HP ProBook 445 G11 Notebook PC: Save time and help increase overall productivity

We compared everyday performance, battery life, and user experiences on an AMD Ryzen 7735U processor-powered HP ProBook 445 G11 to those of two Intel Core Ultra 7 processor 155U-based Dell and Lenovo laptops

As models of where we work continue to evolve, greater overall productivity and extended battery life continue to be in high demand. These priorities make the PC and processor combo you choose for yourself or your team more important than ever. Earlier this year, HP launched the 14-inch ProBook 445 G11 Notebook PC powered by next-gen Zen 3+ AMD® Ryzen™ premium laptop processors. What can this duo provide that others can't?

In our hands-on system responsiveness and battery life tests, the 14-inch HP ProBook 445 G11 Notebook PC with an 8-core AMD Ryzen 7035 Series processor and integrated AMD Radeon™ Graphics received higher CPU- and GPU-focused benchmark scores and provided longer battery life in productivity and video-conferencing scenarios than 12-core Intel® Core™ Ultra 7 processor-based Dell™ and Lenovo® laptops. Read on for more details.

Speed machine learning inference workloads

Up to 163.1% higher Geekbench AI ONNX DirectML iGPU inference score*

Collaborate longer

5 hr 38 min of unplugged power during a Microsoft Teams meeting

Get more done unplugged

Up to 11 hr 50 min of battery life**

This project was commissioned by HP and AMD.

*vs Intel Core Ultra 7 processor 155U-powered Lenovo ThinkPad E14 Gen 6 laptop.
**Procyon Battery Life Benchmark results in Windows 11 Pro Best power efficiency power mode.

How we tested

We equipped each PC with Windows 11 Pro, 16 GB of memory, and 512 GB of PCIe® NVMe™ storage.

HP ProBook 445 G11 Notebook PC

- 8-core/16-thread AMD Ryzen 7 7735U processor
- Integrated 12-core AMD Radeon™ Graphics
- 54-Whr battery

Dell Latitude™ 3450 laptop

- 12-core/14-thread Intel Core Ultra 7 processor 155U
- Integrated 4-core Intel Graphics and Intel AI Boost neural processing unit (NPU)
- 54-Whr battery

Lenovo ThinkPad® E14 Gen 6 laptop

- 12-core/14-thread Intel Core Ultra 7 processor 155U
- Integrated 4-core Intel Graphics and Intel AI Boost NPU
- 47-Whr battery

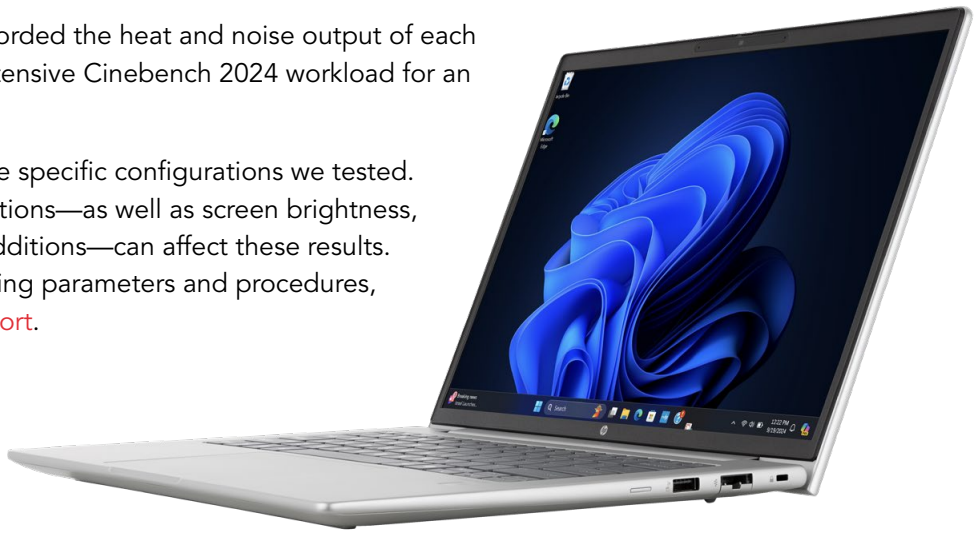
We evaluated the PCs' performance using these performance, productivity, and AI benchmarking tools:

