

LESSON 2

LEARNING OBJECTIVES

After completing this lesson, you will be able to:

1. Create and use a Template.
2. Select a Command.
3. Draw, Select, and Erase Objects.
4. Start a New Drawing.
5. Open an Existing Drawing.
6. Open Multiple Drawings.
7. Using Floating File Tabs.
8. Save, Backup, and Recover a Drawing.
9. Exit AutoCAD.

Creating a Template

The first item on the learning agenda is **how to create a template file** from a drawing file. **This is important:** You will need this template to complete Lessons 2 through 8.

First you need to download a drawing file.

A. Type the website address shown below into your web browser, then press **<Enter>**.

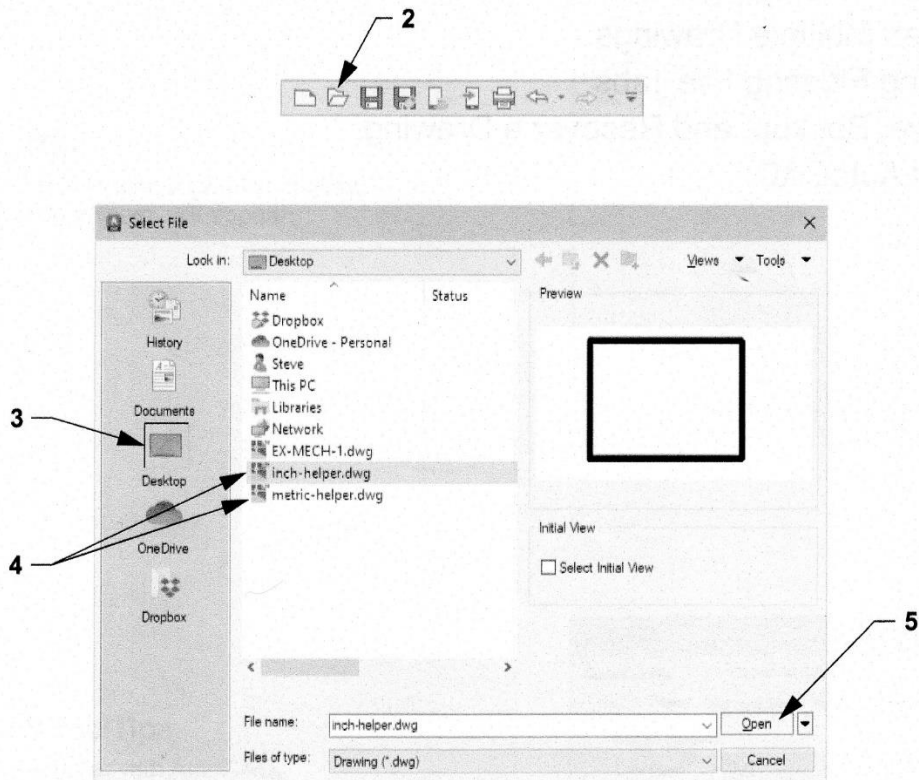
<https://books.industrialpress.com/ext/downloads/acad/workbook-helper.zip>

B. The workbook-helper file will download automatically.

C. Save the downloaded file to your desktop, then unzip the file to extract both drawings.

Now you will create a template. (This will be a very easy task.)

1. Start AutoCAD, if you haven't already. (Refer to page 1-2.)
2. Select the **Open** tool from the **Quick Access Toolbar**. (Refer to page 1-10.)



3. Select the **Desktop** directory
4. Select either the **inch-helper** or **metric-helper** drawing.
5. Select the **Open** button located in the lower right corner.

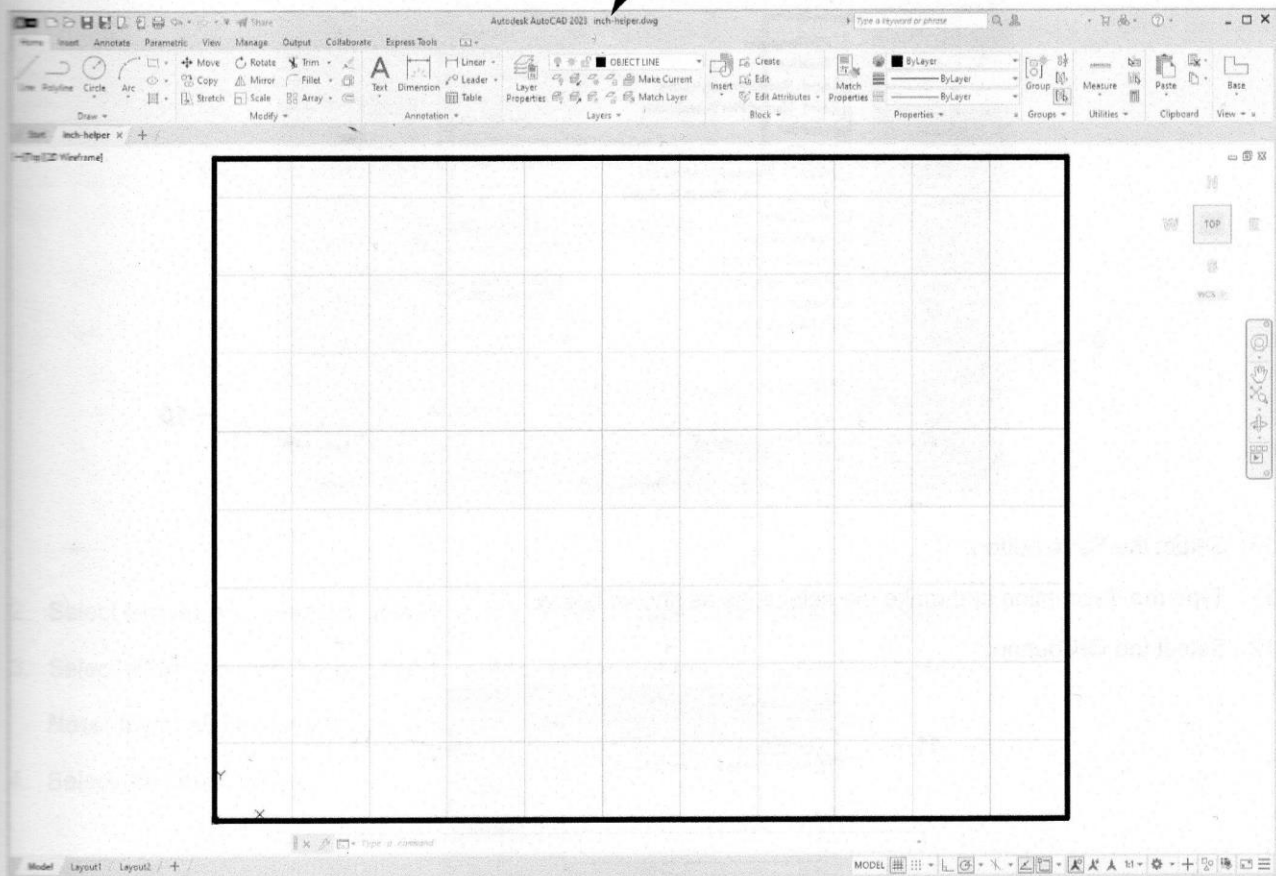
Your screen should appear as shown below.

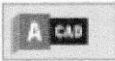
I created the **Rectangular shape** that appears in the drawing area. I have designed the exercises that follow to fit on a 11" X 8-1/2" sheet of paper for inch users, or to fit on a 297mm x 210mm sheet of paper for metric users. This will enable you to easily print them on any letter or A4 size printer. The rectangle represents an 11" X 8-1/2" or 297mm x 210mm sheet of paper, depending on which file you use. While completing the exercises within this Workbook, please try to draw all objects within this rectangle.

The criss-cross lines are **Grids**. I have set them to display every 1 inch vertically and horizontally for inch users, and every 25mm for metric users. You will learn more about Grids in Lesson 3. For now, notice that the grids are 11 horizontally and 8.5 vertically for inch users, and 11.88 horizontally and 8.4 vertically for metric users. Grids are merely a visual aid and will not print. The size may be changed at any time and they may be turned **on** or **off** easily by selecting the **"Grid"** button on the Status Bar, or by pressing the **<F7>** key. (Refer to page 1-13.)

The next step is to create a template from this drawing.
Continue on to Step 6.

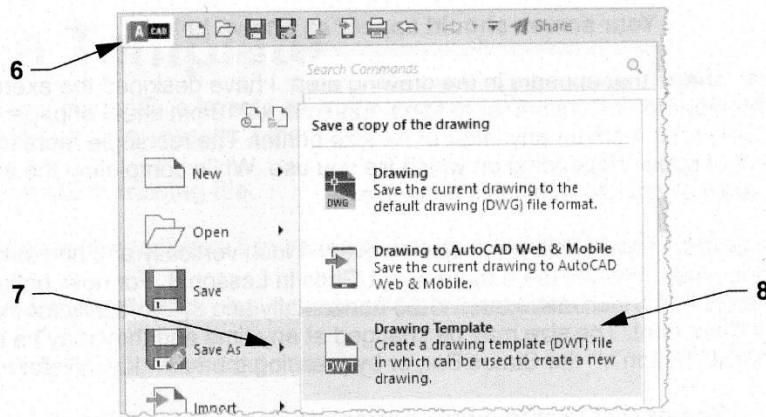
Notice the **drawing file name** is displayed here.



