

Microsoft Windows Editions

Core 2 Objective

1.1: Identify basic features of Microsoft Windows editions.

Windows 10 and its successor, Windows 11, are available in a variety of editions. Understanding the differences and how upgrade paths are affected by those differences is essential to succeed as a computer tech.

In this chapter, you will learn everything you need to know about A+ Certification Core 2 Objective 1.1, including the following topics:

- ▶ **Windows 10 Editions**
- ▶ **Windows 10 versus Windows 11**
- ▶ **Feature Differences Between Editions**
- ▶ **Upgrade Paths**

WINDOWS 10 EDITIONS

Windows 10 is available in four major editions:

- ▶ Home
- ▶ Pro
- ▶ Pro for Workstations
- ▶ Enterprise

EXAM TIP

Windows 11 is currently being shipped as the standard version of Windows on new hardware. Existing Windows 10 Home and Pro editions can be upgraded to the corresponding Windows 11 version. Windows 11 is also available in Pro for Workstations and Enterprise.

These versions differ in features and supported hardware. The following sections cover core features common to all and differences by edition.

Core Windows 10 Features

Whichever edition of Windows 10 you use, you're looking at the following core features:

- ▶ The 64-bit operating system fully supports 64-bit processors from AMD and Intel and supports classic Windows and modern apps. Windows 10 supports multiple desktops, so you can have different desktops with different icons and backgrounds for different tasks. Windows 10 includes search, including Cortana voice search. Integrated antimalware and security features help keep Windows 10 protected from threats.
- ▶ Windows 10's Action Center provides messages from Windows and applications and makes it easy to change configurations such as wireless networking, Airplane mode, Bluetooth, and more. Windows 10 features a Start button and a two-pane menu with Live Tiles in Standard mode. The Tablet mode, which features a full-screen menu, can be toggled on/off manually or automatically when a tablet or convertible PC is used.

To determine which version of Windows is in use, open Settings, select System, and click About (Figure 1.1).

Home

As the name implies, Windows 10 Home is designed for people using their computers for home, including gaming, recreation, and small-office/home office (SOHO) scenarios. Windows 10 Home has all of the Core Windows 10 features, and adds wired and wireless Ethernet workgroup networking. You can't join a domain with Windows Home, but you're ready for basic networking. Windows 10 Home supports data backup with File History, and to keep your system up-to-date, there's Windows Update. Windows 10 Home can use less RAM than other versions, but its limit of 128 GB should be plenty for home and SOHO users, and that's much more than typical desktop and laptop PCs can currently support.

