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Exercise Twenty-Two: Adding Dimensions to the Plan

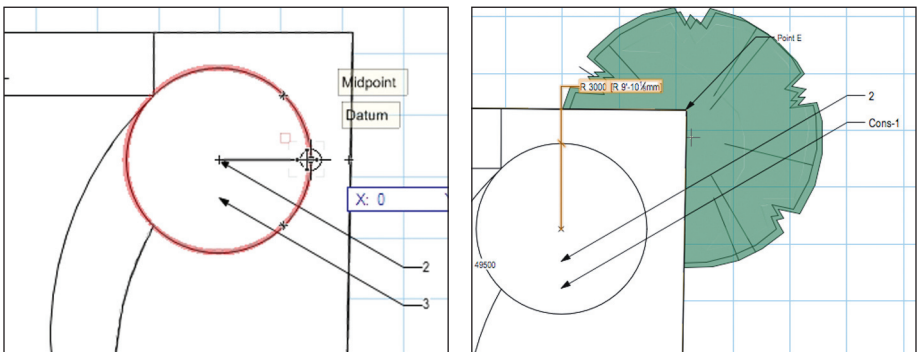
One of the things I found most tedious about hand-drawing was writing in all the dimensions. Vectorworks provides all the tools you need to place accurate dimensions onto the plan wherever you choose. It also gives you the ability to show dimensions for circles and arcs. In our imaginary garden, we will be able to provide accurate information on how to build the garden, including the curved path. It's important to make such specifications at this early stage because once we have converted these shapes into different types of objects, the dimension tools may no longer recognize the curves. The plan is still very simple, which makes the dimensions easy for your contractor to work from.

The tools are found in the Dims/Notes tool set and they work in a similar way to the Tape Measure tool, which you've used already. For a simple linear dimension, you click on the first point, click on the second point, and then click where you would like the dimension text displayed.

When you create dimensions, they are automatically placed in a class called Dimension, so that you can make them invisible in certain contexts. You may want to create subclasses of the dimension class in order to control the visibility of different types of dimensions (e.g. levels etc.)

Note the Dimension of the Circle

1. Ensure nothing is selected on the drawing by clicking on a blank space with the 2D Selection tool. Return to the Format Text dialog in the Text menu. Reduce your font size and make any other changes you want. In my case, I want to have a smaller font for dimensions than the callout text and other text boxes.
2. Select the Radial Dimension tool in the Dims/Notes tool set. On the Tool bar, choose the Interior Radial Dimension Mode button. Choose also the Right Hand Shoulder Mode button. Move the cursor onto the circle and notice it changes to a cross and the circle highlights in red. Vectorworks is showing you objects on which you can place a Radial dimension. It will ignore objects which do not contain arcs. Click anywhere on the circular seating area to mark the center and show the radius of the circle. Click again, just outside the circle to place the radius dimension label (or inside if you prefer your dimension to remain inside the circle.) Note that the tool also has modes for measuring the diameter.

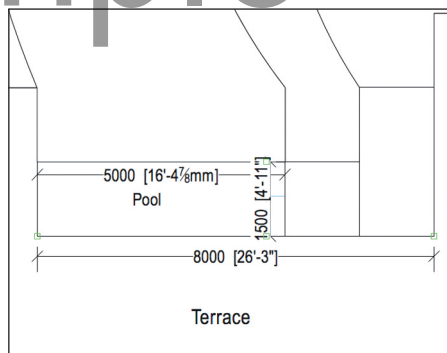


Note the Dimensions on the Terrace

1. Select the Constrained Linear Dimension tool from the Dims/Notes tool set. Click on the lower left corner of the Formal Pool. Click on the lower right corner of the planting bed. These two clicks tell Vectorworks which length you want to measure. Click a third time to position the text and “witness” lines.

You are now going to use the same tool to place dimensions automatically for a selected object.

2. Using the 2D Selection tool in the Basic palette, select the rectangle that will become the pool.
3. From the Dims/Notes tool set, select the Constrained Linear Dimension tool again. From the Tool bar, choose Selected Objects mode. Click once inside the selected rectangle. Click again either above or below the rectangle. A horizontal dimension line is automatically created.
4. Repeat the above step, but this time, for your second click, hold down the Alt/Option key before clicking. This will produce the vertical dimension.



