

Appendix

A2

Drawing a Larger Bedroom Floorplan

In this chapter, you will learn the following to World Class standards:

- **Draw a Bedroom Floorplan**
- **Draw the Bedroom Walls**
- **Draw and Dimension the Bedroom Closet**
- **Draw and Dimension the Bedroom and Closet Door**
- **Draw and Dimension the Bedroom Windows**
- **Add Overall Dimensions to the Bedroom**

Draw a Bedroom Floorplan

In this project, we will learn how to draw a larger bedroom floorplan with a single door, two windows, and a closet and dimension the plan. In the tutorial, we will begin by drawing the perimeter of the room and closet and offset that outline to show the width of the wall. The importance of this lesson is to practice our CAD skills without adding the extra complex entities found in intricate architectural drawings of kitchens, bathrooms, and elevations. After we attain the basic skills and speed in drawing floor plans, we can increase the difficulty of the design.

We will start the session with a sketch that has the required dimensions to create the lines in our CAD drawing. We will be using AutoCAD 2011 in this example.

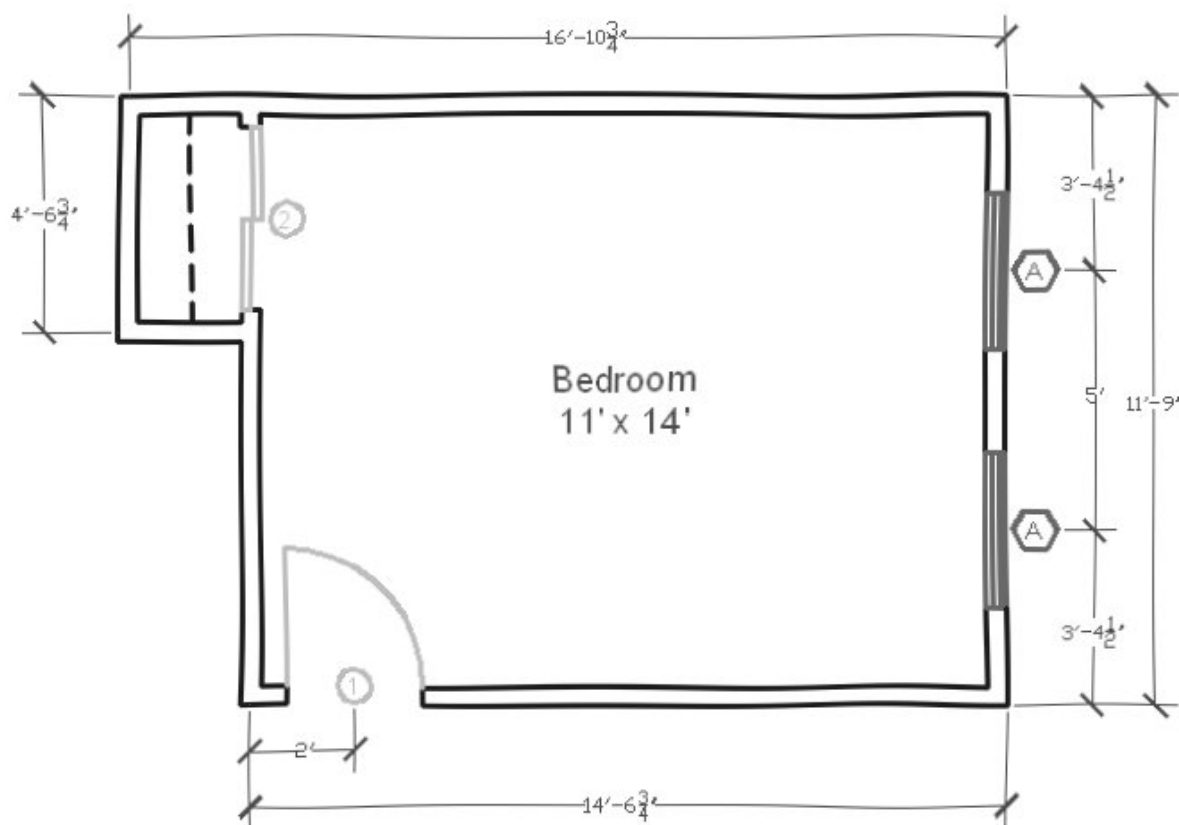


Figure A2.1 – Sketch of the Bedroom

Draw the Bedroom Walls

Our first bedroom drawing was 10 feet by 7 feet, which created the smallest footprint of this rest area according to the International Code Council (ICC) 2006 International Residential Code of 70 square feet. Our door will open towards the bedroom wall, so when the door is fully open, it will rest against the perimeter of the room as to not interfere with traffic. As we learned in the

previous exercise, bedrooms require two modes of exit in case of an emergency and one of them can be by the way of the window. The International Residential Code states the width of the window should be a minimum of twenty inches, and the height of the window should be a minimum of twenty-four inches. Both our door and two windows are 32 inches wide.

To begin the drawing, we open the CAD program and with our architectural template by selecting New and then we choose architectural as shown in Figure A2.2. The current layer is set at floorplan so we are ready to draw our walls.

We begin to draw the rectangle by choosing Polyline and then we pick a starting point on the lower left side of the graphical display. With the Ortho Mode on, we push the line to the right and type 14' (feet) at the command line. A single line will appear as shown in Figure A2.3.

