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An Introduction to AutoCAD for Beginners

AUTODESK.

Guide to AutoCAD Basics

In this section, you'll find a comprehensive technical AutoCAD tutorial which includes all the basic commands you will need when creating 2D drawings with AutoCAD or AutoCAD LT.

If you have just completed your AutoCAD training, or if you are comfortable with AutoCAD basics but would like a refresher, this is a great place to start. The included commands are grouped together according to types of activity, and are arranged to follow a general workflow. The following sections are covered:

Basics:
This section reviews the basic AutoCAD controls.

Viewing:
Pan and zoom in a drawing, and control the order of overlapping objects.

Geometry:
Create basic geometric objects such as lines, circles, and hatched areas.

Precision:
Ensure the precision required for your models.

Layers:
Organize your drawing by assigning objects to layers.

Properties:
You can assign properties such as color and linetype to individual objects, or as default properties assigned to layers.

Modifying:
Perform editing operations such as erase, move, and trim on the objects in a drawing.

Blocks:
Insert symbols and details into your drawings from commercial online sources or from your own designs.

Layouts:
Display one or more scaled views of your design on a standard-size drawing sheet called a layout.

Notes and Labels:
Create notes, labels, bubbles, and callouts. Save and restore style settings by name.

Dimensions:
Create several types of dimensions and save dimension settings by name.

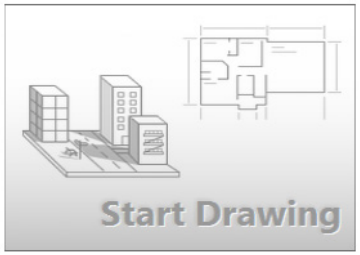
Printing:
Output a drawing layout to a printer, a plotter, or a file. Save and restore the printer settings for each layout.

For questions, the **product discussion** group is a great resource, as is the **AutoCAD blog**.

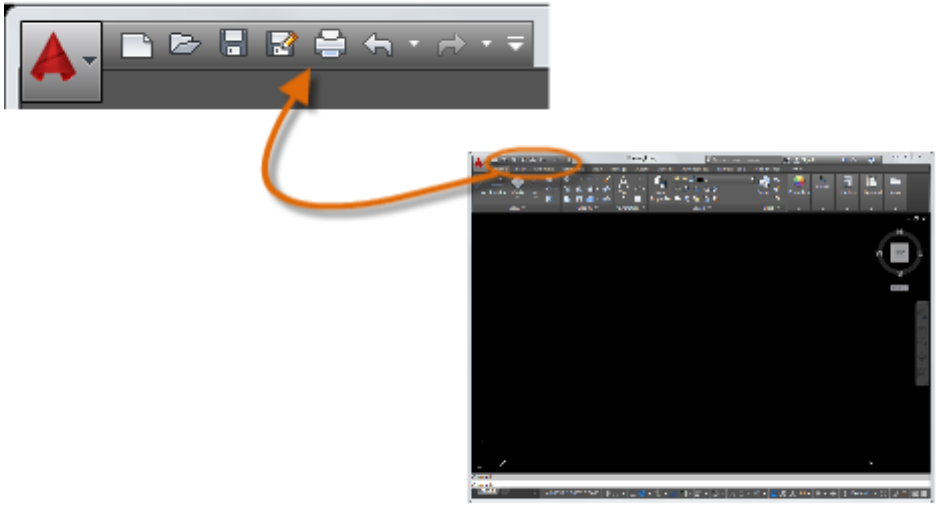
Basics

Review the basic AutoCAD controls.

After you launch AutoCAD, click the Start Drawing button to begin a new drawing.



AutoCAD includes a standard tabbed ribbon across the top of the drawing area. You can access nearly all the commands presented in this guide from the **Home** tab. In addition, the Quick Access toolbar shown below includes familiar commands such as New, Open, Save, Print, Undo, and so on.



