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Preface

The AutoCAD®/AutoCAD LT® 2018: Fundamentals student guide is designed for those using AutoCAD® or AutoCAD LT® 2018 with a Windows operating system. This student guide is not designed for the AutoCAD for Mac software.

The objective of AutoCAD/AutoCAD LT 2018: Fundamentals is to enable students to create a basic 2D drawing in the AutoCAD software.

Part 1 (chapters 1 to 20) covers the essential core topics for working with the AutoCAD software. The teaching strategy is to start with a few basic tools that enable the student to create and edit a simple drawing, and then continue to develop those tools. More advanced tools are introduced throughout the student guide. Not every command or option is covered, because the intent is to show the most essential tools and concepts, such as:

- Understanding the AutoCAD workspace and user interface.
- Using basic drawing, editing, and viewing tools.
- Organizing drawing objects on layers.
- Inserting reusable symbols (blocks).
- Preparing a layout to be plotted.
- Adding text, hatching, and dimensions.

Part 2 (chapters 21 to 32) continues with more sophisticated techniques that extend your mastery of the software. For example, here you go beyond the basic skill of inserting a block to learning how to create blocks, and beyond the basic skill of using a template to understand the process of setting up a template. You learn skills such as:

- Using more advanced editing and construction techniques.
- Adding parametric constraints to objects.
- Creating local and global blocks.
- Setting up layers, styles, and templates.
- Using advanced plotting and publishing options.
This student guide refers to both the AutoCAD and AutoCAD LT software as the AutoCAD software. All topics, including features and commands, relate to both the AutoCAD and AutoCAD LT software unless specifically noted otherwise.

**Note on Software Setup**

This student guide assumes a standard installation of the software using the default preferences during installation. Lectures and practices use the standard software templates and default options for the Content Libraries.

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*Note: Free products are subject to the terms and conditions of the end-user license and services agreement that accompanies the software. The software is for personal use for education purposes and is not intended for classroom or lab use.*

**Lead Contributor: Renu Muthoo**

Renu uses her instructional design training to develop courseware for AutoCAD and AutoCAD vertical products, Autodesk 3ds Max, Autodesk Showcase and various other Autodesk software products. She has worked with Autodesk products for the past 20 years with a main focus on design visualization software.

Renu holds a bachelor’s degree in Computer Engineering and started her career as a Instructional Designer/Author where she co-authored a number of Autodesk 3ds Max and AutoCAD books, some of which were translated into other languages for a wide audience reach. In her next role as a Technical Specialist at a 3D visualization company, Renu used 3ds Max in real-world scenarios on a daily basis. There, she developed customized 3D web planner solutions to create specialized 3D models with photorealistic texturing and lighting to produce high quality renderings.

Renu Muthoo has been the Lead Contributor for AutoCAD®/AutoCAD LT® Fundamentals since 2015.
In this Guide

The following images highlight some of the features that can be found in this Student Guide.

**Practice Files**

The Practice Files page tells you how to download and install the practice files that are provided with this student guide.

**Chapters**

Each chapter begins with a brief introduction and a list of the chapter’s Learning Objectives.
1.3 Working with Commands

Starting Commands

The main way to access commands in the AutoCAD software is to use the Ribbon. Several of the fly commands are available in the Ribbon area. Additional commands are available in the Status Bar or through shortcut menus. There are also additional access methods, such as Task Panes. The various fly of commands can also be typed in the Command Line. A table is included to help you identify the various methods of accessing the commands.

When typing the name of a command in either the Command Line or the Command Panel, the AutoComplete option automatically completes the entry when you pause or press the spacebar. It also supports completion by entering the first few letters of the command, as shown in Figure 1-10. You can then scroll through the list and select a command.

Figure 1-12

To set specific options for the AutoComplete feature, right-click on the Command Line, expand Input Settings, and select from the various options, such as the ability to search for system variables. Or to end the delay response line, as shown in Figure 1-13.

Figure 1-13

As you work in the AutoCAD software, the software prompts you for information that is required to complete the task or control the software. These prompts are displayed in the drawing window at the cursor and in the Command Line. It is possible that you need to repeat the command prompts as you work, as shown in Figure 1-14.

Sample provided by ASCENT for review only
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Instructional Content

Each chapter is split into a series of sections of instructional content on specific topics. These lectures include the descriptions, step-by-step procedures, figures, hints, and information you need to achieve the chapter's Learning Objectives.

Practice Objectives

Practice

Practices enable you to use the software to perform a hands-on review of a topic.

Some practices require you to use prepared practice files, which can be downloaded from the link found on the Practice Files page.

Chapter Review Questions

Chapter review questions, located at the end of each chapter, enable you to review the key concepts and learning objectives of the chapter.
Icons in this Student Guide

The following icons are used to help you quickly and easily find helpful information.

- **New in 2018** Indicates items that are new in the AutoCAD 2018 software.
- **Enhanced in 2018** Indicates items that have been enhanced in the AutoCAD 2018 software.

