

**In This Chapter**

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**1.1 WHAT IS AUTOCAD®?**

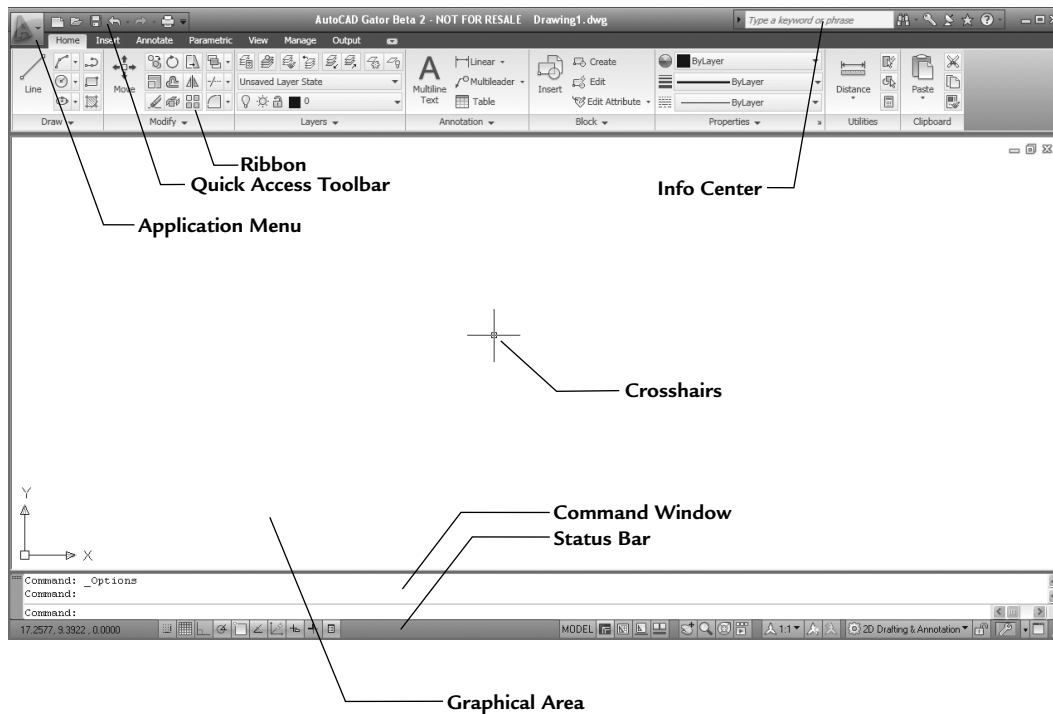
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- AutoCAD® was one of the first Computer Aided Design/Drafting (CAD) software applications in the world.
- The first version of AutoCAD was released at the end of 1982, and it was designed to be used only on PCs.
- Since 1982, AutoCAD has increased dramatically on a global scale.
- Users can draw both two-dimensional (2D) drawings and three-dimensional (3D) designs in AutoCAD.
- There is another version of AutoCAD called AutoCAD LT that is dedicated to 2D drafting only.

## 1.2 HOW TO START AUTOCAD® 2010



- There are two ways to start AutoCAD 2010:
  - While installing AutoCAD 2010, the installation program will create a shortcut on your desktop. To start AutoCAD, simply double-click this icon.
  - From the **Windows** taskbar click **Start/All Programs/Autodesk/AutoCAD2010/AutoCAD2010**.
- AutoCAD will start with a new, open drawing file, which will look like the following:

