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. Save, Backup and Recover a drawing
7. Exit AutoCAD

LESSON 2

CREATE 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 few files.
A. Go to the website: www.shrockpublishing.com

B. Select "**Downloadable Files**" from the header. (Top of the website)

C. Select the 2013 files and save them to your "**Desktop**".

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 1-9)
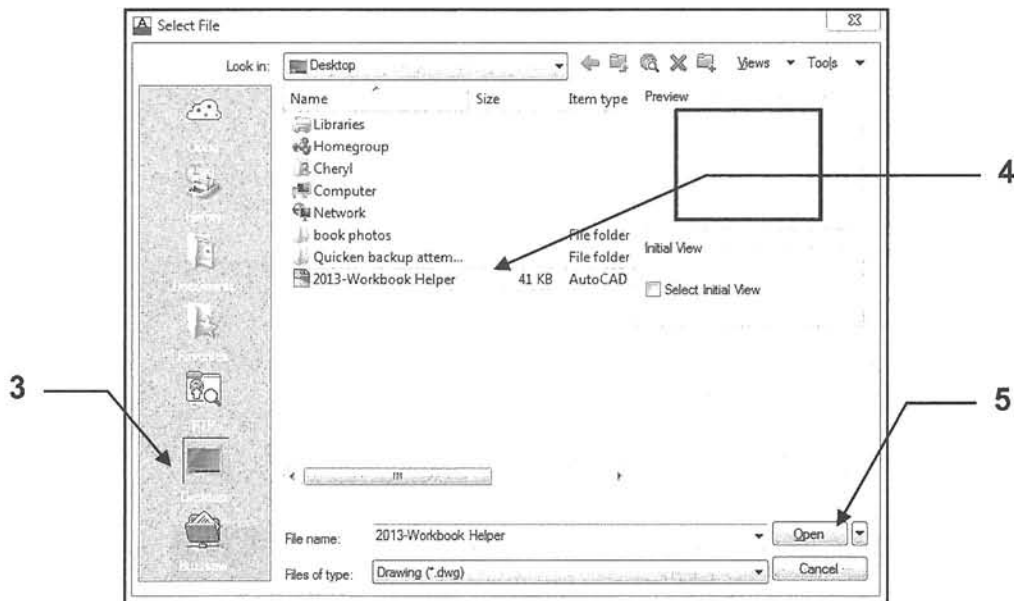
3. Select the **Desktop** directory

4. Select **2013-Workbook Helper**

5. Select **OPEN** button located in the lower right corner.
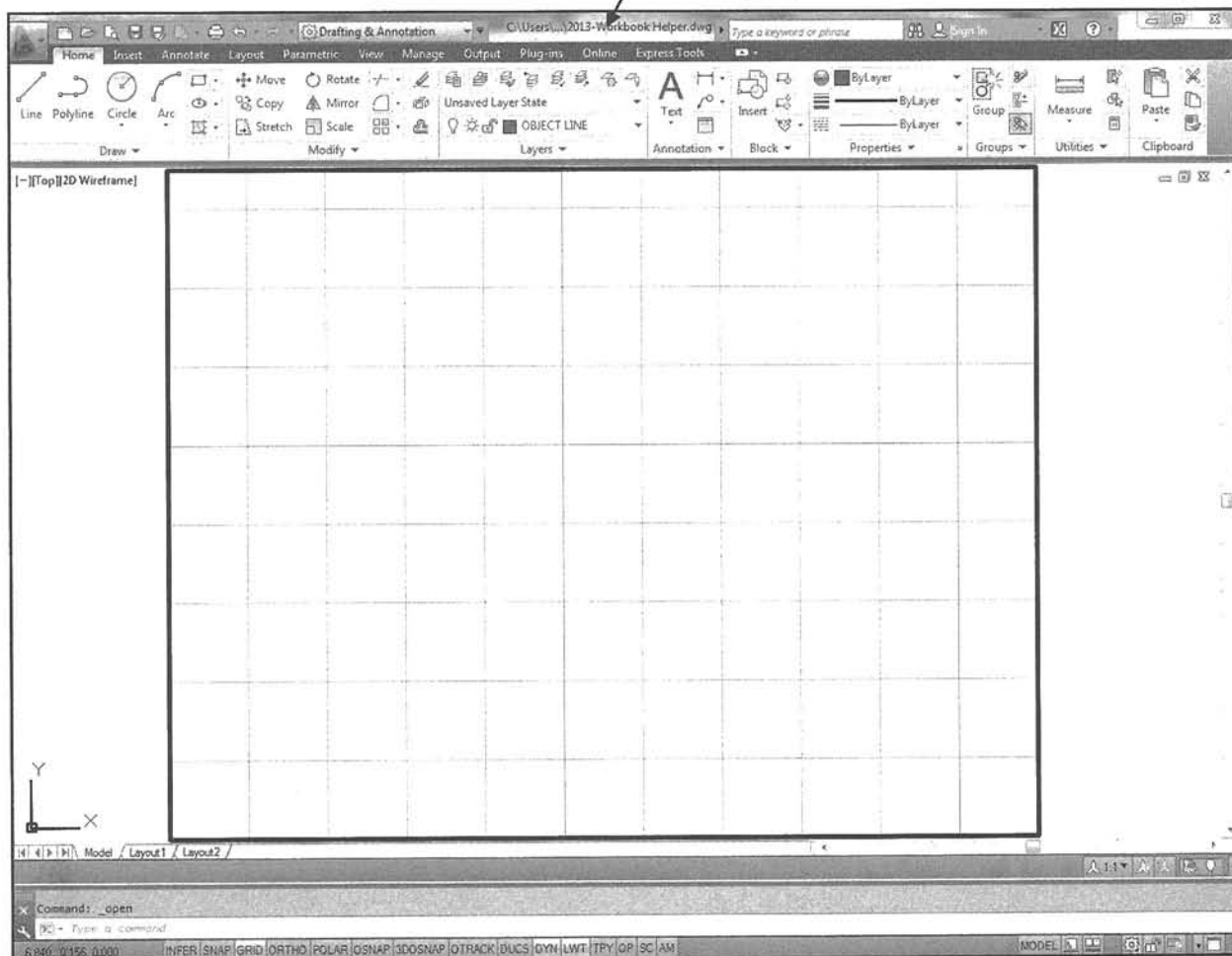
CREATE A TEMPLATE....continued

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 an 11 X 8.5 sheet of paper so you can easily print them on any letter size printer. The Rectangle represents an 11 X 8.5 sheet of paper. 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. You will learn more about Grids in Lesson 3. For now notice that the grids are 11 horizontally and 8.5 vertically. 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 line or F7. (Refer to page 1-12)