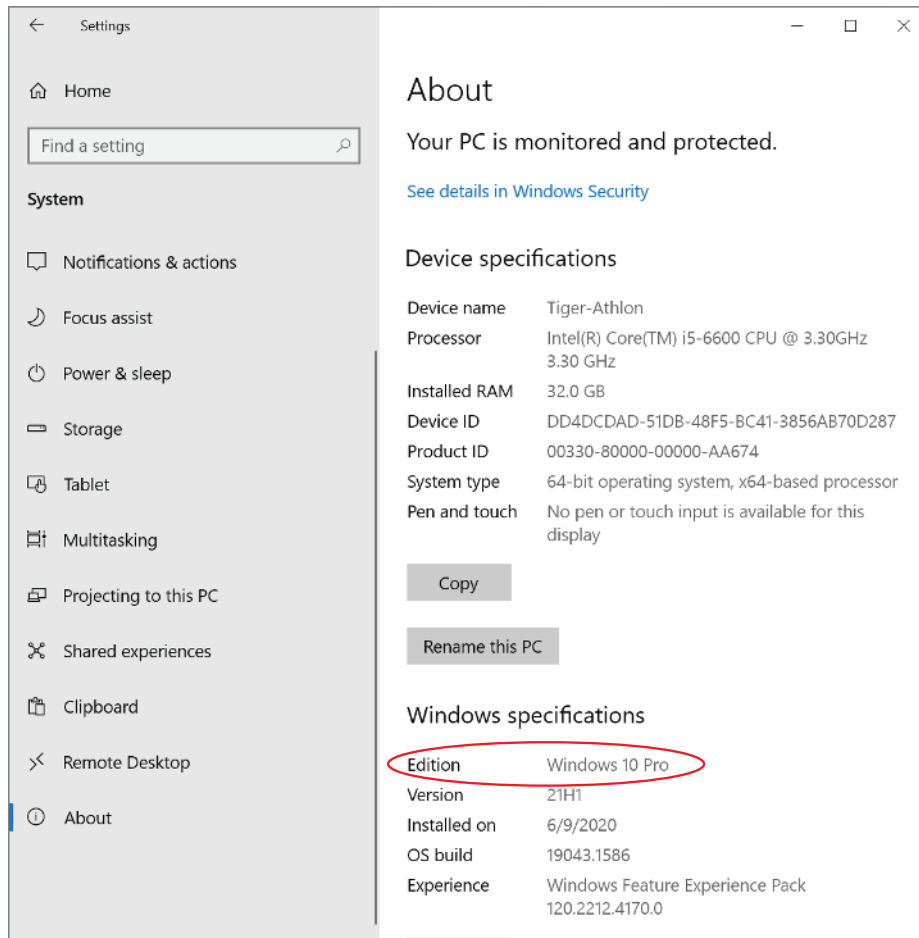


FIGURE 1.1 This system is running Windows 10 Pro.

Pro

Windows 10 Pro is designed to support modern business apps and high-end hardware requirements. It provides the same features as Windows 10 Home and adds a bunch of business-oriented features. The number one feature is domain networking, enabling centralized control of Pro workstations. Group Policy management works along with domain networking to enforce standardized settings across the domain. To protect data, Pro adds EFS (Encrypted File System) for individual files and folders, and BitLocker and BitLocker to Go to encrypt desktop and laptop drives.

Other Pro features include support for Remote Desktop, for remote access, and remote support; Windows Hello for Business, which includes no-password sign-in to Microsoft Windows and Azure; and integration with Microsoft Information Protection (previously known as Enterprise Data Protection). Pro also includes Microsoft's Hyper-V virtualization to create and manage virtual machines. Pro supports up to 2 TB of RAM.

Pro for Workstations

Windows 10 Pro for Workstations is designed to run apps such as those required for scientists, media productions, and graphics animators. These users need high-performance hardware, so Windows 10 Pro for Workstations provides the same features as Windows 10 Professional but adds support for workstation-grade hardware, including up to four workstation-grade CPUs (AMD Opteron, Epyc, Intel Xeon); nonvolatile dual in-line memory modules (NVDIMM); remote direct memory access (RDMA); and ReFS (Resilient File System). Pro for Workstations supports up to 6 TB of RAM.

NOTE

NVDIMM combines flash memory and dynamic access memory (DRAM) for better performance and faster recovery from crashes. RDMA enables memory to be accessed remotely via a network adapter, bypassing the CPU and other components normally involved in memory transfers. ReFS is a filesystem designed to support enormous data sets up to terabytes, to access them at faster speeds, and to protect their contents from corruption. ReFS was originally designed for Windows Server editions.

Enterprise

Enterprise is built for Windows 10 systems in use on large networks, and as such, it takes the features of Windows 10 Pro and adds a lot of corporate management and enterprise networking features to the mix. Security features like Start Screen control with Group Policy, Credential Guard, Device Guard, and AppLocker are standard on Enterprise, as are networking features such as BranchCache and DirectAccess. Enterprise supports up to 6 TB of RAM.

NOTE

DirectAccess is an always-on remote management alternative to virtual private networks (VPNs) for clients. *AppLocker* provides improved software management, standardization, and protection against unwanted software. *BranchCache* optimizes wide area networking (WAN) bandwidth by using caching.

