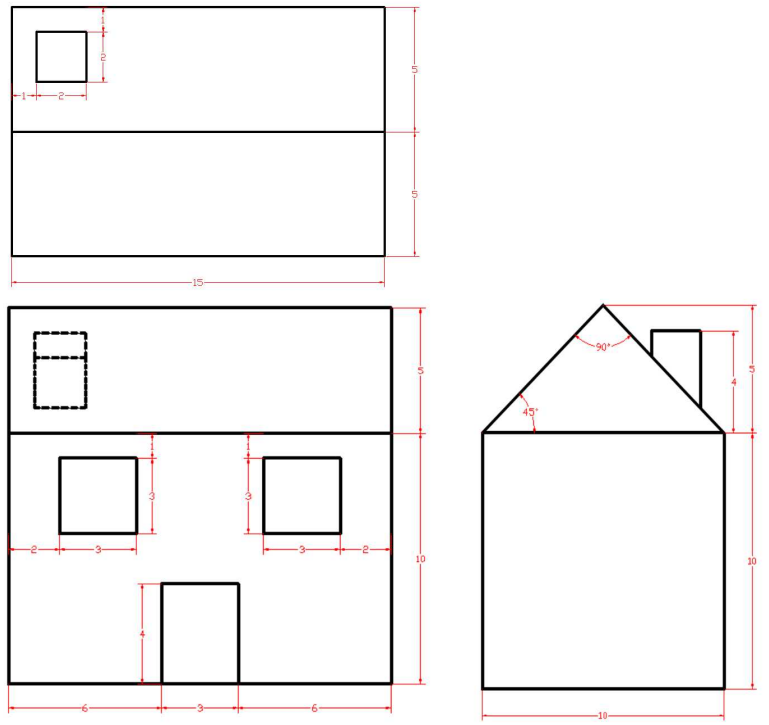
The Language of Drawing

Chapter 7:

Isometric drawings

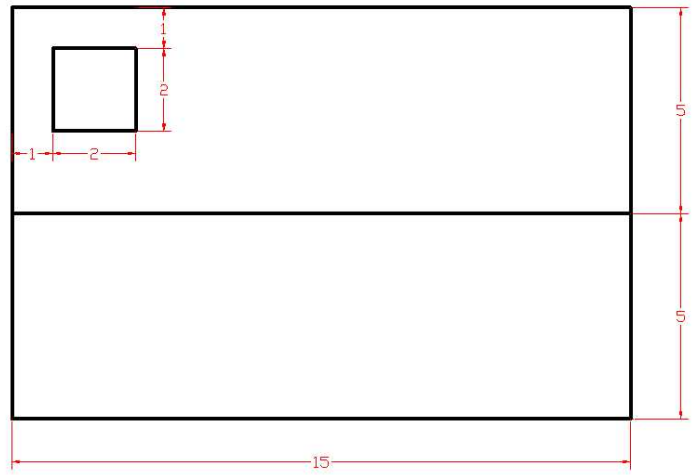
You already know how to draw orthographic views from a 3D model.

