

DesignCAD®

2019

Getting Started Guide

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Getting Started Guide

Welcome to the DesignCAD 2019 Getting Started Guide. The goal of this book is to get you quickly up and running, and to introduce you to the user interface and a variety of drawing and editing tools.

System Requirements

Minimum Requirements:

- Approximately 150 megabytes of hard drive space for a compact installation.
- 512 Mb RAM
- Microsoft Windows 7, Windows 8.x, or Windows 10.

Recommended Requirements:

- A 64-bit multi-core Intel or AMD processor
- 4096 Mb RAM
- A graphics card with OpenGL support and 1 GB or more of video RAM for DesignCAD 3D Max
- A monitor capable of at least 1024 x 768 resolution

Installing DesignCAD

To install DesignCAD, insert the CD into your CD-ROM. If the installation process does not start automatically, select Start / Run from the Windows taskbar and type D:\setup.exe (where D is the drive letter of the CD-ROM).

The **Setup** program creates a program folder. If you choose the default settings, DesignCAD is installed in the folder "C:\Program Files\IMSIDesign\DesignCAD 3D Max 2019." This folder contains only the DesignCAD program files, Help files, and necessary support binaries. When you first run DesignCAD, the program will also set up a new folder in C:\Users\your user name\My Documents\DesignCAD 3D Max 2019 which will contain all sample files and the program's default settings. This will also be the default location where your drawings are stored.

The **Setup** program also creates a program group containing the DesignCAD application icon, as well as shortcuts to the Help and the Readme file.

Activation

Activation is required for all DesignCAD versions. If you have installed the electronic download version, you must enter your activation code to make DesignCAD operational. Your activation code should have been emailed to you along with your serial number at the time of purchase.

If you have installed a boxed version, you have a 30-day grace period before you must enter your activation code. This can be obtained online or via telephone.

Starting DesignCAD

If you accepted the default installation settings, DesignCAD can be accessed via the Windows **Start / Programs** menu.

- 1 Click the **Start** button on the Windows taskbar.
- 2 Select **Programs / DesignCAD 3D Max 2019**

NOTE: You can also start DesignCAD by double-clicking the desktop icon.

- 3 In the **New File Wizard**, click the **New Drawing** icon.

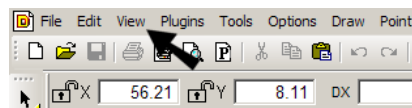


The DesignCAD User Interface

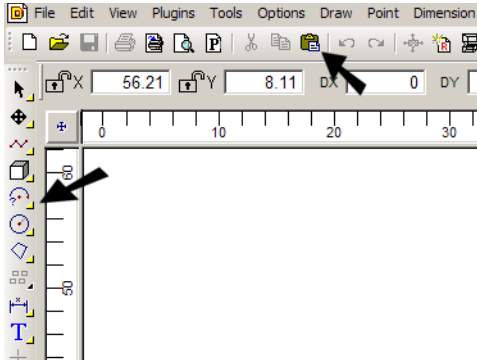
The main area of the DesignCAD window is the drawing area. By default, the background color is white, but you can change this by selecting **Options / Options** and making changes on the **Color** tab.

We will now look at some components of the User Interface (UI).

All tools and options are available by selecting them from the **Menu Bar** at the top of the window - **File, Edit, View, etc.** (Most tools are available in toolbox icons as well).

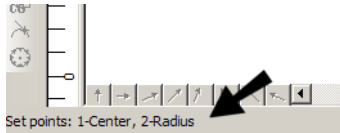


Toolboxes are groups of related icons. They can be located along the top, bottom, and sides of the window.

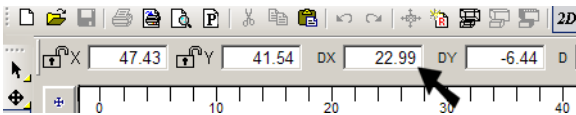


You can drag a toolbox to another location by picking it on its top or left edge.

Located at the lower left corner of the window, the **Status Bar** lets you know the current status of the model, and prompts you for the next action.

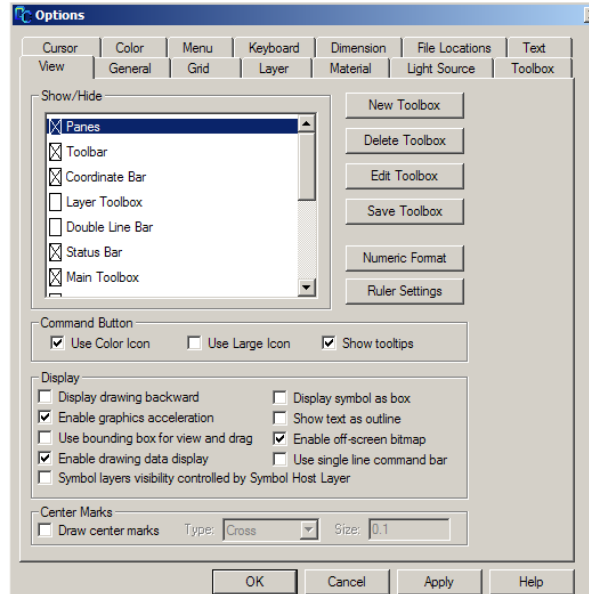


When creating or sizing objects, you can define points by entering them directly into the **Coordinate Fields**. By default, this toolbox is located along the top of the window.



A better method of setting points directly is to use the **PointXYZ** command, which can be accessed from the menu (**Point/PointXYZ**), or directly by the colon shortcut key (:).

The **Options** window (**Options / Options**, or shortcut key Q) contains general options that apply to the current file.



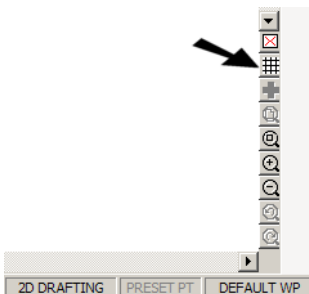
The following are the available **Options** tabs:

- **View:** Controls which toolboxes and other UI features are displayed.
- **General:** Controls general saving and operational options, as well as coordinate and angles options.
- **Grid:** Controls the grid display and grid snap options.
- **Layer:** Controls layers - creating, displaying, selecting, etc.
- **Material:** Controls material properties, and enables you to create your own.
- **Light Source:** Controls up to eight light sources you can use when viewing 3D models.
- **Toolbox:** Enables you to create new toolboxes.
- **Cursor:** Sets the size of the cursor, and the small and large cursor steps.
- **Color:** Sets the color of the background, cursors, grid, points and various selection sets.

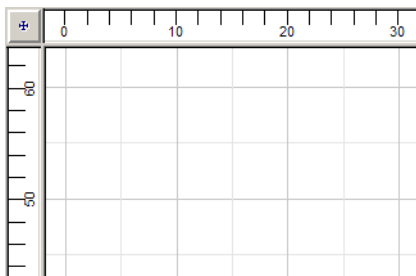
- **Menu:** Sets how commands appear on the main menu, and enables you to add custom commands to any menu.
- **Keyboard:** Enables you to create or change shortcut keys.
- **Dimension:** Controls dimension commands, including the **Pullout** and **Balloon** tools.
- **File locations:** Controls where DesignCAD stores the various files it uses and produces.
- **Text:** Controls color and style for text and attributes.

Drawing Line Objects

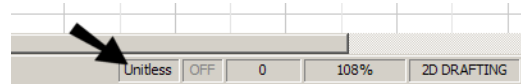
1. If you have been following along so far, you should have an empty drawing open. If not, open a new drawing with **Ctrl+N**. We'll start by displaying the grid. From the scrollbar along the right side of the window, click **Display Grid**.



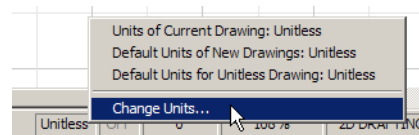
The grid appears, with lines every 5 units. (You can change grid spacing and colors by selecting **Option / Option / Grid** tab.)



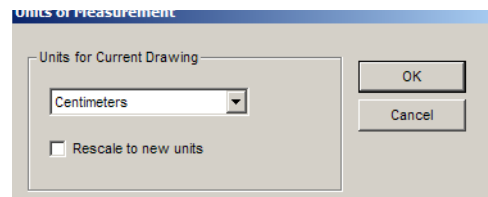
Currently this file has no units, as you can see by the term “Unitless” listed in the Status Bar, along the bottom of the window.



