

Getting Familiar with AutoCAD

If you are totally new to AutoCAD, you'll want to read this chapter. It provides an overview of AutoCAD's layout and shows you what to expect when you start to use it. Even if you've had an AutoCAD class or used an older version of AutoCAD, you'll find this chapter helpful because it covers the new AutoCAD interface.

You'll start by taking a tour of the AutoCAD window to become familiar with the menus and other components. You'll then get a chance to try your hand at drawing, and in doing so, you'll be introduced to the way AutoCAD's commands work. You'll also learn how to use the Zoom and Pan tools to help you get around in a drawing. And you'll look at the ways you can view your drawing by using the layout feature. Finally, you'll be introduced to the Help system for those times when you forget to have this book on hand.

This chapter covers the following topics:

- Understanding the AutoCAD window
- Starting commands
- Starting a drawing
- Panning and zooming to adjust your view
- Understanding the Layout view
- Understanding how command options work
- Getting help

Understanding the AutoCAD Window

Autodesk has redesigned AutoCAD 2010's interface. If you've used a version prior to AutoCAD 2009, it will appear as though AutoCAD has completely changed.

Don't worry; the underlying program still behaves in much the same way as before. Through AutoCAD's workspace feature, you can easily change AutoCAD's interface to display the old, familiar toolbars that are seemingly missing from this latest version. In this section, you'll look at AutoCAD's newest interface options.

The ↵ symbol in this book denotes the Enter key. Whenever you see it, press the Enter key, also known as the Return key.

AutoCAD works like most other Windows-based graphics programs, but it also has a few quirks. This section gives you an overview of AutoCAD's layout. Although many elements will be familiar, a few will be new to you.

To start, you'll see the two ways that AutoCAD displays a drawing. Then, for the rest of this chapter, you'll focus on the 2D drawing environment. After installing AutoCAD, take the following steps to get to the 2D workspace:

1. Choose Start → All Programs → Autodesk → AutoCAD 2010 → AutoCAD 2010. (LT users will click AutoCAD LT 2010 in place of AutoCAD 2010 in the previous menu selection.) You can also double-click the AutoCAD 2010 icon on your Windows Desktop.

If this is a new installation, you will see the Initial Setup dialog box. This dialog box lets you set up a workspace for the type of file you want to work with. Everything from Architectural to Manufacturing to Structural Engineering is offered. For the purposes of this book, you can click the Skip button in the lower-right corner of the dialog box. You can always open this dialog box through the User Preferences tab of the Options dialog box. After closing the Initial Setup dialog box, you'll see a greeting, called a *splash screen*; then, if this is a new installation, AutoCAD displays the Workspaces message box. This message box offers an option to select 2D Drafting & Annotation, 3D Modeling, or AutoCAD Classic.

2. Click 2D Drafting & Annotation. You'll see the AutoCAD window with a blank default document named Drawing1.dwg, as shown at the top of Figure 1.1. If this is a new installation, you will also see the New Features Workshop window. If this happens, select Maybe Later, and then click OK.

AUTOCAD 2010 VS. AUTOCAD 2010 LT

AutoCAD 2010 and AutoCAD 2010 LT are essentially the same program, with some differences both large and small. The LT version has limited 3D capabilities and no 3D workspace. Customization features too are limited in the LT version. With the exception of the 3D features, you should be able to use the features discussed in this book when using AutoCAD 2010 LT.

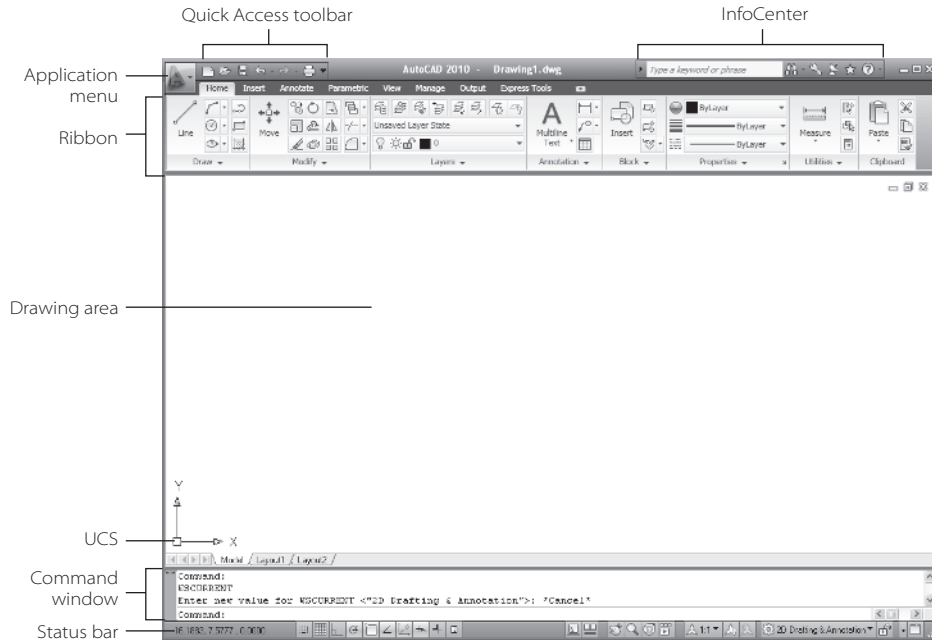


Figure 1.1
AutoCAD when
opened into a 2D
Drafting & Annotation workspace

In some installations, you might see a Startup dialog box. If this happens to you, click Cancel, and AutoCAD will display the blank default document.

3. The default document appears to be an empty 2D space. You'll also see a special tool palette, called the Ribbon, along the top, as shown in Figure 1.1. This is a set of 2D drafting and annotation tools that gives you ready access to the most common drafting functions.

If you are using AutoCAD 2010, try the following exercise to see how to get to the 3D Modeling workspace (this workspace is not available in AutoCAD 2010 LT):

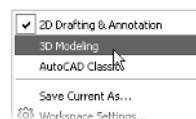
1. In the lower-right corner of the AutoCAD window, you'll see a gear-shaped icon. This is the Workspace Switching tool. Click it to open a list that shows 2D Drafting & Annotation, 3D Modeling, and AutoCAD Classic. If you selected an option in the Initial Setup dialog box, you will also see the Initial Setup Workspace listed.



If you're feeling adventurous, you can go to Chapter 6 to find out more about AutoCAD's new 3D tools. LT users will not have the 3D functions.

2. Select 3D Modeling from the list.

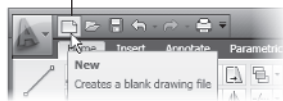
The current default file, Drawing1.dwg, is set up for 2D drafting, but you can open a new file by using a file template already set up for 3D modeling.



3. On the Quick Access toolbar, click New. The Select Template dialog box appears (Figure 1.2).
4. Select acad3D.dwt from the list, and click Open. A new file, called Drawing2.dwg, appears. Notice that this drawing is in a 3D space (Figure 1.3). You'll learn more about 3D modeling in Chapter 6.

Figure 1.2
Opening the Select
Template dialog box

Click New in the Quick Access Toolbar.



The Select Template dialog box appears.

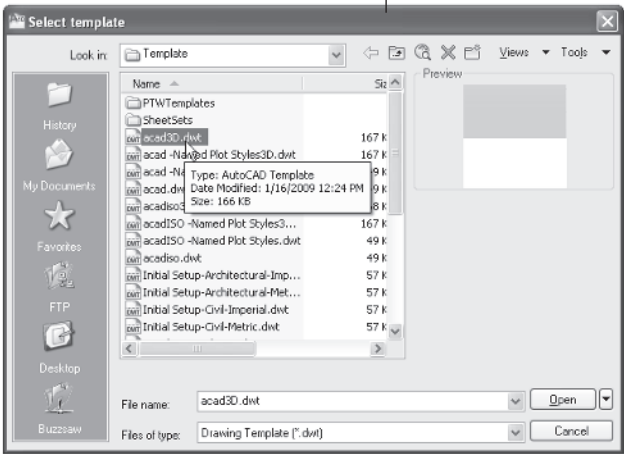
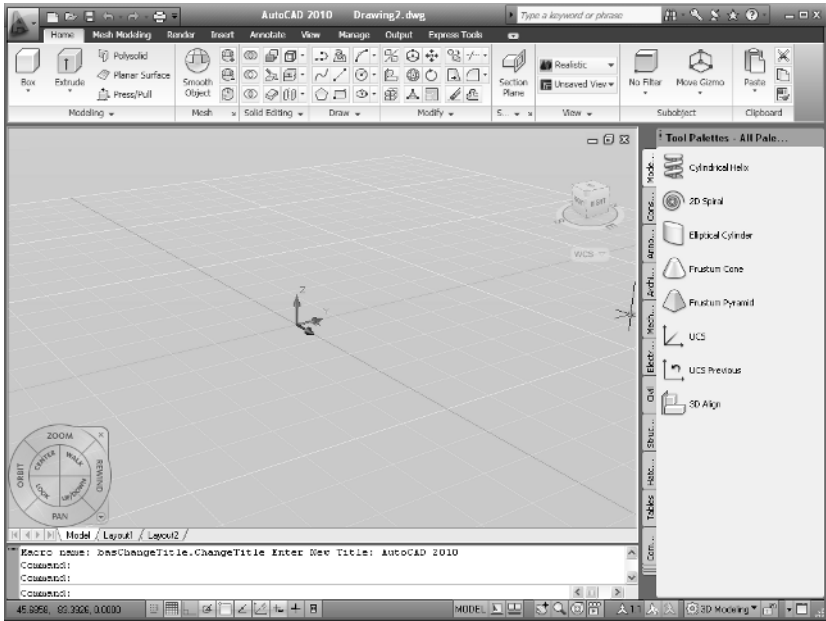


Figure 1.3
The AutoCAD
window set up for
3D modeling



5. Click the Workspace Switching tool, and click 2D Drafting & Annotation in the Workspaces toolbar. You'll be working in this workspace for most of this book.
6. Exit the 3D Drawing2.dwg file by clicking the Close icon in the upper-right corner of the drawing area. The Close icon looks like an X.

