



Acer Chromebook 712 C871-328J with an Intel Core i3-10110U processor



Acer Chromebook 712 C871T-C5YF with an Intel Celeron 5205U processor

## Support a range of student activities with an Acer Chromebook 712 powered by Intel processors

By the time a student reaches high school, they may well be involved with a range of pursuits, from the usual classroom fare of literature, mathematics, science, and history, to extracurricular ventures, club activities, and hobbies. No matter what a student's interests are, it pays to have a device that can keep up with their passion and drive.

At Principled Technologies, we assessed the responsiveness of two configurations of Acer Chromebook 712: one powered by an Intel® Core™ i3-10110U processor, and the other powered by an Intel Celeron® 5205U processor. Our hands-on tests measured the time required for each Chromebook™ to complete sequences of tasks in a variety of apps that students use in classrooms around the world. We tested these tasks while each Chromebook was connected to a Google Meet call.

Though both Chromebooks were responsive, we consistently found that the Intel Core i3 processor-powered Chromebook was faster to finish tasks. Even so, at the time of this writing, the Intel Celeron configuration of the Acer Chromebook 712 costs \$120 less than the Intel Core i3 configuration. Depending on your needs, either device may be right for your classrooms.<sup>1</sup>

In our hands-on tests, we found that the Intel Core i3-10110U processor-powered Chromebook provided the following advantages:



Up to **55%** less time collaborating on presentations<sup>†‡</sup>



Up to **51%** less time editing photos<sup>†‡</sup>



Up to **43%** less time working with documents and spreadsheets<sup>†‡</sup>

<sup>†</sup>Acer Chromebook 712 C871-328J with 10th Gen Intel Core i3-10110U processor compared to an Acer Chromebook 712 C871T-C5YF with an Intel Celeron 5205U processor

<sup>‡</sup>See [the science behind this report](#) for detailed system configurations and benchmark results.

The Acer Chromebook 712 has a design that some product reviewers are praising for being durable enough to survive the less-than-delicate care that students sometimes employ.

Buzz Garwood of EdTech Magazine tested the rugged capabilities of the Chromebook 712 by dropping it from a table 48 inches off the ground. Garwood writes "the [Chromebook] landed on its front right corner and bounced a couple of times before resting on the floor...I was hard-pressed to find even a scuff mark on it, thanks to the rubberized shock-absorbing bumper[.]"<sup>2</sup> You can purchase the Acer Chromebook 712 with either an Intel Celeron or Intel Core i3 processor, but both configurations will get you all the beneficial features outlined on this page.<sup>Δ</sup>



According to Intel, Wi-Fi 6 (802.11ax) can potentially provide up to 2.8 times the theoretical maximum data throughput compared to Wi-Fi 5 (802.11ac) when a Wi-Fi 6-enabled device is connected to a Wi-Fi 6-enabled router.<sup>3</sup>

Intel simulation data also suggests Wi-Fi 6 can result in up to 75% less latency than Wi-Fi 5 when the router and device both support OFDMA.<sup>4</sup>

With the greater throughput that Wi-Fi 6 can offer, users may see better upload and download speeds.

Get quality features no matter which Intel processor you choose



**Durability:** According to Acer, the Chromebook 712 is MIL-STD 810G certified for reliability in high and low temperatures, rain, humidity, vibration, and four-foot-high drops. It also has a spill-resistant keyboard and a moisture-resistant touchpad.<sup>5</sup>

<sup>Δ</sup>See [the science behind this report](#) for detailed system configurations and benchmark results.

In this report, text in the **colored sections overlaying the photographs** represents fictional scenarios based on the results of PT testing. Though the people aren't real, the scenarios present a lifelike picture of the benefits users may see in the real world.



Note: Each timed graph in this report uses a different scale to ensure each graph can comfortably fit within the page.

## How we tested

We compared each Chromebook's responsiveness by hand-timing three sequences of tasks that involve common classroom apps. Before performing each sequence, we connected the Chromebooks to a two-way Google Meet call and ran an assortment of apps in the background. In this way, we hoped to reflect a realistic remote-learning scenario where students collaborate on classroom tasks while videoconferencing and having other apps open.

