B

Drawing a Bathroom Floorplan

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

- **Draw a Bathroom Floorplan**
- **Draw the Bathroom Walls**
- **Draw and Dimension the Bathroom Door**
- **Draw and Dimension the Bathroom Windows**
- **Add the Bathtub, Toilet and Sink to the Bathroom**
- **Add Overall Dimensions to the Bathroom**

Draw a Bathroom Floorplan

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In this project, we will learn how to draw a Bathroom floorplan with a single door, a window, and dimension the plan. We will also add blocks of the bathtub, toilet, and sink. In the tutorial, we will begin by drawing the perimeter of the room 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, staircases, and elevations. After we attain the basic skills and speed in drawing floor plans, we can enhance the complexity 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.
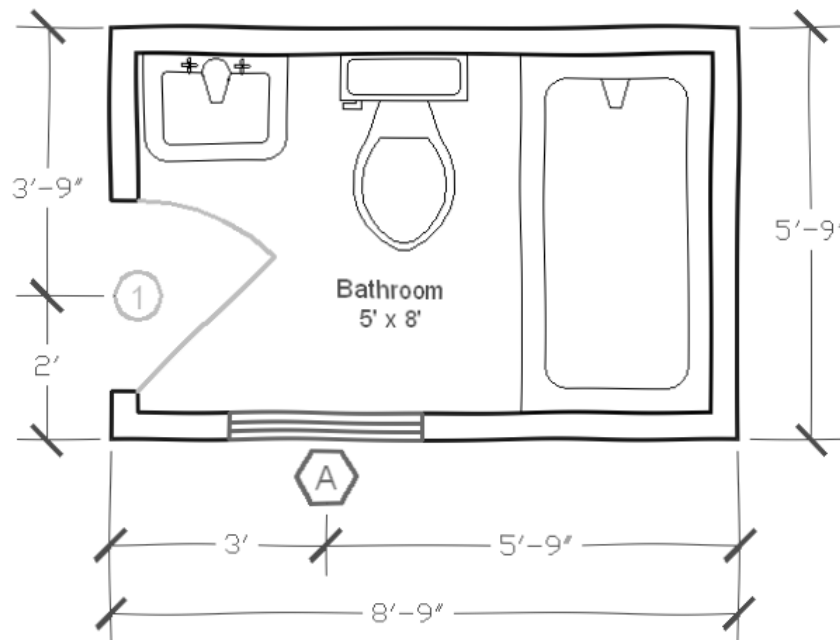
Figure B.1 – Sketch of the Bathroom

Draw the Bathroom Walls

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The first Bathroom we will draw will be 5 feet by 8 feet. Our 32 inch door will open towards the wall, so when the door is fully open, it will rest against the perimeter of the room as to not interfere with traffic. The window will be 32 inches in width and will give daylight to the room. For privacy, we can require frosted glass or we can add a shade.

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 B.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 8' (feet) at the command line. A single line will appear as shown in Figure B.3.
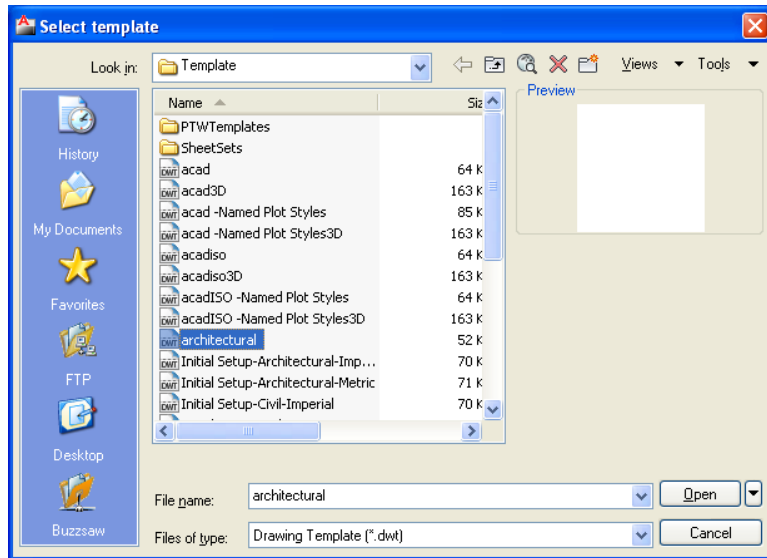