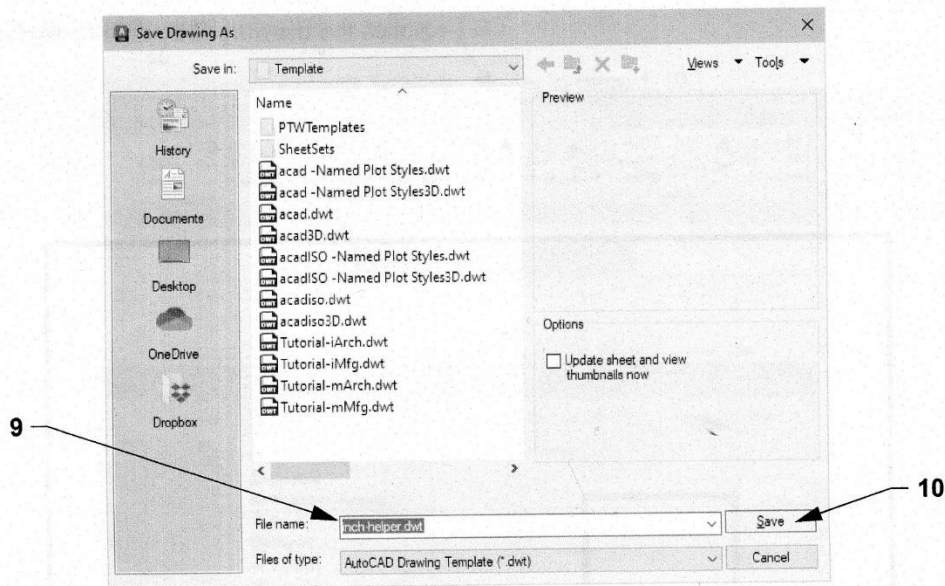
6. Select the **"Application Menu"** button. 
7. Select **Save As** ▶ (Click on the arrow not the words "Save As", as shown on the next page.)
8. Select **"Drawing Template"**.

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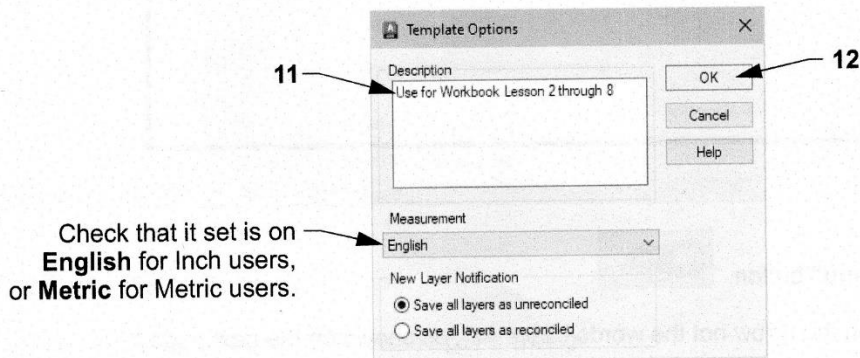
Creating a Template



9. The name of the new file should already be highlighted in the “File name” box; if it’s not, just type in **inch-helper** or **metric-helper** in the File name box. Do not type the extension **.dwt**. AutoCAD will add it automatically.



10. Select the **Save** button.
11. Type the description and make the selections as shown below.
12. Select the **OK** button.



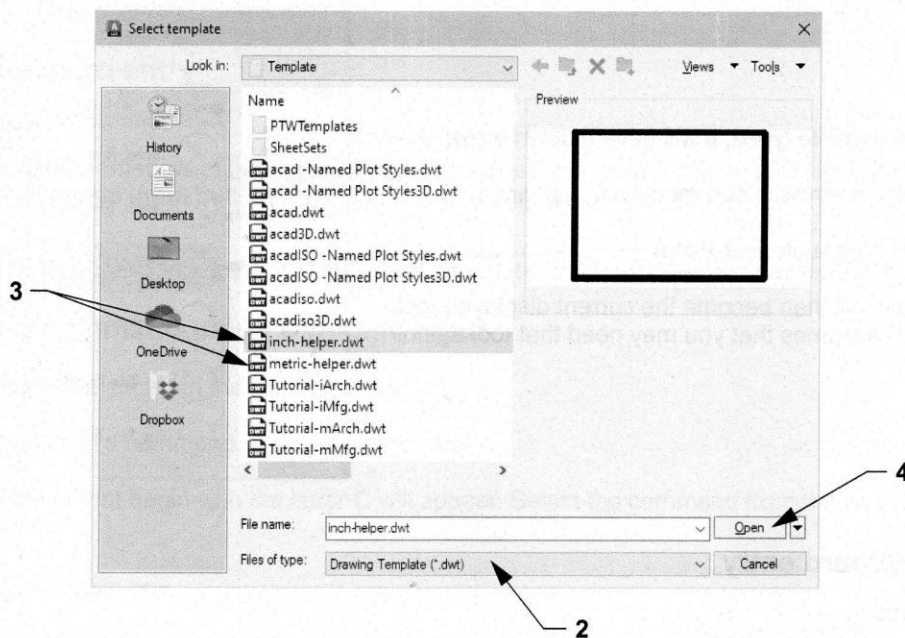
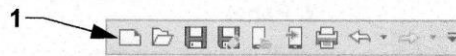
Now you have a template to use for Lessons 2 through 8. At the beginning of each exercise, you will be instructed to start a **new** drawing using either the **inch-helper.dwt** or **metric-helper.dwt**. Using a template as a master setup drawing is very good CAD management.

Using a Template

The template that you created following the instructions on the previous pages will be used for Lessons 2 through 8. Many variables have been preset in this template. This will allow you to start drawing immediately. You will learn how to set those variables before you complete this Workbook, but for now you will concentrate on learning the AutoCAD commands and hopefully have some fun.

To use a Template

1. Select the **New** tool from the **Quick Access Toolbar**.



2. Select **Drawing Template (*.dwt)** from the “Files of type” if not already selected.
3. Select either the **inch-helper.dwt** or **metric-helper.dwt** from the list of templates.

Note: If you do not have these templates, refer to page 2-2 for instructions.

4. Select the **Open** button.

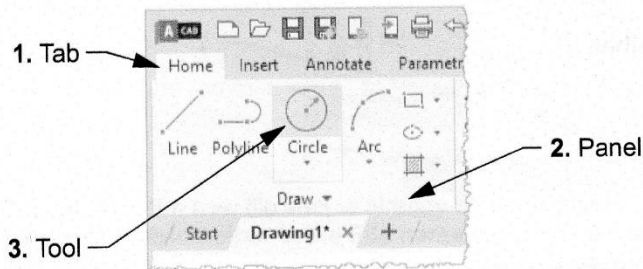
Selecting a Command

AutoCAD provides you with two different methods for selecting commands. One is **selecting a tool from the Ribbon**, the other is **typing the command**. Both methods will accomplish the same end result. You decide which method you prefer.

An example of Method 1 is shown on the next page, followed by Method 2.

Method 1. Selecting a tool from the Ribbon

1. First select a **Tab** such as **Home**.
2. Locate the correct **Panel** such as **Draw**.
3. Select a **tool** such as **Circle**.



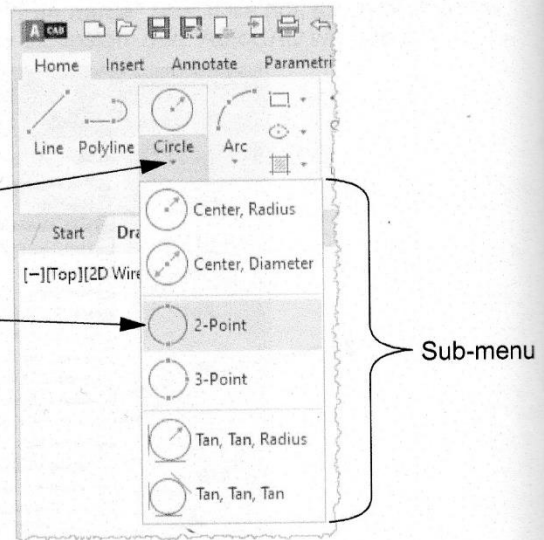
Note:

If the tool includes multiple types, it will have a down arrow ▼

If you select the down arrow, a sub-menu will appear.

Select the desired type such as **2-Point**.

The latest selection will then become the current displayed tool, because AutoCAD assumes that you may need that tool again.



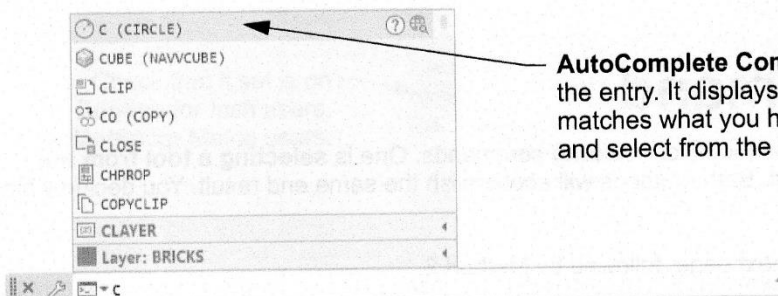
Method 2. Keyboard entry

Command Line

You may type commands on the **Command Line** (shown below) or in the **Dynamic Input Tooltip** box (shown on the next page). It depends on whether you have Dynamic Input turned **on** or **off**.

