

Peter Clements Art Studios

How to Erase Pencil

Axonometric Projection or drawing is referred to as a projection as they do not have vanishing points as the conventional perspective drawing. Consequently, all line on a common axis are parallel.

It is how the object is rotated about the centre point that creates the variations in the way it is constructed. In the slideshow below a step-by-step explanation will demonstrate each variation.

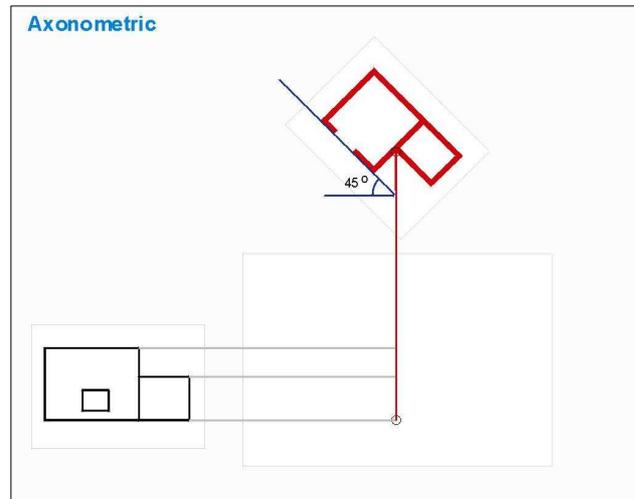
Axonometric Projections are used in construction, engineering, manufacturers and everyday application such as computer games.

The exploded axonometric projection is frequently used as a 'look-a-like' graphic reference to a component list or an assembly of a 3D complex object.

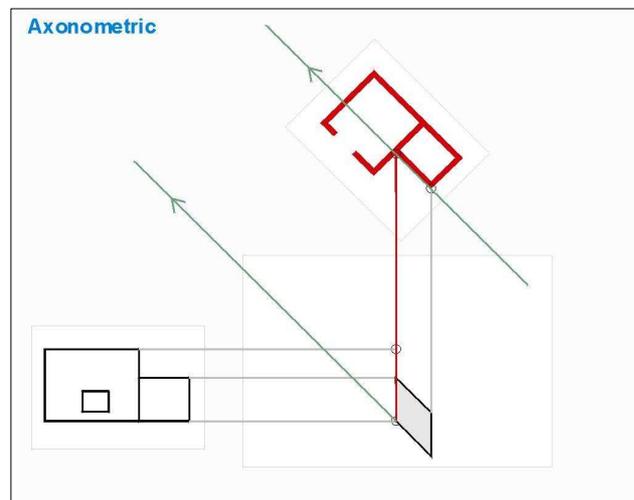
There are three main types of axonometric or orthographic projection: Isometric, Dimetric and Trimetric.

Okay let's have a look at how they are drawn.

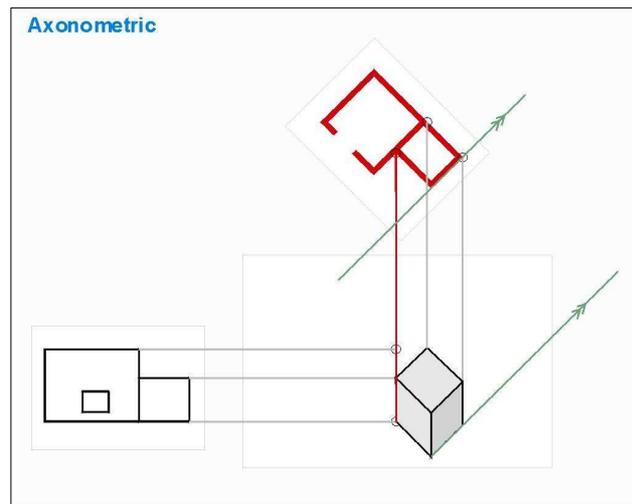
1: Firstly, either to the left or right of your working set-up the elevation and project the Relevant heights onto your draw. Then on the Centre line of your drawing set-up the plan of the object on a relevant point 'O' (centre point) and rotate it to 45 degrees.