Even though the default 2D file looks completely different from the new 3D file you created by using the acad3D.dwt template, they really are basically the same. They just have different display settings turned on. You can learn more about the various ways to display drawings in Chapter 6.

You now have AutoCAD set up for 2D drawing, so you'll take a more detailed look at the AutoCAD window. You'll find that, for the most part, it is a typical Windows-style graphics program window with a few twists.

Getting to Know the Window Components

Your AutoCAD window should look like the earlier Figure 1.1, which shows the default configuration for a new AutoCAD installation. Since AutoCAD is so easy to customize, you might not see exactly the same layout, but the basic components should be there. The AutoCAD window offers several controls to the program:

Ribbon The Ribbon contains most of the common functions you'll need to use (see Figure 1.4). The Ribbon contains several panels, each of which contains tools for drawing and editing. The set of panels changes depending on which Ribbon tab is selected. The Ribbon panels can be moved with a click and drag of their title bars, and the entire Ribbon can be set up to stay hidden until you need to use it.

When Ribbon panels are away from the edge of the window and appear “free floating,” they are said to be floating, as opposed to docked. You'll learn more in the “Using the Ribbon” section of this chapter.

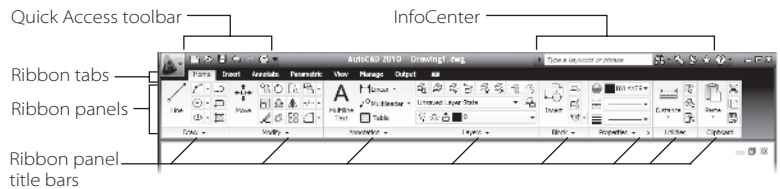
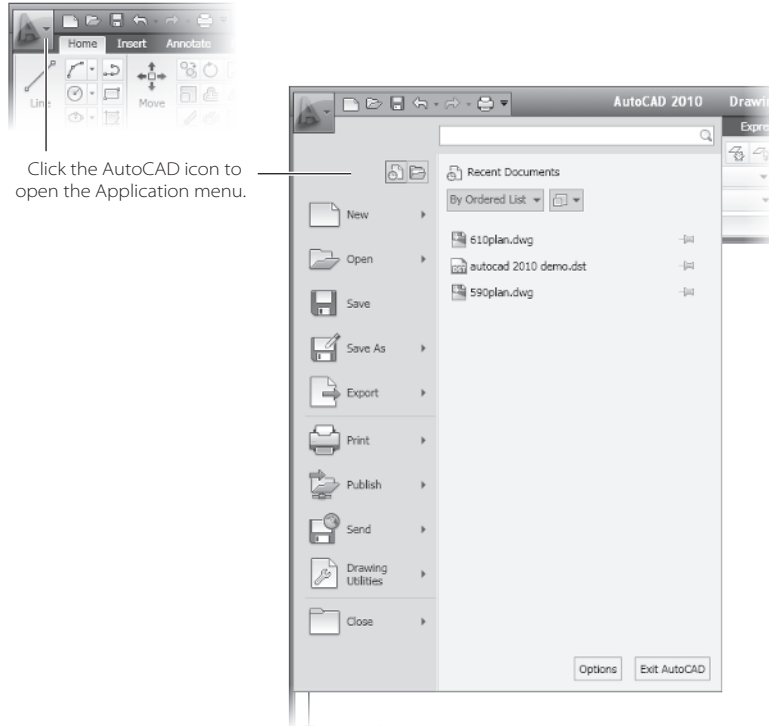


Figure 1.4
The Ribbon and its components

Quick Access toolbar The Quick Access toolbar offers the most commonly used Windows functions, such as Save, Undo, Redo, and Print.

Application menu If you click the AutoCAD logo in the upper-left corner of the window, you open the Application menu, which offers general file-related tools (see Figure 1.5). At the top of the Application menu, you see the Search tool. This enables you to find a specific tool by name just by typing the name into the search input box. Just below and to the left of the Search tool are two icons that offer Recent Documents and Open Documents. If you click Recent Documents, the panel to the right lists the most recent files you've opened. Each file has a pushpin icon to the right, enabling you to lock the item in the list. If you click Open Documents, you'll see a list of documents that are currently open in AutoCAD. You'll learn more in the “Using the Application Menu” section of this chapter.

Figure 1.5

The Application menu

Drawing area In the middle of the AutoCAD window is the drawing area where you'll do your actual drawing. You'll learn more in the "Getting Familiar with the Drawing Area" section of this chapter.

UCS icon The UCS icon is the L-shaped icon you see at the lower-left corner of the drawing area; you'll learn more in the "Checking the UCS Icon" section.

Status bar At the bottom of the screen is the status bar, which provides information about many of the settings you'll use in AutoCAD. The status bar also offers controls over many of the different drawing modes in AutoCAD.

Command window Just above the status bar is the command window, which is almost unique to AutoCAD. The command line is a text window that displays commands as you use them, as well as your keyboard input. Messages often appear here that prompt you to perform a step in a command. You'll learn more about the command line a bit later in this chapter; see the "Using the Command Line" section.

InfoCenter In the upper-right corner of the AutoCAD window you'll see the InfoCenter. This is where you can get help about AutoCAD features or find current information about AutoCAD on the Internet. You'll learn more in the "Staying Informed with the InfoCenter" section of this chapter.

Another unique item in AutoCAD's window is the set of tool palettes shown in Figure 1.6. You can use these palettes to keep your favorite tools and drawing components in one convenient place for quick access.

The Properties palette shown on the left and the AutoCAD tool palettes shown on the right of Figure 1.6 might not appear in your AutoCAD window by default, but you can open the tool palettes by clicking the View tab in the Ribbon and selecting Tool Palettes from the Palettes panel.

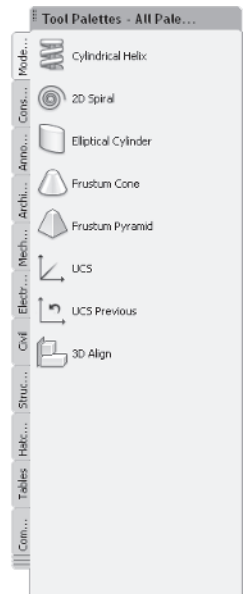
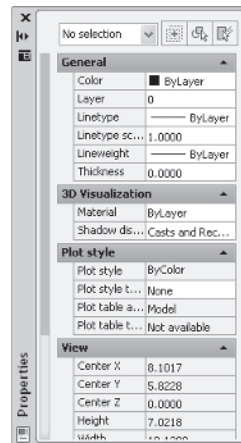
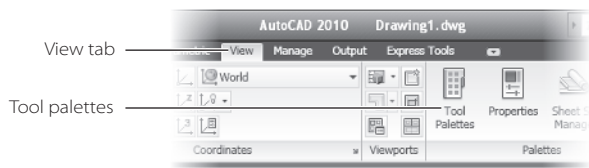


Figure 1.6

The Properties palette (at left) and the tool palettes (at right)

The drawing area, the status bar, and the command line work together to give you feedback while you create and edit your drawing. As you move your cursor over the drawing area, you'll see the cursor appear as a crosshair cursor. If you click the drawing area, a pair of numbers and a selection window appear. Click again, and the selection window disappears.



With the crosshair cursor, you can point to portions of the drawing area, and the numeric display, known as the *Dynamic Input display*, tells you your XY coordinate within the drawing area. The selection window lets you select objects in the drawing area. You'll learn more about coordinates in AutoCAD in Chapter 2, and you'll look at selection windows a bit later in this chapter.

If you don't see the Dynamic Input display, go to the status bar at the bottom of the AutoCAD window, and click the Dynamic Input tool.



Along with the Dynamic Input display, the command line and status bar just below the drawing area provide feedback as you work with AutoCAD commands (see Figure 1.7). You can also see the XY coordinate in the far left of the status bar in the lower-left corner of the AutoCAD window.

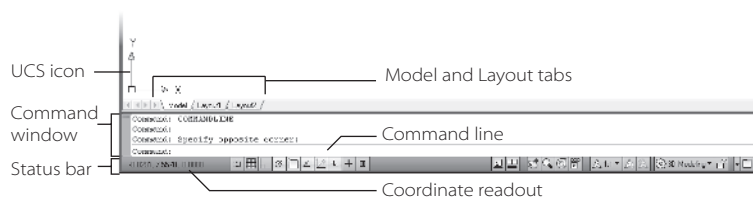


Figure 1.7
The status bar and the command line work with the drawing area to give you feedback as you draw.