FEATURE DIFFERENCES BETWEEN EDITIONS

While the many flavors of Windows 10 have many features, the most important features in your day-to-day installation, support, and troubleshooting revolve are these:

- ▶ Support for domain access vs. workgroups
- ▶ Desktop styles and user interface
- ▶ Availability of Remote Desktop Protocol
- ▶ RAM limitations
- ▶ BitLocker
- ▶ Group Policy Editor (`gpedit.msc`)

The following sections provide the essential information you need to know about the differences in features between different editions of Windows.

Domain Access vs. Workgroup

Windows 10 Home offers only workgroup networking. In a workgroup, each computer can share printers or folders with others and maintains its own list of authorized users. There is no limit on the number of computers in a workgroup, but Windows is limited to 20 concurrent users for each shared resource.

Windows 10 Pro, Pro for Workstations, and Enterprise also support domain networking. A domain controller maintains a list of users, groups, and resources. Resources are connected directly to the network or to print and file servers, among others. The domain controller permits or denies access to resources per group or user.

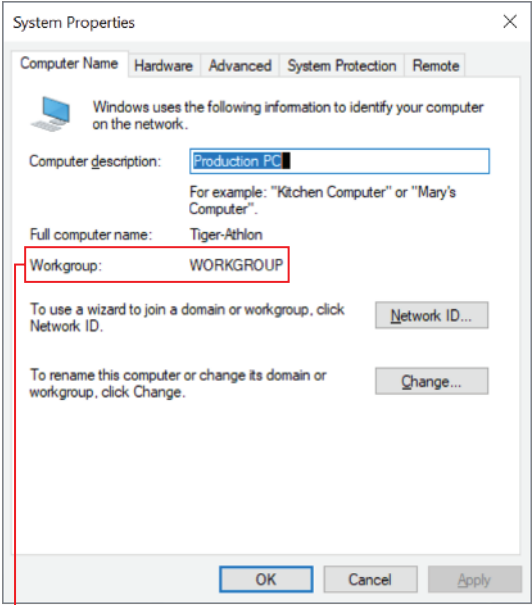
To determine what type of network you are using:

1. Click Start.
2. Click System.
3. Click About.
4. Scroll down and click Rename This PC (Advanced).
5. The Computer Name tab of System Properties appears. It lists the domain name or the Workgroup name (Figure 1.2).

Desktop Styles/User Interface

Windows 10 can start in Standard mode or Tablet mode. It starts in Standard mode on desktop or laptop computers that have keyboards. Figure 1.3 illustrates a typical system's Start menu in Standard mode.

If you are using Windows 10 on a tablet or a convertible 2-in-1 PC that has its keyboard folded away or detached, it will start in Tablet mode (Figure 1.4). To switch between modes on a touchscreen computer, click Notifications, then Tablet Mode.



On a domain network,
the domain is listed here.

FIGURE 1.2 This system is connected to a workgroup.