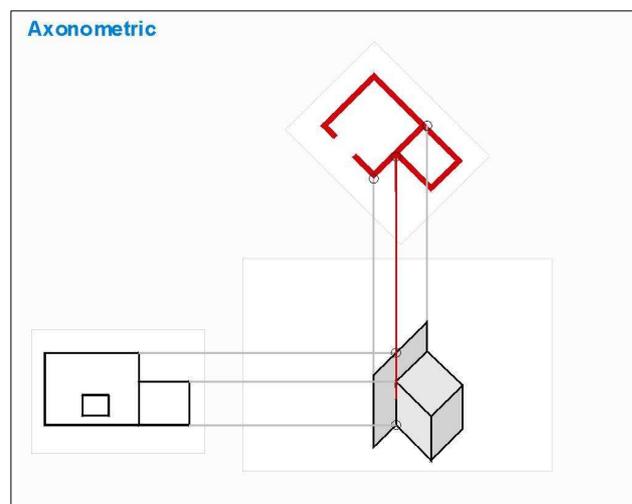
2: From the next corner 'O' project a Construction Line parallel to the Centre line on to the working drawing. Then from the Ground line & lower Roofline draw the first face parallel to the object (45 Degrees).



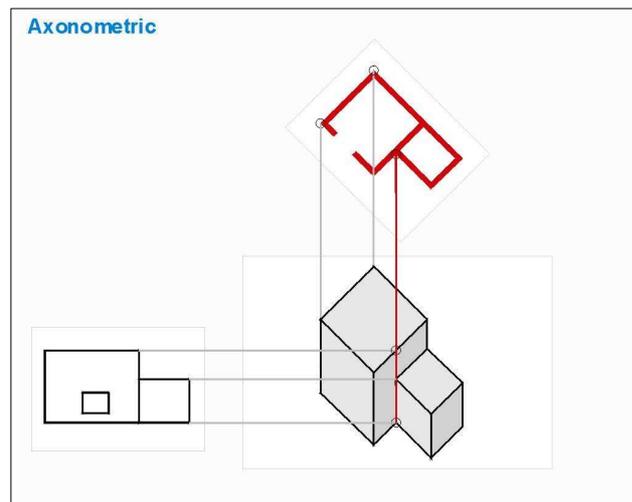
3: To complete the lower portion of the object project Construction Lines parallel to the Centre line from the remaining corners. 'O' Then Parallel to that face add the remaining face and roof.



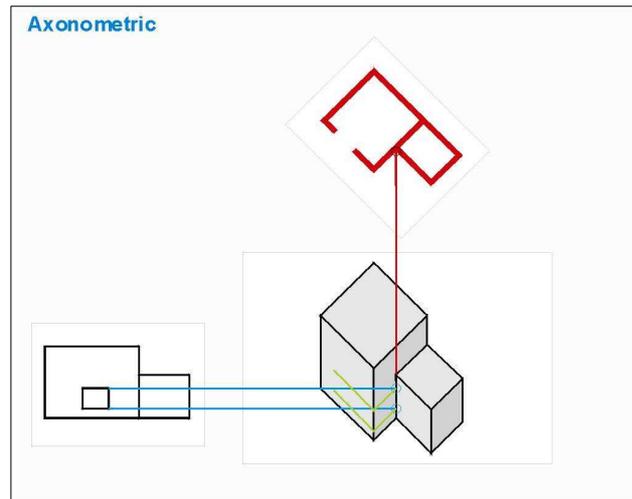
4: Next project a Construction Lines from the adjoining corner 'O'. Then from where the upper roofline intersects the Centre line 'O' add the roofline to the upper section and complete the face parallel to that face