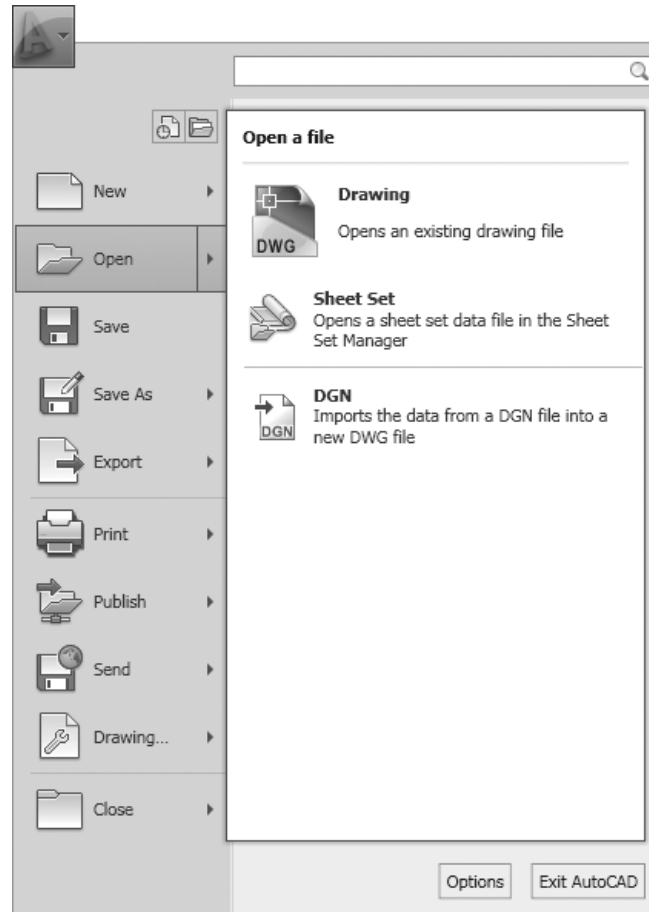


## 1.3 UNDERSTANDING THE AUTOCAD® 2010 INTERFACE

- The primary methods to reach commands in AutoCAD 2010 will be through **Ribbons** and the **Application Menu**.
- You will use **Ribbons** instead of the normal toolbars.
- This interface will give you more space in the **Graphical Area**, which is your drawing area.

## Application Menu

- Click on the **Application Menu**, and you will see the following:



- Using this menu, you can:
  - Create a new file
  - Open an existing file
  - Save the current file
  - Save the current file under a new name (Save As) and/or in a different folder
  - Export the current file to a different file format
  - Print the current file
  - Publish the current file
  - Send the current file to eTransmit or email
  - Use all the functions related to your drawing

- Close the current file
- Exit AutoCAD

### Quick Access Toolbar

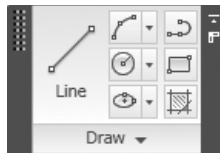
- The **Quick Access Toolbar** is the small toolbar located at the top left of the screen:



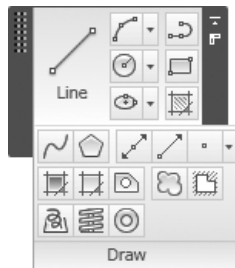
- Using this toolbar, you can:
  - Create a new file
  - Open an existing file
  - Save the current file
  - Undo and redo
  - Print the current file

### Ribbons

- **Ribbons** consist of two parts:
  - Tabs
  - Panels
- For example, the **Home** tab consists of eight panels: **Draw**, **Modify**, **Layers**, **Annotation**, **Block**, **Properties**, **Utilities**, and **Clipboard**.
- In each tab you will see different panels.
- The following is the **Draw** panel:



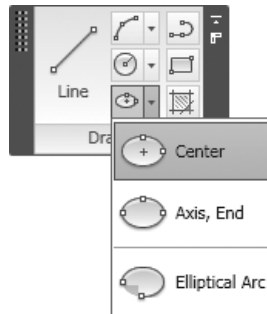
- Some panels (such as the **Draw** panel) have a small triangle near the title, which indicates that there are more buttons available. If you click on it you will see the following:



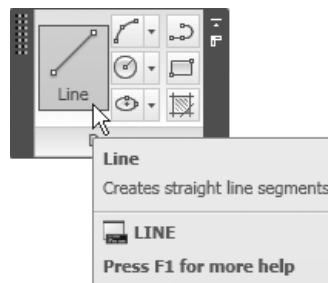
- At the lower left-hand corner of the panel you will see a small pushpin. If you click on it, this will be the default view. To return to the previous view, simply click the pushpin again.



