



## Complete academic work faster with a Chromebook powered by Intel

### The Intel Core m3 processor-powered Samsung Chromebook Pro versus the Arm Rockchip processor-based Samsung Chromebook Plus

At Principled Technologies, we created a side-by-side video to compare education-related tasks in common apps using two Chromebooks: the Samsung Chromebook Pro powered by the Intel® Core™ m3 processor, and the Samsung Chromebook Plus with the Arm Rockchip processor.

On each system, we investigated performance in the Android versions of the Google Drive, Google Docs, and Google Sheets apps. We configured both systems to have access to the Google Play Store beta and simulated a background workload that accessed popular websites. We then downloaded and launched the first app on both systems. We used a camera to capture the tasks and recorded our results. We repeated this process for each app.

See what we found in the following video: <http://facts.pt/CShyyA>

On October 30, 2017, we finalized the hardware and software configurations we tested. Updates for current and recently released hardware and software appear often, so unavoidably these configurations may not represent the latest versions available when this report appears. For older systems, we chose configurations representative of typical purchases of those systems. We concluded hands-on testing on November 2, 2017.

## Appendix A: System configuration information

System	Samsung Chromebook Pro	Samsung Chromebook Plus
Processor	Intel Core m3-6Y30	ARM Rockchip
Processor freq (GHz)	0.9–2.2	2.0
Processor cores	2	6
Memory (GB)	4	4
Storage (GB)	32	32
Battery type	Li-Ion	Li-Ion
Battery capacity (Wh)	39	39
Display (size, resolution)	12.3", 2,400 x 1,600	12.3", 2,400 x 1,600
Wireless	802.11 AC	802.11 AC
Bluetooth	4.0	4.0
USB ports	2 x USB-C	2 x USB-C
System weight (lbs.)	2.38	2.38
OS (version)	61.0.3163.38 dev (64-bit)	61.0.3163.38 dev (32-bit)
Build/firmware	Caroline.7820.300.0	Kevin.8785.220.0

# Appendix B: How we tested

## Creating the background workload

To simulate typical Chromebook use, we ran a combination of news, email, chat, document viewing, music, and social media websites in the background. For websites that required accounts, we created test profiles and logged in the users on each device.

1. From the shelf, open Chromebook settings.
2. Navigate to the On Startup section of the settings, and select Open a specific page or set of pages.
3. Select Open a specific page or set of pages, insert the following URLs, and click OK.
  - forbes.com
  - markets.ft.com/data
  - arstechnica.com
  - mail.google.com
  - slack.com
  - drive.google.com
  - docs.google.com
  - youtube.com/feed/music
  - sheets.google.com
  - twitter.com
  - facebook.com
4. Restart the Chromebook. Before testing, navigate through each tab to ensure that both devices have fully loaded all the same content.

## Testing each application

### Google Sheets

#### Saving a large Google Sheet as an Excel document

1. From the Google Play Store, install Google Sheets, and pin the app to the shelf.
2. Launch the app from the shelf, and click Skip to skip the tutorial.
3. Close the app and reopen it by clicking on the Sheets icon on the shelf.
4. From the recent files screen, click the test Sheet to open it.
5. Click the menu icon from the top navigation bar.
6. Click Share & export, and click Save As...
7. With Excel (.xlsx) selected, start the timer and click OK.
8. When the saving dialog closes, stop the timer.

#### Preparing a print preview (large document)

1. From the shelf, click the Google Sheets icon to launch the app.
2. From the recent files screen, click the test Sheet to open it.
3. Click the menu icon from the top navigation bar.
4. Click Share & export, start the timer, and click Print.
5. When the print preview fully loads, stop the timer.

### Google Drive

#### Launching Google Drive

1. From the Google Play Store, install Google Drive, and pin the app to the shelf.
2. Simultaneously start the timer and click the Drive icon from the shelf.
3. When the Drive app fully loads, stop the timer.

#### Opening a Google Docs document

1. Install Google Drive from the Google Play Store, and pin the app to the shelf.
2. Launch the app from the shelf.
3. From the files list, start the timer and click the test Google Doc.
4. Stop the timer when the document fully loads.

### Loading a print preview for eBook PDF

1. Launch the app from the shelf.
2. From the files list, click the thumbnail for the test PDF.
3. When the PDF loads, click the dropdown menu icon.
4. Start the timer, and click Print.
5. When the print preview fully loads, stop the timer.

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Benchmark results were obtained prior to implementation of recent software patches and firmware updates intended to address exploits referred to as "Spectre" and "Meltdown". Implementation of these updates may make these results inapplicable to your device or system.