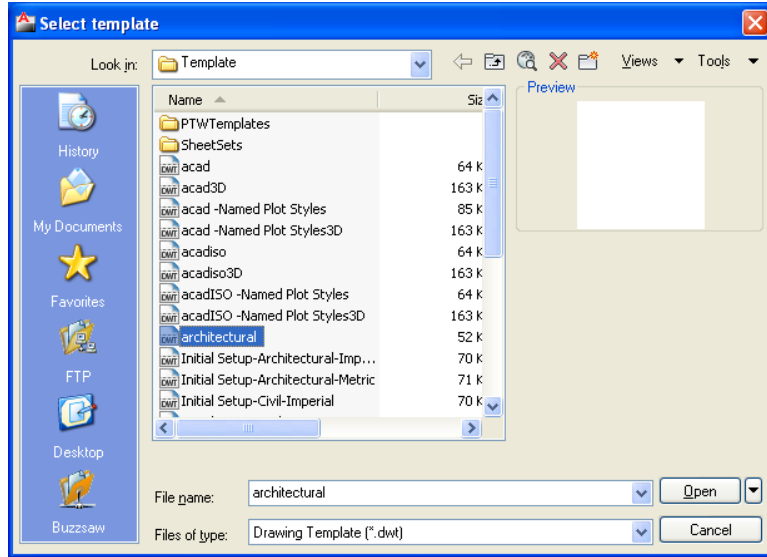


Figure A2.2 – The Architectural Template

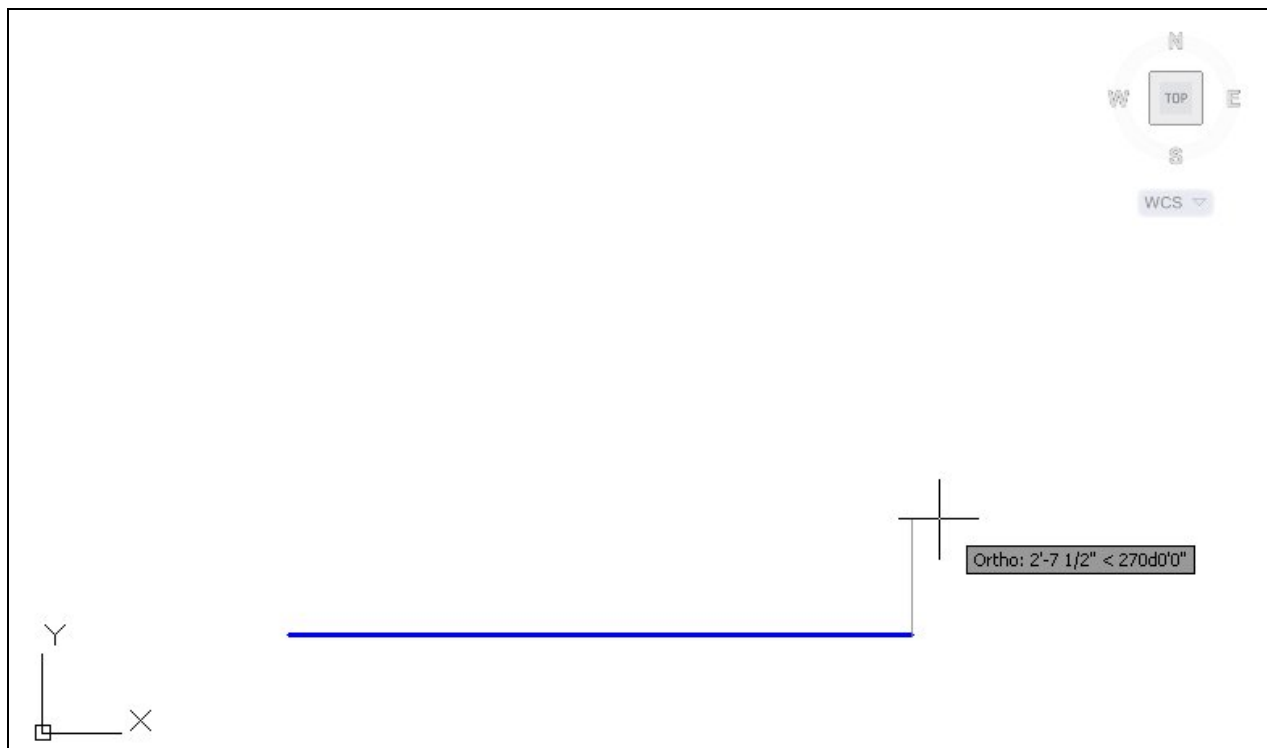


Figure A2.3 – Drawing the First Line in the Bedroom Wall

We continue with the rectangle by drawing the next leg upward by 90 degrees. We type 11' and enter. We draw the third line to the left at 16'4". The fourth line is drawn downward at 4'. We draw the fifth line 2'4" to the right. Finally, we will type "C" for close to complete the Polyline.

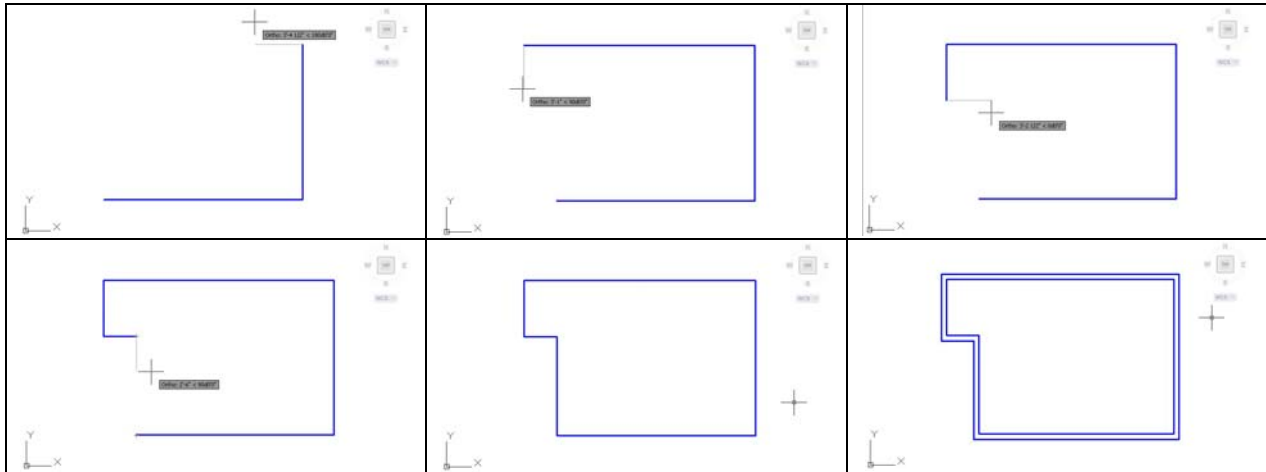


Figure A2.4 – Completing the Rectangular Drawing of the Bedroom Interior Wall

Our next step is to offset the interior boundary of the wall 4.5 inches outward using the Offset command. We computed our walls at 4.5 inches since a 2 by 4-wall stud measures 1.5 by 3.5 inches. We add a sheet of 1/2-inch drywall on either side of the 3.5 inch width to add up to 4.5 inches. In order to modify the twelve lines, we will Explode the two Polyline entities.