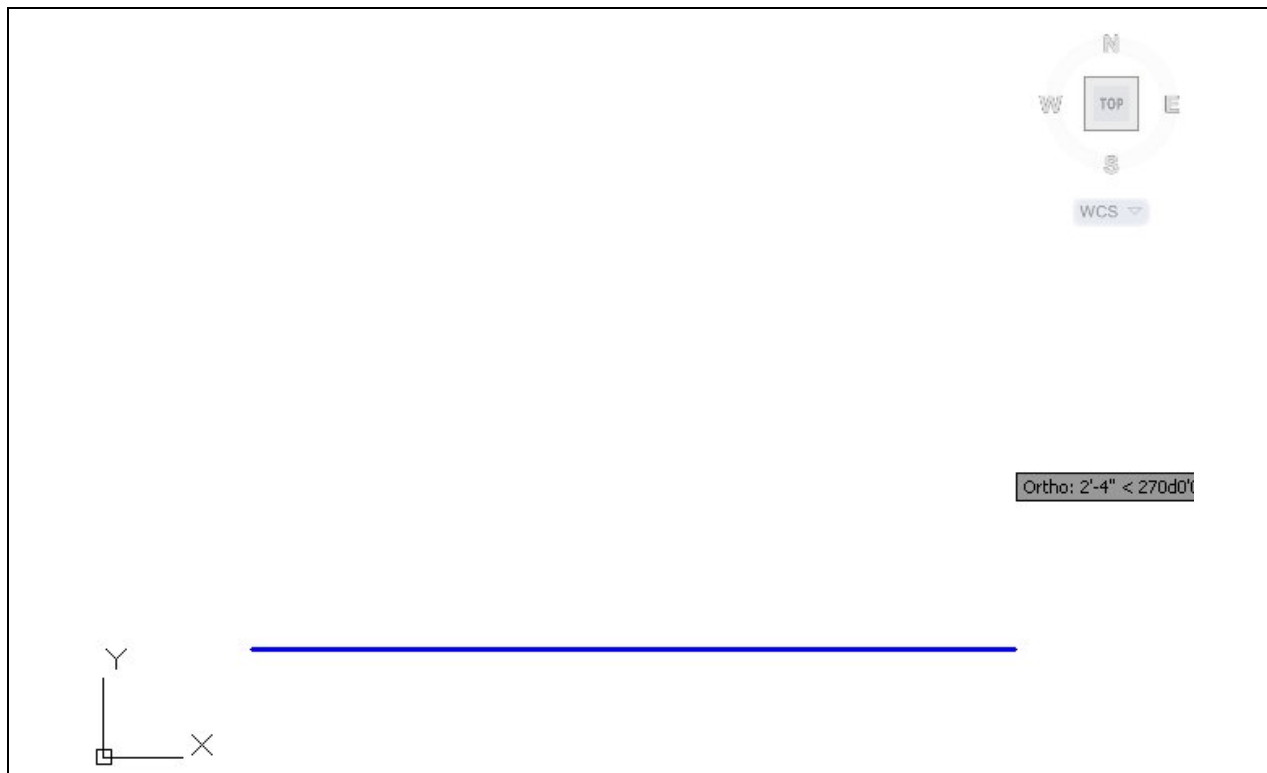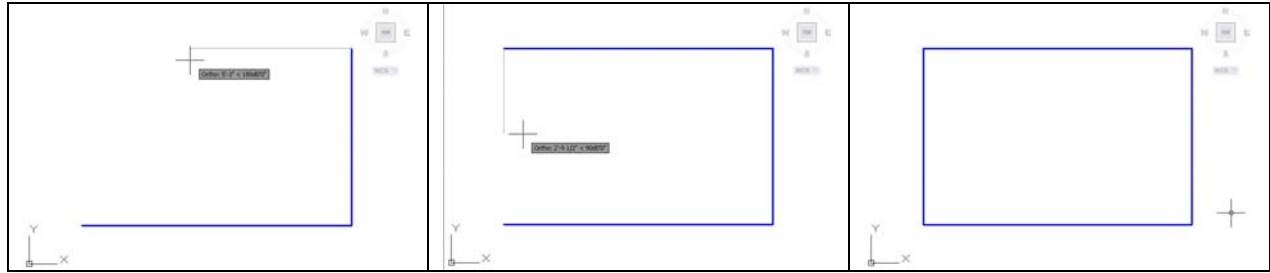**Figure B.2 – The Architectural Template**

Figure B.3 – Drawing the First Line in the Bathroom Wall

We continue with the rectangle by drawing the next leg upward by 90 degrees. We type 5' and enter. We draw the third line to the left at 8'. Finally, we will type "C" for close to complete the Polyline.

