Up to 2.58x the PassMark overall rating while unplugged*

Choose the HP EliteBook 845 G9 Notebook PC for longer battery life and better performance scores while maintaining cool surface temperatures

vs. the Dell Latitude 7430 laptop and the Dell Latitude 7420 laptop

Work unplugged for over 10 hours in Windows Balanced Mode**

Over 19°F cooler with better sustained performance***

A portable and powerful laptop can be a great choice for remote, hybrid, or in-office workers. But deciding which system is best suited to users' needs is a more complicated task. Benchmarks can give helpful indications about potential performance, but they can't tell the complete story. And, while users can minimize outward distractions, their devices' noise levels, surface temperatures, or battery warnings could disrupt their focus and productivity.

At PT, we used industry-standard benchmarks to compare two current-generation business-class laptops aimed at enterprise users: an HP EliteBook 845 G9 Notebook PC powered by an AMD Ryzen™ 7 PRO processor and a Dell™ Latitude™ 7430 laptop powered by an Intel® Core™ i7 processor. For a gen-over-gen comparison, we performed the same tests on a previous-gen Dell Latitude 7420 laptop powered by an Intel Core i7 processor. We ran benchmarks both while the devices were connected to AC power and while they used battery power. Not only did the HP EliteBook 845 G9 Notebook PC deliver longer battery life with a smaller battery, but it also achieved higher benchmark scores while plugged-in and unplugged than both Dell Latitude devices. Additionally, we found that it ran cooler to the touch and output similar acoustic levels under Cinebench R23 multi-core workloads compared to the Dell Latitude systems we tested.

Based on PassMark PerformanceTest 10 results

**Based on MobileMark® 25 battery life scores; scores may differ from other published scores due to differences in system settings*

***Based on thermals while under CPU load*

Putting three laptops to the test

We tested the following business laptops:

Current gen	Current gen	Previous gen
HP EliteBook 845 G9	**Dell Latitude 7430**	**Dell Latitude 7420**
AMD Ryzen 7 PRO 6850U processor	Intel Core i7-1265U processor	Intel Core i7-1185G7 processor
8 cores	10 cores	4 cores
32GB RAM	32GB RAM	32GB RAM
512GB SSD	512GB SSD	512GB SSD
51WHr battery	58WHr battery	63WHr battery

In this report, we visually present data for all three systems together, but where necessary, we include key takeaways that break down the comparisons: the current-gen HP EliteBook Notebook PC vs. the current-gen Dell Latitude 7430 laptop, and the current-gen HP EliteBook Notebook PC vs. the previous-gen Dell Latitude 7420 laptop.

We ran the following benchmark tests while the devices were plugged in and unplugged:

- Cinebench R23
- PassMark PerformanceTest 10
- PCMark 10 Benchmark Test
- PCMark 10 Applications Test
- 3DMark

To test battery life, we ran the MobileMark 25 benchmark while the devices were unplugged. For our thermal tests, we ran a CPU-intensive sustained Cinebench R23 multi-core workload and took temperatures on each device's keyboard deck (top) and underside of the chassis (bottom) while the devices were under load. We tested acoustics by measuring decibels both while the devices were under a Cinebench R23 multi-core workload and while they were idle. The devices were plugged in during thermal and acoustic testing.

Unless we note otherwise, we ran each test three times and report the median result in the pages that follow. For more information on our configurations and details about our testing, see the science behind the report.

Battery life testing

Whether employees work in an office building or remotely from their kitchen tables, receiving a low battery notification and searching for the nearest power outlet can disrupt a focused workflow. We tested battery life by setting each system to Balanced Mode and running the MobileMark 25 benchmark, which uses real-world productivity applications to complete workday tasks, such as word processing, email, web browsing, and photo editing.[1] We saw that the HP EliteBook Notebook PC delivered 10 hours and 26 minutes of battery life—more than a standard workday—under the MobileMark 25 workload (Figure 1).

MobileMark 25 overall battery life in Windows Balanced Mode

hours:min | Median | Higher is better

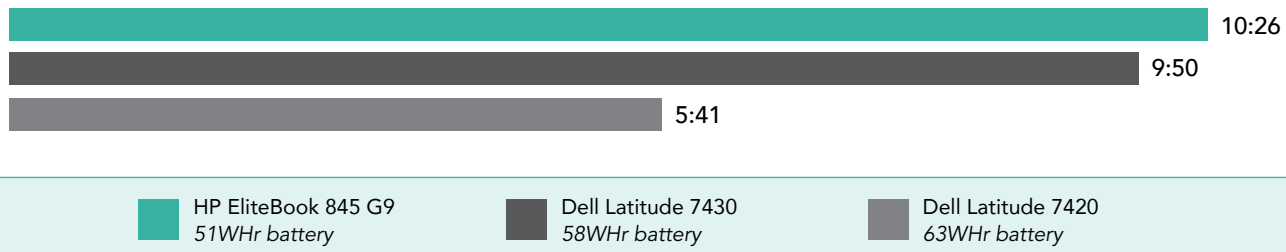

Figure 1: Overall battery life of the three systems we tested as reported by MobileMark 25. Higher is better. Source: Principled Technologies.

Although the HP EliteBook Notebook PC had a smaller battery than both Dell Latitude laptops we tested, it delivered longer battery life. These data suggest better system efficiency from the HP EliteBook Notebook PC, which we show in Figure 2 below.

System efficiency

Minutes per WHr | Median | Normalized | Higher is better

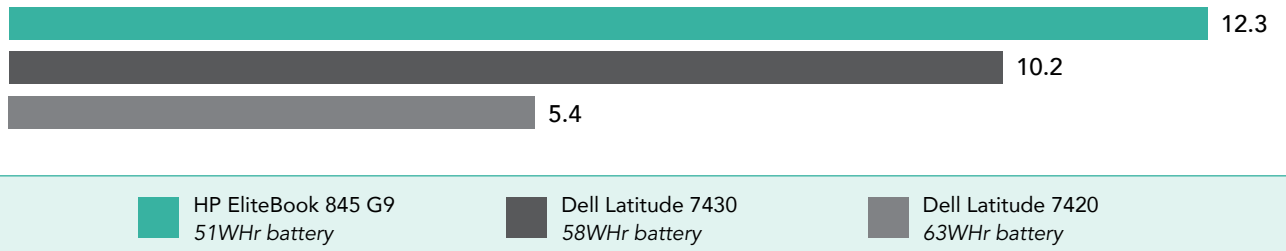

Figure 2: System efficiency of each of the three devices we tested, in minutes of battery life (as measured by the MobileMark 25 benchmark) per WHr. Higher is better. Source: Principled Technologies.