CONTROLLING THE STATUS BAR DISPLAY

To the far right of the status bar, you'll see a down-pointing triangle, or *arrow*; click this arrow to open a menu that controls the display of the status bar. You can also just right-click in a blank area of the status bar to display this menu. You use this menu to turn the items in the status bar on or off. A check mark by an item indicates it is currently on.

If for some reason you do not see all the buttons mentioned in the preceding discussion, check this menu to make sure that all the status bar options are turned on. Note that the LT version does not have an Otrack option in the status bar.

Using the Ribbon

If you've used the latest version of Microsoft Office for Windows Vista, you'll be familiar with the Ribbon. The Ribbon is a bit like a super toolbar that offers quick access to the most commonly used tools. In addition, the Ribbon offers a lot of helpful information in the form of expanded tooltips.

Specifically, the Ribbon is a collection of tools that invoke commands. These tools are grouped into several *tabs*. Each tab contains a set of *panels*, and each panel contains a set of icons representing tools and showing their function (see the earlier Figure 1.4). The tools also offer *tooltips* that provide a lot of information, including a description that helps you understand what the icons represent.

If the Ribbon does not appear on the screen, you can click in the command window and then type **ribbon**↵ to restore it to the window.

If you move the cursor onto one of the Ribbon panel tools and leave it there for a moment, you'll see a tooltip appear just below the cursor, giving you a brief description of the tool. Leave the cursor there a bit longer, and the tooltip expands to show even more information on how to use the tool (see Figure 1.8). As a new user, you'll find these tooltips very helpful.

Throughout the book, when I ask you to select a tool from the Ribbon or from a toolbar, I'll use the name shown in the tooltip. For example, if you hover your cursor over any icon tool in the Ribbon, you'll see the name of the tool at the top of the tooltip that appears (as shown in Figure 1.8).

In most cases, you'll be able to guess what each tool does by looking at its icon. The icon with an arc in the Draw panel of the Ribbon, for instance, indicates that the tool draws arcs; the one with the circle shows that the tool draws circles; and so on. But for further clarification, the tooltip gives you the name of the tool.

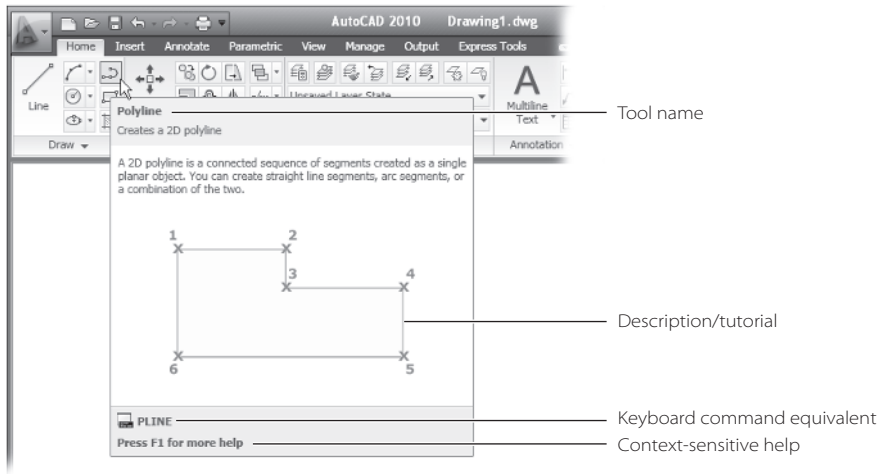


Figure 1.8
A tooltip showing the name of the tool, a brief tutorial-like graphic, and the command name associated with the tool

Finding Hidden Panels and Tools

In the “Getting Familiar with the Drawing Area” section, you’ll start to work in the drawing area by drawing some lines. Before you do that, though, take a moment to examine the left part of the Ribbon, where the Draw panel of the Ribbon resides. You will be instructed to use the tools in this Ribbon panel frequently throughout this book, so it will be helpful for you to get a feel for their arrangement and what they contain.

Besides the visible tools, a few tools are hidden from view. Click the Blocks and Reference tab just above the Ribbon. The row of Ribbon panels changes to a new set of panels. Click the Home tab above the Ribbon to return to the previous set of panels.

As you work through exercises in this book, I’ll abbreviate the name of the Ribbon tabs to simplify the instructions. For example, I’ll say “On the Home tab’s Draw panel” to refer to the Draw panel on the Home tab of the Ribbon.

If you see a triangle next to the title on the Ribbon panel title bar, you can expand the panel to reveal more tools. To do this, click the panel title bar (Figure 1.9). The panel will expand downward. Once you click in the drawing area, the panel returns to its normal view. If you want to lock the expanded panel so that it stays open, click the pushpin icon on the left side of the expanded panel’s title bar.

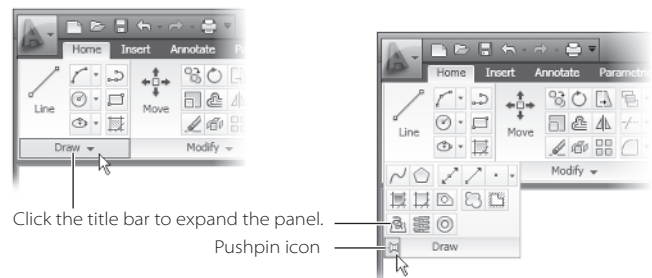
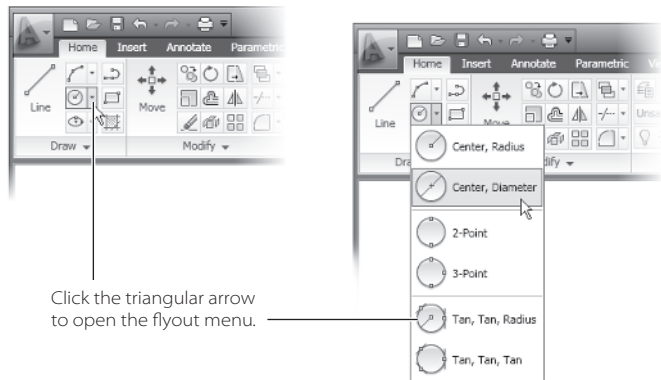


Figure 1.9
Expanding a Ribbon panel

From now on, when you see the term *expanded panel*, you should expand the Ribbon panel by clicking the panel’s title bar.

Figure 1.10
Opening a flyout



You might also notice that some of the tools have triangular arrows next to them. You can click these arrows to open *flyout* menus that contain options related to the tool with which they are associated. For example, you can click the triangle next to the Circle tool to open a flyout that offers different ways to draw a circle (Figure 1.10). You'll get a chance to use these features in Chapter 3.

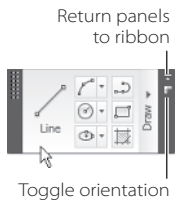


Figure 1.11
A Ribbon panel in its floating appearance, showing its controls

Switching to Floating Ribbon Panels

If you find that you use one particular Ribbon panel a lot, you can “tear off” the panel and have it available as a floating Ribbon panel. To do this, click and drag the panel title bar toward the drawing area. The panel’s appearance changes slightly to offer some controls (see Figure 1.11). These controls disappear when you are not pointing inside the panel, but they reappear when you hover over the panel with your cursor.

Tooltips appear when you hover over the controls, and they describe what each control does. The Toggle Orientation control is a little misleading because it only controls the display of the title bar.

Using the Application Menu

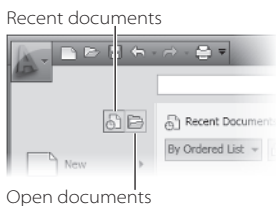
The AutoCAD Application menu provides a familiar means of finding file- and print-related commands. You can open the Application menu by clicking the AutoCAD icon in the upper-left corner of the AutoCAD window (shown earlier in Figure 1.5).

In the Application menu, you'll see many of the standard Windows menu options, such as Open, Save, Save As, and Print, as well as a few that are specific to AutoCAD. Many of the options show arrowheads that indicate a cascading menu. Open the Application menu, for example, and click the arrowhead to the right of the Export

option. You'll see a list of options that are related to exporting AutoCAD drawings.

As mentioned earlier, you can view a list of recently opened drawing or currently opened drawings by clicking either of the two tools at the top of the Application menu (Figure 1.12).

Figure 1.12
The Recent documents and Open documents tools at the top of the Application menu



While viewing the drawing list, you can hover your cursor over a drawing name to view a thumbnail of the drawing. You can also click the File View tool above the list to change the list from names to images (Figure 1.13).

