Practice Exam 1 Answers

Answers to Exam Questions

1. Answer **B** is correct. Most of the time a computer's BIOS/UEFI will be configured to boot to the hard drive first. To boot from an optical disc, you might need to change the boot sequence, otherwise known as the boot order or boot priority, and place the optical drive first. However, if the hard drive is brand new and blank, you might be able to still boot from the optical disc, even if the optical drive is not first on the list. This will depend on the system, but essentially, the BIOS/UEFI will see that the drive is blank and move on to the next boot media on the list. Keep in mind that you might boot to a disc with an operating system for other reasons than installing the OS (for example, recovering an existing system). See the section titled "The BIOS/UEFI" in Chapter 2, "Motherboards," for more information.

   Incorrect answers: Enabling a password is not necessary, but there should be a password. If there is, you will need to know it to access the BIOS/UEFI. If not, you should create one while you are there. TPM (Trusted Platform Module) deals with the encryption of data on the hard drive and should be enabled or disabled before an operating system is installed; it won't have any bearing on the boot sequence.

2. Answer **A** is correct. The firewall is the device that prevents outside intrusion by blocking ports and protocols. It is the first line of defense for a network. See the section titled "Types of Networks, Network Devices, and Cloud Technology" in Chapter 15, "Computer Networking Part I," for more information.

   Incorrect answers: A gateway is a device (usually a router) that allows multiple clients on one network access to another (for example, computers on the LAN that want to gain access to the Internet). A router connects two networks together. A bridge separates a LAN into two distinct network sections. An access point allows wireless connectivity to the network for Wi-Fi-enabled computers.

3. Answer **B** is correct. PCIe 6-pin is the best answer. 8-pin PCIe power connectors are also common. See the section titled "Power Supplies" in Chapter 5, "Power," for more information.

Incorrect answers: Although there are 8-pin 12 V connectors for PCIe, there are also 8-pin 12 V connectors for the CPU. Because of this, the answer "8-pin 12 V" is somewhat ambiguous, whereas "PCIe 6-pin" specifies a connector for a PCIe video card specifically. 20-pin refers to older P1 main power connections from the power supply to the motherboard. SATA power connectors are 15-pin and are used for hard drives and optical drives.

4. Answer **B** is correct. DNS (Domain Name System) provides the mapping of user-friendly names (domain names such as www.davidlprowse. com) to network resources (such as IP addresses). See the section titled "TCP/IP" in Chapter 15, "Computer Networking Part I," for more information.

Incorrect answers: DHCP (Dynamic Host Configuration Protocol) provides automated addressing to computers on the network. FTP (File Transfer Protocol) offers separate control and data connections. RDP (Remote Desktop Protocol) provides remote connectivity to resources on the network.

5. Answer **A** is correct. DVD-9 DL is the best answer when it comes to saving 6,153 MB (6 GB) of data. DL stands for dual-layer. DVD-9 has one side and two layers by default, allowing it to save up to 8.5 GB of data maximum. See the section titled "Optical Storage Media" in Chapter 6, "Storage," for more information.

Incorrect answers: CD-R discs can only save 700 MB or so; the 48x simply tells you the write speed. DVD-5 SL discs are standard single-sided, single-layer DVDs that can save up to 4.7 GB. A RAID 5 array would definitely be able to hold the data, but it is not a "disc"; in fact, it is three or more drives. Either way, a lot of work is required to build that array; plus the question did not mention that fault tolerance was required.

6. Answer **D** is correct. ECC stands for error correcting code. ECC memory can detect and correct common types of data corruption. It is not typically installed to desktops but might be used if data corruption cannot be tolerated. See the section titled "RAM Basics and Types of RAM" in Chapter 4, "RAM," for more information.

Incorrect answers: Quad-channel means that the RAM can send data over four 64-bit channels at the same time. Unbuffered memory is standard RAM; buffered memory (registered memory) places less electrical load on the memory controller making a system that has a lot of sticks of RAM run more stable. Dual-channel RAM uses two 64-bit data channels at the same time.

7. Answer **B** is correct. Download the special keys driver from the laptop manufacturer's website. Some laptops have separate drivers for the keyboard, the touchpad, and the special keys (the extra keys near the Power button, also known as special buttons, hotkeys, or corner keys). In many cases, the main part of the keyboard (numbers and letters) will work fine by default without you having to install a driver, but those special keys will need to be installed manually, especially if you have reinstalled an OS to the laptop. See the section titled "Installing, Configuring, and Troubleshooting Visible Laptop Components" in Chapter 7, "Mobile Device Hardware," for more information.

   Incorrect answers: ACPI stands for Advanced Configuration and Power Interface, which deals with power management within the OS. The ACPI driver is part of the operating system and usually doesn't have to be installed; regardless, it would come from Microsoft, not the manufacturer of the laptop, and it has nothing to do with the volume buttons of the laptop. AHCI is a standard that defines the operation of SATA host adapters. AHCI drivers do not affect the volume buttons. The Bluetooth driver also has nothing to do with the volume buttons but might be required if a user was using a remote keyboard with the laptop or if the Bluetooth button on the laptop didn't function.

8. Answer **B** is correct. The best answer includes a gaming rig that has the fastest CPU and the most RAM. The gaming PC would also use the highest power PSU, while the HTPC would use an HTPC-type PSU, most likely micro-ATX or mini-ITX. The HTPC special requirement would be a TV tuner (and probably an HDMI output). The thick client special requirement would be Windows 7 32-bit, if you can call that special. The gaming PC special requirement would be liquid cooling or other specialized cooling solution. Other important notes here include the usage of a quiet SSD drive by the HTPC and the fact that the HTPC should have a decent amount of RAM. The thick client is simply a basic PC used for things such as access to the Internet and Microsoft Office usage. See the section titled "Custom PC Configurations" in Chapter 13, "Peripherals and Custom Computing," for more information.

Incorrect answers: The rest of the answers had incorrect matchups. Some standouts include the following: A standard thick client would not need liquid cooling or a hex core CPU, but it wouldn't function without a hard drive! The home theater PC wouldn't need virtualization. The gaming system should not use Windows Vista no matter how much RAM it has! And none of the systems listed should use a Pentium IV (though it was a good CPU in its day).

9. Answers **A** and **D** are correct. Check the memory and the power supply unit (PSU) first. Both of these can fail intermittently, causing random reboots. Try reseating and cleaning RAM (and replacing if necessary). Test the PSU with a PSU tester or multimeter and replace if necessary. The PSU can also cause the computer to quickly shut down immediately after it was started. See the section titled "Installing and Troubleshooting RAM" in Chapter 4, "RAM," and "Power Supplies" in Chapter 5, "Power," for more information.