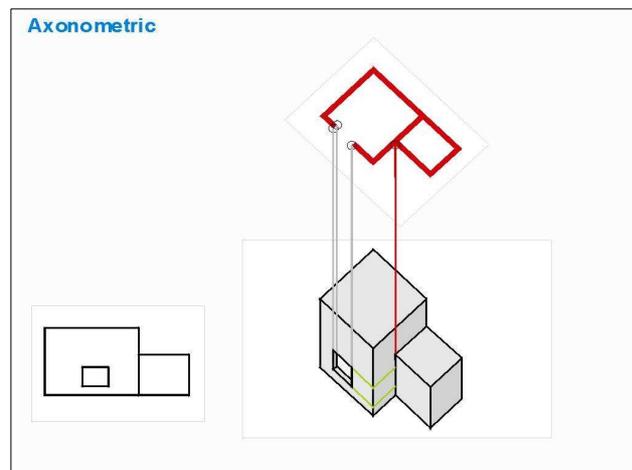
5: Thereafter project the remaining 2 Construction Lines from those corners 'O' onto the working drawing and complete the Larger block.



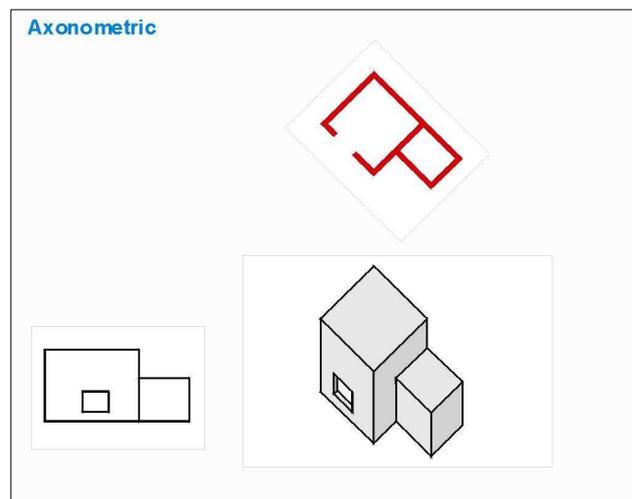
6: All that remains is the opening. Project the [Top & Bottom lines](#) of the opening to the [Centre line](#). Then from those intersections 'O' draw the [Construction Lines](#) to the corner and to the opening.



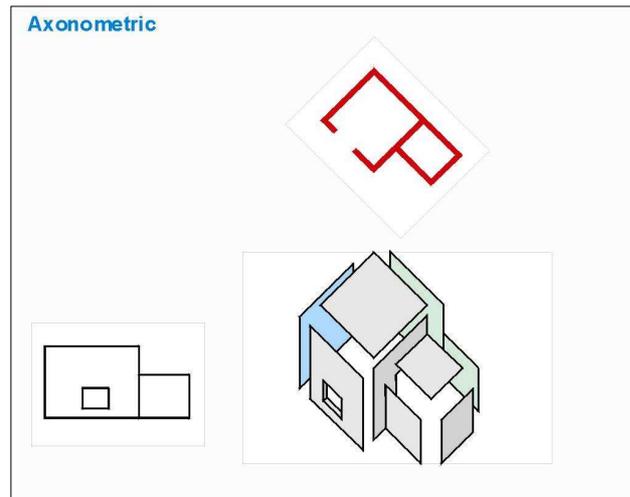
7: Finally, project the opening's [Construction Lines](#) on to the working drawing and complete the opening.



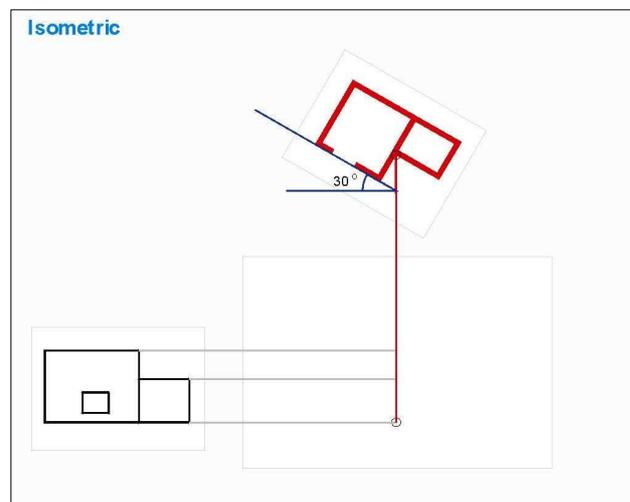
8: Now let's clean it up. That is a typical 45-degree axonometric projection, which is mainly used for commercial purposes. Despite appearance is also to scale.