## Collaborate on presentations in Google Slides in less time

The first task sequence we tested involved collaborating on Google Drive and Google Slides. Notably, the Intel Core i3-10110U processor-powered Chromebook saved 63.9 percent of the time required to make an edit to a Google Slides presentation, completing the task in 18.6 seconds compared to the Intel Celeron 5205U processor-powered Chromebook's time of 51.6 seconds.

### Save up to 42.5 seconds working with presentations and photos during a Google Meet call with Google Meet, Google Drive™, and Google Slides

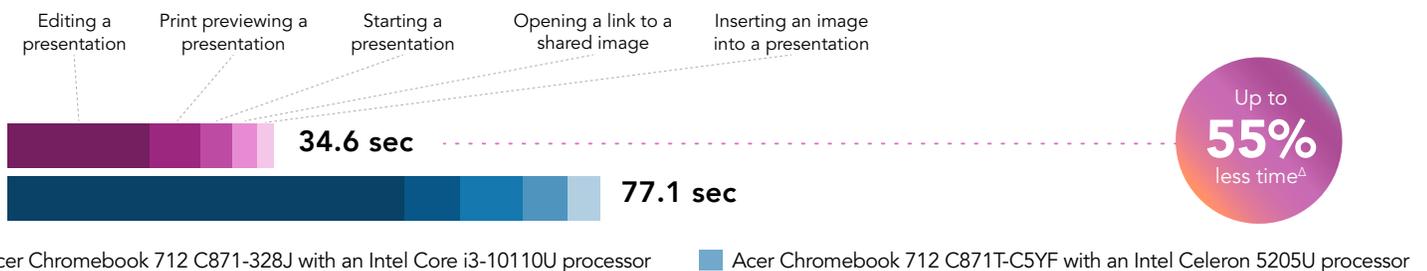


Figure 1: Time (in seconds) to complete tasks in Google Workspace apps. Less time is better. Source: Principled Technologies.

#### Google Meet

Google has made their premium videoconferencing product free and available to the general public. According to Google, the app is used in schools, governments, and companies worldwide.<sup>6</sup>

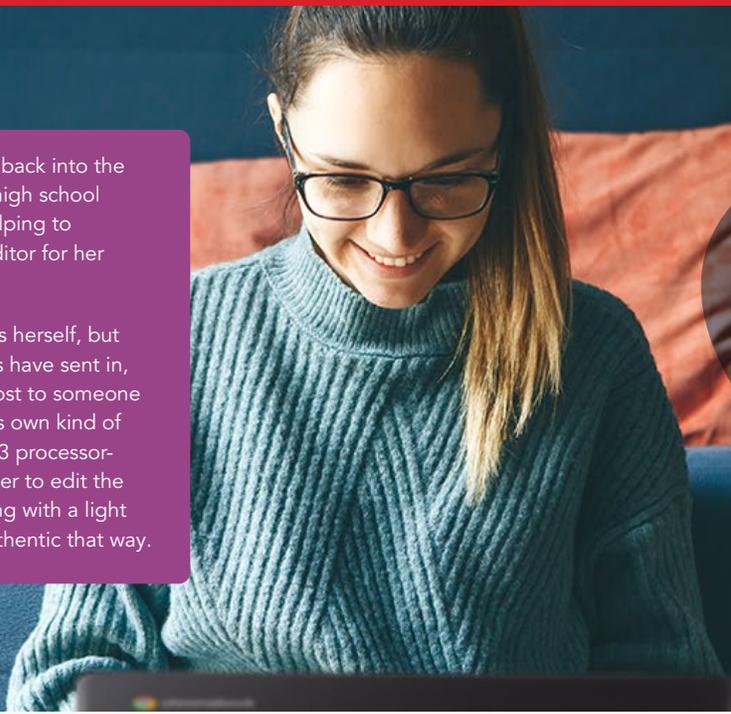
#### Google Workspace

Former G Suite app offerings are now branded as Google Workspace—but you'll still get the same productivity and collaboration tools you've used in the past, including Google Docs™, Google Slides™, Google Meet, Google Drive, and more.<sup>7</sup>

<sup>Δ</sup>See [the science behind this report](#) for detailed system configurations and benchmark results.