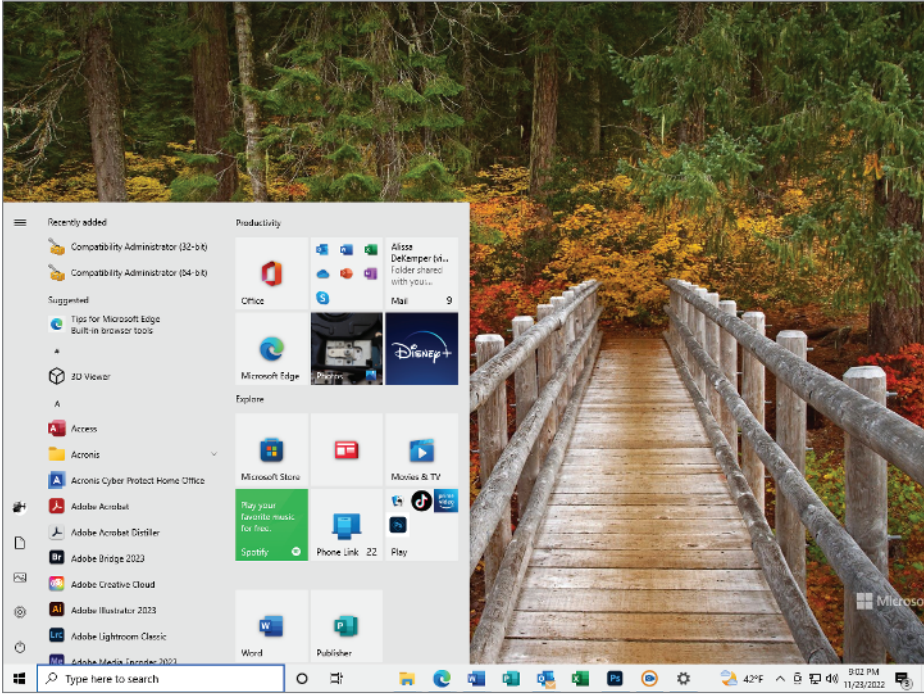


FIGURE 1.3 Typical Windows 10 Start menu in Standard mode

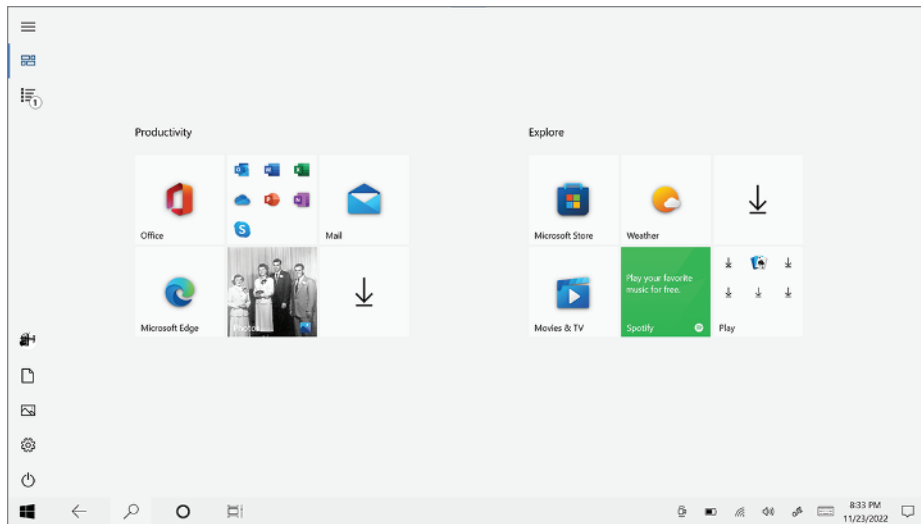


FIGURE 1.4 Typical Windows 10 Start menu in Tablet mode

To configure when Tablet mode starts, click Start > System > Tablet. To change how Tablet mode works, choose Change Additional Tablet Settings from the Tablet menu.

NOTE

Windows 11 also supports Standard and Tablet modes, but the difference is minimal and the switch is automatic.

Availability of Remote Desktop Protocol (RDP)

Remote Desktop Protocol (RDP) is a remote access/remote control protocol. You can configure a computer running Pro, Pro Workstations, and Enterprise editions to *receive* RDP connections, but not a computer using the Home edition.

After you enable RDP through the System Properties dialog box in Settings, click Select Users That Can Remotely Access This PC (Figure 1.5) to set up a list of authorized remote users.

The Remote Desktop Connection (RDC) apps used to connect to a system running RDP are available for Windows (including Home editions), iOS, and Android. Advanced settings allow you to configure additional security and remote network settings. Figure 1.6 illustrates using Remote Desktop Connection.