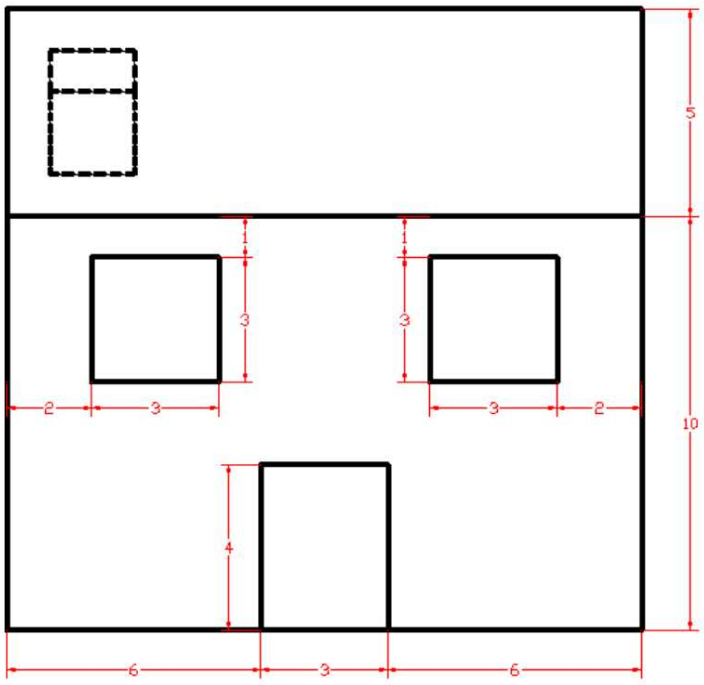


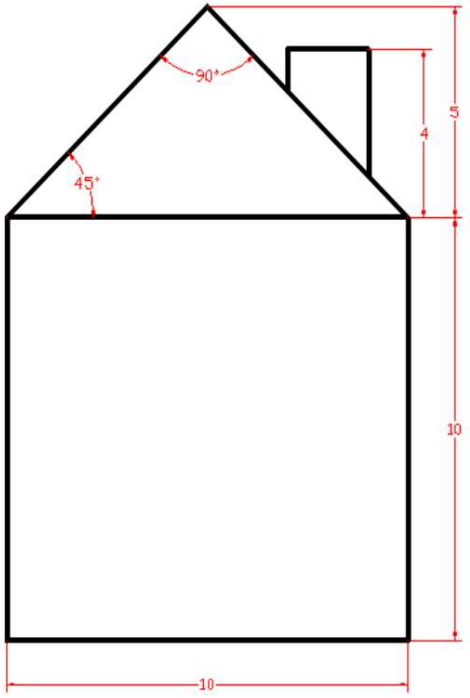
Here is a set of orthographic views of a house.

Your job is to draw a view that models what the house would look like in real life. For this example, you will create an isometric drawing.

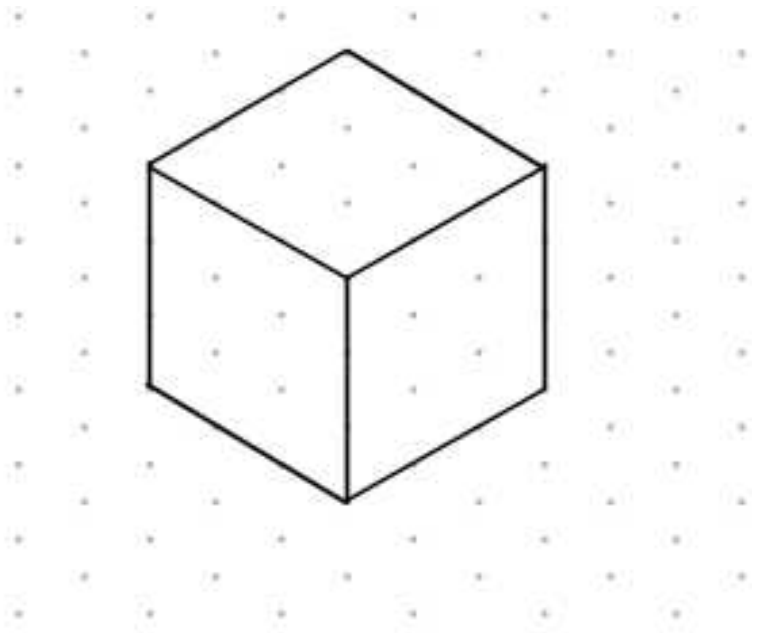
Here is a better look at the three views:







Here is the grid you will be using to draw the isometric view of the house. In an isometric drawing, the z axis runs vertically on the page, while the x and y axis extend to the left and right at a 30° angle.

