



Tips, Tricks, & Tools

MCHE 201 – Spring 2019

Dr. Joshua Vaughan

Rougeou 225

`joshua.vaughan@louisiana.edu`

`@Doc_Vaughan`

Personal Productivity & Time Management



- Divide each of your goals/projects into actionable tasks
- Explicitly track all
 - Your mind is not a good task management system
 - A computer remembers *way* better than you can
- You can also group tasks by context
 - by amount of focus required
 - by necessary tool, location, or person

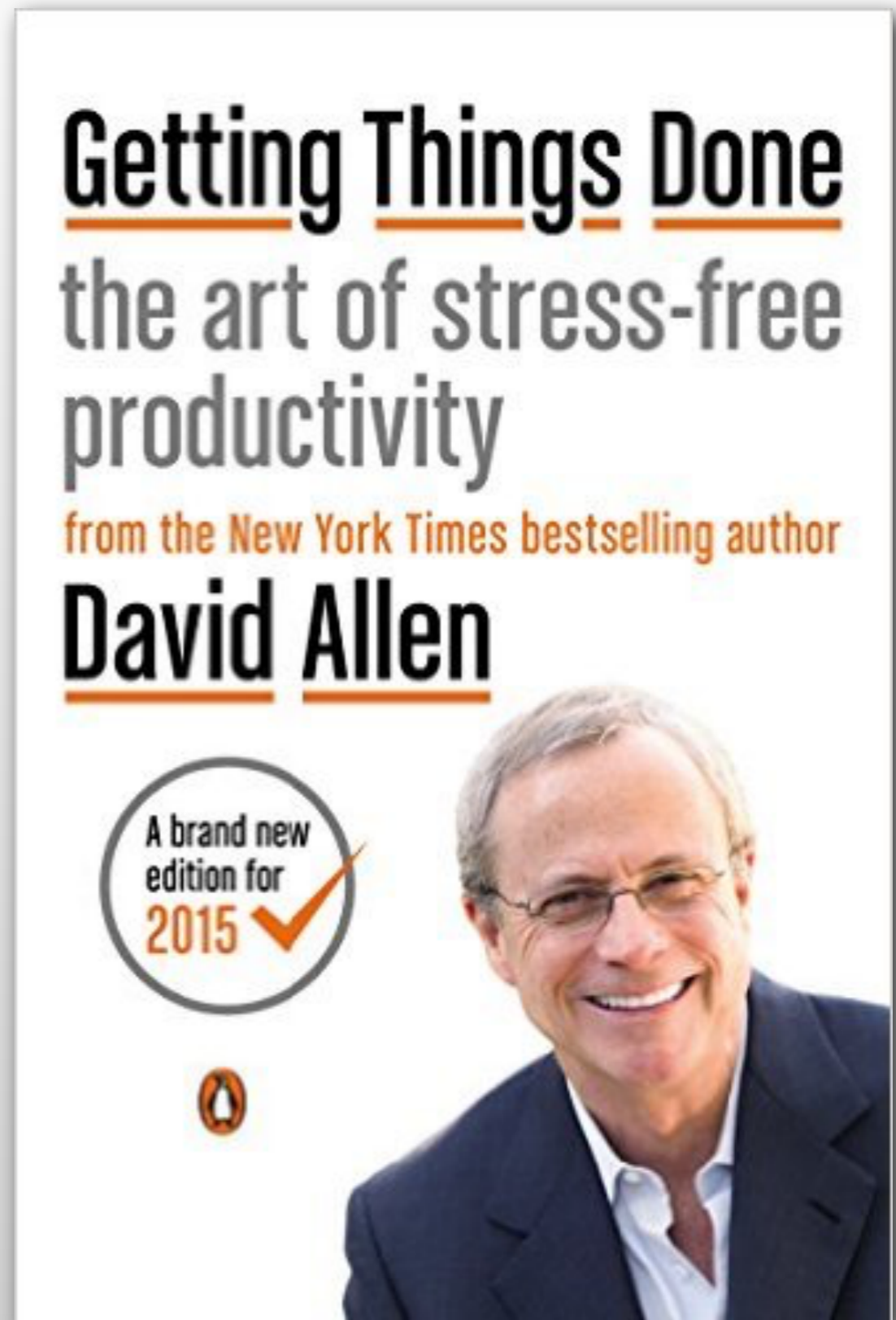
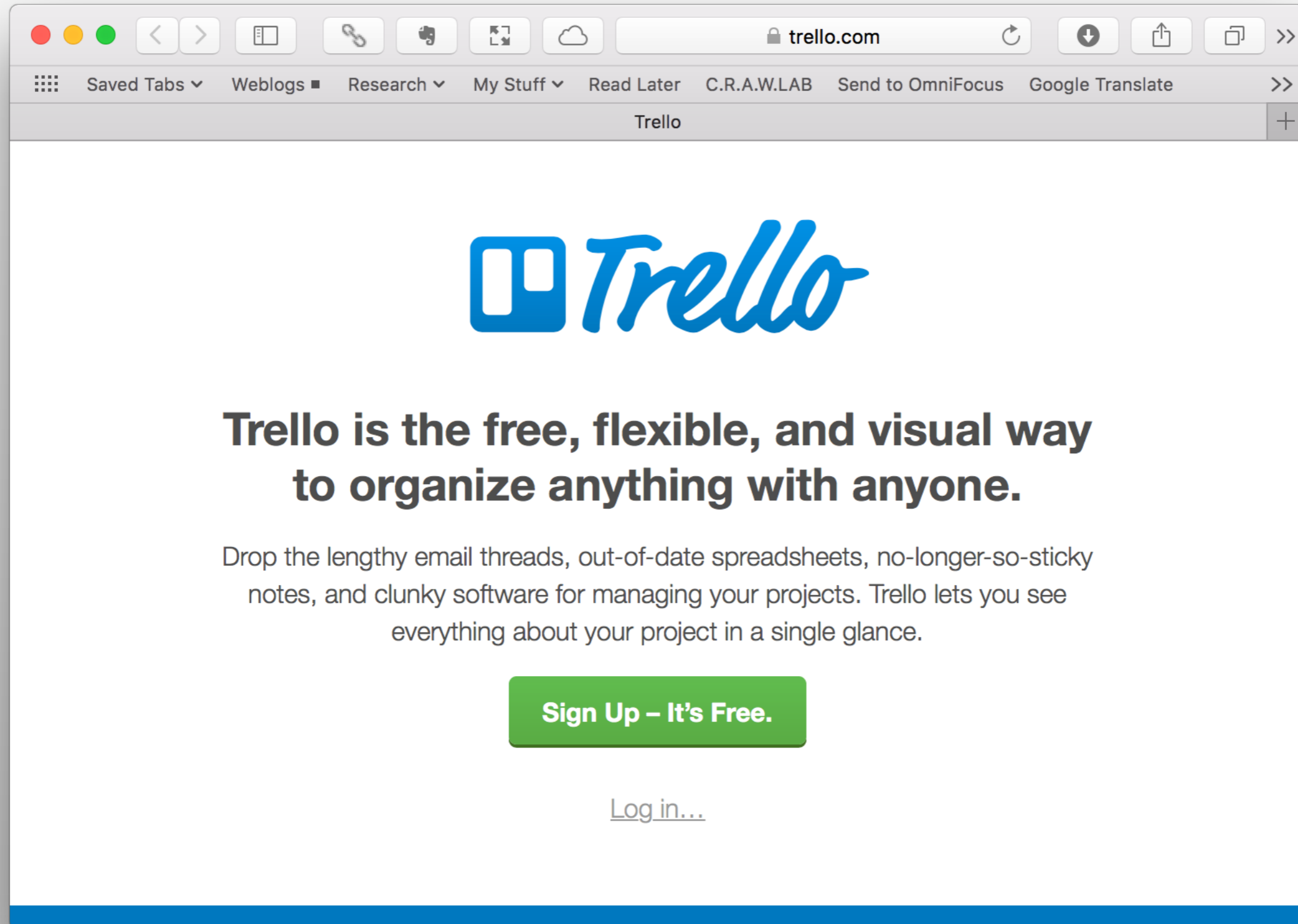