Getting Familiar with the Drawing Area

As you might imagine, the drawing area in the middle of the AutoCAD window is the space where you'll be spending a lot of time. It pays to get a feel for how it behaves early on. As your introduction to the drawing area, try the following exercise:

1. Move the cursor around in the drawing area. As you move the cursor, notice that the coordinate readout in the status bar gives the X and Y coordinates and adds the Z coordinate.
2. Click in the middle of the drawing area. You have just selected a point. Move the cursor, and a rectangle follows. This is a *selection window*; if any objects appear in the drawing area, you can select them for editing. A coordinate display appears at the cursor, showing your coordinates in an X, Y format. Also notice the words *Specify opposite corner* in the Dynamic Input display. This tells you that you have started a selection window and you need to select the opposite corner for the window.
3. Move the cursor a bit in any direction; then click again. Notice that the selection window disappears. Had there been objects within the selection window, they would be selected. This is similar to the way the cursor behaves on the Windows Desktop; however, in Windows, you have to drag the cursor to create a selection window.
4. Try selecting several more points in the drawing area. Notice that as you click, you alternately start and end a selection window.

As you click the drawing area, you might notice that, depending on whether you click to the right or to the left of the preceding point, the selection window displays a different color. If you click from left to right, the selection window appears blue. From right to left, it's green. These colors indicate a different mode of selection, which you'll learn about in Chapter 4.

If you right-click, a context menu appears. Just as with most other Windows applications, a right-click frequently opens a menu that contains options that are *context sensitive*. This means that the contents of the context menu depend on where you right-click as well as on the command that is active at the time of your right-click. You'll learn more about these options as you progress through the book. For now, if you happen to open this menu by accident, press the Esc key to close it.

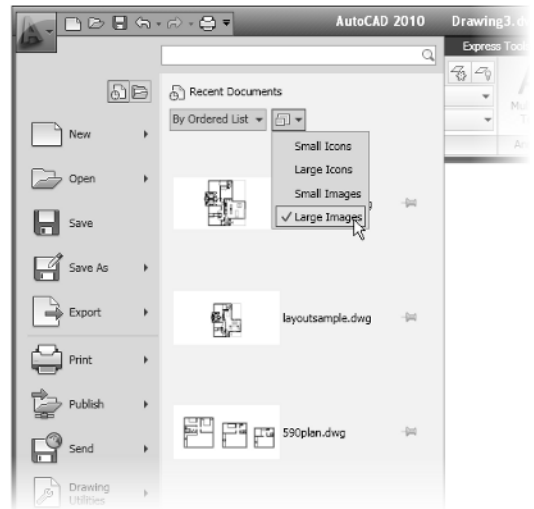
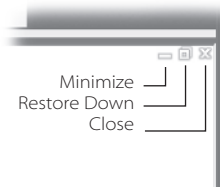


Figure 1.13
Changing the list
from names to
Large Images

Finally, as with any window, you can expand the drawing area or contract it into a smaller window by clicking the Restore Down icon in the upper-right corner of the drawing area.

When the drawing area is in the Restore Down position, it appears as a separate window within the AutoCAD window. You can then resize the window to any rectangular shape you need. This is helpful when you have multiple AutoCAD drawing files open. To maximize a drawing to fill the AutoCAD window, double-click the drawing window title bar.



Checking the UCS Icon

The UCS icon is the L-shaped icon you see at the lower-left corner of the drawing area (shown earlier in Figure 1.1). It helps you see your orientation at a glance by pointing to the positive X and Y directions. UCS stands for *user coordinate system*. That name is a hint that you can create and use other coordinates besides the default one that exists in new drawings. By default, the X direction is from left to right, and the Y direction is from bottom to top; but with AutoCAD you can alter your view orientation as well as include additional coordinate systems that can be oriented in different directions. The UCS icon is especially helpful when you start to use these other coordinate systems and display modes, but right now, just be aware that it is there to help you get your bearings.

You might notice a small square at the base of the UCS icon. This square tells you that you are in the world coordinate system, which is the base coordinate on which other coordinate systems can be built. You'll learn more about the UCS in Chapter 6.

Using the Command Line

The horizontal window at the bottom of the AutoCAD window is called the *command window*. Besides the drawing area, this is where you can get feedback from AutoCAD. As you work in AutoCAD, the command activity appears in the bottom line of the command window and scrolls upward.

When AutoCAD is waiting for input, you'll see the word *Command:* at the bottom of the command window. This is the *command prompt*. As you click a point in the drawing area, you'll see the message *Specify opposite corner* in the command line. Simultaneously, a selection window appears in the drawing area. Click another point without selecting anything; the selection window disappears, and the command prompt returns.

You'll want to pay close attention to the command window as you start using AutoCAD because it tells you what AutoCAD expects you to do. It also lists information when you query AutoCAD for certain types of information, which you'll learn about in later chapters.

In addition to getting feedback from the command window, you'll also see the command prompt at the cursor whenever you have the Dynamic Input display turned on.

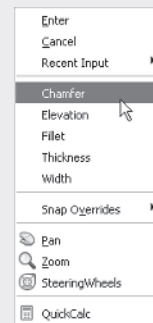
The command window is a little like a chat window when you're online. You "chat" with AutoCAD by responding to messages that appear in the command line. When AutoCAD asks for specific data, the command line allows you to enter data using the keyboard. It is also an area that provides information about your drawing when you request it.

"CHATTING" WITH AUTOCAD

AutoCAD communicates its needs to you in messages in the command line. These messages often tell you what to do next or offer options, usually shown in square brackets. Commands often display a series of messages, which you answer to complete the command. If you aren't sure what to do, check the command line for clues.

As an additional aid, you can right-click to display a context menu. If you are in the middle of a command, this menu provides a list of options specifically related to that command. For example, if you right-click before selecting the first point for the Rectangle command, a menu appears, offering the same options that are listed at the command prompt, plus some additional options.

Note that AutoCAD allows you to customize the right mouse button, and many users will set up this button as an Enter key. This is a holdover from the very earliest versions of AutoCAD, and many users still prefer it to the context menu function.



Starting Commands

Working with commands is fairly straightforward, but you have a few options in AutoCAD that you won't find in other Windows programs. You can use tools in the Ribbon to start a command with a simple click and then use the command window to get feedback from AutoCAD. Try the following to see firsthand how this works:

1. Click the Dynamic Input tool in the status bar to turn off Dynamic Input display mode. When it is off, it is gray. You'll start your exploration of commands with this feature turned off so you can get a clear view of your activity. You'll get a chance to try the Dynamic Input feature in later chapters, starting with Chapter 2.



2. Click the Rectangle tool in the Draw panel. Notice that the command line at the bottom of the window now shows the following prompt:

Specify first corner point or [Chamfer/Elevation/Fillet/Thickness/Width]:

AutoCAD is asking you to select the first corner for the rectangle, and also, in brackets, it is offering a few options that you can take advantage of at this point in the command. Don't worry about those options right now. You'll have an opportunity to learn about command options in Chapter 2.

3. Click a point roughly in the lower-left corner of the drawing area, as shown in Figure 1.14. Now as you move your cursor, you'll see a rectangle follow the cursor with one corner fixed at the position you just selected. You'll also see the following prompt in the command line:

Specify other corner point or [Area/Dimensions/Rotation]:

4. Click another point anywhere in the upper-right region of the drawing area. A rectangle appears (see Figure 1.15). You'll learn more about the different cursor shapes and what they mean later in this chapter.

Figure 1.14
Selecting the first point of a rectangle

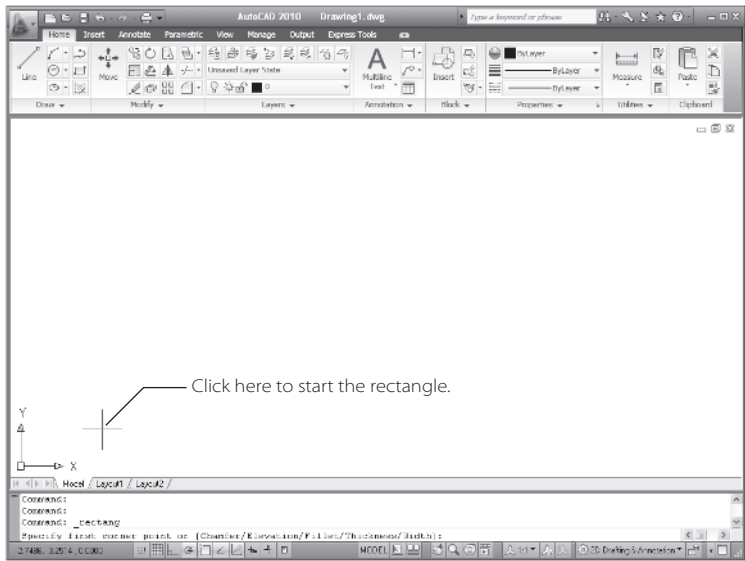
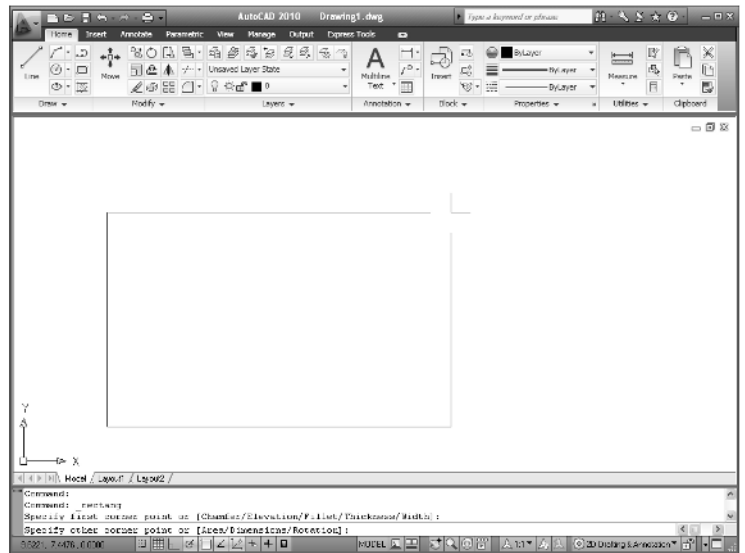


Figure 1.15
Once you've selected the first point of the rectangle, you'll see a rectangle follow the motion of your mouse.



