

CompTIA A+ Flashcards — Bonus Deck

Printable flashcard deck: 60 cards, generated from the TemplateForge concept list for this guide.

HOW TO PRINT:

1. Print this file double-sided on Letter, flip on SHORT edge.
2. Front pages show the Terms; each back page shows that same page's answers in the identical grid layout.
3. Cut along the grid lines. The card number in the top-right corner matches each front to its back.

STUDY TIP: quiz yourself with the Anki deck (import the CSV into Anki — it's free — note type Basic, fields by comma). Review daily; space your reviews instead of cramming.

Source: TemplateForge study guide concept list. Facts are the guide's own verified content — always confirm exam details at the official testing organization's website.

CompTIA A+

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#1

CompTIA A+

Vendor-neutral entry-level IT certification requiring two exams from the same series: Core 1 (220-1201) and Core 2 (220-1202), V15, launched March 25 2025.

Tip: Treat A+ as the first rung on the CompTIA ladder - Network+ and Security+ build directly on it.

Example: A help desk candidate passes both A+ exams, then studies Network+ for the same job family.

#2

Core 1 (220-1201)

Hardware-focused exam: mobile devices, networking, hardware, virtualization and cloud, and hardware/network troubleshooting. Pass mark 675 on a 900 scale.

Tip: Study the five Core 1 domains in exam-weight order: troubleshooting (28%) and hardware (25%) first.

Example: A candidate drills hardware and troubleshooting because they make up over half of Core 1.

#3

Core 2 (220-1202)

Software-focused exam: operating systems, security, software troubleshooting, operational procedures. Pass mark 700 on a 900 scale.

Tip: OS and security are each 28% of Core 2 - give them the most review time.

Example: Core 2 prep spends equal top weight on Windows administration and security fundamentals.

#4

Same-version rule

Core 1 and Core 2 must be taken from the SAME exam version; mixing exam series (like 220-1101 with 220-1202) is not allowed.

Tip: Before registering for the second exam, confirm both vouchers match the 220-1200 series.

Example: A candidate who started v14 must take both exams in v15 - not one in each.

#5

Mobile device hardware

Laptop and tablet internals: replaceable batteries, cameras, Wi-Fi and Bluetooth antennas, and add-on storage.

Tip: Know which laptop parts are field-serviceable (RAM, storage, battery) versus soldered.

Example: A tech swaps a laptop's M.2 SSD and RAM while the CPU stays soldered to the board.

#6

Battery management

Lithium-ion batteries degrade by charge cycles and heat; calibrate by full discharge only when the vendor asks.

Tip: Keep laptops cool and avoid leaving them at 100% for months to extend battery life.

Example: A fleet of docks runs cool and is charged to 80%, doubling average battery lifespan.

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Wi-Fi/Bluetooth antennas

Laptops hide antenna wires along the display bezel for Wi-Fi and Bluetooth signals.

Tip: Reconnect antennas after display work - a loose wire explains a sudden Wi-Fi drop.

Example: After replacing a laptop screen, the tech reseats the two antenna leads and Wi-Fi returns.

#8

TCP vs UDP

TCP is connection-oriented with guaranteed delivery; UDP is fast, connectionless, and loss-tolerant.

Tip: Match the protocol to the job: files need TCP, streaming and VOIP use UDP.

Example: Video call audio runs over UDP so a dropped packet becomes a blip, not a stall.

#9

Port 20/21 - FTP

FTP transfers files on port 21 (control) and 20 (data) in plaintext - no encryption by default.

Tip: Prefer FTPS or SFTP in answers where security matters; port 21 marks plaintext FTP.

Example: A legacy device only supports FTP on port 21, so the tech wraps it in a VPN.

#10

Port 22 - SSH

Secure Shell: encrypted remote administration and secure file transfer (SFTP rides on 22).

Tip: Port 22 is the safe remote-management answer versus plaintext Telnet on 23.

Example: An admin manages a Linux server over SSH from a laptop on the same LAN.

#11

Port 23 - Telnet

Legacy plaintext remote terminal protocol - unencrypted and discouraged.

Tip: Flag Telnet as insecure; any modern answer uses SSH instead.