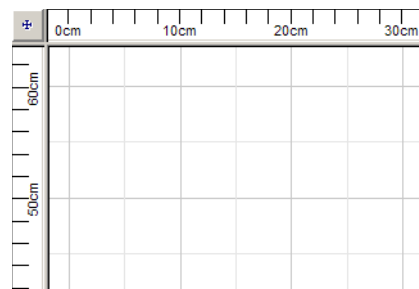
2. Click on “Unitless” and select **Change Units**.



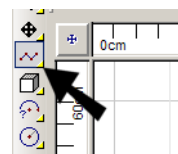
3. In the “Units for Current Drawing group, select **Centimeters** and click **OK**.



Now “cm” is listed in the Status Bar, and the units displayed in the rulers are listed in cm.



4. The first tool we will use is **Line**. From the Main Toolbox (along the left side), click the **Line** icon.

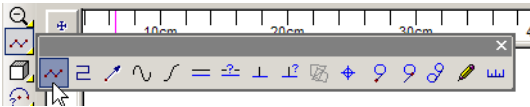


NOTE: You can access any tool from the menu as well. For **Line**, select **Draw / Lines / Line**.

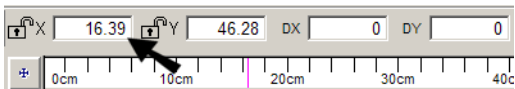
Or you can press the **V** shortcut key.

If you're ever unsure what an icon is for, hover over it with your cursor, and a tooltip will appear temporarily, indicating the icon's command.

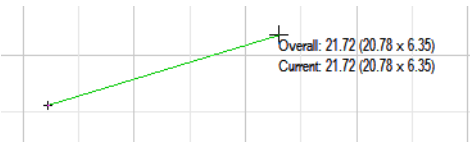
Note the small triangle on most of the icons along the Main Toolbox. This indicates that the icon contains a fly-out toolbox. If you click and hold the icon, the fly-out toolbox will open, from which you can select related tools.



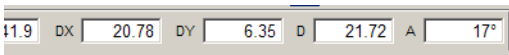
- Before clicking the first point, look at the **Coordinate Bar** - along the top of the window. Move your cursor around, and you can see the coordinates of the cursor location update dynamically.



- Click anywhere to place the first point, and move the cursor toward a second point, but do not click yet. The length and coordinates update as you move the cursor.

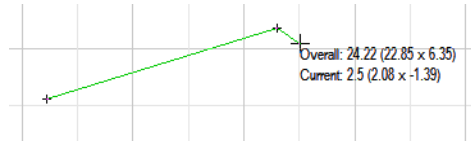


The Coordinate Bar contains the same information that you see attached to the second line point: overall line length (D) and DX, DY, which are the distances in X and Y from the first line point.



- For updates and additional information,

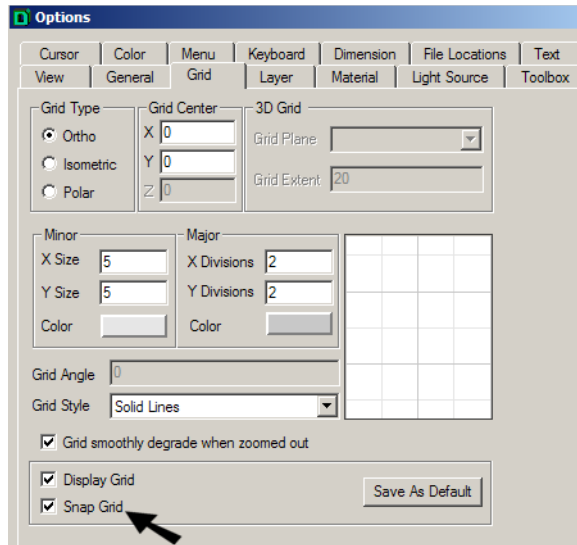
- Click anywhere to place the second point of the line. Another line segment starts from this point, but press **Enter** to finish the line after one segment.



TIP: Many commands, such as the **Line** command, can take any number of points. Press the **Enter** key, or select a new drawing or editing command, to end such commands.

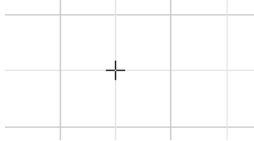
For the next object, we will use snaps. Snaps enable you to place the cursor on an exact point, so that you don't need approximate a point's location. The first snap will be on the grid intersection points.

- Open **Options / Options** and click on the **Grid** tab (or press **Ctrl+G**). Check the box for **Snap Grid** and click **OK**.

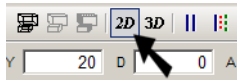


TIP: You can also open the **Options** window by right-clicking anywhere in the **Status Bar** or one of the toolboxes, and selecting **Customize**.

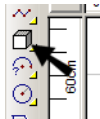
9. If you move the cursor around you will not see the grid snap in action, because no drawing tool is currently active. Activate any drawing tool, like the **Line** command, and the cursor jumps to grid points as you move it. Press **Esc** to end any current commands.



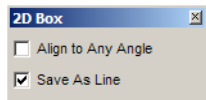
10. The next object we will draw is a rectangle. First, make sure you are in **2D** mode, indicated in the top toolbox.



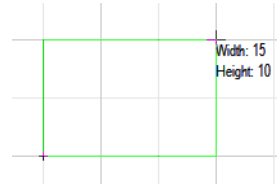
11. Click **Box**. If you were in 3D mode, this tool would create a 3D box, but in 2D mode it can be used to create a rectangle.



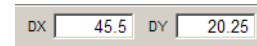
12. In the **2D Box** window, make sure **Save As Line** is checked. This means the rectangle will be created as a line entity, rather than a plane. Leave **Align to Any Angle** unchecked, so that the rectangle will not be tilted.



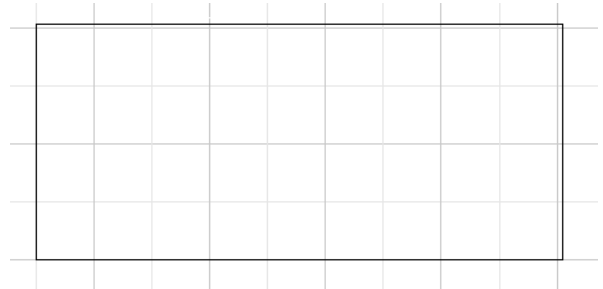
13. Set the first corner of the rectangle by left-clicking the mouse at any grid point in the lower left area of the view window. Move the cursor, but do not click the second point yet. The width and height will update dynamically as you move the cursor.



14. Even though the Grid Snap is on, you can still specify points that are not on grid intersections. Move the cursor into the DX field of the Coordinate Bar and enter **45.5**. Press **Tab** to jump to the DY field and enter **20.25**.



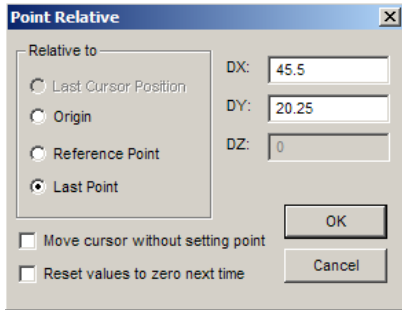
15. Press **Enter** to finish editing the coordinate bar. The rectangle is created with the length and width you specified.



16. To see an easier way to create the same rectangle, **Undo** this one. You can use **Edit / Undo** from the menu, or click the **Undo** icon, or press **Ctrl+Z**.



17. Activate **Box** again and set the first point. Then select **Point / Point Relative**, or use the shortcut key ‘ (apostrophe or single quote key). Enter **45.5** for DX and **20.25** for DY, and make sure **Last Point** is selected.



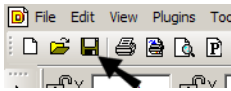
18. Click **OK**, and the same size rectangle is created.

TIP: If you want to define a relative point using a distance and angle, use **Point / Point Polar**.

You can always adjust the view by using these icons on the right scrollbar.