Image from: <http://amzn.com/0143126563>

Online Tools Exist for Team TODOs

A screenshot of a web browser displaying the Trello homepage. The browser's address bar shows 'trello.com'. The page features the Trello logo, a main headline, a sub-headline, and a sign-up button.

Trello

Trello is the free, flexible, and visual way to organize anything with anyone.

Drop the lengthy email threads, out-of-date spreadsheets, no-longer-so-sticky notes, and clunky software for managing your projects. Trello lets you see everything about your project in a single glance.

[Sign Up – It's Free.](#)

[Log in...](#)

Standardize Filenames & Folder Structures



- *Main Folder*: Named (Conference or Journal Abbreviation) - (Short description of topic) - YYYY where YYYY is the four digit year of the conference
 - *figures* - the main folder that contains all the figures used in the paper
 - ◆ *sources* - a subfolder with the folder source files, if different than the included version.
 - ◆ *unused* - As your paper is edited, there will likely be figures that are no longer included in the paper.
 - *Submission documents* - a folder containing any submission, registration, *etc.* confirmations
 - *Reviews* - Most of our papers will be reviewed before being accepted. Store those reviews here. It is also helpful to store the initial submission version here.
 - *Presentation* - For conferences, include the presentation file (named in a similar manner as the `.tex` source file) and any supporting figures, movies, *etc.* in this folder.