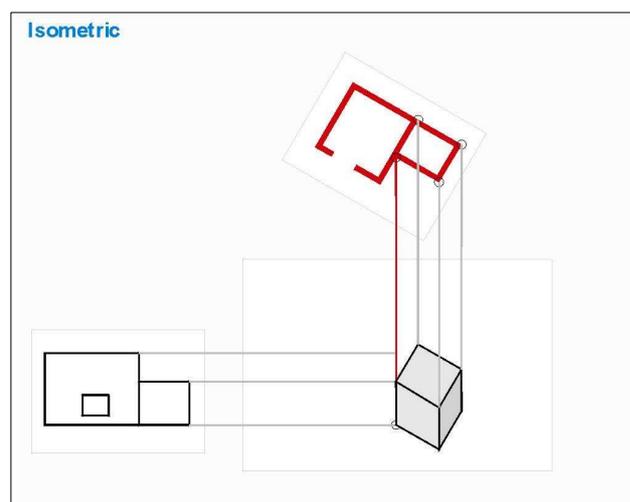
9: In some cases the 'components' of the object are projected outwards so they can be identified and scaled. This is referred to as an exploded axonometric projection.



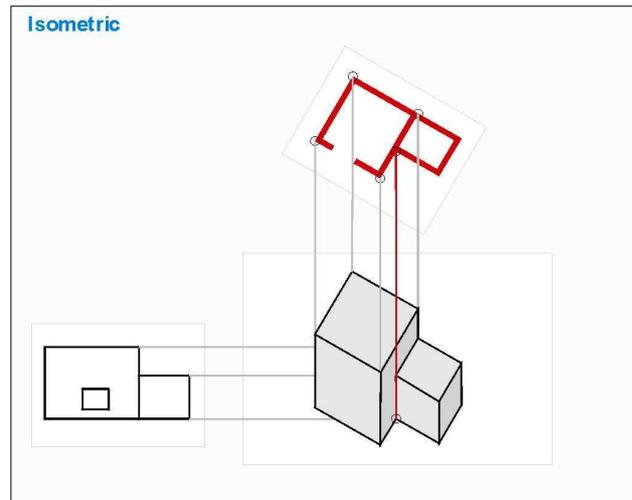
10. The Isometric projection is set-up at an angle of 30 Degrees about a relevant point 'O' with the remaining at 60 degrees. OR, it can be set-up at 60 degrees with the remaining at 30 degrees. Here again, draw the Centre line, and from the elevation project the Relevant heights onto your working drawing.



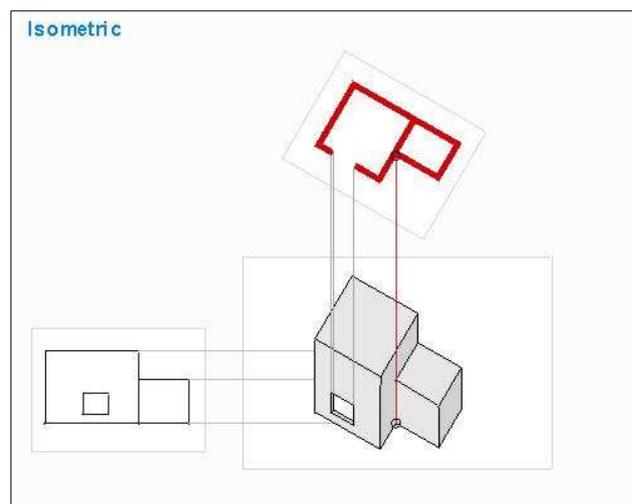
11. Thereafter, as with the axonometric project, add the Construction lines from the corners 'O' of the smaller block and draw the faces parallel to their own. (Namely 30 & 60 degrees)