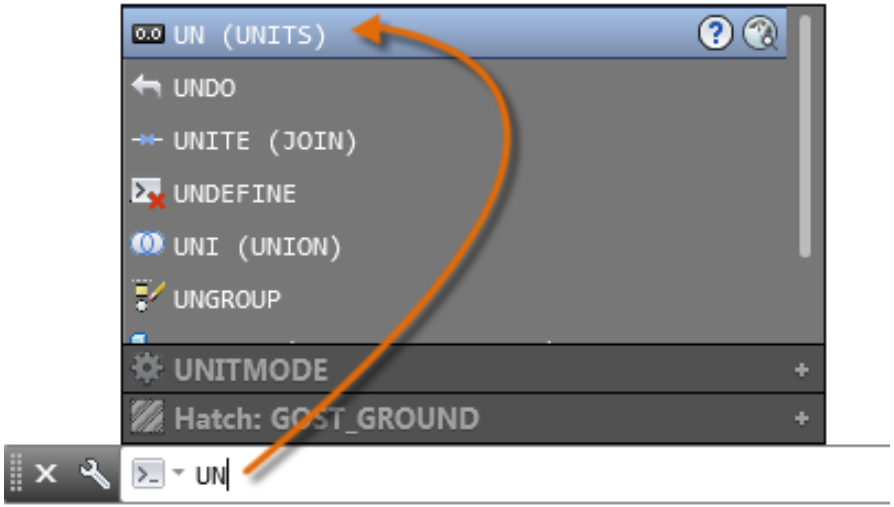
NOTE: *If the Home tab is not the current tab, go ahead and click it.*

The Command Window

At the heart of AutoCAD is the Command window, which is normally docked at the bottom of the application window. The Command window displays prompts, options, and messages.

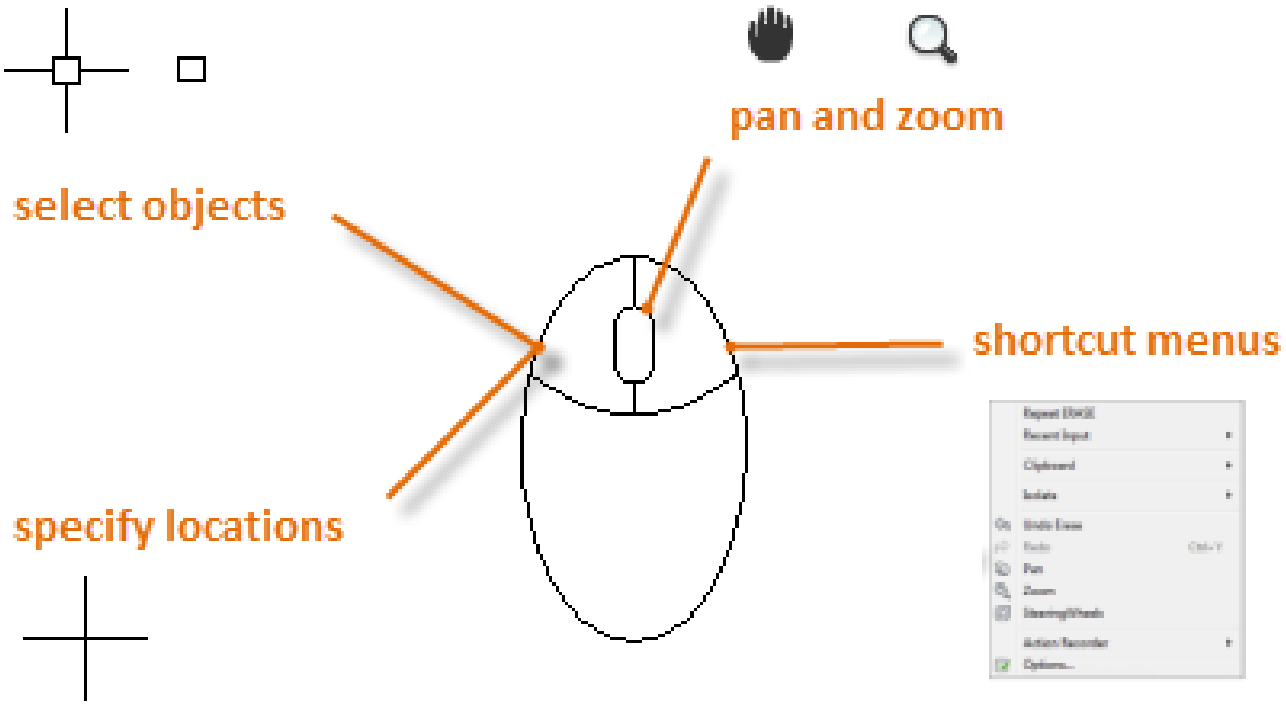
You can enter commands directly in the Command window instead of using the ribbon, toolbars, and menus. Many long-time AutoCAD users prefer this method.