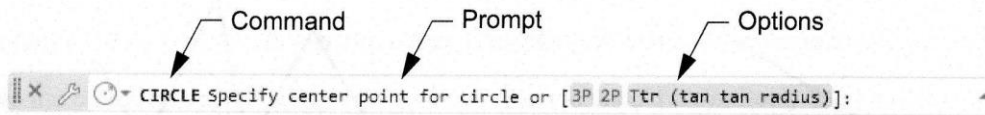
How to enter a command on the Command Line

1. **Important:** Place the cursor in the Command Line area.
2. Type the first letter of a command, such as **c** for **circle**.



Continued on the next page...

3. A list of commands that begin with the letter **C** will appear. Scroll down and select a command from the list.
4. When you select a command such as **Circle**, the **prompt** and **options** will be displayed on the Command Line.



5. The **prompt** for the Circle command asks you to:

"Specify center point for circle" or [3P 2P Ttr (tan tan radius)]:

The information within the [] brackets are options that you may select.

Method 2. Keyboard entry

Dynamic Input

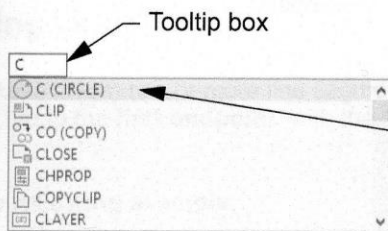
Dynamic Input is another method of inputting commands, values, and select options. To use Dynamic Input, you must turn **on** the **Dynamic Input** button in the Status Bar, shown on page 1-13.



If you choose to use Dynamic Input, the command will be entered in the Tooltip box beside the cursor.

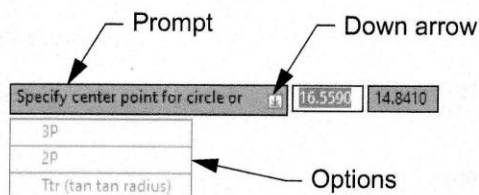
How to enter a command using Dynamic Input

1. **Important:** Place the cursor in the Drawing Area.
2. Type the first letter of a command, such as **c** for **circle**.
3. A list of commands that begin with the letter **C** will appear. Select the command from the list.



AutoComplete Command Entry automatically completes the entry. It displays a list of all the commands whose prefix matches what you have typed. This enables you to scroll and select from the list.

4. If you press the ↓ arrow, the options will appear below the prompt.



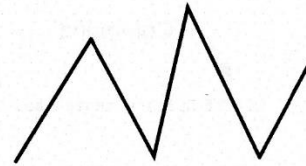
Notice that the command entry also is being displayed on the Command Line. Whether you use the Command Line or Dynamic Input is your choice.

Drawing Lines

A **Line** can be **one segment** or a **series of connected segments**. But each segment is an individual object.



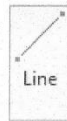
One segment
One object



Series of connected segments
5 objects

Start the **Line command** using one of the following methods:

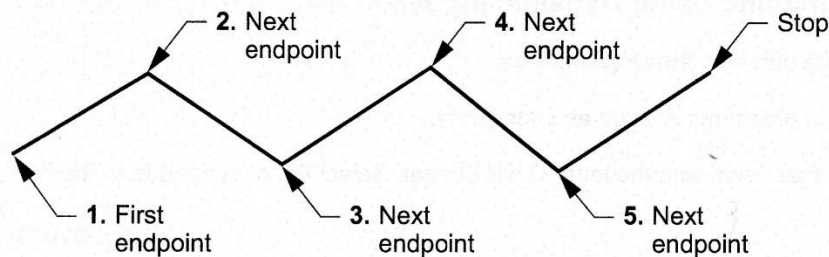
Ribbon = Home Tab / Draw Panel /
or
Keyboard = L <Enter>



Lines are drawn by specifying the locations for each endpoint.

Move the cursor to the location of the “**first**” endpoint (1), then press the left mouse button and release. (Click and release, do not Click and Drag.) Move the cursor again to the “**next**” endpoint (2) and press the left mouse button. Continue locating “**next**” endpoints until you want to stop drawing lines.

There are 2 ways to stop drawing a line: press the **<Enter>** key or press the **<Spacebar>**.



To **quickly** repeat the **Line** command, press the **<Spacebar>**.

Horizontal and Vertical Lines

To draw a **Line** perfectly horizontal or vertical, select the **Ortho** mode by selecting the **Ortho** button on the Status Bar or pressing the **<F8>** key.

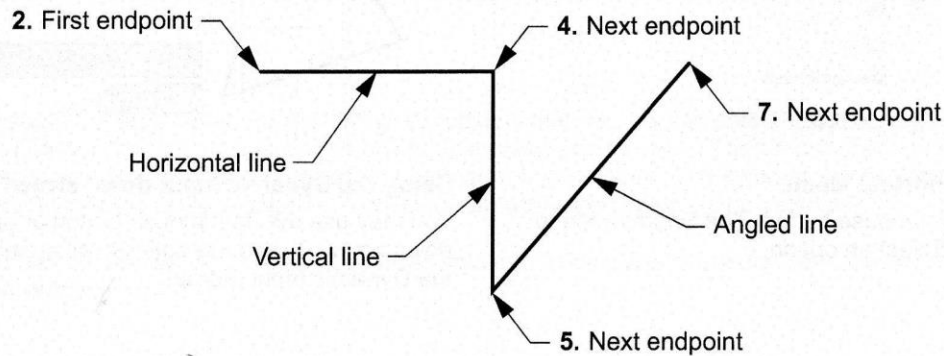


Try the following example:

1. Select the **Line** command.
2. Place the **first endpoint** anywhere in the drawing area.
3. Turn **Ortho on** by selecting the **Ortho** button or **<F8>**. (The “**Ortho**” button will change to a neon blue when on.)

Continued on the next page...

4. Move the cursor to the right and press the left mouse button to place the **next endpoint**. (The line should appear perfectly horizontal.)
5. Move the cursor down and press the left mouse button to place the **next endpoint**. (The line should appear perfectly vertical.)
6. Now turn **Ortho off** by selecting the **Ortho** button. (The “**Ortho**” button will change to gray when **off**.)
7. Now move the cursor up and to the right on an angle (the line should move freely now) and press the left mouse button to place the **next endpoint**.



CAD TIP! Ortho can be turned **on** or **off** at any time while you are drawing. It can also be turned **on** or **off** temporarily by holding down the **<Shift>** key.

Closing Lines

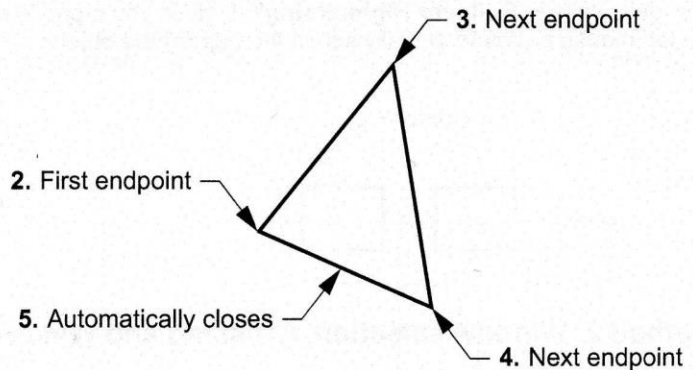
If you have drawn two or more line segments, the **endpoint of the last line segment** can be automatically connected to the **first endpoint**, with the space between them closed up, by using the **Close** option.

Try the following example:

1. Select the **Line** command.
2. Place the **first endpoint**.
3. Place the **next endpoint**.
4. Place the **next endpoint**.
5. Type **C <Enter>**.

Or

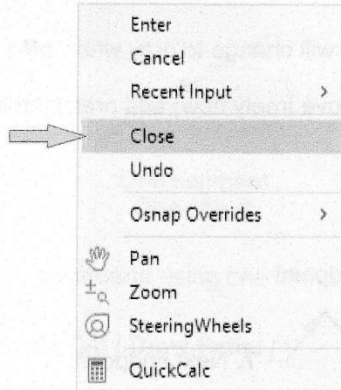
5. Press the **right** mouse button and select **Close** from the **Shortcut Menu**.



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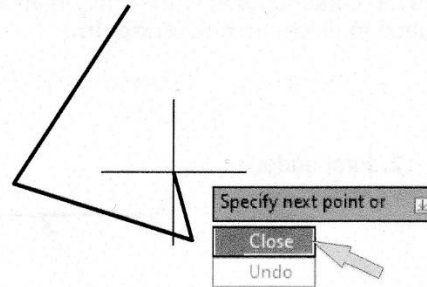
What is the Shortcut Menu?

The **Shortcut Menu** gives you quick access to command options.



Using the Shortcut Menu:

Press the right mouse button. The Shortcut Menu will appear. Select an option.



Using the Dynamic Input down arrow:

You may use the right mouse button or press the down arrow ↓ and the options will appear below the Dynamic Input prompt.

Methods for Selecting Objects

Many AutoCAD commands prompt you to “**select objects**”. This means selecting the objects that you want the command to affect. There are 3 methods:

Method 1. Pick, is very easy and should be used if you have only 1 or 2 objects to select.

Method 2. Window selection, is a little more difficult, but once mastered it is extremely helpful and time saving.