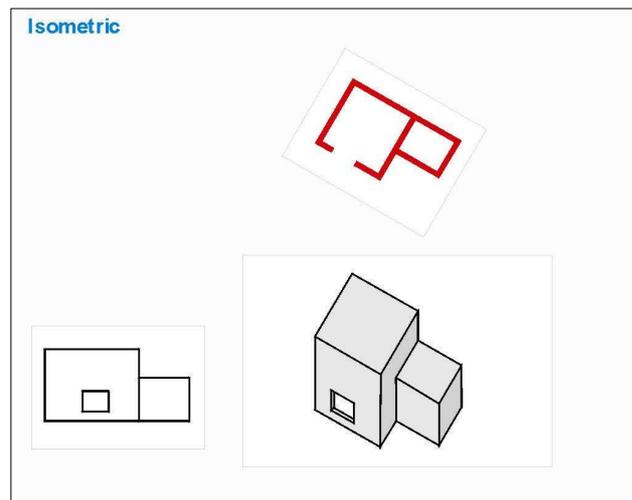
12. Thereafter do the same with the larger block of the object.



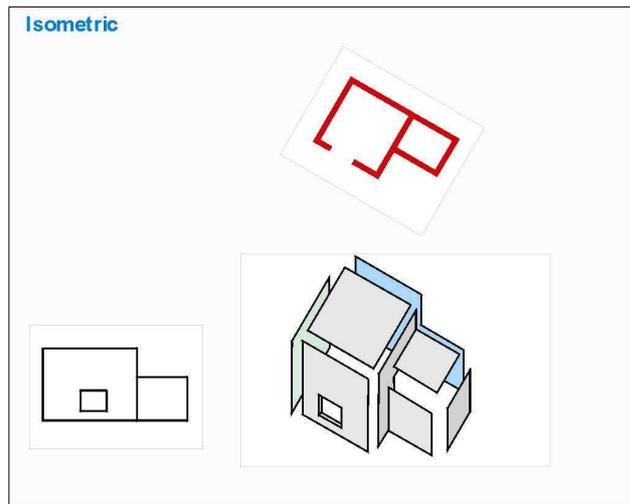
13. Finally, add the opening to the front face.



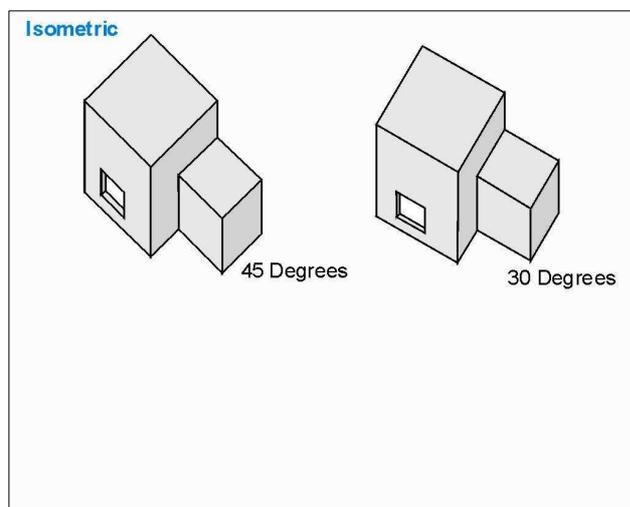
14. The only difference between this projection compared to the pervious is the angle at which it was set-up as. Otherwise they are drawn in the same way.