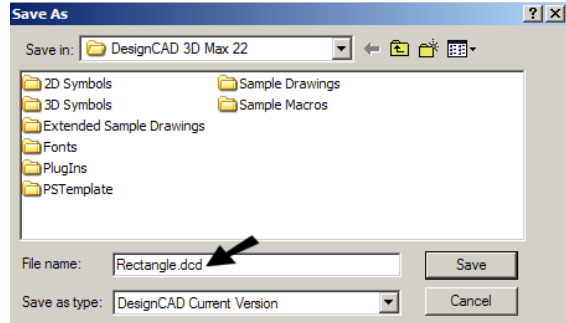


19. It is a good idea to save your file often, in case of a power failure or system crash. Click the **Save** icon.



TIP: The **General** tab of the **Options** window has options for setting an automatic save at set time intervals.

20. The default folder for saving files is shown below, but you can switch to any folder you like by clicking the down arrow beside the folder name.. Assign a name like “Rectangle.dcd.”

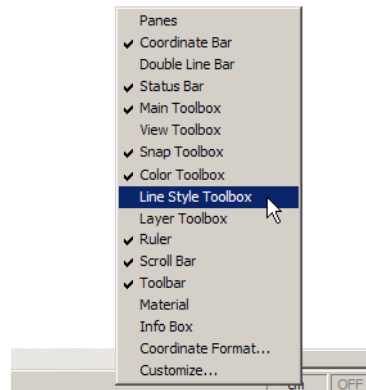


TIP: The **File Locations** tab of the **Options** window has options for changing folders for saving folders. The “Drawings” folder is where this file would be saved.

Properties and Snaps

This sections focuses on how to change line styles, and on various ways you can snap to existing geometry.

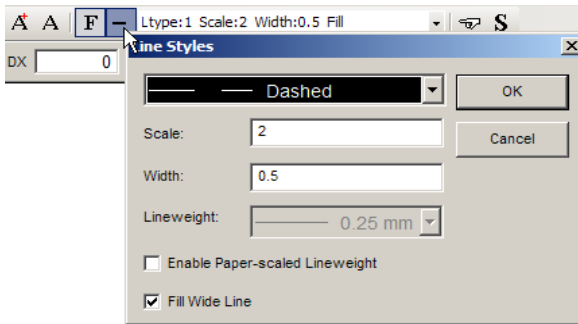
1. For the next few objects, we want to change their appearance. To display the toolbox with line style options, right-click in the Status Bar, or on any other toolbox icon, and select **Line Style Toolbox**.



- This toolbox appears along the top of the window. Select the "Dashed" style.



- Click the **Change Scale Width** icon (the dash symbol to the right of the **F** icon), and set the **Width** to **0.5**. Also, check **Fill Wide Line**.

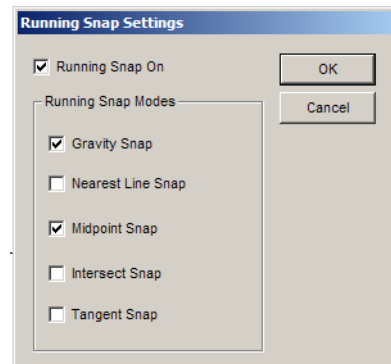


- Finally, select another color from the Color Toolbox on the right side of the window. If this toolbox is not currently displayed, you can turn it on like you did for the Line Style Toolbox.

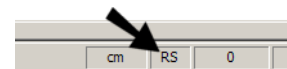


We will now turn on some running snaps. Once turned on, a running snap remains active for all drawing tools, until you turn it off.

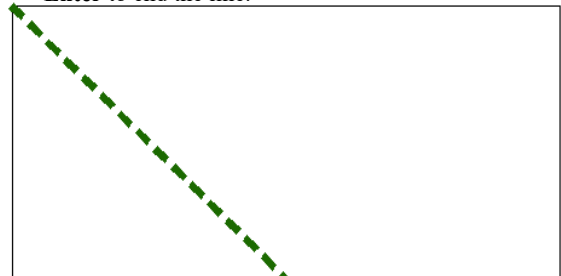
- Select **Options / Running Snap Settings**. Check **Running Snap On**, then check **Gravity** and **Midpoint**.



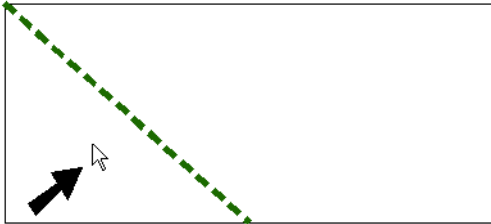
The magic wand icon on the Snap Toolbox should now be enabled, indicating that running snaps are on. Also, the snap indicator in the Status Bar should now be "RS."



- Turn off the display grid by clicking the **Display Grid** icon under the vertical scrollbar. The Grid Snap is still active, but you can turn this off by selecting **Options / Snap Grid**, or by using the shortcut key **G**.
- Activate **Line**, and draw one segment from the top left corner of the rectangle to the midpoint of the lower line. Endpoints and midpoints are highlighted when the cursor passes over them, so simply left-click near the top left corner, then near the bottom center. Press **Enter** to end the line.



8. After you have finished a command, you are in **Select** mode, indicated by the arrow cursor.

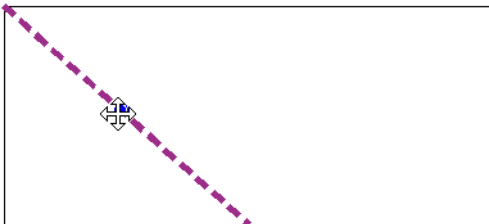


9. The Status Bar should read “2-D Select Mode.” If it doesn’t, you can click the **2-D Selection Mode** icon.

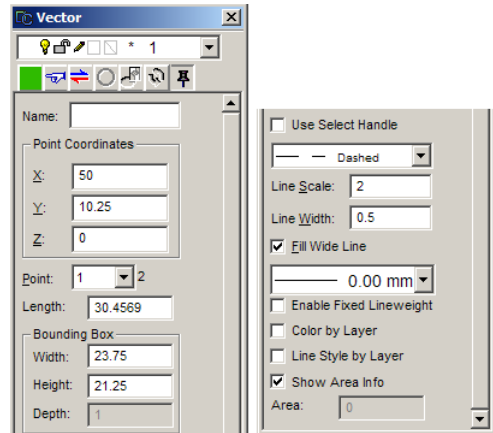


*TIP: If you want to use a drawing command repeatedly, and not return to Select mode after each use, you can double-click the tool’s icon. Each time you press **Enter** to end the command, it starts again automatically. Press **Esc** to return to Select mode.*

10. Left-click the line you just created to select it. Selected objects appear in a magenta color, with one or more blue markers that indicate selection handles.



11. To see properties of this line, open the Info Box (**View / Info Box** or **Ctrl+I**). The Info Box can be used for any object, to view or change its properties, such as line style, color, layer, length, etc. You can also view the coordinates of each point used to create the line.



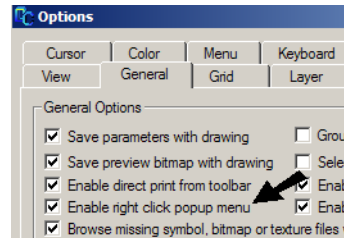
12. To see another way to create the same line, **Undo** this one. You can use the **Undo** icon or press **Ctrl+Z**.



13. First, turn off the Running Snaps.



14. Because we want the popup menu to appear when right-clicking, open the **Options** to the **General** tab and make sure **Enable right-click popup menu** is checked.

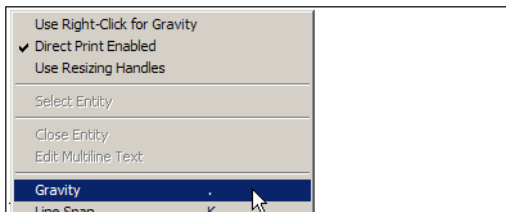


TIP: Even if this option not checked, you can still get the popup menu by pressing **Ctrl** while right-clicking.

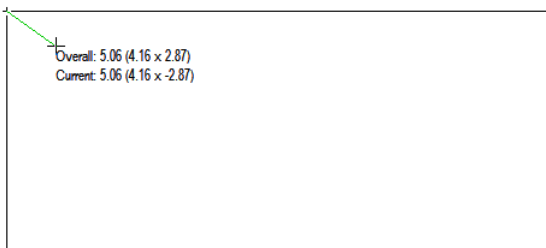
15. Even when running snaps are off, you can still use temporary, one-time snaps. Activate **Line** again and move the cursor close to the top left corner of the rectangle.