Standardize Filenames & Folder Structures



Name	Date Modified	Size	Kind
figures	Today 4:02 PM	--	Folder
Command_form_inverted.pdf	Jun 6, 2013 5:07 PM	45 KB	Portab...(PDF)
Command_form.pdf	Jun 10, 2013 4:27 PM	46 KB	Portab...(PDF)
GT_jumping_matchedRange_surf.pdf	Jun 7, 2013 5:25 PM	1.8 MB	Portab...(PDF)
GT_jumping_matchedRange.pdf	Jun 3, 2013 4:51 PM	532 KB	Portab...(PDF)
GT_jumping.pdf	May 29, 2013 4:25 PM	1.2 MB	Portab...(PDF)
Height_vs_spacing.pdf	Jun 7, 2013 3:56 PM	408 KB	Portab...(PDF)
Jump_convolve.pdf	Jun 6, 2013 5:09 PM	83 KB	Portab...(PDF)
Jumping_command_position.pdf	Jun 12, 2013 5:31 PM	44 KB	Portab...(PDF)
Jumping_normalized_spacing_inverted.pdf	Jun 12, 2013 5:48 PM	597 KB	Portab...(PDF)
Jumping_normalized_spacing.pdf	Jun 12, 2013 5:48 PM	627 KB	Portab...(PDF)
Jumping_optim_scaled.pdf	Jun 10, 2013 6:27 PM	406 KB	Portab...(PDF)
Jumping_optim.pdf	Jun 10, 2013 4:46 PM	406 KB	Portab...(PDF)
Jumping_squat_example.pdf	Jun 7, 2013 12:06 PM	407 KB	Portab...(PDF)
Jumping_stutter_example.pdf	Jun 10, 2013 4:19 PM	57 KB	Portab...(PDF)
Linear_jumping_model.pdf	Mar 8, 2013 3:42 PM	55 KB	Portab...(PDF)
Sources	Today 4:00 PM	--	Folder
spring_compression.pdf	Mar 21, 2013 7:23 PM	68 KB	Portab...(PDF)
stutter_jump.pdf	Mar 21, 2013 7:23 PM	87 KB	Portab...(PDF)
unused	Today 4:01 PM	--	Folder
ISR_Jumping_2013.aux	Jul 12, 2013 1:50 PM	8 KB	aux
ISR_Jumping_2013.bbl	Jun 14, 2013 5:42 PM	7 KB	TeXSh...ument
ISR_Jumping_2013.blg	Jun 14, 2013 5:42 PM	2 KB	Document
ISR_Jumping_2013.doc	Jun 10, 2013 9:28 PM	22 KB	Micro...ument
ISR_Jumping_2013.log	Jul 12, 2013 1:50 PM	43 KB	Log File
ISR_Jumping_2013.out	Jul 12, 2013 1:50 PM	628 bytes	Document
ISR_Jumping_2013.pdf	Jul 12, 2013 1:50 PM	4.3 MB	Portab...(PDF)
ISR_Jumping_2013.synctex.gz	Jul 12, 2013 1:50 PM	85 KB	gzip c...rchive
ISR_Jumping_2013.tex	Jun 14, 2013 5:45 PM	29 KB	TeX source file
Master_bib_minimal.bib	Jun 14, 2013 5:42 PM	214 KB	BibTeX
Reviews	Today 3:59 PM	--	Folder
Submission Documents	Today 3:59 PM	--	Folder

Macintosh HD > Users > josh > Documents > Research > Papers copy > ISR - Jumping - 2013 > unused

32 items, 125.6 GB available

Software Version Tracking



- Use git, GitHub, svn, BitBucket, *etc.* to manage software, ***not***
`PDcontroller_newGains_new_v2_Final_FINAL.c`
- Allows rollback to working versions
- Allows branching for exploring new ideas/features
- Also acts as backup for software
- Can use for code and plain text documents
- My classes and my lab use GitHub

Version Tracking



The screenshot shows the GitHub homepage with a sign-up form on the right. The form includes fields for 'Pick a username', 'Your email', and 'Create a password'. Below the password field is a note: 'Use at least one lowercase letter, one numeral, and seven characters.' A green 'Sign up for GitHub' button is at the bottom of the form. Below the button is a disclaimer: 'By clicking "Sign up for GitHub", you agree to our terms of service and privacy policy. We will send you...'

GitHub Search GitHub Explore Features Enterprise Pricing Sign up Sign in

Where software is built

Powerful collaboration, code review, and code management for open source and private projects. Public projects are always free. Private plans start at \$7/mo.

Pick a username

Your email

Create a password

Use at least one lowercase letter, one numeral, and seven characters.

Sign up for GitHub

By clicking "Sign up for GitHub", you agree to our [terms of service](#) and [privacy policy](#). We will send you...