- 3DMark® Fire Strike
- Cinebench 2024
- Geekbench AI
- PassMark PerformanceTest 11
- Procyon® AI Computer Vision Benchmark

To see how long each PC's battery lasted for users with different needs, we chose multiple ways to measure battery life. For general consumers, we ran the MobileMark 30 benchmark in the Windows 11 Pro "Balanced" power mode. For users who prioritize battery life over everything else, we ran the MobileMark 30 battery life benchmark and UL Procyon Battery Life (Office Productivity) benchmarks with the PCs in "Best power efficiency" power mode. Finally, to see how long each laptop would run Microsoft Teams while unplugged and in "Best power efficiency" power mode, we simulated a long-running collaboration scenario among nine participants using the popular video-conferencing app.

To gauge user comfort, we recorded the heat and noise output of each PC while using the resource-intensive Cinebench 2024 workload for an extended period of time.

The results we report reflect the specific configurations we tested. Any difference in the configurations—as well as screen brightness, network traffic, and software additions—can affect these results. For a deeper dive into our testing parameters and procedures, see the science behind the report.



Note: The graphs in this report use different scales to keep a consistent size. Please be mindful of each graph's data range as you compare.

Set up your workforce for success

When your goal is to maximize productivity no matter where you're working, you need to consider a number of factors before investing in new PCs. Above all, the PC and processor combo you choose must empower your workforce to complete projects as quickly as possible, incorporate AI tools into their daily routines, and provide enough battery life to sustain work when outlets are scarce. High-end processors can generate a lot of heat, and the fans that cool these components can be noisy, so it's important to find out whether the PCs you're considering can remain cool and quiet under resource-intensive workloads.

We focused our testing on battery life and processor capabilities, but we recognize that CPU, GPU, RAM, and storage all play important roles in the overarching performance picture. We equipped all three options with enough RAM and SSD storage to power our tests.

Everyday productivity

Whether your team spends their workdays in meetings or they're incorporating new and promising AI technologies into their workflows, they need PCs that will help them succeed in their endeavors. Empower day-to-day work with strong system performance, all-day battery life, and long-lasting collaboration capabilities.

Day-to-day performance

We first evaluated the PCs' general performance using two benchmarks. Cinebench 2024 measures a CPU's multi-core performance by rendering a 3D scene.[1] PassMark PerformanceTest 11 combines CPU, 2D and 3D graphics, storage, and memory test performance metrics into an overall PassMark rating.[2]

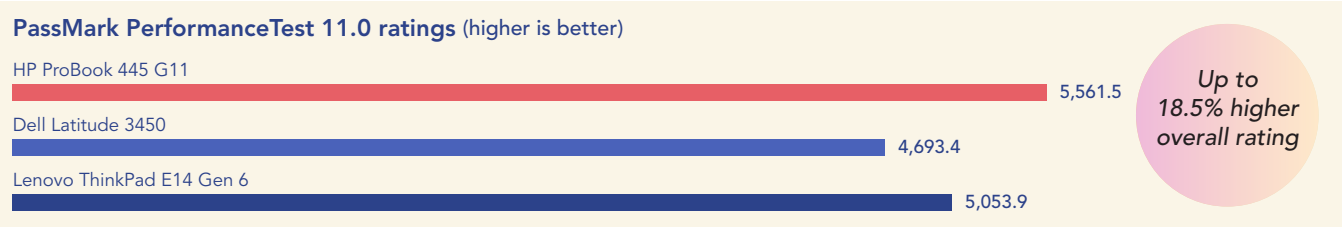


Figure 1: PassMark PerformanceTest 11.0 overall ratings. Higher is better. Source: Principled Technologies.