Next, try deleting the rectangle you just drew:

1. Place the cursor on top of the rectangle, but don't do anything yet. Notice that as you pass the cursor over the rectangle, it is highlighted. In a crowded drawing, this highlighting can help you determine exactly what will be selected when you click an object.
2. With the cursor on the rectangle and the rectangle highlighted, click the rectangle. The rectangle is selected, and the Quick Properties dialog box opens. This dialog box gives you access to the properties of the selected object.
3. Close the Quick Properties dialog box by clicking the X in its upper-right corner. You'll see a message box asking whether you want to "turn off the Quick Properties panel for all future selected objects."
4. Click the answer that says "Turn off for all future selected objects." You can easily restore the Quick Properties panel feature at any time by clicking the Quick Properties Panel tool in the status bar.



You'll learn more about the Quick Properties panel in Chapter 4.

5. The rectangle is still selected, so press the Delete key to delete it. This removes the rectangle from the drawing.

In step 1, AutoCAD shows you exactly what the cursor is pointing to by highlighting objects that will be selected with the next click.

When drawing and erasing the rectangle, you were exposed to the most common processes you need to know about to work in AutoCAD: you selected a command from the menu bar, and then you selected points in the drawing area while following the messages in the command line. Commands from the toolbars work in the same way, as you'll see next.

UNDERSTANDING THE COMMAND-TOOL-OPTION RELATIONSHIP

One of AutoCAD's greatest assets is its ability to adjust to your way of performing tasks. If you prefer using toolbars, you can switch to the AutoCAD Classic workspace, which shows the older style toolbars and menu bar. If you stay with the 2D Drafting & Annotation workspace, the Ribbon offers the most commonly used functions in AutoCAD. Experienced users know how to use the command line and know nearly all the commands by heart.

The AutoCAD commands are really at the heart of its operations. Menu bar options, the Ribbon, and the toolbar buttons are just different ways to invoke AutoCAD commands. When you click a Ribbon tool or a menu option, you are really initiating a command through AutoCAD's menu system, sometimes with predetermined options already selected. In fact, if you watch the command line as you click an Application menu option or Ribbon button, you'll see that the messages in the command line are the same regardless of where you invoked the command.

For this reason, I'll often intermix the terms *tool*, *option*, and *command*, because at a practical level they are all the same. Just be aware that the Application menu options and Ribbon buttons invoke commands.

Starting a Drawing

What you do to start a new drawing in AutoCAD is a little different from what you do in other programs, so let's create a new file to see how it's done:



1. From the Application menu, choose File → Close to close the current file. When the message box appears asking you to save changes, click No. Notice that the toolbars disappear and that the AutoCAD drawing window appears blank when no drawings are open.
2. From the Quick Access toolbar, click the New tool to open the Select Template dialog box.
3. Select the `acad.dwt` template file, and then click Open to open a blank drawing window.
4. To give your new file a unique name, choose File → Save As from the Application menu to open the Save Drawing As dialog box.
5. Enter **My First Drawing**. As you type, the name appears in the File Name text box. By default, the file will be saved in the My Documents folder.
6. Click Save. You now have a file called `My First Drawing.dwg`, located in the My Documents folder. Of course, your drawing doesn't contain anything yet. You'll take care of that next.

The `acad.dwt` template file you selected in step 3 is really just an AutoCAD drawing file that has been set up with standard settings. AutoCAD uses those settings to create a new file. As you saw in the Select Template dialog box, you can choose from several such templates.

The new file you just created shows a drawing area roughly 31 units wide by 13 units high. The units can be inches, meters, or millimeters. You determine what the units are equivalent to through the Drawing Units dialog box, which you will learn about in Chapter 2.

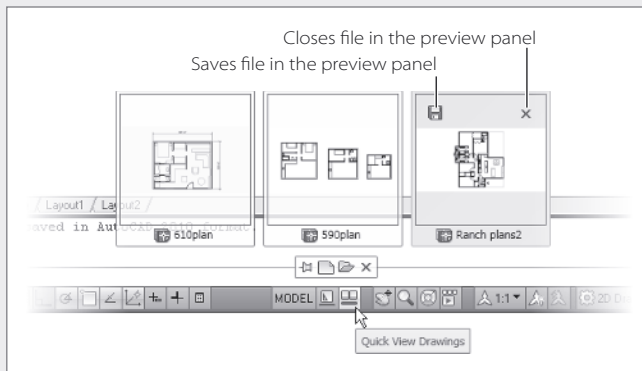
The drawing area you're presented with initially is your workspace, although you're not limited to the 75 by 45–unit area in any way. No visual clues indicate the size of the area, so to check the area size for yourself, move the crosshair cursor to the upper-right corner of the screen, and observe the value in the coordinate readout in the lower-left corner of the AutoCAD window. This is the standard AutoCAD default drawing area for using the `acad.dwt` drawing template for new drawings.

The coordinate readout won't show exactly 75 units by 45 units, because the proportions of your drawing area are not likely to be exactly 7.5 by 4.5. Factors such as the size and resolution of your display and the shape of the AutoCAD window affect the dimensions of the drawing area.

SWITCHING BETWEEN OPEN DRAWINGS AND THE MODEL AND LAYOUT VIEWS

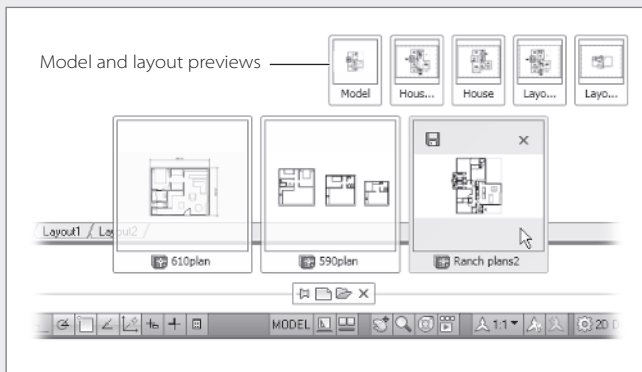
As with most Windows programs, you can have several drawings open at one time. AutoCAD offers the Quick View Drawings tool in the status bar, with which you can easily navigate among multiple drawings.

When you click the Quick View Drawings tool, you will see a row of drawing preview panels just above the status bar. These panels show the contents of the currently open drawings.



You can then click a preview panel of a drawing you want to switch to; the selected drawing appears in the drawing area. Click in the drawing area to make that drawing current.

When you hover over a preview panel with your cursor, additional preview panels appear, showing you the model and layout views of the drawing to which you are pointing.



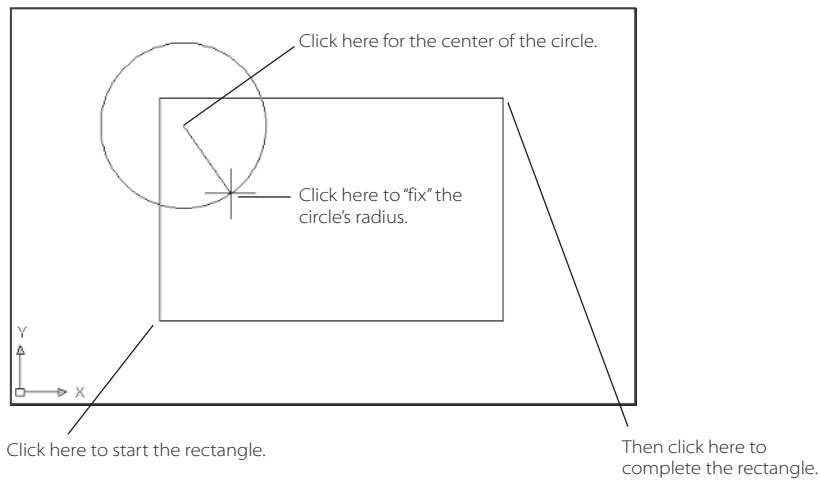
You can then click in a model or layout preview to have it display in the drawing area. Click in the drawing area to make the selected view the current one.



Next, try drawing a couple of objects just to get comfortable with drawing in AutoCAD. In the following exercise, you'll draw a rectangle; then you'll add a circle:

1. Click the Rectangle tool in the Draw panel. Remember that you can use the tooltips to help you locate a tool. You can also type **Rec**↵.
2. Click a point in the lower left of the drawing area, as shown in Figure 1.16. Don't worry about the exact location. You're just practicing right now. After clicking, you'll see that one corner of the rectangle follows the cursor.
3. Click a point in the upper right of the drawing area, as shown in Figure 1.16. Again, it's not important if you don't pick the exact location. The rectangle is now in place.