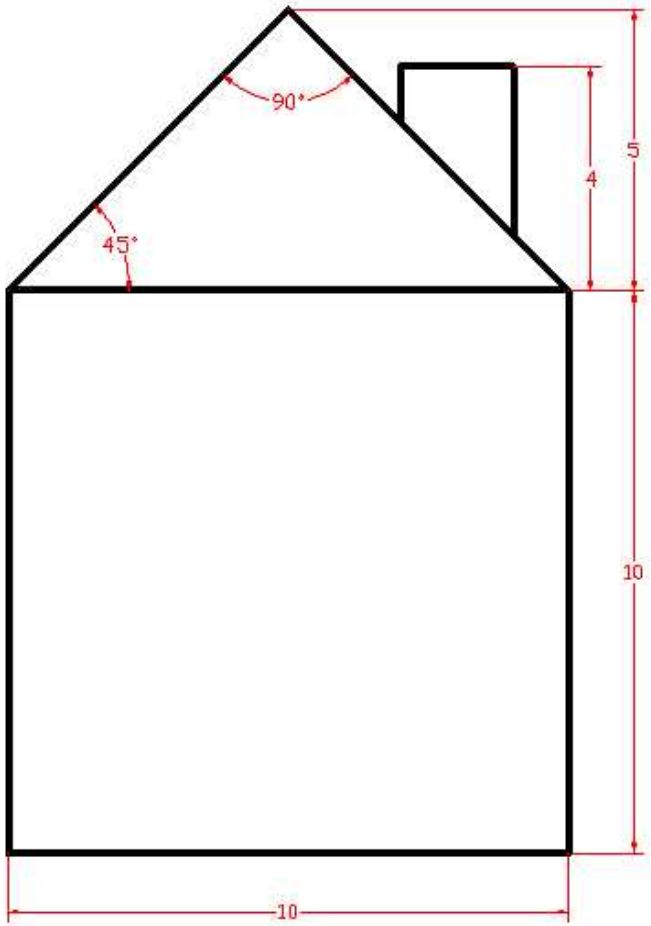


Shown on the grid is a 3 x 3 x 3 unit cube. The vertical lines run vertically on the page, while the horizontal lines run diagonally. An isometric view shows the object from the top, so that the part looks as though it is tilted towards the viewer.

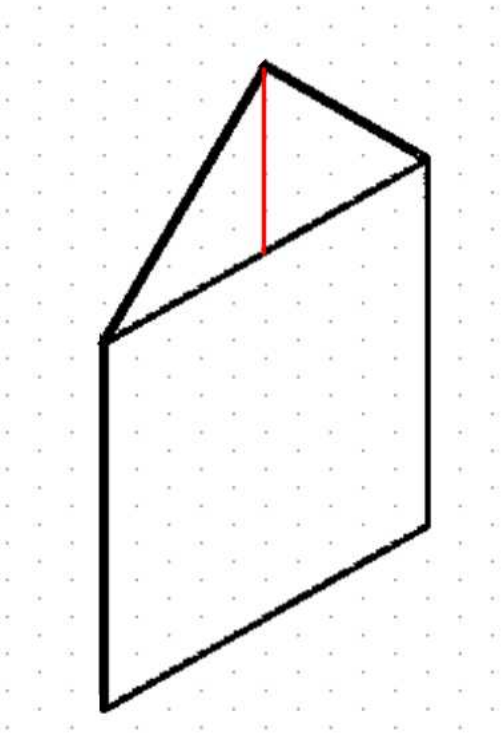
For practice, draw the same 3 x 3 x 3 cube on the grid below.

Now let's get started on drawing the house. First, look at the right side

view. It is the only view with dimensioned angles.



