**Solutions for Chapter 2: All About Motherboards**

***A+ Guide to IT Technical Support* (Comprehensive, 10th Edition),   
ISBN 978-0357108291**

1. Thinking Critically

These questions are designed to prepare you for the critical thinking required for the A+ Core 1 exam and may use information from other chapters or the web.

1. After trying multiple times, a coworker is not able to fit a motherboard in a computer case, and is having difficulty aligning screw holes in the motherboard to standoffs on the bottom of the case. Which is most likely the source of the problem?
2. The coworker is trying to use too many screws to secure the board; only four screws are required.
3. The form factors of the case and motherboard don’t match.
4. The form factors of the motherboard and power supply don’t match.
5. The board is not oriented correctly in the case. Rotate the board.

Answer: b. The form factors of the case and motherboard don’t match.

1. Which type of boot authentication is more secure?
2. Power-on password or supervisor password
3. Drive password
4. Full disk encryption
5. Windows password

Answer: c. Full disk encryption

1. You are replacing a processor on an older motherboard and see that the board has the LGA1155 socket. You have three processors on hand: Intel Core i3-2100, Intel Core i5-8400, and Intel Core i5-6500. Which of these three processors will most likely fit the board? Why?

Answer: Intel Core i3-2100. The LGA1155 socket is a 2nd and 3rd generation socket and the Intel Core i3-2100 processor is a 2nd generation processor, according to the 2 in the model number.

1. You are looking at a motherboard that contains *B370* in the motherboard model name, and the socket appears to be an Intel LGA socket. Which socket is this board most likely using?
2. LGA1150
3. LGA1151, 7th generation
4. LGA1151, 8th generation
5. LGA1151, all generations

Answer: c. LGA1151, 8th generation

1. Windows is displaying an error about incompatible hardware. You enter BIOS/UEFI setup to change the boot priority order so that you can boot from the Windows setup DVD to troubleshoot the system. However, when you get to the Boot screen, you find that the options to change the boot priority order are grayed out and not available. What is most likely the problem?
   1. You signed in to BIOS/UEFI with the user power-on password rather than the supervisor power-on password.
   2. A corrupted Windows installation does not allow you to make changes in BIOS/UEFI setup.
   3. Motherboard components are malfunctioning and will not allow you to change BIOS/UEFI options.
   4. The keyboard and mouse are not working.

Answer: a. You signed in to BIOS/UEFI with the user power-on password rather than the supervisor power-on password.

1. Your supervisor has asked you to set up a RAID hard drive array in a tower system, which has a motherboard that uses the B360 chipset. You have installed the required three matching hard drives to hold the array. When you enter BIOS/UEFI to configure the RAID, you cannot find the menus for the RAID configuration. What is most likely the problem?
   1. A RAID array requires at least four matching hard drives.
   2. RAID arrays are not configured in BIOS/UEFI.
   3. Your supervisor did not give you the necessary access to BIOS/UEFI to configure RAID.
   4. The B360 chipset does not support RAID.

Answer: d. The B360 chipset does not support RAID.

1. A customer asks you over the phone how much it will cost to upgrade memory on her desktop system to 16 GB. She is a capable Windows user and able to access BIOS/UEFI setup using the user power-on password you set up for her. Which actions can you ask the customer to perform as you direct her over the phone to get the information you need and develop an estimate of the upgrade’s cost?
   1. Use BIOS/UEFI to view how much memory is installed and how much memory the system can hold.
   2. Enter info32.exe to determine how much memory is currently installed.
   3. Use BIOS/UEFI to show which memory slots are used and how much memory is installed in each slot.
   4. View the System Information window to determine how much memory is currently installed.

Answer: c. Use BIOS/UEFI to show which memory slots are used and how much memory is installed in each slot.

1. The GeForce GTX 1060 graphics card requires 120 W of power. You plan to install it in a PCIe 3.0 ×16 slot. Will you need to also install extra power to the card? If so, how can you do that?
   1. Yes. The PCIe 3.0 ×16 slot provides 75 W, and you need to connect the card using a PCIe 8-pin connector to gain additional power.
   2. No. The PCIe 3.0 ×16 slot provides all the necessary power and no extra power connection is required.
   3. Yes. The PCIe 3.0 ×16 slot provides 75 W, and you need to connect the card using a PCIe 6-pin connector to gain additional power.
   4. Yes. The PCIe 3.0 ×16 slot provides 100 W, and you need to connect the card using a Molex connector to gain an additional 20 W.

Answer: c. Yes. The PCIe 3.0 ×16 slot provides 75 W, and you need to connect the card using a PCIe 6-pin connector to gain additional power.

1. While building a high-end gaming system, you are attempting to install the EVGA GeForce GTX 1080 graphics card and discover there is not enough clearance above the motherboard for the card. What is your best solution?
   1. Use a different case that allows for the height of the expansion card.
   2. Use a riser card to install the card parallel to the motherboard.
   3. Use an onboard component rather than the graphics card.
   4. Use a conventional PCI graphics card that fits the motherboard and case.