Notice that as you start to type a command, an autocomplete menu appears. When several options are available, such as in the example below, make your choice by clicking the correct option or using the arrow keys and then pressing Enter or the Spacebar to confirm your selection.



The Mouse

Most people use a mouse as their pointing device, but other devices have equivalent controls.

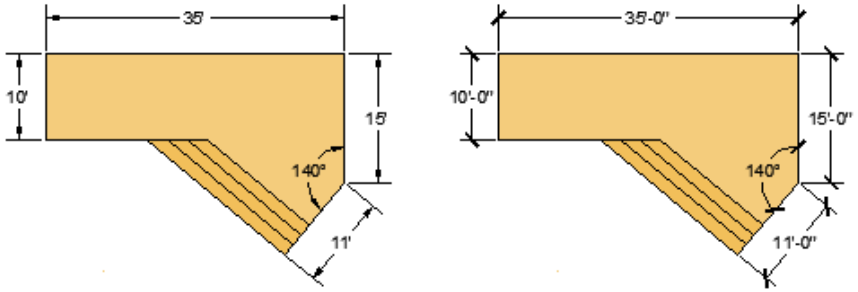


Here's a Tip:

When looking for a command or option, try right-clicking. Depending on where your cursor is located, different menus will display relevant commands and options.

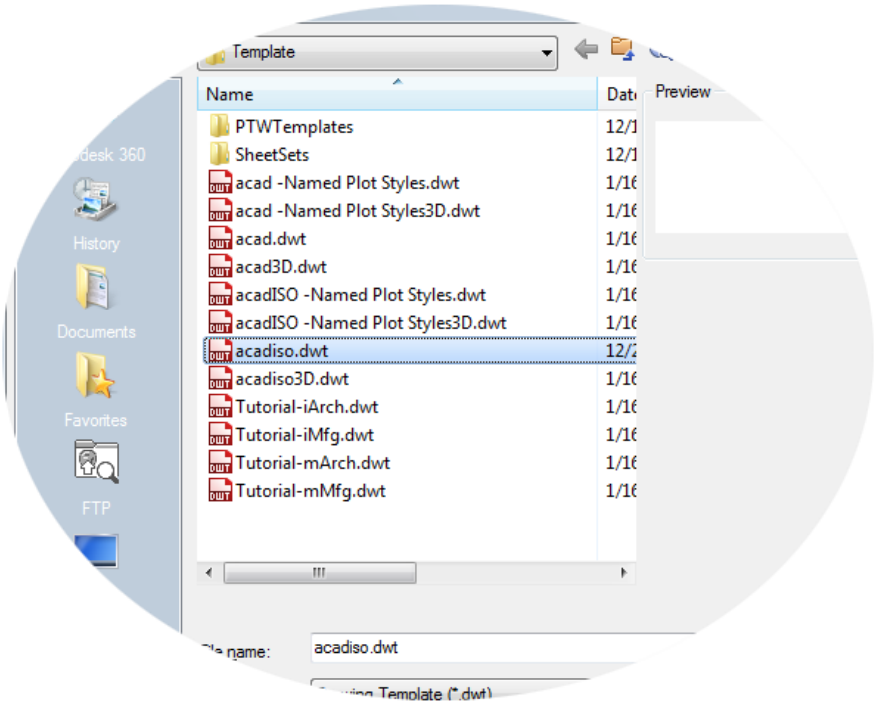
New Drawings

You can easily conform to industry or company standards by specifying settings for text, dimensions, linetypes, and several other features. For example, this backyard deck design displays two different dimension styles.



All these settings can be saved in a *drawing template* file. Click New to choose from several drawing template files:

- For imperial drawings that assume your units are inches, use *acad.dwt* or *acadlt.dwt*.
- For metric units that assume your units are millimeters, use *acadiso.dwt* or *acadltiso.dwt*.