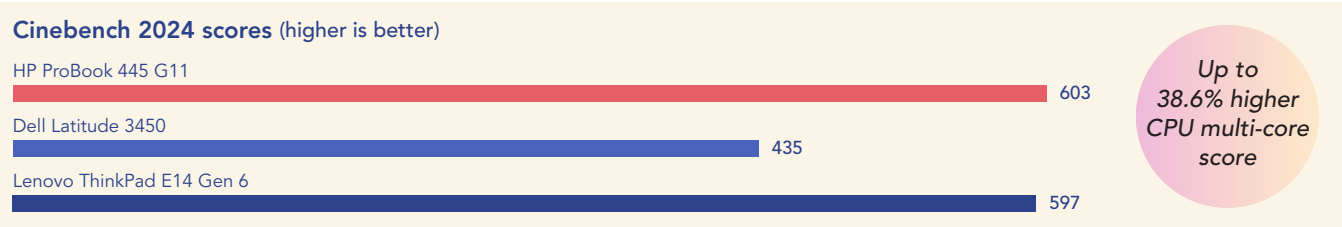


Figure 2: Cinebench 2024 CPU multi-core scores. Higher is better. Source: Principled Technologies.

Battery life

We evaluated battery life in multiple ways to get a feel for real-world battery life expectations. MobileMark 30 factors in both the DC performance score and battery life results for the MobileMark 30 Index composite score.[3] Higher Index scores denote a better balance between performance and battery life. Lower Index scores indicate that the longer battery life came at the price of performance or vice versa. To see how changing Windows 11 Pro power modes affected performance and battery life, we measured battery life and system responsiveness in both "Balanced" and "Best power efficiency" power modes. Procyon Battery Life Benchmark provides performance and battery life results in an office productivity scenario.[4]

For users who prize extended battery life over performance, we found something interesting in the MobileMark 30 tests. All three PCs experienced performance drops when we prioritized battery life over performance. However, the HP ProBook 445 G11 Notebook PC powered by an AMD Ryzen 7 7735U processor still delivered longer battery life and higher performance scores than the Intel Core Ultra 7 155U processor-powered Dell Latitude 3450 or Lenovo ThinkPad E14 Gen 6 laptops.

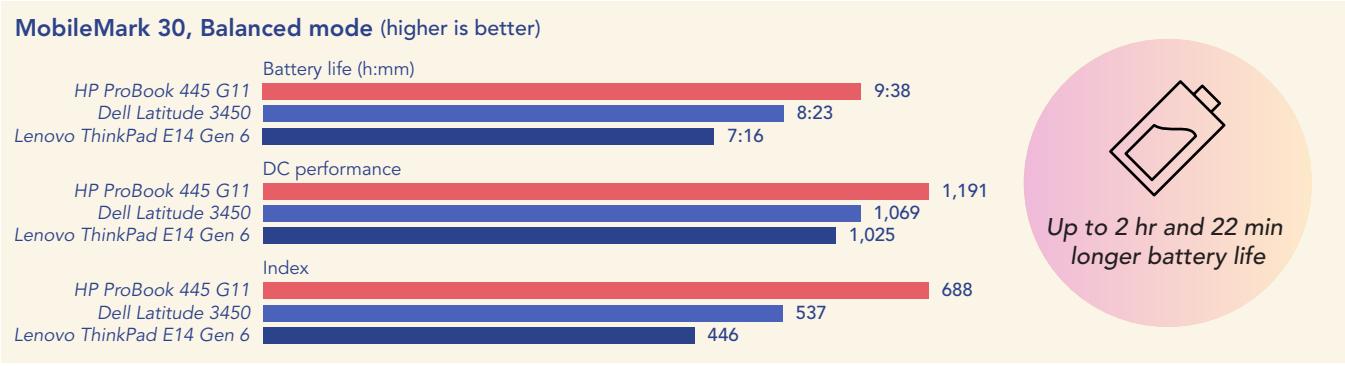


Figure 3: MobileMark 30 benchmark results in Balanced power mode. Time in hours and minutes (h:mm). Higher scores and times are better. Source: Principled Technologies.

