Improve virtual classroom performance with a Dell Chromebook 3100

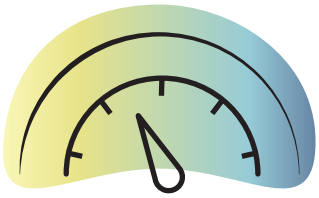
An Intel Celeron N4020 processor-powered Dell Chromebook had better video chat and web app performance, a longer battery life, and shorter app wait times compared to an AMD A4-9120C processor-powered HP Chromebook

To make the best of remote education, it pays to equip students and teachers with devices that can give them as fast and responsive an experience as possible.

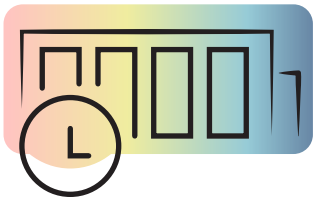
In hands-on tests, we compared the web app responsiveness, system responsiveness, battery life, and video chat performance of two Chromebooks™:

- Dell™ Chromebook 3100 powered by an Intel® Celeron® N4020 processor
- HP Chromebook 11 G8 EE powered by an AMD A4-9120C processor

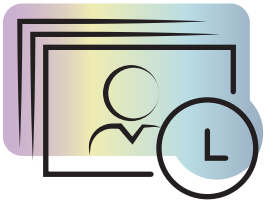
We found that the Intel Celeron N4020 processor-powered Dell Chromebook 3100 had a longer battery life by 4.5 hours, had a better video send resolution while video chatting, saved time on common tasks in educational apps, and had a higher score on the Speedometer 2.0 web browser benchmark, suggesting it would feel more responsive while a student uses web applications.



34% better web app responsiveness*
in Speedometer 2.0



4.5 more hours of battery life (15 hours total)*



Send 53% more frames per second
in Zoom

*Comparing a Dell Chromebook 3100 powered by an Intel Celeron N4020 processor to an HP Chromebook 11 G8 EE powered by an AMD A4-9120C processor

Dell Chromebook 3100

This 11-inch Chromebook features an anti-glare screen, 32GB eMMC storage, a two-core Intel Celeron N4020 processor, and other notable highlights which we show below.

53%
more
video send frames per second*

11.6-inch HD screen
with 1,366 x 768 resolution

HD fixed-focus camera
with 720p resolution

Ports:
2 x USB 3.1 Type-C
2 x USB 3.1 Gen 1

Band Wireless AC 9560
(802.11ac) 2x2 +
Bluetooth 5.0

Weight: 2.85 lbs (1.29 kg)

Battery: Three-cell,
42Wh lithium ion

*Comparing a Dell Chromebook 3100 powered by an Intel Celeron N4020 processor to an HP Chromebook 11 G8 EE powered by an AMD A4-9120C processor

Our testing

We tested the following two devices:

- **Dell Chromebook 3100** powered by a dual-core Intel Celeron N4020 processor and a three-cell, 42Wh lithium ion battery
- **HP Chromebook 11 G8 EE** powered by a dual-core AMD A4-9120C processor and a two-cell, 47Wh lithium ion polymer battery

Note that the battery life and performance benchmark scores we report reflect the device configurations we tested. Any difference in the configurations you test, as well as factors including screen brightness, network traffic, or software additions, can affect these results. For a deeper dive into our testing parameters and procedures, read the science behind this report.

Web app responsiveness

Speedometer 2.0 is a benchmark that assesses system web app responsiveness—or, in other words, how quickly web-based applications respond to user input. The Intel Celeron N4020 processor-powered Dell Chromebook 3100 achieved a 34 percent higher Speedometer 2.0 score than the AMD A4-9120C processor-powered HP Chromebook 11 G8 EE, which could mean a better user experience on apps like Soundtrap that run from the Chrome browser.