Command Summary

The Command Summary is located at the end of each chapter. It contains a list of the software commands that are used throughout the chapter, and provides information on where the command is found in the software.

Certification Exam Objectives

This appendix includes a list of the topics and objectives for the Autodesk Certification exams, and the chapter and section in which the relevant content can be found.
Getting Started with AutoCAD

In this chapter you learn how to start the AutoCAD® software, become familiar with the basic layout of the AutoCAD screen, how to access commands, use your pointing device, and understand the AutoCAD Cartesian workspace. You also learn how to open an existing drawing, view a drawing by zooming and panning, and save your work in the AutoCAD software.

Learning Objectives in this Chapter

• Complete a basic initial setup of the drawing environment.
• Identify the basic layout and features of the AutoCAD user interface.
• Locate commands and launch them using various command interfaces.
• Locate points in the AutoCAD Cartesian workspace.
• Open, edit, and close existing drawings.
• Move around a drawing using the navigations options.
• Save drawings in various formats and set the automatic save option.
1.1 Starting the Software

You must have Internet Explorer® on your system to load the AutoCAD 2018 software.

When launching the software for the first time, you are prompted to migrate custom settings and files from the earlier releases of the software.

Start Tab

When you launch the software or if you click in the Start tab while working in an active drawing, the initial Start window displays, as shown in Figure 1–1.

- By default, the Start tab is always available as the first tab in the File Tabs bar as you create and open additional drawings.
- While working in a drawing, you can click the Start tab to display the initial Start window.
- You can use <Ctrl>+<Home> to jump from an active drawing to the Start tab.
- The Start window contains two content frames: Learn and Create, as shown in Figure 1–1.

Launch the software using the Windows desktop icon or the Start menu.

- Double-click on \AutoCAD 2018\ on the desktop.
- If there is no shortcut on the desktop, click \Start\ in the Task bar at the bottom of the screen and select All Programs>Autodesk>AutoCAD 2018>AutoCAD 2018.
- When the AutoCAD software is launched, an initial Start Window displays.

The AutoCAD 2018 software runs on most recent versions of the Windows operating system, including Windows 7 Enterprise, Home Premium, Professional, and Ultimate (32 or 64-bit versions), Windows 8.1, 8.1 Pro, and Enterprise (32 or 64-bit versions), and Windows 10 Enterprise and Professional (64-bit version only). The 64-bit versions provide a huge improvement in processing speed.
Learn

• Contains videos, tips, and online resources to help you learn about new features in the software and how to start using the software.

Create

• Contains tools that enable you to create new drawings or open existing, sample, or recently used files.

• Enables you to connect to Autodesk® A360 to access online services.

• When you click on Start Drawing, a new, blank drawing automatically opens. To start another new blank drawing, in the File Tabs bar, click (New Drawing). The new drawing is opened and made active.

• Click Open Files to open an already saved drawing.
1.2 User Interface

The interface includes the main components that are used to operate the AutoCAD software. By default, the display of the interface uses the Dark color scheme. You can change it to the Light color scheme by expanding (Application Menu) and clicking **Options** to open the Options dialog box. In the **Display** tab, in the **Window Elements** area, expand the Color scheme drop-down list and select **Light**, as shown in Figure 1–2. Then, click **OK** for the background color of the interface components to change to light. The light color scheme is used throughout this Student Guide for printing clarity.

![Figure 1–2](image)

The software interface is shown in Figure 1–3. The Drawing Window color has been changed to white for printing clarity.

![Figure 1–3](image)
1. Application Menu

The Application Menu provides access to AutoCAD file commands, settings, and documents. Click (Application Menu) to expand the Application Menu and display its contents.

2. Crosshairs and Prompts

The Crosshairs indicate the current cursor location. As you draw, prompts display near the cursor to explain how to complete each command. It displays badges that provide additional information when you are working in a command. This can help you to successfully complete the command.

3. Drawing Window

The Drawing Window is the area of the screen in which the drawing displays. Near the lower left corner of the window a horizontal line labeled X and a vertical line labeled Y might be displayed. This is called the UCS icon and indicates the current drawing plane. Several drawing windows can be open at the same time. They can be resized, minimized, and maximized.

4. Quick Access Toolbar

The Quick Access Toolbar provides access to commonly used commands, such as New, Open, and Save, as shown in Figure 1–4.

5. Ribbon

The ribbon contains the AutoCAD tools in a series of tabs and panels, as shown in Figure 1–5. Clicking on a tab displays a series of panels. The panels contain a variety of tools, which are grouped by function.
6. InfoCenter

The InfoCenter (shown in Figure 1–6) provides you with tools that enable you to quickly access the online Help system, stay connected with the online AutoCAD community, and access the Autodesk App Store. You can sign in to your A360 account to access various online services and sync your settings.

![Figure 1–6](image)

Clicking the ? icon opens the initial help screen, which displays videos about new features and getting started with the software. You can search for a specific help topic by entering a keyword and selecting from the list of available related documents. Commands can be quickly identified in the ribbon, Status Bar, and the Application Menu by clicking Find next to the command’s icon in the Help window, as shown in Figure 1–7. A red animated arrow displays in the interface identifying the location of the command, as shown in Figure 1–7.