The next step is to create a template from this drawing.
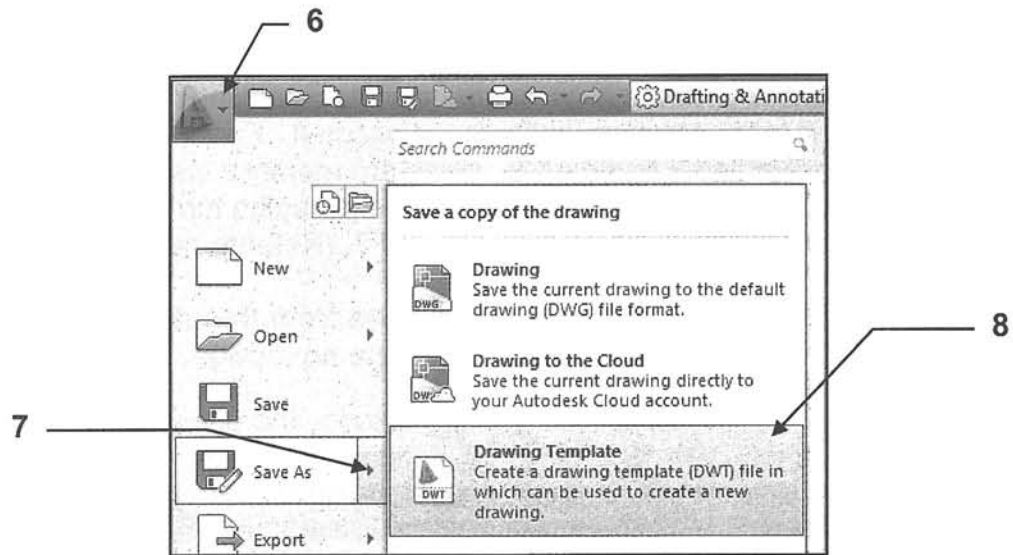**Continue on to step 6 on the next page.**

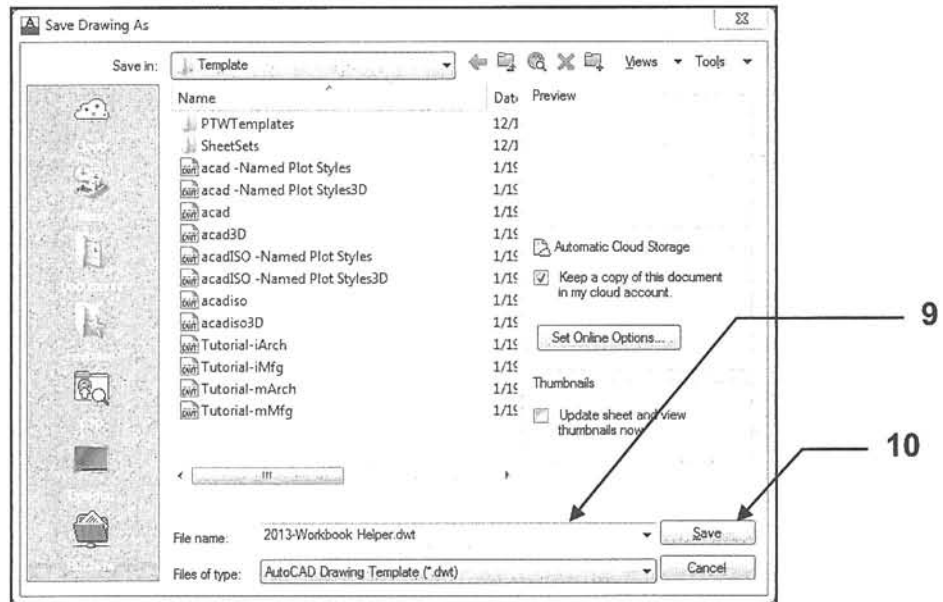Notice the drawing file name is
displayed here.

CREATE A TEMPLATE....continued

6. Select the **"Application Menu"** ▾

7. Select **Save As** " ▶ " (Click on arrow not words Save As)

8. Select **"AutoCAD Drawing Template".**

9. Type the new file name **2013-Workbook Helper** in the **File Name** box.
   Do not type the extension .dwt, AutoCAD will add it automatically.
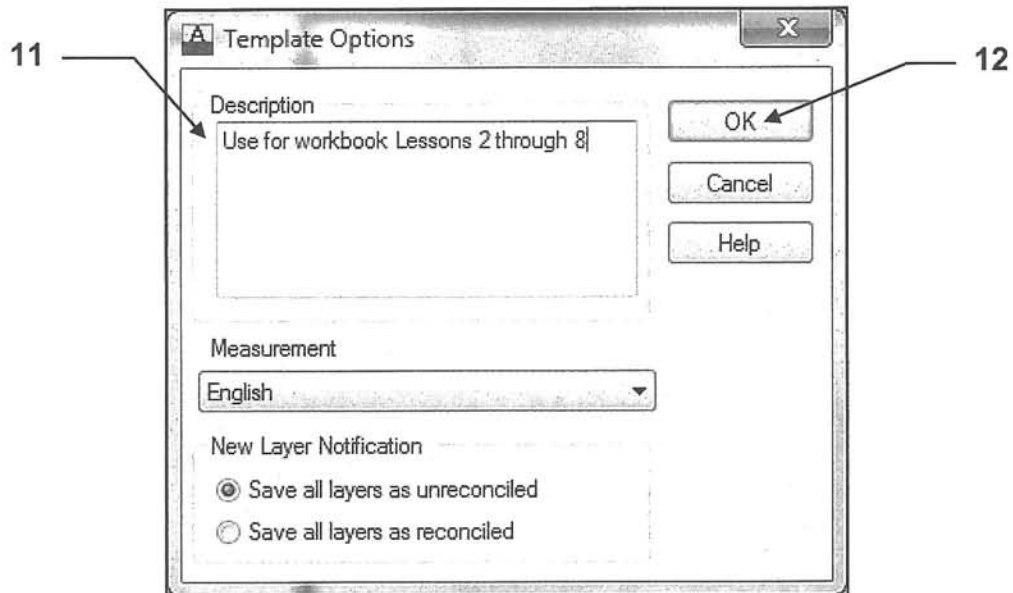

10. Select the **Save** button.

CREATE A TEMPLATE....continued

11. Type the description as shown below.

12. Select **OK** button.

```
┌─────────────────────────────────────────────────┐
│ [A] Template Options                        [X]  │
│                                                  │
│   Description                    ┌──────────┐    │
│   ┌─────────────────────────┐    │    OK    │    │
│   │Use for workbook Lessons 2 through 8│     │    │
│   │                         │    ┌──────────┐    │
│   │                         │    │  Cancel  │    │
│   │                         │    └──────────┘    │
│   │                         │    ┌──────────┐    │
│   │                         │    │   Help   │    │
│   └─────────────────────────┘    └──────────┘    │
│                                                  │
│   Measurement                                    │
│   ┌──────────────────────────────────────┐       │
│   │English                            ▼  │       │
│   └──────────────────────────────────────┘       │
│   New Layer Notification                         │
│    ◉ Save all layers as unreconciled             │
│    ○ Save all layers as reconciled               │
│                                                  │
└─────────────────────────────────────────────────┘
```

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 the **2013-Workbook Helper.dwt.**

Using a template as a master setup drawing is very good CAD management.