Answer: a. Use a different case that allows for the height of the expansion card.

1. Your boss has purchased a new laptop for business use and has asked you to make sure the data he plans to store on the laptop is secure. Which of the following security measures is the most important to implement to keep the data secure? Second in importance?
   1. Use BitLocker Encryption with the TPM chip.
   2. Enable Secure boot.
   3. Set a supervisor password to BIOS/UEFI.
   4. Disable booting from the optical drive.

Answers: a. Use BitLocker Encryption with the TPM chip.

c. Set a supervisor password to BIOS/UEFI.

1. Which of the following might cause you to flash BIOS/UEFI? Select all that apply.
   1. Windows displays error messages on the screen at startup and refuses to start.
   2. You are installing an upgraded processor.
   3. You are installing a new graphics card to replace onboard video.
   4. Windows continually shows the wrong date and time.

Answer: b. You are installing an upgraded processor.

1. Which of the following must be done before you can install the Intel Core i7-7700 processor on the Gigabyte GA-H110M-S2 motherboard? Select all that apply.
   1. Flash BIOS/UEFI.
   2. Install motherboard drivers.
   3. Clear CMOS RAM.
   4. Exchange the LGA1151 socket for one that can hold the new processor.

Answer: a. Flash BIOS/UEFI. (see *https://www.gigabyte.com/Motherboard/GA-H110M-S2-rev-10#sp*)

1. Does Windows 7 support Secure boot in UEFI? Windows 8? Linux Ubuntu version 14?

Answer: No. Yes. Yes.

1. Which partitioning method must be used for partitioning a 4-TB hard drive?

Answer: GPT

1. If a USB port on the motherboard is failing, what can you do that might fix the problem?

Answer: Go to the motherboard manufacturer website, then download and install updated drivers.

1. What is the purpose of installing standoffs or spacers between the motherboard and the case?

Answer: To prevent components on the back of the motherboard from touching the case and causing a short.

1. When installing a motherboard, suppose you forget to connect the wires from the case to the front panel header. Will you be able to power up the system? Why or why not?

Answer: No, because the power button will not work until the power wire is connected to the motherboard.

1. When you turn off the power to a computer and unplug it at night, it loses the date, and you must reenter it each morning. What is the problem and how do you solve it?

Answer: The CMOS battery is dead and needs replacing.

1. When troubleshooting a desktop motherboard, you discover the network port no longer works. What is the best and least expensive solution to this problem? If this solution does not work, which solution should you try next?
   1. Replace the motherboard.
   2. Disable the network port and install a network card in an expansion slot.
   3. Use a wireless network device in a USB port to connect to a wireless network.
   4. Return the motherboard to the factory for repair.
   5. Update the motherboard drivers.

Answer: All the above solutions might be possible. The least expensive and simplest solution is e. Update the motherboard drivers. If that doesn’t work, choose b. Disable the network port and install a network card in an expansion slot.

1. A computer freezes at odd times. At first, you suspected the power supply or overheating, but you have eliminated overheating and replaced the power supply without solving the problem. What do you do next?
2. Replace the processor.
3. Replace the motherboard.
4. Reinstall Windows.
5. Replace the memory modules.
6. Flash BIOS/UEFI.

Answer: Try the simplest and least expensive solution first: e. Flash BIOS/UEFI.

1. Hands-On Projects

Note that solutions are not provided for all Hands-On Projects.

1. Hands-On Project 2-1 Examining a Motherboard in Detail
2. Hands-On Project 2-2 Examining Motherboard Documentation
3. Hands-On Project 2-3 Matching a Processor to a Motherboard and Socket

You are designing a desktop system and your friend has offered to sell you his unused Core i5-8600T processor at a reduced price. Research the processor and possible motherboards that will support it and answer the following questions:

1. What is the best online price you can find for the processor?

Answers will vary.

1. What socket does the processor use?

Answer: LGA1151 socket.

1. What is one Gigabyte motherboard that supports this processor? Which chipset does the board use? Does the board require a firmware (BIOS) update to use this processor?

Answers will vary. Possible answer: H310M S2V, H310 Express chipset, no firmware update required.

1. What is one Asus (*asus.com*) motherboard that supports this processor? Which chipset does the board use? Which firmware (BIOS/UEFI) version is necessary to use this processor?

Answers will vary. Possible answer: TUF H310-PLUS Gaming, H310 chipset, BIOS version 0222.

1. Hands-On Project 2-4 Identifying the Intel Chipset and Processor on Your Computer
2. Hands-On Project 2-5 Researching the Intel ARK Database
3. The Z370 chipset is designed for gaming computers. What is the launch date for the Z370 chipsets? What Intel generation is the chipset? How many displays does the chipset support?