![Figure 1–7](image)
7. Tooltips

When you hover the cursor over a tool, a **Tooltip** displays the name of the tool, a short description, and sometimes an extended description, as shown in Figure 1–8. They provide information about tools, commands, and drawing objects. Press <F1> to open the Help window and display the help information related to the currently displayed tooltip.

You can control the display of tooltips using the Options dialog box (Application Menu)>**Options**), in the **Display** tab> **Window Elements** area. You can also set the delay to display the tooltip and the extended description, as shown in Figure 1–9.

8. Command Line

Command prompts also display in the **Command Line**, which is by default, a text window located at the bottom of the screen, as shown in Figure 1–10. You can dock and undock the Command Line by clicking on the left edge and dragging it around. The command history has a gray background to distinguish it from the active command line.
9. Status Bar

The Status Bar enables you to change many of the AutoCAD software’s drafting settings. All of the tools are located in the (Customization) list and their icons can be displayed or removed from the Status Bar by selecting them in the list. After displaying the tool icons in the Status Bar, you are required to toggle them on to take affect. The icons are highlighted when they are toggled on. If the displayed icons cannot fit in a single row, the Status Bar automatically wraps into two rows to accommodate all of the icons, as shown in Figure 1–11.

Along the left side of the Status Bar icons, the Model tab and one or more Layout tabs display, as shown in Figure 1–11.

10. Navigation Bar

The Navigation Bar enables you to access the various methods of moving around in the drawing, such as Zoom and Pan, as shown in Figure 1–12.

If the Model and Layout tabs are not displayed, set the LAYOUTTAB system variable to 1.

If the Navigation Bar is not displayed, in the ribbon, go to the View tab>Viewport Tools panel, and click (Navigation Bar).
11. File Tabs

The drawing's File tabs (shown in Figure 1–13) are located near the top of the drawing window. They provide a quick way of switching between open drawings, creating a new ones, or closing the required drawings. The Start tab is always the first tab and persists in the File tabs bar. Clicking it displays the initial Start window.

![Figure 1–13](image-url)
1.3 Working with Commands

Most commands in the AutoCAD software are accessed using the ribbon. For example, to access the Line command in the ribbon, in the Home tab > Draw panel, click Line, as shown in Figure 1–14. Several of the file commands are available in the Quick Access Toolbar or in the Application Menu. Some commands are available in the Status Bar or through shortcut menus. There are additional access methods, such as Tool Palettes. The names of all of the commands can also be typed in the Command Line or near the cursor in the Drawing Window (Dynamic Input).

The ribbon provides easy access to the tools, which are organized in tabs and panels. The tabs (Home, Insert, etc.) contain a series of panels (Draw, Modify, etc.) which contain the tools, as shown in Figure 1–14. The tools are organized by function.

By default, the ribbon is docked at the top of the interface, as shown in a partial view in Figure 1–14.

Some panels contain additional tools that are not displayed in the main panel. Select the panel title to expand the panel and display the hidden tools. Panels close automatically when you select another panel or when you start a command, unless they are pinned, as shown in Figure 1–15.
Click  (Push Pin) to keep a panel open. The image changes to  (Push Pin). Click it again to return the panel to its default setting.

The ribbon becomes a palette that can be docked to either side and hidden using Auto-Hide. If hidden, the ribbon displays when you hover the cursor over its location.

Figure 1–15

• The ribbon can float (as shown in Figure 1–16) and be docked to the side. To float the entire ribbon, right-click in the empty space at the end of the ribbon and select Undock.

Figure 1–16

• Individual panels can also be floated in the drawing window, as shown in Figure 1–17. To float a panel, drag it by the title and drop it in the drawing window. To return it to the ribbon, drag-and-drop it onto the ribbon. This method can also be used to rearrange the panels available in the ribbon.

Figure 1–17
Some tools include a gallery containing thumbnail previews of the available options, as shown in Figure 1–18. The display of these image previews can be controlled by the system variable `GALLERYVIEW` which is set as 1, by default. To hide the thumbnail preview, the value can be set to 0.

![GALLERYVIEW=0](image1)

![GALLERYVIEW=1](image2)

**Figure 1–18**

**Command Line and Dynamic Input Prompt**

You can directly enter the name of a command in either the Command Line or in the Dynamic Input prompt. When the Dynamic Input option is On (by default), and you start typing a command name, a command box displays near the crosshair with the letters you are typing, as shown in Figure 1–19. You can also specifically click and type inside the Command Line. When the Dynamic Input option is Off, typing a command name automatically starts in the Command Line.

For both input methods, the AutoComplete option automatically completes the entry you are typing when you pause. It also supports mid-string search by displaying all of the commands that contain the word that you typed, as shown in Figure 1–20. You can then scroll through the list and select a command to start it.
• The order in which commands are listed in the suggestion list adapts as you use the software.