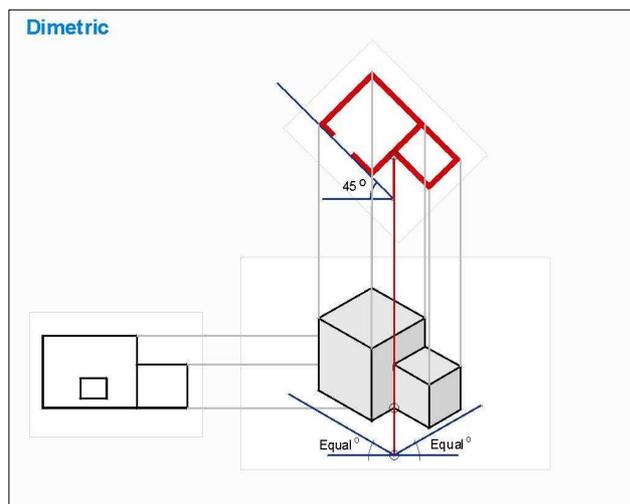
15. The exploded version of an isometric projection would look something this.



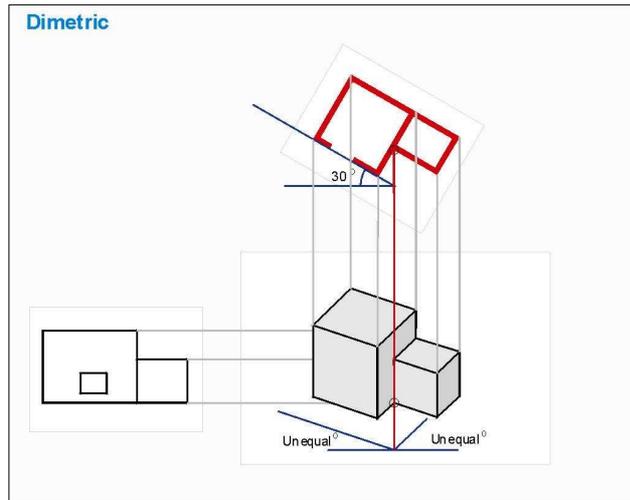
16. If we had to compare the two side by side they both look a little 'stilted'. However, the object of these projections are usually for a particular purpose where the 3D orientation is the important.



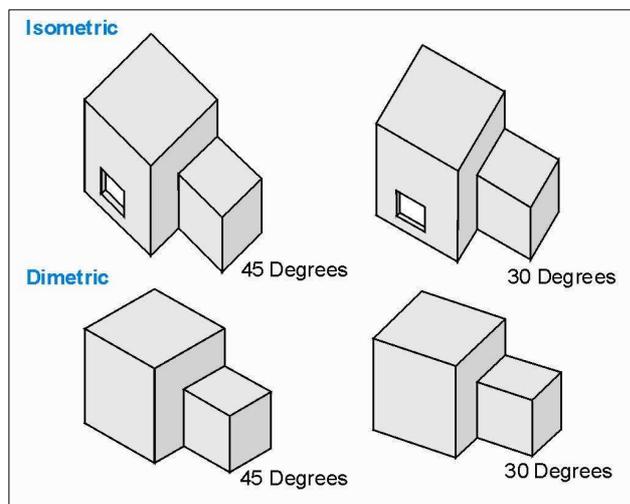
17. To reduce that 'stilted' appearance dimetric projection can be used. In this example the plan is set-up at 45 degrees. But in this case the angle at which the faces are drawn is reduced. The smaller the angle, the less 'stilted' it appears.



18. In this example the plan was set-up at 30 degrees and again the angle the faces are drawn at are reduced. In both cases the construction lines are the same as the first example



19. Here we can see the differences. The 2 dimetric projections at bottom appear less 'stilted' and are used for in application that require a more graphic presentation. For example, computer games, orientation maps and the like.



To Conclude:

As an extension to this page [Axonometric Illustrations](#) has been compiled. It will be discussing how to apply these projection to the computer and other graphic environments.

For further information on related topics, go to <http://www.peter-clements-art.com>