Note: My dimension text is rather lengthy. That's because I'm showing both imperial and metric dimensions together. I would usually just use one or the other. Your dimensions should look more manageable and show just your chosen unit of measure (as set in the chapter on Setting Up Your Drawing Board).

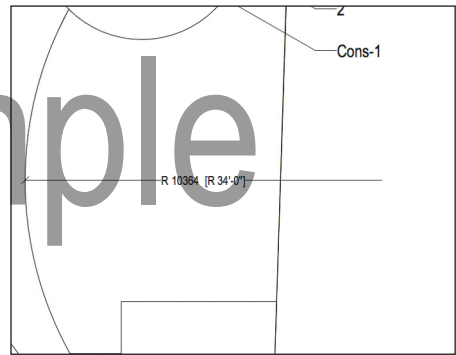
Note: I have used metric dimensions when drawing my objects. If you are using imperial, your measurements may not match mine. This is because in my instructions I have rounded up where sensible for imperial users. If you've followed the imperial measurements your dimensions will reflect this.

Note the Dimension of the Curved Path to the Circle

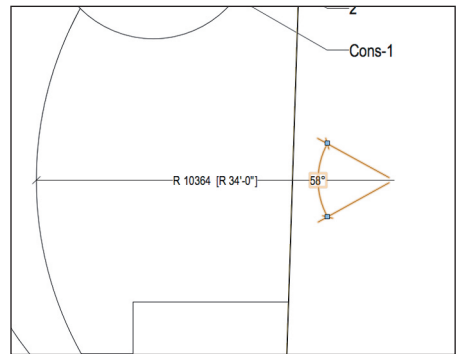
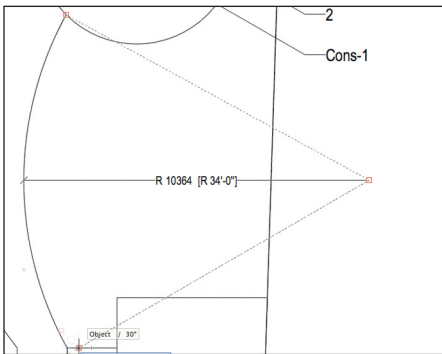
The new curve modes (including Arc Tangent to a Line and Point on Arc) are great for designers—you can draw the curve you want for your design and then you can add dimensions to show someone how it's to be built. The Radial Dimension tool can be used to add radial dimensions to curves made from arcs and standard circles. (If you used the Bezier or Cubic modes, the Circular Dimension tool can't be used on the curve).

In our design, we've used Point On Arc curves, and created a number of arcs on the drawing. We are now going to use the Radial Dimension tool again to provide information about these arcs.

5. Select the Radial Dimension tool from the Dims/Notes tool set. Ensure it is set to Interior Radial Dimension mode on the Tool bar. Click anywhere on one of the curves in the drawing. The tool recognizes the arcs as part of a circle and creates a dimension line to the center of the arc. Click again to place your dimension text.



6. Now that we have the center point and radius marked, we need to measure the sweep of the arc. Select the Angular Dimension tool from the Dims/Notes tool set. Choose Angular Dimensions from Two Reference Lines mode on the Tool bar.
7. Click on the top of the arc, then the center point (as marked by the Radial Dimension tool above), and then on the bottom of the arc. Two grey lines will appear, as well as a curved line either inside or outside the reference lines. Move the cursor inside and outside of the two gray lines and notice that you can measure either the interior or exterior angle. Ensure your cursor is inside the two lines and click where you want to place the interior angle text.



As mentioned above, Dimension objects are automatically placed in the Dimension class, which Vectorworks creates in any new drawing. This gives you the flexibility to show or hide the dimensions as you wish.

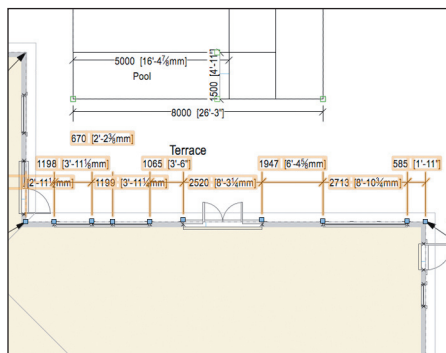
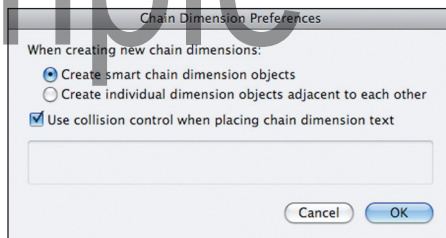
8. On the Navigation palette, change the Dimension class to invisible. Note that all your dimensions disappear. Change the class back to visible and the dimensions will reappear magically! You are now developing a multipurpose drawing.
9. Save your work.