Method 3. Lasso selection, is a little more difficult than Window selection, but again, once mastered it is very useful and will save you time. Practice the following examples.

Method 1. Pick

Place the cursor on the object, but do not press the mouse button yet. The object will highlight. This appearance change is called “**Rollover Highlighting**”. It gives you a preview of which object AutoCAD is recognizing. Press the left mouse button to actually select the highlighted object.

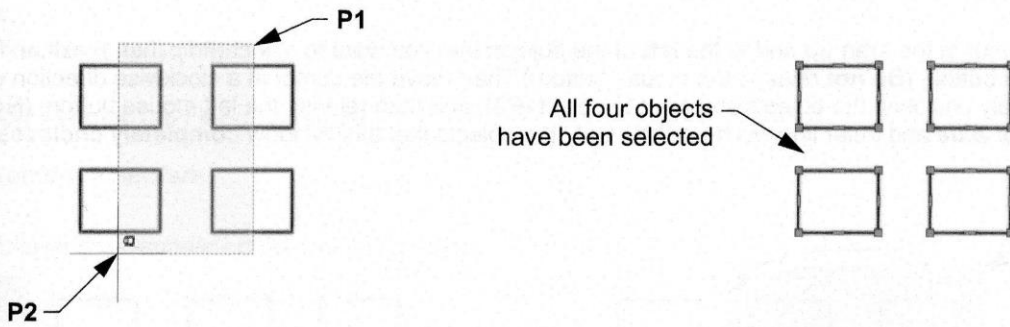


Method 2. Window selection, Crossing and Window

Crossing:

Place your cursor in the area **up** and to the **right** of the objects that you want to select (**P1**) and press the left mouse button. (**Do not** hold the mouse button down. Just press and release.) Then move the cursor **down** and to the **left** (**P2**) and press the left mouse button again. (**Note:** The Window will be **green** and the outer line will be **dashed**.) **Only** the objects that this Window **crosses** will be selected.

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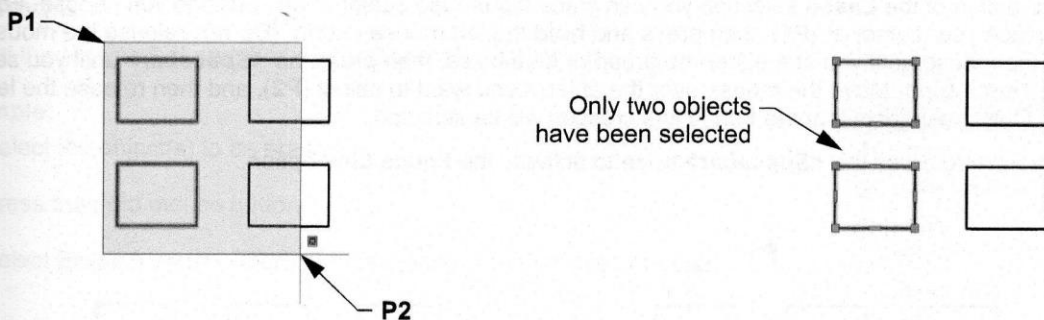


In the example above, all four rectangles have been selected because the Crossing Window **crosses** a portion of each.

Window:

Place your cursor in the area **up** and to the **left** of the objects that you want to select (**P1**) and press the left mouse button. (**Do not** hold the mouse button down. Just press and release.) Then move the cursor **down** and to the **right** of the objects (**P2**) and press the left mouse button again. (**Note:** The Window will be **blue** and the outer line will be **solid**.) **Only** the objects that this Window **completely encloses** will be selected.

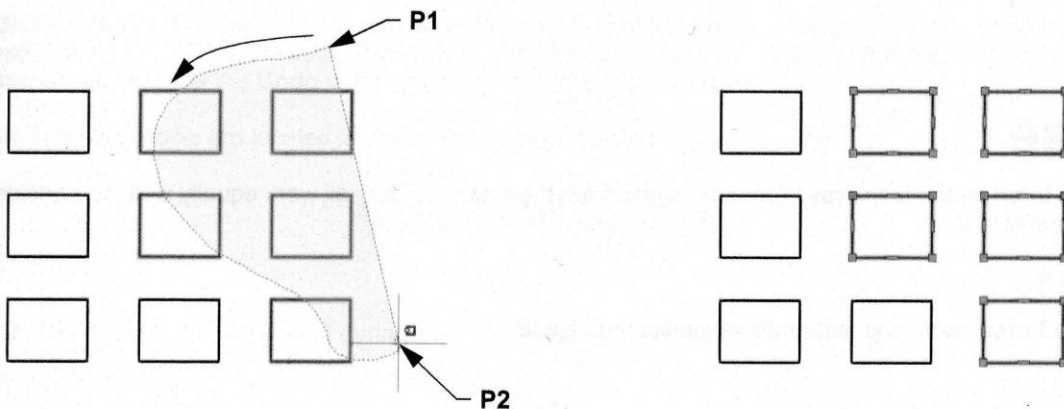
In the example below, only two rectangles have been selected. (The other two rectangles are **not** completely enclosed in the **Window**.)



• **Method 3. Lasso selection, Crossing, Window, and Fence**

Crossing:

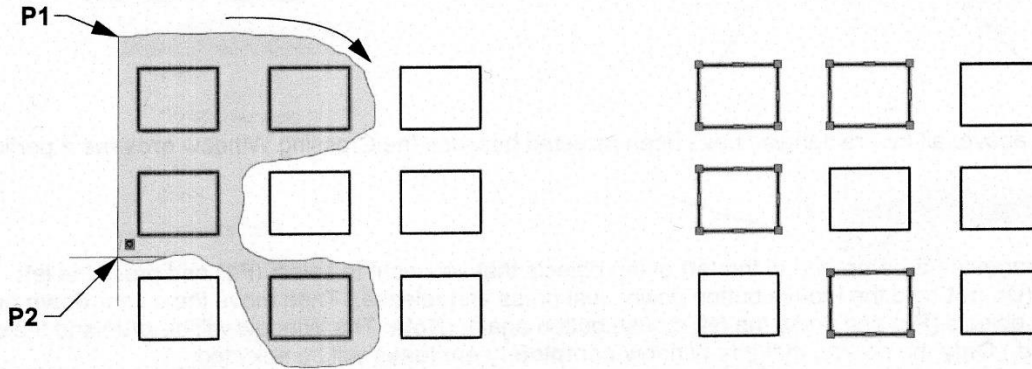
Place your cursor in the area **up** and to the **right** of the objects that you want to select (**P1**), then press and hold the left mouse button. (**Do not** release the mouse button.) Then move the cursor in an counter-clockwise direction until you have crossed the objects you want to select (**P2**) and then release the left mouse button. (**Note:** The Lasso Window will be **green** and the outer line will be **dashed**.) **Only** the objects that the Lasso Window **crosses** will be selected.



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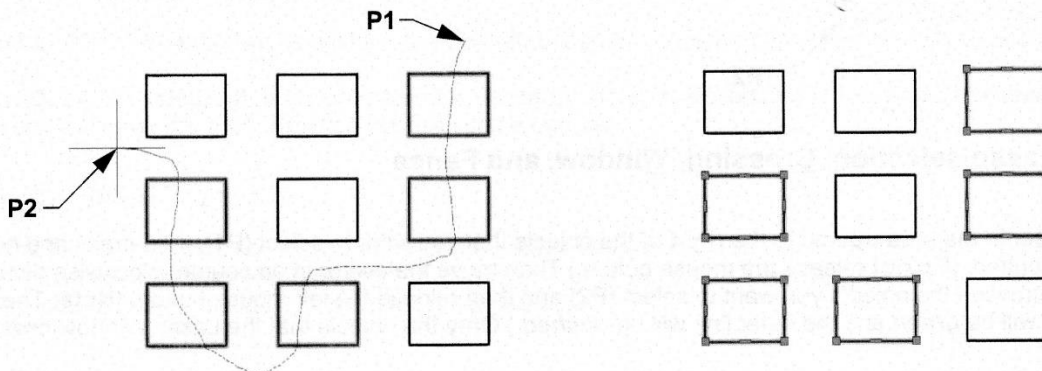
Window:

Place your cursor in the area **up** and to the **left** of the objects that you want to select (**P1**), then press and **hold** the left mouse button. (**Do not** release the mouse button.) Then move the cursor in a clockwise direction until you have completely enclosed the objects you want to select (**P2**), and then release the left mouse button. (**Note:** The Window will be **blue** and outer line will be **solid**.) Only the objects that this Window **completely encloses** will be selected.

**Fence:**

With the **Fence** option of the **Lasso** selection you can place the mouse cursor in any position you choose. For this example, place your cursor at (**P1**), then press and **hold** the left mouse button. (**Do not** release the mouse button.) Move the mouse until you see either the green or blue lasso, then press the **<Spacebar>** until you see just a **Dashed Fence Line**. Move the mouse over the objects you want to select (**P2**), and then release the left mouse button. Only the objects that the Fence line crosses will be selected.

Note: You may have to press the **<Spacebar>** twice to activate the **Fence Line** option.



Erase

There are three methods to erase (delete) objects from the drawing. They all work equally well. You decide which one you prefer to use.

Method 1.

Select the **Erase** command first and then select the objects.

Example:

1. Start the **Erase** command using one of the following:

Ribbon = Home Tab / Modify Panel /

or

Keyboard = E <Enter>



2. The following will appear on the Command Line:



3. Select one or more objects and then press **<Enter>** to erase the object(s).

Method 2.