• To set specific options for command input, including the **AutoComplete** feature, right-click on the Command Line, expand **Input Settings**, and select from the various options, such as the ability to search for system variables or to set the delay response time, as shown in Figure 1–21.

If you need to stop a command, press <Esc> to cancel it. You might need to press <Esc> more than once.

• As you work in the AutoCAD software, the software prompts you for the information that is required to complete each command. These prompts display in the Dynamic Input prompt and in the Command Line. It is important that you read the command prompts as you work, as shown in Figure 1–22.

• If you press <Enter> when no command is active, it launches the command that you last used. It is a quick and easy way of repeating a command.
• Depending on the Command Line being docked/undocked, pressing <F2> opens an AutoCAD Text Window or an expanded version of the Command Line, which contains a record of each command and prompt that has been used in the current drawing session.

• In the Status Bar, click ➕ (Customization) and select Dynamic Input in the list to display ➔ (Dynamic Input) in the Status Bar, as shown in Figure 1–23. Click to toggle the option on and off. The icons highlight in blue when they are toggled on.

![Figure 1–23](image)

**Selecting Command Options**

If a command has options, you can specify it either in the Command Line, the dynamic input prompt, or the shortcut menu, as shown in Figure 1–24:
• In the Dynamic Input prompt, indicates that more options are available. Press <Down Arrow> to expand the list and select an option, as shown in Figure 1–24.

• The shortcut menu opens when you right-click. It includes the same selections as dynamic input, and several standard options that display with every command.

• In the Command Line, the command name, its default prompt, and a list of options display. You can select the required option in the Command Line by clicking on it or by typing the option’s capitalized letter(s) (displayed in blue) to activate it, as shown in Figure 1–25.

The Application Menu (shown in Figure 1–26), contains the file tools. It includes a search field in which you can type command names to locate them in the ribbon, Quick Access Toolbar, or Application menu, and an area in which to browse for recent and open documents.
• Hover the cursor over a primary icon to display its options and select the required option. If you click the primary icon rather than the arrow, the default command starts.

• Click Options to open the Options dialog box and modify the default settings to customize how the AutoCAD software performs. For example, to change the color of the drawing window, click Options, select the Display tab in the Options dialog box, and click Colors. In the Context area, select 2d model space, in the Interface element area, select Uniform background, and in the expanded Color drop-down list, select a color.

• Click Exit Autodesk AutoCAD to close the software.

How To: Find Command Access Locations

1. Expand the Application Menu.
2. In the Search field, start typing the name of a command. Tools related to the command name you are typing display in the Application Menu, as shown in Figure 1–27.

3. Select the command that you want to use.
How To: Select Drawings from the Application Menu

1. Expand the Application Menu.

2. Ensure that (Recent Documents) is selected so that the list of recently opened documents displays, as shown in Figure 1–28.

3. The default display option is By Ordered List. In the expanded drop-down list you can also select By Access Date, By Size, or By Type to change the display option. You can also change the size of the images, as shown in Figure 1–29.

4. Click (Open Documents) to display a list of open drawings, as shown in Figure 1–30.
Quick Access Toolbar

The Quick Access Toolbar provides fast access to the common tools: **New, Open, Save, Save As, Plot, Undo, and Redo**. You can customize it by adding and removing typical commands displayed in the list. Click 📖 (as shown in Figure 1–31) to expand the list and select from a list of typical commands. The commands with a checkmark are already displayed in the Quick Access Toolbar.

![Figure 1–31](image)

- When the **Start** tab is open, only **New, Open**, and **Sheet Set Manager** display in the Quick Access Toolbar.

Additional Shortcut Menus

When you right-click, a menu usually displays next to the cursor, called a **shortcut menu**. The menu that displays depends on what you are doing in the AutoCAD software and where you right-click in the AutoCAD interface.

In the Quick Access Toolbar

When you right-click on the Quick Access Toolbar, a list of options displays, which enable you to customize or locate the Quick Access Toolbar, shown in Figure 1–32.

![Figure 1–32](image)
In the Ribbon

If you right-click on a tab or in an empty space in the ribbon, you can select which tabs or panels to display. You can also change the visibility and docking status of the ribbon. Right-clicking on a ribbon panel title only displays the tab and the panel options. The options that display in the shortcut menu are determined by where you click in the ribbon, as shown in Figure 1–33.

Figure 1–33

If you right-click on an icon in a panel, you can select the tabs and panels to be displayed in the ribbon. You can also add the icon to the Quick Access Toolbar, as shown in Figure 1–34.

Figure 1–34
In the Command Line

When you right-click on the Command Line, you can select the various **Copy** and **Paste** commands, as shown in Figure 1–35. You can also access the **AutoComplete** options using the **Input Settings** selection. Using the Options dialog box, which can be accessed by selecting **Options...** in the shortcut menu, you can change many of the AutoCAD settings.

![Figure 1–35](image)

In the Drawing Window

If no command is active when you right-click in the drawing window, you have the option of repeating the previous command or recently used commands (**Recent Input**), selecting **Zoom** and **Pan**, and the standard Windows clipboard functions. You can also access several other utilities or open the Options dialog box, as shown in Figure 1–36.