**Figure B.4 – Completing the Rectangular Drawing of the Bathroom 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 ½-inch drywall on either side of the 3.5 inch width to add up to 4.5 inches. In order to modify the eight lines, we will Explode the two Polyline entities.
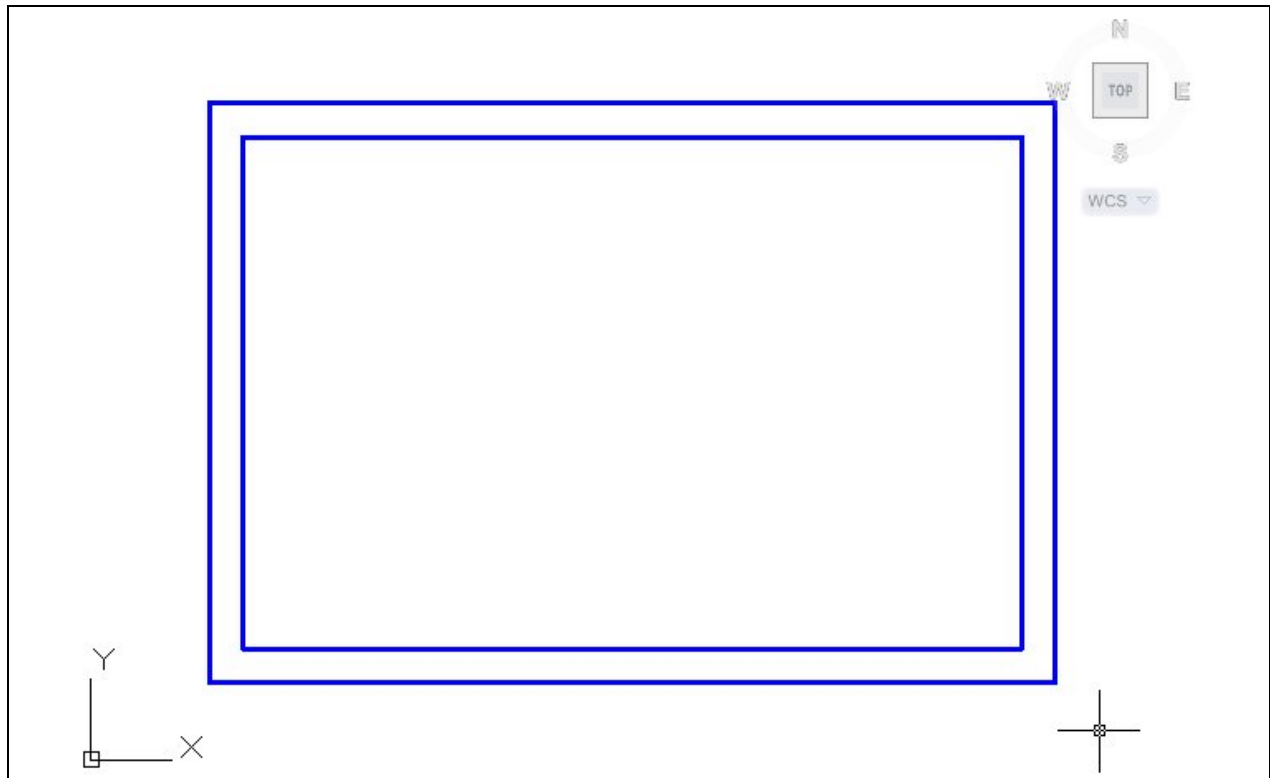
Figure B.5 – Offset the Bathroom Wall

