Basic AutoCAD Commands & Procedures

F3 – Osnap On/Off
Osnap is used to assist the operator in ensuring that all lines in a drawing connect accurately. Osnap creates a “Magnetic” drawing cursor that is attracted to parts of a drawing such as the center and quadrant points of a circle, midpoint and endpoints of lines, and enables the operator to create lines that are perpendicular, parallel or tangent to other lines, circles or arcs.

F5 – Isoplane On/Off
Used to toggle the planes on which you are able to draw when AutoCAD is set to draw in isometric. Pressing F5 allows the operator to draw on the Frontal Plane, Top Plane, or Right Side Plane, and may be toggled during a drawing operation or before beginning an operation. (Note: F8 should be turned ON at all times while drawing in isometric snap)

F8 – Ortho On/Off
Ortho is used in order to ensure that the lines you draw are perfectly horizontal or perfectly vertical. If Ortho is toggled to the off position, lines may be drawn at any angle and there is no assurance that they will be drawn squarely.

Draw Commands

Line – L (Enter) or
Polyline - Pline (Enter)
(Used for creating Lines)
(Pline works the same way but creates a continuous line instead of segmented line)
1. Type L and press Enter
2. Left click at start point of line
3. Move the mouse in direction the line should be drawn
4. Type in the numerical length of the line and press Enter
5. (This will set the line)
6. To continue adding lines move the mouse in the next direction
7. Type in the numerical length of the next line and press Enter
8. Continue in this manner until all lines have been placed.
9. To disconnect cursor from the end of the last line drawn Right Click the mouse or Press Enter

To Create Isometric/Oblique Lines Using Direct Keyboard Entry Method:
1. Type L, and Press Enter
2. Left Click at the start point of the line to be drawn and move the mouse in the direction the line should travel. (Do NOT click the mouse)
3. Type the following into the command line:
   a. @ desired line length < desired angle then press Enter
4. For Isometric drawings, the angle for lines to the right will be 30
5. For isometric drawings, the angle for lines to the left will be 150
   a. Example…( A 3 ½” line drawn at 150 degrees)
      i. @3.5<150 (Enter)
Arc – A (Enter)
(Used to draw an arc or curved line)
1. Type A and press Enter
2. Left click at the first endpoint of the arc
3. Left click at the center point of the arc
4. Left click at the endpoint of the arc

Circle – C (Enter)
(Used to draw circles)
1. Type C and press Enter
2. Left click on the centerpoint for the circle
3. Type R and press Enter
4. Enter the radius of the circle and press Enter

Polygon- Polygon (Enter)
(Draws a polygon with a given number of sides and inscribed or circumscribed size).
1. Type Polygon and press Enter
2. Type the number of sides you want for the polygon and press (Enter)
3. Select the centerpoint of the polygon being drawn
   a. Enter I for an inscribed polygon
   b. Enter C for circumscribed polygon
3. Type the radius of the circle to inscribe or circumscribe and press Enter

Snap – Snap (Enter)
(Used to set the drawing screen to standard or isometric)
1. Type Snap and press Enter
2. Type S and press Enter
   a. For a Standard Snap, Type S and Press Enter 3 times
   b. For an Isometric Snap, Type I and press Enter 3 times
3. Type Off and press Enter

Modify Commands

Offset – O (Enter)
(Used to create an exact copy of an object a set distance from an original object).
1. Type O and press Enter
2. Type in the distance to offset the line and press Enter
3. Left Click the object to offset
4. Left click on the side of the original object you want the object to offset towards.
   a. To continue with another offset, simply left click on the next object
   b. Left click on the side of the original object you want the object to offset towards.
5. To end the offset command, right click the mouse.
Copy – CP (Enter)  
(Used to create an exact copy of an object)  
1. Type CP and press Enter  
2. Left click on all objects to be copied.  
   a. (Right Click the mouse when you are finished selecting objects)  
3. Left Click on the basepoint of the object to be copied.  
4. Slide the mouse and the object will be attached to the cursor.  
5. Left click where you want the object to be placed.  
   a. Continue as many times as needed to copy multiple objects  
6. Right Click to end the Copy command.

Trim – Tr (Enter) (Enter)  
(Used to erase portions of a line while leaving the rest of it intact)  
1. Type Tr and press Enter twice.  
2. Left click on the part of the line you want to disappear.  
3. Continue to trim until finished…then right click to end the Trim command.

Trim – Tr (Enter)  
(Used to erase part of a line beyond a selected intersection)  
1. Type Tr and press Enter.  
2. Left click on the line that intersects the line you want to trim.  
3. Right click the mouse.  
4. Left click the mouse on the end of the line you want to trim.

Rotate – Ro (Enter)  
(Used to Rotate an object around a center point)  
1. Type Ro and press Enter  
2. Left click on the object(s) you want to rotate, and then right click the mouse.  
3. Left Click on the base point (center or rotation) of the object.  
4. Slide the mouse and you will see the objects begin to move in a rotational pattern.  
5. Type in the number of degree to rotate the object(s) and press Enter  
   a. Positive number degrees rotate the object counter-clockwise.  
   b. Negative number degrees rotate the object clockwise.  
6. To rotate more objects, begin again with step 1.