34% better web app responsiveness
with BrowserBench.org Speedometer benchmark

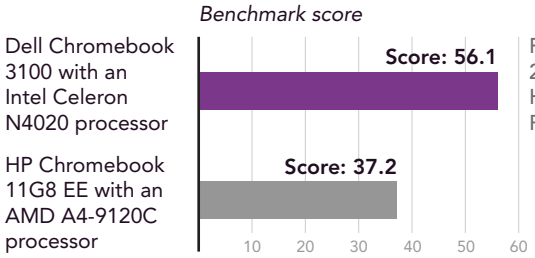


Figure 1: Speedometer 2.0 benchmark score. Higher is better. Source: Principled Technologies.

Battery life

Both the Dell Chromebook 3100 and the HP Chromebook 11 G8 EE had enough battery power to last through the school day; however, the Intel Celeron N4020 processor-powered Chromebook, with its three-cell, 42Wh battery, delivered 4.5 more hours of battery life (15 hours total) compared to the AMD A4-9120C processor-powered Chromebook.

30% longer battery life
with CrXPRT 2 benchmark

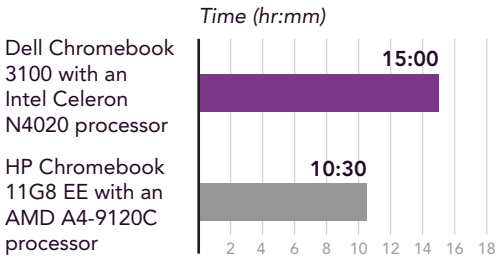


Figure 2: Battery life measurement from the CrXPRT 2 benchmark. More time is better. Source: Principled Technologies.

Higher frame rate for outgoing video boosts your classroom's image

When you are on a video call, the rate of images per second your device can send out affects how smooth your video appears to others. For a virtual classroom, a higher video send frame rate could mean a better experience for students and teachers alike.

According to Zoom call statistics from our testing, the Intel Celeron N4020 processor-powered Dell Chromebook 3100 supported 53 percent more video send frames per second than the AMD A4-9120C processor-powered HP Chromebook 11 G8 EE on average.

Average outgoing video frame rate: 53% better
with Zoom

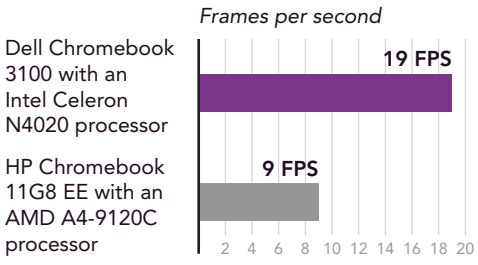


Figure 3: Average video-send frame rate during a Zoom call. More frames per second is better. Source: Principled Technologies.

Note: The x axes on this page differs from graph to graph in order to keep a consistent visual size. Please be mindful of each graph's data range as you compare.

Teachers: Save time during lesson planning

Explain Everything™ is an interactive whiteboard application that teachers can use to produce and share lessons and facilitate communication between teacher and student. As Figures 4 and 5 show, the Intel Celeron N4020 processor-powered Dell Chromebook 3100 saved time on two tasks within this app: opening a local presentation and exporting a presentation video.

Open a presentation in 70% less time
with Explain Everything
Save up to 6 seconds

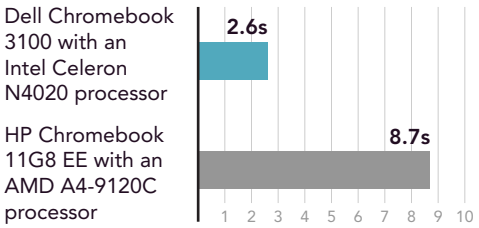


Figure 4: Time (in seconds) to open a presentation in the Explain Everything app. Less time is better. Source: Principled Technologies.