![Figure 1–36](image)
1.4 Cartesian Workspace

Locating Points

The AutoCAD software uses Cartesian (X,Y) coordinates to indicate locations in a drawing. Points are located by designating a horizontal (X) and vertical (Y) distance as measured from the origin (0,0), as shown in Figure 1–37. There is also a third coordinate (Z), which is only used in 3D drawings.

![Figure 1–37](Image)

The current coordinate location of the cursor can be displayed in the Status Bar, as shown in Figure 1–38. By default, this display is toggled off. If you want to display the coordinates, click (Customization) in the Status Bar and select Coordinates.

![Figure 1–38](Image)

When you start a drawing command that requires you to select a point, the current coordinates also display near the crosshair in the Dynamic Input prompt (When Dynamic Input option is toggled On). For example, to draw a line, you must indicate where to begin and end the line. You can specify the point using one of two methods:

- Selecting a point on the screen with the cursor.
- Typing coordinates (when it is requesting point entry) in the form X,Y as shown in Figure 1–39. For example, the point (6,4) would be typed as 6,4.

![Figure 1–39](Image)
Measuring Angles

With the Cartesian coordinate system, you also need to understand how angles work in the AutoCAD software, as shown in Figure 1–40. This becomes important for coordinate entry, rotating objects, and working with arcs.

![Figure 1–40](image)

- By default, the AutoCAD software measures angles in a counter-clockwise direction relative to the positive X-axis.

Drawings Created at Full Scale

The AutoCAD Cartesian workspace is essentially unlimited in size. Whatever object you are creating, you typically draw it in the software at full scale, as shown in Figure 1–41. Whether you are drawing a building that is 100 x 200 meters or feet, a city that is 10 square kilometers or miles, or an IC chip that is 0.1" x 0.1", you always draw in the real units of the object. Your drawing area is as big as you need it to be. If needed, the entire solar system could be drawn at full scale in the software.

![Figure 1–41](image)

- Scaling the drawing only becomes necessary when the drawing is printed.

Hint: Drawing Accuracy

In addition to being potentially enormous, the AutoCAD drawing plane is also remarkably precise. Each point you enter in the software has an accuracy of at least 14 significant digits (e.g., 1.0000000000000).
1.5 Opening an Existing Drawing File

The **Open** command enables you to open and edit an existing drawing. This command opens the Select File dialog box that is similar to the standard Windows File dialog box, as shown in Figure 1–42.

![Select File dialog box](image)

**Figure 1–42**

- You can access the **Open** command in the Quick Access Toolbar or in the Application menu by clicking ![Open](image). You can also open the command from the Initial Start window (Start tab)>Open Files.

- Drawings that have recently been opened can be reopened quickly using Recent Documents in the Application Menu or the initial Start window.

**How To: Open a Drawing**

1. In the Quick Access Toolbar, click ![Open](image).
2. In the Select File dialog box, locate the required file folder.
3. Select a drawing from the list. A preview displays on the right side of the dialog box.
4. Click **Open** or double-click on the drawing name.
### File Location Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>History</td>
<td>Displays shortcuts to recently opened drawings.</td>
</tr>
<tr>
<td>Documents</td>
<td>Goes to the <em>My Documents</em> folder.</td>
</tr>
<tr>
<td>Favorites</td>
<td>Goes to the <em>Favorites</em> folder (<em>Windows\Favorites</em>), which stores shortcuts to files or folders. You can add items to the <em>Favorites</em> folder by selecting <strong>Tools&gt;Add to Favorites</strong> in the dialog box.</td>
</tr>
<tr>
<td>Desktop</td>
<td>Displays the Windows Desktop and enables you to navigate to any folder. Select a file to display a preview.</td>
</tr>
</tbody>
</table>

* (A360) and (FTP) are options for opening drawings from Internet locations.

### Navigation and File Options

<table>
<thead>
<tr>
<th>Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Back to</td>
<td>Returns to the previous folder.</td>
</tr>
<tr>
<td>Up one level</td>
<td>Moves up one level in the directory structure.</td>
</tr>
<tr>
<td>Search the Web</td>
<td>Opens the Web Browser window. In this window, you can locate a web site to download files, etc.</td>
</tr>
<tr>
<td>Delete</td>
<td>Deletes the selected file(s).</td>
</tr>
<tr>
<td>Create new folder</td>
<td>Creates a new folder in the current folder.</td>
</tr>
<tr>
<td>Views</td>
<td>Select the <em>List</em>, <em>Details</em>, or <em>Thumbnails</em> view for files, and toggle the Preview window on or off. If you have selected the details (Date, type, etc.) of the files to be displayed, the sort order of the columns is remembered by the AutoCAD software next time a file is opened.</td>
</tr>
<tr>
<td>Tools</td>
<td>Locates files in the AutoCAD search path, adds FTP locations, or adds files or folders to the <em>Favorites</em> folder.</td>
</tr>
</tbody>
</table>

* To make your most commonly used folders easier to access, you can select them individually in the Look in: drop-down list and then select **Tools>Add Current Folder to Places** to add them to the File Location drop-down list.
Multiple Drawings

You can have several drawings open at once. You can open them individually and have them open at the same time or open a several files together by using <Ctrl> or <Shift> and selecting them in the Select File dialog box. You can open multiple new drawings by clicking (plus) in the File Tabs bar.