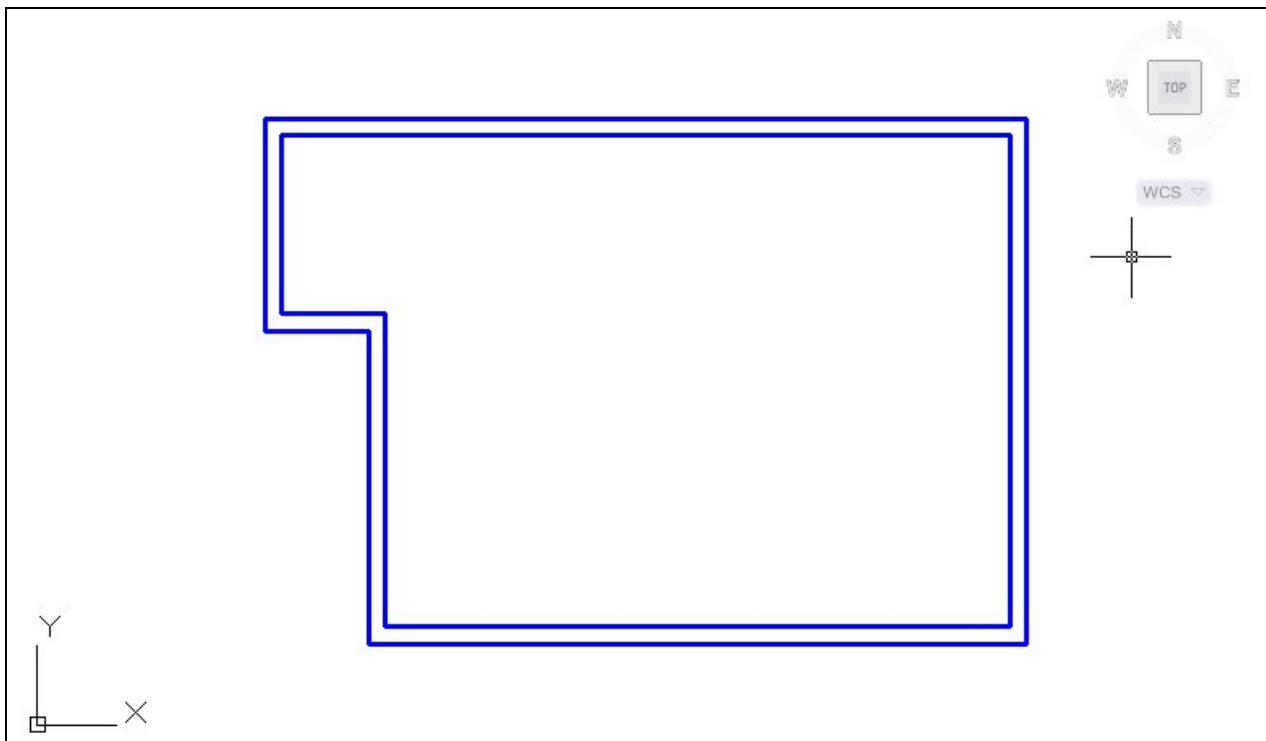


Figure A2.5 – Offset the Bedroom Wall

Draw and Dimension the Bedroom Closet

A bedroom closet is usually 24 to 28 inches in depth. The width can be slightly larger than the closet door all the way up to walk-in closets the size of an entire room. To add a door, we will bring the wall out in front of the closet opening to create a 42-inch opening for the sliding door. We accomplish this feat by starting a new line as shown in Figure A2.6 and drawing it 3 inches upward. We continue by drawing the line to the left for 4.5 inches and down for 3 inches.

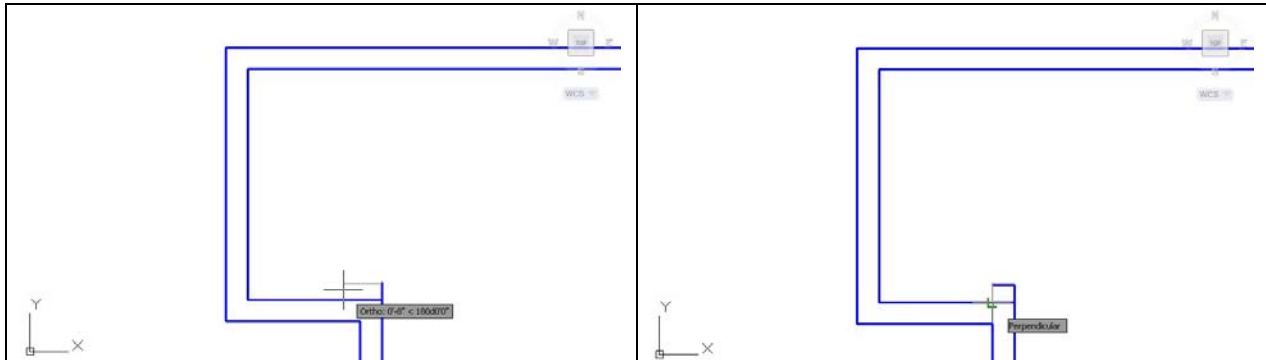


Figure A2.6 – Adding a Wall Extension

Figure A2.7 – Complete the Extension

Using the mirror command, we choose all three lines just drawn and Enter. We mirror the lines using the midpoint of line at the back of the closet. With the Ortho mode still on, we select the second point on the mirror line and another wall protrusion will appear. We use the Trim command to break the exterior wall, so the finished wall materializes as shown in figure A2.9.