    Incorrect answers: If the video card fails, the computer simply won't display to the monitor. If the CMOS battery fails (or shall we say discharges), the time and date will reset (perhaps to January 1, 2000). Other settings in the UEFI/BIOS will be lost as well. If the optical drive fails, you won't be able to read CDs and DVDs, but the optical drive should not cause the computer to reboot.

10. Answer **B** is correct. Double-sided memory modules have their chips divided into two "sides," known as banks. Only one side can be seen by the computer at any time. See the section titled "RAM Basics and Types of RAM" in Chapter 4, "RAM," for more information.

    Incorrect answers: Single-sided memory modules have a single "bank" of memory chips, and the computer's memory controller can access all of the chips at once, unlike double-sided memory. ECC stands for Error Correction Code, a type of RAM that can detect and correct errors, protect against random inconsistencies in data transfer, and, in general, is meant to *improve reliability*. It is used commonly in servers but not in PCs. Non-ECC cannot detect or correct errors but is by far the more common type of RAM module in PCs and laptops.

11. Answer **A** is correct. An integrated GPU means that it is integrated to the main CPU (or the motherboard) of the desktop computer. In this case, video and graphics are controlled by the main CPU instead of a video adapter card with its own GPU. Most commonly, the CPU has a heat sink and fan, though liquid cooling is also a possibility. See the section titled "CPU 101" in Chapter 3, "The CPU," for more information.

Incorrect answers: The heat sink by itself might be used on a GPU that is part of an adapter card (separate from the CPU) but only on low-performance video cards. It is also used on the chipset on the motherboard. Liquid cooling is more common in gaming rigs as a method of cooling the CPU; in a gaming rig, the GPU will always be a separate video card (or more than one). And these will be active, meaning that they have a heat sink and a powered fan to cool the heat sink and GPU.

12. Answer **C** is correct. Infrared (IR) technology is used to beam information between two devices over very short distances (usually a few feet). This is considered by many to be a shortcoming of IR, furthered by the fact that each device's IR sensor must be within line of sight of each other. See the section titled "Understanding Tablet and Smartphone Hardware" in Chapter 7, "Mobile Device Hardware," for more information.

    Incorrect answers: 802.11n is a wireless local area network (WLAN) protocol by the IEEE and allows for wireless transmissions over greater distances (up to 70 meters/230 feet indoors and 250 meters/820 feet outdoors). A parabolic antenna is used with satellite connections, which are long distance. Bluetooth is used by computers and phones to establish connections to wireless peripherals such as headsets, generally over an average distance of 10 meters. Worthy of note: near field communication (NFC) can allow communication between mobile devices over very short distances, too, but it uses radio frequency (RF), not infrared.

13. Answer **C** is correct. Smartphones will typically use microSD cards for storage of bulk data, such as videos, MP3s, photos, and so on. See the section titled "Understanding Tablet and Smartphone Hardware" in Chapter 7, "Mobile Device Hardware," for more information.

    Incorrect answers: SD means the standard secure digital card, which is too large for most smartphones (though it is used in a plethora of other devices). eMMC stands for embedded MultiMediaCard. These are often used for the main memory inside a mobile device. For example, a smartphone might have 2 GB of main memory (eMMC) and 16 GB of long-term storage (microSD). SODIMMs are the RAM modules used in laptops.

14. Answer **A** is correct. RAID 0 provides for the striping of data over two or more drives. The main purpose of this is to increase performance compared to using a single drive. See the section titled "RAID" in Chapter 6, "Storage," for more information.

    Incorrect answers: Note that the question said nothing about fault tolerance. All of the other answers are fault tolerant, which decreases performance. RAID 1 is mirroring; it copies the data to two drives. RAID 5 is striping with parity; it stripes the data and parity information over three or more drives. RAID 10 is a stripe of mirrors.

15. Answers **A**, **C**, and **D** are correct. The input devices you would most likely use with computer games include microphones, gamepads, and joysticks. Microphones are used for in-game chat, especially when the gamer is in a team environment. Gamepads are used to control the game but are more common in gaming consoles than they are in PCs. A joystick is a device used most commonly with flight simulator games. See the section titled "Input/Output Devices, and Peripherals" in Chapter 13, "Peripherals and Custom Computing," for more information.

    Incorrect answers: Webcams are cameras that usually connect via USB and allow a user to communicate with another user while seeing them on-screen; they also allow users to record themselves. Webcams can also be built in to a laptop or mobile device or they can run wirelessly. A camcorder is a video camera that can record video or take pictures. These are often connected to a PC to transfer video data. A digitizer is a device that accepts input in the form of a stylus or by the tap of a finger. It is commonly associated with touchscreens.

16. Answer **D** is correct. The RJ45 connector is the most common type of networking connector. It is used in twisted-pair networks. See the section titled "Cables, Connectors and Tools" in Chapter 15, "Computer Networking Part I," for more information.

    Incorrect answers: RJ11 is the connector used by landline-based phones (POTS connections) and DSL connections in households. The F-connector is a type of coaxial connector used for cable TV and cable Internet connections. BNC is another type of coaxial connector used in some video applications and in older networks.

17. Answer **C** is correct. Of the listed answers, the Lightweight Directory Access Protocol (LDAP) is relied upon most by Active Directory. LDAP deals with directory lists (such as the users within a Microsoft Active Directory domain) or the users' e-mail addresses listed in a Microsoft Exchange server. See the section titled "TCP/IP" in Chapter 15, "Computer Networking Part I," for more information.

    Incorrect answers: Server Message Block (SMB) is a protocol that allows shared access to files; it is important to any computer running Windows, not just computers that are in charge of, or connect to, a Microsoft Active Directory domain. SMB is also known as the Common Internet File System (CIFS). HTTP stands for Hypertext Transfer Protocol, used to transfer data from a web server to a client computer's web browser. WINS stands for Windows Internet Naming Service, a name resolution technology that converts NetBIOS names to IP addresses. It is somewhat deprecated and is rarely used; its successor is the Domain Name System (DNS).

18. Answer **B** is correct. The inkjet printer uses piezoelectric pressure pads to produce small bubbles that are moved to the paper. See the section titled "Printer Types and Technologies" in Chapter 14, "Printers," for more information.

    Incorrect answers: The laser printer applies toner to the paper in the electrophotographic imaging process. A thermal printer uses heat to create text and images on specially coated paper. Impact printers use a print head to hammer the letters through a ribbon and on to the paper.