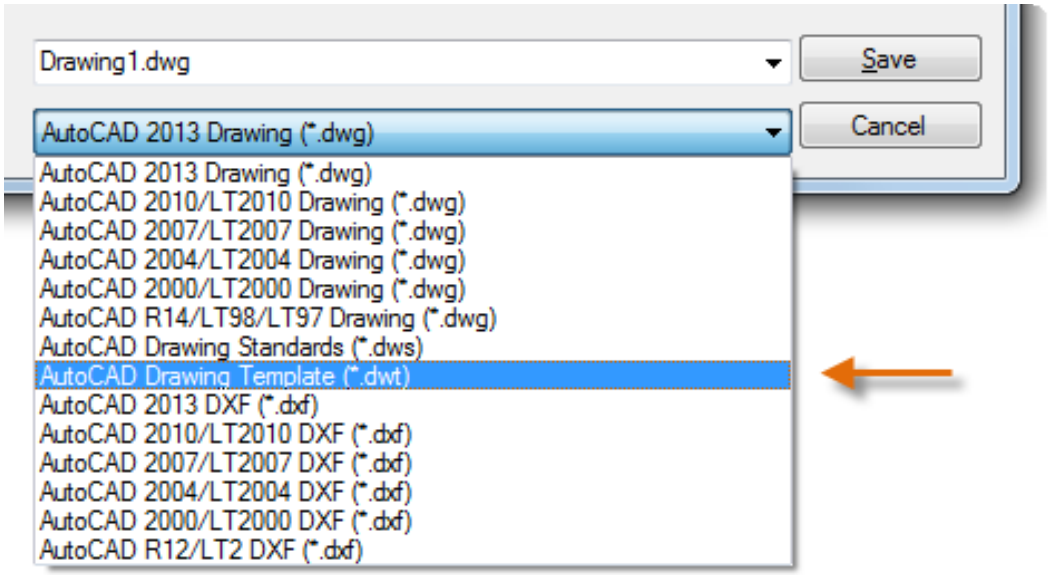


The "Tutorial" template files in the list are examples of the architectural or mechanical design templates using both imperial (i) and metric (m) measurements. You might want to experiment with them.

Most companies use drawing template files that conform to company standards, and they will often use different drawing template files depending on the project or client.

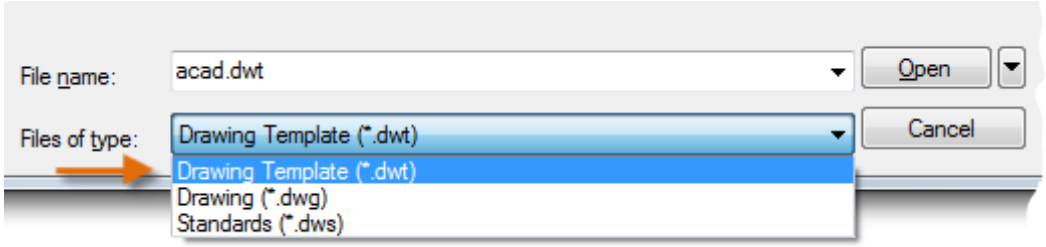
Create Your Own Drawing Template File

You can save any drawing (*.dwg*) file as a drawing template (*.dwt*) file. You can also open any existing drawing template file, modify it, and then save it again with a different filename if needed.



If you work independently, you can develop your drawing template files to suit your working preferences, adding settings for additional features as you become familiar with them.

To modify an existing drawing template file, click Open, specify Drawing Template (*.dwt) in the Select File dialog box, and choose the template file.

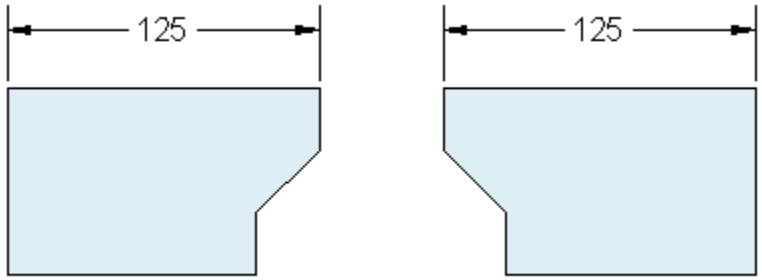


Important:

If your company has already established a set of drawing template files, check with your CAD manager before modifying any of them.