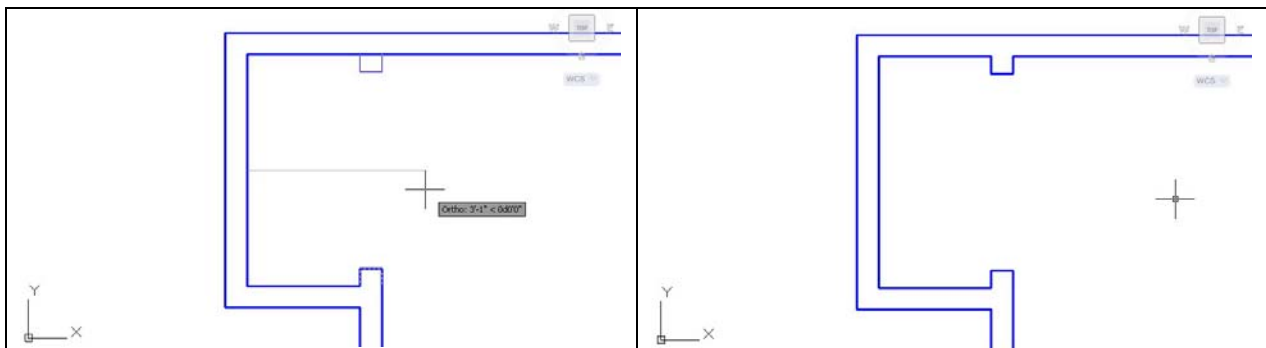


Figure A2.8 – Mirror the Extension

Figure A2.9 – Trimming the Wall

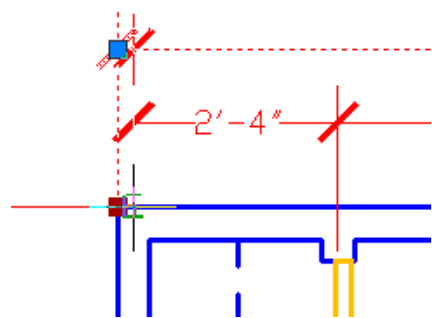


Figure A2.10 - Dimensions

Now, we change the current layer to Dimension and we place four measurements on the bedroom and closet as shown. When we put dimensions on an exterior wall, we use the outside perimeter line. For interior walls, we place the dimension extension lines at the midpoint of the wall. We can actually place the dimension using the Endpoint Osnap, and then we select the dimension again to view the sizing handles. When we choose the sizing handle, we can point our mouse towards the inside of the wall and type 2.25. The dimension extension line will now be in the middle of the wall.

Placing dimensions on a drawing is easy to do, and the most efficient technique is to add measurements as we complete the CAD drawing. This way, when we leave a room, that portion of the entire plan is complete.

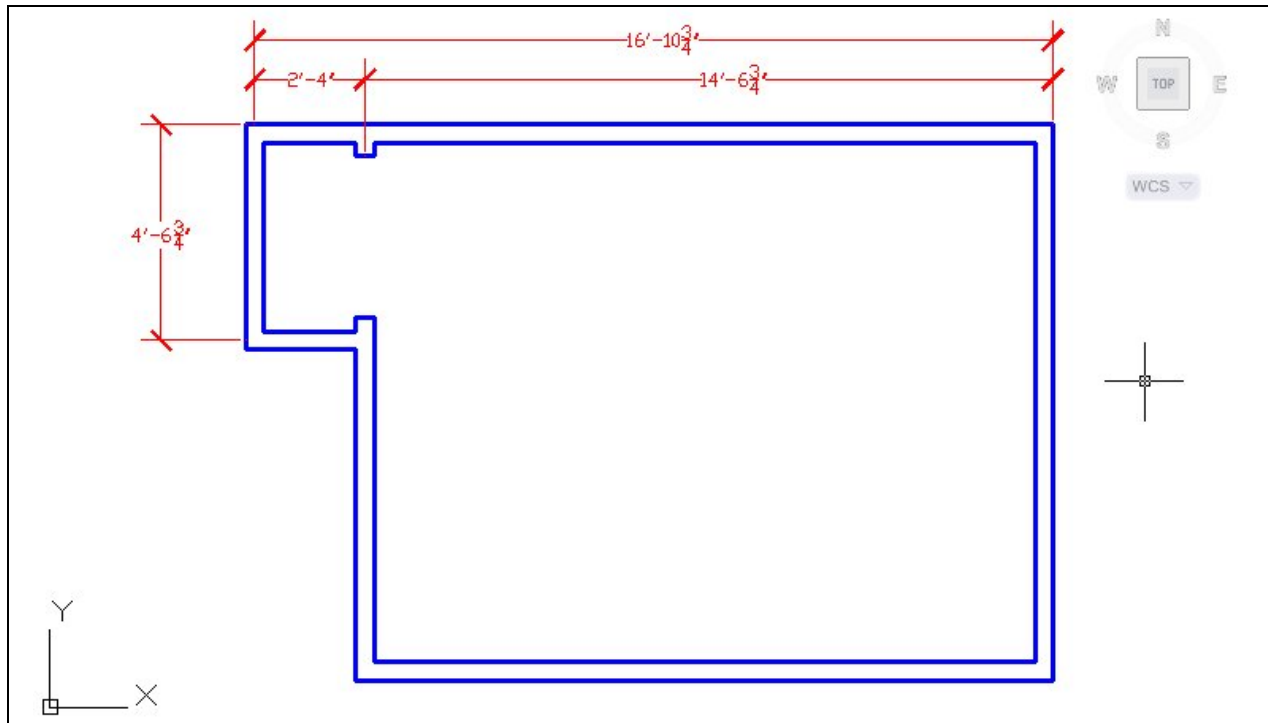


Figure A2.11 – Dimension the Wall and the Closet

Draw and Dimension the Bedroom and Closet Door

Next, we will draw a line that will show our door opening. We will draw a 4.5-inch vertical line from the lower left hand corner of the room. We then move the single line 10.25 inches to the right as shown in Figure A2.6. To make the other side of the opening, we copy the 4.5-inch line segment 32 inches to the right.