Select the objects first and then press the **<Delete>** key.

Example:

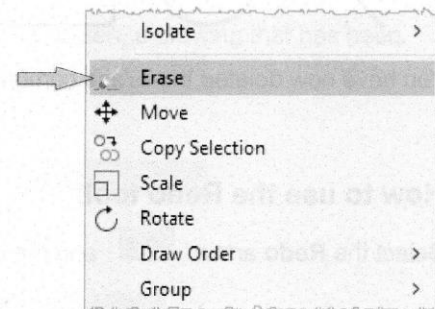
1. Select the object(s) to be erased.
2. Press the **<Delete>** key.


Method 3.

Select the objects first and then select **Erase** from the Shortcut Menu.

Example:

1. Select the object(s) to be erased.
2. Press the right mouse button.
3. Select **Erase** from the Shortcut Menu using the left mouse button.

**Very Important:**

If you want the erased objects to return, select the **Undo tool**  from the **Quick Access Toolbar**. This will **Undo** the last command.

Undo and Redo

The **Undo** and **Redo** tools allow you to undo or redo **previous commands**. For example, if you erase an object by mistake, you can **undo** the previous “erase” command and the object will reappear. So don’t panic if you do something wrong. Just use the **Undo** command to remove the previous commands.

The **Undo** and **Redo** tools are located in the **Quick Access Toolbar**.

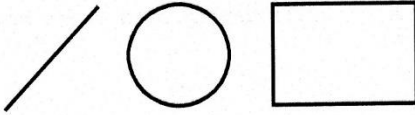


Note: You may **undo** commands used during a work session until you close the drawing.

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How to use the Undo tool

1. Draw a line, circle, and a rectangle.



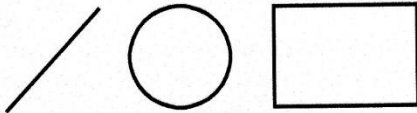
Your drawing should look approximately like this.

2. Next erase the circle and the rectangle.




(The circle and the rectangle disappear.)

3. Select the **Undo** arrow.



You have now deleted the **Erase** command operation. As a result, the erased objects reappear.

How to use the Redo tool:

Select the **Redo** arrow  and the circle and rectangle will disappear again.

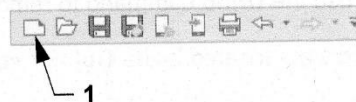
Starting a New Drawing

Starting a new drawing means that you want to start with a previously created Template file. That is why I taught you "How to create a template" at the beginning of this lesson. You will use either the **inch-helper.dwt** or the **metric-helper.dwt** template each time you are instructed to start a new drawing.

Note: Do not use the **New** tool if you want to **open an existing drawing**. Refer to the next page to open an existing drawing file.

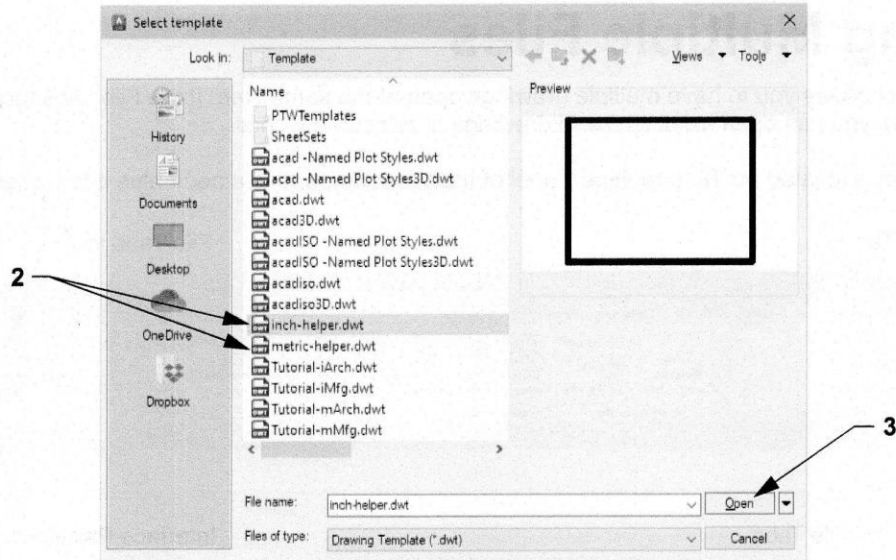
How to start a new drawing

1. Select the **New** tool from the **Quick Access Toolbar**.



2. Select either the **inch-helper.dwt** or the **metric-helper.dwt** from the list of templates.

Note: If you do not have these templates, refer to page 2-2 for instructions.

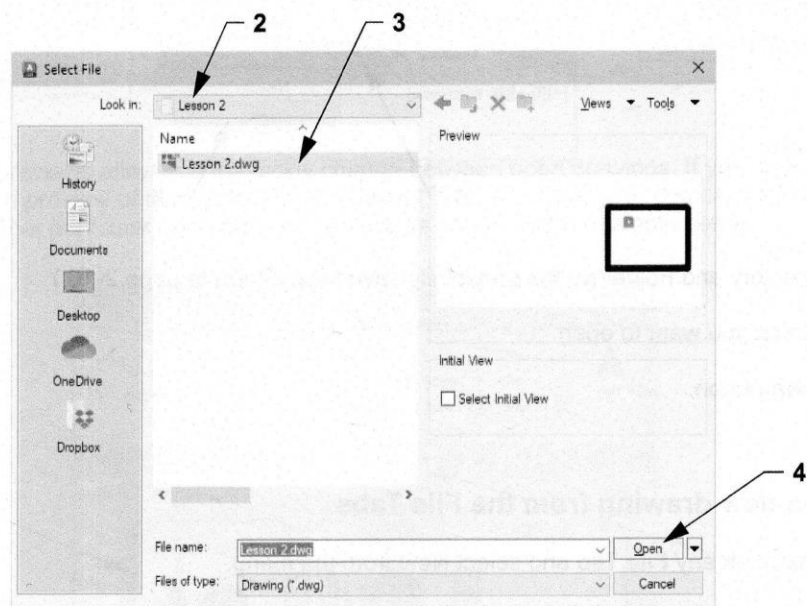
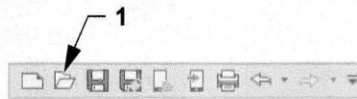


3. Select the **Open** button.

Opening an Existing Drawing File

Opening an **Existing Drawing File** means that you would like to open, on the screen, a drawing that has been previously created and saved. Usually you are opening it to continue working on it or to make some changes.

1. Select the **Open** tool from the **Quick Access Toolbar**.

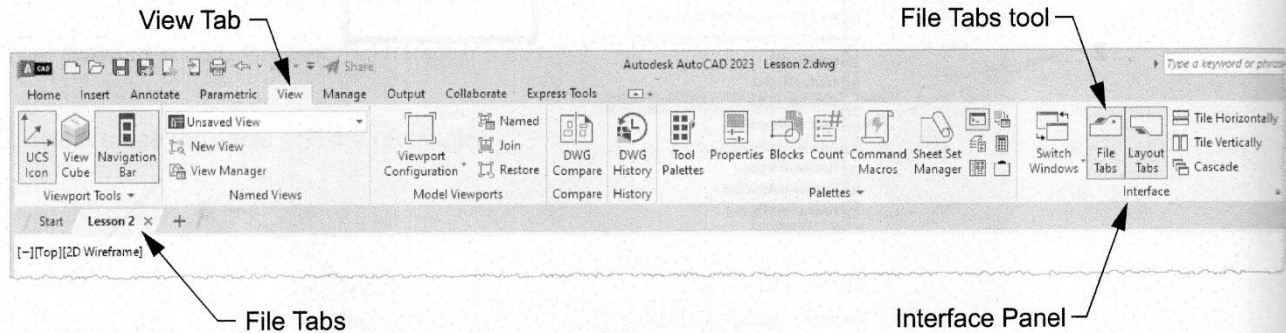


2. Locate the Directory and Folder in which the file had previously been saved.
3. Select the file that you want to open.
4. Select the **Open** button.

Opening Multiple Files

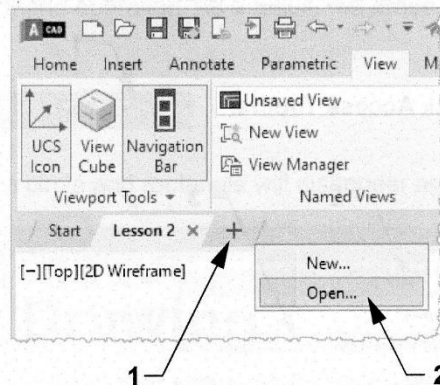
The **File Tabs** tool allows you to have multiple drawings open at the same time. If the File Tabs tool is switched on (on by default), you can open existing saved drawings or create new ones.

The **File Tabs** tool is located on the **Interface Panel** of the **View** Tab, and is a neon blue color when switched on.