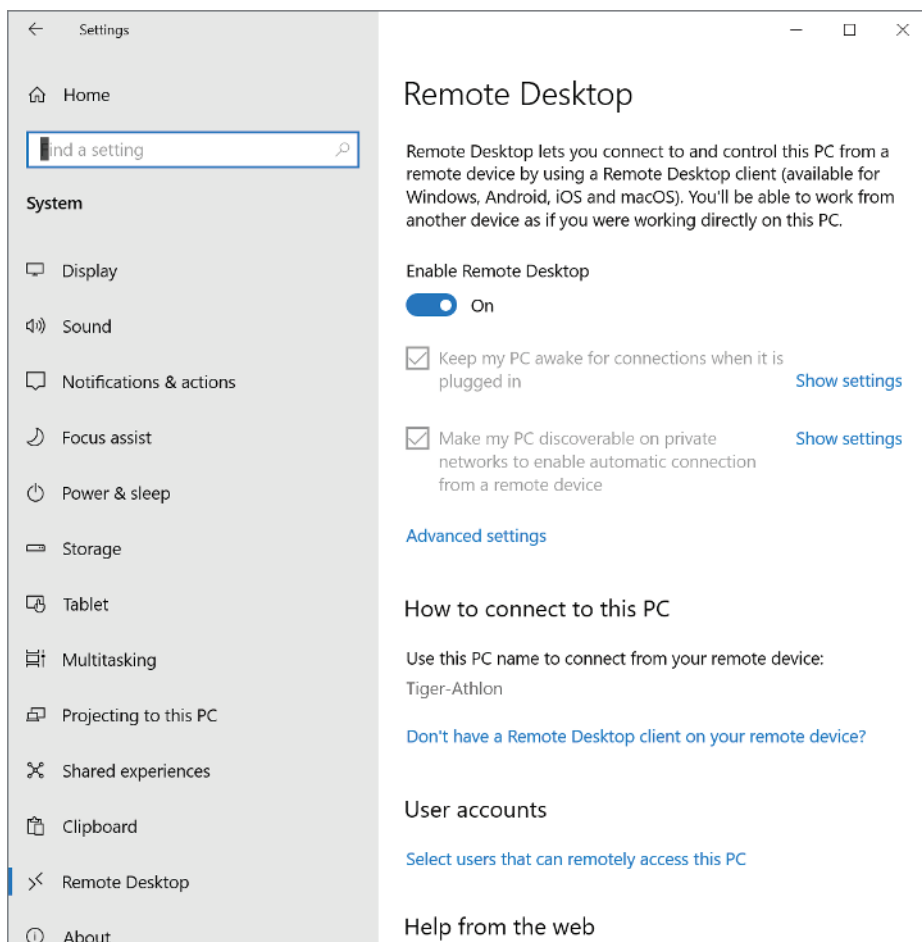


FIGURE 1.5 Configuring RDP

RAM Support Limitations

The amounts of memory (RAM) supported by Windows 10 editions vary but in most cases greatly exceed the amounts of RAM actually available in current hardware. See Table 1.1 for details.