More on using the template on the next page

USING A TEMPLATE

The template that you created from 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.**
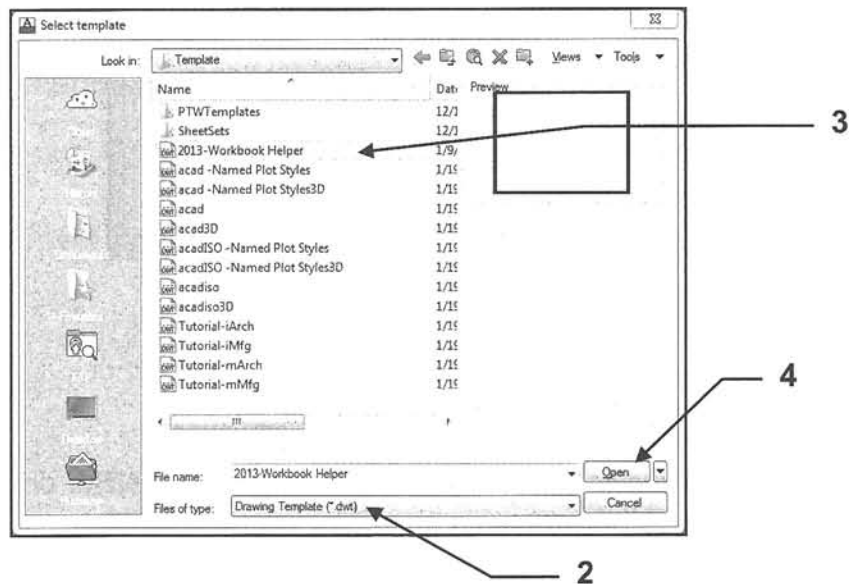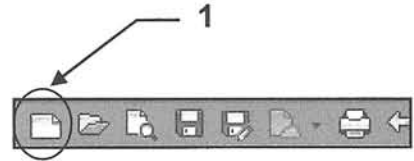
2. Select **Drawing Template [*.dwt]** from the "Files of type" if not already selected.

3. Select the **2013-Workbook Helper.dwt** from the list of templates.

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

4. Select the **Open** button.

Note:
If you find that you have more than one drawing open you may find this confusing. I suggest that you refer to page 2-18 and follow the steps to change your AutoCAD system to only allow one drawing open at one time.

HOW TO SELECT A COMMAND

AutoCAD provides you with 2 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 below. Method 2 is on the next page.

Method 1: Selecting a tool from the Ribbon

1. First select a **tab** such as **Home**.

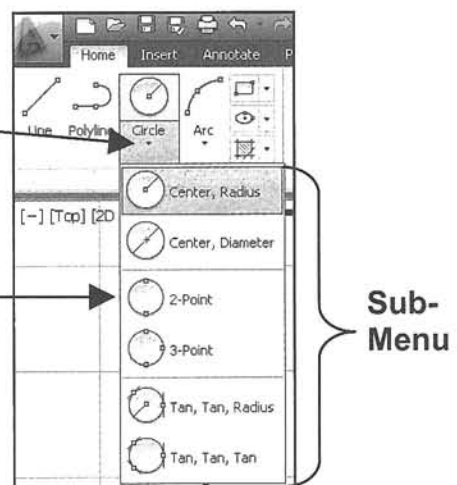2. Locate the correct **Panel** such as **Draw**.

3. Select a **tool** such as **Circle**
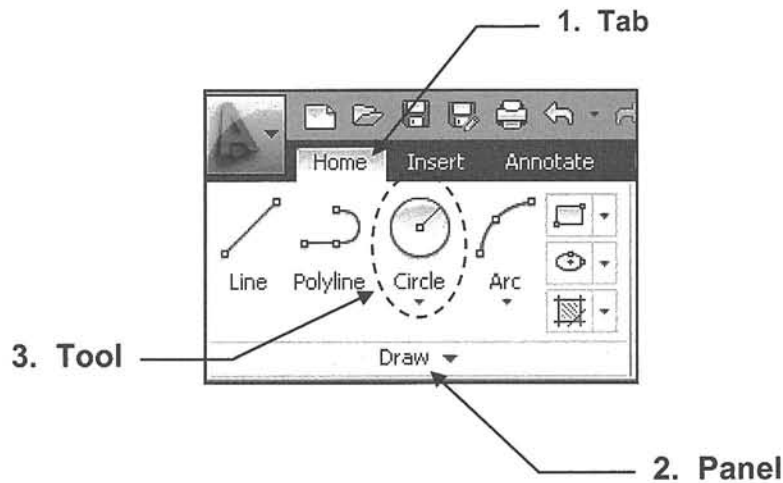
Note:
If the tool includes multiple types it will have a down-arrow ▼

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.

# HOW TO SELECT A COMMAND....continued

Method 2: Keyboard entry

You may type commands on the **Command line** (Shown below) or in the **Dynamic Input tooltip** (Shown on the next page)
It depends on whether you have Dynamic Input On or Off.

COMMAND LINE

How to enter a command on the Command Line.

1. Place the cursor in the Command Line area. (Important)

2. Type the first letter of a command, such as **c** for **circle**.
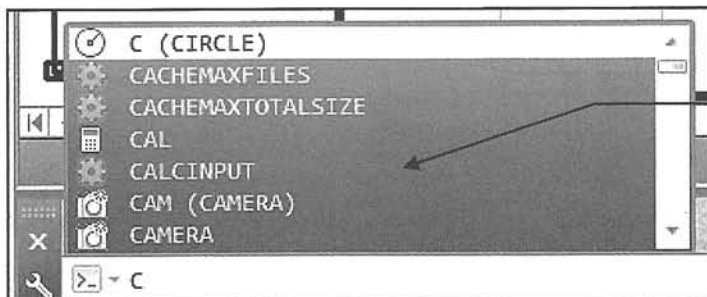
AutoComplete Command Entry automatically completes the entry. It displays a list of all the commands whose prefix matches what you have typed. This enables you to scroll and select from the list.