19. Answer **D** is correct. In most cases, the system board (motherboard) in a laptop cannot be replaced without removing the CPU and reinstalling the CPU to a new motherboard. Sometimes the CPU will be integrated, but this will depend on the laptop. See the section titled "Installing, Configuring, and Troubleshooting Internal Laptop Components" in Chapter 7, "Mobile Device Hardware," for more information.

    Incorrect answers: Replacement of the backlights and function keys will definitely not require the removal of the CPU. The main backlight is located within the top portion of the laptop that contains the other video components. The keyboard backlight is usually integrated to the keyboard itself, which is above the system board (and CPU). The function key is simply a key on the keyboard, which might be replaced individually, but if a function key is broken, it will probably require that the entire keyboard be replaced.

20. Answer **A** is correct. A blackout is an environmental impact that can cause the customer to lose data. A blackout is when there is a complete loss of power for an extended period of time. Going beyond the blackout, there are other concerns, such as the brownout (which is a reduction in power over an extended period of time) and a power surge (which is a spike in power for a short period of time). To protect against all of these, a battery backup device such as a UPS is recommended. See the section titled "Power Devices" in Chapter 5, "Power," for more information.

    Incorrect answers: Air filters are environmental controls used to protect an organization's air from unwanted airborne particles. Being on time is an important part of professionalism. If you are going to be late, be sure to contact the customer. However, this isn't likely to cause the customer to lose data.

21. Answer **A** is correct. HDMI and DVI (potentially) can send purely digital signals. HDMI is inherently digital and DVI-D sends digital signal only (as opposed to DVI-I, which is digital and analog or DVI-A, which is analog only). See the section titled "The Video Subsystem" in Chapter 12, "Video and Audio," for more information.

Incorrect answers: VGA and S-Video operate in analog only. They are older standards that are not commonly used and usually only as a fallback.

22. Answer **C** is correct. A serial connection uses a 9-pin connector. Serial connections are older connections that you might still see in use in special environments. An example would be the DB-9 male COM1 connector on the back of a computer. (This is more accurately known as a DE-9 port as well.) Though it is an older technology, you will probably see it in the field and just might be tested on it. See the section titled "SOHO and Windows Networking" in Chapter 16, "Computer Networking Part II," for more information.

    Incorrect answers: USB 2.0 and earlier is a 4-wire connection as well as 4 pins. USB 3.0 is a 9-wire connection but is actually 11 pins if powered, 5 if micro-USB. Ethernet connections could be coaxial, fiber optic, or (most commonly) twisted-pair. Twisted-pair Ethernet uses RJ45 connections, which are 8 pins. RJ11 ports (used for telecommunications connections) can have 2, 4, 6, or even 8 pins, but most commonly the RJ11s on a telco patch cable are wired for 4.

23. Answer **B** is correct. The best answer is "RAID utilizes multiple disks to increase performance and/or enable protection from data loss." RAID 0 and 5 can be used to increase read performance while RAID 1 can be used to increase write performance. RAID 1, 5, and 10 can be used to enable protection from data loss. See the section titled "RAID" in Chapter 6, "Storage," for more information.

    Incorrect answers: Telling a customer that RAID stands for Redundant Array of Independent Disks is technical jargon that you should try to avoid. RAID is not a dynamic disk management system. However, in Microsoft operating systems, you need to set disks to dynamic in the Disk Management utility if you wish to add them to RAID arrays. Regardless, this is more information that the customer does not need to know. Finally, the statement "RAID uses striping to reduce the amount of hard drive write time and utilizes parity bits to reconstruct the data from a failed hard drive" is not altogether correct. RAID can also be mirroring. In addition, not all versions of RAID can use parity bits to reconstruct data from a failed hard drive. RAID 0, 1, and 10 do not. However, RAID 5 and 6 do. Remember that the customer needs to know how the technology will make the business more efficient; he or she does not need to know the technical details or jargon.

24. Answer **A** is correct. The best answer listed is thin client. A thin client is usually a diskless workstation with limited CPU power. It gets its operating system from flash-based memory or from a server and doesn't have a hard drive. In addition, it resets itself every time it is restarted. This helps to protect against malware and decreases the chances of hardware failure. See the section titled "Custom PC Configurations" in Chapter 13, "Peripherals and Custom Computing," for more information.

Incorrect answers: A thick client is generally a PC. Internet cafes do not need the power of a thick client, an HTPC, or a gaming PC. So the thin client option will also save the customer money.

25. Answer **D** is correct. The next thing you need to do is connect to a wireless network, the first step of which will be to scan for network names (SSIDs) or to add them manually. See the section titled "SOHO Networking" in Chapter 16, "Computer Networking Part II," for more information.

Incorrect answers: You won't type the security passphrase until you connect to a wireless network. Updating the firmware and/or drivers for the WLAN card (Wi-Fi adapter) should be done as part of the installation of that card. If the router is set up to accept wireless connections, encryption should have already been configured on that router as well.

26. Answer **C** is correct. The only list of nonoverlapping channels is 1, 6, and 11. That's because the 2.4 GHz wireless frequency spectrum is broken down (in the United States) as 1–5, 6–10, and 11. Anything within a particular range (such as 2 and 4) would overlap and could cause interference. See the section titled "SOHO and Windows Networking" in Chapter 16, "Computer Networking Part II," for more information.

Incorrect answers: Anything within a particular range (such as 2 and 4) would overlap and could cause interference. So "2, 4, 6, 8, 10" is incorrect. "1, 5, 10" is incorrect because 1 and 5 are in the same range. "3, 6, and 10" is incorrect because 6 and 10 are in the same range.

27. Answer **D** is correct. DDR4 SODIMMs use the 260-pin module format. See the section titled "Installing, Configuring, and Troubleshooting Internal Laptop Components" in Chapter 7, "Mobile Device Hardware," for more information.

Incorrect answers: As far as SODIMM technology goes, DDR1 and DDR2 use the 200-pin module format, and DDR3 is 204-pin. 240-pin is used by full-size desktop DDR3.

28. Answer **A** is correct. Orange/white, orange, green/white, blue, blue/white, green, brown/white, brown is the correct wiring sequence for the 568B wiring standard. You might also see this shown as white/orange, orange, white/green, blue, white/blue, green, white/brown, brown, or simply WO, O, WG, B, WB, G, WBr, Br. It's the same thing; it all depends on which color the manufacturer emphasizes. See the section titled "Cables, Connectors, and Tools" in Chapter 15, "Computer Networking Part I," for more information.