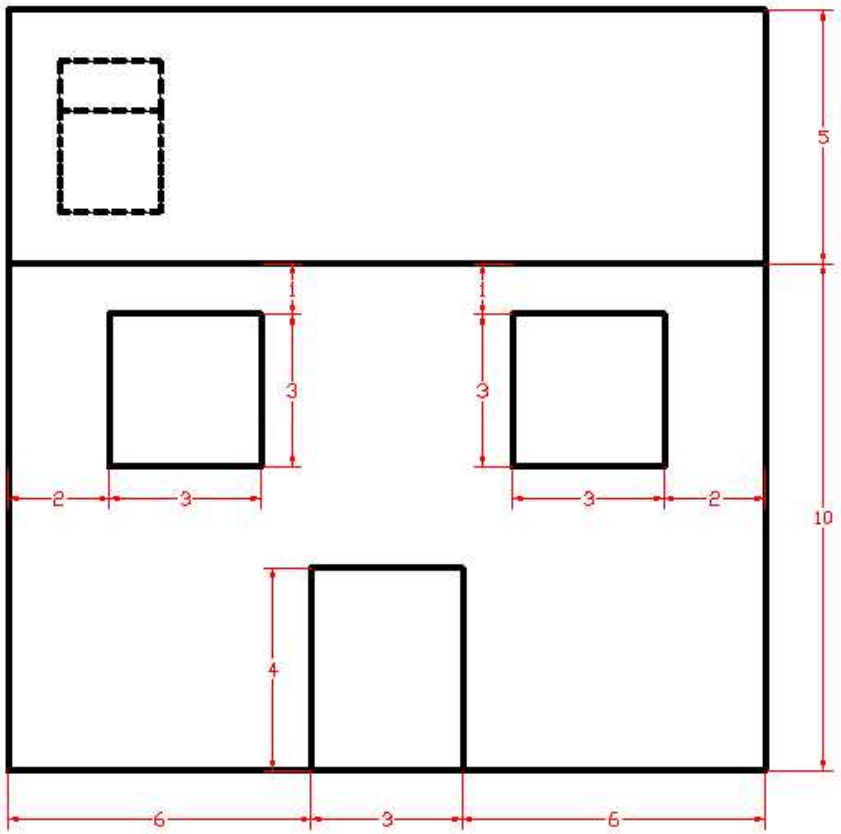
We know that the vertical lines will also be vertical in the isometric view, so start by placing them on the grid. Each space on the grid equals one unit from the orthographic view.
Here is the right side of the house drawn on the isometric grid. The two vertical edges are also vertical on the page.



The horizontal lines are simple to draw because they follow the isometric grid. However, the front edge of the house has a steeper angle. To draw the roof, count 5 units vertically from the top center of the wall (shown with a red line above). We know that the roof is this tall when it comes to a point at the top of the house. Just connect that point to the top corners of the wall to create the edges of the roof

Draw the right side of the house on the grid below. Do not worry about the chimney for now.

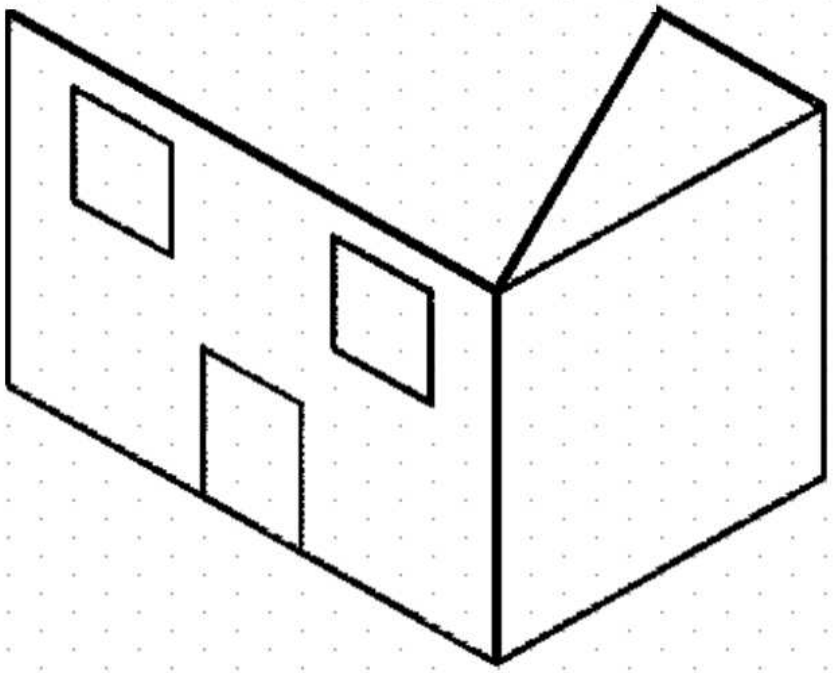
Now let's move onto the front side of the house. Here is the front view of the house.