3. A list of commands that begin with the letter **c** will appear. Select the command from the list.

4. When you enter a **command** such as Circle the **prompt** and **options** will be displayed on the command line.
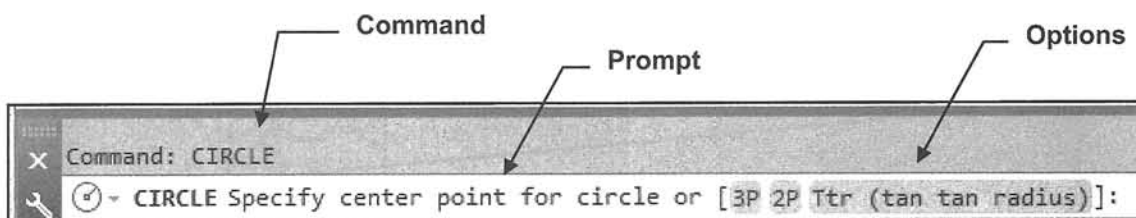
5. The **prompt** for Circle command asks you to:

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

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

HOW TO SELECT A COMMAND....continued

Method 2: Keyboard entry....continued

DYNAMIC INPUT

Dynamic Input is another method of inputting commands, values and select options.
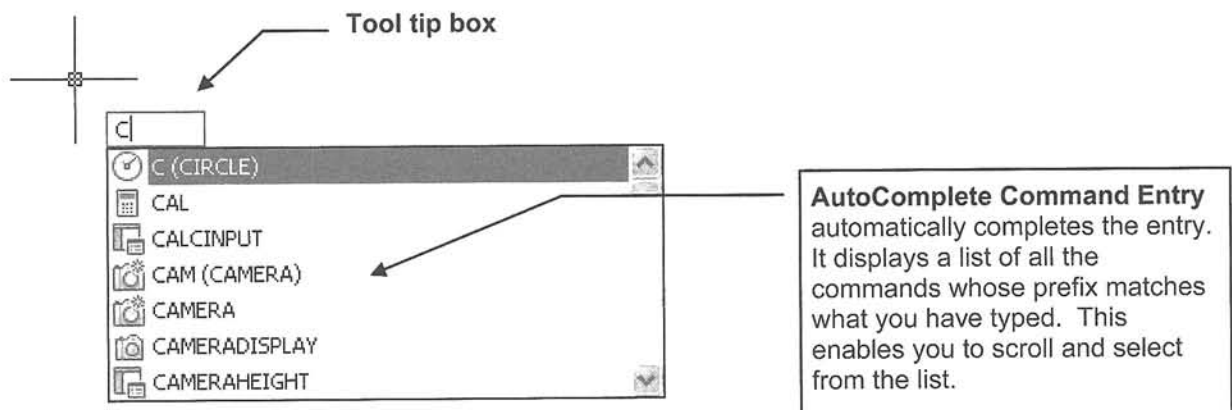
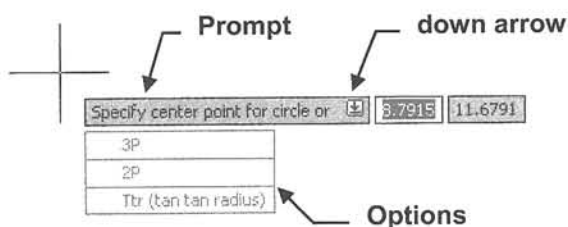To use Dynamic Input you must turn **ON** the **DYN** button in the Status Bar, shown on page 1-17.

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. Place the cursor in the Drawing Area.   (Important)

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.

Tool tip box

| C (CIRCLE) |
| CAL |
| CALCINPUT |
| CAM (CAMERA) |
| CAMERA |
| CAMERADISPLAY |
| CAMERAHEIGHT |

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 ↓ down arrow the options will appear below the prompt.

Prompt   **down arrow**

Specify center point for circle or   8.7915   11.6791

3P
2P
Ttr (tan tan radius)   **Options**

Notice the command entry and prompts are being displayed on the command line also.

Using 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 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 <Space Bar>

2. Next
Endpoint

4. Next
Endpoint

Stop

1. First
Endpoint

3. Next
Endpoint

5. Next
Endpoint
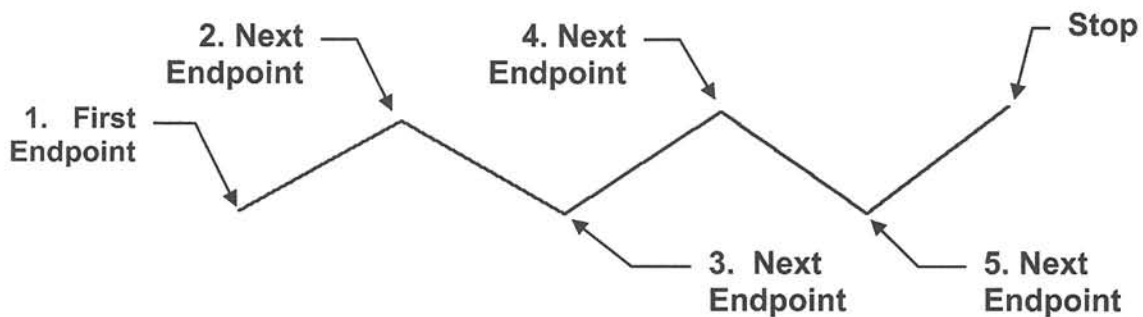
Helpful hint:
To quickly repeat the Line command, press the Spacebar.

Continued on the next page...

2-10

DRAWING LINES....continued

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.
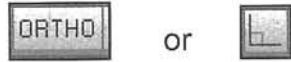
ORTHO   or

Try the following example:

1. Select the **Line** command. (Refer to the previous page)

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 blue when ON.)