- All of the open drawings display as tabs in the File Tabs bar. The currently active drawing displays with a white background.
- The drawings that have been changed and not saved, display a * next to their name in the File Tabs bar, as shown for Drawing10* in Figure 1–43.

You can switch between the drawings using any of the following methods:

- Pressing <Ctrl>+<Tab>.
- Selecting the required File tab (as shown on the left in Figure 1–44).
- Expanding (Application Menu) and selecting a drawing under Open Drawings (as shown on the right in Figure 1–44).
## Closing Files

You can close a drawing file without leaving the software using any of the following methods:

- Clicking ✕ (Close) in the Application Menu.
- Clicking ✗ (Close) in the upper right corner of the drawing window.
- Clicking ✗ (Close) in the required File tab.

The software prompts you to save any changes if you have not yet saved the drawing.

In the Application Menu, ✕ (Close) has two options:

- ✗ (Current Drawing), which closes the current drawing.
- ✗ (All Drawings), which closes all of the drawings together, leaving the Start tab open.

You can close all of the drawings using any of the following methods:

- Right-clicking on a tab and selecting **Close All** to close all of the drawings except the Start tab.
- Right-clicking on a tab and selecting **Close All Other Drawings** to close all of the drawings except the one where the shortcut menu has been opened from. If not already active, this will also make the drawing the active one.
- Using the **CLOSEALLOOTHER** command to close all of the drawings except the current drawing and the Start tab.

When you close all of the drawings, the Quick Access Toolbar changes to only display ✖️ (New), ✏️ (Open), and📖 (Sheet Set Manager).

---

*The Start tab is always persistent in the File Tabs bar.*
Practice 1a Opening a Drawing

Estimated time for completion: 5 minutes

Practice Objective

- Open and close existing drawings, and switch between open drawings.

In this practice, you will use the Select File dialog box to open two existing files and view them, as shown in Figure 1–45.

1. In the Quick Access Toolbar, click (Open) or if you are in the Start tab initial window, select Open Files in the Create tab.

2. In the Select File dialog box, navigate to and open the practice files folder. In the Name area, select Building Rock.dwg and click Open.

3. Start the Open command again. In the Select File dialog box, in the Name area, select Building Side.dwg and click Open.

4. In the File Tabs bar, in addition to the Start tab, the names of all opened files display as tabs, as shown in Figure 1–46.

You can also click (Open) in the Application menu.
5. Expand (Application Menu) and click (Open Documents). The two files you have opened are listed as shown in Figure 1–47.

6. In the Application Menu, in the Open Documents list, select Building Rock.dwg. It becomes the active drawing.

7. In the File Tabs bar, select Building Side.dwg. It becomes the active drawing.

8. Press <Ctrl>+<Home>. The Start tab is active and the initial Start window displays.

9. In the Start window, in the Recent Documents area, select Building Side.dwg to make it active.

10. In the File Tabs bar, right-click in the Building Side tab and select Close All. If prompted to save changes, click No. This closes all of the open drawings and the initial Start window displays again.
1.6 Viewing Your Drawing

Because AutoCAD drawings are drawn to full scale, it would be difficult to create them precisely on the computer screen without being able to move in and out around your work.

For example, if you are working on a map of the United States, you need to get closer to clearly display the roads in specific cities. If you are working on a house, you might want to focus on specific areas to be able to place doors precisely, as shown in Figure 1–48.

The Zoom and Pan commands enable you to specify which area of the drawing to display on the screen.

Wheel Mouse Zoom and Pan

The easiest way to zoom and pan is to use a wheel mouse.

- Roll the mouse wheel away from you to zoom in and roll the wheel toward you to zoom out. The AutoCAD software zooms in and out around the location of the cursor.
- Hold the wheel and move the cursor to pan. Note that a hand icon displays at the cursor location while panning.
- Double-click on the wheel to fit the entire drawing in the drawing window.
- Press <Ctrl> while you hold the wheel and move the mouse to use another mode of panning, called joystick pan.
Navigation Tools

In the AutoCAD LT software, only the 2D Steering Wheel, Pan, and Zoom are available in the Navigation Bar.

Navigation tools are located in the Navigation Bar, as shown in Figure 1–49.

![Figure 1–49](image)

The Navigation Bar provides a quick way of accessing the viewing tools. It displays in a very light gray until you hover the cursor over it. A displayed below a tool indicates that it can be expanded and additional options can be selected. In Paper Space, fewer tools display because you can only use 2D viewing commands. The different options are shown in Figure 1–50.

![Figure 1–50](image)
In the AutoCAD LT software, the ViewCube is not available.