## Draw and Dimension the Bathroom Door

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Next, we will draw a line that will show our door opening. We will draw a 4.5-inch horizontal line from the lower left hand corner of the room. We then move the single line 8 inches upward as shown in figure B.6. To make the other side of the opening, we copy the 4.5-inch line segment 32 inches above the first as shown in figure B.7.
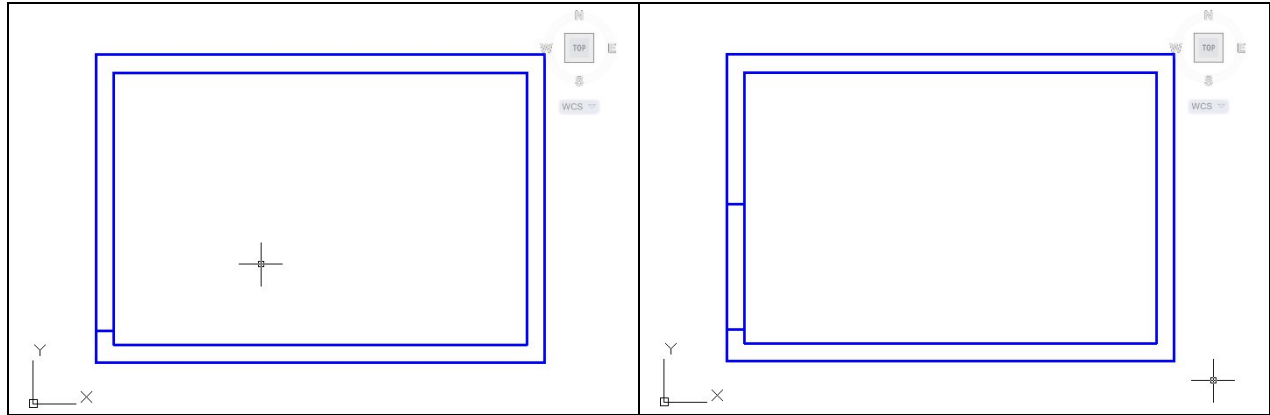
Now, we remove the lines from the door opening using the Trim command leaving the drawing as shown in Figure B.8. We change the current layer to Door and we draw a single line from bottom to the top on the interior of the Bathroom wall as shown in Figure B.9.
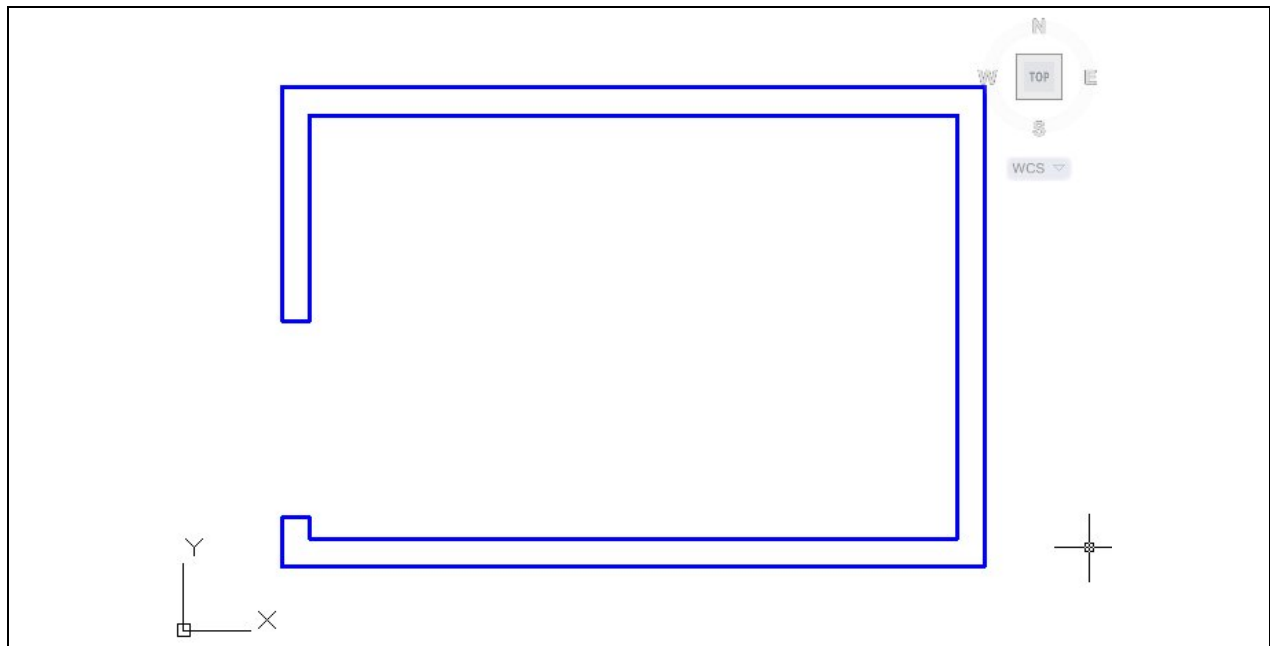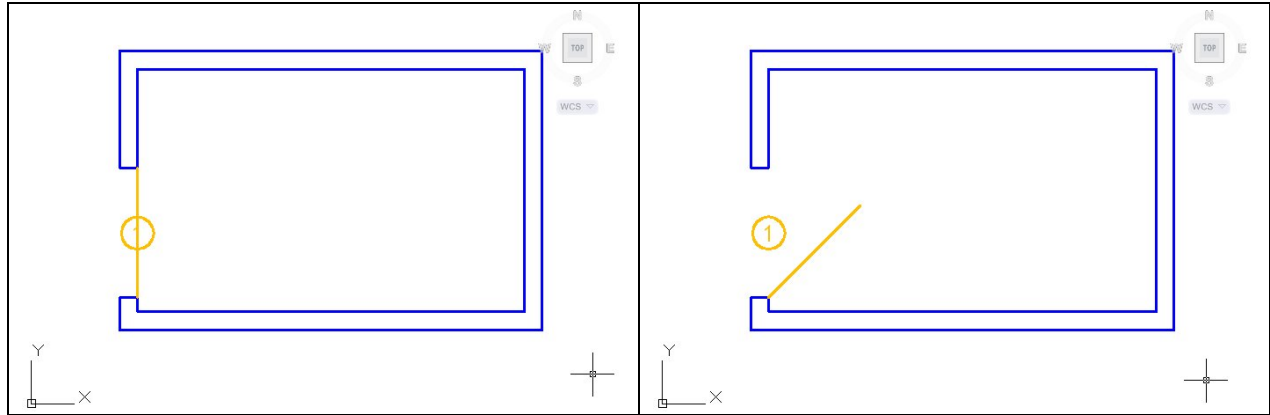

Figure B.8 – Trim the Door Opening

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 B.9.

We show doors in the open position, so we use the Rotate command to open the door by 45 degrees as shown in Figure B.10.