Incorrect answers: In reality, you could use whatever wiring scheme you want, as long as the wires are organized in the same order on both ends of the cable. For example, you could use the 568A standard, which was listed in one of the answers as Green/white, green, orange/white, blue, blue/white, orange, brown/white, brown. That is the older standard that was replaced by 568B. But to stay within electrical code and municipal guidelines, use the wiring scheme defined by the 568B standard.

29. Answer **B** is correct. The best method is to enable print sharing on the computer that the local USB printer is connected to. Then connect the other computers to the shared printer. See the section titled "Installing, Configuring, and Troubleshooting Printers" in Chapter 14, "Printers," for more information.

Incorrect answers: A print server is a possibility, but that would require purchasing a print server, removing the printer from the computer, and then connecting it to the print server. This incurs additional cost and work, so it isn't the best method. USB hubs are used to connect multiple USB devices to a single computer. PCL (Printer Command Language) drivers are a standard in Windows and other operating systems—as such, they should already be installed to the other computers.

30. Answer **A** is correct. The most likely cause is that the backlight has failed. If you attempt to alter the brightness with the function keys and the screen is still very dim, the backlight (usually a CCFL or cold-cathode fluorescent lamp) probably needs to be replaced. It is known as a backlight or lamp, not as a bulb. See the section titled "Installing, Configuring, and Troubleshooting Visible Laptop Components" in Chapter 7, "Mobile Device Hardware," for more information.

Incorrect answers: If the battery failed, the laptop would not boot (unless you plug it in). If the display driver was corrupted, you would still see brightness while the system POSTs and might get a basic VGA resolution or perhaps a garbled screen.

31. Answer **B** is correct. Infrared (or IR) has the shortest wireless range for printing. The computing device and the printer need to be very close to each other. Because of this, Bluetooth is a better method to use for a single computer. See the section titled "Printer Types and Technologies" in Chapter 14, "Printers," for more information.

Incorrect answers: Most wireless printers that use Bluetooth are Class 2 devices with a range of 10 meters. For networked wireless printers, 802.11g and 802.11a both have a range of approximately 30 to 35 meters indoors. 802.11a is slightly less than 802.11b and g. Note: 802.11n and 802.11ac have greater ranges than 802.11a, b, and g.

32. Answer **A** is correct. The page count should be reset whenever you perform normal, scheduled printer maintenance. For example, a laser printer can print about 200,000 pages before it needs a scheduled maintenance. By resetting the page count after a successful maintenance, you will know when the next maintenance should occur. This is reset on the printer itself. See the section titled "Installing, Configuring, and Troubleshooting Printers" in Chapter 14, "Printers," for more information.

Incorrect answers: The job queue and cache should reset automatically; this is because you would normally turn the printer off before maintaining it. Any print queue located on a computer is not reset automatically, but jobs in the queue will probably have to be re-sent. The tray settings do not have to be reset.

33. Answer **D** is correct. SFTP (Secure File Transfer Protocol or SSH File Transfer Protocol) is the best option when attempting to securely transfer large files. It utilizes SSH (Secure Shell) to create a secure connection (often through TLS), but remember that SSH by itself is simply a secure way of connecting to other computers. See the section titled "TCP/IP" in Chapter 15, "Computer Networking Part I," for more information.

Incorrect answers: Basic FTP is not secure by default (other than requiring the use of a password). TELNET is deprecated and should be avoided and replaced with SSH as well.

34. Answer **A** is correct. Of the listed answers, you should check the DC-in jack on the laptop. The very first thing you should do is check the basics; see whether the power brick is connected to the AC outlet and to the DC-in jack, and verify whether the battery is connected properly. See the section titled "Installing, Configuring, and Troubleshooting Visible Laptop Components" in Chapter 7, "Mobile Device Hardware," for more information

Incorrect answers: Laptops don't have an AC-in jack; the power adapter takes care of converting AC power to DC power for the laptop to use. Of course, you should always check the laptop battery first, in case it is missing or not connected properly. Next, make sure the power adapter is plugged in to the DC-in jack and that the jack is not damaged. A damaged DC-in jack can also cause the laptop to occasionally shut off. Users often damage the DC-in jack because they leave the power adapter plugged in while they are in transit. On most laptops, a new one must be soldered on to the board. The CMOS battery is inside the laptop. It retains UEFI/BIOS settings and has nothing to do with charging the main laptop battery. The AC circuit breaker might have tripped, but that is less likely than the previously listed reasons. Also, a good indication of a failed AC circuit is that all the devices on that circuit would stop working.

35. Answer **B** is correct. The key here is the word *unique*. The computer requires three unique power connection types: SATA (for the hard drives), Molex (for the fan), and PCIe 6-pin or 8-pin power (for the video cards). See the section titled "Power Supplies" in Chapter 5, "Power," for more information

    Incorrect answers: The total number of connectors would be five, but the question is asking for unique types; thus the correct answer is three.

36. Answer **A** is correct. Use an RJ45 crimper to crimp those RJ45 plugs on the ends of a patch cable. See the section titled "Cables, Connectors, and Tools" in Chapter 15, "Computer Networking Part I," for more information.

    Incorrect answers: Use a punchdown tool to terminate individual wires to the RJ45 wall jack and to patch panels. Use a loopback plug to test a network adapter by plugging it into the card's RJ45 port. Use a cable tester to test patch cables or longer LAN cable connections.

37. Answer **B** is correct. You should clean the print head! Most printers come with an on-screen utility that will do this, or you can manually clean the print head (delicately!). Similar to this, printers might need to be calibrated if colors are slightly off. See the section titled "Installing, Configuring, and Troubleshooting Printers" in Chapter 14, "Printers," for more information.

    Incorrect answers: If the printer cables weren't connected, the printer wouldn't print anything at all. Maintenance kits are used more often for laser printers and are unnecessary in this case. The weight of the paper will not affect what colors are printed by an inkjet printer.

38. Answer **A** is correct. Category 3 (Cat 3) twisted-pair cables are often found in Plain Old Telephone Service (POTS) lines. This is especially true in offices. Homes might have standard four-wire telephone cable; however, you can use Cat 3 or higher to connect phones if you wish—by default, using only the blue and (optionally) orange pairs of wires. See the section titled "Cables, Connectors, and Tools" in Chapter 15, "Computer Networking Part I," for more information.

Incorrect answers: RG-6 is coaxial cable used for cable TV and cable Internet. RG-59 is the predecessor to RG-6. Multimode is a type of fiber optic cable. Though you can virtually use any type of cable to connect phones, twisted-pair cable is the most common.

39. Answer **C** is correct. The best answer is gaming servers. The reason for this is that the gaming server is meant to allow connections from gamers on the Internet. The DMZ (demilitarized zone) is that space between the Internet and the LAN that is the optimal location for a gaming server. Gamers can access the gaming server on the DMZ but cannot access the LAN (as long as the firewall is properly configured). See the section titled "SOHO and Windows Networking" in Chapter 16, "Computer Networking Part II," for more information.

