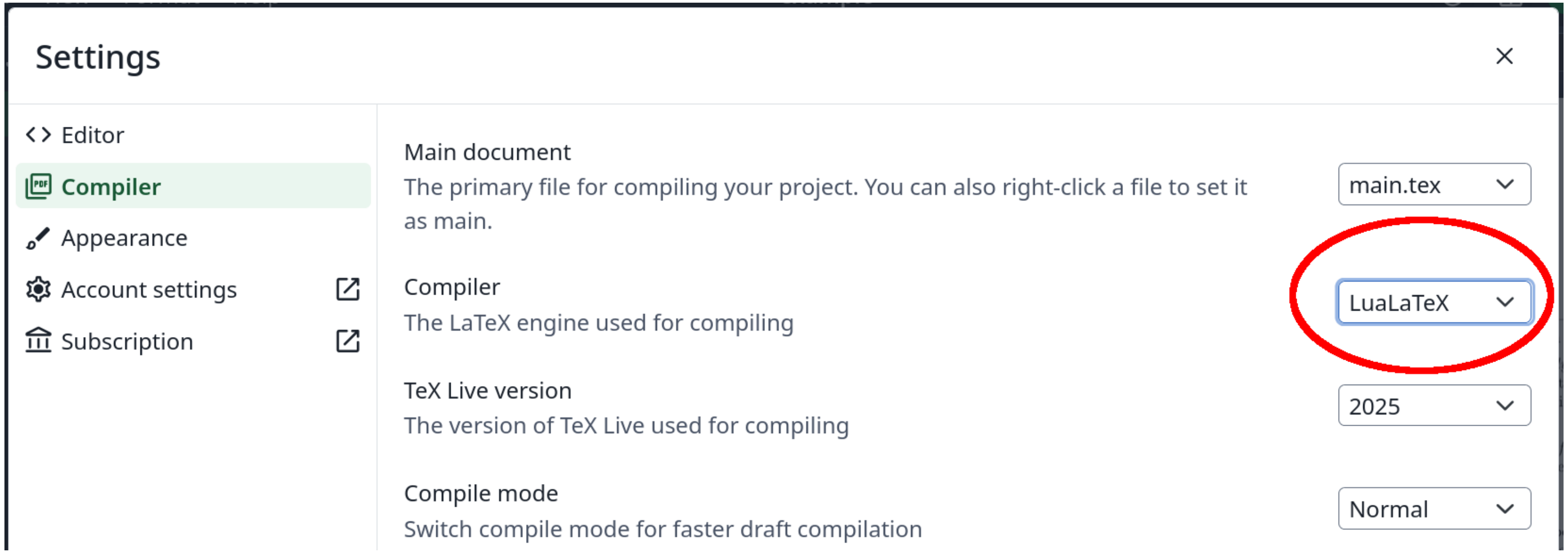
LuaLaTeX

That's it! Note that MiKTeX may need to download and install a few packages the first time you select the LuaLaTeX option.

Using `lualatex` with Overleaf

Overleaf is a popular online LaTeX editor with over 20 million users. You can set it up to use the `lualatex` engine. Alas, this might only work with the paid version ☹.

- From the File menu, select the “Settings” option.
- Navigate to “Compiler” and select “LuaLaTeX” as shown in the figure below.



Main document
The primary file for compiling your project. You can also right-click a file to set it as main.
main.tex

Compiler
The LaTeX engine used for compiling
LuaLaTeX

TeX Live version
The version of TeX Live used for compiling
2025

Compile mode
Switch compile mode for faster draft compilation
Normal

Step 2: Metadata in your documents

Add the following to the very top of your document (adjusting `lang` as needed):

```
\DocumentMetadata{
  tagging=on,
  tagging-setup={math/setup={mathml-SE,mathml-AF}},
  pdfstandard=ua-2,
  pdfstandard=a-4f,
  lang=en-US
}
```

This turns on tagging and embeds *two* kinds of mathematical notation markup for widest compatibility with reader software.

PDF document metadata

Add the following above `\begin{document}` (adjusting entries as needed):

```
\usepackage{hyperref}
\hypersetup{
  pdftitle={Accessible PDF with LaTeX},
  pdfauthor={Bryan W. Lewis},
  pdfsubject={Accessibility},
  pdfkeywords={Accessibility, LaTeX, PDF},
}
```

Use the `unicode-math` math symbol package

Include the following package in your document preamble:

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

Avoid use of the following packages if possible (`unicode-math` may work in their place):

~~\usepackage{amsmath}~~
~~\usepackage{amssymb}~~

Be sure to add text descriptions to every included image

Whenever you include an image in your document, be sure to include a text description defined with `alt`. For example:

```
\includegraphics[alt={Accessible PDFs with LaTeX for Teachers}]{filename}
```

Congratulations! Your LaTeX-generated PDF documents are now accessible!

See
https://github.com/bwlewis/latex-pdf-accessibility/tree/main/example
for a complete, self-contained example document.

Setting up NVDA reader software with MathCAT

- These techniques are all *very* new and not yet uniformly supported, but that's changing quickly.
- The reader software with the most complete support is NVDA (NV Access) equipped with the MathCAT add-on. It's free, supports audible and braille output in more than 50 languages, and works very well!

  `https://www.nvaccess.org/download/`

Issues...

- These techniques are all *very* new! Most (all?) accessibility checkers don't work. That includes, at least, Blackboard's built-in checker as of Spring 2026.