There are no unusual angles on this view, so drawing it should be very simple. The front view will be placed on the front of the house, perpendicular to the right side.

Normally, the direction an isometric drawing is facing will correspond to which orthographic views were used to present it. For example, if the house were first drawn with a top, front, and left side view, the isometric view would be from the left side.
Here is the front wall of the house

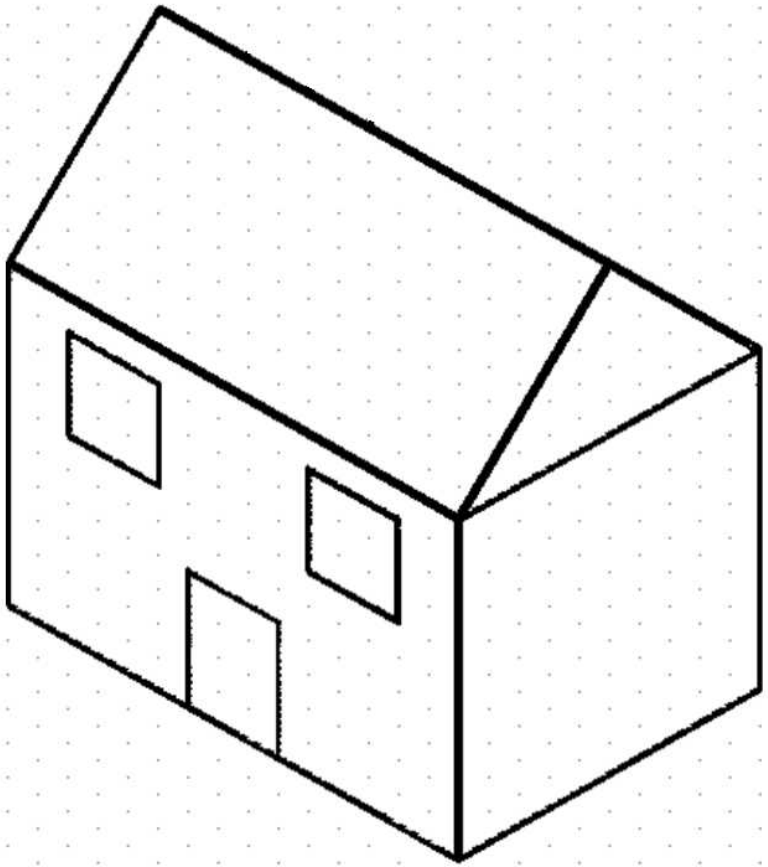
drawn next to the right side, including the windows and door.