Fillet – F (Enter)  
(Fillet has two purposes…This procedure will be used to join a disconnected corner at a 90 degree right angle)  
1. Type F and press Enter  
2. Type R and press Enter  
3. Type 0 and press Enter  
4. Left click near the middle of the first line to be joined.  
5. Left click near the middle of the second line to be joined.
**Fillet – F (Enter)**
*(This procedure will be used to convert a square 90 degree corner to a rounded corner)*
1. Type F and press Enter
2. Type R and press Enter
3. Type the radius of the arc desired and press Enter
4. Left click near the middle of the first line to be joined.
5. Left click near the middle of the second line to be joined.

**Move – M (Enter)**
*(Used to move an object from one place to another on the drawing screen)*
1. Type M and press Enter
2. Left click on the object(s) to move.
3. Right click the mouse when through selecting the objects to move.
4. Left click on the basepoint of the object being moved.
5. Left click where you want the object to be moved to.

**Mirror- Mi (Enter)**
*(Used to create an exact copy of an object or objects about a center line)*
1. Type Mi and press Enter
2. Left click the objects to be mirrored, then right click the mouse.
3. Left click on the center point to be mirrored around.
4. Slide the mouse around until you see the object mirror into place.
   a. Make sure Ortho (F8) is set to On.
5. Left Click the mouse to lock the drawing in place.
   a. Type Y if you wish to delete the original object
   b. Type N if you wish to keep the original object.
6. Right click the mouse to end the mirror command.

**Scale- Sc (Enter)**
*(Used to enlarge or reduce the size of an object proportionately in the X, Y, & Z axis’s)*
1. Type SC (Enter)
2. Select the objects to be scaled, then right click the mouse.
3. Left click the base point you want to use…often the centerpoint of all objects being scaled.
4. Type the scale you want to increase or decrease the drawing by then press Enter
   Example:
   a. To increase the size of an object by 100% enter 2
   b. To decrease the size of an object by 50% enter .5

**Erase - E (Enter)**
*(Used to delete entities from a drawing)*
1. Type E and press Enter
2. Select all objects to be erases, then right click the mouse
Hatch – H (Enter)  
(Used to create a crosshatched area filled with a specific pattern)  
1. Type H and press Enter  
2. From the Pop-up window that appears, select the hatch pattern to be used  
3. Set the Angle and Scale to the desired quantities  
4. Left click on the Add: Pick Points button at the top right side of the popup window.  
5. Left click in the center of the areas to be hatched, then right click when finished.  
6. Select (Enter) from the popup window, then OK from the next Popup window

3D COMMANDS

Overkill & Pedit (Used to convert lines into polylines)  
1. Type Overkill, and press Enter  
2. Select the entire drawing, then right click the mouse  
3. Select OK from the popup window  
4. Type Pedit and Press Enter  
5. Left click on one of the lines to be converted into a polyline, then right click the mouse.  
6. Type J and press (Enter)  
7. Select all lines to be converted to a polyline, then right click the mouse twice

Union (Used to join two or more solids into a single solid piece)  
1. Type Union and Press Enter  
2. Left click on the items to join together, then click the right mouse button.

Subtract (Used to remove a solid from another solid.  
1. Type Subtract and Press Enter  
2. Left click on the solid you wish to keep, then right click the mouse.  
3. Left click on the part you wish to remove, then right click the mouse.

Extrude – Extrude (Enter) (Used to add depth or thickness to a 2D object.)  
1. Type Extrude and press Enter  
2. Left click on the polyline object(s) to extrude, then right click.  
3. Type the distance to extrude the object and press Enter

Cylinder – Cyl (Enter)  
(Used to create a cylinder with a given radius/diameter and height)  
1. Type Cyl and press (Enter)  
2. Left click on the centerpoint for the cylinder  
3. Perform one of the following:  
   a. Press R (Enter) for radius, then input the radius and press Enter  
   b. Press D (Enter) for diameter, then input the diameter and press Enter  
4. Input the height of the cylinder, then press Enter.
AutoCAD Viewport and Zoom Scale Instructions
How to place a drawing into a previously created viewport

1. Complete all drawing of the objects in the Model Tab

2. Left-Click on the desired Tab at the bottom of the screen

3. Activate the viewport you want to use by double left clicking the mouse in the center of the viewport.

4. Once the viewport is activated, a bold border will appear surrounding the viewport.

5. Type Z (Enter) and E (Enter). This command is Zoom Extents and will bring all objects drawn in the model tab into view.

6. Use the mouse wheel to pan and zoom the desired portion of the model space into view within the viewport.
   a. Note the scale on the bottom left corner of the viewport.
   b. (Usually it will be 1:1, 1:2 etc.)

7. Type Z (Enter) S (Enter), then type the scale factor below and press (Enter)
   a. For 1:1 scale type 1xp (Full Scale)
   b. For 1:2 scale, type 1/2xp or .5xp (Half Scale)
   c. For 1:4 scale, type 1/4xp or .25xp (Quarter Scale)