Units

When you first start a drawing, you need to decide what the length of one unit represents—an inch, a foot, a centimeter, a kilometer, or some other unit of length. For example, the objects below could represent two buildings that are each 125 feet long, or they could represent a section from a mechanical part that is measured in millimeters.



Unit Display Settings

After you decide what unit of length that you want to use, the **UNITS** command lets you control several unit display settings including the following:

- **Format (or Type):** For example, a decimal length of 6.5 can be set to display as a fractional length of 6-1/2 instead.
- **Precision:** For example, a decimal length of 6.5 can be set to display as 6.50, 6.500, or 6.5000.

If you plan to work in feet and inches, use the **UNITS** command to set the unit type to Architectural, and then when you create objects, specify their lengths in inches. If you plan to use metric units, leave the unit type set to Decimal. Changing the unit format and precision does not affect the internal precision of your drawing, it affects only how lengths, angles, and coordinates are displayed in the user interface.

Here's a Tip:

If you need to change the **UNITS** settings, make sure that you save the drawing as a drawing template file (.dwt). Otherwise, you will need to change the **UNITS** settings for each new drawing.

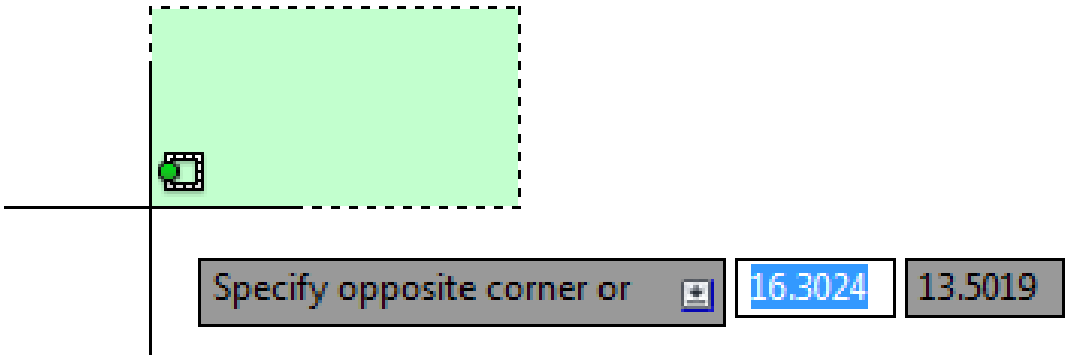
Model Scale

Always create your models at full size (1:1 scale). The term *model* refers to the geometry of your design. A *drawing* includes the model geometry along with the views, notes, dimensions, callouts, tables, and the title block displayed in the *layout*.

You can specify the scaling that is necessary to print a drawing on a standard-sized sheet later, when you create the layout.

Recommendations

- To open **Help** for information about the command in progress, press F1.
- To **repeat** the previous command, press Enter or the Spacebar.
- To see various **options**, select an object and right-click or right-click a user interface element.
- To **cancel** a command in progress or if you ever feel stuck, press Esc. For example, if you click in the drawing area before entering a command, you will see something like the following:



Here's a Tip:

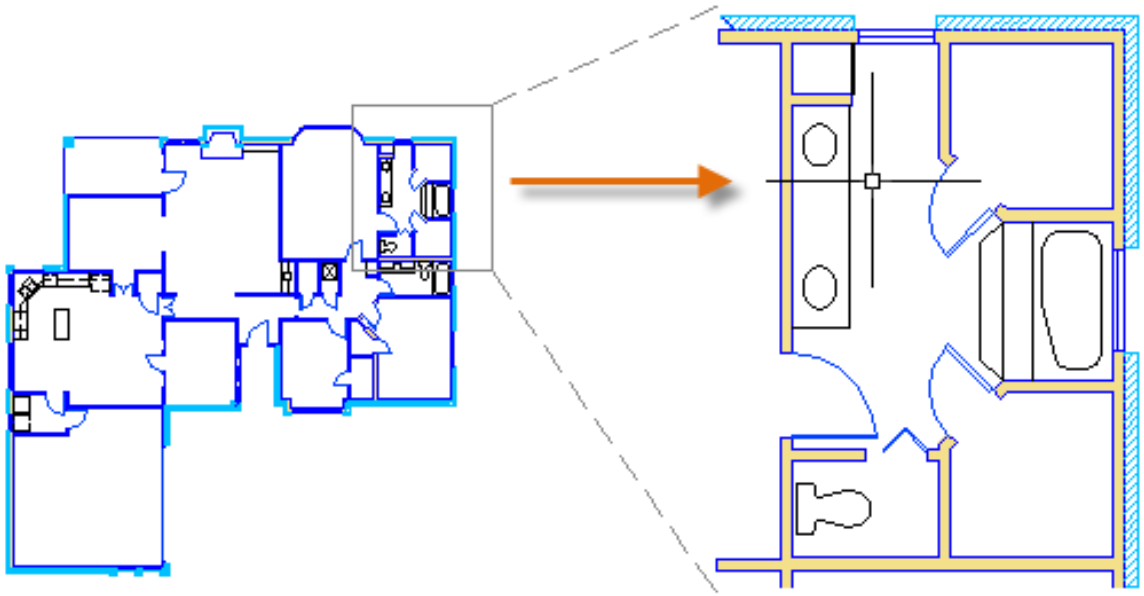
Press Esc to cancel this preselection operation.

Viewing

Zoom in on a drawing to better control the order of overlapping objects.

The easiest way to change your view is by using the mouse wheel.

- Zoom in or out by rolling the wheel.
- Pan a view in any direction by holding the wheel down while moving your mouse.
- Zoom in on a specific area for greater detail holding your mouse over the area and clicking the wheel twice.



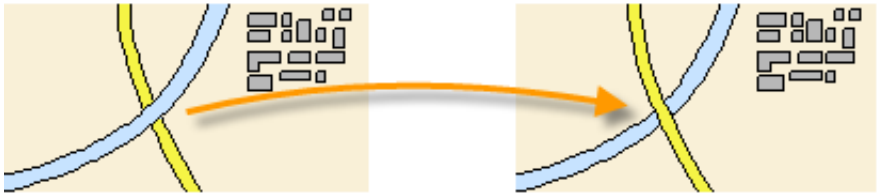
Here's a Tip:

When you zoom in or out, the location of the cursor is important. Think of your cursor as a magnifying glass. For example, if you position the cursor in the upper-right area of the floor plan as shown below, zooming in magnifies the dressing room without shifting the view.

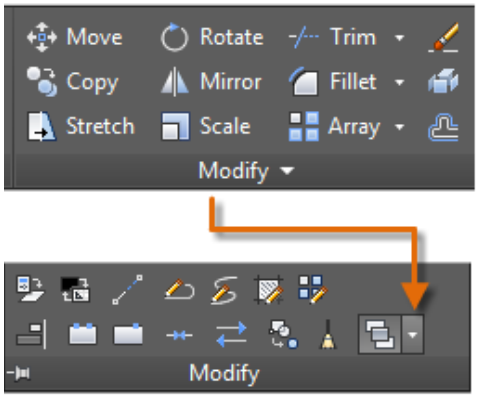
NOTE: *If you cannot zoom or pan any more, type* ***REGEN*** *in the Command window and press Enter. This command regenerates the drawing display and resets the extents available for panning and zooming.*