Melissa is beyond excited to get back into the classroom for her senior year of high school next year. But right now, she's helping to put the cap on this as a photo-editor for her school's yearbook.

Normally she'd be taking pictures herself, but seeing the photos her classmates have sent in, the things that have mattered most to someone through their own lens, offers its own kind of excitement. Melissa's Intel Core i3 processor-powered Chromebook enables her to edit the photos with ease, but she's editing with a light touch this time—it feels more authentic that way.



Note: Each timed graph in this report uses a different scale to ensure each graph can comfortably fit within the page.

## Edit photos in Adobe applications in less time

This task sequence focused on work in photo-manipulation applications Adobe® Photoshop Lightroom® and Adobe Photoshop® Express. When batch-processing a set of 140 photos in Adobe Photoshop Lightroom, the Intel Core i3 processor-powered Chromebook took just 44 seconds compared to 129 seconds for the Intel Celeron processor-powered Chromebook, a savings of more than a minute.

### Save up to 373.7 seconds editing photos during a Google Meet call with Adobe Lightroom and Adobe Photoshop Express

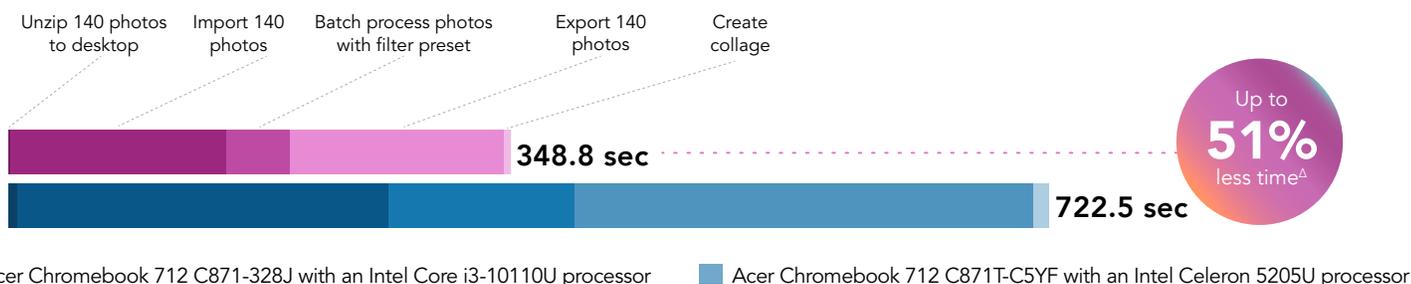


Figure 2: Time (in seconds) to complete photo-editing tasks. Less time is better. Source: Principled Technologies.

#### Adobe Photoshop Lightroom

Adobe Photoshop Lightroom is a free photo editing and camera app that enables students to use customizable filters and other options to create their next photography project.<sup>8</sup>

#### Adobe Photoshop Express

Photoshop Express is a free photo editing app for Android™ devices. The integrations in Photoshop Express enable students to pull photos from Google Photos and other image hosting apps and websites.<sup>9</sup>

<sup>Δ</sup>See [the science behind this report](#) for detailed system configurations and benchmark results.



East River High's yearbook has won national awards for its creative designs. But when she was a freshman, Zana was more impressed that anyone managed to fit the school lives of all 3,000+ of their classmates in a single book. Now, as project manager, it's her turn to try.