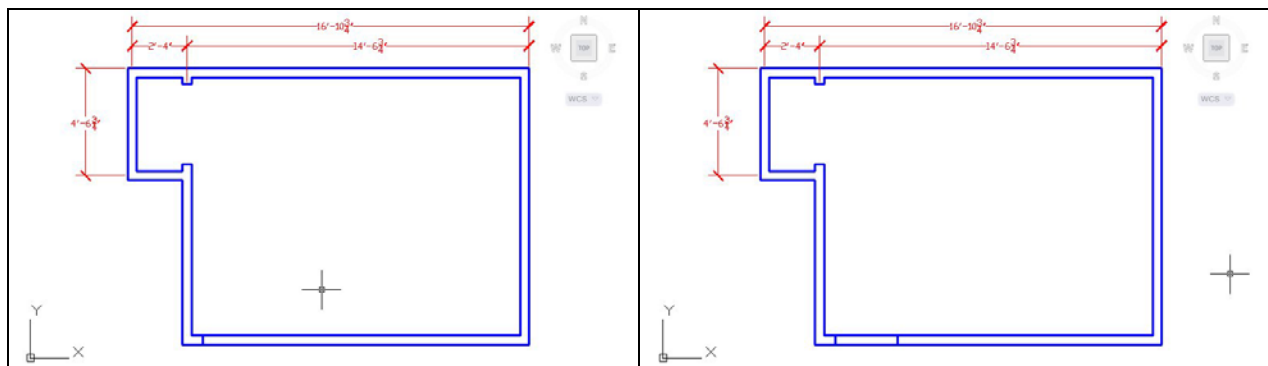


Figure A2.12 – The Left of the Door Opening

Figure A2.13 – The Right Side of the Opening

Now, we remove the lines from the door opening using the Trim command leaving the drawing as shown in Figure A2.14. We change the current layer to Door and we draw a single line from left to right on the interior of the bedroom wall as shown in Figure A2.15.

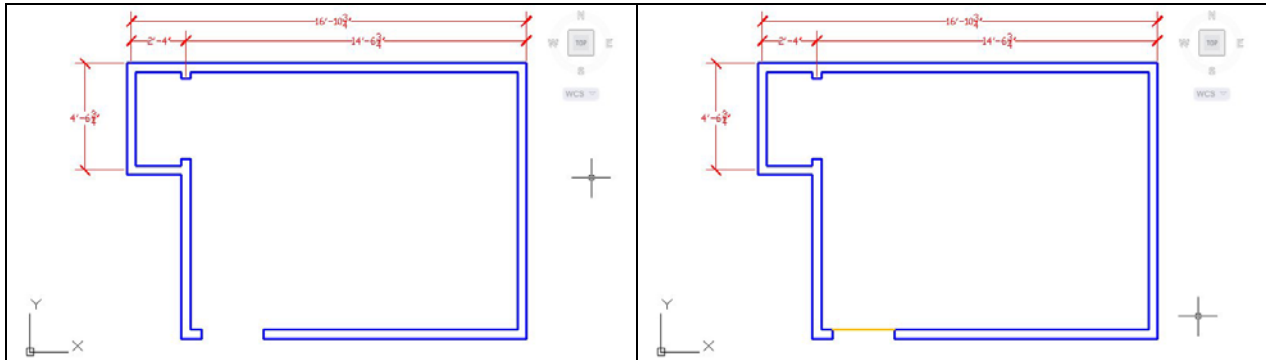


Figure A2.14 – The Left Side of the Opening **Figure A2.15 – The Right Side of the Opening**

When we show a door on an architectural floorplan, we use a number inside a circle to denote the type of door and we can match the description of the door by reading the same number on the door schedule in the plan set.

So, we add the number 1 at the midpoint of the line representing the door using Dtext and Middle for the text insertion point. We draw a circle at the same midpoint that has a radius of 4” as shown in Figure A2.16.

We show doors in the open position, so we use the Rotate command to open the door by 90 degrees as shown in Figure A2.17.

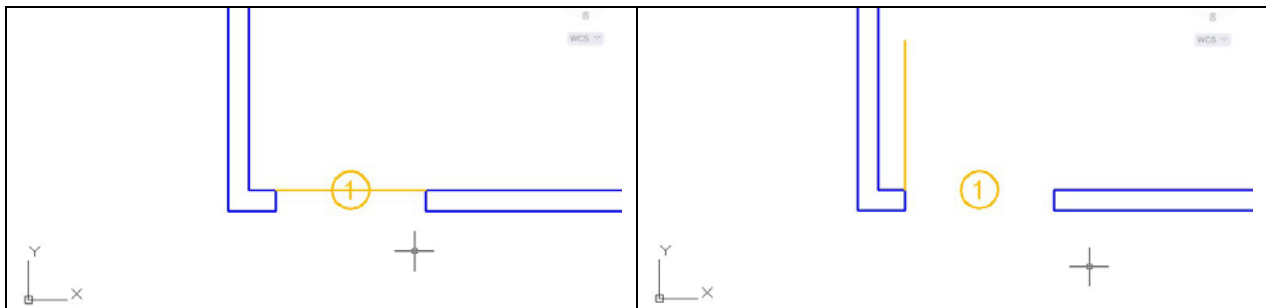


Figure A2.16 – Adding the Door Symbol **Figure A2.17 – Showing the Door as Open**

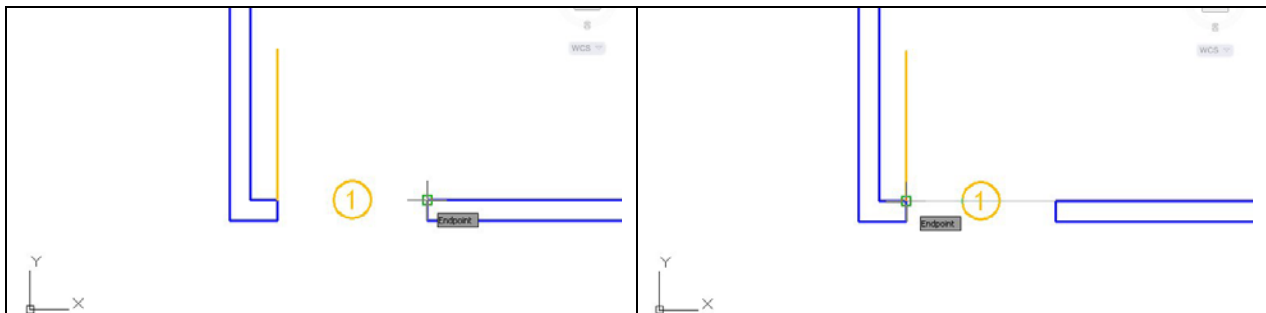


Figure A2.18 – Arc Starting Point **Figure A2.19 – Arc Center Point**

We need to draw an arc to show the direction of the door opening. When we use the Arc command, we pick the start point as shown in Figure A2.18. Then, we type “C” for center and pick the center point as shown in Figure A2.19.