Key takeaways

Current gen vs. current gen: In MobileMark 25 battery life tests, the HP EliteBook Notebook PC with its 51WHr battery ran 36 minutes longer than the Dell Latitude 7430 laptop with its 63WHr battery. Calculating the WHr per minute, the system was 20.6 percent more efficient.

Current gen vs previous gen: In MobileMark 25 battery life tests, the HP EliteBook Notebook PC with its 51WHr battery ran 4 hours and 45 minutes longer than the Dell Latitude 7420 laptop with its 58WHr battery, a difference of 83.5 percent. Calculating the WHr per minute, the system delivered 1.27 times the efficiency of the Dell Latitude 7420 laptop.

About the AMD Ryzen 7 PRO 6850U processor

In our testing, the AMD Ryzen 7 PRO 6850U processor powered the HP EliteBook 845 G9 Notebook PC. This processor is part of the AMD Ryzen PRO 6000 Series processor line, which "deliver superb productivity, enterprise-grade security features, manageability, and reliability features that businesses demand,"[2] according to AMD. The 6850U model features eight cores, 16 threads, a 16MB L3 cache, and AMD Radeon™ Graphics 680M integrated GPU based on AMD RDNA™ 2 architecture.

Learn more at https://www.amd.com/en/product/11666.

About the HP Elitebook 845 G9 Notebook PC

The HP Elitebook 845 G9 Notebook PC we tested is a 14-inch device that comes equipped with two SODIMM memory slots, an up to 1TB PCIe® NVMe® TLC SSD, and a 5MP privacy camera. The device we tested had 16 GB of DDR5 memory and a 512GB PCIe NVMe SSD. According to HP, this laptop series allows users to "connect and ease powerfully through your day in almost any setting with the beautifully designed and highly secure HP EliteBook 805 series."[3]

To learn more, visit https://www.hp.com/us-en/shop/mdp/elite-352503--1/hp-elitebook-845-3074457345617503672-1.

Productivity benchmark testing

The more responsive a system is, the less time users have to spend waiting for spreadsheets, graphic renders, or other important work to load—and the more time they have to maintain focus on their work. Because no single test can paint a complete picture of a system's performance and because users work with a variety of apps throughout their day, we used five industry-standard productivity benchmarks to measure different aspects of performance. Taken together, these results show the system responsiveness users might expect during their day-to-day work. Below, we detail our findings for the three systems we tested.

Note: Unless we specify otherwise, we show each benchmark's overall test results below. For a detailed breakdown of each benchmark's sub-scores, see the science behind the report.

Cinebench R23 multi-core

Key takeaways

Current gen vs. current gen: In plugged-in tests, the HP EliteBook Notebook PC achieved a 49.9 percent higher score than the Dell Latitude 7430 laptop. During unplugged tests, it offered a score 87.6 percent higher.

Current gen vs previous gen: In plugged-in tests, the HP EliteBook Notebook PC reached a score 1.88 times that of the Dell Latitude 7420 laptop. During unplugged tests, it offered a score 1.75 times that of the Dell Latitude 7420 laptop.

The Cinebench R23 benchmark measures "if a machine runs stable on a high CPU load, if the cooling solution of a desktop or notebook is sufficient for longer running tasks to deliver the full potential of the CPU, and if a machine is able to handle demanding real-life 3D tasks."[4] The multi-core workload tests how a device performs under loads that rely on multiple processors cores, such as video and photo editing, 3D rendering, scientific simulations, and complex spreadsheets.[5] While not everyone works on resource-intensive tasks for entire workdays at a time, Cinebench R23 scores give an indication of how a system may perform when these tasks do come up, especially for users who simultaneously work on multiple applications. Figure 3 shows the plugged-in performance we saw from the devices we tested.

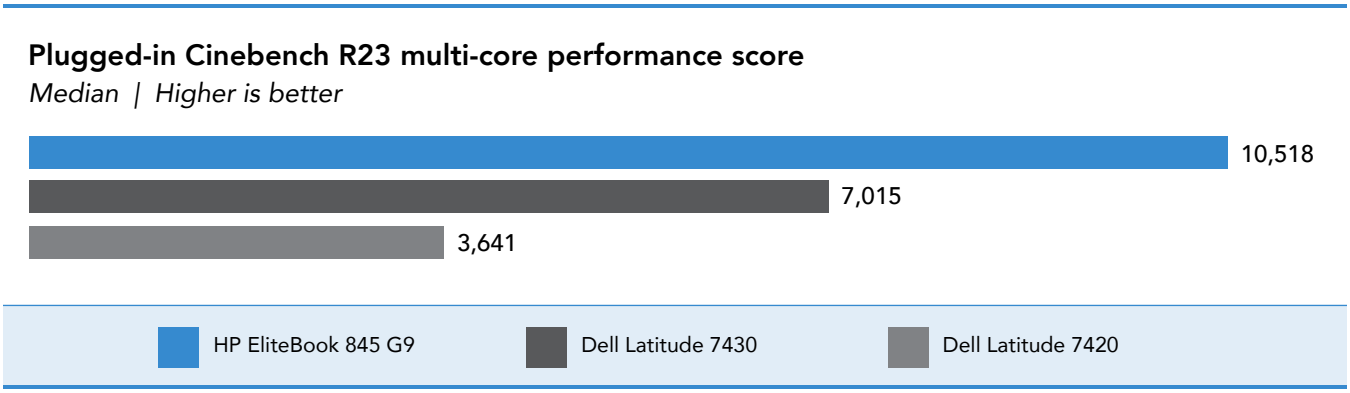

Figure 3: Multi-core scores as reported by Cinebench R23 for the three systems we tested while plugged in. Higher is better. Source: Principled Technologies.