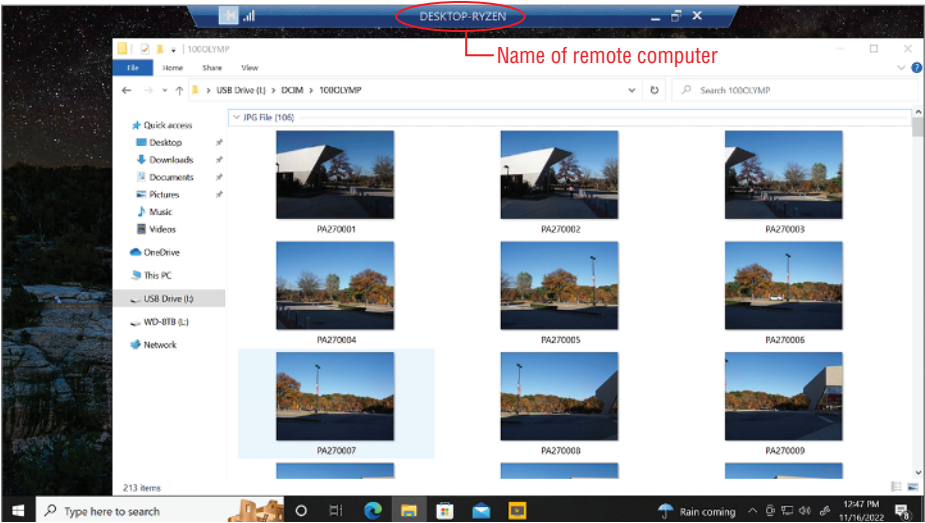


FIGURE 1.6 Viewing a folder on a remote system with RDC

TABLE 1.1 Windows 10 maximum memory sizes by edition

Version	x64 limit*
Windows 10 Home	128 GB
Windows 10 Pro	2 TB
Windows 10 Pro for Workstations	6 TB
Windows 10 Enterprise	6 TB

* 32-bit (x86) versions are all limited to 4 GB of RAM.

BitLocker

In an era in which stories of data compromised by lost laptops are common, using full disk encryption like BitLocker just makes sense. BitLocker (for internal drives) and BitLocker to Go (for external drives) can protect drives in most Windows 10 editions but is not available in Home.

To learn more about BitLocker and BitLocker to Go, see Chapter 17, “Windows Security.”

***Gpedit.msc* (Group Policy Editor)**

Group Policy Editor (`gpedit.msc`) can be used to configure computers, users, software, printers, security, and Windows settings. Administrative templates with a range of typical settings help make management easier.

When run on a workgroup, Group Policy Editor configures the current computer. When run on a domain network, it can configure settings for groups and users. It is not available on Home Edition.

To learn more about Group Policy Editor, see Chapter 13, “Logical Security.”

UPGRADE PATHS

An operating system upgrade retains the existing software and data installed on a computer. Upgrades from one version to another of Windows are likely to occur through the lifespan of computers in any environment. Upgrade options vary with the version of Windows in use, the type (32-bit or 64-bit), and the licensing for the version in use. Upgrades can be free or may require a payment.

To learn more about upgrade methods, see Chapter 9, “Operating System Installations and Upgrades.”

64-Bit Upgrade Paths

First, let’s look at upgrade options for 64-bit versions of Windows Home and Windows Pro:

- ▶ You can upgrade Windows Home 7, 8/8.1 to Windows 10 Home and from Windows 10 Home to Windows 11 Home.
- ▶ You can upgrade Windows Pro 7, 8/8.1 to Windows 10 Pro and from Windows 10 Pro to Windows 11 Pro.
- ▶ You can upgrade Windows 10 Pro to Windows 10 Pro for Workstations or Enterprise.
- ▶ You can upgrade Windows 10 editions to the corresponding Windows 11 edition if hardware requirements are met.

32-Bit Upgrade Paths

If you have a 32-bit version of Windows 7 or 8/8.1, you can upgrade to Windows 10. However, Windows 11 is available only in 64-bit editions.

In-Place Upgrade

From the standpoint of time and effort, the preferred upgrade method is what Microsoft calls an *in-place upgrade*. This replaces your existing version of Windows while preserving your apps and data. The upgrade scenarios discussed earlier typically permit an in-place upgrade.

To learn more about in-place upgrades, see Chapter 9.

Here's a brief overview of how it works:

1. Use the Media Creation tool to create an ISO DVD or USB.
2. Start your system as you normally would.
3. Run the installer from File Explorer.
4. At the end of the process, you have a new version of Windows.

Moving from 32-Bit to 64-Bit Windows

Given the memory limitations of 32-bit Windows and the widespread application switch to 64-bit, the next logical question is. . . how about moving from 32-bit to 64-bit if you have a 64-bit processor?

Microsoft doesn't support an in-place upgrade. The official method is to back up the drive, erase it, install a clean copy of the new Windows edition, reinstall apps, and restore data files.

You can use third-party apps from many vendors (I like Laplink PCmover) as an alternative.