Incorrect answers: Because the DMZ can be accessed to a certain extent by users on the Internet, it is not a good location for smartphones, wireless printers, and especially not backup servers.

40. Answer **C** is correct. Every company should have a patching policy and a plan for how to implement patches for security fixes. The policy will dictate what a technician should do in the event of a published security fix. By patching the laptop, you decrease the chances of exploitation. See the section titled "Security Threats and Prevention" in Chapter 17, "Security," for more information.

Incorrect answers: Hard drive encryption and user training are also excellent ideas, but they won't necessarily help with this particular security flaw. Screen locks can help deter a user who would attempt to use another user's computer, but again, they have little to do with the new security flaw.

41. Answer **B** is correct. Tablet computers are typically not upgradeable. If a component fails and cannot be repaired through a reset or other normal means, the tablet will have to be brought to an authorized repair center. See the section titled "Understanding Tablet and Smartphone Hardware" in Chapter 7, "Mobile Device Hardware," for more information.

Incorrect answers: Tablets always have multitouch touchscreens, but not all laptops come with these. As of the writing of this book, some laptops are still sold with no touchscreen technology whatsoever, though they will undoubtedly shift more to touchscreens as time goes on. Laptops are upgradeable—not as upgradeable as PCs, but the memory, battery, and, in some cases, even the CPU can be upgraded. Laptops typically use the same CPUs (in a smaller form factor) as PCs use, though some laptop/Internet appliances will use ARM CPUs. However, tablet computers almost exclusively use ARM CPUs.

42. Answer **B** is correct. The best answer is native. The native resolution of the monitor is the default resolution that it is designed to work at and will provide the best quality display. For example, an LCD monitor might be designed to work at 1680×1050 resolution—the default, or *native*, resolution. Or perhaps it is designed to work at 1920×1200. Your documentation should show what the native resolution is, and Windows *should* pick that same resolution as the recommended setting. But not always; it will depend on the version of Windows as well as the video card being used. See the section titled "The Video Subsystem" in Chapter 12, "Video and Audio," for more information.

    Incorrect answers: By the way, 1680×1050 is known as WSXGA+, a resolution far higher than SVGA and XGA, which are never native and will not offer the best display quality. Most of today's monitors work in digital, but digital is not a resolution mode. It's simply the method that the monitor uses to receive data/signal from the video card.

43. Answer **D** is correct. The main purpose of cleaning a printer during the imaging process is that it removes residual toner off of the imaging drum that might be left after development of the printed image. See the section titled "Printer Types and Technologies" in Chapter 14, "Printers," for more information.

    Incorrect answers: The speed of the print process really can't be increased unless the printer is working in some kind of "economy" mode. If that's the case, it would have to be disabled at the OSD of the printer. The cleaning that occurs at the end of the print process happens every time and with all laser printers. It is inherent to the process because it is necessary to clean off excess toner before starting a new print job. However, cleaning the inside of the printer (rollers, feeders, and toner compartment) can help to increase the lifespan of the printer and decrease failures.

44. Answer **A** is correct. `PING -a` will run a normal ping, but in the beginning of the results, you will also see the name of the computer followed by its IP address in brackets (if proper name resolution is enabled on the target computer). See the section titled "TCP/IP" in Chapter 15, "Computer Networking Part I," for more information.

Incorrect answers: `PING -f` sets the Don't Fragment flag in IPv4 pings. `PING -n` pings the target computer with a specific number of packets, allowing you to go beyond the default four. `PING -t` pings a target continuously until it is stopped.

45. Answer **A** is correct. The most likely listed cause is that the PC to which the printer is connected is currently off of the network. It would appear from this scenario that the printer is connected to a PC by way of USB and is shared at the PC itself, which is offline. If the customer can connect to other shares on other PCs, you know that that particular computer is functional on the network. See the section titled "Installing, Configuring, and Troubleshooting Printers" in Chapter 14, "Printers," for more information.

Incorrect answers: The printer is on, and restarting a printer can fix some issues but will most likely return the printer to the same state it was in previously. The printer being low on toner should have no effect on whether it can be accessed. But a message would probably appear on one of the computer's screens stating that the toner cartridge should be changed soon. If device drivers are corrupted, the printer should still be accessible and might print, but it will probably print garbled information.

46. Answer **C** is correct. If the intrusion detection setting is enabled in the UEFI/BIOS, and the computer was opened, the system will display a message and log what happened. This is a security feature on most of today's motherboards. See the section titled "The BIOS/UEFI" in Chapter 2, "Motherboards," for more information.

Incorrect answers: Configuring the date and time settings would not result in a message. The boot sequence deals with the list of drives that the system will attempt to boot from in order. Virtualization support allows the system to use CPUs that take advantage of Intel and AMD virtualization extensions.

47. Answer **D** is correct. When you see a smudge of this type on every single page, it usually means that the toner drum needs to be replaced. In most cases, this simply means replacing the entire toner cartridge. See the section titled "Installing, Configuring, and Troubleshooting Printers" in Chapter 14, "Printers," for more information.

Incorrect answers: The rollers and pickup assembly are used to feed the paper into the printer. If the printer's interior is dirty, these could cause smudging but probably not in the center of the page (more likely the edge of the page). If the fuser failed, there would be a lot more smudging and other markings all over every page.

48. Answer **C** is correct. Hyper-Threading makes logical processor cores appear as physical cores to the operating system. It allows a single processor core to process multiple threads simultaneously. See the section titled "CPU 101" in Chapter 3, "The CPU," for more information.

   Incorrect answers: 64-bit is the newer type of CPU architecture we use today: it can access 2 to the 64th bytes of addressable memory—a considerable amount. MMU virtualization is the ability for a virtual machine to emulate the computer hardware component that takes care of CPU requests to memory. MMU stands for memory management unit. Virtual machines require Input/Output MMUs. Intel's example of this is VT-d; AMD's example is AMD-Vi. XD bit stands for Intel's eXecute Disable bit, a feature that enables a CPU to tell the difference between code bits that should be executed and ones that might be malicious; therefore, it should not be executed. This is part of DEP (Data Execution Prevention).

49. Answer **B** is correct. PC3-10600 can be used in conjunction with PC3-8500; they are both types of DDR3 (specifically DDR3-1333 and DDR3-1066, respectively). However, the overall RAM speed will be reduced to the PC3-8500 rate of 8,533 MB/s. See the section titled "RAM Basics and Types of RAM" in Chapter 4, "RAM," for more information.