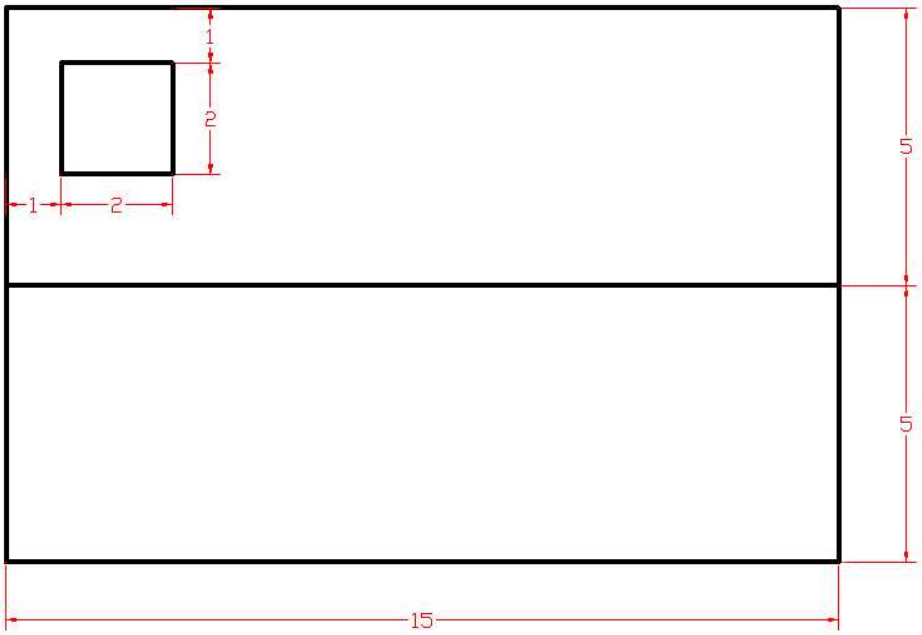
All the lines drawn for this view correspond directly to the grid.

Draw the right side of the house again, and add the front view. Refer to the image to the left if you have trouble.

Once you

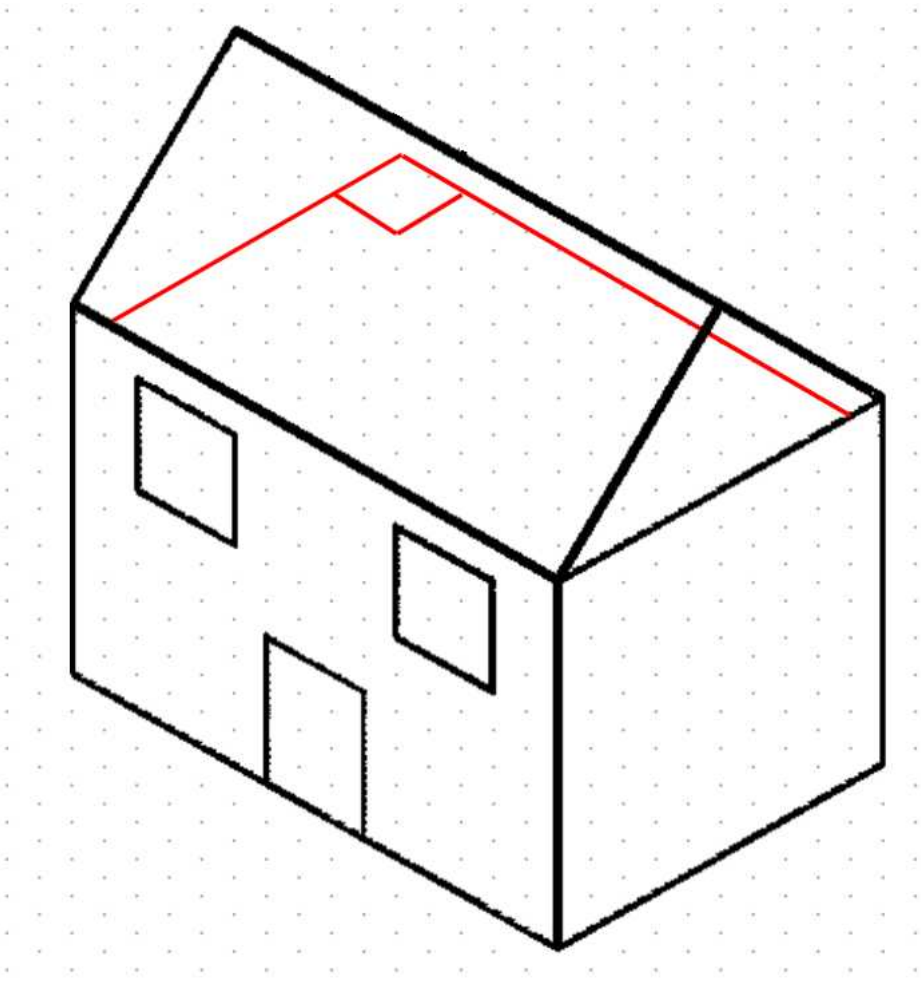


have two sides of the isometric view are drawn, drawing the third side should be little more than connecting the first two.