Figure 1.16
Drawing a circle

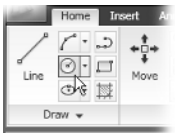


Now add a circle to the drawing:

1. Click the Circle tool in the Draw panel.
2. Click the location shown in Figure 1.16 to place the center of the circle. Now as you move the cursor, a circle appears whose radius follows the location of the cursor.
3. Click another point as shown in Figure 1.16 to "fix" the circle's radius in place. If you prefer, you can enter an exact radius value for a circle instead of clicking another point to "fix" the circle radius.

You now have a circle and a rectangle. As you can see, you create objects by placing key points of their geometry within the drawing area. For the rectangle, it was two corners; for the circle, it was the center and a location on the perimeter.

Once you've placed objects in the drawing, you can use a variety of tools to edit them. In later chapters, you'll learn more about those editing tools. In the following section, you'll learn how to get around in your drawing.



WHEN YOU NEED TO UNDO

The AutoCAD User Group International (AUGI) has conducted a survey to identify the most commonly used features in AutoCAD. The group found that the Undo feature and the Esc key were at the top of the list. Everyone makes mistakes, and it would be impossible to get any work done if it weren't for these two features. But Undo and the Esc key are just two of a set of features you can use to reverse something you have done. If you find you've done something unintentionally, you can use the following options to get out of trouble:

Backspace If you make a typing error, press the Backspace key to back up to your error, and then reenter your command or response.

Esc When you need to exit a command or a dialog box quickly, without making changes, just press the Esc key in the upper-left corner of your keyboard.

Undo If you accidentally change something in the drawing and want to reverse that change, click the Undo tool (the left-pointing curved arrow) in the Quick Access toolbar. You can also enter **U** at the command prompt. Each time you do this, AutoCAD undoes one operation at a time, in reverse order. The last command performed is undone first, then the next-to-last command, and so on. The prompt displays the name of the command being undone, and the drawing reverts to its state before that command. If you need, you can undo everything back to the beginning of an editing session.

Redo If you accidentally undo one too many commands, you can redo the last undone command by clicking the Redo tool (the right-pointing curved arrow) on the Quick Access toolbar. Or enter **Redo**.

Panning and Zooming to Adjust Your View

One of the greatest features of AutoCAD is its ability to draw accurately through a wide range of scales. For example, you can draw a football field, zoom into a blade of grass, and draw its cell structure. With such a broad range of views to work with, you need to be familiar with AutoCAD's view features. The Zoom and Pan commands are the most frequently used view features, so you'll want to become familiar with them right away.

If you have a typical mouse with a scroll wheel, you can use the wheel to zoom in and out of your drawing view. You can also use it to pan across your drawing. To zoom, scroll the wheel. To pan, click and drag the scroll wheel. You can obtain just about any view you need by using this method. You'll also want to know about several other view-related tools.

If you have a mouse that uses special drivers, you might not be able to use the wheel to control pans and zooms.

Try the following exercise to see how the Zoom tool works:

1. Click the magnifying glass icon in the View tab's Navigate panel to open the Zoom flyout.
2. Select Window from the Zoom flyout (Figure 1.17).
3. Click the first point indicated in Figure 1.18. You don't have to be too accurate.
4. Click the second point indicated in Figure 1.18. The area you selected expands to fill the drawing area. Notice that the transition to the zoomed view is smooth. This helps you keep track of exactly where in the drawing the zoom occurs.
5. Right-click and select Pan. Notice that the cursor changes to a hand icon.
6. Click and drag the cursor in the drawing area. Notice how the view moves as you drag the cursor.
7. Press Esc to exit the Pan command. You can also right-click and choose Exit from the context menu.
8. Finally, to get your original view of the overall drawing, open the Zoom flyout again as you did in step 1 and select Previous.

Figure 1.17

The Window tool on the Zoom flyout

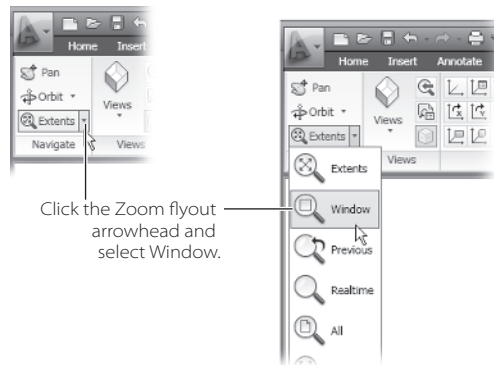
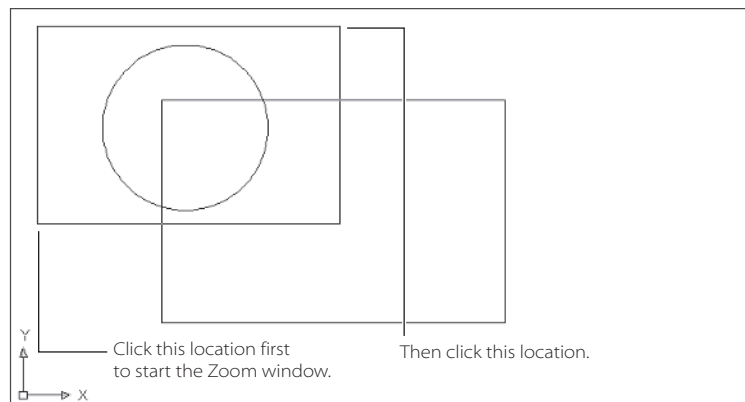


Figure 1.18

Selecting a Zoom window



Several other Zoom- and Pan-related commands exist, but those you've just tried are the ones you'll use 90 percent of the time. You can try the other Zoom and Pan options that you saw in the magnifying glass icon flyout in the Utilities panel. You'll also find options in the Zoom command-line options list:

[All/Center/Dynamic/Extents/Previous/Scale/Window/Object] <real time>:

Here is a list of the options you'll find in the magnifying glass icon flyout:

Extents This displays a view that encompasses all the objects in your drawing. This option ignores the limits of your drawing.

Previous This displays the previous view, just as Undo does for the Zoom command.

Realtime This is the default Zoom option. It displays a magnifying glass cursor. With this option, you can click and drag up or down to change your magnification in real time. You can right-click to access the other Zoom options, including Exit and Cancel.

All This displays the area of your drawing defined by the drawing limits plus any part of your drawing that falls outside the limits.

Dynamic This changes the display to an overall view. A rectangle also appears, which lets you select an area to which to zoom in. To change the size of the rectangle, click the rectangle. You can adjust the size of the rectangle and thus change the size of the zoom area. Click again to fix the rectangle size. Right-click, and choose Enter to zoom in to the selected area.

Scale This lets you zoom in or out by a specific value. It allows you to enter a specific view scale.

Center This allows you to center a location on the screen.

Object This lets you select a view area based on the area occupied by an object. For example, if you want to zoom in so that a particular object fills the display area, use this option.

In This is the same as using the Scale option and entering **2x** to magnify your view two times.

Out This is the same as using the Scale option and entering **0.5x** to view twice the current view area.

You can also start a zoom or pan by clicking the magnifying glass icon or hand icon in the status bar, or right-click and select Zoom or Pan at any time. You can right-click in the middle of a zoom to switch to a pan, and vice versa.

You've just about completed your first look at AutoCAD. You'll want to know about just a couple of other features. In the next section, I'll introduce a display feature in AutoCAD that helps you set up your drawing for printing.

ACCURATE PANNING

Realtime Pan is a great tool for quickly getting around in a drawing, but sometimes you need to pan in an exact distance and direction. A version of the Pan command lets you “nudge” your view to an accurate distance.

Type **-pan**. and you’ll see the following prompt:

Specify base point or displacement:

This is the prompt you’ll see for the Move or Copy command, though in this case you’re not affecting the objects in your drawing. When you select a point at this prompt, you’ll see a rubber-banding line in conjunction with the next prompt:

Specify second point:

The rubber-banding line indicates the direction and distance of your pan. As with any other command that displays a rubber-banding line, you can select points to indicate distance and direction, or you can enter coordinates. This enables you to specify exact distances and directions to pan your view.

Understanding the Layout View

Aside from the command prompt, you’ve probably noticed that AutoCAD behaves like most other Windows programs. But in one of its features AutoCAD is a little different from other Windows graphics programs. Specifically, at the bottom of the AutoCAD window, you’ll see some tabs.

The Model tab is currently active, telling you that you are in what is called *model space*. If you have followed the exercises in this chapter, you’ve been working in model space all along. Model space is the display you’ll use to do most of your drawing. It’s like your main workspace.



Clicking the Layout1 tab opens a view that is like a page preview with the added advantage of enabling you to draw within the preview. This preview is called a *paper space layout*. Besides previewing your drawing, Layout1 also gives you control over the printed scale. You can have multiple paper space layouts for different printed versions of your drawing. For example, you can have one layout for an 8½ by 11-inch sheet and another layout for an 11 by 17-inch sheet. Or, if you use multiple printers, you can have a layout set up for each printer.