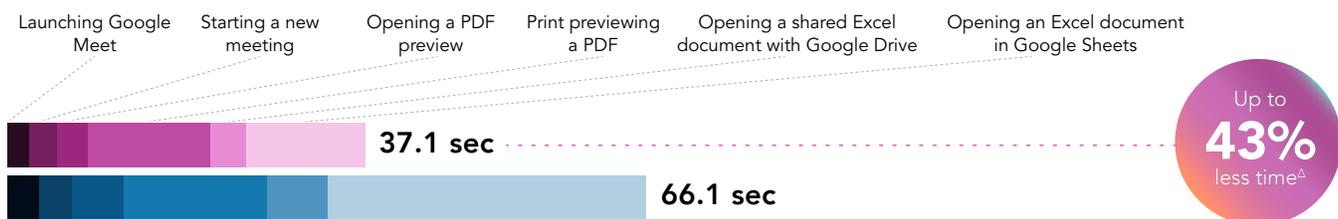
Right now, Zana is looking through the full content spreadsheet on Google Drive. It's a sprawling mass of hundreds of rows with thousands of names across multiple tabs—but her Intel Core i3 processor-powered Chromebook handles the task with ease.

Note: Each timed graph in this report uses a different scale to ensure each graph can comfortably fit within the page.

## Review shared documents during class in less time

In this task sequence, we opened and reviewed a PDF and Microsoft Excel document from within Google Drive. When opening an Excel document in Google Sheets, the Chromebook with the Intel Core i3 processor finished in 12.3 seconds, which was 62 percent less time than the Chromebook with the Intel Celeron processor's 32.9 seconds. Note that we included the time to launch Google Meet in this scenario, as opposed to the previous scenarios where we excluded this time from the total.

### Save up to 29.0 seconds reviewing documents during a Google Meet call with Google Drive and Google Sheets



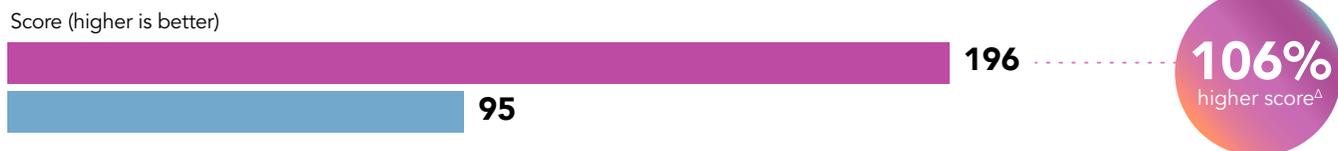
■ Acer Chromebook 712 C871-328J with an Intel Core i3-10110U processor    ■ Acer Chromebook 712 C871T-C5YF with an Intel Celeron 5205U processor

Figure 3: Time (in seconds) to complete document and spreadsheet review tasks. Less time is better. Source: Principled Technologies.

## Get better performance on a web-browsing benchmark

WebXPRT 3 is a web-browsing benchmark that measures how well different devices handle tasks in online applications and webpages.<sup>10</sup> The Intel Core i3-10110U processor-powered Chromebook received a score of 196, which is 1.06 times that of the Intel Celeron 5205U score of 95. The higher score means that the Intel Core i3 processor-powered Chromebook would likely be faster to load websites and web apps.

### WebXPRT 3 score



■ Acer Chromebook 712 C871-328J with an Intel Core i3-10110U processor    ■ Acer Chromebook 712 C871T-C5YF with an Intel Celeron 5205U processor

Figure 4: WebXPRT 3 scores. A higher score is better. Source: Principled Technologies.

<sup>A</sup>See [the science behind this report](#) for detailed system configurations and benchmark results.



## Conclusion

Whether your school's students will be returning to the classroom or learning from home next year, having a fast Chromebook could enable them to quickly accomplish a variety of tasks. In our hands-on tests, we found that an Intel Core i3-10110U processor-powered Acer Chromebook 712 performed tasks faster than the same model Chromebook with an Intel Celeron 5205U. Despite the performance difference, both Chromebooks we tested offered key features—such as Wi-Fi 6 and MIL-STD-810G-certified durability—that potential customers may find useful. The Intel Celeron 5205U processor-powered Chromebook also carries a lower price tag than the Intel Core i3-10110U processor-powered Chromebook at the time of this writing, and is available in a touchscreen configuration.

For more information, visit <https://www.intel.com/content/www/us/en/products/systems-devices/laptops/chromebooks.html>.

