

# Accessible PDFs with L<sup>A</sup>T<sub>E</sub>X for ~~DUMMIES~~ Teachers

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# Why L<sup>A</sup>T<sub>E</sub>X?

- L<sup>A</sup>T<sub>E</sub>X is the de facto standard for the communication and publication of math and science. Chances are you *will* encounter L<sup>A</sup>T<sub>E</sub>X in STEM!
- L<sup>A</sup>T<sub>E</sub>X is widely used in publishing because it clearly separates presentation from content.
- L<sup>A</sup>T<sub>E</sub>X typesets 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 diligent work by the L<sup>A</sup>T<sub>E</sub>Xproject 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.

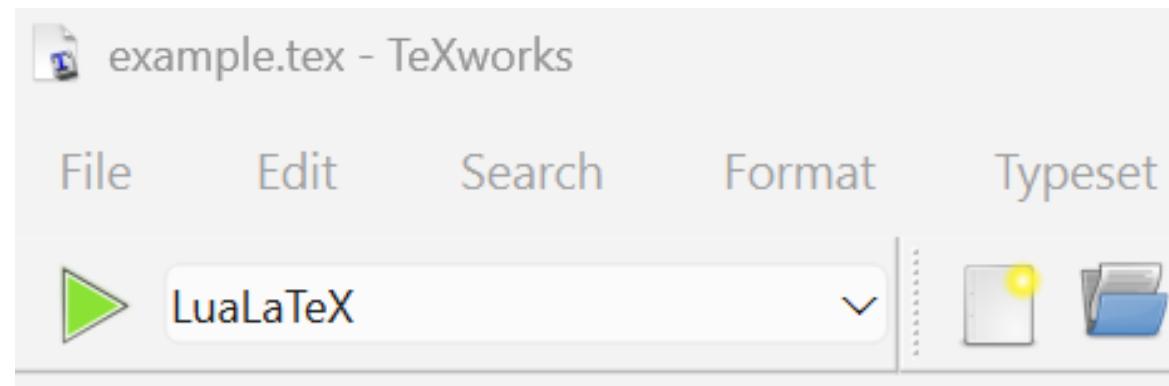
## Step 1: Use `lualatex`

- `LATEX` can 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).

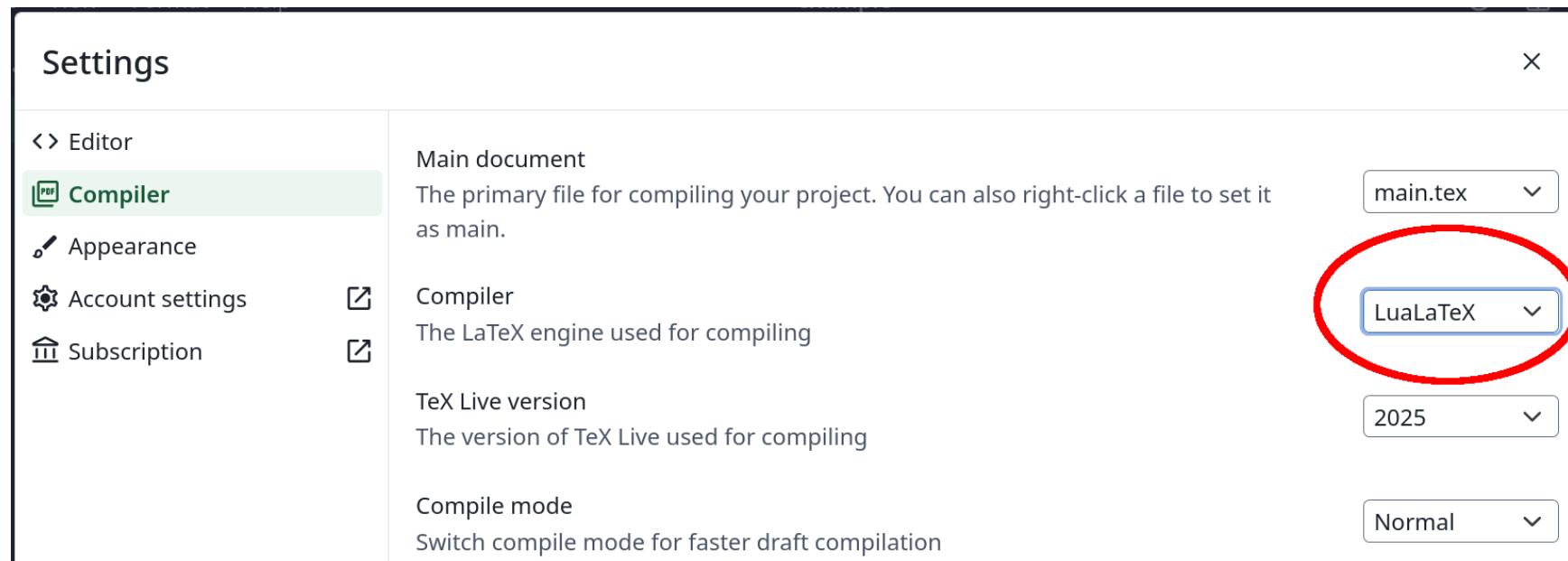


That's it! Note that MiKTeX may need to download and install a few packages the first time you select the LuaLaTeX option.

# Using `lualatex` with Overleaf

Overleaf is a popular online L<sup>A</sup>T<sub>E</sub>X 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.



## 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 to your preamble 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}~~

This may not be strictly necessary but tends to produce good embedded MathML output.

## **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 L<sup>A</sup>T<sub>E</sub>X-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 simply don't work correctly yet. That includes, at least, Blackboard's built-in checker as of Spring 2026. Look for proof in pudding and run your PDF output through a reader like NVDA to make sure it works well.
- *Most LATEX* packages “just work.” Your mileage may vary however with less mainstream packages. If you run into issues you might need to consider some changes.

# About us

Carla Zeigler is the Coordinator of Distance Learning and Instructional Design at Garrett College...



Bryan Lewis teaches math at Garrett College and has been using L<sup>A</sup>T<sub>E</sub>X since the mid 1990s. He's written dozens of journal papers, a book, many talks, and lots of classroom notes in L<sup>A</sup>T<sub>E</sub>X.