GitHub also gives a nice pack of “stuff” to students

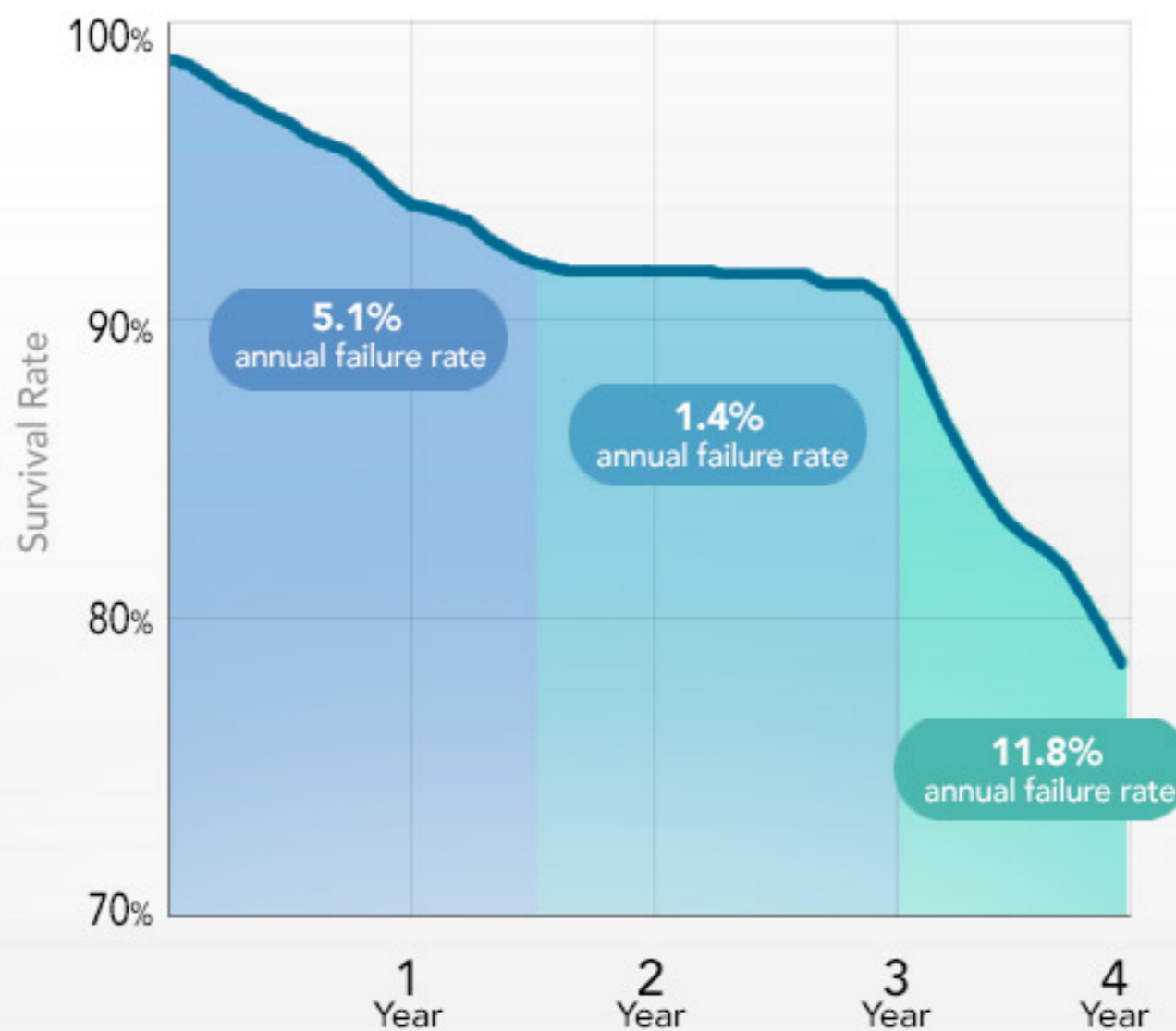
<https://education.github.com/pack/>

BACK UP YOUR DATA!!!!!!!



Drives Have 3 Distinct Failure Rates

Hard Drive Survival Rates - Chart 1



“2 is 1 and 1 is none”



- Windows 10 & macOS have built in backup solutions
 - macOS – Time Machine – <https://support.apple.com/en-us/HT201250>
 - Windows 10 – <https://support.microsoft.com/en-us/help/17143/windows-10-back-up-your-files>
 - For either, just regularly plug in your backup drive(s) – Do this **every** day!
- You might also have a byte-for-byte clone of your boot drive
- Best practice is to have 1 *more* backup **off-site**
 - Local files mirrored to DropBox, OneDrive, *etc.*
 - Backblaze, Arq, *etc.*

General Software Tools



- Office 365 – <https://helpdesk.louisiana.edu/office365student>
- Free Software List – <https://helpdesk.louisiana.edu/get-help/knowledgebase/software/more-free-software>
- Free, student versions of a lot of Autodesk software – <https://www.autodesk.com/education/home>

Tools for Mechatronics Kit



- Microsoft Visual Studio Code text editor – <https://code.visualstudio.com>
- CoolTerm – <http://freeware.the-meiers.org>

Figure and Image Formats



- Want **Vector Graphics** figures
 - A vector representation of the drawing is saved
 - Can zoom infinitely and figure is still crisp
- Avoid bitmap-based filetypes:
 - JPG
 - png
 - bmp
- Avoid using screenshots!!! (They are an *absolute* last-resort.)