Note: The center of my arc is in the neighbor's garden, which is not ideal! However, in this case, using artistic licence, we are going to assume that we are replacing the fence and the neighbor does not mind us measuring from his plot!

Create some Chained Dimensions

We are now going to place some dimensions along the edge of the house. Rather than place individual dimension objects, we can do this using the tool only once but in either Chain mode or Constrained Baseline mode (which creates running dimensions).

1. Choose the Constrained Linear Dimension tool from the Dims/Notes toolset. Choose Chain Mode from the Tool bar. Click on the Preferences button and check the box called Use collision control when placing chain dimension text.
2. Click on Point C on the house. Click on the left edge of the first window to the right of Point C. Move the cursor up the page to a place where you would like the dimension text to appear and click again. Now continue to click along the edge of the house at the start and end points of windows and doors. Double-click at the corner to complete the chain dimension.
3. Notice that your chain dimensions have been staggered above and below the dimension line. This is the effect of the Collision Control setting.

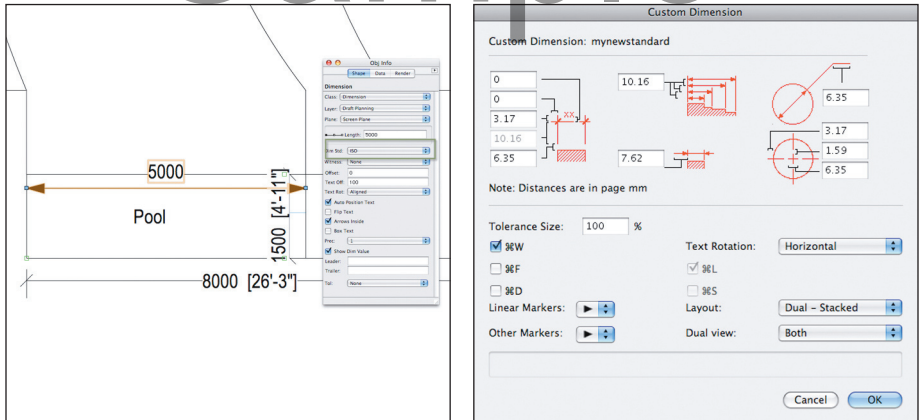


Change Your Dimension Preferences

The way dimensions are displayed can be set in the Dimension Preferences dialog box, (found in the File/Document Settings/Document Preferences dialog box, by clicking on the Dimensions Tab. In Vectorworks 2010 they can also be set via the Toolbar when using any of the dimension tools or via the Object Info palette for existing dimensions. However, if you have used Collision Control for Chain Dimensions, unfortunately you cannot change the standard used after drawing them. You will need to redraw with the new standard.

1. Select any of your dimensions (except the chain dimension on the house wall). On the Object Info palette drop down the list on the Dim Std field. Choose another dimension standard from the list. If you change the current standard in the file to ISO, you will see arrows instead of slashes as dimension markers.
2. Change your choice to Custom Standards. Click New and give your new dimension standard a name. Click OK.
3. Click Edit. Experiment with some of the settings to create a dimension style that you like, using the diagrams as a guide. Click OK.

4. Apply your new Dimension Standard to the existing dimensions on the pool. Choose another dimension tool from the Dims/Notes toolset. Notice you can change your current dimension standard on the toolbar before placing your dimensions.
5. Save your work. If you have not completed this exercise, you can open the file Dims and Text-Completed.vwx before moving on to the next section.



Note: There are a number of industry standards for dimensions available, but you can create your own "standard" and have dimensions appear exactly as you want them. Once you have setup your dimension standard, I suggest you update your template so that this specification carries over into any file you work on.

Note: If you wish to change your dimension style for all dimensions, use the Select Similar tool on one of your dimensions to select them all. Choose the new standard from the Object Info palette.

Note: Changing the Dimension Standard for existing chain dimensions which utilize collision control will cause the Collision Control to be lost. This is working as designed. If you need to change the standard for such a dimension, you will need to recreate it using the new standard.