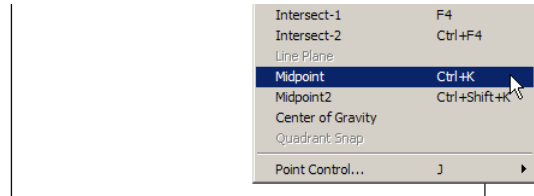
16. Right-click and select **Gravity**.



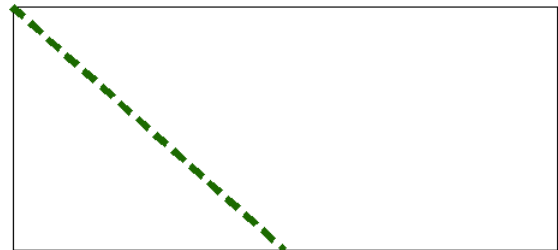
The line starts at the corner point. Activating Gravity will always set a point exactly on the nearest existing point to where you clicked.



17. Move the cursor near the midpoint of the lower line, right-click, and select **Midpoint** from the menu.

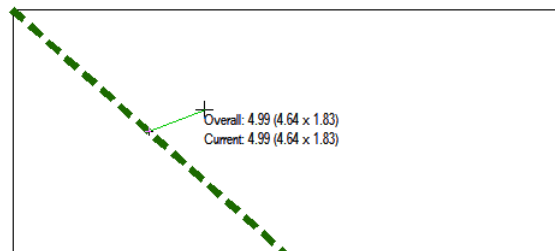


The result is the same line as before.



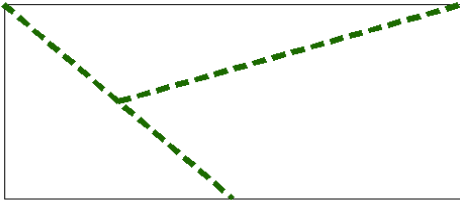
TIP: If you find that you are using Gravity a lot, you can turn off the **Enable right-click popup menu option**, and simply right-click to perform a Gravity snap. To see the context menu in this case, use **Ctrl+right-click**.

18. Temporary snaps can also be implemented with keyboard shortcuts. Start the **Line** command. Move the cursor near the midpoint of the diagonal line you just created, and press **Ctrl+K**. This snaps to the midpoint.



TIP: You can set keyboard shortcuts using the **Keyboard** tab of the **Options** window.

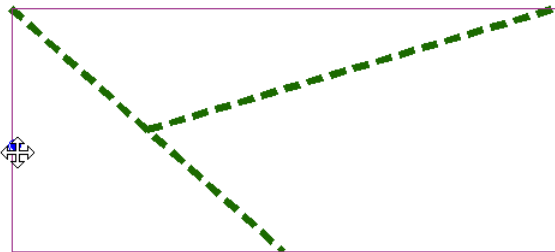
19. Now move the cursor to the top right corner of the rectangle and use the period shortcut key (.) to set a Gravity snap. Press Enter to end this line.



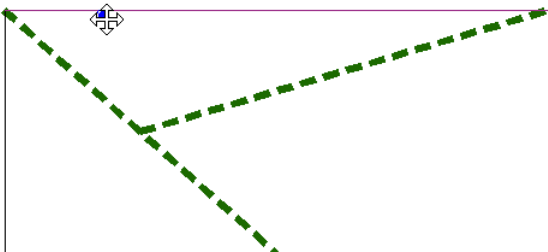
Editing Geometry

The next step is to trim lines to get one closed chain. At this point, the rectangle cannot be used to trim other objects, because it is one line entity comprised of four segments. The rectangle must be broken down into its individual parts first.

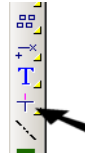
1. In **2-D Select** mode, click the rectangle to select it. All four lines are highlighted, because the rectangle is one object.



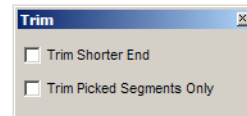
2. While the rectangle is selected, select **Edit / Selection Edit / Break Line**. This breaks the rectangle into its four separate lines. Select one of the lines to see that it is the only object highlighted.



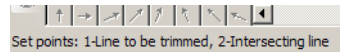
3. Click outside the rectangle (or press Esc) to deselect everything.
4. Now that the lines are separate objects, we can start trimming the other lines. Click the **Trim One Line** icon on the Main Toolbox.



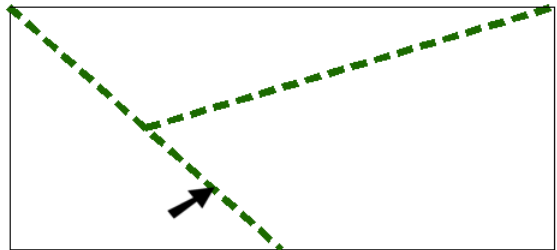
No options need to be selected in this window.



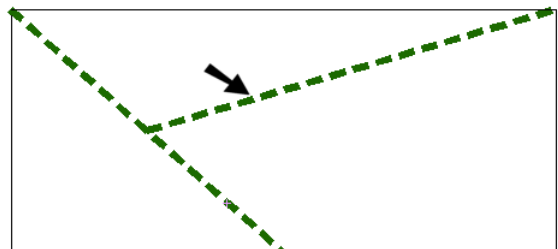
5. When in doubt about what steps to perform, look in the **Status Bar** for instructions. The first step is to set a point on the line to be trimmed.



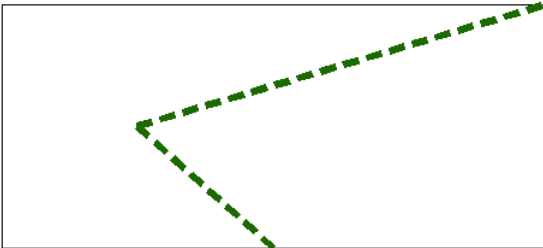
6. Click on the bottom half of the first diagonal line you created - this is the portion you want to keep.



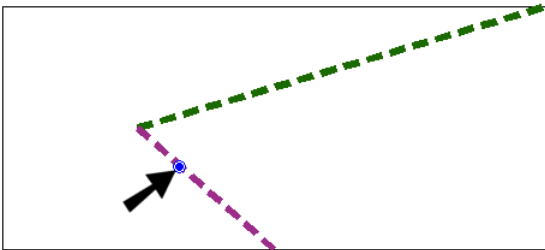
7. The next object is the intersecting line - click on the second diagonal line you created.



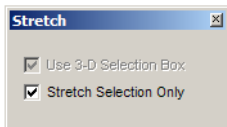
You should see this result - the first diagonal line is trimmed by the second one.



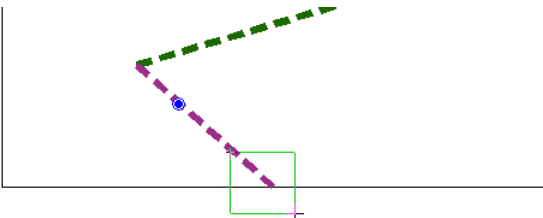
- The next trimming tool is better demonstrated when two lines intersect. We can modify one of the diagonal lines for this purpose. Activate **Select** and select the bottom trimmed line by left-clicking on it.



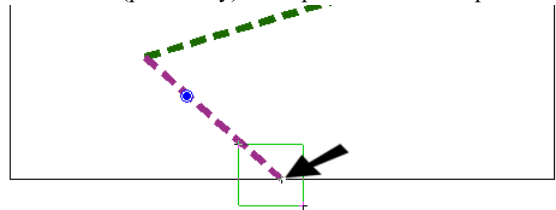
- Select **Edit / Section Edit / Stretch**. Make sure **Stretch Selection Only** is checked.



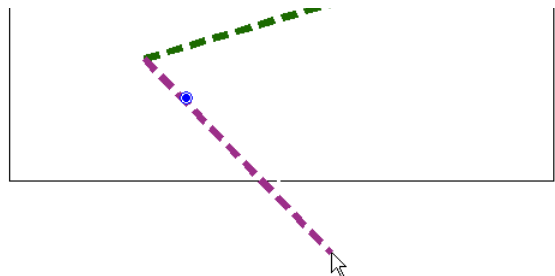
- The first two points you set will define a selection rectangle around the point(s) that will move. In this case, we only want to move the lower endpoint, so create a small rectangle around just this point (click the two opposite corners of the rectangle).