When the HP EliteBook Notebook PC was unplugged, it also achieved higher scores than the other laptops we tested, as Figure 4 shows.

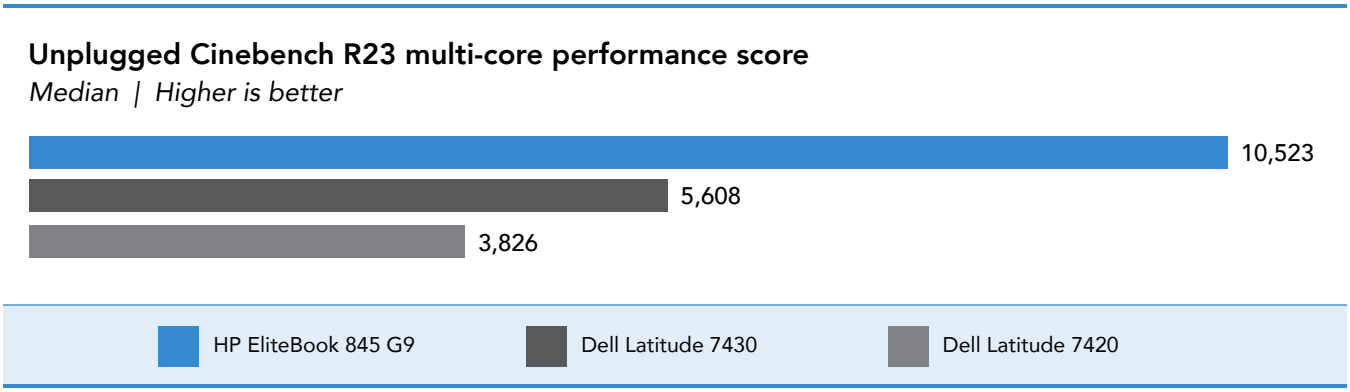

Figure 4: Multi-core scores as reported by Cinebench R23 for the three systems we tested while on battery power. Higher is better. Source: Principled Technologies.

PassMark PerformanceTest 10

Key takeaways

Current gen vs. current gen: In plugged-in tests, the HP EliteBook 845 G9 Notebook PC achieved a 77.2 percent higher score than the Dell Latitude 7430 laptop. During unplugged tests, it delivered a score 92.2 percent higher.

Current gen vs previous gen: In plugged-in tests, the HP EliteBook 845 G9 Notebook PC achieved a 74.1 percent higher score than the Dell Latitude 7420 laptop. During unplugged tests, it delivered a score more than twice that of the Dell Latitude 7420 laptop.

PassMark PerformanceTest 10 tests several key performance areas, including CPU, 2D and 3D graphics, disk, and memory. Figure 5 shows that during plugged-in testing, the HP EliteBook Notebook PC achieved a better overall PassMark PerformanceTest 10 score than the other laptops we tested.

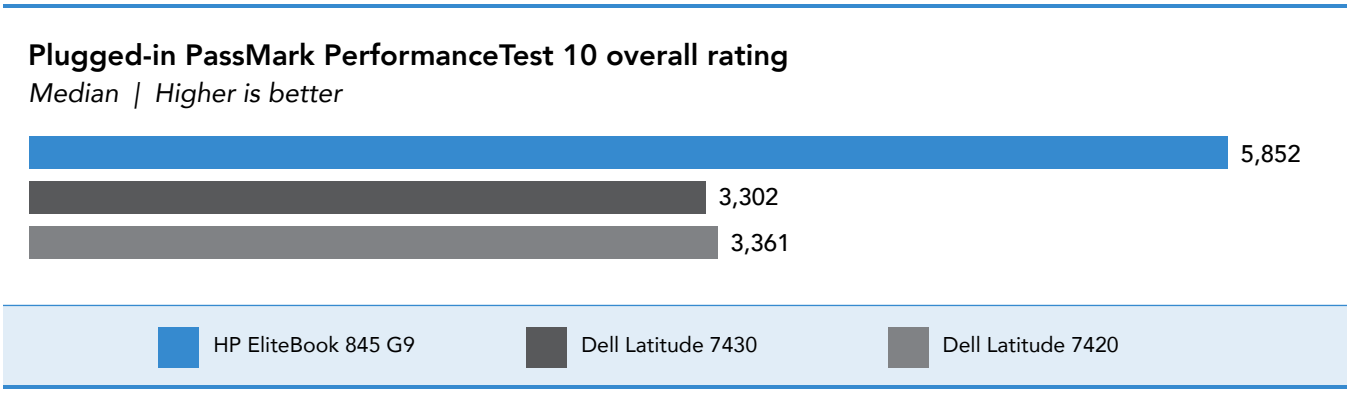

Figure 5: Overall ratings as reported by PassMark PerformanceTest 10 for the three systems we tested while plugged in. Higher is better. Source: Principled Technologies.

When we ran PassMark PerformanceTest 10 on the unplugged devices, we also saw a better overall score from the HP EliteBook PC notebook compared to that of either Dell Latitude laptop (see Figure 6).