Export a presentation video in 29% less time
with Explain Everything
Save up to 1.9 seconds

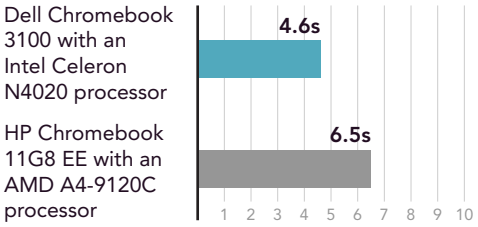
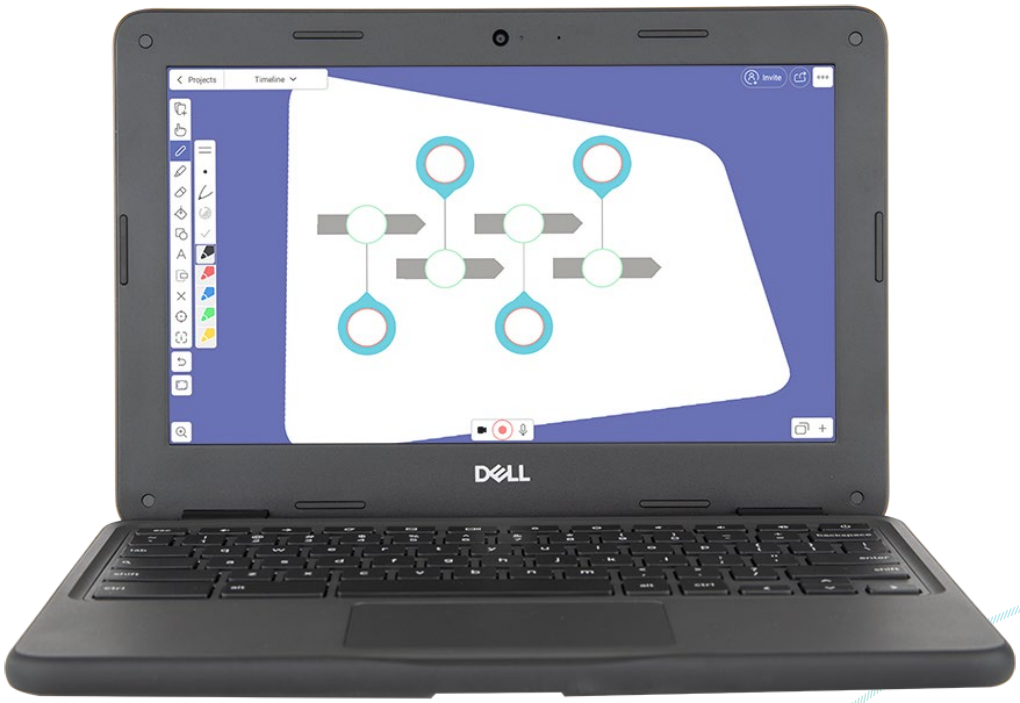


Figure 5: Time (in seconds) to export a presentation video from the Explain Everything app. Less time is better. Source: Principled Technologies.



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Help students save time on creative projects

Sound and video-based work often demands more system resources than document-based assignments. In our tests, the Intel Celeron processor-powered Dell Chromebook 3100 completed tasks in three creative apps in less time than the AMD A4 processor-powered HP Chromebook 11 G8 EE. These apps include the WeVideo video editor, the computer-assisted design (CAD) app Tinkercad®, and the online music production app Soundtrap.

Render a video in 35% less time

with WeVideo

Save up to 46 seconds

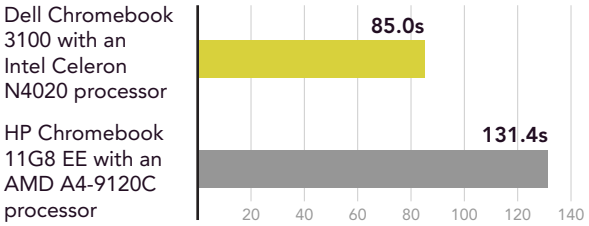


Figure 6: Time (in seconds) to render a video in the WeVideo Video Editor app. Less time is better. Source: Principled Technologies.