- 1 These are the suggested prices Acer provided on their site on June 1, 2021. The Acer website did not allow us to directly build the exact devices we used for testing to check for current pricing.  
<https://www.acer.com/ac/en/US/content/models/laptops/acerchromebook712>.
- 2 Buzz Garwood, "Review: Acer Chromebook C871 Survives Student Use (and Abuse)," accessed June 1, 2021,  
<https://edtechmagazine.com/k12/article/2020/10/review-acer-chromebook-c871-survives-student-use-and-abuse>.
- 3 "What is Wi-Fi 6?," accessed June 18, 2021,  
<https://www.intel.com/content/www/us/en/gaming/resources/wifi-6.html>.
- 4 "Intel Wi-Fi 6 (Gig+) Disclaimers," accessed June 18, 2021,  
<https://www.intel.com/content/www/us/en/products/docs/wireless-products/80211-ax-disclaimers.html>.
- 5 "Acer Chromebook 712," accessed June 1, 2021, <https://cdn.competec.ch/documents/2/6/6/1/109634166/109634166.pdf>.
- 6 Javier Soltero, "Google Meet premium video meetings—free for everyone," accessed June 1, 2021,  
<https://www.blog.google/products/meet/bringing-google-meet-to-more-people/>.
- 7 "Introducing Google Workspaces and a new set of offerings to better meet your needs," accessed June 1, 2021,  
<https://workspaceupdates.googleblog.com/2020/10/introducing-google-workspace.html>.
- 8 "Adobe Lightroom," accessed June 1, 2021,  
[https://play.google.com/store/apps/details?id=com.adobe.lrmobile&hl=en\\_US](https://play.google.com/store/apps/details?id=com.adobe.lrmobile&hl=en_US).
- 9 "Adobe Photoshop Express," accessed June 1, 2021,  
<https://www.adobe.com/products/photoshop-express.html>.
- 10 "WebXPRT 3," accessed June 1, 2021,  
<https://www.principledtechnologies.com/benchmarkxprt/webxprt/>.

We concluded our hands-on testing on May 21, 2021. During testing, we determined the appropriate hardware and software configurations and applied updates as they became available. The results in this report reflect configurations that we finalized on May 19, 2021 or earlier. Unavoidably, these configurations may not represent the latest versions available when this report appears.

## Our results

To learn more about how we have calculated the wins in this report, go to <http://facts.pt/calculating-and-highlighting-wins>. Unless we state otherwise, we have followed the rules and principles we outline in that document.

Table 1: Results of our testing. All timed data is in seconds. Prior to performing each task, we connected each device to a two-way call on Google Meet.

Task	Acer Chromebook 712 C871-328J with an Intel Core i3-10110U processor	Acer Chromebook 712 C871T-C5YF with an Intel Celeron 5205U processor	Intel Core i3 processor-powered laptop percent less time
<b>Scenario one</b>			
Google Slides (seconds)			
Editing presentation	18.6	51.6	63%
Print previewing presentation	6.5	7.3	10%
Starting presentation	4.2	8.1	48%
Google Drive (seconds)			
Opening link to shared image	3.2	5.9	45%
Google Slides (seconds)			
Inserting image into presentation	2.1	4.2	50%
<b>Sum of all tasks for scenario one</b>	<b>34.6</b>	<b>77.1</b>	<b>55%</b>
<b>Scenario two</b>			
Google System (seconds)			
Unzipping 140 photos to the desktop	1.7	6.6	74%
Adobe Lightroom (seconds)			
Importing 140 photos	149.9	257.5	41%
Batch processing 140 photos with filter preset	44.0	129.1	65%
Exporting 140 photos	148.4	318.9	53%
Adobe Photoshop Express (seconds)			
Creating collage with nine images	4.8	10.4	53%
<b>Sum of all tasks for scenario two</b>	<b>348.8</b>	<b>722.5</b>	<b>51%</b>