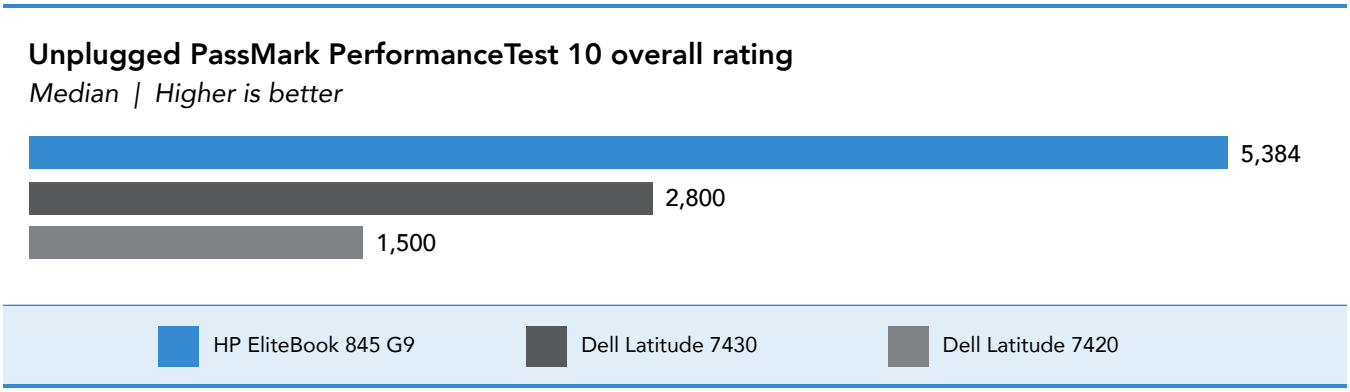

Figure 6: Overall ratings as reported by PassMark PerformanceTest 10 for the three systems we tested while unplugged. Higher is better. Source: Principled Technologies.

PCMark 10 benchmark

According to UL Solutions, the PCMark 10 benchmark "is ideal for organizations evaluating PCs for a workforce with a range of performance needs," testing areas such as web browsing, office applications, and digital content creation.[6] Figure 7 shows that while the devices were plugged in, the HP EliteBook Notebook PC achieved higher PCMark 10 benchmark overall scores than the Dell Latitude laptops.

Plugged-in PCMark 10 overall rating

Median | Higher is better

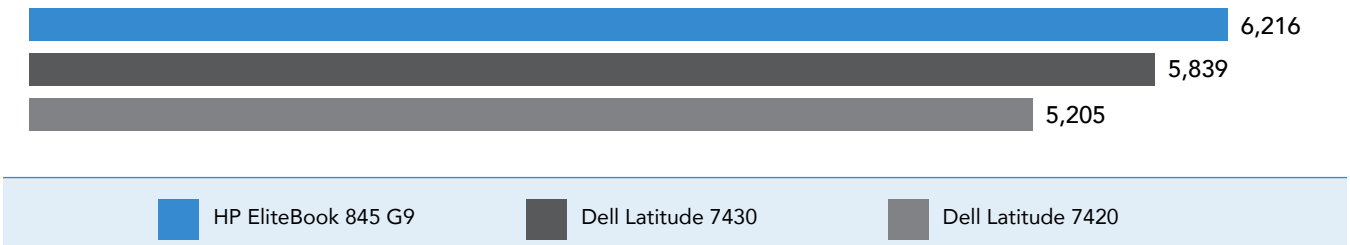

Figure 7: Overall ratings as reported by PCMark 10 for the three systems we tested while plugged in. Higher is better.
Source: Principled Technologies.

Testing the unplugged systems revealed that the HP EliteBook Notebook PC performed comparably to the Dell Latitude 7420 laptop and outperformed the Dell Latitude 7430 laptop (see Figure 8).

Unplugged PCMark 10 overall rating

Median | Higher is better

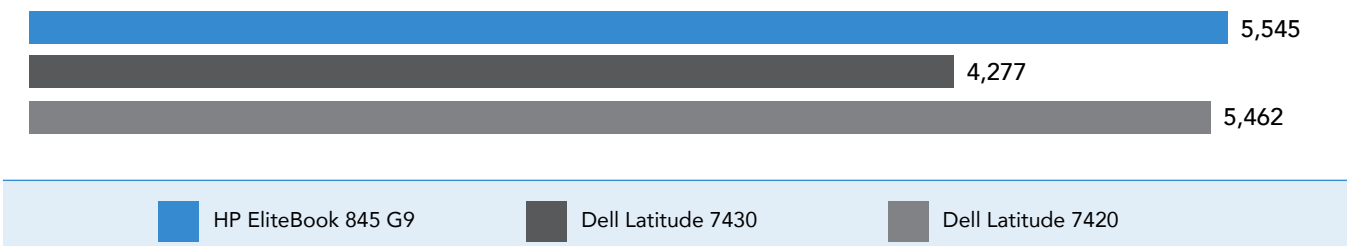

Figure 8: Overall ratings as reported by PCMark 10 for the three systems we tested while unplugged. Higher is better.
Source: Principled Technologies.

Key takeaways

Current gen vs. current gen: Overall, in plugged-in tests, the HP EliteBook Notebook PC performed comparably to the Dell Latitude 7430 laptop, achieving a score 6.4 percent higher. During unplugged tests, it received a 29.6 percent higher score.

Current gen vs previous gen: Overall, in plugged-in tests, the HP EliteBook Notebook PC achieved a 19.4 percent higher score than the Dell Latitude 7420 laptop. During unplugged tests, it performed comparably, yielding a score 1.5 percent higher.

In Figures 9 and 10, we highlight the scores from the Productivity test group of the PCMark 10 benchmark. This test group measures performance using everyday applications with workloads that include spreadsheets and writing work.[7] The performance advantages from the HP EliteBook Notebook PC indicate that users could experience better responsiveness when using office applications at their desks or on the go.

For more sub-score results, see the science behind the report.

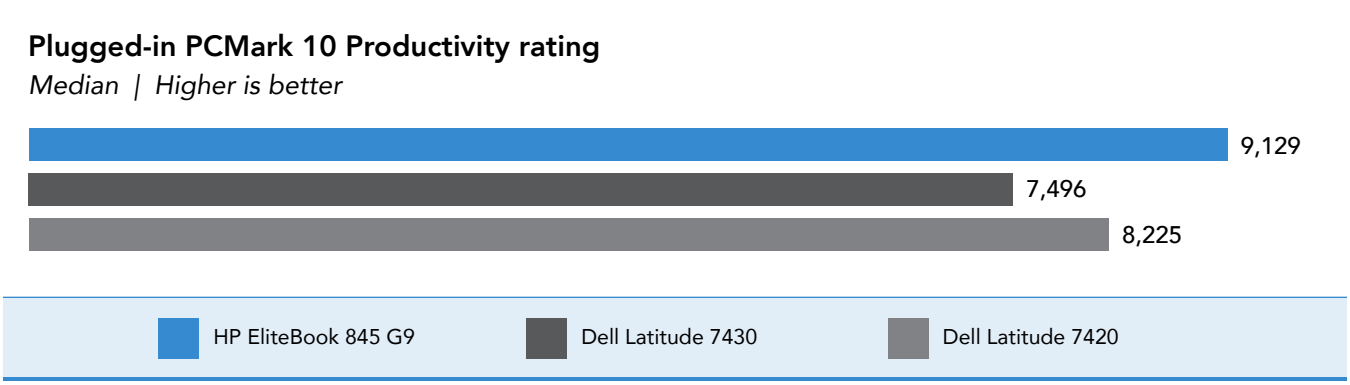

Figure 9: Productivity ratings as reported by PCMark 10 for the three systems we tested while plugged in. Higher is better. Source: Principled Technologies.