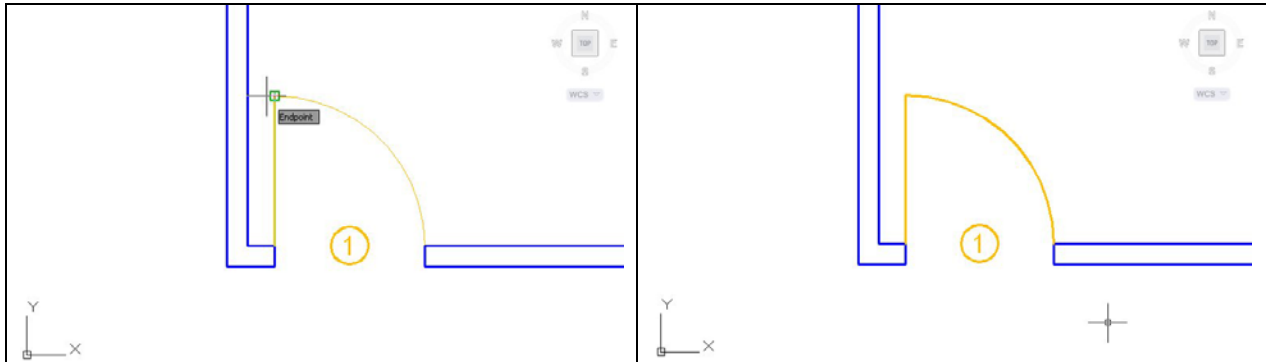


Figure A2.20 – Arc End Point

Figure A2.21– Final Arc

We finally select the endpoint and we can see the faint imprint of the arc as shown in Figure A2.20. The final arc is shown in Figure A2.21.

The last step in describing the bedroom door is to dimension the location of the door from the wall. Typically, we would dimension the door from its center to the center of the wall, but we will take the measurement from the outside of the wall to the center of the door. We set the current layer to dimension and place the Linear Dimension as shown in Figure A2.22.

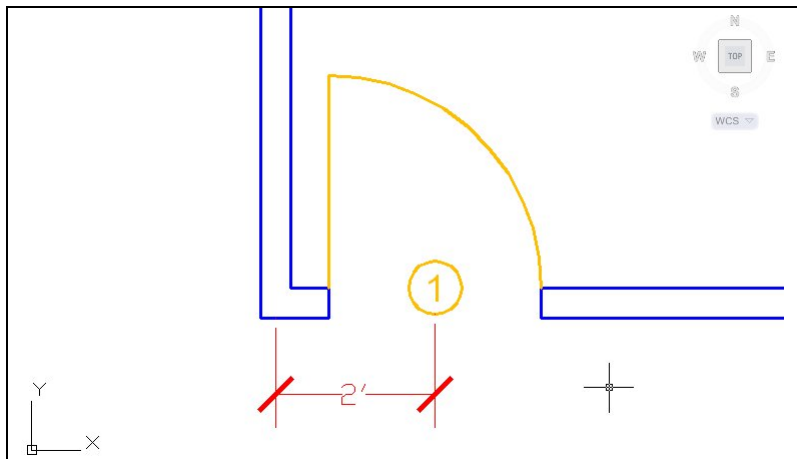


Figure A2.22 – Dimensioning the Door’s Location

While we are still on the door layer, we will draw the sliding door for the closet. We begin by selecting Polyline on the Draw toolbar. We then pick the lower left side of where the door will touch the wall extension we just added. We draw a 2-inch line to the right, a 21-inch line upward, a two-inch line to the left and “c” for close. We will see the closet door as shown in figure A2.23.

We will then make a second closet door by choosing the Copy command, select the first door, and press enter. For the first point of displacement, we click on the lower left side of the door and the second point will be the upper right corner of the first door. That will place the second closet door as shown in figure A2.24.

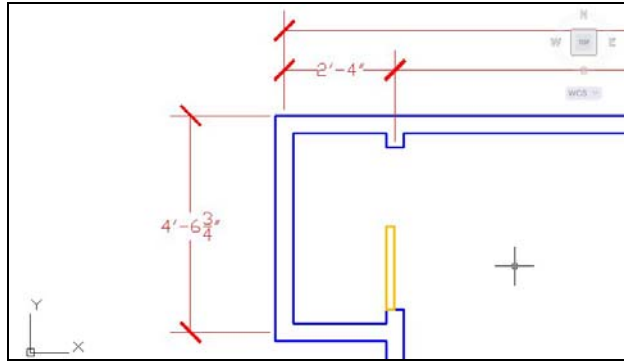


Figure A2.23 – First Closer Door

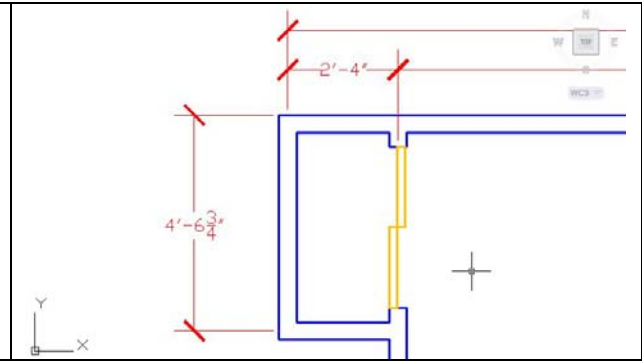


Figure A2.24 – Second Closet Door

Next, we will offset the line at the back of the closet 12 inches to the right as shown in figure A2.25 and then we change the layer linetype to hidden as shown in figure A2.26.