Software for Figures



- Inkscape

- Download – <https://inkscape.org/>
- Tutorials – <https://inkscape.org/en/learn/tutorials/>

- Free (for students) CAD and CAD-like:

- Fusion360 – <https://www.autodesk.com/products/fusion-360/students-teachers-educators>
- SketchUp – <https://www.sketchup.com/products/sketchup-free>
- Tinkercad – <https://www.tinkercad.com>

Inserting Tables Into Word – macOS

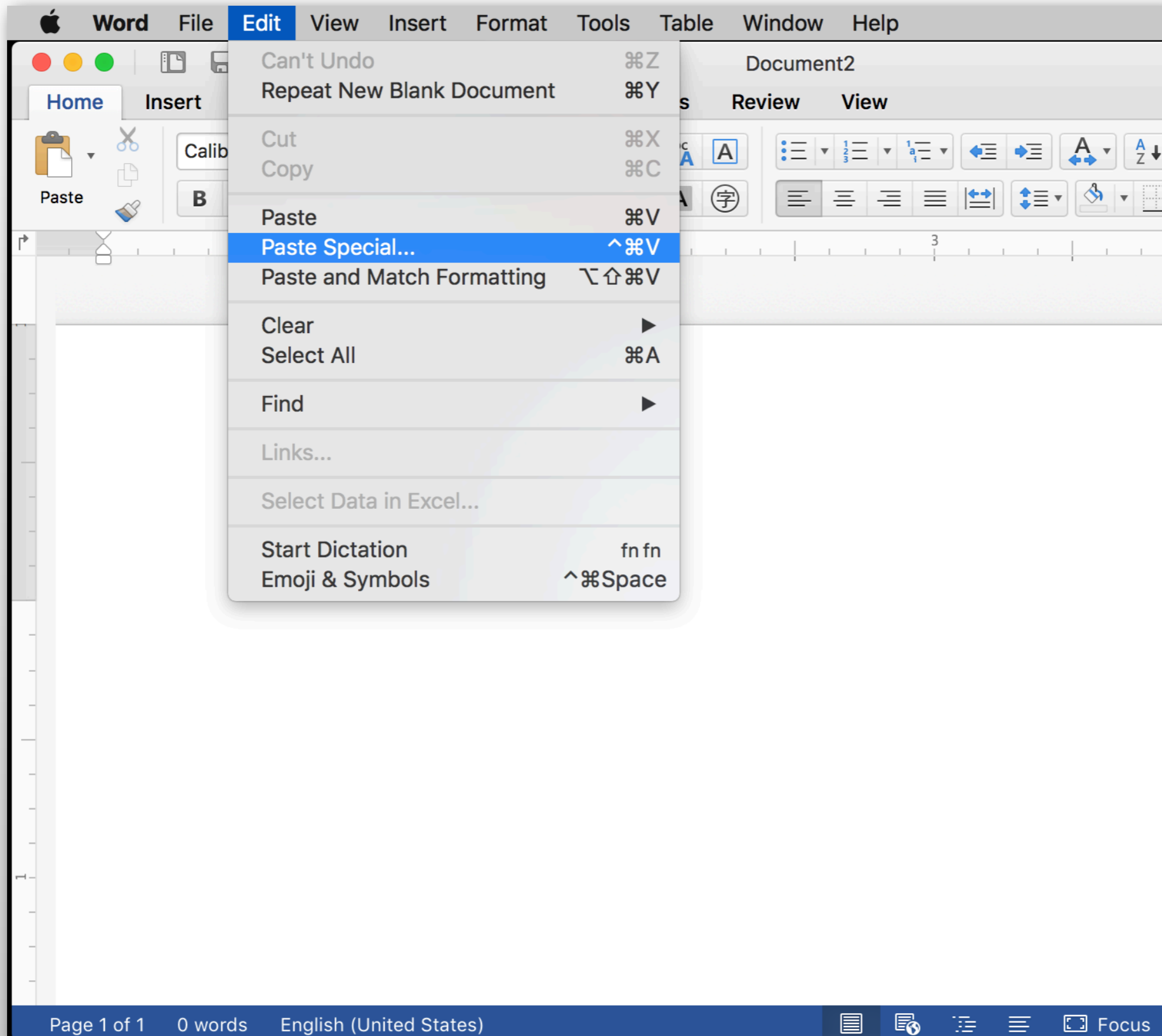


The screenshot shows the Microsoft Excel application window on macOS. The title bar indicates the file is 'Book1'. The ribbon is set to 'Home', and the 'Cells' group is active. A table is selected in the range A1:C4, containing the following data:

	A	B	C
1	1	2	3
2	1	4	9
3	1	16	81
4	1	256	6561

A context menu is open over the selected cells, with 'Copy' highlighted. The menu items include: Cut (⌘X), Copy (⌘C), Paste (⌘V), Paste Special... (⇧⌘V), Smart Lookup... (⇧⌘L), Thesaurus..., Insert..., Delete..., Clear Contents, Filter, Sort, Insert Comment, Format Cells... (⌘1), Pick From Drop-down List..., Define Name..., Hyperlink... (⌘K), and Additional Actions. The status bar at the bottom shows 'Ready', 'Average: 578', 'Count: 12', and a zoom level of 150%.

Inserting Tables Into Word – macOS



Inserting Tables Into Word – macOS



Word File Edit View Insert Format Tools Table Window Help

Document2 Search in Document

Home Insert Design Layout References Mailings Review View

Paste

Calibri (Body) 12 A A Aa abc A A

B I U abc X₂ X² A

Paste Special

Source: Microsoft Excel Worksheet
Sheet1!R1C1:R4C3

Paste
 Paste link

As:

- Microsoft Excel Worksheet Object
- Formatted Text (RTF)
- Unformatted Text
- HTML Format
- PDF**
- Picture (PNG)
- Picture (TIFF)
- Unformatted Unicode Text

Display as icon

Inserts the contents of the Clipboard as an Adobe Portable Document Format (PDF) file.