How to open an existing saved drawing from the File Tabs

1. Right mouse click on the **+** icon.
2. Select **Open** from the menu.

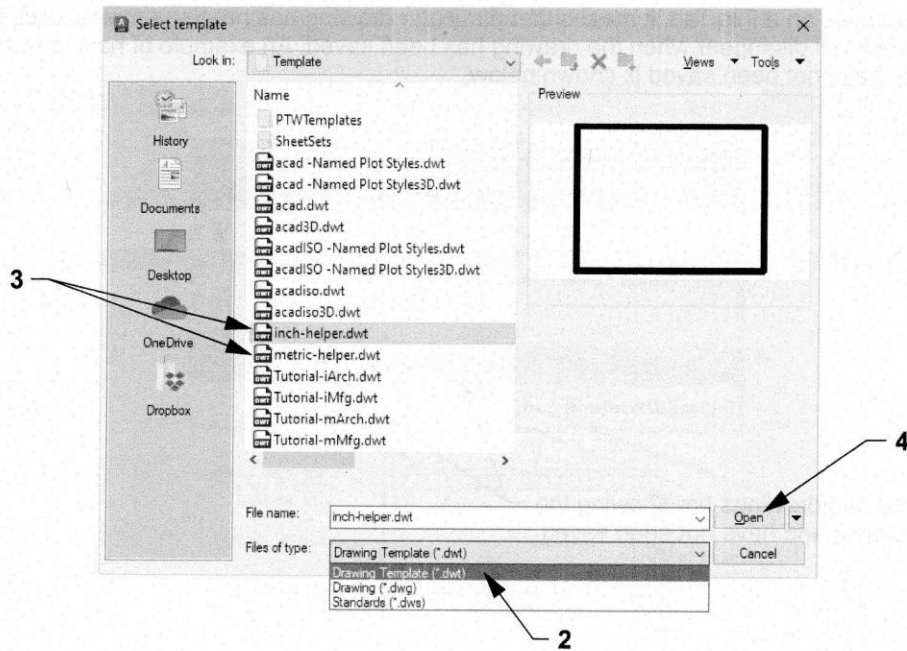


3. Locate the Directory and Folder for the previously saved file. (Refer to page 2-15.)
4. Select the file that you want to open.
5. Select the **Open** button.

How to open a new drawing from the File Tabs

1. Right mouse click on any **File Tab** and select **New** from the menu.
2. Select **Drawing Template (*.dwt)** from the **Files of type** drop-down list (as shown on the next page).
3. Select the **Template** you require.
4. Select the **Open** button.

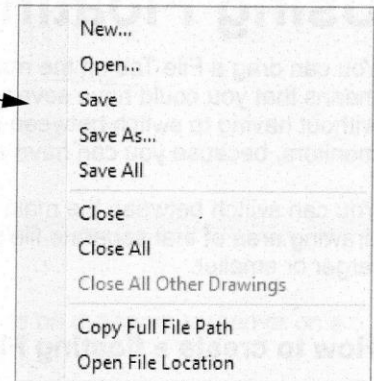
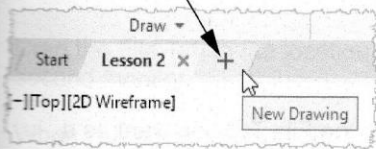
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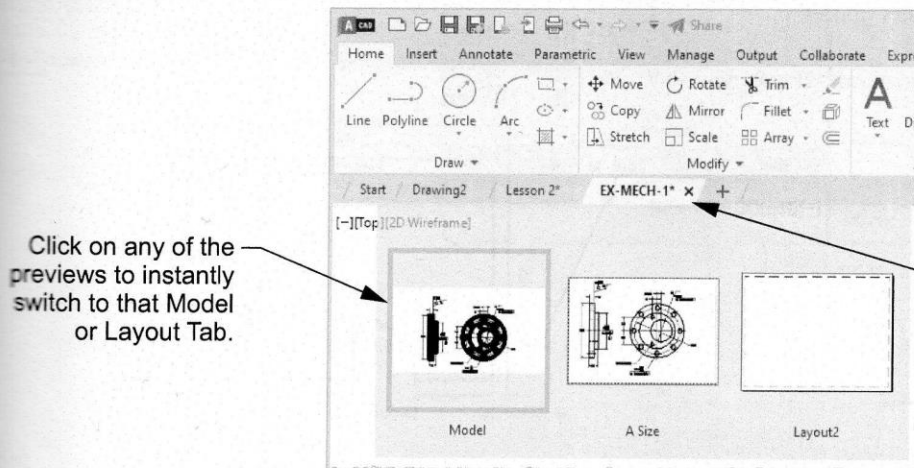
Note:

If you right mouse click on any **File Tab**, a menu appears with various options, including closing all open drawing Tabs except the one you just clicked on.

You can also start a new drawing using the default template by left clicking on the **+** icon.



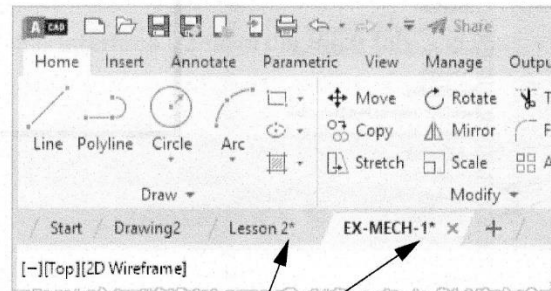
The **File Tabs** drawing previews allow you to quickly change between open drawings. If you hover your mouse over any open File Tab, a preview of the Model and the Layout Tabs are displayed. You can click on any of the previews to take you to that particular open drawing or view, as shown in the example below.



Click on any of the previews to instantly switch to that Model or Layout Tab.

Hover the mouse over any File Tab to see a preview of the Model and Layout Tabs.

If an asterisk is displayed on a File Tab, it means that particular drawing has not been saved since it was last modified. The asterisk will disappear when the drawing has been saved. An example of having two separate drawings open that have not been saved is shown below.



These two drawings are showing the asterisk and have not been saved.

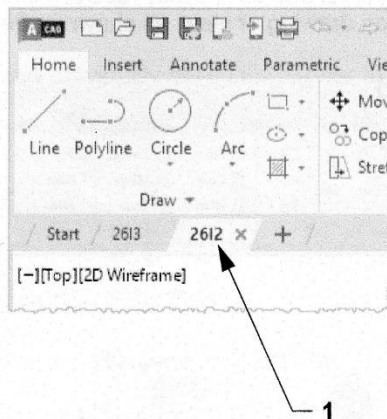
Using Floating File Tabs

You can drag a File Tab off the main AutoCAD Application Window to make it a separate drawing window. This means that you could have several drawing files open at the same time with each file in its own drawing window, without having to switch between File Tabs. The floating File Tabs are particularly useful if you have two or more monitors, because you can have a different drawing file open on each monitor.

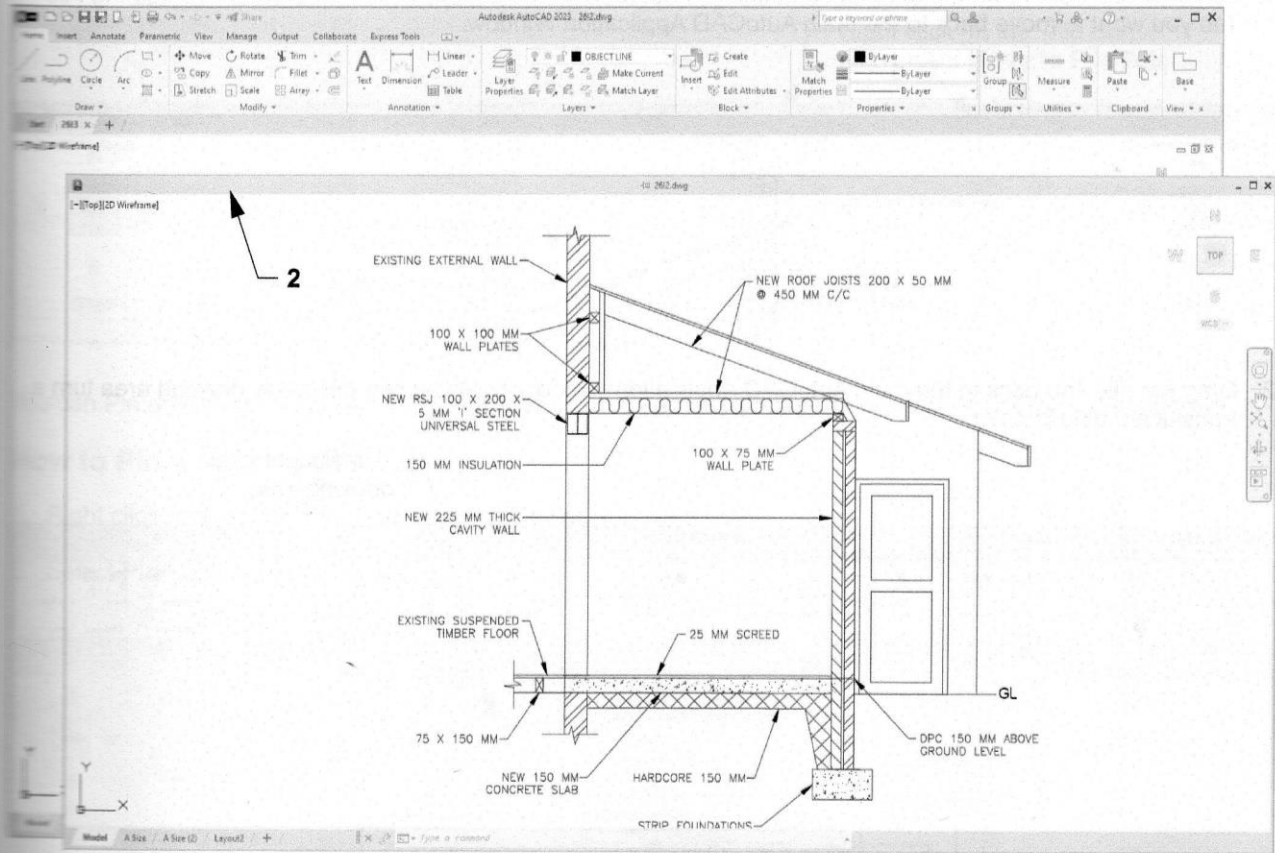
You can switch between the main AutoCAD Application Window and any floating File Tab by left-clicking inside the drawing area of that separate file's drawing window. A floating File Tab window also can be resized to make it larger or smaller.