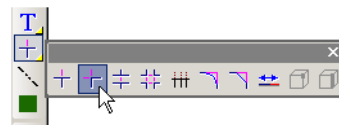
- The next two clicks define the reference direction in which the selected point(s) will move. Use the **Gravity** shortcut (period key) to snap to the lower endpoint.



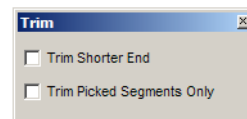
- The last click moves the point to a new location. Move the cursor below the bottom of the rectangle and left-click, as shown here. The line is redrawn with the new endpoint. The command ends, returning you to the Selection cursor.



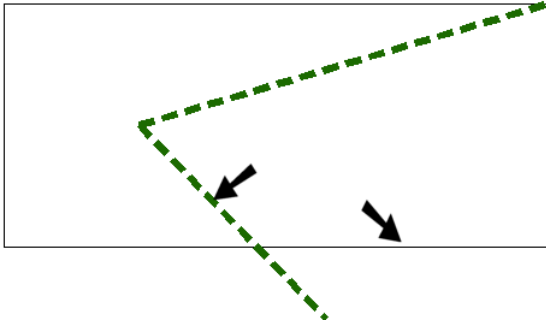
- Press **Esc** to deselect the line.
- Open the **Trim** fly-out toolbox and select the second icon: **Trim Two Lines**.



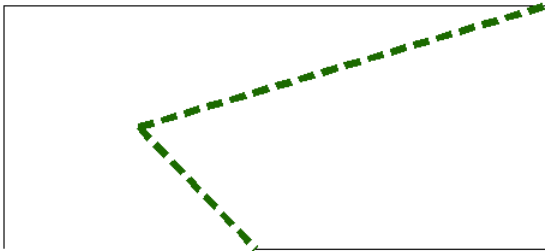
Again, no options need to be selected here.



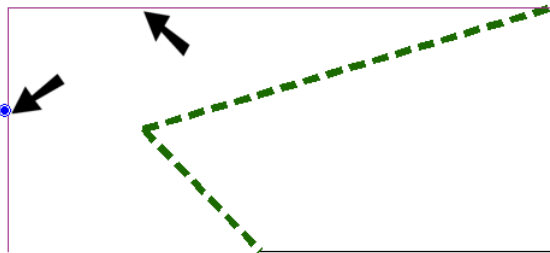
15. Click the two lines shown, this time clicking them on the parts you want to remain.



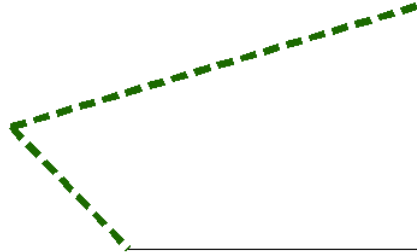
Here is the result - both lines were trimmed to one another.



16. With **Select** active again, press Shift so that you can select multiple objects. Click both lines shown (the top and left sides of the rectangle), and they are both selected.

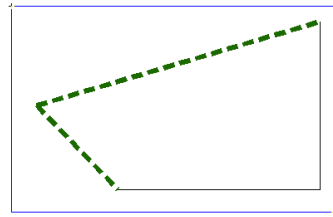


17. Press the Delete key to erase these lines.

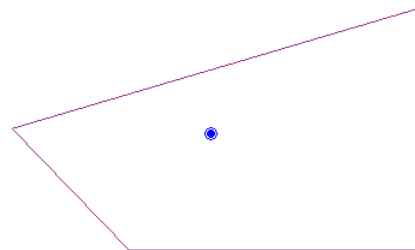


The remaining four lines are each separate objects, which you can verify by selecting each line one by one.

18. Drag a selection window to select all four lines. To do this, move the cursor to one corner of the desired area. Hold the left mouse button down as you drag the cursor to the other corner, then release the button.



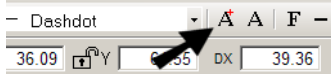
19. With the lines selected, select **Edit / Selection Edit / Combine Lines**. The line style property becomes uniform (yours may look different).



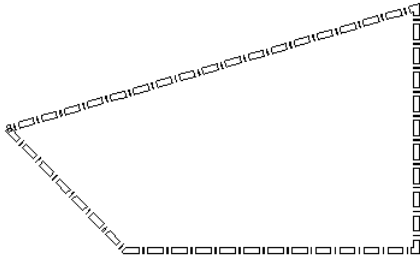
20. Set a new style for this polygon, such as "Dashdot" with 0.5 line width.



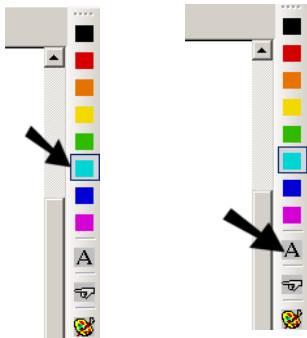
21. The line should still be selected. If not, re-select it. Click **Apply to Selection**.



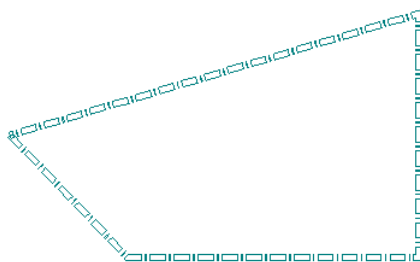
The entire line takes on the new style.



22. You can change the line's color the same way. **Select** it again, and then choose a new color. Then click **Color Apply to Selection**.



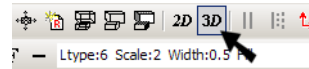
The line takes on the new color.



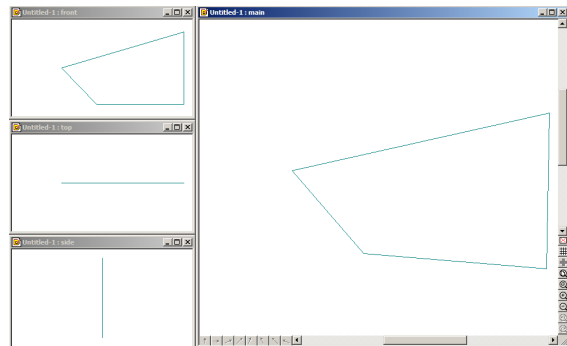
NOTE: Of course, you could also use the Info Box to easily make these changes.

24. The final step is a quick look into shading. To make this line into a surface, or plane, make sure it is still selected. Then select **Edit / Selection Edit / Convert / Make Plane**.

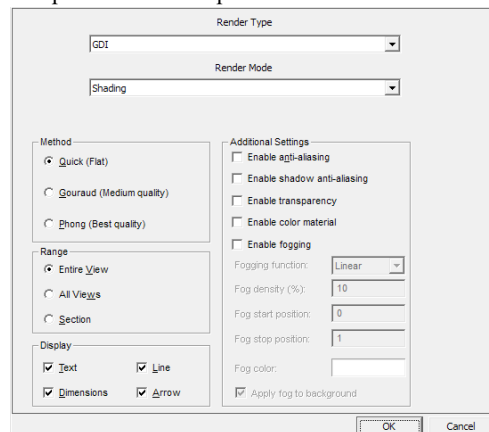
24. Now switch to **3D** mode.



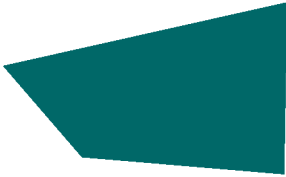
The view is divided into four windows - one main view and three orthogonal views.



25. Press F8 to switch to **Shaded** mode. Click OK to accept these default options:



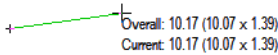
In the main view, the plane is filled in.



Arcs and Circles

In this section, you will create a plane consisting of lines, arcs, and circles.

1. Start a new file. You can press **Ctrl+N** or select **File / New**. Units in this file are not important.
2. Work in **2-D** mode. Activate **Line** and left-click to set the first point.



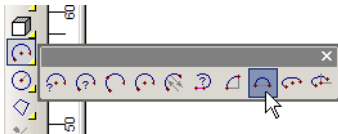
3. Before defining the second point, click the horizontal arrow at the lower left corner of the window. This restricts the current object to be horizontal.