Example: A router still offers Telnet; the tech disables it and enables SSH.

#12

Router

Forwards packets between networks, serves as the gateway, and usually hosts DHCP and NAT at home or small office.

Tip: Label the router as the gateway-plus-DHCP device in SOHO topology answers.

Example: A home router gives every device an address and sends traffic to the internet.

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Switch

Connects devices on the same LAN, forwarding frames by MAC address.

Tip: Switches extend LAN ports; routers move between networks - keep the two separate.

Example: Four desktops plug into a switch that uplinks to the router.

#14

Access point

Bridges wireless clients onto the wired network using SSIDs and encryption.

Tip: In a wireless question, the access point is the device that actually serves Wi-Fi.

Example: An office installs an access point so a conference room gets Wi-Fi coverage.

#15

SOHO network design

Small office/home office topology: modem to router to switch to devices, with wired and wireless segments.

Tip: Draw the flow modem - router - switch - devices to answer topology questions fast.

Example: A home network runs modem gateway router switch, then two PCs wired and phones on Wi-Fi.

#16

Motherboard form factors

ATX, micro-ATX, and mini-ITX define board size, mounting holes, and expansion slots.

Tip: Match the form factor to the case; mini-ITX means fewer slots, not less power.

Example: A small build uses mini-ITX in a compact case with a single PCIe slot.

#17

Chipset

The chipset routes data between CPU, RAM, storage, and peripherals and defines supported features.

Tip: Chipset questions: it manages the motherboard's feature set and connectivity.

Example: A chipset decides how many USB ports and M.2 slots the board can offer.

#18

CPU sockets

Sockets (like LGA) must match the CPU generation; they define pin layout and cooler mounting.

Tip: Match CPU and motherboard by socket - never force a CPU into the wrong socket.

Example: An LGA1700 CPU only fits an LGA1700 board; the tech verifies before installing.

Cores and threads

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Cores and threads

Cores are physical processing units; threads (Hyper-Threading/SMT) let each core handle two tasks.

Tip: More cores helps multitasking; thread count matters for virtualization workloads.

Example: An 8-core CPU with SMT shows 16 logical processors in the OS.

#20

HDD

Hard disk drives store data on spinning platters; large capacity at low cost, slower, mechanical.

Tip: Choose HDD for bulk archiving; SSD for anything performance-sensitive.

Example: A NAS archives video files on 8 TB HDDs because capacity beats speed there.

#21

SSD

Solid-state drives use NAND flash with no moving parts; fast boots, low power, shock resistant.

Tip: SSD is the default performance answer for OS drives and laptops.

Example: An old laptop gets an SSD, and boot time drops from minutes to seconds.

#22

NVMe and M.2

M.2 is the small card form factor; NVMe is the PCIe-based protocol with very high throughput.

Tip: NVMe/M.2 = fastest storage answer; SATA M.2 exists but is slower.

Example: A new workstation boots from a 1 TB NVMe M.2 drive with multi-gigabyte speeds.

#23

SATA

Serial ATA connects drives at up to 6 Gbps; the common interface for 2.5-inch SSDs and HDDs.

Tip: SATA answers suit mechanical drives and 2.5-inch SSDs; NVMe answers for speed.

Example: A data drive (HDD) and an OS drive (SATA SSD) both connect over SATA ports.

#24

USB generations

USB 2.0 at 480 Mbps, USB 3.x at 5/10/20 Gbps, USB4/Thunderbolt at 40 Gbps; Type-A and Type-C connectors.

Tip: Match USB speed to the peripheral: external SSDs want USB 3.x or newer.

Example: A backup SSD over USB 3.2 runs far faster than the same drive on USB 2.0.

USB-C

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USB-C

Reversible, power-delivery capable, and carries video, data, and charging in one cable.

Tip: USB-C is the modern 'one cable' answer for docking and charging.

Example: A laptop connects to a dock over a single USB-C cable for power, video, and data.

#26

Thunderbolt

Intel/Apple standard over USB-C: up to 40 Gbps, daisy-chaining, and external GPU support.

Tip: Thunderbolt answers pair with 40 Gbps and daisy-chained high-speed devices.

Example: A video editor daisy-chains two 4K monitors from one Thunderbolt port.