CERTMIKE EXAM ESSENTIALS

- ▶ Windows Home editions lack business networking, centralized management, and integrated disk encryption.
- ▶ Windows business-oriented editions (Pro, Pro Workstation, and Enterprise) support more RAM than the Home edition does and also supports domain networking, full-disk encryption, and centralized management.
- ▶ Moving from older to newer 64-bit editions is easy and supported by Microsoft, while moving from 32-bit to 64-bit editions is challenging if third-party tools are not used.

Practice Question 1

Your client has closed their offices and all office employees are now working from home. Client PCs are using a mixture of Windows 10 Home and Windows 10 Pro, and your client is concerned about supporting remote workers.

Which of the following upgrade strategies would best deal with this issue?

- A. Upgrade all Windows 10 systems to Windows 11.
 - B. Upgrade all Windows 10 Home systems to Windows 10 Pro.
 - C. Install Remote Desktop Protocol on all Windows 10 systems.
 - D. Enable BitLocker on all systems.
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Practice Question 2

You are helping a friend upgrade a computer that they picked up at a yard sale. It has a 64-bit processor and room for up to 16 GB of RAM. It has 4 GB of RAM. Your friend purchased additional RAM and has asked you to come over and install it. When you start the computer and go to System > About, you notice that the Windows version installed is Windows 7 Home 32-bit edition. What should you do?

- A. Install the additional RAM and assure your friend it will work.
 - B. Return the RAM since it can't work.
 - C. Do an in-place upgrade to a 64-bit edition of Windows before installing the RAM.
 - D. Perform a clean installation or use a third-party upgrade tool to install a 64-bit edition of Windows before installing the RAM.
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Practice Question 1 Explanation

This question is designed to test your understanding of the differences between Windows editions and how to apply that knowledge in a real-world situation. You are likely to encounter this type of question on the exam.

Let's evaluate these choices one at a time.

1. The first suggested answer would make the support situation more of a challenge. Windows 11 has a different look and feel when compared to Windows 10. More significantly, this doesn't address any differences in remote support between Home and Pro editions. This is incorrect.
2. The next suggested answer, upgrade Windows 10 Home to Windows 10 Pro, reveals an understanding of one of the significant differences between Home and Pro: Pro has the ability to accept Remote Desktop Protocol (RDP) connections and Home doesn't. Systems running Pro can be connected to with RDP for use in remote support and access. This is the *best* answer.
3. The third suggestion, install RDP on all systems, shows an understanding of its importance in remote support. However, incoming RDP connections aren't supported on Windows 10 Home. Although RDP can be installed on Windows 10 Home, doing so requires an unofficial hack that violates Windows licensing. This is not a suitable solution.
4. The last option, enabling BitLocker, totally misunderstands the question. The issue is remote support, not data security. Using BitLocker is a good idea for computers being used remotely, but it doesn't address the support issue. Also, BitLocker is not available on Windows 10 Home. This is incorrect.

Correct Answer: B. Upgrade Windows 10 Home to Pro

Practice Question 2 Explanation

This question is designed to test your understanding of the differences between Windows editions in terms of hardware issues. You are likely to encounter this type of question on the exam.

Let's evaluate these choices one at a time.

1. The first suggestion, install the additional RAM and assure your friend it will work, is not a friendly thing to do. Memory above 4 GB can't be used by a 32-bit version of Windows. This is incorrect.
2. The next suggestion, return the RAM since it can't work, would be correct *if* nothing is done about the operating system. If a 64-bit operating system is installed, the additional RAM will be quite welcome. This is incorrect.

3. The third suggestion, do an in-place upgrade to a 64-bit version of Windows, can't work because you can't move from 32-bit to 64-bit Windows this way. This is incorrect.
4. The last option, perform a clean installation of a 64-bit version of Windows or use a third-party upgrade tool, is the *best* choice. A clean installation is the best option if there are no apps that the user has licenses for on the computer. To preserve existing apps, the third-party upgrade tool would preserve the apps, although some might require reinstallation afterwards.

Correct Answer: D. Clean installation of 64-bit version or use a third-party upgrade tool