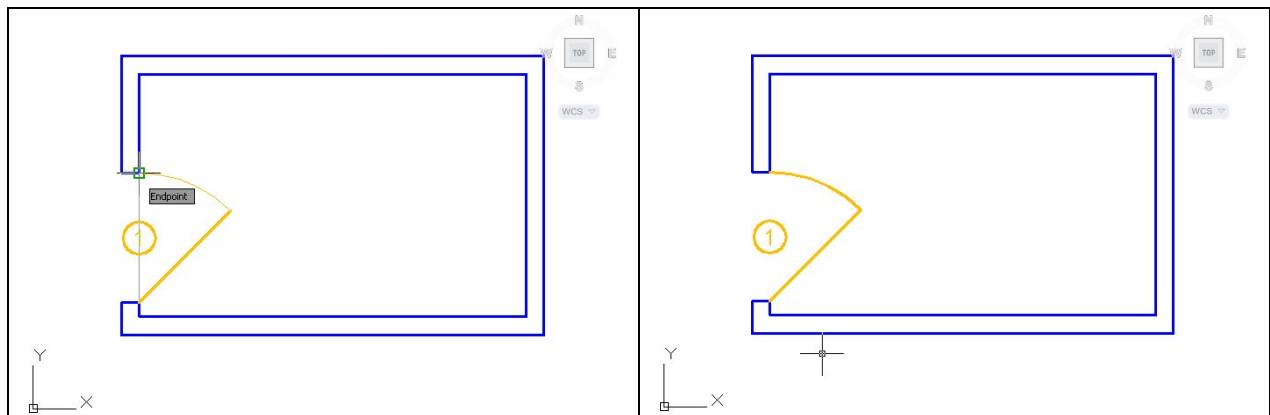**Figure B.9 – Adding the Door Symbol**

Figure B.10 – Showing the Door as Open
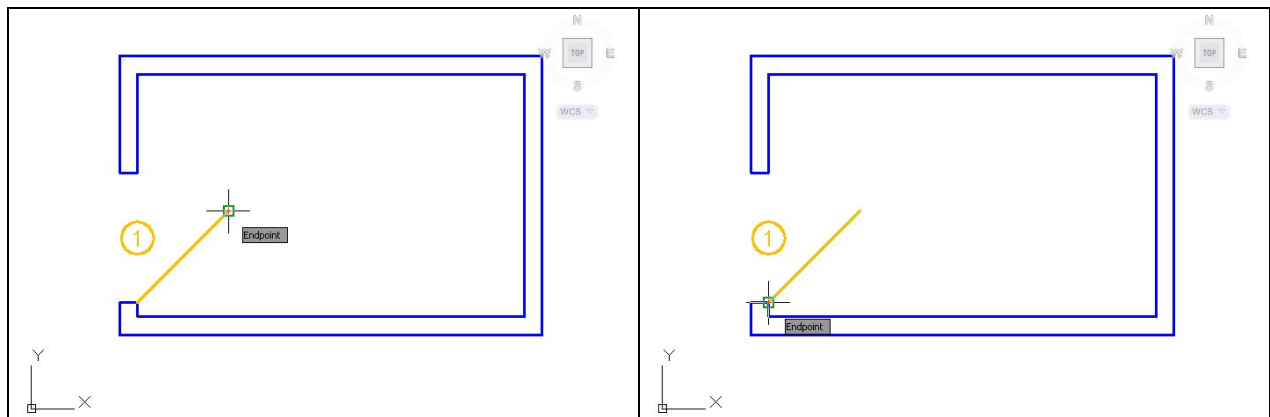
Figure B.11 – Arc Starting Point

Figure B.12 – 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 B.11. Then, we type "C" for center and pick the center point as shown in Figure B.12.


Figure B.13 – Arc End Point

Figure B.14– Final Arc

We finally select the endpoint and we can see the faint imprint of the arc as shown in Figure B.13. The final arc is shown in Figure B.14.

The last step in describing the Bathroom 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 B.15.
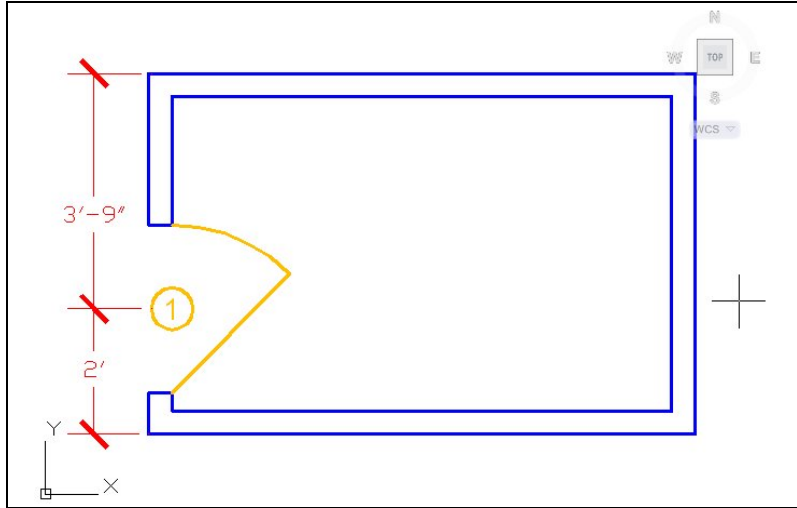
Figure B.15 – Dimensioning the Door's Location