#27

HDMI

Digital audio/video port common on TVs and monitors; carries uncompressed video plus audio.

Tip: HDMI is the display answer for TVs and consumer monitors.

Example: A conference TV mirrors a laptop over HDMI.

#28

Virtual machine

A software-emulated computer running its own OS on shared host hardware.

Tip: VM answers: one physical host, many isolated guests.

Example: A server runs Windows and Linux simultaneously in separate VMs.

#29

Hypervisor

Software that creates and runs VMs: Type 1 bare-metal (ESXi, Hyper-V) or Type 2 hosted.

Tip: Type 1 runs directly on hardware; Type 2 runs inside an OS.

Example: A lab uses VirtualBox (Type 2); a production host uses ESXi (Type 1).

#30

Host vs guest

The host is the physical machine running the hypervisor; guests are the VMs inside it.

Tip: Name the physical box host and the VM guest in any virtualization question.

Example: A host crash takes down all of its guest VMs together.

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Troubleshooting methodology

Identify the problem, establish a theory, test the theory, plan and implement a fix, verify, document.

Tip: Answers that ask order: identify first, document last.

Example: A no-internet ticket is worked in methodology order and the fix is documented.

#32

Identifying the problem

Gather details: what changed, when it started, error messages, and who is affected.

Tip: Ask the user what changed - it beats guessing nine times out of ten.

Example: A user says the network died 'after the storm,' pointing to a power or modem issue.

#33

Establish a theory

Form a probable cause from symptoms before touching hardware: power, connection, settings.

Tip: Generate multiple theories, then test the cheapest one first.

Example: No link light plus recent storm suggests a dead modem before a bad NIC.

#34

Test the theory

Verify with tools: ping, link lights, cable tester, or swap-in known-good hardware.

Tip: Swapping a known-good cable or device isolates the failing part fast.

Example: A ping fails on a wired PC; replacing the cable restores the link.

#35

Plan and implement

Choose the least invasive fix, back up settings or data, and note rollback steps.

Tip: Prefer configuration fixes before hardware replacements.

Example: The tech reconfigures DNS before ordering a new router.

#36

Windows editions

Home, Pro, Enterprise, and Education differ in features like BitLocker, domain join, and group policy.

Tip: Pro/Enterprise answers carry BitLocker and domain join; Home lacks them.

Example: A business workstation runs Windows 11 Pro to join the domain and use BitLocker.

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Windows 11 requirements

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Windows 11 requirements

Modern CPU, 4 GB RAM minimum, 64 GB storage, UEFI with Secure Boot, and TPM 2.0.

Tip: TPM 2.0 and Secure Boot are the modern install answers.

Example: A PC that fails the Windows 11 check usually lacks TPM 2.0.

#38

Clean install vs upgrade

Clean installs wipe and load fresh; upgrades keep apps and settings in place.

Tip: Choose upgrade to preserve data; clean install for a fresh, consistent image.

Example: A slow Windows 10 PC gets a clean Windows 11 install, losing no work after a backup.

#39

In-place upgrade

Upgrade install keeps user files, apps, and settings while moving to a newer edition or version.

Tip: Answer in-place upgrade when data preservation is required.

Example: A user upgrades Windows 10 to 11 in place and keeps all documents.

#40

Task Manager

Shows processes, performance, startup apps, and lets you end tasks and change priorities.

Tip: Task Manager is the first stop for a slow PC - find the hog.

Example: A runaway process pegs CPU; Task Manager ends it and the PC recovers.

#41

Disk Management

Creates, formats, shrinks, and extends partitions; assigns drive letters; initializes disks.

Tip: Extend a volume only when adjacent unallocated space exists.

Example: A tech extends C: by 50 GB from adjacent unallocated space in Disk Management.

#42

Device Manager

Lists hardware, shows driver status, and updates or rolls back drivers.

Tip: Yellow warning in Device Manager = driver problem; update or roll back there.

Example: A sound device shows an error; rolling back the driver restores audio.

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System Configuration (msconfig)

Controls startup items, boot options, and services for troubleshooting.

Tip: Safe boot under msconfig is quick for diagnosis; uncheck it after.