Here is the top view of the house. To finish drawing the roof, add a 15 unit line across the top, and then connect it to the left corner of the front wall.

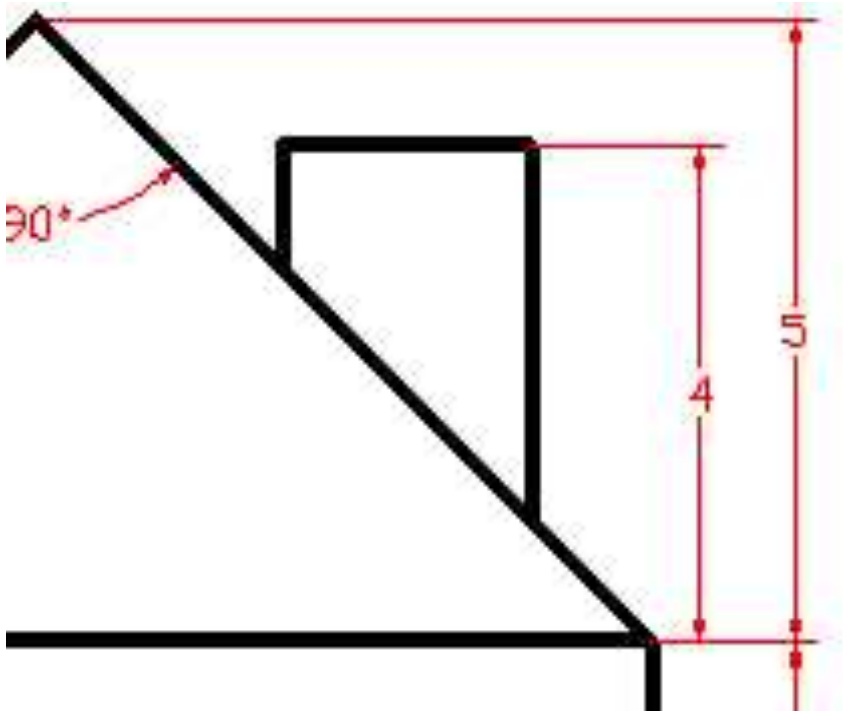
The only detail left to draw on the house is the chimney. The top orthographic view shows that the chimney is 2 x 2 units, and 1 unit away from each edge.