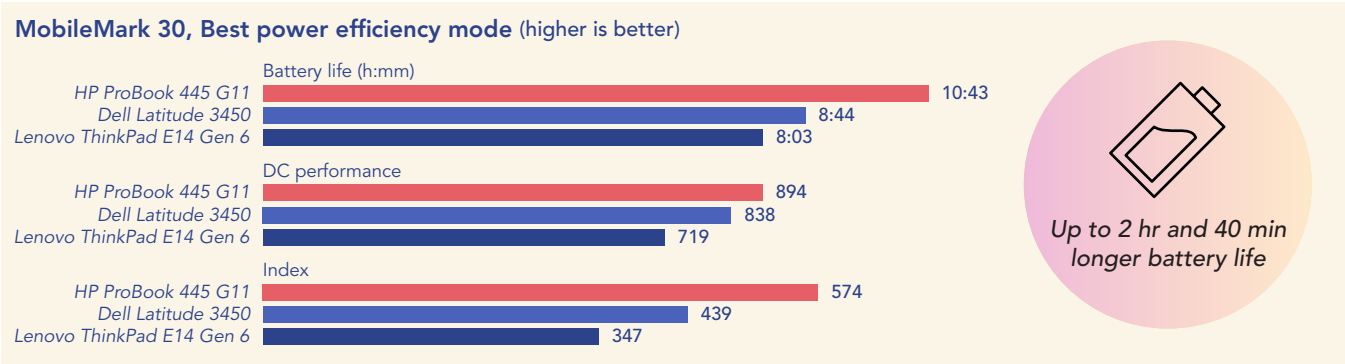


Figure 4: MobileMark 30 benchmark results in Best power efficiency power mode. Time in hours and minutes (h:mm). Higher scores and times are better. Source: Principled Technologies.

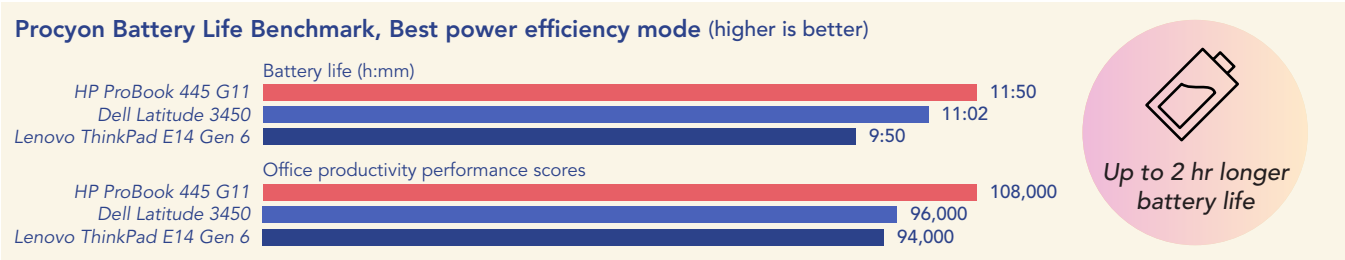


Figure 5: Procyon Battery Life Benchmark (Office Productivity) results in Best power efficiency power mode. Time in hours and minutes (h:mm). Higher scores and times are better. Source: Principled Technologies.

Collaboration

For the collaboration assessment, we set up a Microsoft Teams video-conferencing meeting for nine participants and measured how long the devices' batteries held out.