4. Left-click to the right of the first point to create a horizontal line, and press Enter to end the command.

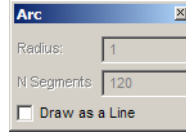


5. Attached to this line will be a semi-circle. Open the **Arc** fly-out toolbox and click the **Semi-Circle** icon.



TIP: Arc tools can also be found in the **Draw / Arcs** menu.

6. Leave **Draw as a Line** unchecked. If this option is used, the arc is approximated as a series of small line segments.



7. Use a **Gravity** snap (by any method shown previously) to start the arc at the endpoint of the line.



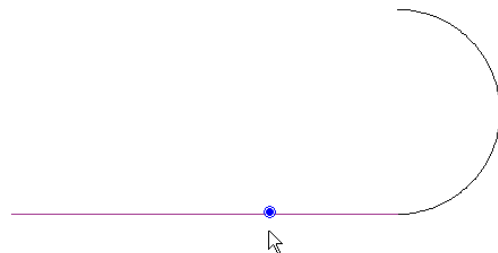
8. For the next endpoint, click the vertical arrow.



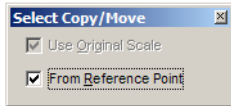
9. Place a second point above the first to create the semi-circle.



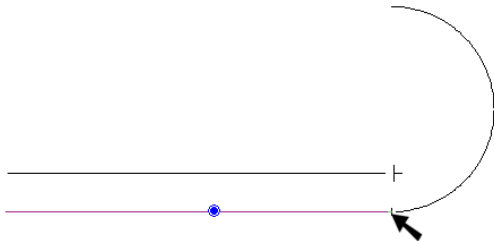
10. These two objects will be copied to complete the closed shape. First, select the line.



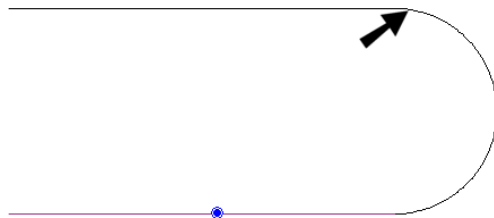
11. Select **Edit / Select Edit / Duplicate**. Check **From Reference Point**, so that you can select your own reference point. Otherwise the copy will be made from the blue point indicated where you clicked the line.



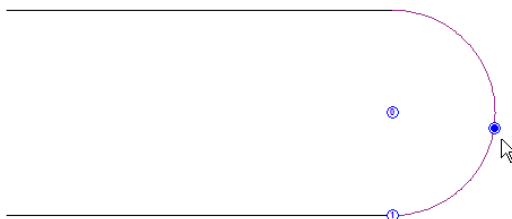
12. For the reference point, gravity snap to the endpoint of the line where it meets the semi-circle. A copy is made from this point.



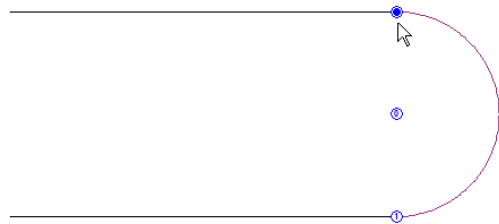
13. For the next point, gravity snap to the upper endpoint of the semi-circle. The copy is placed here.



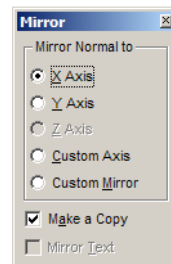
14. The semi-circle will also be copied, but it needs to be mirrored as well. Start by selecting it. The blue reference point appears where you click it.



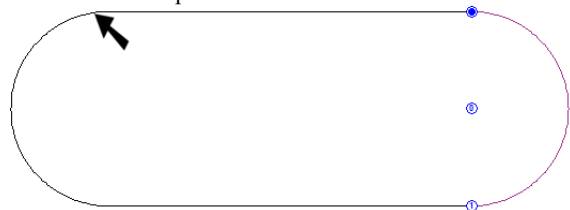
15. When mirroring, the reference point needs to be in place before beginning. Use **Gravity** to place the reference point at the top of semi-circle.



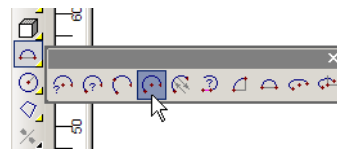
16. Select **Edit / Selection Edit / Mirror**. The mirror should be around the **X Axis**, and check **Make a Copy**.



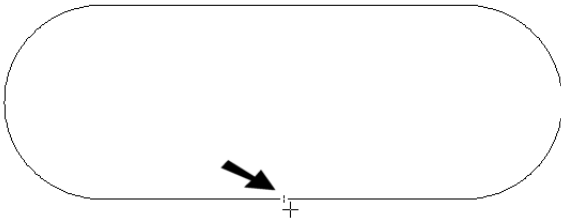
17. Place the mirrored copy with a gravity snap to the other end of the top line.



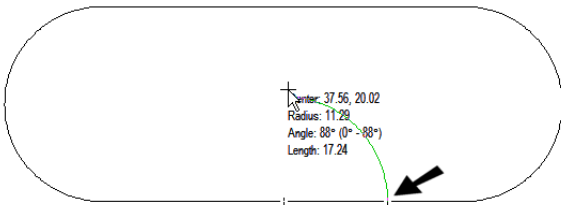
18. The next object will be used to cut a notch from the shape. Select **Arc Center, Begin, End**.



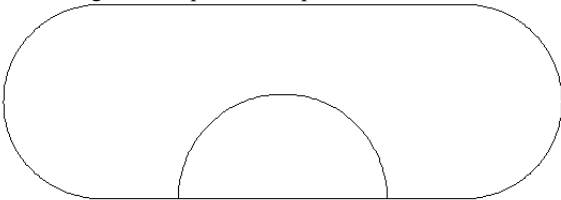
19. Use a **Midpoint** snap (Ctrl+K) to place the center of the arc at the midpoint of the lower line.



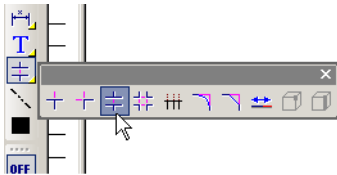
20. Use a **Line** snap (K) to start the arc somewhere to the right of the first point along the lower line. (The **Line** snap finds the closest point on the line.)



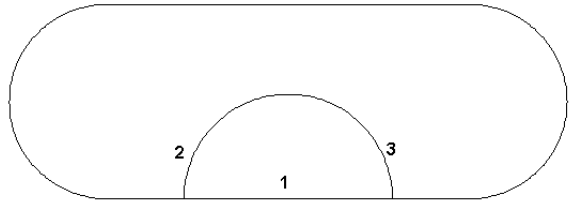
21. Finish the arc on the other side of the same line, again using Line snap to set the point.



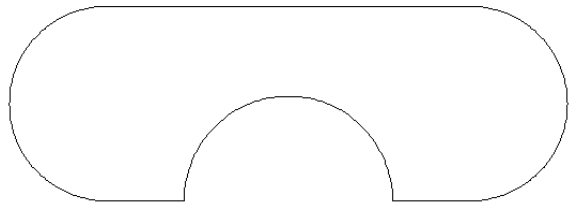
22. To cut the notch, use **Trim Between Two Lines**.



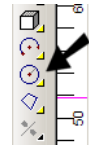
23. First click on the lower line in the middle of the arc. Then click the two sides of the arc.



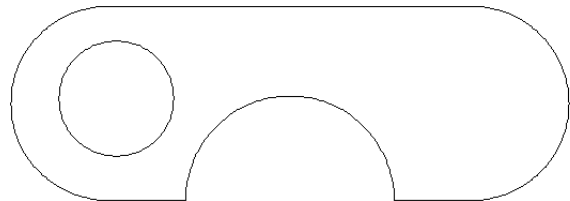
The lower line is cut to meet the arc.



24. The last object to create in this plane is a circle. Click **Circle Center, Outside**.



25. Place the circle on one side of the shape. First click the centerpoint, then any other point to set its radius.

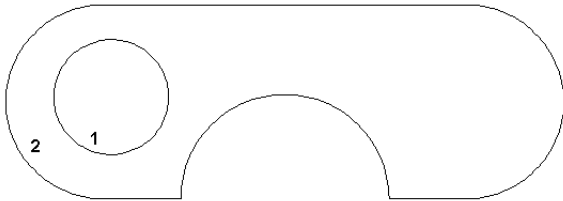


26. To convert these lines and arcs into planes, select them all. (You can press Ctrl+A to select everything in the window.) Then select **Edit / Selection Edit / Convert / Make Plane**.