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.
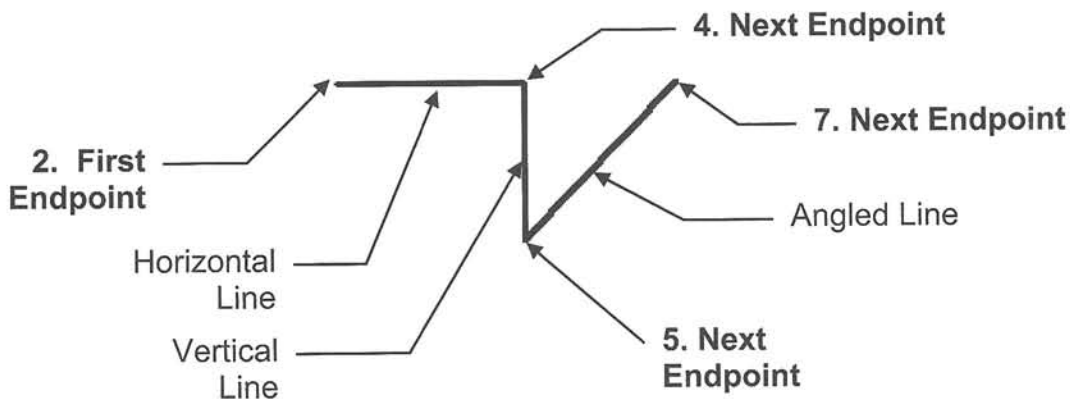
Ortho can be turned ON or OFF at any time while you are drawing. It can also be turned ON or OFF temporarily by holding down the **Shift** key. Release the Shift key to resume.
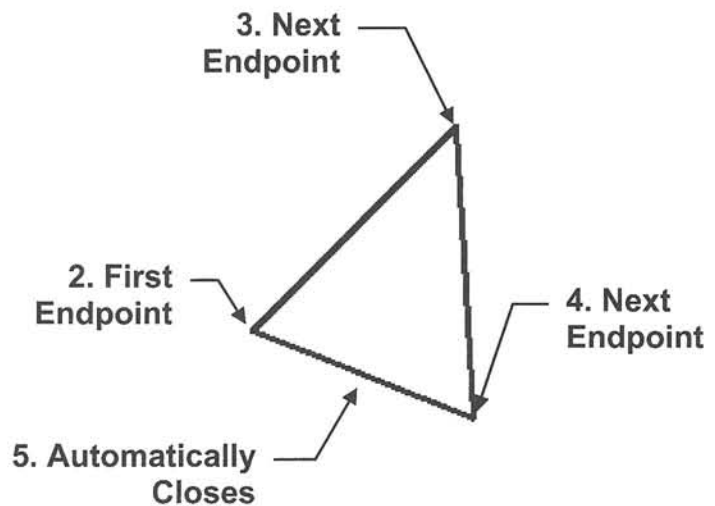
DRAWING LINES....continued

Closing Lines

If you have drawn 2 or more line segments, the endpoint of the last line segment can be connected automatically to the first endpoint using the **Close** option.

Try the following example:

1. Select the Line command.

2. Place the **First endpoint**

3. Place the next endpoint
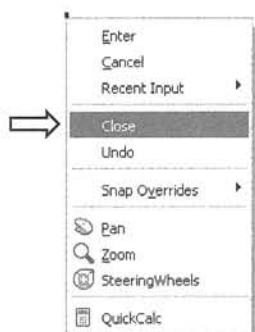
4. Place the next endpoint

5. Type **C** <enter>

    Or

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

3. Next Endpoint

2. First Endpoint

4. Next Endpoint

5. Automatically Closes

What is the Shortcut Menu?
The Shortcut menu gives you quick access to command options.

Enter
Cancel
Recent Input   ▶
Close
Undo
Snap Overrides   ▶
Pan
Zoom
SteeringWheels
QuickCalc

Specify next point or
Close
Undo

Using the Shortcut menu:
Press the right mouse button.
The shortcut menu will appear.
Select an option.
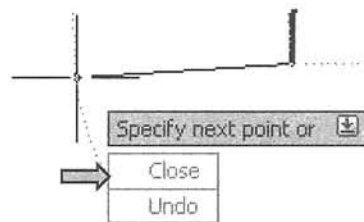
Using the Dynamic Input down arrow:
You may use the right mouse button or press the down arrow ↓ and the options will appear below the Dynamic Input prompt.

METHODS OF SELECTING OBJECTS

Many AutoCAD commands prompt you to "**select objects**". This means select the objects that you want the command to effect.

There are 2 methods. **Method 1.** <u>Pick</u>, is very easy and should be used if you have only 1 or 2 objects to select. **Method 2.** <u>**Window selection**</u>, is a little more difficult but once mastered it is extremely helpful and time saving.
Practice the examples shown below.

Pick Box

Method 1. <u>PICK</u> :
First start a command such as ERASE. (Press E <enter>)
Next you will be prompted to "**Select Objects**", place the cursor (pick box) on the object but do not press the mouse button yet. The object will highlight. This appearance change is called "Rollover Highlighting". This gives you a preview of which object AutoCAD is recognizing. Press the left mouse button to actually select the highlighted object.
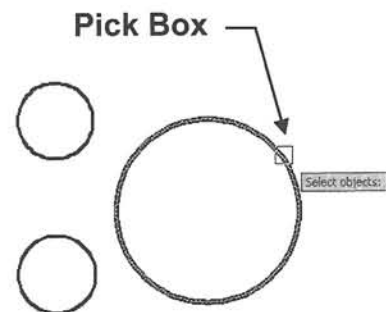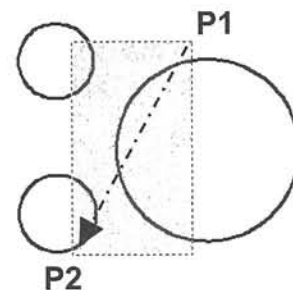
Select objects:

Method 2. <u>WINDOW</u> selection: <u>Crossing</u> and <u>Window</u>

<u>Crossing</u>:
Place your cursor in the area <u>up</u> and to the <u>right</u> of the objects that you wish 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 outer line is *dashed*.)
<u>Only</u> the objects that this window **crosses** will be selected.

P1

P2

In the example on the right, all 3 circles have been selected because the Crossing Window crosses a portion of each.

P1

<u>Window</u>:
Place your cursor in the area <u>up</u> and to the <u>left</u> of the objects that you wish to select (**P1**) and press the left mouse button. Then move the cursor <u>down</u> and to the <u>right</u> of the objects (**P2**) and press the left mouse button.
(Note: The window will be *blue* and outer line is *solid*.)
<u>Only</u> the objects that this window **completely enclosed** will be selected.

P2
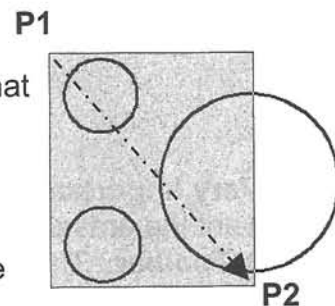
In the example on the right, only 2 circles have been selected.

ERASE

There are 3 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. Select objects: *Pick one or more objects*
   Select Objects: *Press <enter> and the objects selected will disappear.*

Method 2
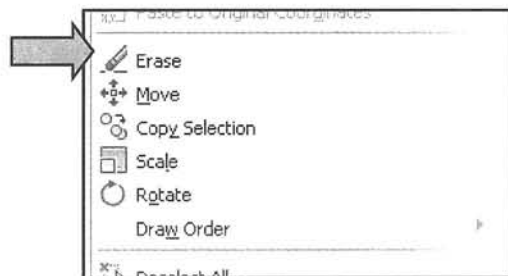Select the Objects first and then the **Delete** Key.

Example:
1. Select the object to be erased.
2. Press the Delete Key.

Method 3
Select the Objects first and then select Erase command from the Shortcut Menu.

Example:
1. Select the object to be erased.
2. Press the right Mouse button.
3. Select **Erase** from the Shortcut Menu using the left mouse button.