Task	Acer Chromebook 712 C871-328J with an Intel Core i3-10110U processor	Acer Chromebook 712 C871T-C5YF with an Intel Celeron 5205U processor	Intel Core i3 processor-powered laptop percent less time
<b>Scenario three</b>			
<b>Google Meet (seconds)</b>			
Launching Google Meet	2.4	3.4	29%
Starting new meeting	2.9	3.4	14%
<b>Google Drive (seconds)</b>			
Opening PDF preview	3.1	5.3	41%
Print Previewing a PDF	12.7	14.9	14%
<b>Google Sheets (seconds)</b>			
Opening a shared Microsoft Excel document with Google Drive	3.7	6.2	40%
Opening Microsoft Excel document in Google Sheets	12.3	32.9	62%
<b>Sum of all tasks for scenario three</b>	<b>37.1</b>	<b>66.1</b>	<b>43%</b>

Table 2: Results of benchmark testing with WebXPRT 3.

	Acer Chromebook 712 C871-328J with an Intel Core i3-10110U	Acer Chromebook 712 C871T-C5YF with an Intel Celeron 5205U	Intel Core i3 processor-powered laptop percent higher score
WebXPRT 3 score	196	95	106%

# System configuration information

Table 3: Detailed information on the system we tested.

System	Acer Chromebook 712 C871-328J	Acer Chromebook 712 C871T-C5YF
Processor	Intel Core i3-10110U	Intel Celeron 5205U
Processor frequency (GHz)	2.1	1.9
Processor cores	2	2
Memory (GB)	8	4
Storage (GB)	64	32
USB	1 x USB 3.0, 2 x USB Type-C	1 x USB 3.0, 2 x USB Type-C
Battery type	Lithium-ion	Lithium-ion
Battery capacity (Wh)	48	48
Display size	12"	12"
Display resolution	1366 x 912	1366 x 912
OS (version)	90.0.4430.218	90.0.4430.218
System weight (lbs.)	3.31	3.31

# How we tested

## Creating the background workload

To simulate typical Chromebook use, we ran a combination of news, email, chat, music, document viewing, 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.
3. Select Open a specific page or set of pages.
4. Insert the following URLs, and click OK.
  - [Forbes.com](https://forbes.com)
  - [Markets.ft.com/data](https://markets.ft.com/data)
  - [Arstechnica.com](https://arstechnica.com)
  - [mail.google.com](https://mail.google.com)
  - [slack.com](https://slack.com) (logged into Slack chat, #general channel)
  - [drive.google.com](https://drive.google.com)
  - [docs.google.com](https://docs.google.com) (viewing document)
  - [youtube.com/feed/music](https://youtube.com/feed/music)
  - [drive.google.com](https://drive.google.com) (viewing document)
  - [sheets.google.com](https://sheets.google.com) (viewing spreadsheet)
  - [twitter.com](https://twitter.com)
  - [facebook.com](https://facebook.com)
5. Restart the Chromebook. Before testing, navigate through each tab to ensure that both devices have fully loaded the same content.

## Testing multitasking scenarios

For our multitasking tests, we opened the Google Play Store application, and joined a three-participant video meeting. Our Chrome tab for testing contained the background workload we described at the beginning of this section. We tested each task for a given scenario sequentially.

### Scenario one

#### Google Slides

##### Edit a shared Google Slides Presentation

1. From the Google Meet chat window, simultaneously start the timer, and click the link to the Google Slides test document shared via Google Drive.
2. Stop the timer when the Slides presentation fully loads.

##### Viewing a print preview of a Google Slides presentation

1. From the Google Meet chat window, click the link to the Google Slides test document shared via Google Drive.
2. When the Slides presentation loads, click the File dropdown menu.
3. Simultaneously start the timer, and click Print.
4. Stop the timer when the Print Preview fully loads.

##### Beginning a Google Slides presentation

1. From the Google Meet chat window, click the link to the Google Slides test document shared via Google Drive.
2. Simultaneously start the timer, and click the Present button.
3. Stop the timer when the Presentation fully loads.

#### Google Drive

##### Opening a link to a shared Image

1. From the Google Meet chat window, simultaneously start the timer, and click the link to the Google Photos test image shared via Google Drive.
2. Stop the timer when the photo preview fully loads.