Load a design gallery in 17% less time

with Tinkercad

Save up to 0.7 seconds

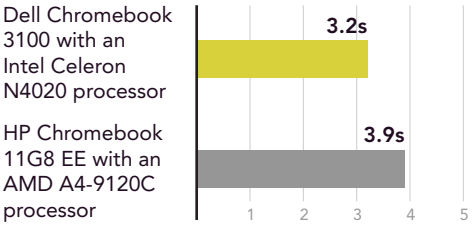


Figure 7: Time (in seconds) to load a design gallery in the Tinkercad app. Less time is better. Source: Principled Technologies.

Open a model in 18% less time

with Tinkercad

Save up to 4 seconds

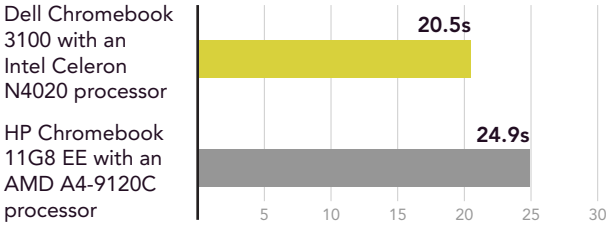


Figure 8: Time (in seconds) to open a pre-built model in the Tinkercad app. Less time is better. Source: Principled Technologies.

Merge tracks in 24% less time

with Soundtrap

Save up to 12 seconds

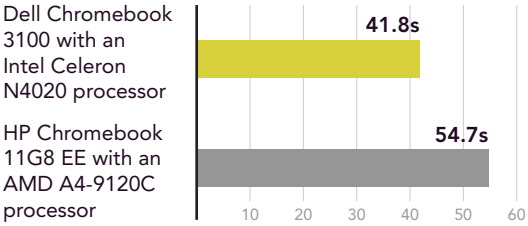


Figure 9: Time (in seconds) to merge tracks in the Soundtrap app. Less time is better. Source: Principled Technologies.

Note: The x axes on this page differs from graph to graph in order to keep a consistent visual size. Please be mindful of each graph's data range as you compare.

Improve multitasking during remote learning sessions

When more schools were open for in-person learning, a student's device would be reserved for working on in-class projects while teachers interacted with students in the real world. Now, however, many student devices are doing double duty, simultaneously supporting project work as well as class sessions.

In our tests, the Intel Celeron N4020 processor-powered Dell Chromebook 3100 saved time compared to the AMD A4-9120C processor-powered HP Chromebook 11 G8 EE during several project-related tasks while simultaneously keeping up with a Zoom video call.

Preview a large PDF in 21% less time

while multitasking in Zoom meeting

Save up to 2 seconds

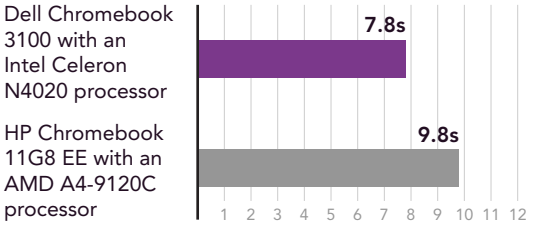


Figure 10: Time (in seconds) to preview a large PDF in Adobe Reader DC while on a Zoom call. Less time is better. Source: Principled Technologies.

Print preview a PDF

while multitasking in Zoom meeting

3 seconds difference

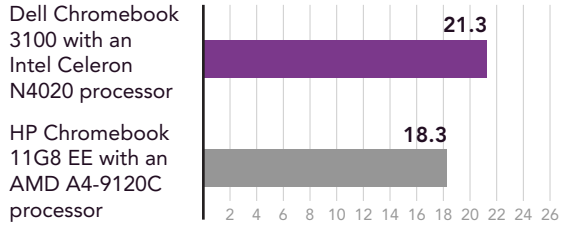


Figure 11: Time (in seconds) to view a print preview of a PDF while on a Zoom call. Less time is better. Source: Principled Technologies.