Note: 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.
More about Undo and Redo on the next page.

UNDO and REDO

The **UNDO** and **REDO** tools allow you to undo or redo <u>previous commands</u>.
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.

How to use the <u>Undo</u> 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 <u>Redo</u> command:
Select the REDO arrow and the Circle and Rectangle will disappear again.

STARTING A NEW DRAWING

Starting A <u>New</u> 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 the **2013-Workbook Helper.dwt** template each time you are instructed to **Start a <u>New</u> Drawing**.

*Note: Do not use the **New** tool if you want to **open** an **existing drawing**.*
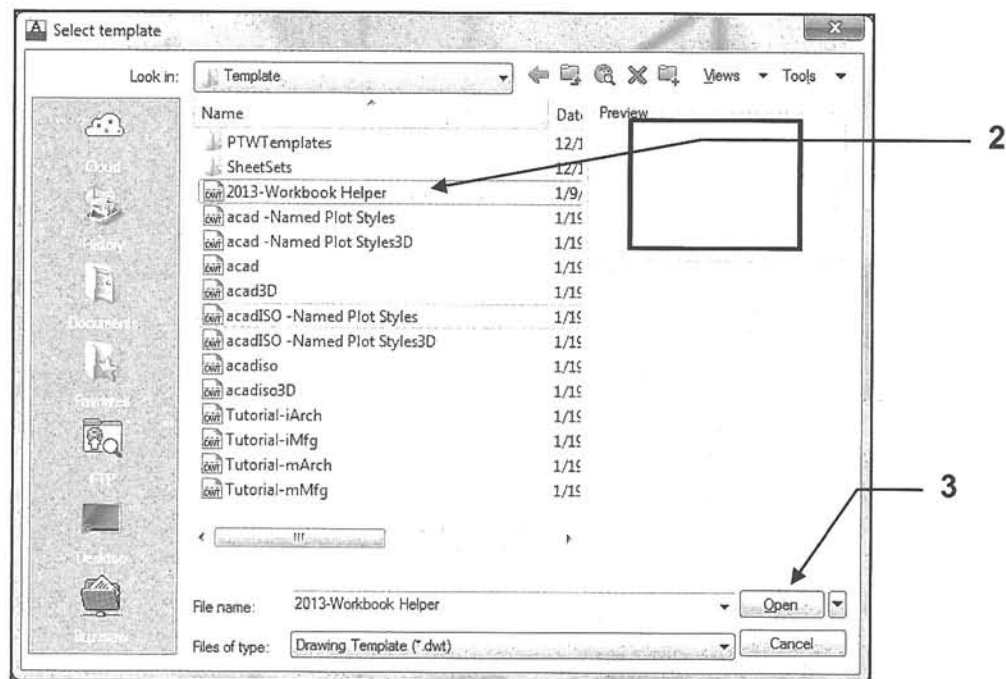*Refer to page 2-17 to OPEN an existing drawing file.*

HOW TO START A NEW DRAWING

1. Select the **NEW** tool from the **Quick Access Toolbar.**
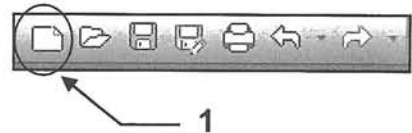
2. Select the **2013-Workbook Helper.dwt** from the list of templates.

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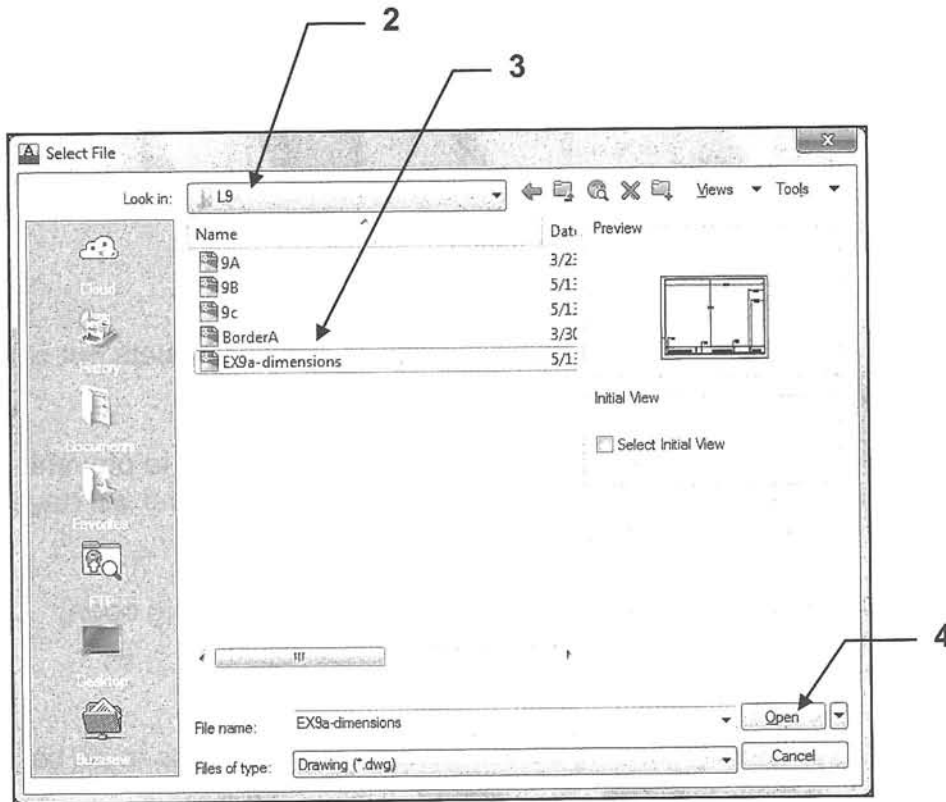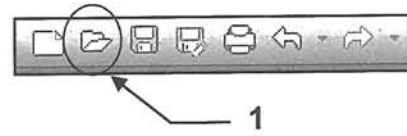

3. Select the **Open** button.

Note:
If you find that you have more than one drawing open you may find this confusing. I suggest that you refer to page 2-18 and follow the steps to change your AutoCAD system to only allow one drawing open at one time.

OPENING AN EXISTING DRAWING FILE

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

1. Select the **OPEN** tool on the **Quick Access Toolbar**.

2. Locate the Directory and Folder in which the file had previously been saved.

3. Select the File that you wish to OPEN.

4. Select the **Open** button.

Note:
If you find that you have more than one drawing open you may find this confusing.
I suggest that you refer to page 2-18 and follow the steps to change your AutoCAD system to only allow one drawing open at one time.

MULTIPLE OPEN FILES

AutoCAD allows you to have multiple drawing files open at the same time. If you select the **Application Menu** and select the **Open Documents** icon a list of all open drawings will be displayed.