Similarly, users working with their laptops unplugged could see comparable performance—the Dell Latitude 7420 laptop yielded a score 4.6 percent higher—or improved performance from the HP EliteBook Notebook PC, with a score 57.2 percent higher than that of the Dell Latitude 7430 laptop.

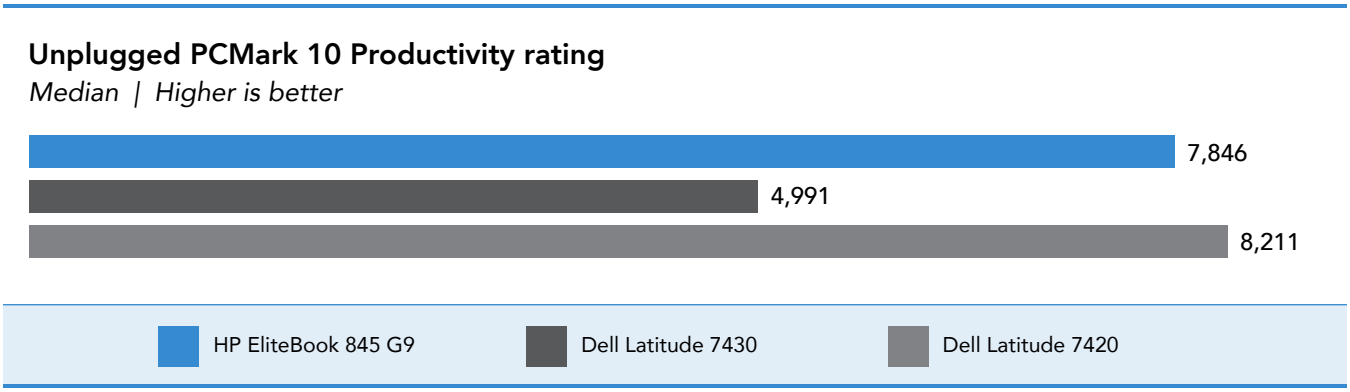

Figure 10: Productivity ratings as reported by PCMark 10 for the three systems we tested while unplugged. Higher is better. Source: Principled Technologies.

Key takeaways

Current gen vs. current gen: In plugged-in Productivity tests, the HP EliteBook Notebook PC achieved a score 21.7 percent higher than the Dell Latitude 7430 laptop. During unplugged tests, it received a 57.2 percent higher score.

Current gen vs previous gen: In plugged-in Productivity tests, the HP EliteBook PC notebook achieved a 10.9 percent higher score than the Dell Latitude 7420 laptop. During unplugged tests, it performed comparably, with the Dell Latitude 7420 laptop receiving a score 4.6 percent higher.

PCMark 10 Applications benchmark

Key takeaways

Current gen vs. current gen: In plugged-in tests, the HP EliteBook Notebook PC performed comparably to the Dell Latitude 7430 laptop, with the Dell Latitude 7430 receiving a score 7.5 percent higher. During unplugged tests, the HP EliteBook Notebook PC received a score 23.2 percent higher.

Current gen vs previous gen: In plugged-in tests, the HP EliteBook Notebook PC performed comparably to the Dell Latitude 7420 laptop, receiving a score 8.8 percent higher. During unplugged tests, the devices also performed comparably, with the Dell Latitude 7420 laptop achieving a score 1.8 percent higher.

We also ran the PCMark 10 Applications benchmark, which uses Microsoft Office applications to test performance. As Figure 11 shows, while plugged in, the devices received comparable scores.

Plugged-in PCMark 10 Applications overall rating

Median | Higher is better

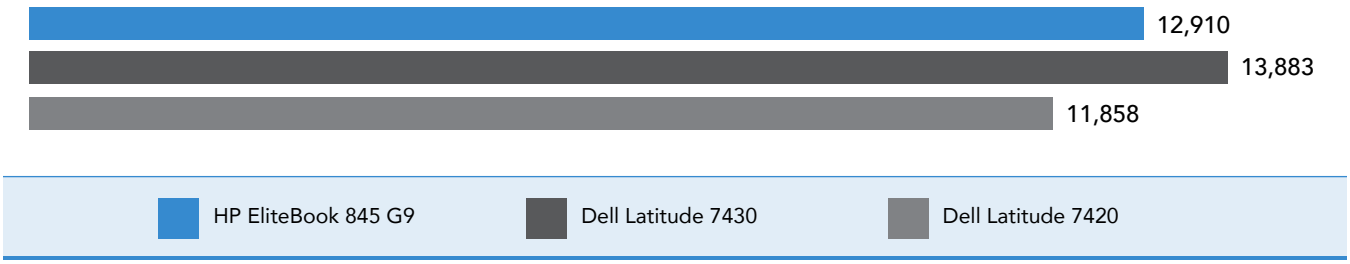

Figure 11: Overall ratings as reported by PCMark 10 Applications for the three systems we tested while plugged in. Higher is better. Source: Principled Technologies.

In unplugged tests, the HP EliteBook Notebook PC received a PCMark 10 Applications score comparable to or higher than the Dell Latitude laptops we tested (see Figure 12).