Open a large .csv file in 38% less time

while multitasking in Zoom meeting

Save up to 26 seconds

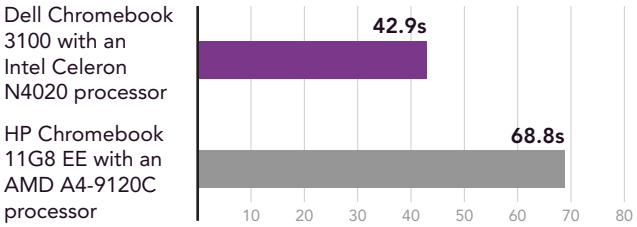


Figure 12: Time (in seconds) to open a large .csv file in Google Sheets while on a Zoom call. Less time is better. Source: Principled Technologies.

Open a large .docx file in 41% less time

while multitasking in Zoom meeting

Save up to 7 seconds

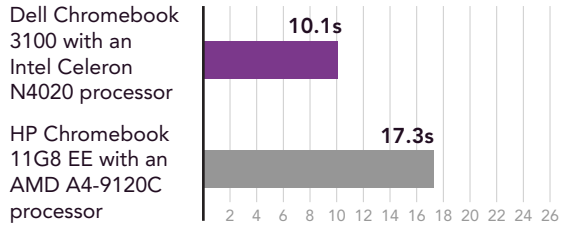


Figure 13: Time (in seconds) to open a large .docx file in Google Docs while on a Zoom call. Less time is better. Source: Principled Technologies.

Open and save .docx file in 32% less time

while multitasking in Zoom meeting

Save up to 5 seconds

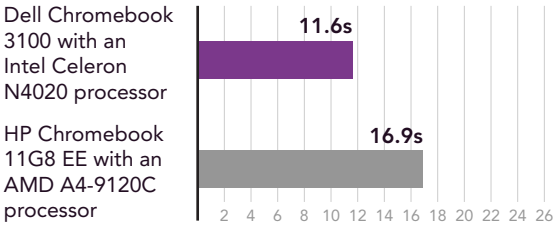


Figure 14: Time (in seconds) to open and save a .docx file in Google Docs while on a Zoom call. Less time is better. Source: Principled Technologies.