Overlapping Objects

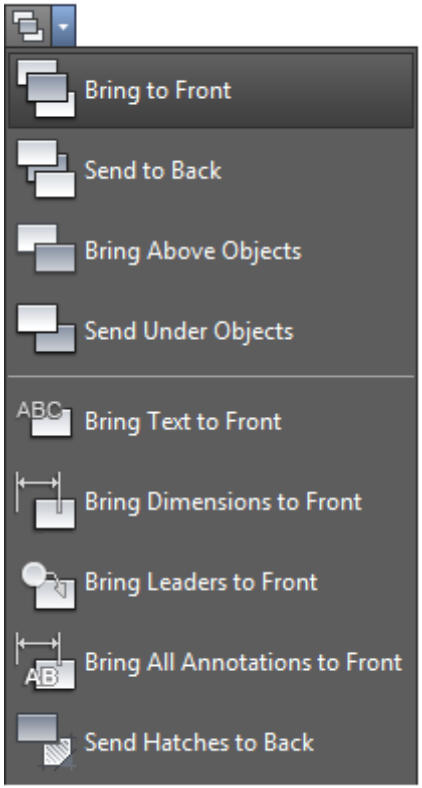
If you create objects that overlap, you might need to change which objects are displayed on top or in front of the others. For example, if you want the yellow highway to cross the blue river rather than the other way around, use the **DRAWORDER** command to reorder the objects.



You can access several draw order options from the Modify panel on the ribbon. Click to expand the Modify panel, and then click the down-arrow as shown below.



The draw order options that are listed include sending all hatches to the back, all text to the front, and so on.



Geometry

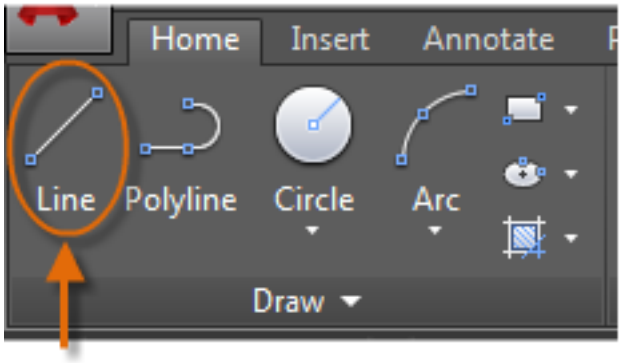
Create basic geometric objects such as lines, circles, and hatched areas.

You can create many different types of geometric objects in AutoCAD, but you only need to know a few of them for most 2D drawings.

NOTE: *If you want to simplify the display while creating geometric objects, press F12 to turn off dynamic input.*

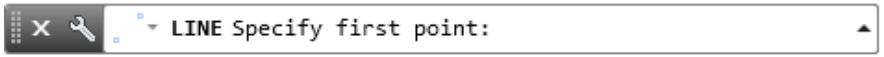
Lines

The line is the most basic and common object in AutoCAD drawings. To draw a line, click the Line tool.

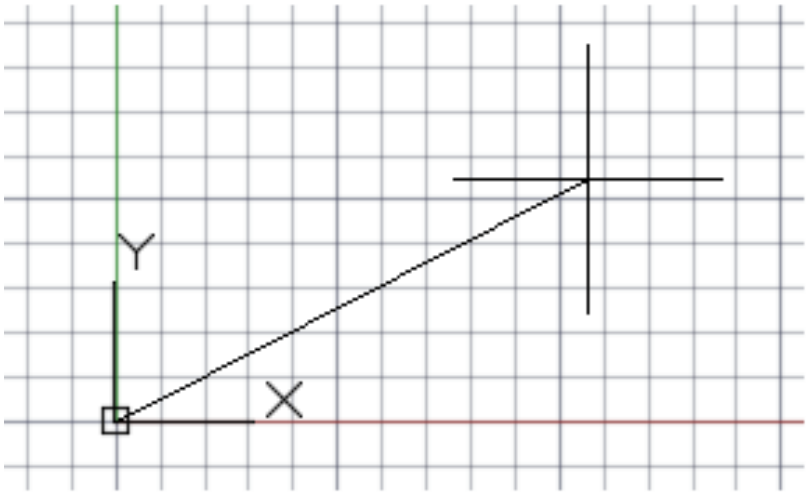


Alternatively, you can type **LINE** or just **L** in the Command window, and then press Enter or the Spacebar.

Notice the prompt in the Command window for a point location.



To specify the starting point for this line, you would type in the coordinates 0,0. It is a good idea to locate one corner of your model at 0,0, which is called the origin point. To locate additional points, you could specify additional X,Y coordinate locations in the drawing area, however more efficient methods for specifying points are available, and will be presented in the Precision topic.



After you specify the next point, the **LINE** command automatically repeats itself, and it keeps prompting you for additional points. Press Enter or the Spacebar to end the sequence.