Cancel OK

Page 1 of 1 0 words English (United States) Focus 245%

Inserting Tables Into Word – Windows

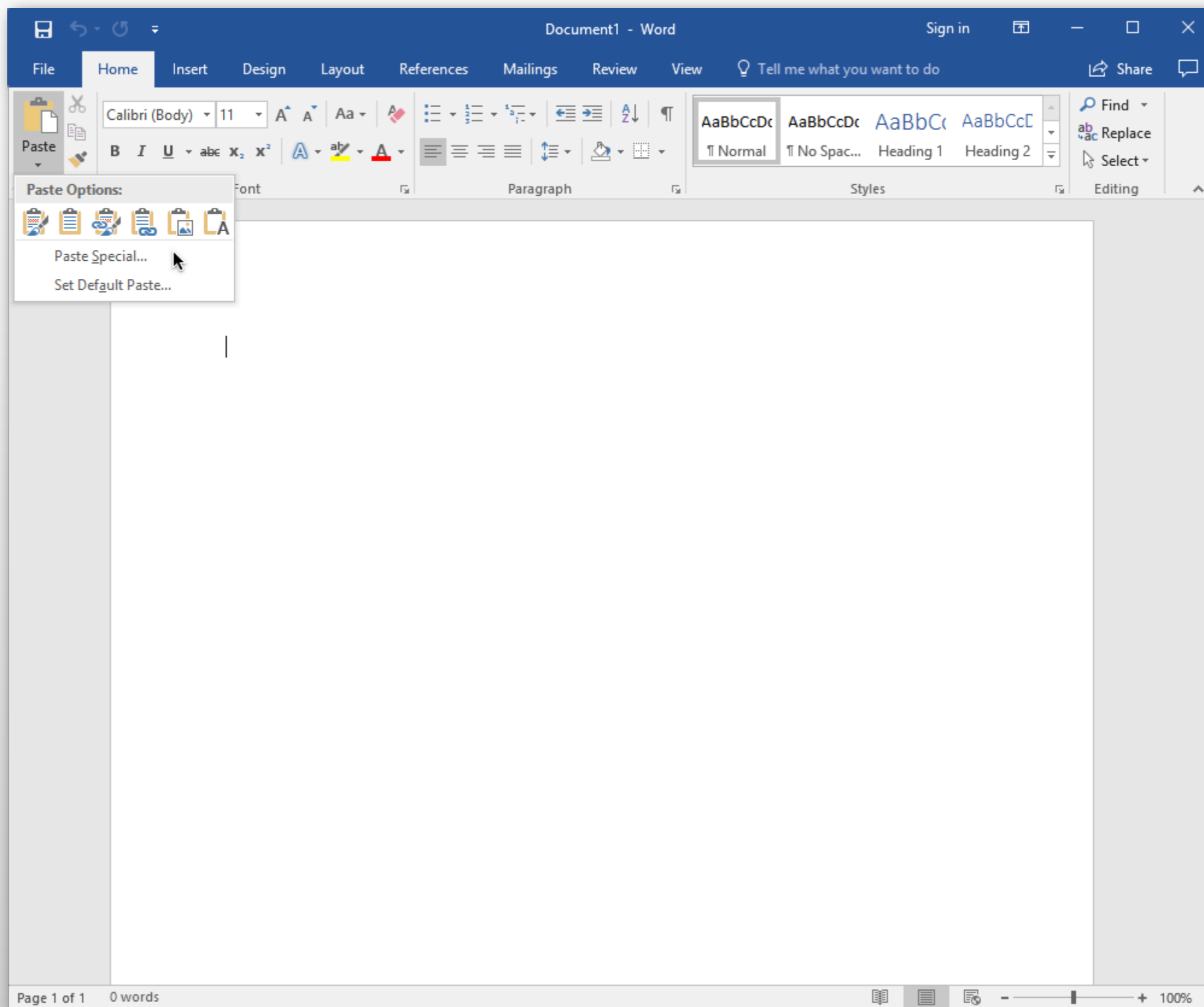


The screenshot shows the Microsoft Excel interface with the following data in the first four rows of columns A and B:

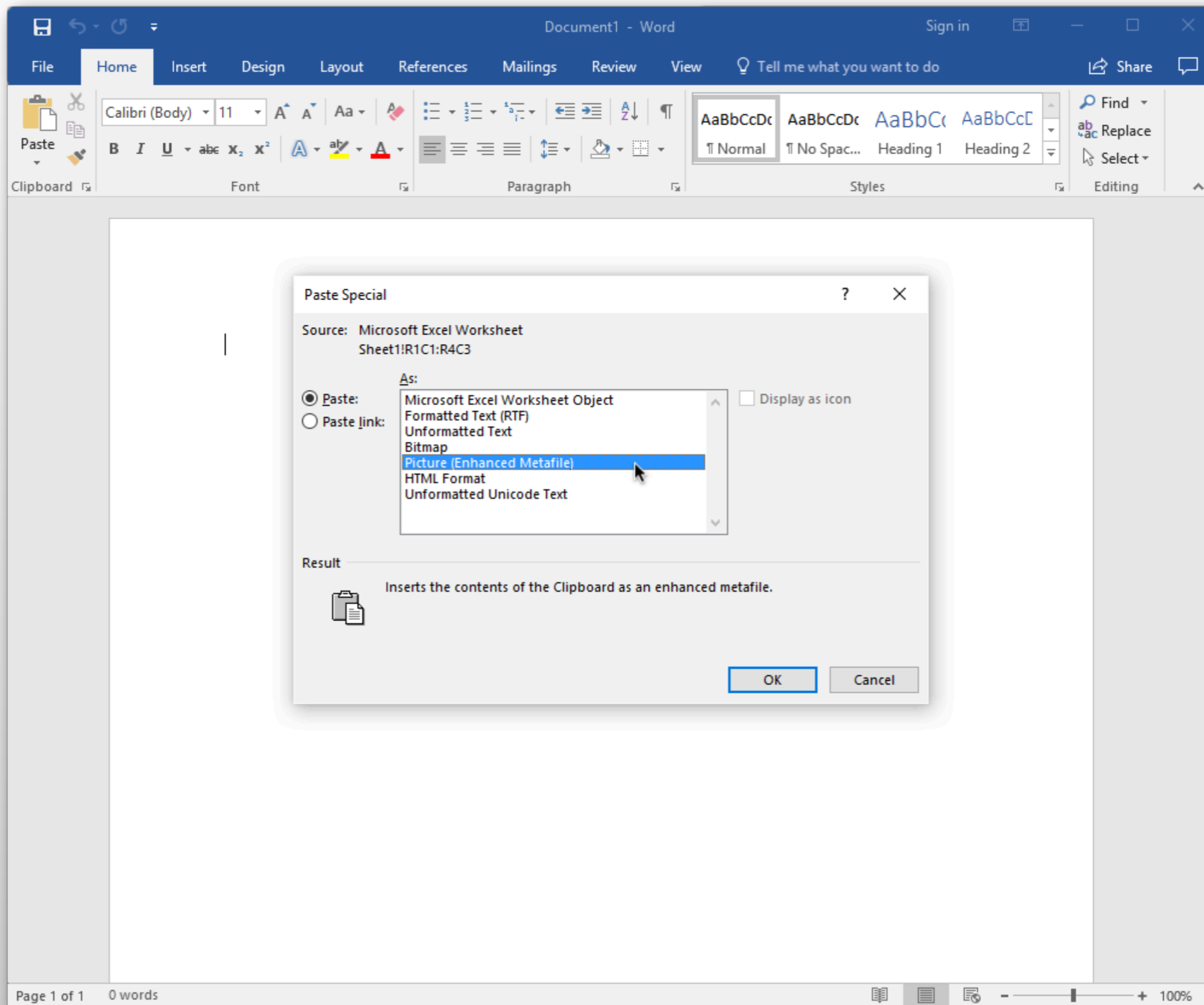
1	2
1	4
1	16
1	256

The context menu is open over the table, and the 'Copy' option is selected. The status bar at the bottom indicates 'Average: 578' and 'Count: 12 Sum: 6936'.

Inserting Tables Into Word – Windows



Inserting Tables Into Word – Windows



PDF vs Screenshot Comparison



Table 1: Inserted as a PDF

1	2	3
1	4	9
1	16	81
1	256	6561

Table 2: Inserted from a Screen Shot

1	2	3
1	4	9
1	16	81
1	256	6561

Page 1 of 1 13 words English (United States) Focus 245%

Inserting Captions – macOS



- Make your captions in the document preparation application, not the drawing or table application
- In Word:
 - Right click on the inserted object
 - Select *Insert Caption...*
 - Select Table or Figure
 - Type your descriptive Caption
 - Click ok

Inserting Captions – macOS



- Main application
- In

The screenshot shows the Microsoft Word macOS interface with the 'Picture Format' tab selected. A table is visible with a caption dialog box open over it. The table contains the following data:

1	2	3
1	4	9
1	16	81
1	256	6561

The 'Caption' dialog box is open, showing the following options:

- Caption:** Table 2
- Options:**
 - Label:** Table (dropdown menu)
 - Position:** Above selected item (dropdown menu)
 - Numbering:** Format... (button)
 - Exclude label from caption

Buttons at the bottom of the dialog: AutoCaption..., Cancel, OK.