How to create a floating File Tab

1. Left click and hold down the left mouse button (do not release the button) on the File Tab you want as a floating File Tab.

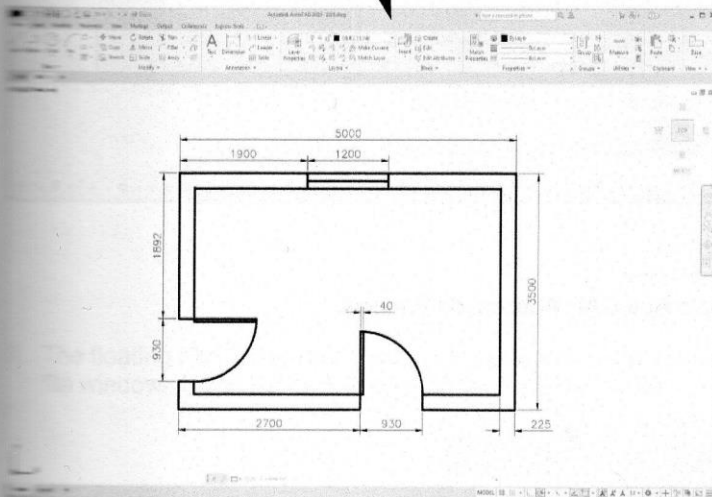


2. Drag the File Tab away from the main AutoCAD Application Window.

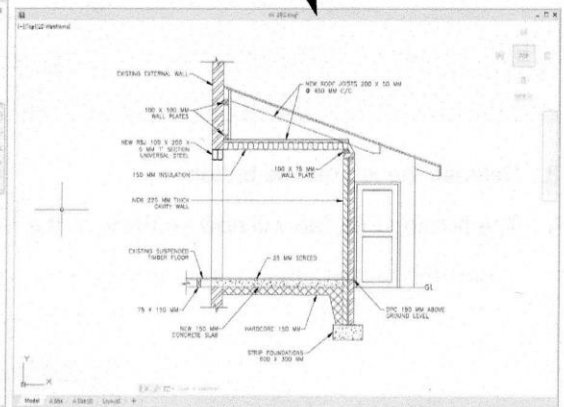


3. Drag the File Tab to the location you want for the floating File Tab. This could be on the same screen or on a second monitor.
4. When you are happy with the location of the floating File Tab, release the left mouse button.

Main AutoCAD Application Window.

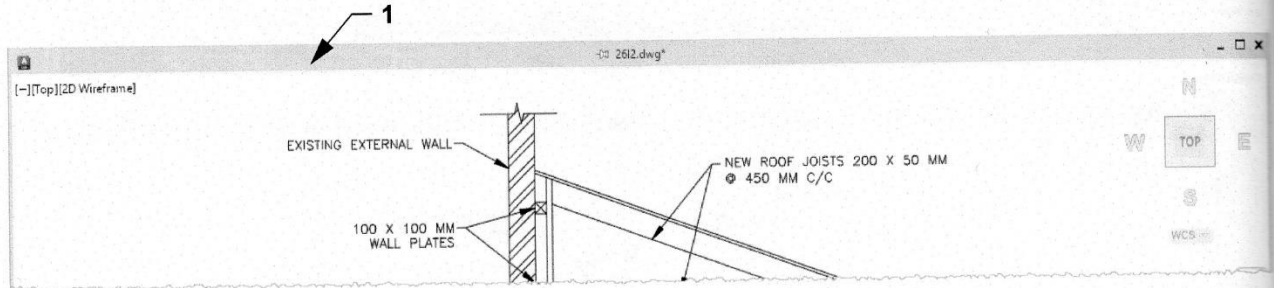


Floating File Tab.

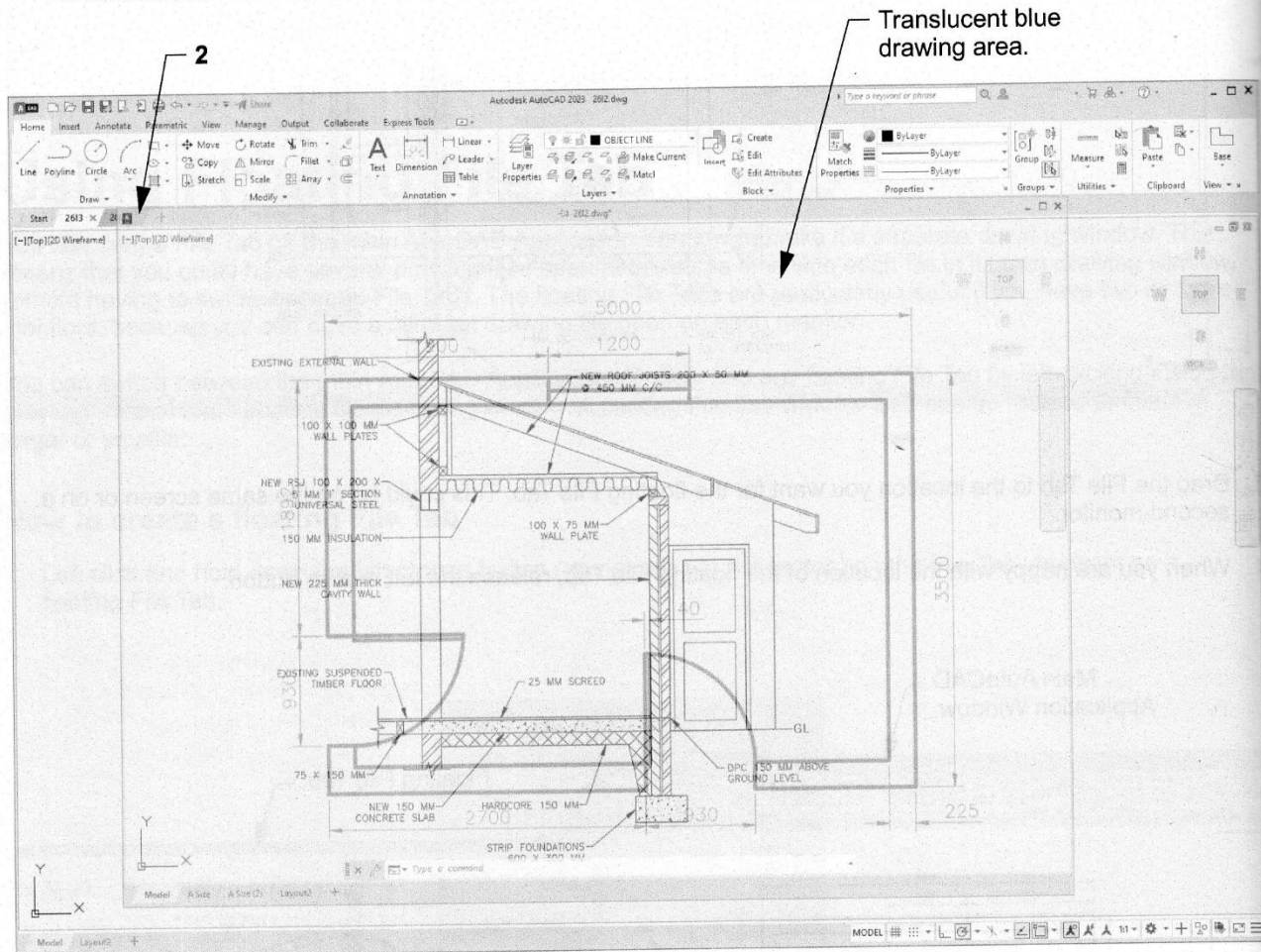


How to move a floating File Tab back to the main AutoCAD Application Window

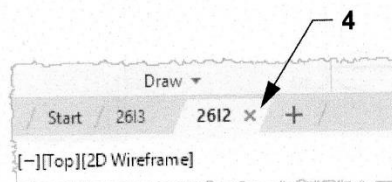
1. Left click and hold down the left mouse button (do not release the button) on the Title Bar of the floating File Tab you want to move back to the main AutoCAD Application Window.