Example: Launching msconfig and selecting Safe Boot loads a minimal Windows.

#44

macOS fundamentals

Unix-based OS with Finder, Dock, System Settings, and Gatekeeper app security.

Tip: macOS answers pair with Gatekeeper, Time Machine, and Spotlight.

Example: A Mac blocks an unsigned app via Gatekeeper until the user allows it.

#45

Time Machine

macOS built-in backup to external drive or network share, with hourly snapshots.

Tip: Time Machine is the macOS backup answer; restore from it after drive failure.

Example: A Mac recovers an accidentally deleted file from Time Machine.

#46

macOS recovery

Command-R boots macOS Recovery for reinstalls, disk utility, and restore.

Tip: Command-R answers: recovery and reinstall without a bootable USB.

Example: A Mac with a failing OS is reinstalled from Recovery.

#47

CIA triad

Confidentiality, Integrity, Availability - the three security goals framing most controls.

Tip: Map controls to the triad in questions: encryption = confidentiality.

Example: Backups support availability; hashes verify integrity; passwords protect confidentiality.

#48

Encryption basics

Symmetric uses one key; asymmetric uses a public/private pair; TLS protects data in transit.

Tip: Encryption answers: at rest - BitLocker/FileVault; in transit - TLS/VPN.

Example: A laptop's drive is encrypted with BitLocker; web traffic uses TLS.

BitLocker

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BitLocker

Windows full-disk encryption tied to TPM; requires Pro/Enterprise editions.

Tip: BitLocker pairs with TPM and Pro editions; Home cannot run it.

Example: A stolen Pro laptop yields nothing because BitLocker encrypts the drive.

#50

FileVault

macOS full-disk encryption with FileVault on Apple Silicon or Intel Macs.

Tip: FileVault is the macOS full-disk encryption answer.

Example: A Mac's data stays unreadable without the FileVault recovery key.

#51

Application won't start

Check compatibility, missing dependencies, corrupt files, and permissions; reinstall as last resort.

Tip: Repair install before full reinstall; check the event log for the error.

Example: A legacy app fails until compatibility mode is set on the executable.

#52

Slow application

Causes: low memory, runaway processes, disk pressure, and background activity.

Tip: Close hogs and check disk space before blaming the app itself.

Example: An email client crawls because the disk is 98 percent full.

#53

App crashes and freezes

Use Task Manager to end the task, check the app's logs, and apply the vendor fix or update.

Tip: Record the failure details from Event Viewer for accurate diagnosis.

Example: A video app freezes on export until its GPU driver is updated.

#54

Driver issues

Yellow device errors in Device Manager: update, roll back, or reinstall the matching driver.

Tip: Roll back the last driver change when a device broke right after an update.

Example: A printer fails after a Windows update; rolling back the driver restores it.

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ESD protection

Electrostatic discharge damages components; use ESD straps and mats when handling parts.

Tip: Wear the strap and touch the case before touching components.

Example: A tech wearing an ESD strap installs RAM without zapping the board.

#56

Power safety

Unplug before working inside; check for damaged cables and proper grounding.

Tip: Verify power is off and discharged before internal work.

Example: A technician unplugs a PSU and presses power to drain capacitors before service.

#57

Surge and UPS

Surge suppressors and UPSes protect equipment and keep servers up during dips.

Tip: Server and storage gear go on UPS; desktop workstations on surge protectors.

Example: A brief brownout passes without a reboot thanks to the UPS.

#58

Backup types

Full backs up everything; incremental backs up changes since the last backup of any type; differential since the last full.

Tip: Full + incremental saves space; restoring takes full plus all incrementals.

Example: A nightly incremental plus weekly full restores to Wednesday's state with two tapes.

#59

3-2-1 backup rule

Three copies of data, on two different media, with one copy offsite.

Tip: Choose the 3-2-1 answer for resilient backup strategy questions.

Example: A business keeps the NAS copy, an external disk, and a cloud copy.

#60

Cloud backup

Offsite copies in cloud storage protect against fire, theft, and ransomware.

Tip: Cloud backup is the offsite leg of the 3-2-1 rule.

Example: A small firm syncs critical folders to cloud storage nightly.