Inserting Captions – Windows



- Make your captions in the document preparation application, not the drawing or table application
- In Word:
 - Right click on the inserted object
 - Select *Insert Caption...*
 - Select Table or Figure
 - Type your descriptive Caption
 - Click ok

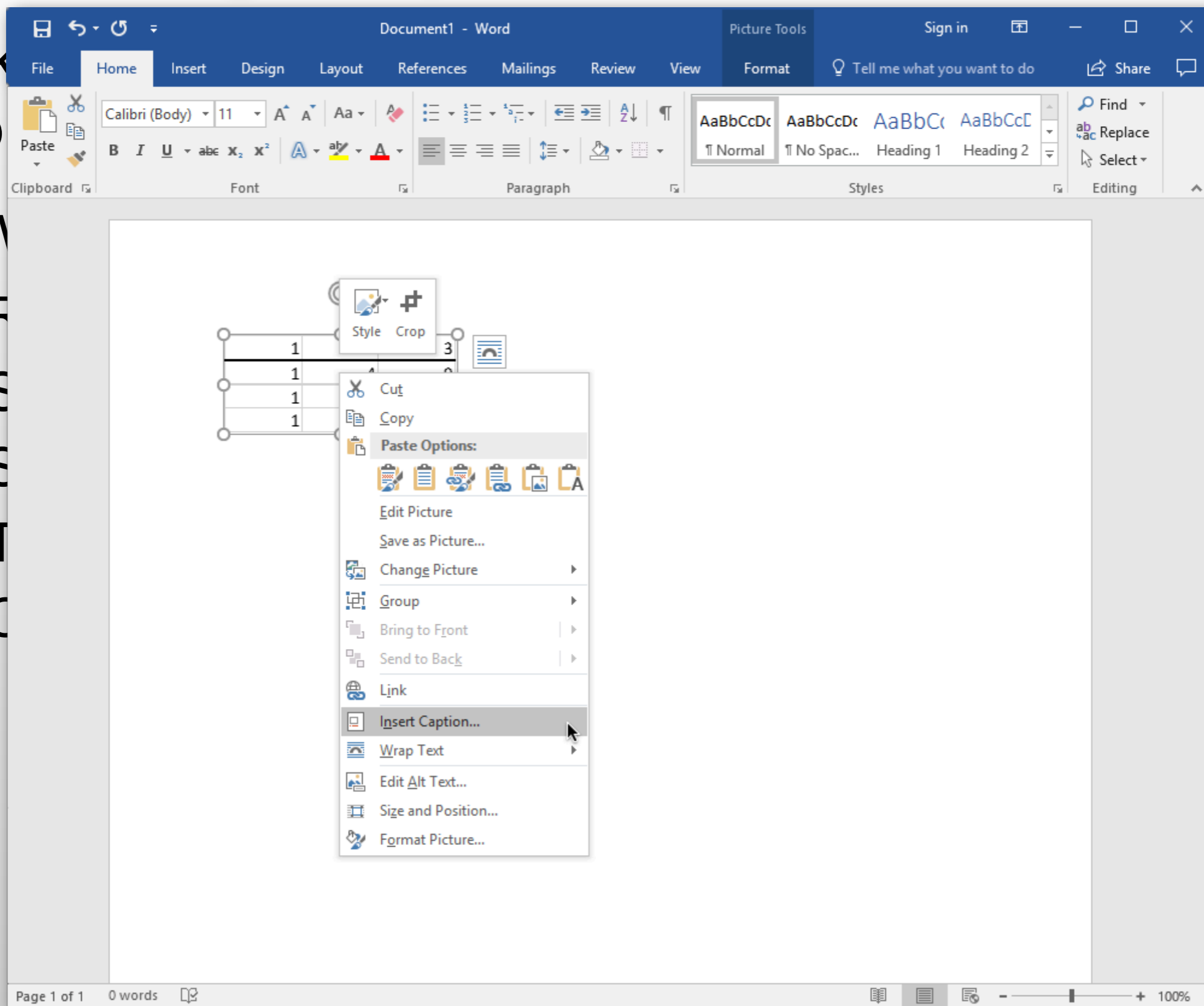
Inserting Captions – Windows



- Make app

- In W

- F
- S
- S
- T
- C



Inserting Captions – Windows



- Make app

- In W

- F
- S
- S
- T
- C

The screenshot shows the Microsoft Word interface with the 'Caption' dialog box open over a table. The table contains the following data:

1	2
1	4
1	16
1	256

The 'Caption' dialog box is configured as follows:

- Caption: Table 1
- Options:
 - Label: Table
 - Position: Above selected item
 - Exclude label from caption
- Buttons: New Label..., Delete Label, Numbering..., AutoCaption..., OK, Cancel

Another Document Prep. Option



- LaTeX – <https://www.latex-project.org>
- Lots of help online
 - <https://en.wikibooks.org/wiki/LaTeX>
 - https://www.overleaf.com/help/category/getting_started
- Run locally or in collaborative environment at <https://www.overleaf.com>
- There is a class template at <https://www.overleaf.com/latex/templates/mche-201-template/lpgzgpmmqmkr>

Other Resources



- Example reports from past semesters linked from class page – http://crawl.org/classes/MCHE201_Sp19/Supplemental/MCHE201ExampleReports.zip
- Pre-submission checklist linked from class page – http://crawl.org/classes/MCHE201_Sp19/Projects/MCHE201_ReportAndPresentation_Checklist.pdf
- Templates for the design tools are linked from the class page