Unplugged PCMark 10 Applications overall rating

Median | Higher is better

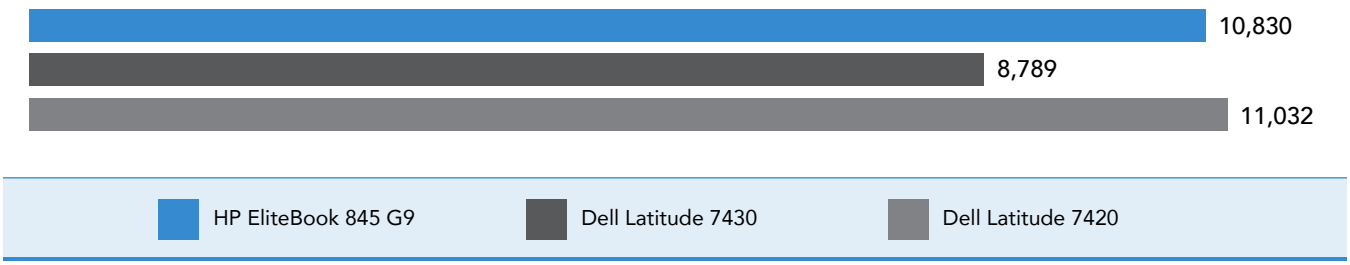

Figure 12: Overall ratings as reported by PCMark 10 Applications for the three systems we tested while unplugged. Higher is better. Source: Principled Technologies.

Note: When comparing plugged-in scores to unplugged scores, we observed that the Dell Latitude laptops sometimes experienced less performance degradation than the HP EliteBook PC Notebook. In some tests, such as Cinebench R23, the Dell Latitude laptops yielded better scores while unplugged compared to when they were plugged in. Small variances are common in such tests, and we believe they do not negatively affect users.

3DMark

Key takeaways

Current gen vs. current gen: In plugged-in Fire Strike tests, the HP EliteBook Notebook PC achieved a score 78.6 percent higher than the Dell Latitude 7430 laptop. During unplugged Time Spy tests, it achieved a score 80.5 percent higher.

Current gen vs previous gen: In plugged-in Time Spy tests, the HP EliteBook Notebook PC received a score 64.9 percent higher than the Dell Latitude 7420 laptop. During unplugged Time Spy tests, it achieved a score 68.5 percent higher.

3DMark, a benchmark designed for gaming, tests the 3D graphics capabilities of devices. It can also help indicate system performance while running CAD applications.[8] The benchmark offers several tests as part of its portfolio, and we selected the Fire Strike and Time Spy tests, which use the DirectX 11 and DirectX 12 engines, respectively.[9] As Figure 13 shows, while plugged in, the HP EliteBook Notebook PC achieved higher scores in the 3DMark tests.

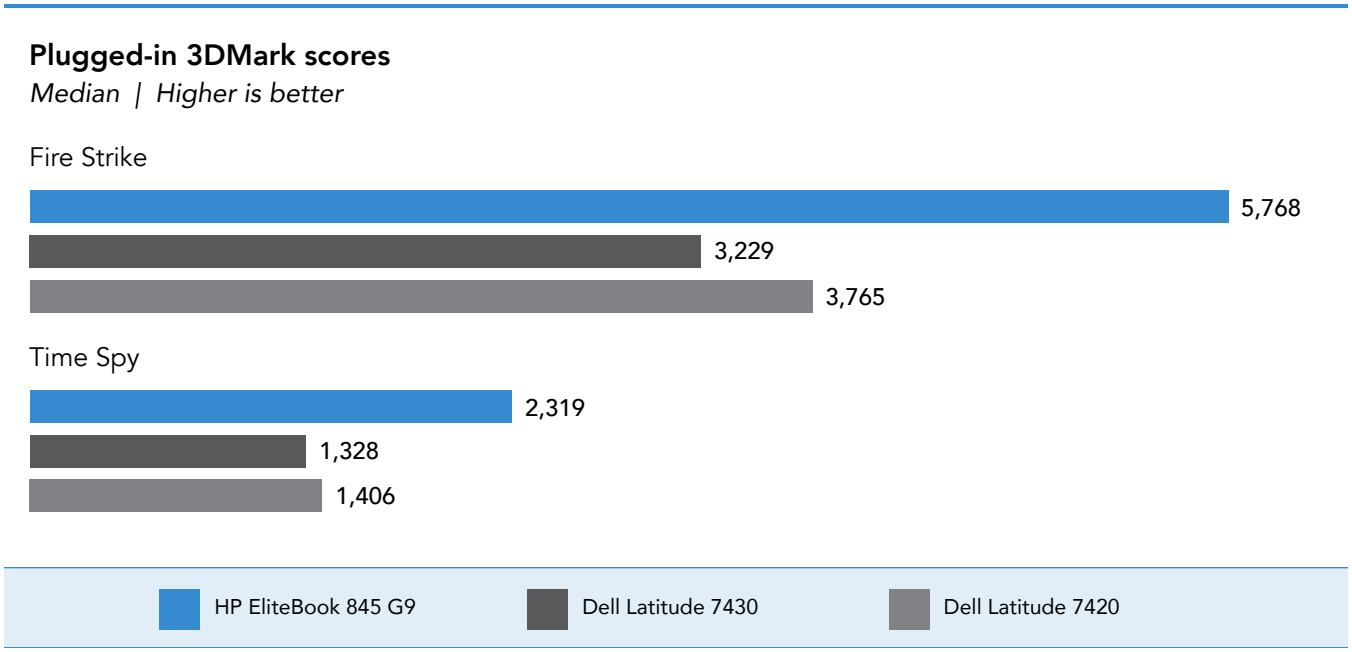

Figure 13: Performance ratings as reported by 3DMark for the three systems we tested while plugged in. Higher is better.
Source: Principled Technologies.

During unplugged testing, the HP EliteBook 845 G9 Notebook PC again scored higher than the unplugged Dell Latitude laptops (see Figure 14).