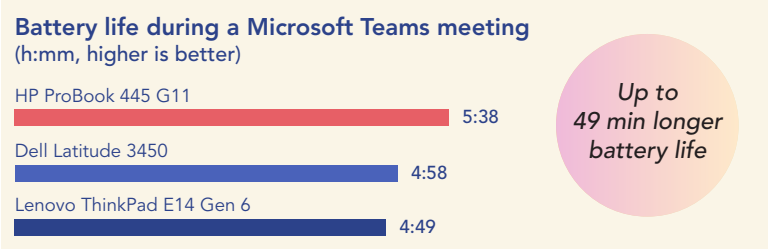


Figure 6: Battery life while conducting a nine-person Microsoft Teams meeting. Time in hours and minutes (h:mm). More time is better.
Source: Principled Technologies.

In our everyday productivity evaluations, we found that the HP ProBook 445 G11 Notebook PC with its AMD Ryzen 7 7735U processor performed better and lasted longer unplugged than either the Dell Latitude 3450 or Lenovo ThinkPad E14 Gen 6 laptops powered by an Intel Core Ultra 7 processor 155U.

Handling processor-intensive workloads

Whether you or your team are tackling processor-intensive projects that involve computer vision, machine learning, gaming, or content creation, the results of the benchmarks in this category can provide good insights on performance both now and in the future. For example, higher CPU and GPU scores here can translate to snappier response times with today's demanding productivity apps, computer-aided design programs, and project development applications. This improved performance can also speed new and emerging AI-enabled productivity and creative tools, so teams work faster and more efficiently for years to come.

Graphics-intensive performance

We evaluated the PCs' gaming performance using the 3DMark benchmark. 3DMark Fire Strike scans a system's hardware and estimates the frame rates you can expect from a modern gaming PC when playing CPU- and GPU-intensive games.[5]

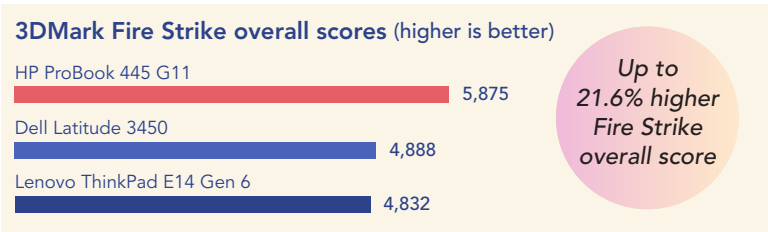


Figure 7: 3DMark Fire Strike overall scores. Higher is better.
Source: Principled Technologies.

AI/ML performance

Geekbench AI uses large datasets to simulate real-world use cases and evaluate machine learning, deep learning, and AI-centric workload performance.[6] In our Geekbench testing, we used the Open Neural Network Exchange (ONNX) AI framework as well as the DirectML AI backend for machine learning on Windows. Procyon AI Computer Vision Benchmark uses a variety of inference engines to gauge machine learning application performance.[7] In our Procyon testing, we used the Windows ML inference API on the AMD-based system and the Intel OpenVINO™ inference API on the Intel-based systems. The Windows ML API allowed the use of AMD hardware acceleration features, while the OpenVINO API is optimized for Intel CPU, GPU, and NPU inference.

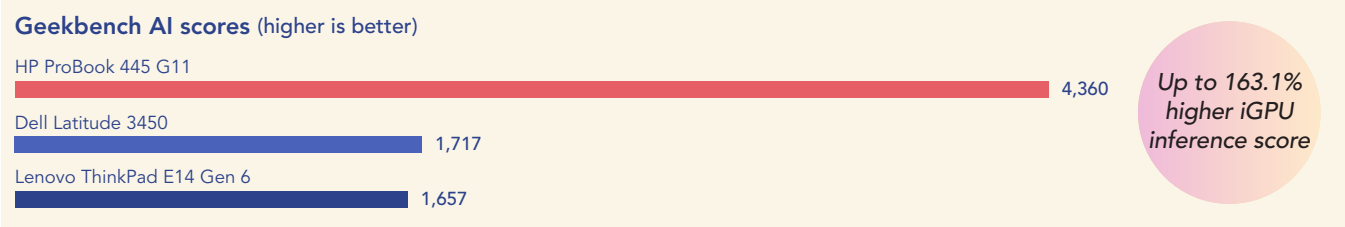


Figure 8: Geekbench AI (ONNX DirectML) iGPU inference scores. Higher is better. Source: Principled Technologies.

