

Writing a thesis

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What is a thesis?

From the Oxford English Dictionary:

- ① (*n.*) a statement or theory that is put forward as a premise to be maintained or proved.
- ② (*n.*) a long essay or dissertation involving personal research, written by a candidate for a university degree.
- ③ (*n.*) an unstressed syllable or part of a metrical foot in Greek or Latin verse. Often contrasted with *arsis*.

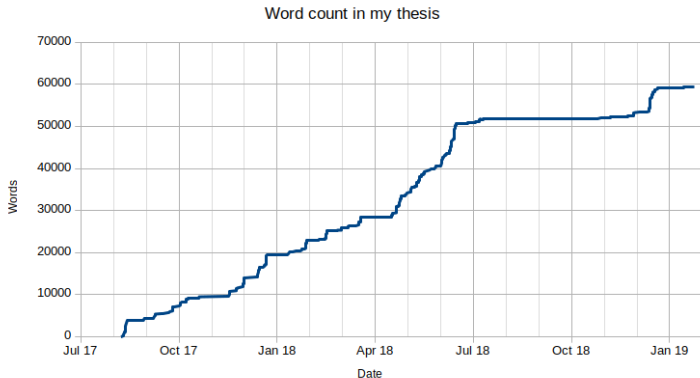
Ārmā vīr|ūmquē cān|ō, || Trō|iaē quī| p̄rīmūs āb|ōrīs
Ītālī|ām fāt|ō || p̄rōfūg|ūs Lāv|īniāquē|vēnīt
lītōrā|, mūltum il|le et || tēr|rīs iac|tātūs ęt|āltō
vī sūp̄r|ūm, saēv|aē || mēmōr|ēm Iūn|ōnīs ōb|īrām,
mūltā quō|que et bēl|lō || pās|sūs, dūm|cōndērēt|ūrbēm
īnfēr|rētquē dē|ōs || Lātī|ō; gēnūs|ūndē Lāt|īnūm
Ālbān|īquē pāt|rēs || āt|que āltāē|moēniā|Rōmaē.

What is a PhD thesis?

- A book-length body of work describing the research you've done across the whole period of your PhD
- Word limit: 80,000
- Contains:
 - ▶ background material
 - ▶ discussion of the field
 - ▶ new results
 - ▶ rewritten versions of any papers you may have published
- Less concise than a paper
- Takes ages to write

It's difficult...

- Imposter syndrome
- Unsteady progress



- Hofstadter's law:
 - ▶ *A task always takes longer than you expect, even when you take into account Hofstadter's Law.*

...but it can be done!

- Start early
- No, seriously, start early
- Get organised!
- Keep talking to your supervisor
- Plan everything
 - ▶ Destroy the blank page!
 - ▶ Plan each day/week/month
 - ▶ Be flexible
- You can't work all the time

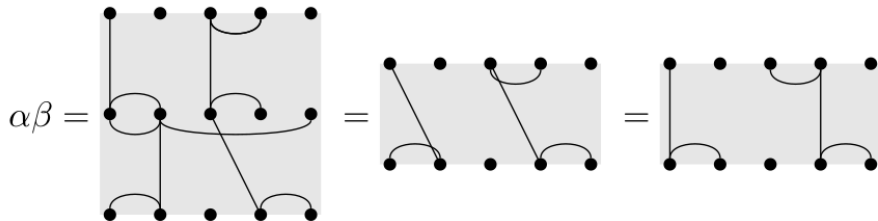
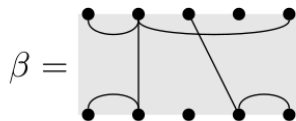
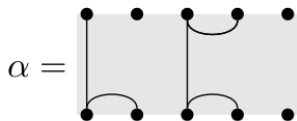
- Overleaf \LaTeX editor: www.overleaf.com
- Detexify: detexify.kirelabs.org
- \LaTeX Macros: `\newcommand`

Why write...	when you can write...
<code>\mathbf{n}</code>	<code>\bn</code>
<code>\mathrel{\mathscr{R}}</code>	<code>\RR</code>
<code>\mathrel{\cancel{\mathscr{J}}}</code>	<code>\nJJ</code>

```

\newcommand{\diag}[1]{ % Triple diagram (to show multiplication)
  \begin{tikzpicture}[scale=\bipartdiagscale, baseline=({[yshift=-.8ex]current bounding box.center})]
    \fill[gray!20] (0.8,0) rectangle (5.2,6);
    \fill(1,6)circle(.125); \fill(1,4)circle(.125); \fill(1,2)circle(.125); \fill(1,0)circle(.125);
    \fill(2,6)circle(.125); \fill(2,4)circle(.125); \fill(2,2)circle(.125); \fill(2,0)circle(.125);
    \fill(3,6)circle(.125); \fill(3,4)circle(.125); \fill(3,2)circle(.125); \fill(3,0)circle(.125);
    \fill(4,6)circle(.125); \fill(4,4)circle(.125); \fill(4,2)circle(.125); \fill(4,0)circle(.125);
    \fill(5,6)circle(.125); \fill(5,4)circle(.125); \fill(5,2)circle(.125); \fill(5,0)circle(.125);
  #1
  \end{tikzpicture}~
}

```



- Write proper sentences
- Make an argument
- Give intuition
- Precision
- Don't overuse symbols
- Structure

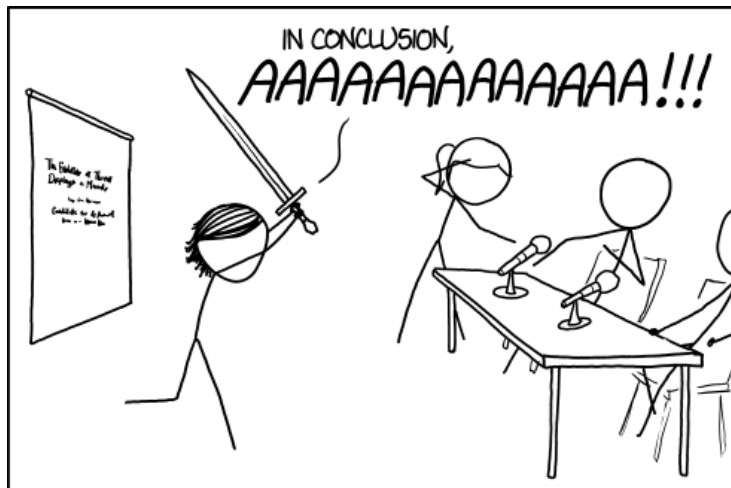
The perfect thesis

- Title page
- Declarations
- Abstract
- Contents page
- List of figures, tables and algorithms
- Preface
- Acknowledgements
- Chapter 1: Preliminaries
- Chapter 2: Parallel method for generating pairs
- Chapter 3: Converting between representations
- Chapter 4: Calculating congruence lattices
- Chapter 5: Congruences of the Motzkin Monoid
- Chapter 6: Principal factors and counting congruences
- Bibliography
- List of notation
- Index

The big day

- *viva voce* (“with living voice”) – an oral examination
- Nothing to worry about
- May feel adversarial
- Very fussy
- Answer questions in your thesis instead of in your viva
- A great opportunity

The big day



THE BEST THESIS DEFENSE IS A GOOD THESIS OFFENSE.

- Fail
- Major corrections (12 months + second viva)
- Minor corrections (3 months)
- Typos (usually 1 month)
- Pass

Any questions?