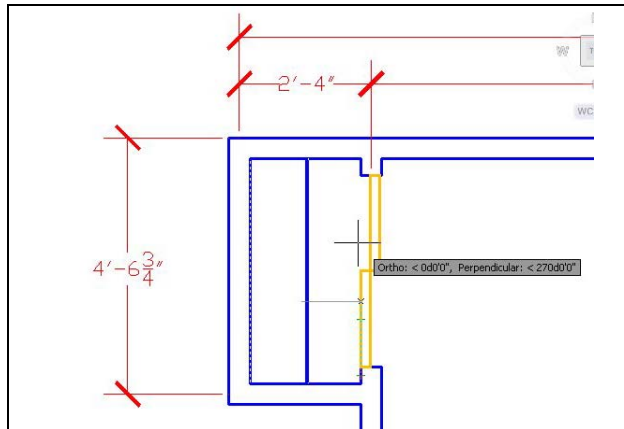


Figure A2.25 – Creating the Shelf

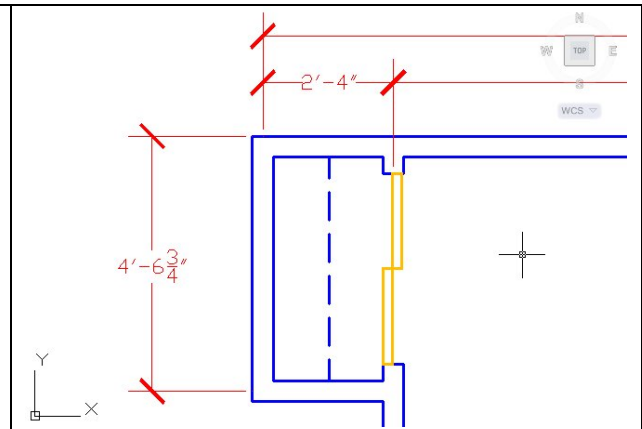


Figure A2.26 – The Shelf as a Dotted Line

Draw and Dimension the Bedroom Window

To add a window to the bedroom, we will change the current layer to window and draw a line from the endpoint of the outside of the lower right corner of the exterior wall. We will then use the Move command and shift the line 3'4.5 upward. We then use the Offset command copy the 4.5-inch line 16 inches above and below the midline as shown in Figure A2.27.

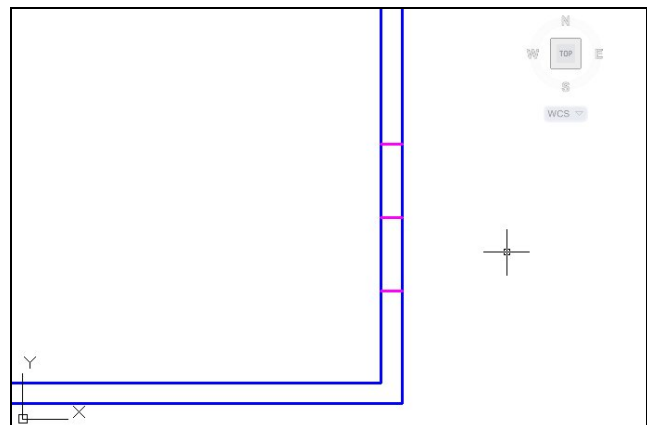


Figure A2.27 – Adding a Window

We can erase the middle line we used to begin to draw the window and then we will utilize the Trim command to remove the blue wall lines. After that, we will draw the two lines for the window as shown in Figure A2.29. To get the two lines that represent the glazing, we offset the last two lines 1.5 inches to the inside as shown in Figure A2.30.

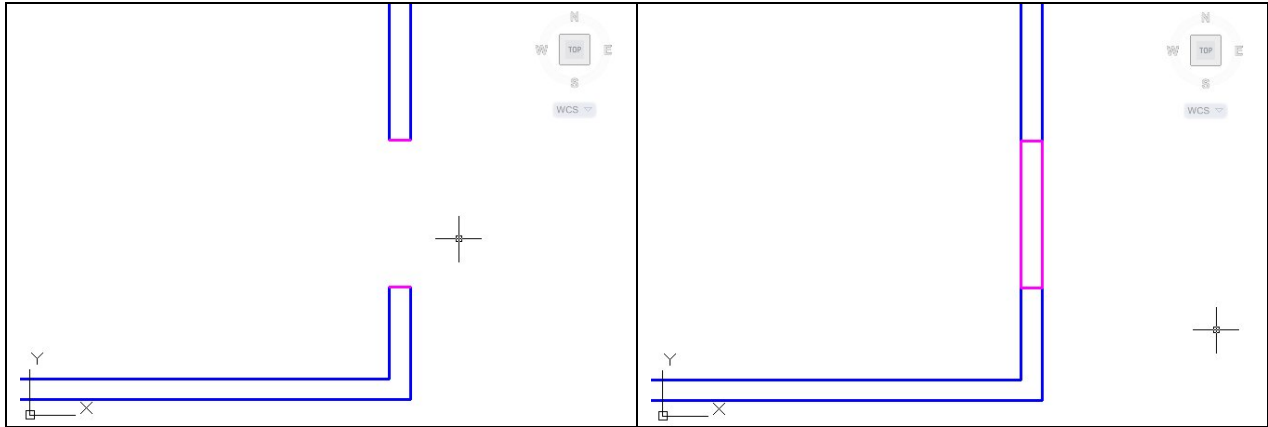


Figure A2.28 – Trimming the Window

Figure A2.29 – Adding Window Lines

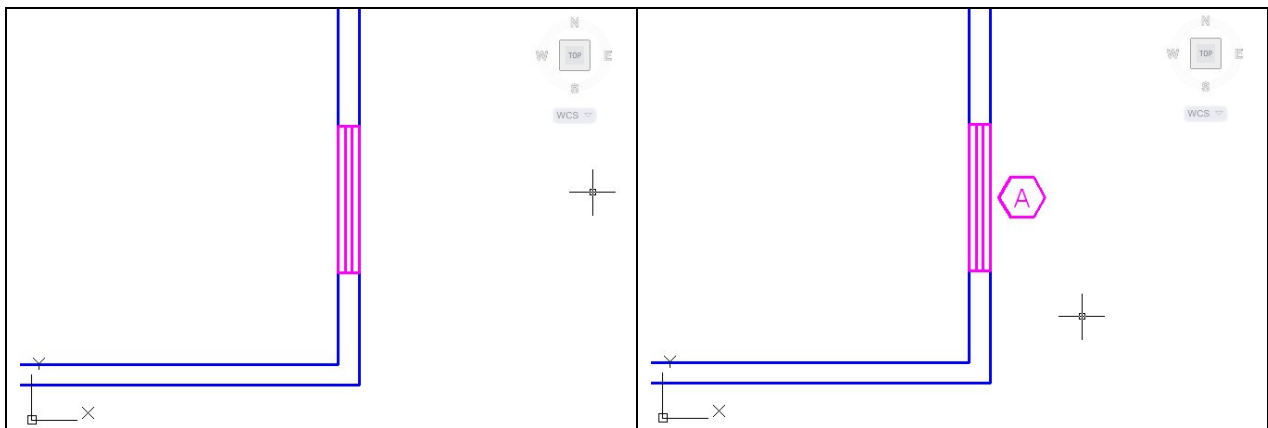


Figure A2.30 – Adding Lines for Glazing

Figure A2.31– Adding Window Symbol

When we show a window on an architectural floorplan, we use a letter inside a hexagon to denote the type of window and we can match the description of the window by reading the same letter on the window schedule in the plan set.