Draw and Dimension the Bathroom Window

To add a window to the Bathroom, we will change the current layer to window and draw a vertical 4.5 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' to the right. We then use the Offset command copy the 4.5-inch line 16 inches above and below the midline as shown in Figure B.16.
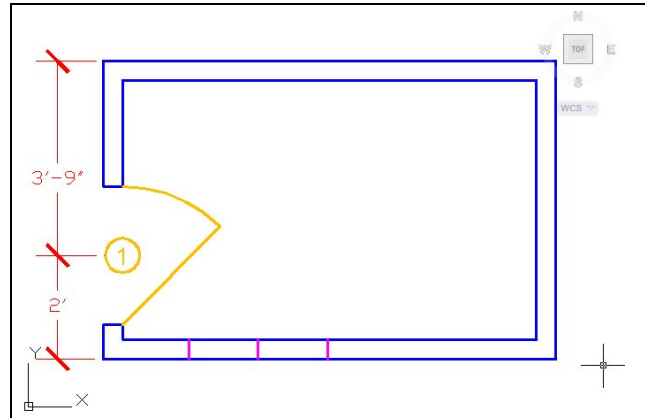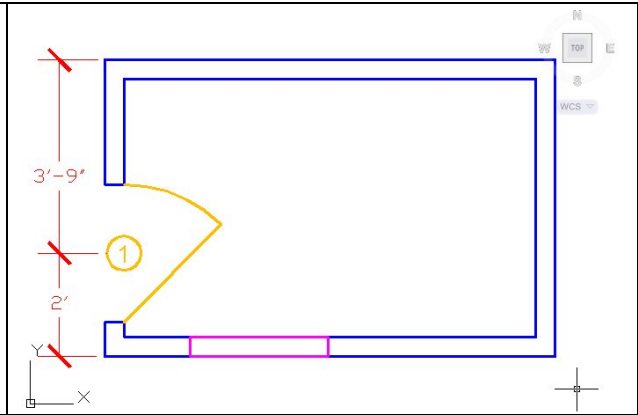

Figure B.16 – Adding a Window

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 as shown in figure B.17.
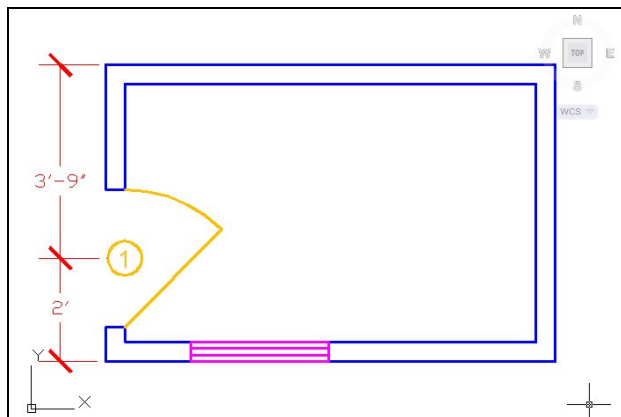
After that, we will draw the two lines for the window as shown in Figure B.18. To get the two lines that represent the glazing, we offset the last two lines 1.5 inches to the inside as shown in Figure B.19.
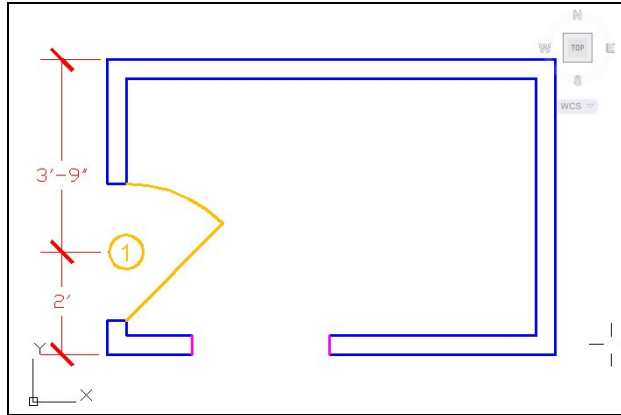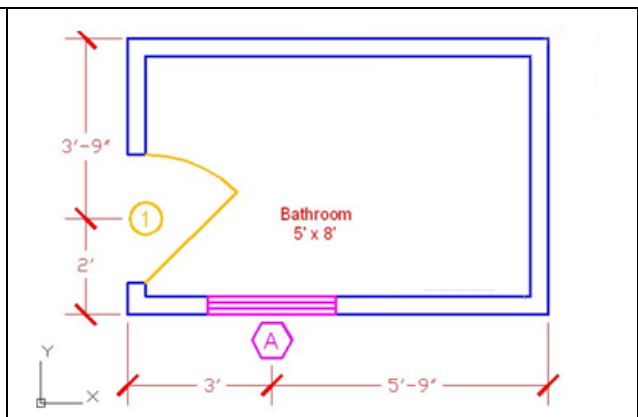
Figure B.17 – Trimming the Window

Figure B.18 – Adding Window Lines

Figure B.19 – Adding Lines for Glazing

Figure B.20 – 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 B.31. We move the letter and hexagon 6.5 inches to the right.