   Incorrect answers: PC-2700 is a DDR1 standard. It is not compatible with DDR3. PC3-6400 is a DDR3 standard, but if that was used, each memory stick would be reduced to its data transfer rate of 6,400 MB/s. PC2-5300 is a type of DDR2 as is PC2-5300. DDR2 cannot be mixed and matched with DDR3 due to architectural and voltage differences.

50. Answer **B** is correct. A switch can be described as a network device that transmits packets it receives to specific connections. It does this by mapping systems' MAC addresses to physical ports on the switch. See the section titled "Types of Networks, Network Devices, and Cloud Technology" in Chapter 15, "Computer Networking Part I," for more information.

   Incorrect answers: A router would convert a packet for transmission from one network to another network. It also determines whether a packet belongs on an internal or an external network, though this process can be augmented by other devices. A hub broadcasts packets it receives to all connections.

51. Answers **A** and **E** are correct. A virtualization computer (especially a virtualization server) requires memory and a powerful multicore CPU above all else. Because virtual machines require a lot of raw resources, maximum memory, and maximum-core CPUs are the most important items for virtualization workstations. See the section titled "Custom PC Configurations" in Chapter 13, "Peripherals and Custom Computing," for more information.

Incorrect answers: High-end sound cards and video cards are typical in gaming computers and audio/video editing workstations. High-end video cards are also common in CAD/CAM computers (which, by the way, also require a lot of RAM and CPU power). A dual-rail PSU is one that has two amperage outputs instead of just one; this is common in today's PSUs. 1000 watts is quite a high amount and is required by computers with a lot of powerful components, such as gaming computers.

52. Answer **B** is correct. If the power supply fan and the case fans are spinning but there is no power to other devices, the chances are that the main 24-pin power connection was not made from the power supply to the motherboard. In this scenario, the case fans would have been connected by way of Molex power connectors directly to the power supply. If they were connected to the motherboard, they would not spin, because the motherboard is not receiving power. If this scenario was to occur, no other devices would get power, including the CPU, RAM, motherboard, hard drives, optical drives, and so on. See the section titled "Power Supplies" in Chapter 5, "Power," for more information.

Incorrect answers: If the hard drive fails, the operating system will fail to boot up. If the hard drive cannot be repaired, it will have to be removed (often with a Phillips head screwdriver) and replaced. If the drive is not recognized, again, the OS will not boot. It would have to be reconnected properly, configured in the UEFI/BIOS, or partitioned and formatted properly in Windows, depending on the specific situation. Failed RAM could cause a boot failure and will definitely be registered by the POST, but it doesn't necessarily mean that the RAM (or any other devices) is not receiving power.

53. Answer **C** is correct. The Additional Drivers button in the Sharing tab is used to allow compatibility between different operating systems. For example, if the printer was installed on a Windows 8 computer and a Windows Vista computer needed to print to it over the network, the additional driver for Windows Vista could be added from the Sharing tab. See the section titled "Installing, Configuring, and Troubleshooting Printers" in Chapter 14, "Printers," for more information.

Incorrect answers: When installing drivers for printers, always use the exact driver for the printer you will connect to. Don't try to emulate a printer with a "similar" driver; it won't work. You can add a driver for different printer modes, such as PCL or postscript, but make sure you are adding the correct driver based on the exact printer, OS used, and the scenario where the printer is being used in.

54. Answer **C** is correct. Unshielded twisted-pair (UTP) is prone to electromagnetic interference (EMI). See the section titled "Cables, Connectors, and Tools" in Chapter 15, "Computer Networking Part I," for more information.

    Incorrect answers: Fiber optic cable is not prone to EMI because it uses light as the medium instead of electricity. Multimode cable is a type of fiber optic. STP stands for shielded twisted pair, and as the name indicates, it incorporates an aluminum shield around the wires to prevent EMI.

55. Answer **D** is correct. 802.11n can operate at two different channel widths within the same spectrum simultaneously. For example, 802.11n wireless routers can operate on the 20 and 40 MHz channels simulta-neously, which can be configured within the router's firmware. This, and other technologies such as MIMO and frame aggregation, allows 802.11n to transmit data much faster than 802.11a, b, and g. Use 802.11n or 802.11ac (or higher) if at all possible! See the section titled "SOHO and Windows Networking" in Chapter 16, "Computer Networking Part II," for more information.

    Incorrect answers: 802.11a, b, and g do not have the capability to use multiple channel widths or MIMO.

56. Answer **C** is correct. The audio/video (A/V) editing workstation would most benefit from the use of dual monitors. Audio and video applica-tions require several windows to be opened at the same time, making two, three, or even four monitors a necessity in order to be produc-tive. See the section titled "Custom PC Configurations" in Chapter 13, "Peripherals and Custom Computing," for more information.

    Incorrect answers: Gaming PCs might have dual monitors or a 3D monitor, but it is less common. HTPC stands for home theater PC; these computers usually connect to large, flat-screen TVs only. Thin clients are basic computers that require little resources and only one display.

57. Answer **A** is correct. You should first calibrate the printer. This locks in the print mechanism with the ink cartridges. Calibration utilities are

often found within the on-screen display of the printer itself. See the section titled "Installing, Configuring, and Troubleshooting Printers" in Chapter 14, "Printers," for more information.

Incorrect answers: If calibrating doesn't work, inspect and possibly replace the ink cartridges. The USB cable and type of paper will probably not play into an unclear print job. If the cable fails, the printer will most likely fail to print altogether. If paper is too thin, the printer might have trouble grabbing it, but printing will either not work because the rollers failed to pick up the paper or will look the same as it normally does.

58. Answer **C** is correct. You need a 32-bit driver. The x86 in *Windows 7 Professional x86* refers to the 32-bit version of the Win7 operating system. See the section titled "Installing and Upgrading to Windows 7" in Chapter 8, "Installing and Upgrading Windows," for more information.

   Incorrect answers: There is no 86-bit driver or OS. 16-bit OSes haven't been seen since the days of the 80286 computer (in the 1980s). 64-bit drivers are used by operating systems such as Windows 7 Ultimate 64-bit and Windows 8.1 Pro, which might also be referred to as x86-64. To find out whether the OS is 32-bit or 64-bit in Windows, go to the System window. In Windows 7, click Start, right-click Computer, and then select Properties. That will open the System window and will display the System type: 32-bit or 64-bit.

59. Answer **D** is correct. After installing a barcode reader, you should start scanning various test barcodes to calibrate and configure the reader. Many reader devices will come with a physical book that has printed test codes used to calibrate the device. See the section titled "Input/Output Devices and Peripherals" in Chapter 13, "Peripherals and Custom Computing," for more information.