Application Menu

Open Document icon

List of open drawings
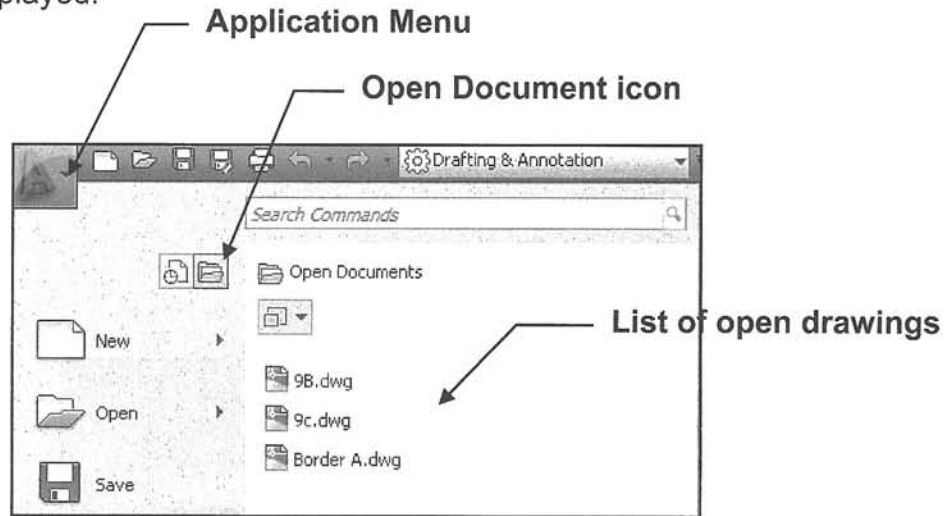
Having multiple drawings open is very helpful to **experienced** AutoCAD users but can be confusing for users **NEW** to AutoCAD.

While using this workbook you might find it helpful if you <u>change a setting </u>to prevent opening more than one file at one time. This will only change AutoCAD and will have <u>no affect on any other software on your computer</u>.

1. Close all but one drawing file. You should only have one drawing open.
2. Type: sdi <enter>
3. Type: 1 <enter>

Now AutoCAD will restrict you to one drawing on the screen. If you choose to go back to multiple drawings repeat the steps above except enter "0" instead of "1".

Read-Only files

If the SDI setting is off, allowing multiple open files, and you open a drawing file that you <u>already have open</u> AutoCAD will display this warning.
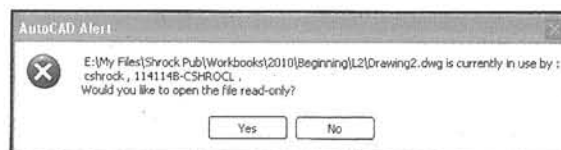
It is best if you select the **No** button. If you select the **Yes** button, AutoCAD will open a duplicate file as a **"Read-only"** file. A Read-only file should only be used as a reference file. It is not good practice to work on a Read-only file.
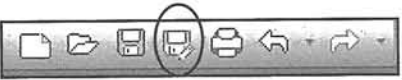
SAVING A DRAWING FILE

After you have completed a drawing, it is very important to save it. 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 2 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 may replace a file with the same name. So play it safe, use **Save As** for now.

1. Select the **Saveas** command using one of the following:

Quick Access Toolbar =
or
Application Menu = Save As / Drawing
or
Keyboard = S <enter>   Saveas

2. Select the "Save In" location.
(This is where the file will be saved.)
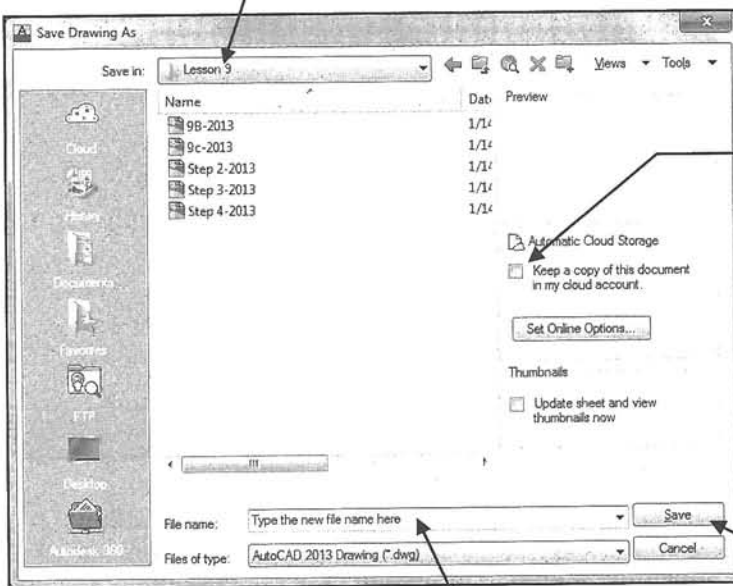
Important:
This box should be un-checked for now.
Refer to page 30-14

4. Select the "Save" button.

3. Type the new file name.

AUTOMATIC SAVE

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** <enter>

2. Select the **Open and Save** tab.

3. Enter the desired **minutes between saves**.

4. Select the **OK** button.
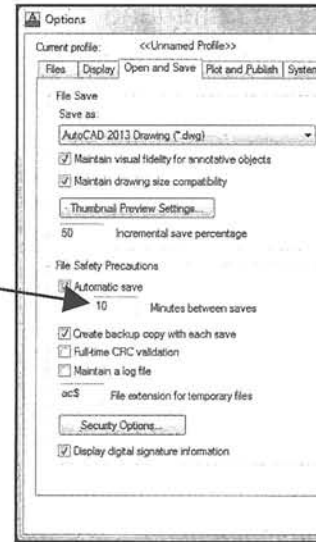
How to change the Automatic Save location

1. Type **options** <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.
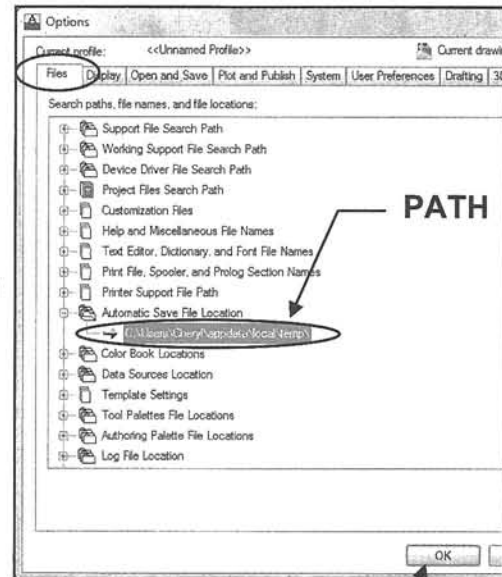
BACK UP FILES and RECOVER

BACK UP FILES

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 with the new 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.)