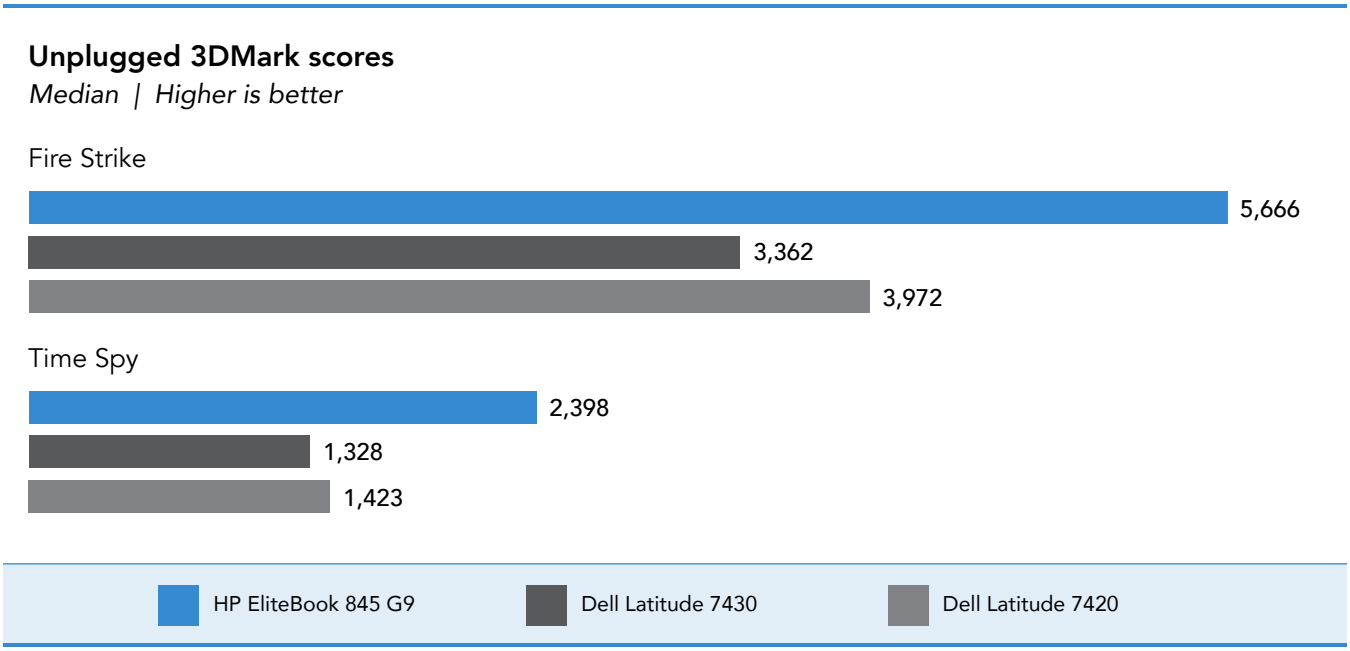

Figure 14: Performance ratings as reported by 3DMark for the three systems we tested while unplugged. Higher is better. Source: Principled Technologies.

Sustained performance and thermal testing

Sometimes, a high-performing processor in a laptop can mean putting up with more heat coming from the device. For hybrid and remote workers, whose workplace could be anywhere—an office, a coffee shop, or even a living room couch—keeping a hot laptop on their laps could be distracting or uncomfortable.

To test thermals, we stressed each system's processor by running 30 consecutive Cinebench R23 multi-core workloads on the devices, not allowing them time to cool down between runs. Figure 15 shows the average Cinebench R23 multi-core scores of the devices during this sustained workload.

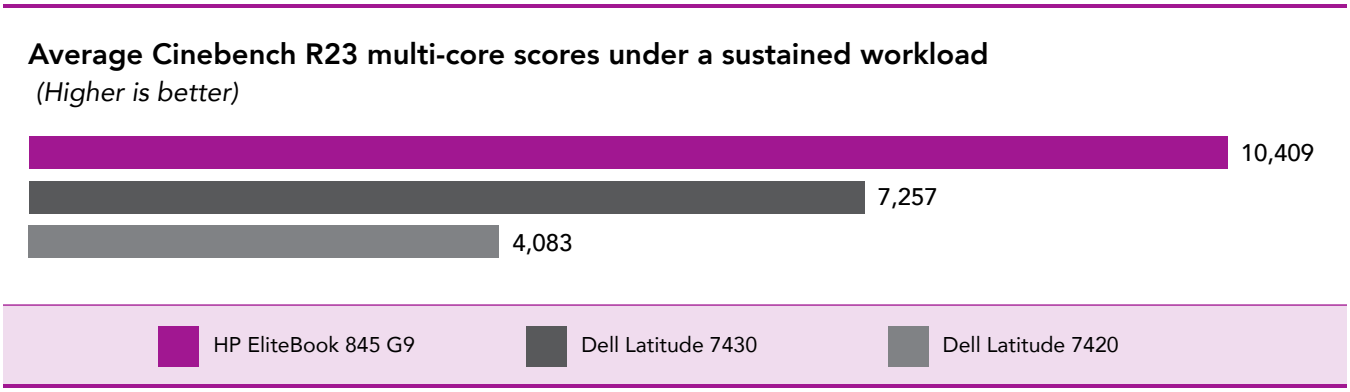

Figure 15: Sustained average Cinebench R23 multi-core scores for the three devices we tested. Higher scores are better.
Source: Principled Technologies.

Not only did the HP EliteBook Notebook PC achieve higher scores under the CPU-intensive Cinebench R23 workload, but it did so while maintaining temperatures comparable to or cooler than the Dell Latitude laptops. Figure 16 shows the average temperatures we took from each device's top hot spot (keyboard deck) and bottom hot spot (underside chassis) while running the sustained workload.