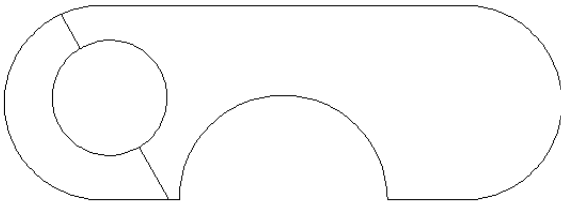
27. As you did before, switch to **3D** mode and shade the file (F8). The shape of the plane is correct, but it does not include a cutout for the circle.



28. You should have four viewing windows, but only one is shaded. Select **Edit / Polygon Edit / Polygon Subtract**. In the unshaded Front view window, first click the circle, then the larger polygon. This removes the circle area from the plane.



This is the result - actually two planes are created.



29. Now when you shade again, the circle cutout appears.



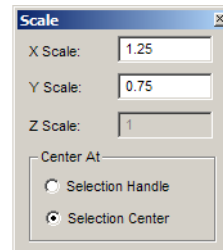
Scaling, Rotating, and Copying

In this section, you will modify the plan you just created, and make several copies of it.

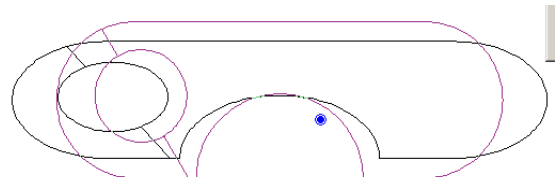
1. Continue working with the same plane, switch back to **2D** mode, and select the entire shape.
2. From the **Copy** toolbox, select **Selection Scale**.



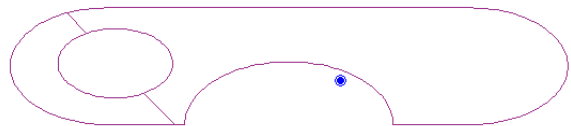
3. Enter these values for **X Scale** and **Y Scale**. This will elongate the shape in X and shorten it in Y. (A scale factor of 1 means no change.) Do not press Enter.



4. Move your cursor over the shape to see a preview of the scaling change.

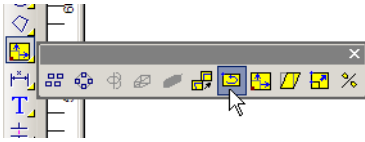


5. Press Enter, or left-click, to make the change.

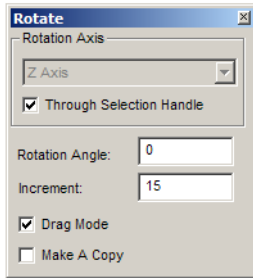


NOTE: You can also use the Info Box for this, by changing the fields in **XYZ Scale**.

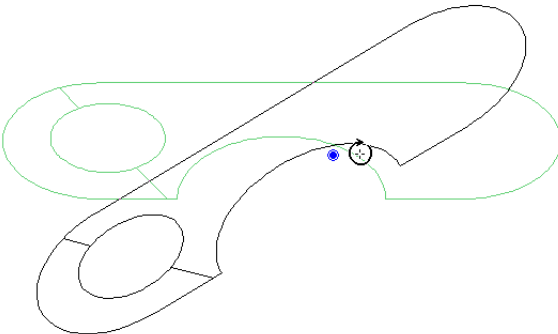
6. Now activate **Selection Rotate**.



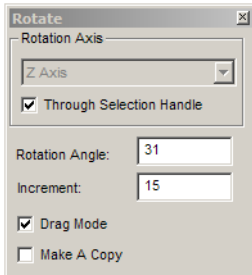
7. You could specify a rotation angle and press Enter, but instead check these options and do not press Enter.



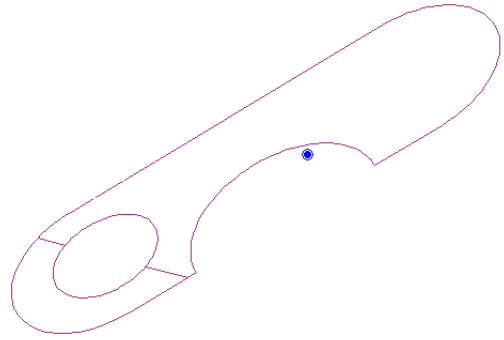
8. Click back on the shape, and move the cursor to rotate a preview of the new shape.



The **Rotation Angle** updates as you move the cursor.



9. Click when you rotate to the angle you want.



10. The last step is to make multiple copies of this shape. If the scale of your shape is large, you may want to use **Zoom Out** to shrink the view. Click **Zoom Out** and click where you want to place the center of the new view.

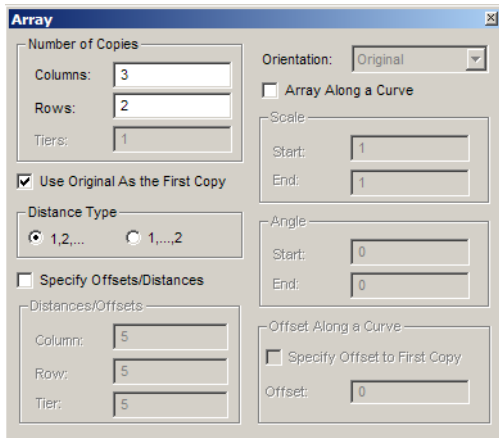


11. With the shape still selected, activate **Array**.

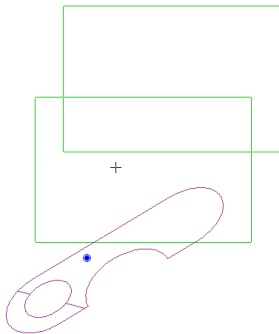


- 18 For updates and additional information,

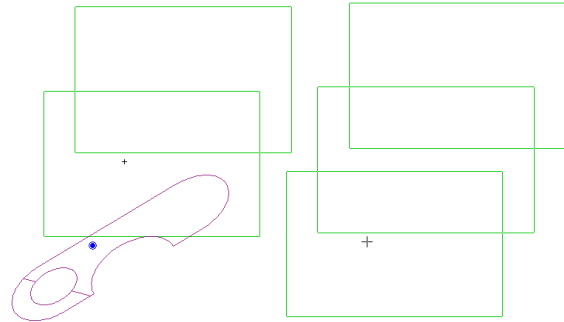
12. **Array** enables you to create rows and columns of the copied objects. This examples uses 3 columns and 2 rows, but rows and columns do not need to correspond with the X and Y axes.



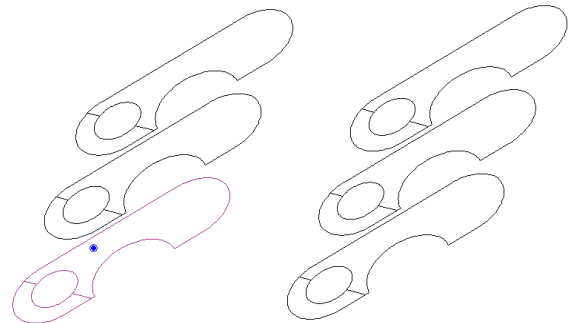
13. First, set the rows. When you move the cursor, you can see a preview of each copy appear. The rows can be placed at any spacing and angle.



14. The next click defines the placement of the two columns.



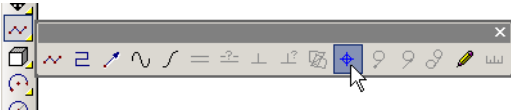
This is the result - six total objects.



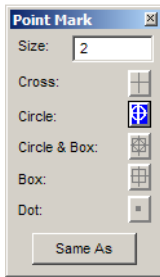
Points and Curves

In this section, you will play with a few different types of curves.