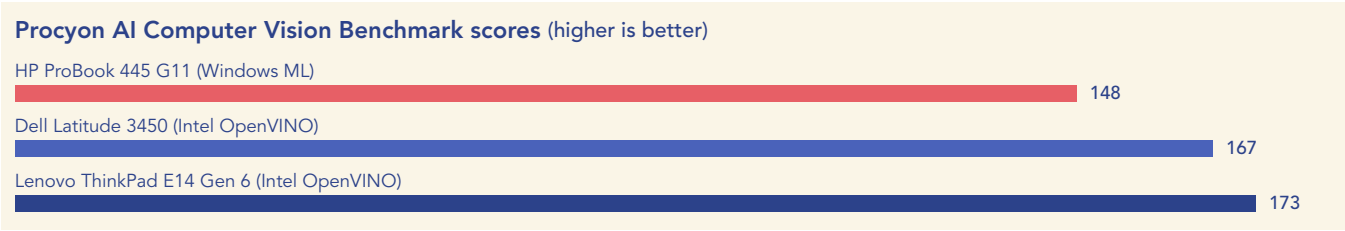


Figure 9: Procyon AI Computer Vision Benchmark GPU float32 scores. Higher Is Better. Source: Principled Technologies.

In our processor-intensive workload performance evaluations, we found that the AMD Ryzen 7 7735U processor-powered HP ProBook 445 G11 Notebook PC outperformed Intel Core Ultra 7 processor 155U-powered Dell Latitude 3450 and Lenovo ThinkPad E14 Gen 6 laptops in our 3DMark Fire Strike and Geekbench AI tests. The significantly higher Geekbench AI score indicates a greater ability to efficiently process large data sets and get answers in less time.

About the HP ProBook 445 G11 Notebook PC

HP purpose-built HP ProBook 405 Series Notebook PCs for a hybrid workforce. According to HP, "these devices unlock AI-powered workflows and essential performance while offering upgradeable storage and memory."[8] The HP ProBook 445 G11 delivers the power of next-gen AMD Ryzen 3, 5, or 7 processors with integrated AMD Radeon 660M Graphics, an integrated 1080p FHD or 5MP IR webcam, and a dual-microphone array.[9]

About the AMD Ryzen 7 7735U processor

AMD designed this Zen 3+ technology-based AMD Ryzen 7035 Series mobile processor to deliver fast performance and long battery life for hybrid workers.[10] The 8-core/16-thread AMD Ryzen 7 7735U processor (2.27 – 4.75 GHz) has an integrated 12-core GPU Radeon 680M iGPU for better power efficiency and graphics.[11]

You can learn more about AMD Ryzen processors with Zen 3+ architecture at: https://ir.amd.com/news-events/press-releases/detail/1111/amdextends-its-leadership-with-the-introduction-of-its.

The user's physical experience

Sometimes, opting for high-performing processors can mean users have to deal with more heat or noise coming from the PC. If your team members work with their PCs on their laps or in common areas where excessive noise can bother others, this can be a real issue.

For our hands-on heat and noise tests, the ambient room temperature was between 74.1 and 75.2 degrees Fahrenheit and ambient room noise was 23.6 decibels (dBA). We ran the resource-intensive Cinebench 2024 media-rendering benchmark six times: three times for thermal testing and three times for acoustic testing. Figure 10 shows the median performance scores we captured during the thermal runs. Figures 11 and 12 show the median temps and noise levels.