Thermal performance during a sustained Cinebench R23 workload

Average | Lower is better

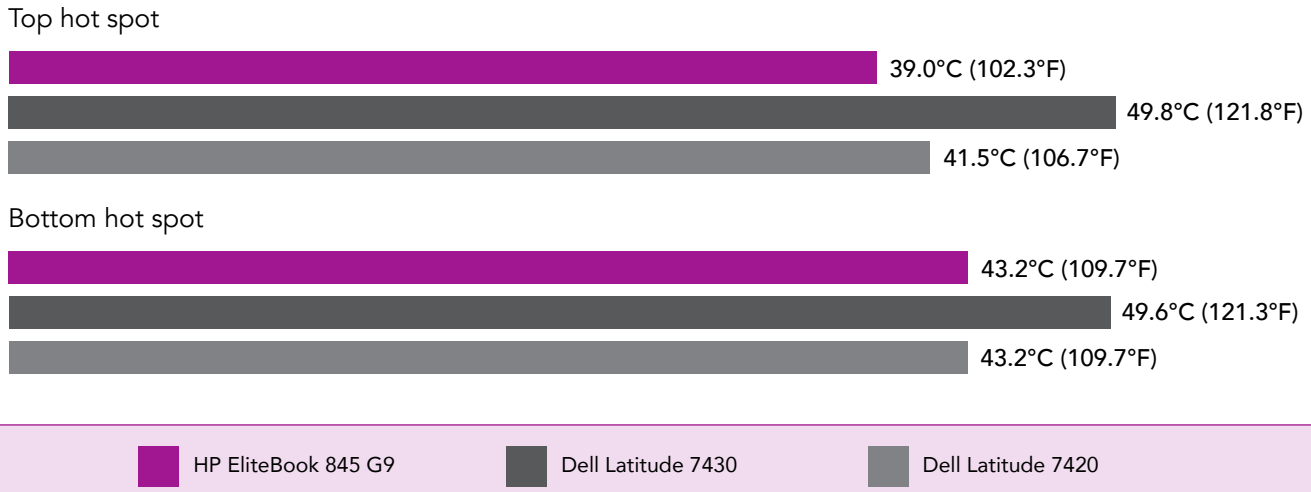

Figure 16: Temperatures under CPU load, in degrees Celsius, at two hot spots on the devices we tested. Lower numbers are better. Source: Principled Technologies.

Key takeaways

Current gen vs. current gen: While running as much as 10°C (19°F) cooler, the HP EliteBook Notebook PC received a Cinebench R23 score 43.4 percent higher than the Dell Latitude 7430 laptop.

Current gen vs previous gen: The HP EliteBook Notebook PC achieved more than twice the Cinebench R23 score of the Dell Latitude 7420 laptop—all while running at temperatures as much as 2°C (4°F) cooler.

The higher Cinebench R23 scores and lower temperatures of the HP EliteBook Notebook PC indicate that it could stay cooler while delivering better performance on resource-intensive tasks, making it an appealing option for workers in non-traditional settings.

Acoustic testing

Key takeaways

Current gen vs. current gen: While idle and while under a CPU-intensive load, the HP EliteBook Notebook *PC and the Dell Latitude 7430 laptop had comparable acoustic output.*

Current gen vs previous gen: While idle and while under a CPU-intensive load, HP EliteBook PC notebook and the Dell Latitude 7430 laptop had comparable acoustic output.

A noisy device can be a distraction for users trying to accomplish their tasks. When we measured the noise levels of each system while idle and while running a Cinebench R23 multi-core workload, we saw that their average noise levels were roughly comparable, varying by less than two decibels (see Figure 17).

Acoustic performance

Decibels | Average | Lower is better

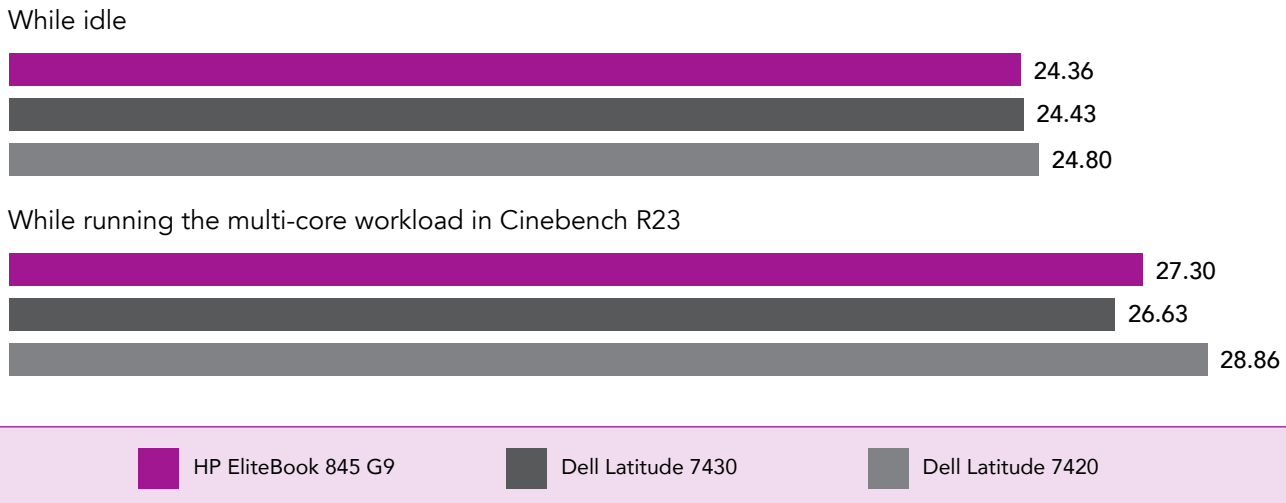

Figure 17: Acoustics, in average decibels, for the three devices we tested while under the Cinebench R23 multi-core workload and while idle. Lower numbers are better. Source: Principled Technologies.

Conclusion

Selecting a strong device for your workforce can be a challenge. By looking at performance from multiple angles, you can get a fuller idea of which device could serve them best. During testing with MobileMark 25, the HP EliteBook 845 G9 Notebook PC demonstrated longer battery life despite its smaller battery capacity. In plugged-in, unplugged, and sustained performance benchmark testing, it also presented competitive benchmark scores, cooler overall surface temperatures, and acoustics on par with the previous-gen and current-gen Dell Latitude laptops we tested. Taking these results together, the HP EliteBook 845 G9 Notebook PC could be a compelling choice for remote, hybrid, or in-office employees.

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9. UL Solutions, "3DMark," accessed October 6, 2022, https://benchmarks.ul.com/3dmark.

Read the science behind this report at https://facts.pt/V2tZ1YG ▶

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This project was commissioned by HP & AMD.