   Incorrect answers: The IR port should work automatically on a barcode reader; there is no reason to enable it. Barcode readers do not usually have jumper switches. Also, these are usually Plug and Play devices that do not need to be enabled in the BIOS.

60. Answer **B** is correct. Port 53 is the default inbound port on a DNS server. A DNS server resolves domain names and host names to their corresponding IP addresses. See the section titled "TCP/IP" in Chapter 15, "Computer Networking Part I," for more information.

   Incorrect answers: Port 25 is used by the Simple Mail Transport Protocol (SMTP). Port 143 is used by the Internet Message Access Protocol (IMAP). Port 3389 is used by the Remote Desktop Protocol (RDP).

61. Answer **C** is correct. A dead pixel on a video display is a possible symptom of a damaged monitor screen. Sometimes dead pixels can be repaired with third-party software programs, but more often than not, the dead pixel indicates a damaged display. Another common display issue is when artifacts show up on the screen. This could be due to a damaged display or an incorrect video setting (such as resolution). See the section titled "The Video Subsystem" in Chapter 12, "Video and Audio," for more information.

Incorrect answers: A disconnected punchdown at a punchblock, patch panel, or RJ45 jack can cause a disruption in wired network data transfer, just as a low radio frequency (RF) signal can cause a loss in wireless network data transfer, but these will not affect the video display. If there is a problem with a wired connection, a punchdown tool will be required to rewire the network connection. Generally, the best method is to remove the cable's individual wires, cut it, strip the plastic jacket with a wire stripped, and re-terminate the individual wires. If a computer repeatedly boots into Safe Mode, there might be a driver issue, malware issue, or other OS problem, and though the system will boot in VGA resolution (640×480), that doesn't mean there is damage to the video display.

62. Answers **B** and **C** are correct. The voltages a power supply unit (PSU) typically supplies include 3 V, 5 V, and 12 V (as well as their negatives) to components in the computer. See the section titled "Power Supplies" in Chapter 5, "Power," for more information.

Incorrect answers: 1.5 is a common voltage for DDR3 RAM. 9-volt batteries are sometimes found inside a PC for use with add-on devices, but it isn't recommended. PSUs do not supply a 9-volt rail or 1.5 volt rail.

63. Answer **D** is correct. Most likely, the Windows update included its own driver for the biometric device, which could—for a variety of reasons—cause it to stop functioning. When it comes to these types of peripherals, the manufacturer's driver is the best bet and, unfortunately, you would have to reinstall that driver on the laptop. See the section titled "Security Threats and Prevention" in Chapter 17, "Security," for more information.

Incorrect answers: A virus could affect a biometric device, but it is unlikely that your laptop will have a retinal scanning biometric device. It is more likely that it will be a fingerprint-scanning device. AV software updates should not interfere with the biometric device. If the

device was not reading a fingerprint properly, then it might need to be recalibrated. But recalibration probably won't help if the device has stopped functioning altogether.

64. Answer **D** is correct. Plasma displays use more power than LCDs and LEDs. See the section titled "The Video Subsystem" in Chapter 12, "Video and Audio," for more information.

Incorrect answers: Because plasma uses a lot of power, most laptop manufacturers choose to use LCD, LED, or even OLED technologies, which consume less power than plasma.

65. Answers **A** and **C** are correct. Some common symptoms of printer trouble include vertical lines on the page, which would indicate a print drum issue, likely fixed by a toner cartridge replacement or inkjet cartridge calibration. Also, problems installing the printer to an operating system are a symptom of printer trouble. If the printer has failed, the OS will have difficulty seeing it, and the printer will have to be repaired before the printer and print driver can be installed to the client computer's OS. See the section titled "Installing, Configuring, and Troubleshooting Printers" in Chapter 14, "Printers," for more information.

Incorrect answers: Num lock (Number Lock) indicator lights are displayed on laptop and PC keyboards. If a laptop's Num lock indicator light is on, it will probably be difficult for a user to log in to the system. Instead of the user typing the regular password, a mixture of unwanted letters and numbers will be typed, causing the login to fail. Of course, this is not a common symptom of printer failure but could be the cause for a failed login. Failure to document cable and screw locations and the failure to organize parts could make reassembly of a printer or laptop difficult. These failures could possibly even be reasons why the printer or laptop fails, but they wouldn't be symptoms of the problem. When troubleshooting, be sure to understand the difference between a symptom of a problem and a cause of a problem. And of course, think carefully about the best solution to the problem!

66. Answer **B** is correct. Component video cables are broken into three separate physical channels: red, green, and blue (RGB). The connectors are often RCA type. See the section titled "The Video Subsystem" in Chapter 12, "Video and Audio," for more information.

Incorrect answers: DVI-analog (or DVI-A) sends analog video signal but sends it across a signal physical channel. VGA sends RGB analog video over a single channel. RCA is the connector, not the cable type, and might also be used with basic composite video (though that also uses BNC connectors).

67. Answers **C** and **E** are correct. The most important components in a CAD workstation are maximized RAM, high-end video, and a multicore CPU. See the section titled "Custom PC Configurations" in Chapter 13, "Peripherals and Custom Computing," for more information.

Incorrect answers: An eSATA drive is not necessary. It is more likely that the system will use internal SATA drives or SATA Express drives. The USB ports are not as important on a CAD workstation. More likely, the system will run a 64-bit OS.

68. Answers **A** and **E** are correct. The CPU and RAM are located "on" the northbridge. More accurately, they are connected *to* the northbridge. On newer Intel systems, the northbridge is actually part of the CPU. See the section titled "Motherboard Components and Form Factors" in Chapter 2, "Motherboards," for more information.

Incorrect answers: The hard drive and audio connect to the south-bridge; in newer Intel systems, they connect directly to the single chip within the chipset (which is still referred to as a southbridge.) Fans are physically connected to the motherboard; any functionality is controlled by the UEFI/BIOS.

69. Answer **B** is correct. The AMD FM1 socket is the only one listed that works with AMD CPUs. Other AMD socket types include AM3, AM3+, FM2, and FM2+. See the section titled "CPU 101" in Chapter 3, "The CPU," for more information.

Incorrect answers: LGA 775, LGA 1155, and LGA 1366 are all Intel socket types. Other Intel sockets include LGA 1156, 1150, and 2011.