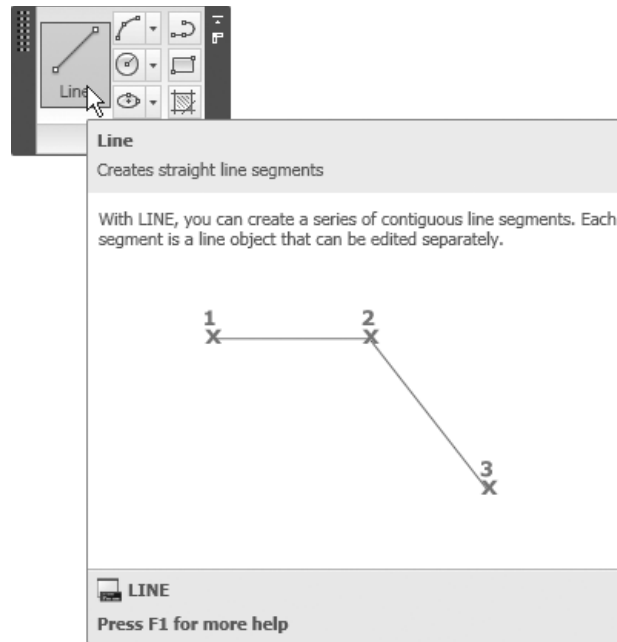
- Some panel buttons may have a small triangle just to the right, which means there are additional options, as shown here:



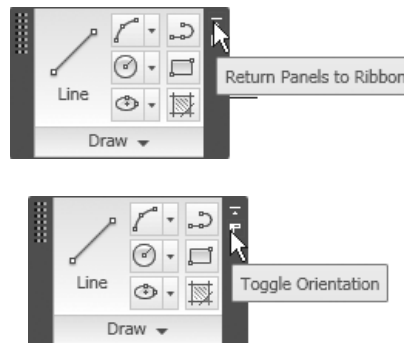
- If you hold your cursor over any button for one second, a small help screen appears:



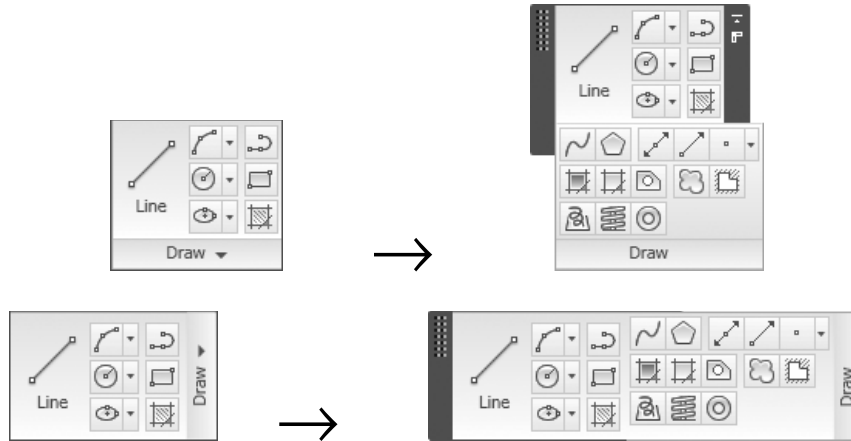
- However, if you hold your cursor over the button for three seconds, you will see an extended help screen:



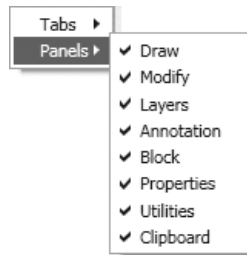
- Panels can be docked or floating. By default, all panels are docked. To make a panel a floating panel, simply click on the name of the panel, hold it, and drag it to its new location.
- If all panels remain docked, you will *not* see any panel outside the tab it belongs to. But if you make any panel a floating panel, then you will be able to see it in all other tabs.
- While the panel is floating, you will see two small buttons on the right-hand side. The following image shows the function of each one:



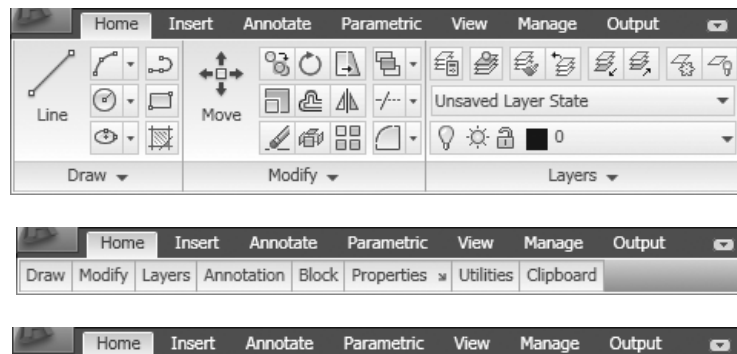
- All panels have two orientations: a vertical orientation and a horizontal orientation. The following illustration shows the tabs and panels that appear for both orientations.