The terms *paper space* and *layout* are often used interchangeably, which can cause a lot of confusion to new users. One way to think of these two terms is to say that “paper space is where you lay out your drawing.” It’s called *paper space* because it is where your drawing is translated into the paper shape, size, and layout of your drawing before you actually commit the drawing to paper.

Another way to look at paper space layouts is to think of them as a drawing mock-up area. Using a paper space layout, you can set up multiple views of the drawing you create in model space. You can also add a title to your drawing and include borders or other graphic design features.

Since paper space layouts are labeled with the “layout” prefix, as in Layout1, I’ll just use the term *layout* in this book.

Try the following exercise to see firsthand how layouts work:

1. Click the Layout1 tab at the bottom of the drawing area.



The drawing area changes to show your drawing, plus some additional display elements, as shown in Figure 1.19. The layout view shows how your drawing will look when it is printed.

2. Move the cursor over the rectangle that immediately surrounds the rectangle and circle drawing that you created earlier in the chapter.
3. Click the highlighted rectangle, and then press the Delete key. Your drawing disappears.
4. Click the Model tab to return to model space. You’ll see that the objects you drew are still there.
5. Click the Undo tool in the Quick Access toolbar twice to return to the Layout1 view and undo your deletion of the outer rectangle. The view of the rectangle and the circle returns.

6. Click the Model tab to return to the original drawing area.



Click this outline, and press the Delete key.

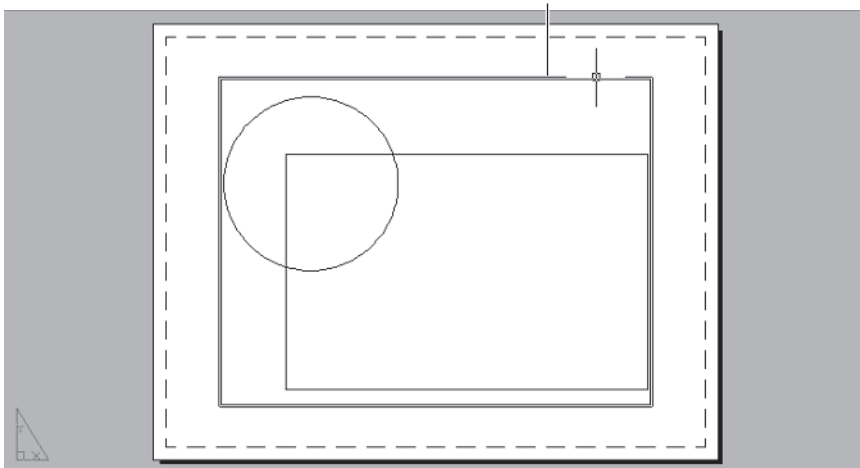


Figure 1.19

Your drawing as it appears in one of the layout views

In step 3, your entire drawing disappeared when you deleted the outer rectangle. This is because that rectangle is really a *viewport* into the drawing you created in model space. When you are in a layout view, a viewport acts like a window into your drawing. By default, AutoCAD creates a single viewport to show your drawing, but you can have multiple viewports of various sizes, each displaying different parts of your drawing. When you deleted that viewport, you essentially closed your view into your drawing in the model space, so your rectangle and circle disappeared from view. They didn't really go anywhere—it's just that your view of them was deleted.

You might have also noticed that a layout displays a white area over a gray background. This white area represents the area of the paper onto which your drawing will be printed.

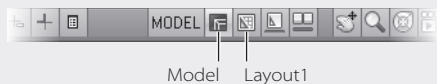
The white area also shows a dashed line close to its edge. This dashed line represents the printable area of your paper. The current default printer connected to your computer determines both the paper area and the dashed line.

If you have a printer that accepts paper of different sizes, you can select a different sheet size, and the new sheet size will be reflected in the white area shown in the layout. You'll learn how to control sheet sizes and layouts in Chapter 12.

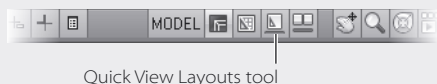
As you might guess, you use the layout to lay out your drawing for printing. You can print from the model space if you want, but you have much more control over your printer output from a layout.

TURNING OFF THE LAYOUT TABS

AutoCAD can be set up to hide the model and layout tabs at the bottom of the drawing area. To hide the tabs, right-click any tab, and select Hide Layout and Model Tabs. With the tabs hidden, you can still switch from model space to a layout by clicking the Model or Layout1 tools that appear in the status bar.



If you have multiple layouts, you can use the Quick View Layouts tool just to the right of the Layout1 tool in the status bar to switch between layouts.



To turn the tabs back on, right-click the Model or Layout1 tool, and then select Display Layout and Model Tabs. The tabs will appear below the drawing area.

For more on the Quick View Layouts tool, see “Switching Between Layouts” in Chapter 12.

Understanding How Command Options Work

Nearly every AutoCAD command offers a set of options shown at the command-line prompt. These options let you alter the behavior of a command to suit your current drawing. To see how command options work, and to get a feel for the drawing process in general, in this exercise you'll draw an arc and then place it exactly in the inside corner of the rectangle:

1. Click the Arc tool in the Draw panel.

The prompt `Specify start point of arc or [Center]:` appears, and the cursor changes to a crosshair cursor.



2. If you examine this `Specify start point of arc or [Center]:` prompt, you'll see that the start point contains two options. The default option is stated in the main part of the prompt: `Specify start point`. If other options are available, they appear within brackets, as in the `[Center]` option that appears in the Arc tool's command prompt. This `[Center]` option tells you that you can also start your arc by selecting a center point instead of a start point. If multiple options are available, they appear within the brackets and are separated by slashes (/). The default is the option AutoCAD assumes you intend to use unless you tell it otherwise.
3. Enter `C↵` to select the Center option. The prompt `Specify center point of arc:` appears. Notice that you had to enter only the `C` and not the entire word `Center`.

When you see a set of options in the command line, note their capitalization. If you choose to respond to prompts by using the keyboard, these capitalized letters are all you need to enter to select that option. In some cases, the first two letters are capitalized to differentiate two options that begin with the same letter, such as `LAYER` and `LTYPE`.

4. Now select a point for the center of the arc, as shown in Figure 1.20. The prompt `Specify start point of arc:` appears. You'll also see a rubber-banding line from the center point you just selected to your cursor.

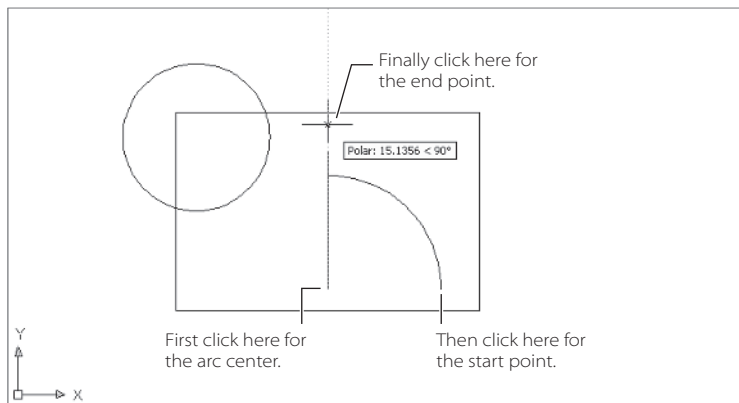


Figure 1.20
Using the Arc
command

If you point directly to the right, you'll see that the rubber-banding line snaps to an exact horizontal orientation, and you'll see a tooltip appear at the cursor. This is a feature called *polar tracking vector*, and it helps you draw in exact horizontal and vertical directions, much like a T square and a triangle. The tooltip shows your cursor's location relative to the center point you just selected. It displays this information in what is known as a *polar coordinate*. You can learn more about polar coordinates in Chapter 2.

5. With the rubber-banding line pointing to the right, click to select a point, as shown earlier in Figure 1.20. The prompt *Specify end point of arc or [Angle/chord Length]:* appears.
6. Move the mouse, and a temporary arc appears, originating from the start point of the arc that you just selected and rotating about the center of the arc.

As the prompt indicates, you now have three options. You can enter an angle, a chord length, or the endpoint of the arc. The prompt default, to specify the endpoint of the arc, lets you select the arc's endpoint. The cursor is in Point Selection mode, telling you it is waiting for point input. To select this default option, you need only select a point on the screen indicating where you want the endpoint.

7. Move the cursor so it points vertically from the center of the arc. You'll see the polar tracking vector snap to a vertical position, as shown in Figure 1.20.
8. Click any location with the polar tracking vector in the vertical position. The arc is now fixed in place.

As you can see, AutoCAD has a distinct structure in its prompt messages. You first issue a command, which in turn presents options in the form of a prompt. Depending on the option you select, you get another set of options, or you are prompted to take some action, such as selecting a point, selecting objects, or entering a value. The prompts offer a great deal of help by “prompting” you to take an action.

Getting Help

AutoCAD provides a good set of help options that can answer most of the questions you might have while working on a drawing. If you're stuck with an AutoCAD problem, give the AutoCAD help options a try.