We add the letter A at the midpoint of the outside line representing the window using Dtext and Middle for the text insertion point. We draw a hexagon at the same midpoint that has a radius of 4” as shown in Figure A2.31. We move the letter and hexagon 6.5 inches to the right.

In Figure A2.32, we can see the dimension that measures the distance from the edge of the bedroom to the center of the window. Then we add a dimension from window to window and a third from the window to the edge of the room.

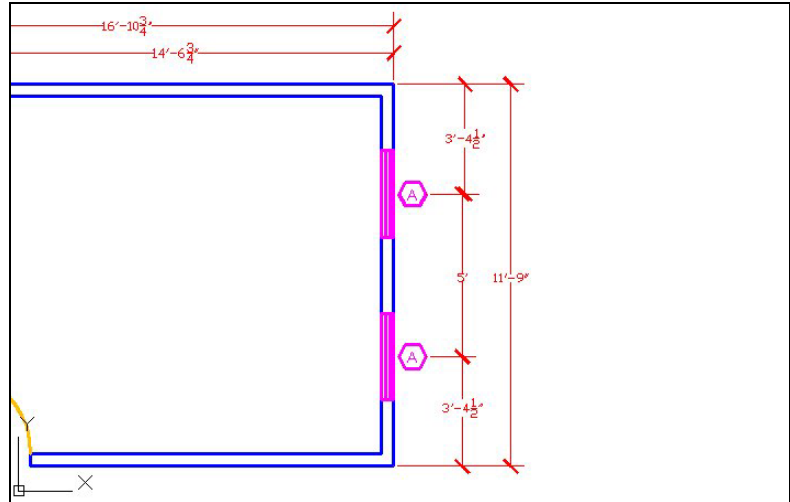


Figure A2.32 – Dimension the Windows

Add Overall Dimensions to the Bedroom

In Figure A2.33, we show the overall dimensions to the exterior of the room. We can practice drawing this same bedroom floorplan or we can change the dimensions as we begin to improve in our technique.

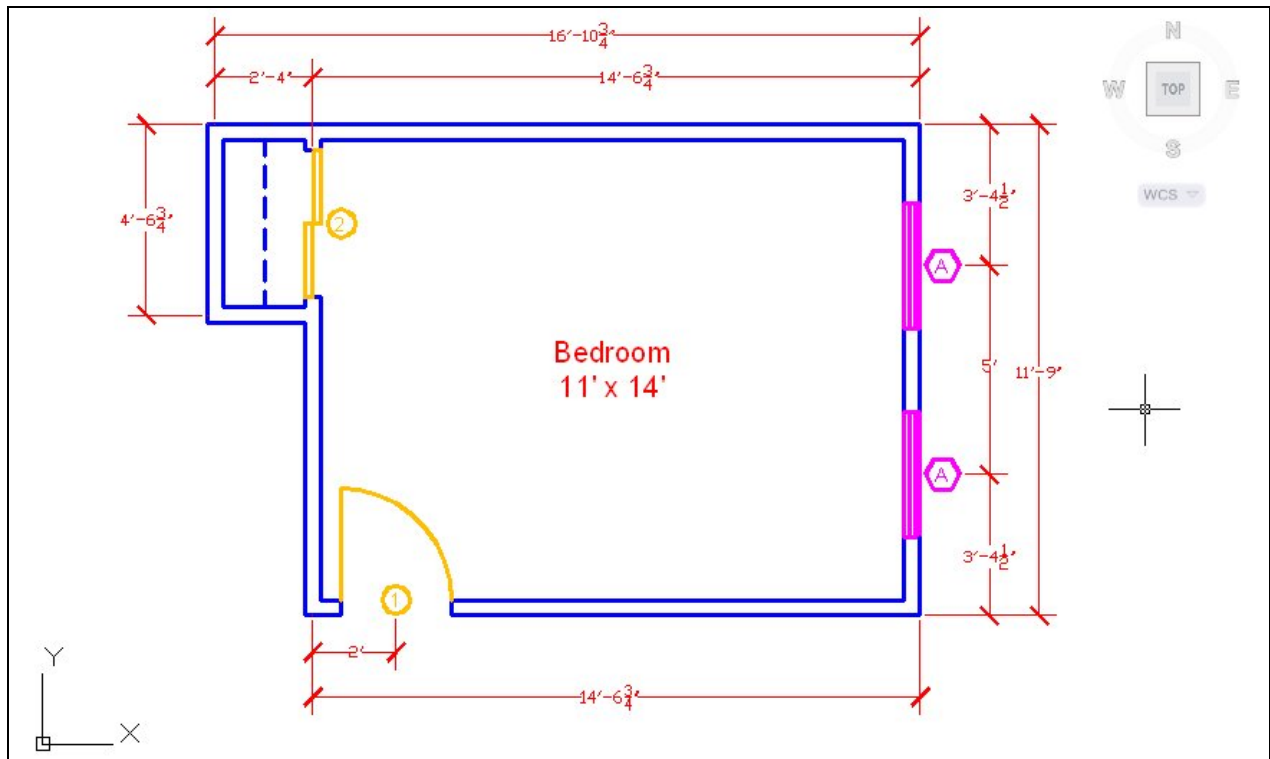


Figure A2.33 – Adding Outside Dimensions

*** World Class CAD Challenge * - Open a new file in your CAD program with the architectural template. Draw the wall, closet, door, and windows of the bedroom showing dimensions in 15 minutes.**

Continue this drill multiple times using the steps we have learned, each time completing the drawing under 15 minutes to maintain your World Class ranking