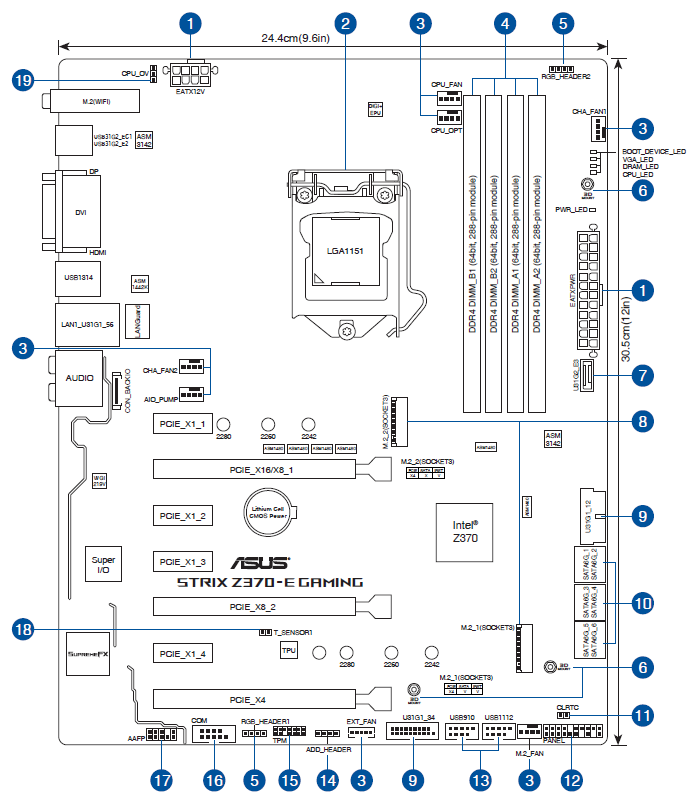
Answer: The Z370 chipset was launched in the fourth quarter of 2017. The Z370 is an 8th generation chipset that supports 3 displays.

1. Hands-On Project 2-6 Examining BIOS/UEFI Settings
2. Hands-On Project 2-7 Inserting and Removing Motherboards
3. Real Problems, Real Solutions

Note that solutions are not provided for all Real Problems.

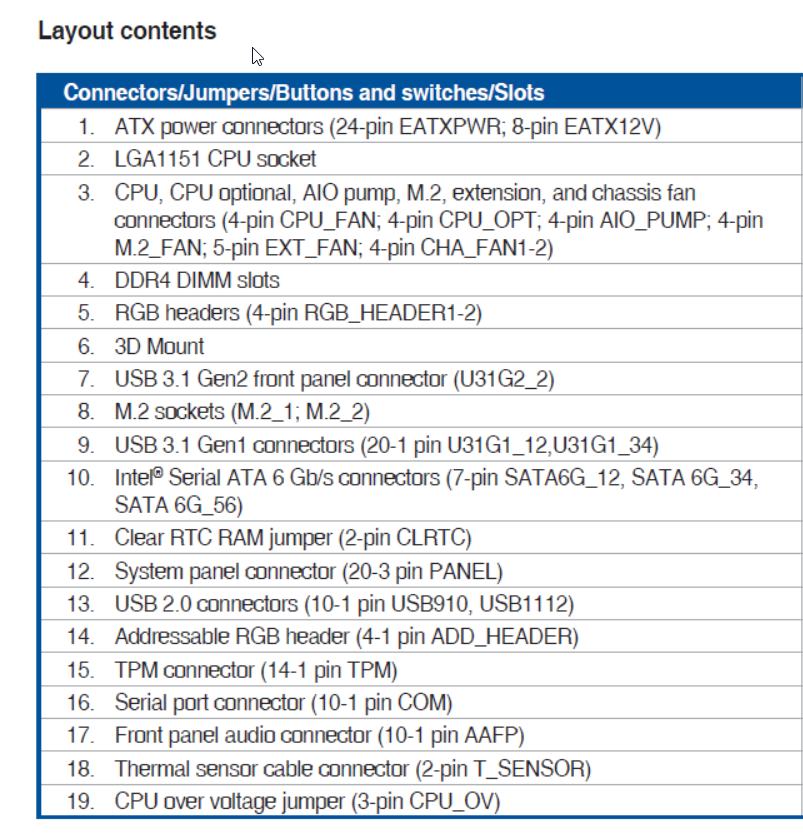
1. Real Problem 2-1: Labeling the Motherboard

Figure 2-47 shows a diagram of an ATX motherboard. Label as many of the 19 components as you can. If you would like to print the diagram, look for “Figure 2-47” in the online content that accompanies this text at *cengagebrain.com*. For more information on accessing this content, see the Preface.



**Figure 2-47** Label the 19 components on the motherboard

Answer: The motherboard is the Asus ROG STRIX Z370-E Gaming motherboard. You can find the diagram for this motherboard at *asus.com/us/Motherboards/ROG-STRIX-Z370-E-GAMING/HelpDesk/*. The labeled components are listed below.



1. Real Problem 2-2: Selecting a Replacement Motherboard
2. Real Problem 2-3: Researching How to Maintain a Motherboard

Note that solutions are not provided for Real Problems 2-2 and 2-3.