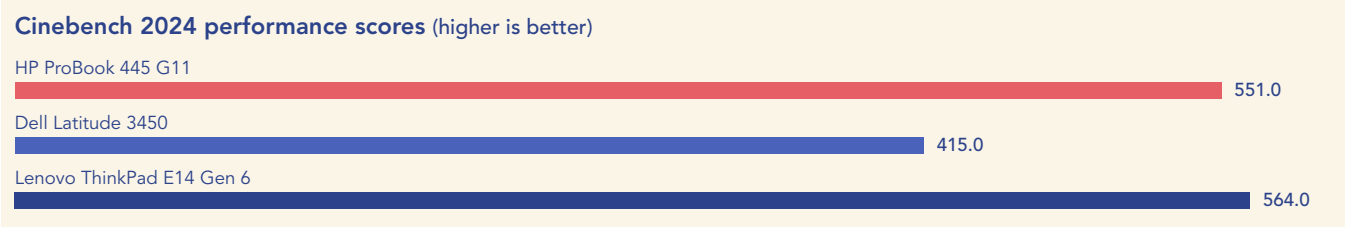


Figure 10: Median performance scores while the PCs were plugged in and running the Cinebench 2024 benchmark for 30 minutes. Higher performance scores are better. Source: Principled Technologies.

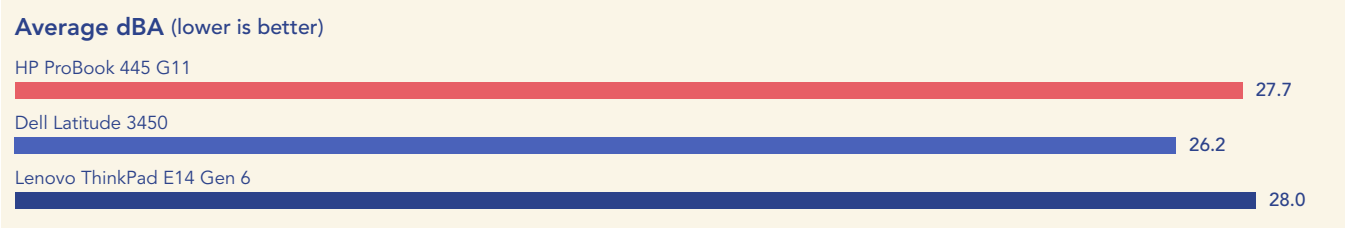


Figure 11: Median acoustic results while the PCs were plugged in and running the Cinebench 2024 benchmark for 30 minutes. Lower decibels are better. Source: Principled Technologies.

In this comparison, we found that the AMD Ryzen 7 7735U processor-powered HP ProBook 445 G11 Notebook PC received a significantly higher performance score than the Intel Core Ultra 7 processor 155U-powered Dell Latitude 3450 and was in the middle of the whisper-quiet pack when it came to noise output. For reference, 10dBA is equivalent to normal breathing, 30dBA is whispering, and 40dBA is what you'd hear in a quiet office or residential area.[12] The big difference was heat output, with the Lenovo ThinkPad E14 Gen 6 laptop generating almost 30 degrees more heat off the bottom than the HP ProBook 445 G11 Notebook PC we tested.