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

Add the Bathtub, Toilet and Sink Blocks

In the section of the lesson, we will insert the 32"x60" bathtub, the toilet, and the sink. We can download the three blocks off the World Class CAD website at:

http://www.worldclasscad.com/residential_architectural.htm

We change the current layer to bathroom. We type Insert at the command line and the Insert window will appear. We then will choose the Browse button and locate the folder that we have stored on our computer. We pick the bathtub drawing and then press the OK button. We then will insert the bathtub as shown in figure B.21.
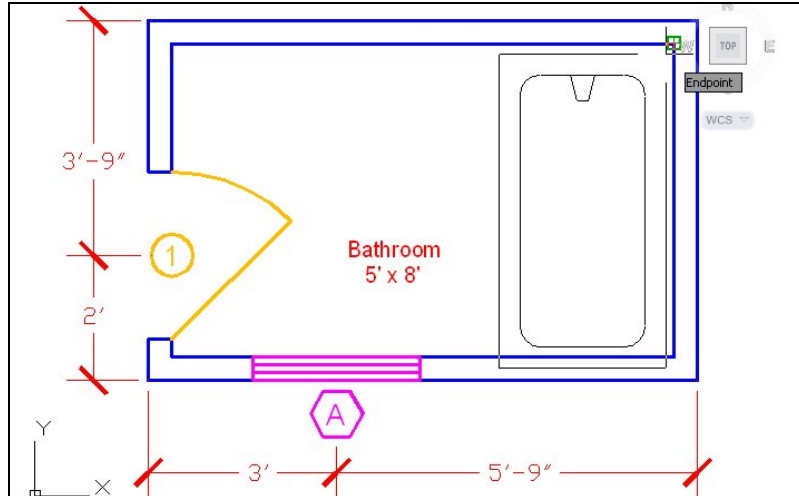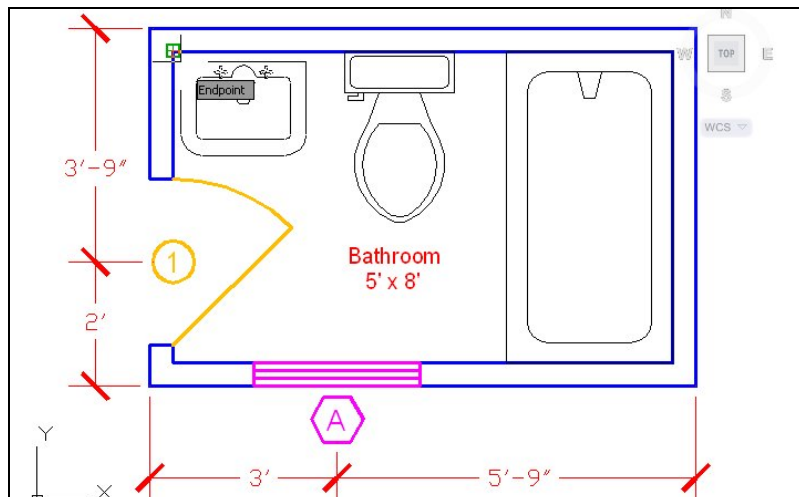

Figure B.21 – Adding the Bathtub Block

The next block will we insert into the bathroom floorplan is the toilet. The drawing is called "toilet-top." We follow the same procedure as the bathtub. We place the block using the midpoint Osnap. We then will move the toilet 3.5 inches to the left to give us equal spacing between the bathtub and the soon to be placed sink.
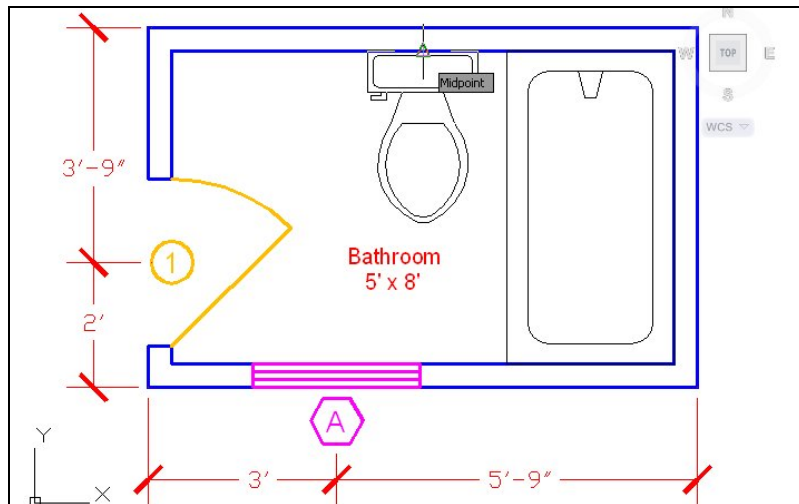
Figure B.22 – Adding the Toilet Block

The last symbol we will insert is the sink. We type Insert at the command line, and insert the sink in the upper inside corner of the bathroom floorplan. As we can see in figure B.24, we moved the sink one inch to the right.