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 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 2-20)

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.

2. Start the **EXIT** procedure using one of the following.
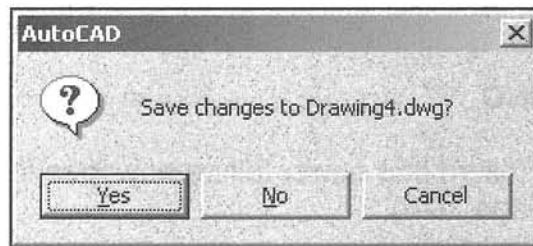
> **Ribbon = None**
> **or**
> **Application Menu =** Exit AutoCAD
> **or**
> **Keyboard = Exit <enter>**

If any changes have been made to the drawing since the last **Save As**, the warning box shown below will appear asking if you want to **SAVE THE CHANGES?**
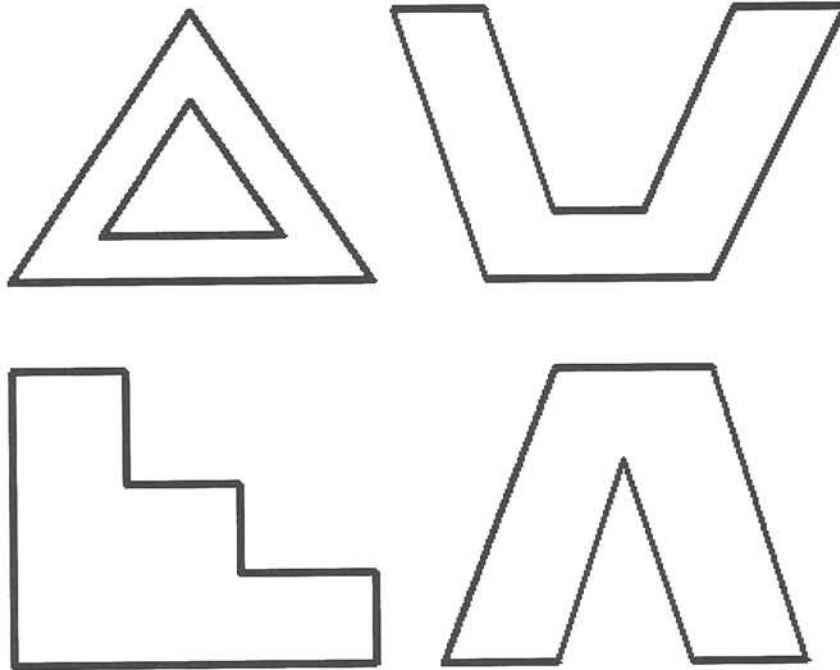
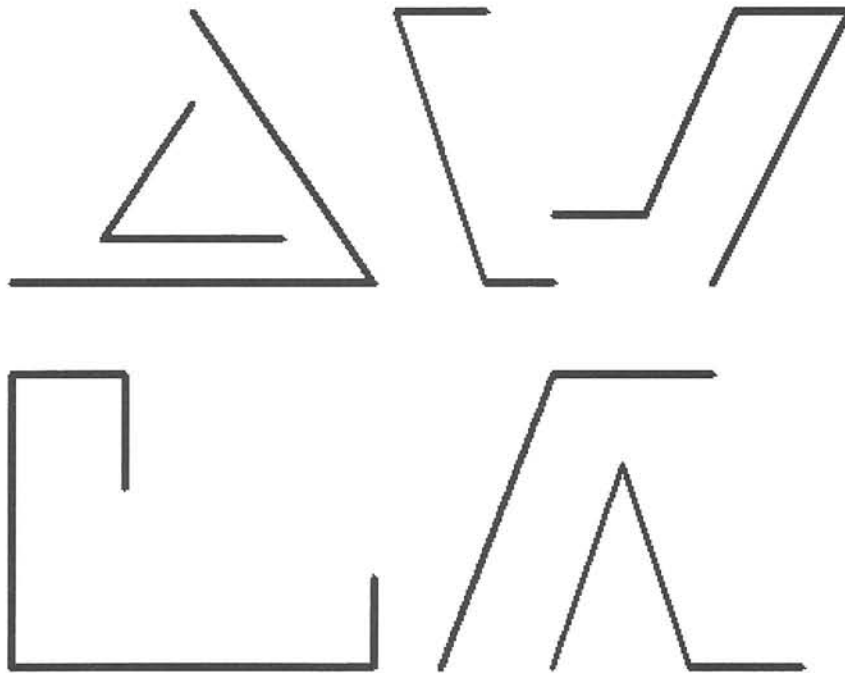Select **YES, NO** or **CANCEL**.

EXERCISE 2A

INSTRUCTIONS:

1. Start a **NEW** file using **2013-Workbook Helper.dwt.**
2. **Draw** the objects below using:

   A. **Line** command

   B. **Ortho** (F8) **ON** when drawing Horizontal and Vertical lines.

   C. **Ortho** (F8) **OFF** when drawing lines on an Angle.

   D. Turn **Increment Snap** (F9) **ON**

   E. Turn **Osnap** (F3) **OFF**

   F. Turn **Grid** (F7) **ON**

   G. Use the **Close** option

3. **Save** the drawing as: **EX2A**

EXERCISE 2B

INSTRUCTIONS:

1. <u>**OPEN**</u> **EX2A**, if not already open.

2. **Erase** the missing Lines as shown.

      A. Turn **Osnap** (F3) **OFF** (It will be easier to move the cursor accurately)

3. **Save** the drawing as: **EX2B**

EXERCISE 2C

INSTRUCTIONS:

1. Start a **NEW** file using **2013-Workbook Helper.dwt.**
2. **Draw** the objects below using:
    - A. **Line** command
    - B. **Ortho** (F8) **ON** when drawing Horizontal and Vertical lines.
    - C. **Ortho** (F8) **OFF** when drawing lines on an Angle.
    - D. Turn **Increment Snap** (F9) **ON**
    - E. Turn **Osnap** (F3) **OFF**
    - F. Turn **Grid** (F7) ON
    - G. Use the **Shift Key** to toggle Ortho ON and OFF
3. **Save** the drawing as: **EX2C**

EXERCISE 2D

INSTRUCTIONS:

1. Start a **NEW** file using **2013-Workbook Helper.dwt.**

2. **Draw** the objects below using:

     A. **Line** command

     B. **Ortho** (F8) **ON** when drawing Horizontal and Vertical lines.

     C. **Ortho** (F8) **OFF** when drawing lines on an Angle.

     D. Turn **Increment Snap** (F9) **ON**

     E. Turn **Osnap** (F3) **OFF**

     F. Turn **Grid** (F7) ON

     G. Use the **Shift Key** to toggle Ortho ON and OFF

3. **Save** the drawing as: **EX2D**