- Most of the ViewCube options are primarily used in 3D views. However, you can use the Clockwise and Counterclockwise controls to rotate the viewport in the 2D plane, as shown in Figure 1–51.

![Figure 1–51](image)

In the AutoCAD LT software, only the 2D Navigation Wheel is available.

- Navigation Wheels provide access to groups of commonly used navigation tools. Depending on the wheel selected, you can access a small group of commands, such as Zoom, Rewind, and Pan, or a group with many more options. The Navigation Wheel displays at the cursor, enabling you to quickly select the navigation tools.

- **ShowMotion** is used when creating animations in 3D.

In the AutoCAD LT software, **ShowMotion** is not available.

### Pan and Zoom Commands

The Navigation Bar and the shortcut menu contain the **Zoom** and **Pan** commands.

The **Realtime** commands are really two parts of one command. **Pan Realtime** enables you to shift the display without changing the current magnification. **Zoom Realtime** enables you to zoom in closer to the drawing or away from the drawing, displaying the results dynamically (in real time) while the command is used.

### How To: Pan in Real Time

1. In the Navigation Bar, click ⬇️ (Pan). The crosshair changes to 🗼️ (Hand cursor).
2. Position the cursor over the part of the drawing that you want to visually move to a different part of the screen. Hold the left mouse button and drag in the direction you want to go.
3. After you release the mouse button, you can pan again, or press <Esc> or <Enter> to complete the command.
   • You can also pan using the scroll bars on the sides of the drawing.

How To: Zoom in Realtime

1. In the Navigation Bar, expand \( \text{Zoom} \) and select \text{Zoom Realtime}. The crosshair changes to \( \text{Magnifying glass} \).
2. Hold the left mouse button and drag the cursor up to zoom in or down to zoom out.
3. After you release the mouse button, you can zoom again, or press <Esc> or <Enter> to complete the command.
   • If you select a \text{Zoom} option in the Navigation Bar, the top level \text{Zoom} icon changes to the selected option.

Switching Between Zoom and Pan

In either \text{Zoom Realtime} or \text{Pan Realtime}, you can right-click in the drawing window to open a shortcut menu, as shown in Figure 1–52. Select an option and continue with the viewing operation.

- **Zoom Window**: Requires you to hold the left mouse button while you drag a window.
- **Zoom Original**: Returns the display to the view that was current before the \text{Zoom/Pan Realtime} command was started.
- **Zoom Extents**: Fills the screen with all of the objects in the drawing.
Practice 1b Viewing a Drawing

Practice Objective

- Display parts of a drawing using the **Zoom** and **Pan** commands.

In this practice, you will use several options in the **Zoom** command and **Pan** to display parts of a large drawing, as shown in Figure 1–53.

**Figure 1–53**

1. Open **Bighouse-A.dwg** from your practice files folder.

2. If you have a mouse wheel, scroll the wheel to zoom and press it to pan. Double-click on the mouse wheel to zoom to the extents of the drawing.

3. In the Navigation Bar, expand (Zoom) and select **Zoom Realtime**. Click, hold, and move the cursor to zoom in and out of the drawing.

4. Right-click and select **Pan**. Click, hold, and move the cursor to pan around the drawing.

5. Right-click and select **Exit**. Double-click on the mouse wheel to zoom to the extents of the drawing.
6. In the Navigation Bar, expand (Zoom) and select **Zoom Window**. Select two corner points for the window to zoom in on the kitchen (in the upper right corner of the house).

7. In the Navigation Bar, click (Pan). Pan from the kitchen to the Master Bedroom (upper left corner).

8. Right-click and select **Zoom Extents**. Right-click again and select **Exit**.

9. In the **File Tabs** bar, click (Close) in the **Bighouse-A** tab to close the drawing. Do not save changes.
1.7 Saving Your Work

Saving your work is vitally important. You should save early and often to avoid losing and redrawing information. To provide added security, you can create automatic saves to a backup file. You can also save your drawings so that they can be used in previous versions of the AutoCAD software that might not be compatible with the one you are using.

- The save commands only save to the current drive. Remember to regularly back up your work to another machine or other data storage.

- When you click (Save) in the Quick Access Toolbar or Application Menu, the drawing file you are working on is saved without prompting you for the name or location. This is called a quick save.

- If you are working in a new drawing that has not been saved with a specific name, you are prompted for a name and location in the Save Drawing As dialog box.

- Clicking (Save As) in the Quick Access Toolbar or Application Menu (or typing save) enables you to save the current drawing with another name.

While it is critical for you to save a drawing regularly as you are working on it, the AutoCAD software is also set up to save a drawing to a backup file every 10 minutes. These files can be used to recover work that might not have been saved. They have an SV$ extension.

- By default, the AutoCAD software also creates a backup copy of the file every time you save. It has a .BAK extension.

- Most of the times, automatic saves are performed incrementally. This is much faster than performing full saves, which can take a lot of time.
In the AutoCAD LT software, the **Full-time CRC validation** option is not available.