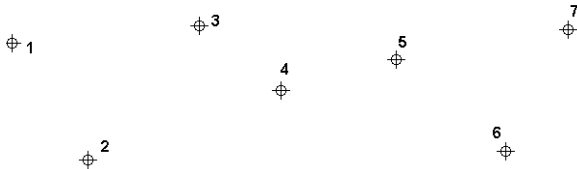
1. Start another file, or pan to some blank space in the current file. (You can pan by dragging the scroll bars up or down, or side to side.)
2. Open the **Line** toolbox to the **Pointmark** tool.



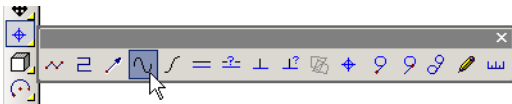
3. There are several options for the pointmarks' appearance. This example uses **Circle**.



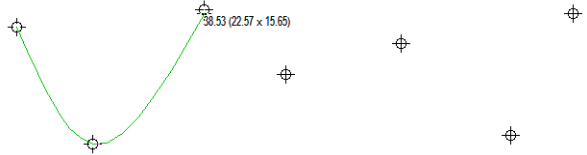
4. Create several pointmarks like this:



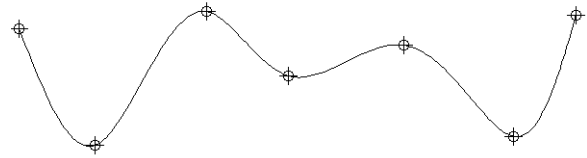
5. The first object to try is **Curve**, located in the same toolbox.



6. Use **Gravity** snaps to create the curve along the series of pointmarks.

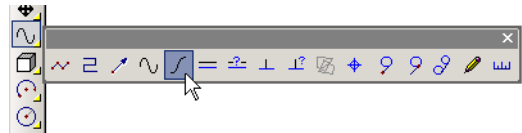


When finished, the curve should run smoothly through each pointmark. Press Enter to finish the curve.

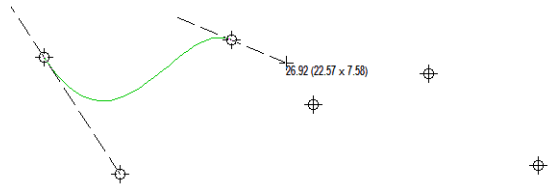


TIP: While creating the curve, you can undo segments one step at a time by using the Esc key.

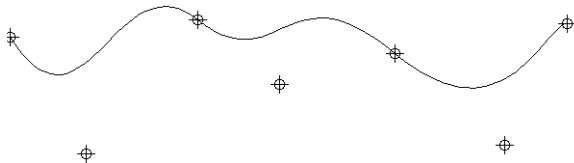
7. Undo this curve, and activate **Bezier Curve**.



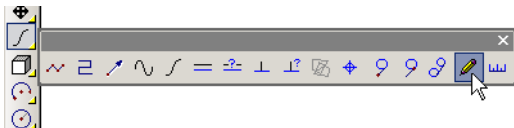
8. This curve does not run through all selected pointmarks. Rather, each point works as a guideline for setting the curve tangency.



When finished, this curve runs through every other pointmark.



9. Undo again. The last curve to try is **Freehand**.



10. Click and drag the cursor along the pointmarks. Depending on the steadiness of your hand, you will get a result like this:



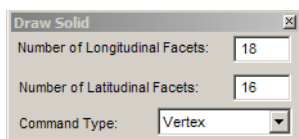
3D Objects

This final section will show some simple 3D objects and how to apply materials to them.

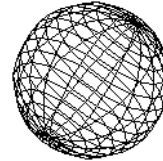
1. Make sure you are working in **3D** mode. Now all the solid commands are available.
2. Select **Solid / Sphere**, or use the **Sphere** icon.



The number of facets determine how the solid is created; the higher the number of facets, the smoother the sphere will look.



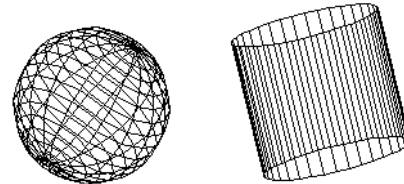
3. Set two points to create the sphere: the center and a point on the outside. The number of grid lines shown depend on the specified number of facets.



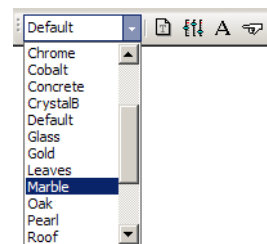
4. The next shape to create is a **Cylinder**.



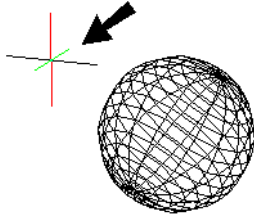
5. This solid is created with three points: the center of the base circle, the outside of the base circle, and the height.



6. Display the **Material** Toolbox. From the field on the left, set the "Marble" material.



A solid is created in whatever material was active at the time it was created, and the “Default” material was used for both solids. To change the material of an object, you must first select it. Note that in 3D mode, the Select cursor looks like a set of 3D axes.

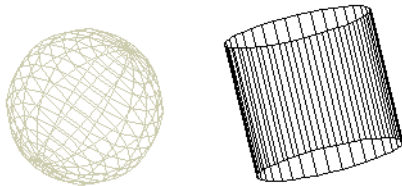


NOTE: If you create a new object now, it will have the “Marble” material, since that material is now active.

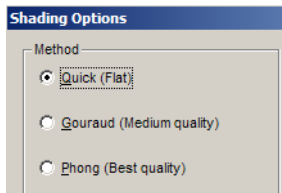
7. Select the sphere (click on one of its grid lines to select it). Then use the **Apply** icon to change its material to “Marble.”



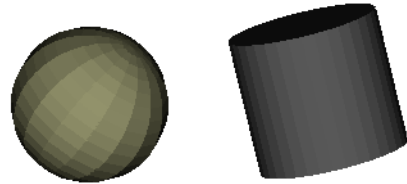
The color of the sphere has changed to the base color of the marble material. But in Wireframe mode, the material itself cannot be seen.



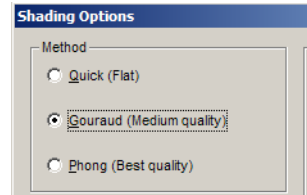
8. Activate **Shading**. For **Method**, select **Quick**.



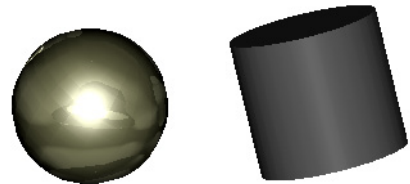
This is the fastest, and least realistic, type of shading. The solids are shaded in the material’s base color, with no texture visible.



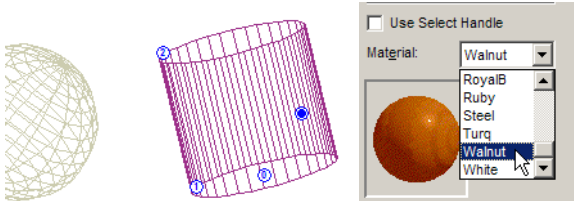
9. Shade again, using **Gouraud**. This improves the quality. Note that, to see the material patterns, you must have selected GDI as the shading Render Type. OpenGL and RedSDK Draft do not show materials.



10. Now try **Phong** shading (GDI Render Type only). This is the highest quality, but keep in mind that it also takes the most resources. If you have a complex drawing, this type of shading may take some time to complete.



11. Now select the cylinder, and open the Info Box. You can also change an object's material here. Choose "Walnut" and click anywhere in the drawing to set it.



12. This is the result with **Phong** shading.



TIP: On **Materials** tab of the **Options** you can create new materials and textures. Also, **Tools / Texture Mapping** enables you to apply an image as a texture.

Getting Help

These exercises demonstrate only the tip of iceberg for what you can do in DesignCAD. You can find information on all of DesignCAD's functionality in several places:

Online Help: The **Help** menu provides access to the online help. This is an online version of the DesignCAD Reference Manual. The DesignCAD Reference Manual is also available as a PDF file, in the same folder as this Getting Started Guide.

Help on the Internet: Select **Help / Online Support**. This opens a page that contains several links for further support information. You can also access the DesignCAD community forum at <http://forum.designcadcommunity.com>.

Technical Support: If you cannot find the answer to your question in the documentation or on the forum, you may contact IMSI customer support by email at customersupport@imsidesign.com. Please include your DesignCAD version number and your serial number in any correspondence.