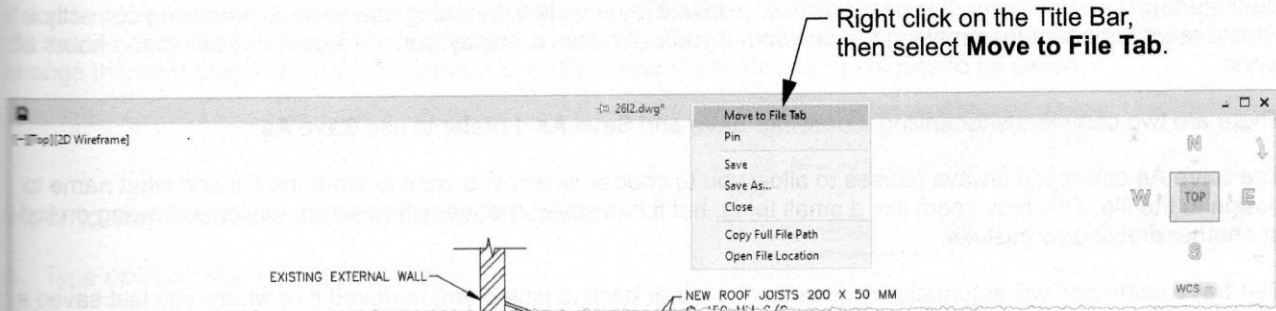
2. Drag the File Tab back to the main AutoCAD Application Window, until you see the entire drawing area turn a translucent blue in color.



3. Release the left mouse button.
4. The floating File Tab will now be back on the main AutoCAD Application Window.



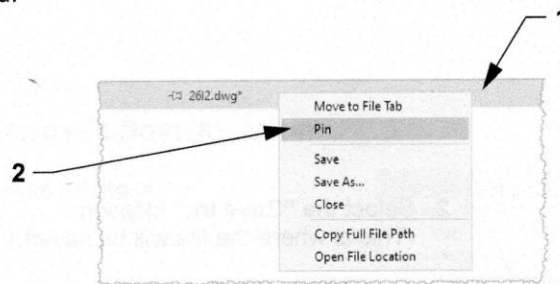
You also can move a floating File Tab back to the main AutoCAD Application Window by right clicking on the Title Bar of the floating File Tab, and then selecting **Move to File Tab** from the menu.



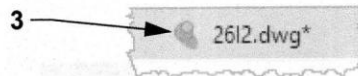
You can Pin a floating File Tab so that it remains on top of any other open or overlapping drawing file windows.

How to Pin a floating File Tab

1. Right click on the Title Bar of the floating File Tab you want to Pin.
2. Select **Pin** from the menu.

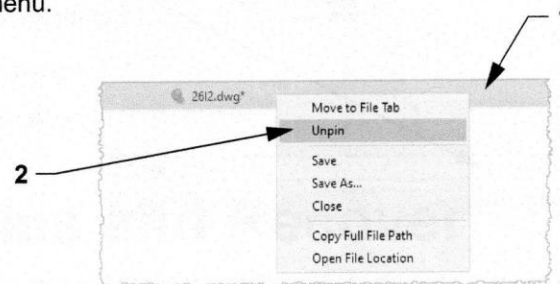


3. The floating File Tab is now pinned so that it remains on top of any other open or overlapping drawing file windows.



How to Unpin a floating File Tab

1. Right click on the Title Bar of the floating File Tab you want to Unpin.
2. Select **Unpin** from the menu.



3. The floating File Tab is now unpinned. It will only remain on top of any other open or overlapping drawing file windows if you left click inside the file's drawing area.



Saving a Drawing File

After starting a new drawing, it is best practice to save it immediately. Learning how to save a drawing correctly is almost more important than making the drawing. If you can't save correctly, you will lose the drawing and hours of work.

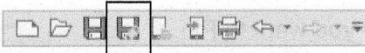
There are two commands for saving a drawing: **Save** and **Save As**. I prefer to use **Save As**.

The **Save As** command always pauses to allow you to choose where you want to store the file and what name to assign to the file. This may seem like a small thing, but it has saved me many times from saving a drawing on top of another drawing by mistake.

The **Save** command will automatically save the file either back to where you retrieved it or where you last saved a previous drawing. Neither may be the correct destination. And the file you are saving may replace a file with the same name. So play it safe, use **Save As** for now.

1. Select the **Save As** command using one of the following:

Quick Access Toolbar =



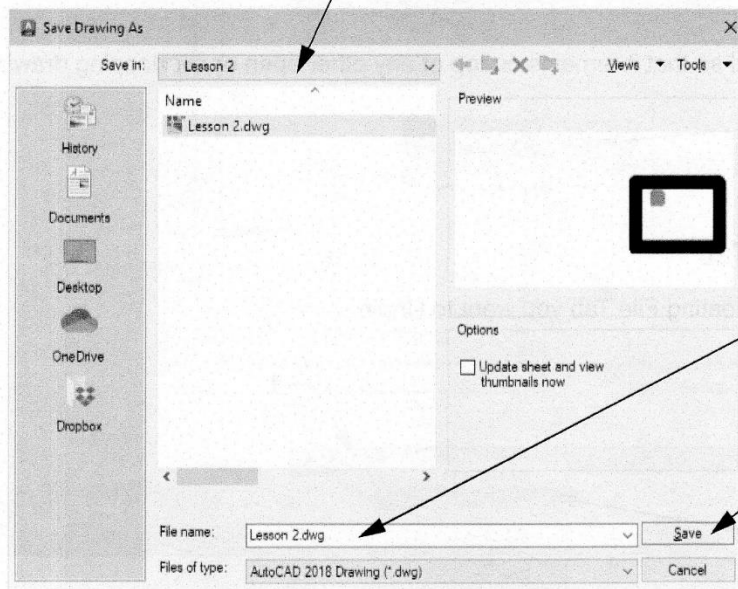
or

Application Menu = **Save As / Drawing**

or

Keyboard = **SA <Enter>**

2. Select the "Save in:" location.
(This is where the file will be saved.)



3. Type the new file name here.

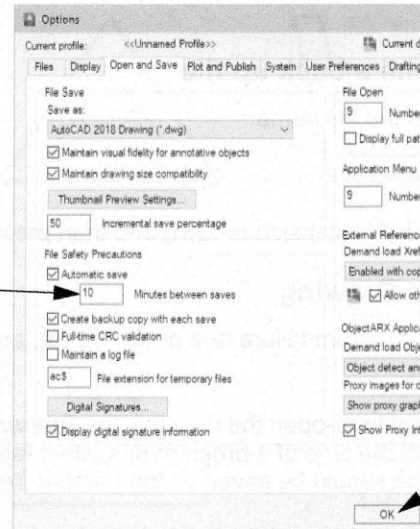
4. Select the "Save" button.

Automatic Save

If you turn the **Automatic save** option **on**, your drawing is saved at specified time intervals. These temporary files are automatically deleted when a drawing closes normally. The default save time is every 10 minutes. You may change the save time intervals and where you would prefer the Automatic Save files to be saved.

How to set the Automatic Save intervals

1. Type **options** and then press **<Enter>**.
2. Select the **Open and Save** Tab.
3. Enter the desired **Minutes between saves**.
4. Select the **OK** button.

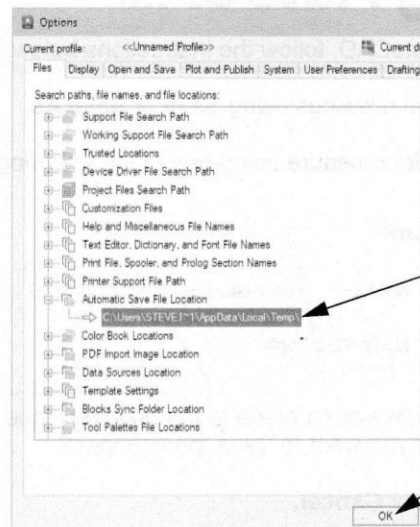


How to change the Automatic Save location

1. Type **options** and then press **<Enter>**.
2. Select the **Files** Tab.
3. Locate the **Automatic Save File Location** and click on the **+** to display the path.
4. Double click on the path.
5. Browse to locate the Automatic Save Location desired and highlight it.
6. Select **OK**.

(The browse box will disappear and the new location path should be displayed under the Automatic Save File Location heading.)

7. Select **OK** to accept the change.



Back Up Files and Recover

When you save a drawing file, AutoCAD creates a file with a **.dwg** extension. For example, if you save a drawing as **12b**, AutoCAD saves it as **12b.dwg**.

The next time you save that same drawing, AutoCAD replaces the old version of the file with the new version and renames the old version **12b.bak**. The old version is now a back up file. (Only 1 backup file for each drawing file is stored.)

Continued on the next page...

How to open a back up file

You can't open a ".bak" file. It must first be renamed with a ".dwg" file extension.

How to view the list of back up files

The backup files will be saved in the same location as the drawing file. You must use Windows Explorer to locate the .bak files.

How to rename a back up file

1. Right click on the file name.
2. Select "**Rename**".
3. Change the .bak extension to .dwg and then press **<Enter>**.

Recovering a Drawing

In the event of a program failure or a power failure, any open files should be saved automatically. (Refer to page 2-23.)

When you attempt to re-open the drawing, the **Drawing Recovery Manager** will display a list of all drawing files that were open at the time of a program or system failure. You can preview and open each .dwg or .bak file to choose which one should be saved as the primary file.

Exiting AutoCAD

To safely exit AutoCAD, follow the instructions below.

1. Save all open drawings using **Save** or **Save As**.
2. Start the **Exit** procedure using one of the following:

Ribbon = None

or

Application Menu =

or

Keyboard = Exit <Enter>

If any changes have been made to the drawing since the last **Save** or **Save As**, the warning box shown below will appear asking if you want to Save the changes?

Select **Yes**, **No**, or **Cancel**.