## Google Slides

### Inserting an image into a presentation

1. Navigate back to the Google Slides test presentation.
2. With the first slide selected, click Insert, click Image, and select Upload From Computer.
3. Click to select the test image.
4. Simultaneously start the timer, and click Open.
5. Stop the timer when the image fully loads into the document.

## Scenario two

### Google System: Unarchiving photos

#### Unzipping 140 photos from the desktop

1. From the Files application, navigate to the test archive location.
2. Double-click to open the test archive using the default system viewer.
3. Select the contents of the test archive, and click and drag the contents to an empty folder.
4. Simultaneously start the timer and unclick the dragged content.
5. Stop the timer when the copying files dialog completes.

### Adobe Lightroom

#### Importing 140 photos

1. From the app shelf, launch Adobe Lightroom from the Chrome.
2. From the Adobe Lightroom home page, click the blue import photos icon.
3. Sort by Device Folders. To select the unarchived test photos, click the checkbox next to the folder name.
4. Simultaneously start the timer and click Add.
5. When the import dialog completes, stop the timer.

#### Batch-processing 140 photos with a filter preset

1. From the Adobe Lightroom home page, click the collection containing the test photos.
2. Click the first image.
3. Click the Adjustments icon.
4. To apply auto-adjustments, click Auto.
5. Click the menu button in the top right, and select Copy Settings.
6. Leave the default Copy Settings, and click OK.
7. To return to the collection view, click the back arrow.
8. Long-click the first photo to select it.
9. Click the menu button in the top right, and select Select All.
10. Click the menu button in the top right again, and select Paste Settings.
11. Simultaneously start the timer and click Apply.
12. When the processing dialog closes, and "Changes applied to 140 photos" appears, stop the timer.

#### Exporting 140 photos

1. From the Adobe Lightroom home page, click the collection containing the test photos.
2. Click to select the first image.
3. From the dropdown menu, click to Select All images.
4. With all images selected, click the Share icon.
5. From the Share dialog box, click Export As...
6. Leave the default settings. Simultaneously start the timer and click the checkmark icon.
7. When the export dialog completes, stop the timer.

## Adobe Photoshop Express

### Creating a nine-image collage

1. From the app shelf, launch Adobe Photoshop Express from the shelf.
2. Click the Collage icon in the bottom right.
3. Click to select the nine test images.
4. Simultaneously start the timer and click the next arrow.
5. When the collage fully loads, stop the timer.

## Scenario three

### Google Meet

#### Launching Google Meet

1. Simultaneously start the timer and launch the Meet app from the shelf.
2. When the app fully loads and the webcam preview appears, stop the timer.

#### Launching a new Google Meet session

1. From the Meet main screen, simultaneously start the timer, and click New meeting.
2. When the meeting invite code appears and the webcam preview refreshes, stop the timer.
3. For the remainder of our timings, we joined a four-way video Meet, and minimized the app.

### Google Drive

#### Opening a PDF preview from Google Drive

1. From the Google Meet chat window, simultaneously start the timer, and click the link to the test PDF.
2. When the PDF preview fully loads in the web browser, stop the timer.

#### Viewing a print preview of a PDF

1. From the Google Meet chat window, click the link to the test PDF shared via Google Drive.
2. When the PDF loads, simultaneously start the timer, and click the Print icon.
3. Stop the timer when the print preview fully loads.

### Google Sheets

#### Opening a shared Excel file with Google Drive

1. From the Google Meet chat window, simultaneously start the timer, and click the link to the test .csv file shared via Google Drive.
2. Stop the timer when the document preview fully loads.

#### Opening a shared Excel file In Google Sheets

1. From the Drive document preview, simultaneously start the timer, and click Open in Sheets.
2. Stop the timer when the Google Sheets document fully loads.

## WebXPRT 3

### Running WebXPRT 3

1. Power on the device, and log in.
2. Allow the device to idle for 10 minutes to clear any background startup activity. 3. Open the default web browser, and navigate to <https://www.principledtechnologies.com/benchmarkxpert/webxpert/>.
3. Click Run WebXPRT 3.
4. Click Continue.
5. Click Start.
6. When the test completes, record the score.

This project was commissioned by Acer.



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