70. Answer **D** is correct. The only answer listed that is an example of a MAC address is 00-1C-C0-A1-55-21. The MAC address is the address burned into the ROM chip of a network adapter that uniquely identifies it. This address is composed of six hexadecimal numbers, each between 00 and FF. The decimal equivalent of this is 0 through 255. The first three numbers are the OUI (Original Equipment Manufacturer); 00-1C-C0 is an Intel OUI. The last three numbers are the individual address of the particular network adapter. See the section titled "Troubleshooting Networks" in Chapter 16, "Computer Networking Part II," for more information.

Incorrect answers: 10.1.1.255 is an IPv4 address. 4410:FF11:AAB3::0012 is a truncated IPv6 address. http://www.davidlprowse.com is a web address. It includes the protocol used (HTTP) and the domain name (www.davidlprowse.com).

71. Answer **C** is correct. The BIOS/UEFI power-on password setting requires that the user enters her password every time the laptop performs a POST (power-on self-test), which is basically every time it boots. This is an extra level of protection before the system boots to the operating system that is loaded on the laptop. See the section titled "The BIOS/UEFI" in Chapter 2, "Motherboards," for more information.

Incorrect answers: The BIOS/UEFI also contains a supervisory password (sometimes also referred to as an administrative password). This is required to gain access to the BIOS and make configuration changes. The Windows password comes later, when the laptop gets past the POST and after Windows has booted.

72. Answers **A** and **B** are correct. Wireless and cellular connections are typically disabled when a mobile device enters airplane mode. See the section titled "Understanding Tablet and Smartphone Hardware" in Chapter 7, "Mobile Device Hardware," for more information.

Incorrect answers: The display's multitouch capabilities will work as normal, but web browsers, e-mail programs, and other apps that require Internet access will appear not to function properly when tapped on and navigated through—because, indeed, they are not functioning at all due to airplane mode. Data encryption will still function, though you won't be able to send that encrypted data anywhere.

73. Answer **B** is correct. A touchscreen LCD monitor also requires a USB connection. This kind of monitor is used by users who wish to tap on the screen or use a stylus—it could be used by AV editors, CAD/CAM operators, and so on. See the section titled "Input/Output Devices and Peripherals" in Chapter 13, "Peripherals and Custom Computing," for more information.

Incorrect answers: Because it connects directly to a PC, an Ethernet connection to the network is not necessary. SCSI connections are often used for high-speed, efficient hard drives. Parallel connections are older types of connections used mainly with printers. USB (Universal Serial Bus), as the name implies, is a serial interface.

74. Answers **A** and **C** are correct. A home server is most likely used to stream data to other computers in the home network and to act as a central repository for that data (music, pictures, video, and so on), so it stands to reason that the system will have a RAID array and a quick gigabit Ethernet connection. See the section titled "Custom PC Configurations" in Chapter 13, "Peripherals and Custom Computing," for more information.

Incorrect answers: Virtualization support is necessary for computers that will host guest operating systems (virtual machines). Touchscreens are sometimes used in A/V editing computers and CAD/CAM computers and are very common in tablet computers and laptops. Dual monitors are commonly used by A/V editing workstations.

75. Answer **A** is correct. Try replacing the drum. If this is within the toner cartridge (which it often is), then replace that as well. See the section titled "Installing, Configuring, and Troubleshooting Printers" in Chapter 14, "Printers," for more information.

    Incorrect answers: If the fuser needs replacing, you will probably see smeared text and images. If images or text are not straight or are colored incorrectly, you might need to calibrate the printer. If the network cable fails, the printer should not print at all from networked computers; however, a test page run locally at the printer should print just fine.

76. Answer **C** is correct. The DDR3 laptops are the only computers that will accept the purchased memory. See the section titled "RAM Basics and Types of RAM" in Chapter 4, "RAM," for more information.

    Incorrect answers: Answers that include DDR2 are incorrect. DDR2 and DDR3 are not compatible physically (pinout) and electrically (voltages). Therefore, only the DDR3 laptops will accept the newly purchased memory. It is possible that SODIMMs with an incorrect CL rating will not work properly, but it is not the best answer listed here.

77. Answer **A** is correct. VGA is an older standard that sends analog signal. It is the most susceptible to signal degradation. See the section titled "Video Subsystem" in Chapter 12, "Video and Audio," for more information.

    Incorrect answers: DVI, HDMI, and DisplayPort are designed to work best sending digital signals and can send them over longer distances than analog cables (such as VGA). Digital is inherently better as far as distance and signal quality goes.

78. Answer **B** is correct. 172.16.22.108 is a private class B IP address. The class B private range is between 172.16.0.0 and 172.31.255.255. See the section titled "TCP/IP" in Chapter 15, "Computer Networking Part I," for more information.

    Incorrect answers: 10.0.36.144 is a private class A IP address. 172.37.1.1 is actually public. 172.37 is outside of the range of private class B IP addresses. 192.168.1.1 is a private class C IP address.

79. Answer **D** is correct. You will need to go to another computer, download the driver from the manufacturer's website, copy that to a flash drive, and bring it back to the affected computer. See the section titled "SOHO and Windows Networking" in Chapter 16, "Computer Networking Part II," for more information.

Incorrect answers: If you have access to another computer, it would be silly to wait for a disc from the manufacturer. And any manufacturer that charges for drivers (or a driver disc) should be ashamed, as should the user who actually purchases the disc! You can't run Windows Update or download drivers from the computer in question because the computer has no network connection.

80. Answer **E** is correct. John forgot to verify full system functionality. As I've said many times during the course of the book, always *test*! And by "test," I mean verify functionality—make sure it works—not "test the theory." With a default installation of a Plug and Play network card, the card will, by default, be set to obtain an IP address automatically. If the computers need to be configured for static IP addresses, this will most likely cause a problem. There might not even be a device or server that is handing out IP addresses on the network. If that is the case, the Windows 8.1 computer would attempt to self-assign an IP address (an APIPA address starting with 169.254). If that happens, the computer will most definitely not be able to communicate with the gateway—or the Internet, for that matter. And even if there is a DHCP server on the network, the chances are very slim that it is handing out addresses on the 192.168.50.0 network. Most SOHO routers will hand out addresses on the 192.168.0.0 or 192.168.1.0 networks, and that is only if DHCP is enabled.

John should have logged in to Windows, run a ping test, tried to connect to websites with one or more browsers, and so on. Verifying full functionality is very important. Always remember to test every repair thoroughly.

See the section titled "The Six-Step Troubleshooting Process" in Chapter 1, "Introduction to Troubleshooting," for more information.

Incorrect answers: All of the steps of the A+ troubleshooting theory are listed in the answers. John performed each step except for verifying full system functionality.

ExamAlert

Know the A+ troubleshooting theory like the back of your hand for both exams!