- The number of tabs and panels are predefined by default.
- You can turn off/on any tab/panel by right-clicking on any tab/panel and then selecting the desired tab/panel to be turned on or off.



- **Ribbons** have three different shapes. You can alter the shapes by clicking the small arrow at the right:

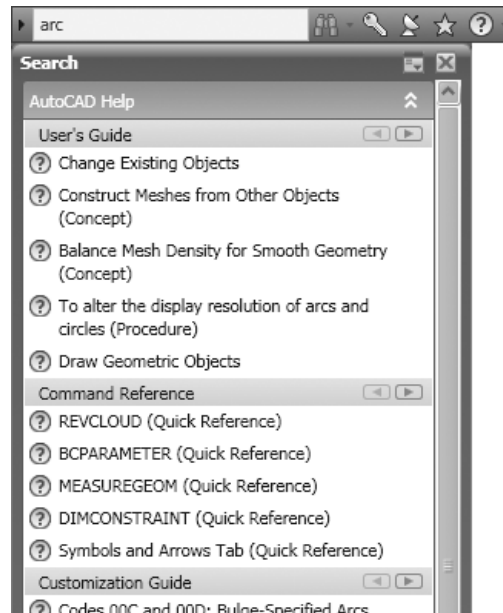


### InfoCenter

- At the top-right part of the screen, you will see the **InfoCenter**:



- The **InfoCenter** gives you the opportunity to type in keywords that will enable AutoCAD to search both online and offline resources and provide you with a list of related help topics. See the following example:



- You may still use the conventional **Help** search by clicking the arrow at the right-hand side of the **InfoCenter**:



### Command Window

- If you used AutoCAD 25 years ago, the only way to input commands was to use the **Command Window**. You had to memorize all of the AutoCAD commands and type them in. There were no **menus**, **toolbars**, **panels**, or **ribbons**. Although you can still type in the commands, we don't recommend that method.



### Graphical Area

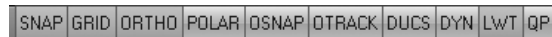
- The **Graphical Area** is where you do your actual drawing. You use the crosshairs to specify points in the X,Y plane.
- You can monitor the coordinates of the crosshairs using the left side of the **Status Bar**.

### Status Bar

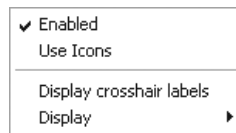
- The **Status Bar** in AutoCAD contains many functions that will help you draft more precisely. We will discuss most of the buttons on the **Status Bar** throughout this book.
- There are two views for the **Status Bar**:
  - By default (Icons)



- Buttons



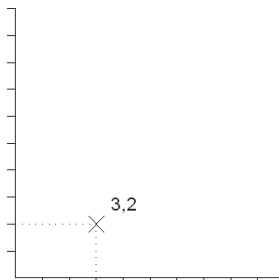
- To switch views, right-click the **Status Bar** to alternate between buttons and icons.



- If you select **Use Icons**, the view will change accordingly.

## 1.4 POINTS IN AUTOCAD®

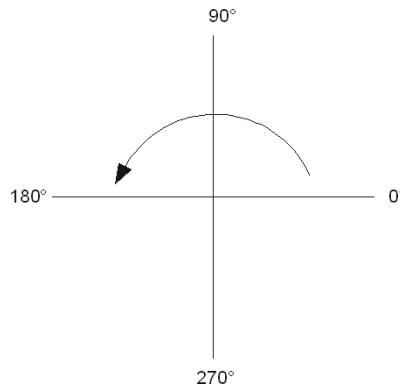
- Points are defined (and saved) in AutoCAD using the **Cartesian coordinate system**.
- The coordinates will look something like **3.25,5.45**, which is the format of **X,Y**.
- So the first and most traditional way of specifying points in AutoCAD is to type the coordinates whenever you are asked to do so, by typing X,Y (pronounced X comma Y). See the following illustration:



## 1.5 AUTOCAD® DEFAULT SETTINGS

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- Sign convention: positive is up and right.
- Angle convention: positive is counterclockwise (CCW) starting from the east (i.e., 0 angle). See the following illustration:



## 1.6 THINGS YOU SHOULD KNOW ABOUT AUTOCAD®

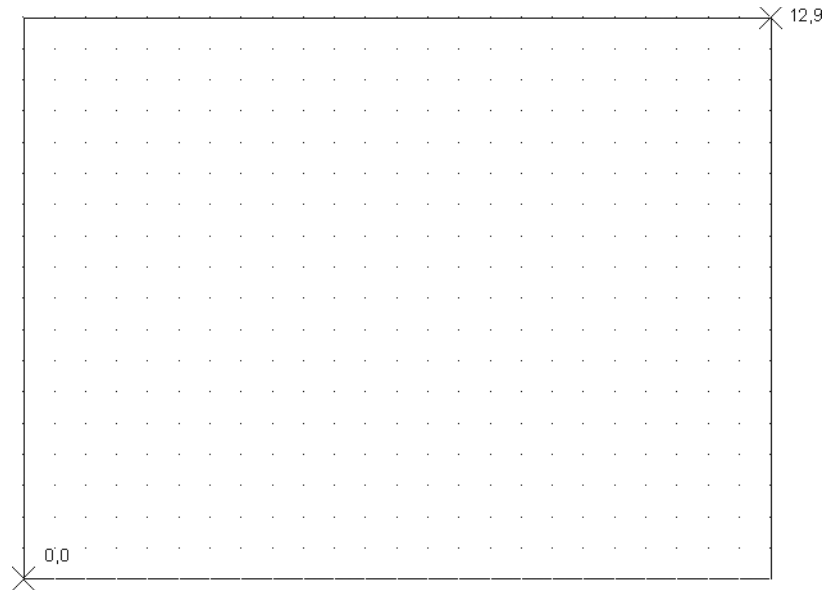
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- The mouse is the primary input device:
  - The left mouse button is always used to select and/or click.
  - The right mouse button, when clicked, offers a drop-down menu.
- The mouse wheel has zooming functions:
  - Zoom in on your drawing by moving the wheel forward.
  - Zoom out of your drawing by moving the wheel backward.
  - Pan (i.e., move through the drawing) by pressing the wheel and holding it and then moving the mouse.
  - Zoom to the edges of your drawing by double-clicking the wheel.
- If you type an AutoCAD command or any input in the **Command Window**, you have to press the [Enter] key to execute it.
- [Enter] = [Spacebar] in AutoCAD.
- To repeat the last AutoCAD command, press [Enter] or [Spacebar].
- To cancel any AutoCAD command, press [Esc].

## 1.7 DRAWING LIMITS

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- AutoCAD offers users an infinite drawing sheet on all sides.
- When you start a new AutoCAD drawing, your viewpoint will be at 0,0,1.
- You are looking at the X,Y plane, using a camera's lens; hence you will see part of your infinite drawing sheet. This part is called the **limits**. See the following:



- In this example, you can see that the **limits** of the drawing are from 0,0 (lower left-hand corner) to 12,9 (upper right-hand corner). This is your working area.
- We will learn how to change **limits** in upcoming chapters.

## 1.8 UNITS AND SPACES

- One of the vague facts about AutoCAD is that it does not deal with a certain length unit while drafting. Take note of the following points:
  - AutoCAD deals with AutoCAD units.
  - An AutoCAD unit can be anything you want. It can be a meter, centimeter, millimeter, inch, or foot.
  - All of these options are correct as long as you remember your chosen option and stay consistent in both X and Y.
- Also, there are two spaces in AutoCAD, **Model Space** and **Paper Space (Layout)**. You can switch between the two spaces using the **Status Bar**.