---

### Saving in Various Formats

**Enhanced in 2018**

- You can modify the Automatic Save and backup features in the **Open and Save** tab of the Options dialog box (Application Menu>**Options**). You can also control the interval between saves. By default, the feature is toggled on with an interval of 10 minutes between saves and the **Create backup copy with each save** option is selected, as shown in Figure 1–54.

![Figure 1–54](image)

Using the **Save As** command, you can select an earlier version of the DWG file format so that the file can be opened with earlier versions of the AutoCAD software, as shown in Figure 1–55.

- With the 2018 release, the AutoCAD software uses the **AutoCAD 2018 Drawing** file format to save the drawings. If you want to share a drawing with someone that has the AutoCAD 2017 software or an earlier version of the software, you need to save it in the previously used **AutoCAD 2013** file format.

![Figure 1–55](image)
**Practice 1c**

**Saving a Drawing File**

**Practice Objectives**

- Open and save a drawing.
- Modify the **Automatic save** option.

In this practice, you will open a drawing, save it, and modify the **Automatic save** option, as shown in Figure 1–56.

![Image](image-url)

*Figure 1–56*

1. Open **Building Valley.dwg** from your practice files folder.
2. In the Quick Access Toolbar, click **(Save)**. The AutoCAD software performs a quick save.
3. In the Application Menu, click **Options** to open the Options dialog box.
4. In the **Open and Save** tab, change the time for **Automatic save** to **15** minutes.
5. Click **OK** to close the Options dialog box. Note a * beside the **Building Valley** name in the **File Tabs** bar.
6. Save the drawing by clicking **(Save)** in the Quick Access Toolbar. In the **File Tabs** bar, note that **Building Valley** does not have a * beside it.
7. Close the drawing.
Chapter Review Questions

1. What displays when you click the Start tab in the File Tabs bar?
   a. The recently opened drawings.
   b. An expanded version of the Command Line.
   c. The Initial Start window.
   d. The Application Menu.

2. How do you cancel a command using the keyboard?
   a. Press <F2>.
   b. Press <Esc>.
   c. Press <Ctrl>.
   d. Press <Delete>.

3. What is the quickest way to repeat a command?
   a. Press <Esc>.
   b. Press <F2>.
   c. Press <Enter>.
   d. Press <Ctrl>.

4. To display a specific ribbon panel, you can right-click on the ribbon and select the required panel in the shortcut menu.
   a. True
   b. False

5. How are points specified in the AutoCAD Cartesian workspace?
   a. X value x Y value
   b. Y value, X value
   c. X value, Y value
   d. X value - Y value
6. How do you know if a file has not been saved after it is modified?
   a. Its tab displays a white background in the File Tabs bar.
   b. It displays a * next to its name in the File Tabs bar.
   c. Its tab is highlighted in blue in the File Tabs bar.
   d. Its tab always displays next to the Start tab in the File Tabs bar.

7. How can you switch between the open drawings? (Select all that apply.)
   a. By pressing <Ctrl>+<Tab>.
   b. By pressing <Ctrl>+<Shift>.
   c. By right-clicking and selecting Open in the shortcut menu.
   d. By selecting the required drawing file tab in the File Tabs bar.

8. How do you fit the entire drawing in the drawing window?
   a. Double-click on the right mouse button.
   b. Hold <Ctrl> and scroll the mouse wheel.
   c. Double-click the mouse wheel.
   d. Hold the mouse wheel and move the cursor.
# Command Summary

<table>
<thead>
<tr>
<th>Button</th>
<th>Command</th>
<th>Location</th>
</tr>
</thead>
</table>
| ![Close icon](image) | Close | • Drawing Window  
• Application Menu  
• Command Prompt: close |
| ![Close Current Drawing icon](image) | Close Current Drawing | • Application Menu  
• Tabs bar shortcut menu |
| ![Close All Drawings icon](image) | Close All Drawings | • Application Menu  
• Tabs bar shortcut menu |
| ![Dynamic Input icon](image) | Dynamic Input | • Status Bar: expand Customization |
| ![Exit Autodesk AutoCAD icon](image) | Exit AutoCAD | • Application Menu |
| ![Open icon](image) | Open | • Quick Access Toolbar  
• Application Menu  
• Command Prompt: open, <Ctrl>+<O> |
| ![Open Documents icon](image) | Open Documents | • Application Menu |
| ![Options icon](image) | Options | • Application Menu  
• Shortcut Menu: Options |
| ![Pan icon](image) | Pan | • Navigation Bar  
• Shortcut Menu: Pan  
• Command Prompt: pan or P |
| ![Recent Documents icon](image) | Recent Documents | • Application Menu |
| ![Save icon](image) | Save | • Quick Access Toolbar  
• Application Menu  
• Command Prompt: qsave, <Ctrl>+<S> |
| ![Save As icon](image) | Save As | • Quick Access Toolbar  
• Application Menu  
• Command Prompt: save |
| ![Zoom Realtime icon](image) | Zoom Realtime | • Navigation Bar: Zoom Realtime  
• Shortcut Menu: Zoom  
• Command Prompt: zoom or Z |