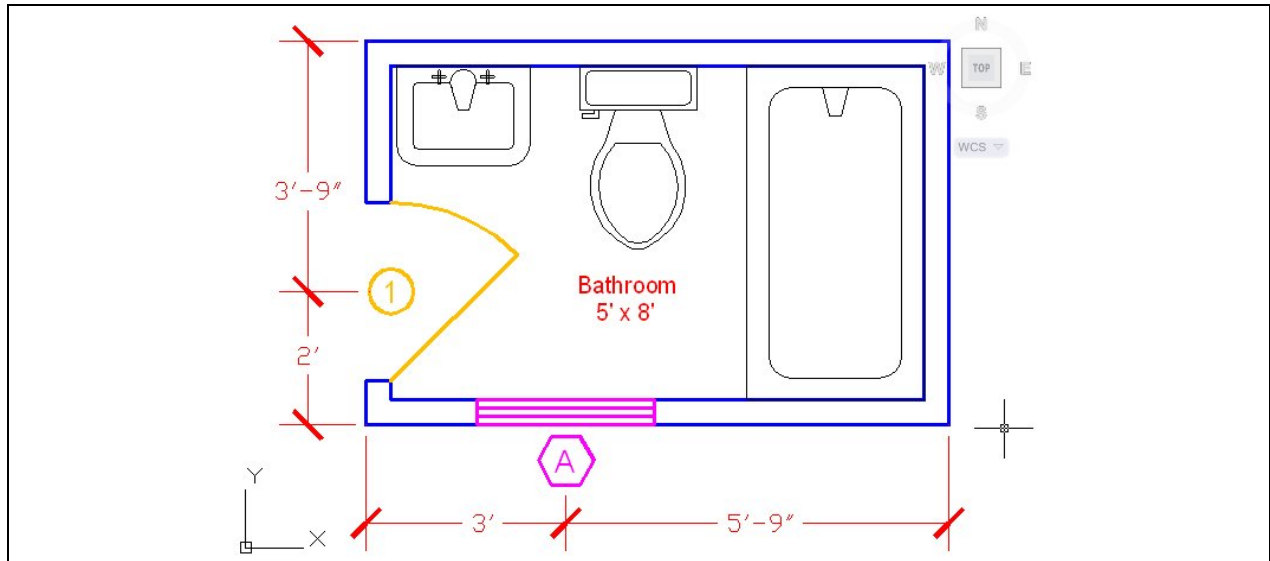**Figure B.23 – Adding the Sink Block**

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Figure B.24 – Adding the Toilet Block

Add Overall Dimensions to the Bathroom

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In Figure B.25, we show the overall dimensions to the exterior of the room. The 5'9" dimension is on the right and the 8'9" dimension goes across the bottom. We can practice drawing this same Bathroom floorplan or we can change the dimensions as we begin to improve in our technique.
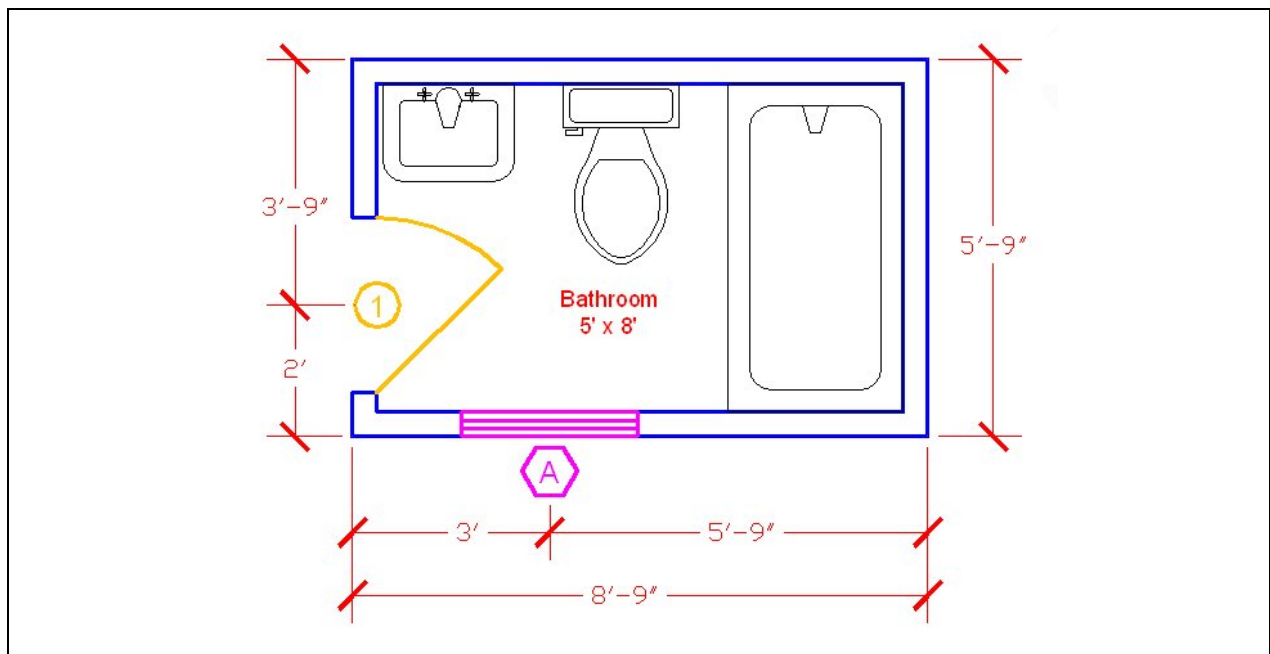

Figure B.25 – Adding Outside Dimensions

* World Class CAD Challenge * - Open a new file in your CAD program with the architectural template. Draw the wall, door, a window and insert three blocks into the Bathroom while 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