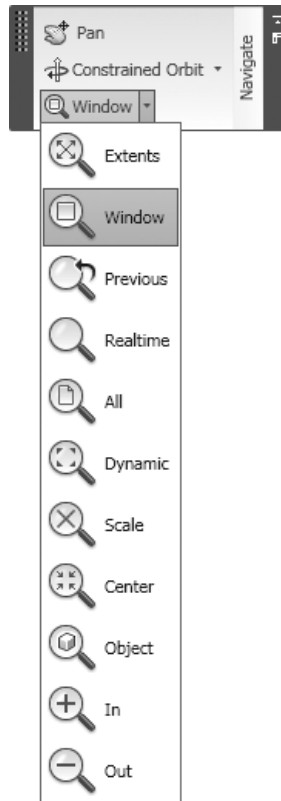
Paper Space (Layout) button

Model Space button

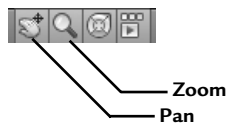
- By default, when you start a new drawing file, you are in **Model Space**.
- In **Model Space** you can create and modify your drawing.
- Once you are ready to make a hardcopy of your drawing file, switch to the **Paper Space (Layouts)** so you can prepare your page setup.
- This is the moment you need to ask, “*What is my unit assumption?*” so that you can properly scale your drawing.
- We will discuss printing in a later chapter.

## 1.9 VIEWING COMMANDS

- We already discussed using the mouse wheel for zooming in, zooming out, and panning.
- You can also zoom in, zoom out, and pan using the zooming and panning commands.
- If using **Ribbons**, make sure you are in the **View** tab, and, using the **Navigate** panel, select the first button on the left, or the small arrow, to see a list of zooming commands:

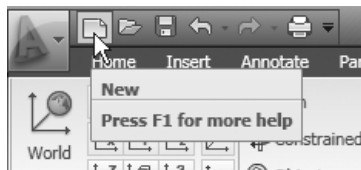


- **Zoom Extents** is used to zoom to all objects.
  - **Zoom Window** is used to specify a rectangle. By specifying two opposite corners, whatever is inside the rectangle will look larger.
  - **Zoom Previous** is used to restore the previous view, up to the last ten views.
  - **Zoom Realtime** is done by clicking the left button on the mouse and holding it. If you move forward, you are zooming in; if you move backward, you are zooming out.
  - **Zoom Dynamic** is used with the **Zoom Window** first. You will see the whole drawing and your current place (shown as a dotted green line), go to the new location, and press [Enter].
  - **Zoom Scale** is used to input a scale factor. If you type in a number less than 1, you will see the drawing smaller. If the scale factor you type in is greater than 1, you will see the drawing larger. If you put the letter x after the number (e.g., 2x) the scale will be relative to the current view.
  - **Zoom Center** is used to specify a new center point for the zooming, along with a new height.
  - **Zoom Object** is used to zoom to certain selected objects. AutoCAD will ask you to select objects and the selected objects will fill the screen.
  - **Zoom In** is not really a zoom option, but rather a programmed option equal to the **Zoom Scale** with a scale factor of 2x.
  - **Zoom Out** is just like **Zoom In**, but with a zoom factor of 0.5x.
- Also on the Status Bar, you can use the following two buttons:

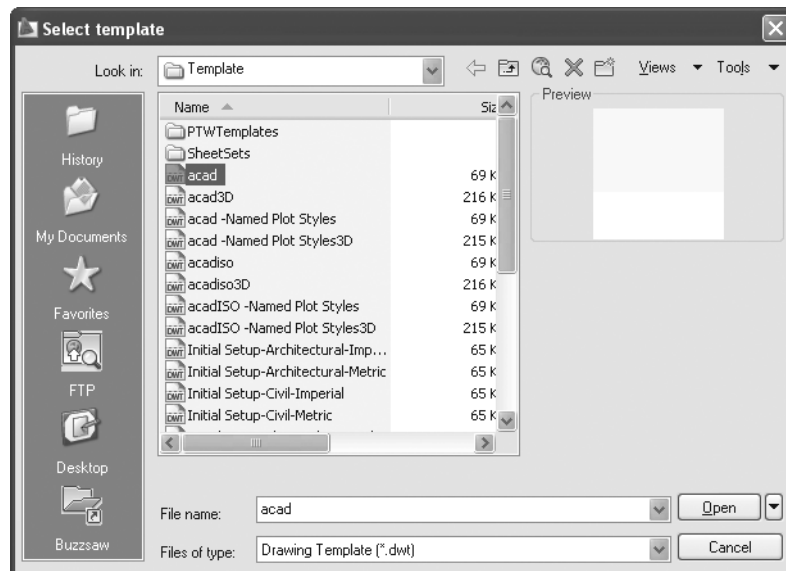


## 1.10 CREATING A NEW FILE

- To create a new file based on a premade template, click on the **New** button on the **Quick Access Toolbar**:



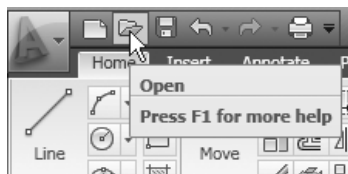
- The following dialog box will appear:



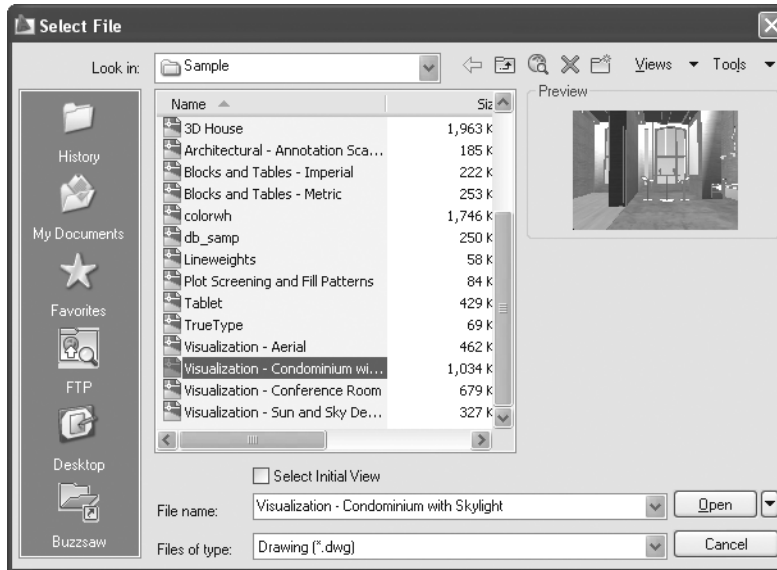
- This dialogue box will allow you to select the desired template.
- AutoCAD template files have the extension *\*.dwt*.
- AutoCAD 2010 has lots of premade templates you can use, or you can create your own template.
- For now, we will use *acad.dwt* for some of our exercises.
- Click **Open** to start a new file.

## 1.11 OPENING AN EXISTING FILE

- To open an existing file for further editing, click the **Open** button from the **Quick Access Toolbar**.



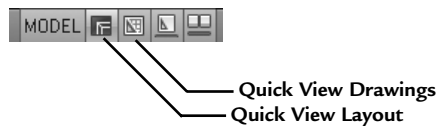
- The following dialog box will appear:



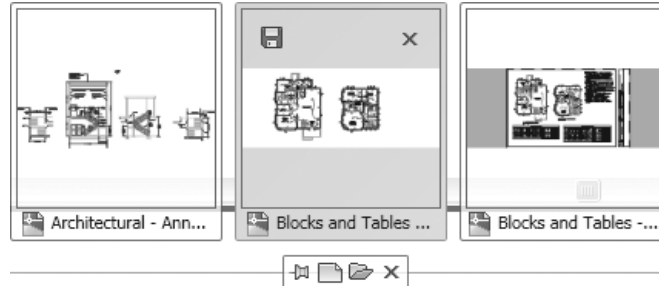
- Specify the hard drive, and the folder your file resides in.
- AutoCAD drawing files have the extension *\*.dwg*.
- If you want to open a single file, select the file and click open (you can also double-click on the file's name).
- If you want to open more than one file, select the first file name, then hold the [Ctrl] key on the keyboard, and click the other file names.
- You can open as many files as you wish.
- When you are done, click **Open**.

### Quick View

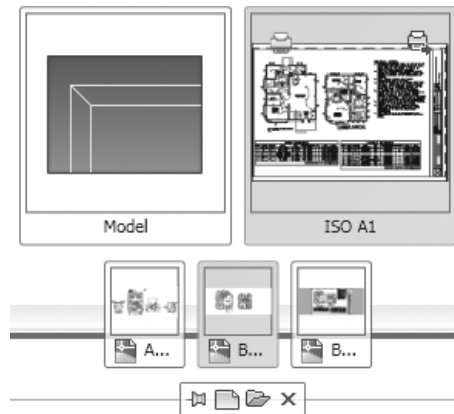
- If you open more than one file, you can use two functions in the **Status Bar**: **Quick View Drawings** and **Quick View Layouts**.