To get more familiar with the AutoCAD Help window, try the following:

1. Press F1 to open the AutoCAD 2010 Help window.
2. Click the Contents tab, which contains a table of contents. The other two tabs, Index and Search, provide assistance in finding specific topics (Figure 1.21).
3. Scan down the screen until you see the topic Command Reference, and double-click it. Both panels of the Help window change to show more topics.

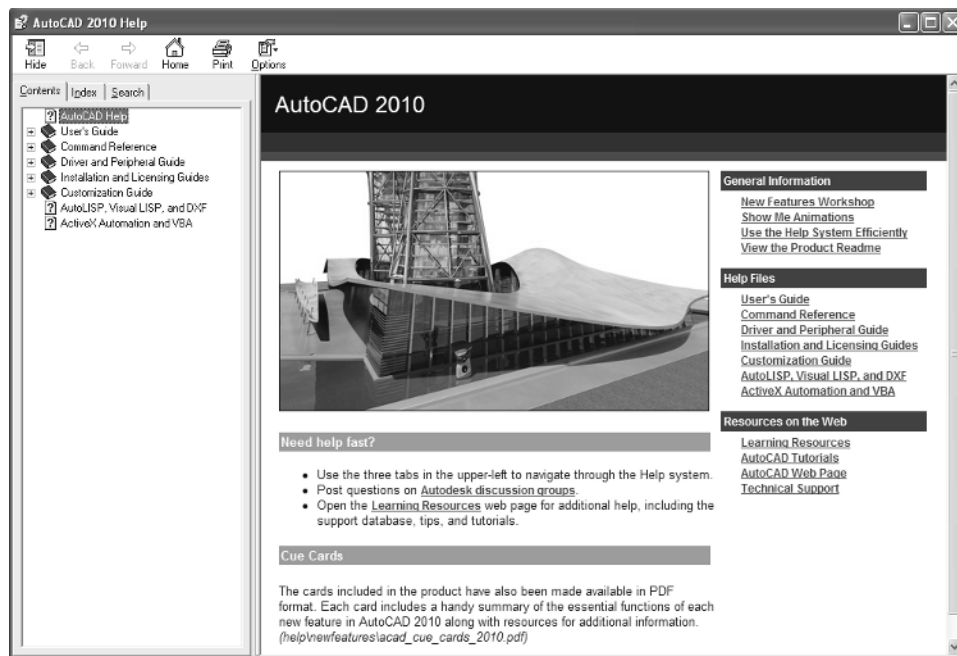


Figure 1.21
The AutoCAD 2010
Help window

4. Expand the Commands list, and then click the item labeled **C** near the top of the command listing. The panel to the right changes to display a list of command names that start with the letter **C**.
5. Look down the list, and click **Copy**. A description of the **Copy** command appears.

You also have the **Concept**, **Procedure**, and **Quick Reference** tabs along the top of the panel on the right. These options provide more detailed information about how to use the selected item. If you want to back up through the steps you have just taken, click the **Back** button on the toolbar.

Using the Search Tab

If you're a beginning AutoCAD user looking for help, the Help window's table of contents might not be as useful as it could be. To use it, you have to know a little about what you want to find. Sometimes it's quicker to use the **Search** feature of the Help window:

1. Click the **Search** tab in the left panel. If this is the first time you've selected the **Search** tab, you might see a message telling you that AutoCAD is setting up an index for searches.
2. Enter **Change** in the text box at the top of the **Search** tab, and then click **Ask** or press **↵**. The list box displays all the items in the Help system that contain the word *Change*.

In this example, the list that is returned is quite large. You can use Boolean AND, OR, NEAR, and NOT in conjunction with other keywords to help filter your searches. Once you've found the topic you're looking for, select it from the Select Topic list, and then click the Display button to display the topic information.

The Index tab lets you find specific topics in the AutoCAD Help system by entering a word in a list box.

Using Context-Sensitive Help

AutoCAD also provides context-sensitive help to give you information about the command you are using. To see how this works, try the following:

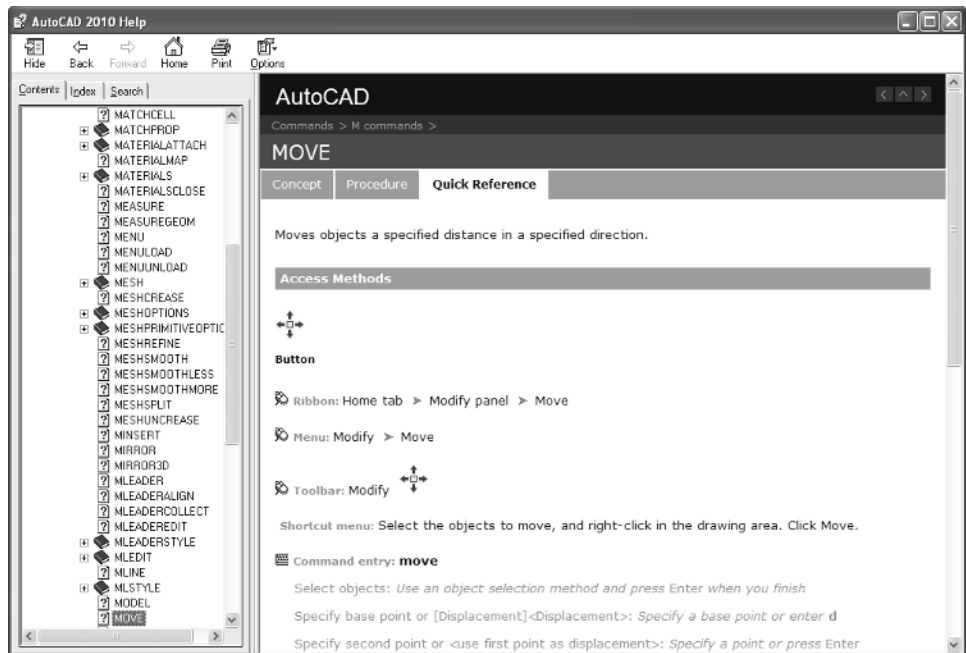
1. Close or minimize the Help window to return to the AutoCAD window.
2. Click the Move tool in the Modify panel to start the Move command.
3. Press F1 or choose Help from the menu bar to open the Help window. A description of the Move command appears in the panel on the right (Figure 1.22).
4. Click the Close button, or press the Esc key.
5. Press the Esc key to exit the Move command.

If you gain some confidence with AutoCAD's Help window, you can go far in helping yourself learn basic AutoCAD commands. But if you really get stuck, this book will help you get past your barriers.



Figure 1.22

The Help window showing information on the Move command



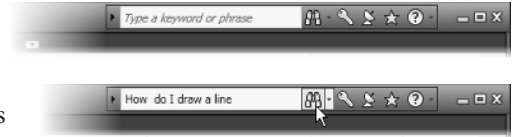
Staying Informed with the InfoCenter

Nearly every major Windows program is somehow linked to the Internet to offer the latest news and updates for software. AutoCAD provides the InfoCenter, which appears as a bar in the upper-right corner of the AutoCAD window.

The InfoCenter provides a way to stay informed about the latest software updates and support issues for AutoCAD. Enter a keyword or phrase in the input box and then click the binoculars icon to get a list of sources for your query.

You can then select a topic from the list to find the information you need. If you click the InfoCenter's Communication Center tool, the one that looks like a satellite dish, you'll open a list of general topics available.

The list is divided into main topics shown as gray title bars. You can click the arrow to the right of a title bar to close or open a topic.



Finding Additional Sources of Help

The Help window and the InfoCenter are the main source for reference material, but you can also find answers to your questions through the other options in the Help menu. To open the Help menu, click the arrowhead to the right of the question mark icon in the InfoCenter.

Here is a brief description of the other Help menu options:



Info Palette (AutoCAD 2010 LT only) The Info palette is a pop-up window that offers immediate help with the command you are using. It's helpful for first-time users. When you issue a command with the Info palette open, you will see an option or a list of options in the palette. These options offer a brief tutorial or other information about the current command.

New Features Workshop This option provides descriptions and tutorials focused on the new features found in AutoCAD 2010. You can update this unique support tool through the Autodesk website.

Additional Resources This options provides online help from Autodesk's website, including a support knowledge base, online training resources, and the Developer Center. There is also a link to the Autodesk User Group International website.

Send Feedback Click here to open a web page that allows you to send comments about AutoCAD directly to Autodesk.

Customer Involvement Program This program tracks your use of AutoCAD and its interaction with your computer system. This information is used to help determine future changes to AutoCAD. You can participate anonymously or supply contact information.

About This options provides information about the version of AutoCAD you are using.

Summary

AutoCAD is a rare example of a program that has successfully made the transition from a text-based DOS program to a fully Windows-compliant one. The trick to using AutoCAD is in learning how to use it to input exact distances and directions. Once you've mastered the input methods AutoCAD offers, you're well on your way to producing accurate drawings. If you find you have questions along the way, this book will provide the right amount of help, but don't forget the AutoCAD Help system. It is full of great information and can be a real lifesaver.

That does it for your introduction to AutoCAD. You might want to practice what you've learned thus far. When you're ready to get down to some serious drawing, check out the next chapter. There you'll be introduced to the drawing tools you'll need to produce accurate drawings.