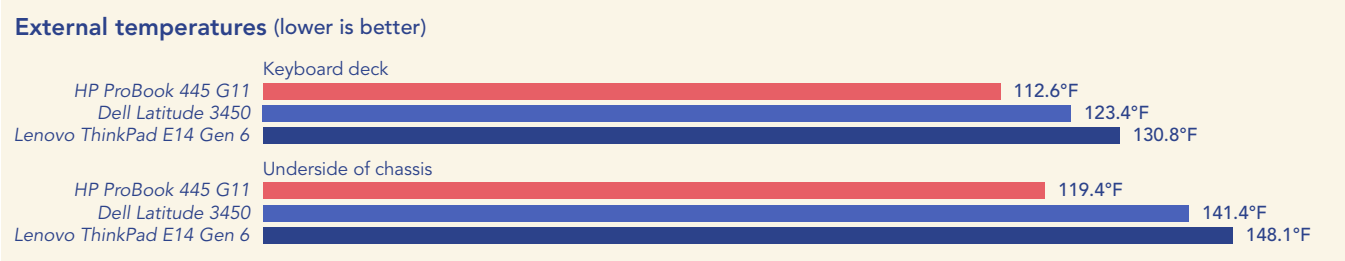
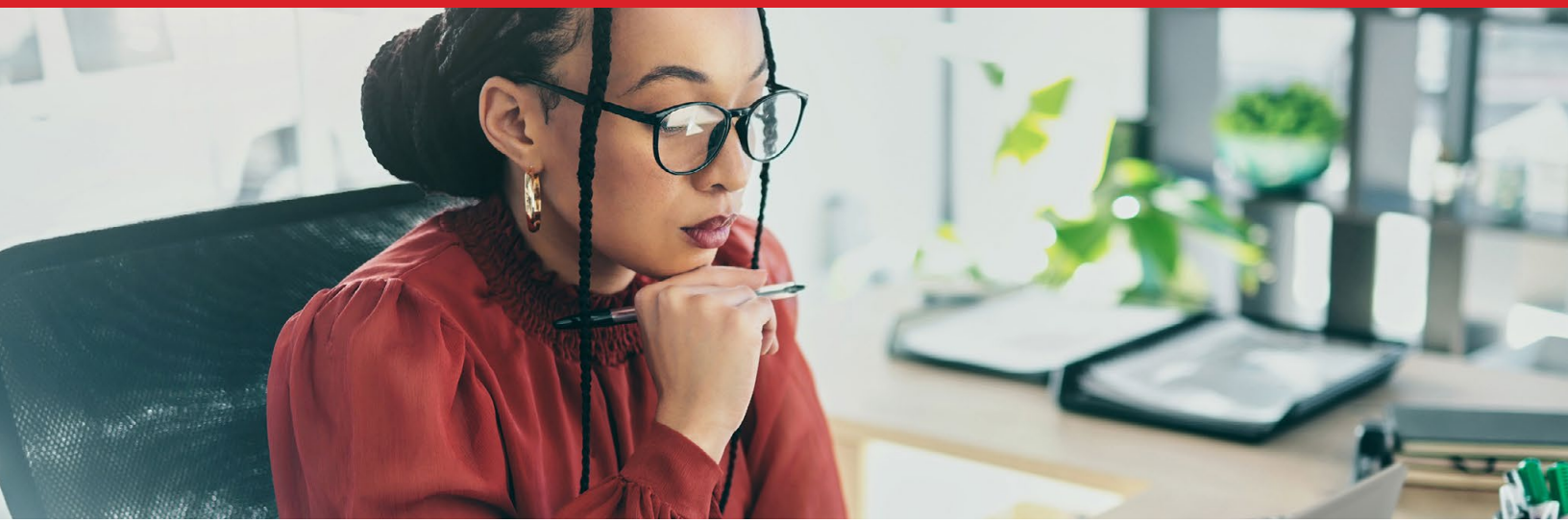


Figure 12: Median thermal results while the PCs were plugged in and running the Cinebench 2024 benchmark for 30 minutes. Lower temperatures are better. Source: Principled Technologies.



Conclusion

Our hands-on system responsiveness and battery life tests show that investing in 14-inch HP ProBook 405 Series Notebook PCs powered by next-gen AMD Ryzen 7035 Series processors could help set up your workforce for success. We found an AMD Ryzen 7735U processor-powered HP ProBook 445 G11 Notebook PC could help speed machine learning inference workloads and provide long battery life in unplugged productivity and collaboration scenarios.

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Read the science behind this report at https://facts.pt/ZvF8Tdr ▶

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