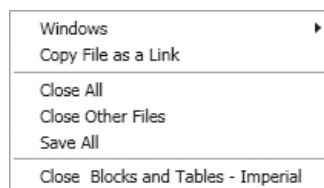
- If these two buttons are switched on, you will see the following:



- You will see all of the open files.
- In order to jump from one file to another, click the window of the desired file.
- When you hover over any of the files, you will see the layouts of the file, and the picture will change to:



- Also, you will see a small toolbar at the bottom of the screen that will enable you to:
  - Close the **Quick View**
  - Open a file
  - Start a new file
  - Pin **Quick View Drawings**
- If you right-click the **Quick View** button of any file, the following menu will appear:

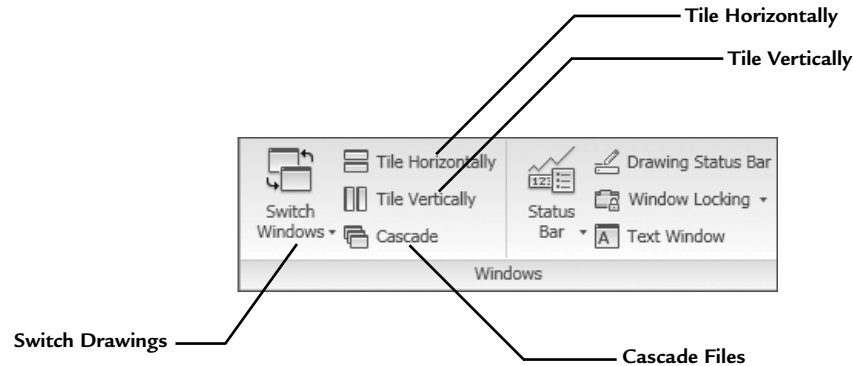




- You can close all files
- Close other files except the current file
- Save all files
- Close the current file

### Organizing Files

- Make sure you are in the **View** tab on the **Ribbon**. There are several ways to organize the files by using the **Windows** panel.



- The **Switch Drawings** button will show you a list of the opened files. The current file will be listed with a checkmark (✓). If you want another file, select the name of the desired file.
- The rest of file commands, such as **Save**, **Save As**, and **Exit**, are identical to those in other Windows applications.

NOTE

## INTRODUCING AUTOCAD® 2010



### Exercise 1

1. Start AutoCAD 2010.
2. From the **Quick Access Toolbar**, click the **Open** button.
3. Go to the **Samples** folder under the AutoCAD 2010 folder. Open the following three files:
  - a. Blocks and Tables—*Metric.dwg*
  - b. *dbsamp.dwg*
  - c. Architectural and Annotation Scaling—*Multileader.dwg*
4. Using **Quick View Drawings**, jump from one file to another. Using **Quick View Layouts**, take a look at the layouts in each file.
5. Using one of the open files, use the mouse wheel—like any of the other methods discussed in this chapter—and zoom in, zoom out, and pan.
6. Using the right-click menu on the **Quick View Drawings**, close all files without saving.

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**CHAPTER REVIEW**

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1. You can close all open files using one command:
  - a. True
  - b. False
2. CAD stands for \_\_\_\_\_.
3. In AutoCAD there are two available spaces: **Model Space** and **Paper Space**. Which of the following statements is true?
  - a. You draw on **Model Space** and print from **Paper Space**.
  - b. You draw in **Paper Space** and print from **Model Space**.
  - c. There is only one space in AutoCAD.
  - d. **Model Space** is only for 3D design.
4. Positive angles start from the north.
  - a. True
  - b. False
5. AutoCAD is one of the few software applications that allows users to:
  - a. Connect to the Internet.
  - b. Type commands using the keyboard.
  - c. Accept Cartesian coordinates.
  - d. Create positive angles that are CCW.
6. \_\_\_\_\_ is a tool in AutoCAD that allows users to see all open files in small windows.

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**CHAPTER REVIEW ANSWERS**

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1. a
2. Computer Aided Design/Drafting
3. a
4. b
5. b
6. **Quick View Drawings**