Open shared project in 31% less time

while multitasking in Zoom meeting

Save up to 6 seconds

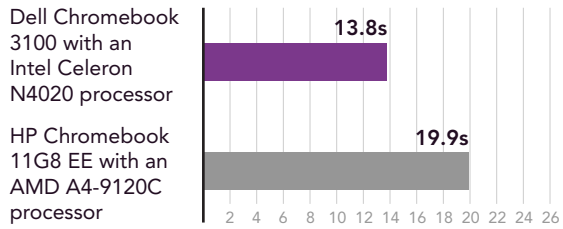
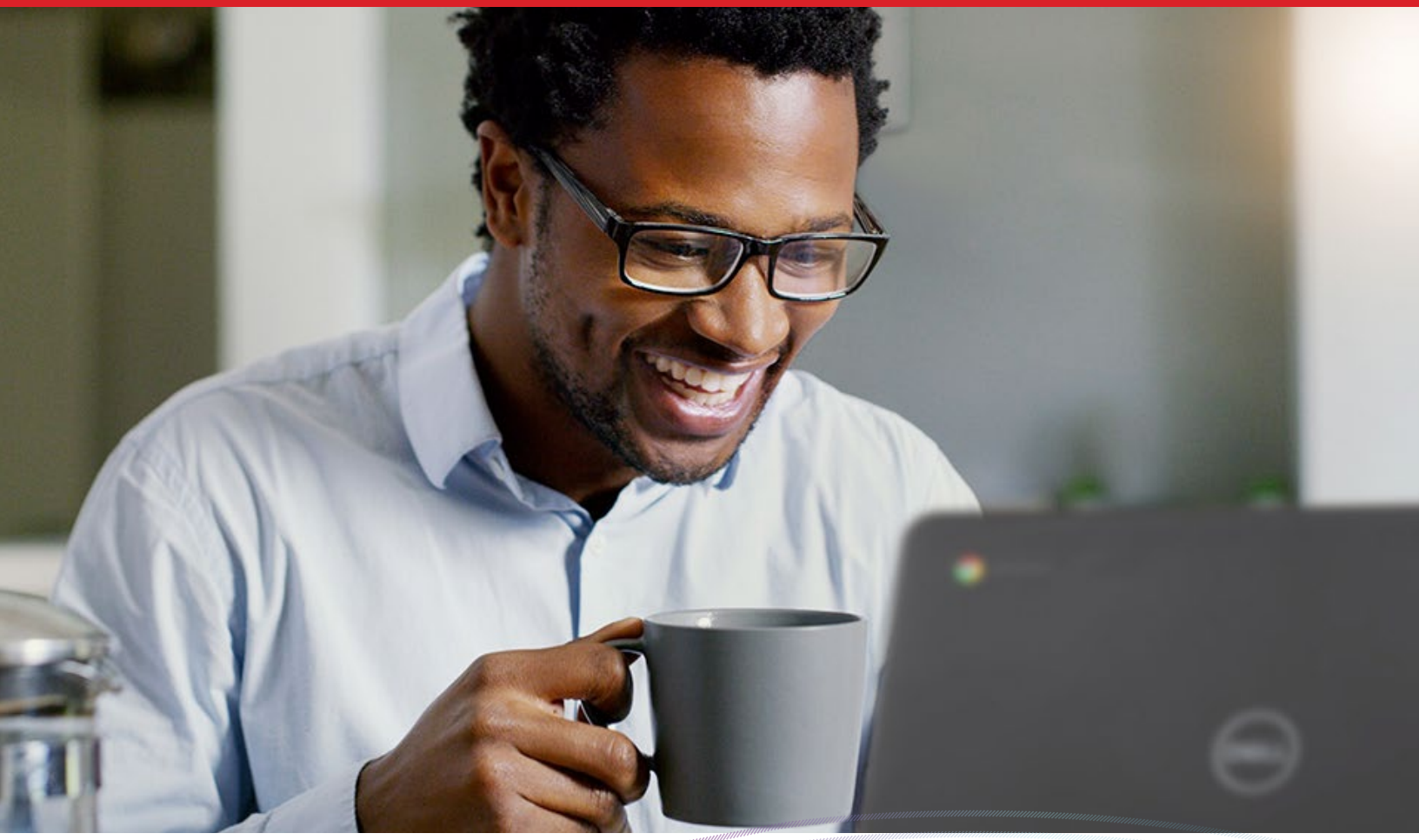


Figure 15: Time (in seconds) to open a shared project in Google Slides while on a Zoom call. Less time is better. Source: Principled Technologies.



Conclusion

Choosing a fast and responsive Chromebook can give teachers and students a better remote learning experience, and can even help facilitate virtual classroom communication. In our tests, a Dell Chromebook 3100 powered by an Intel Celeron N4020 processor achieved the following benefits when compared to an HP Chromebook 11 G8 EE powered by an AMD A4-9120C processor:

- More fluid video transmission during a Zoom call
- Better web app performance in Speedometer 2.0
- Longer battery life
- Less time to complete tasks in apps for lesson planning
- Less time to complete tasks in apps for computer-assisted design (CAD)
- Less time to complete tasks in apps for sound and video editing
- Better performance when completing productivity tasks during a Zoom call

Read the science behind this report at http://facts.pt/Z1ubwPi ►

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For additional information, review the science behind this report.

This project was commissioned by Dell Technologies.