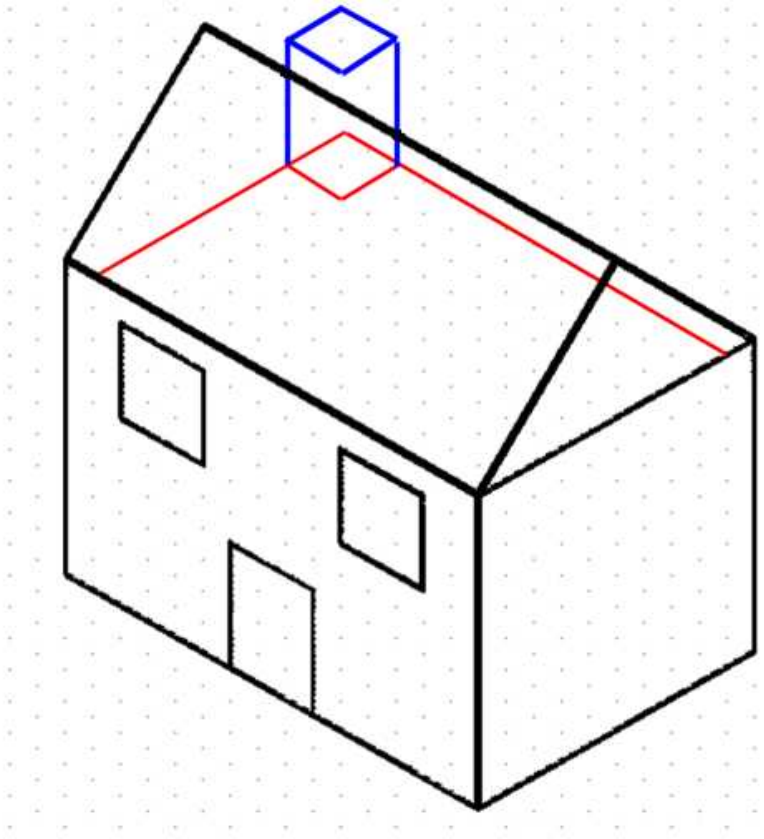
Above, the red lines intersect at exactly 1 unit away from each back edge. At the corner, there is a 2 x 2 red square showing the base of the chimney. However, because of the roof, even in the orthographic the entire chimney is not visible. Only the part that sticks out past the roof can be seen.

In the isometric drawing, we only care about the part of the chimney we would be able to see when viewing the object from this angle. In this instance, we won't be able to see how the chimney meets with the roof.

We do know from the right side view that the chimney extends 4 units from the base of the roof.

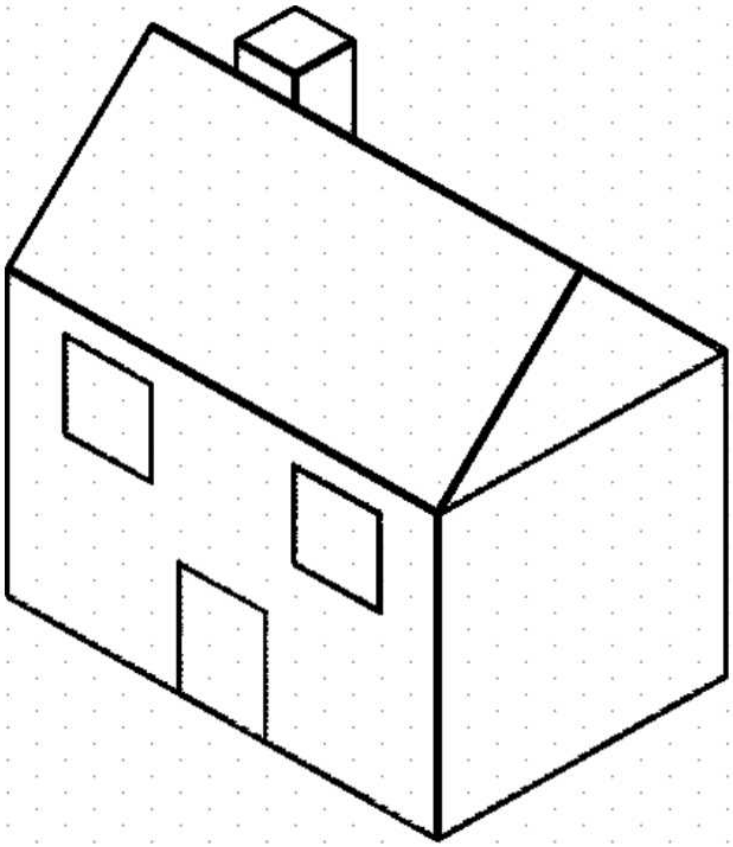


We can use this dimension to draw the chimney.



Here is the red 2 x 2 base of the chimney moved vertically 4 units. The new square is shown in blue. The blue square represents the top plane of the chimney.

Once you have drawn the top of the chimney, just draw three lines down to the top of the roof to show the edges.



Above is a finished drawing of the house.

Now try drawing the house from the very beginning. If you have trouble, refer to the example on the previous page.