

Orthographic Projection > First angle

Learning outcomes:

- I can recognise the direction of viewing used to derive the various views in first angle projection
- I can project the elevations of a simple solid in first angle projection

By the end of the lesson I will be able to:

- Draw a front elevation
- Draw an end elevation
- Draw a plan
- Draw the first angle symbol

Before studying this lesson I need to make sure that I know how to:

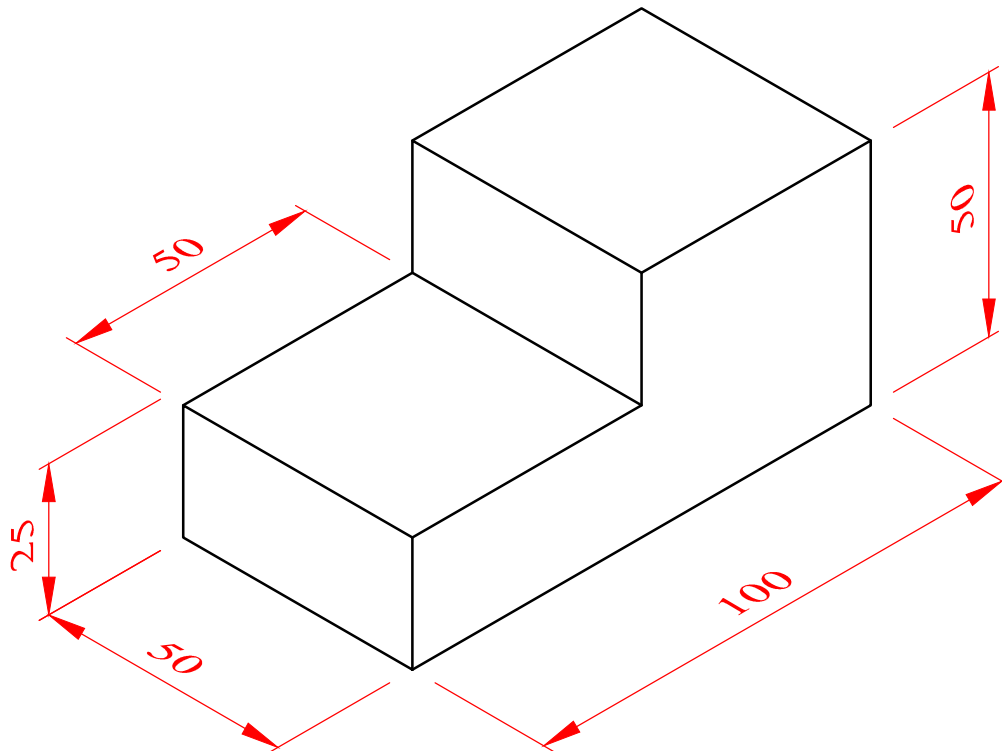
- Draw construction lines
- Label neatly in block letters
- Apply different line weights to construction lines and bold lines

| Self Assessment (to be done after the lesson) | | | | |
|--|--------------------|---------------|-------------------|-----------------------|
| | Well Achieved > | Achieved > | Almost There ? | Need more Effort @ |
| I can project across the three views | | | | |
| My drawings are accurate and correct | | | | |
| My drawings are neat and well presented | | | | |
| I can place the views in their correct order | | | | |

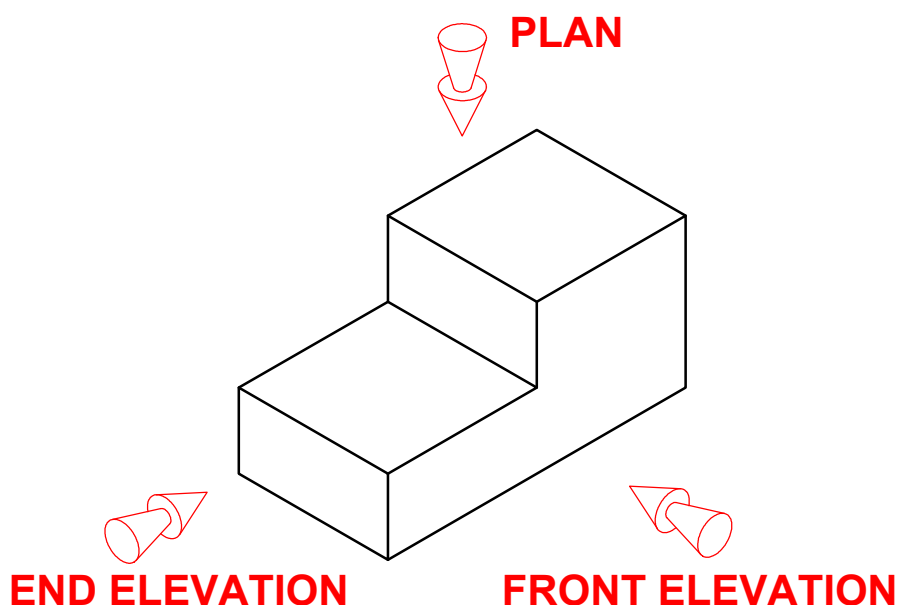
Orthographic Projection

The **orthographic projection** is a way of drawing an object as seen from **three different directions**. To demonstrate this, we will use the simple object shown below, a video of which can be viewed at:

<https://www.youtube.com/watch?v=wcRnctJeclK>

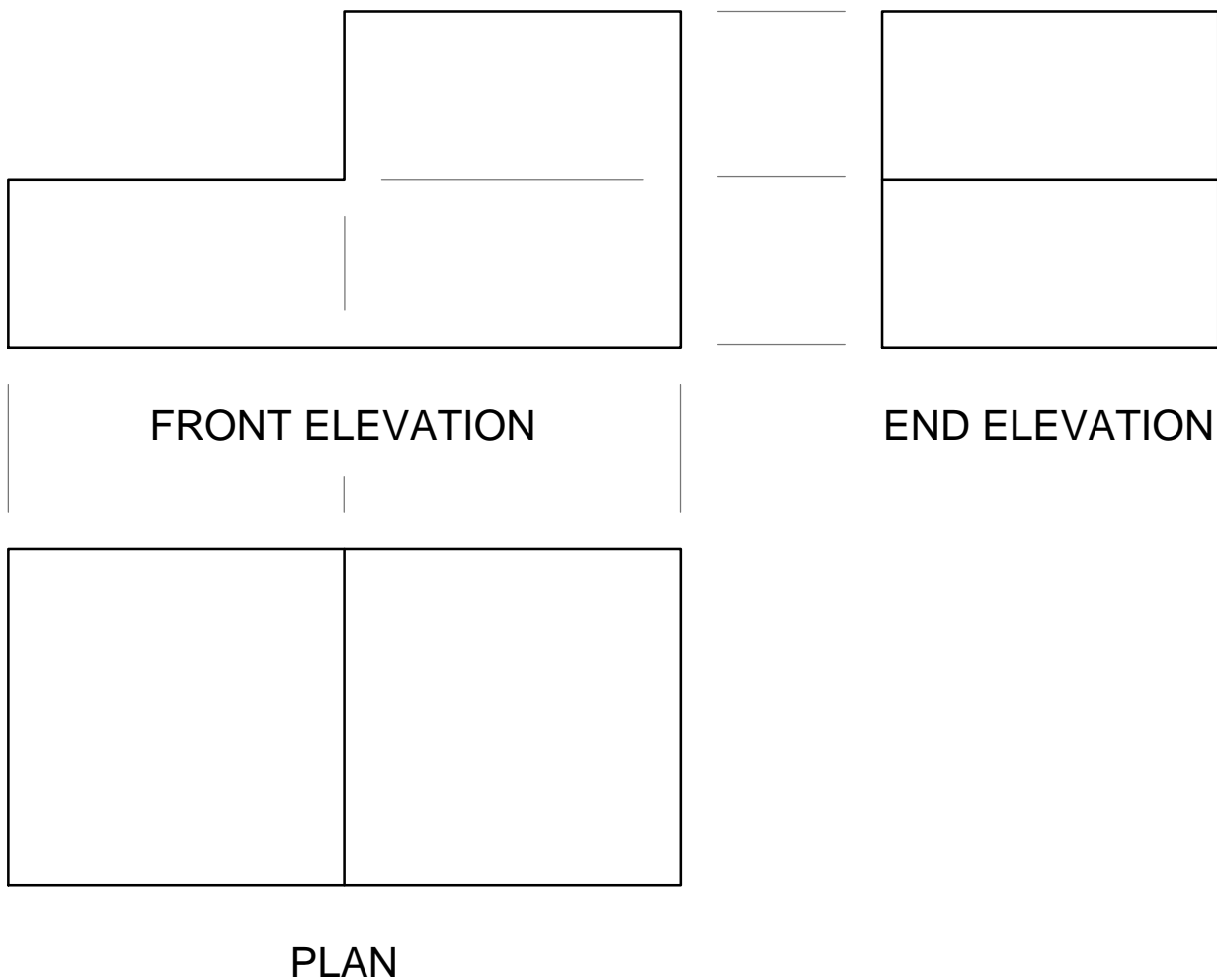


The three directions from which the object is to be drawn are shown below. They are called **Front Elevation**, **End Elevation** and **Plan**. This helps us distinguish between one view and the other.



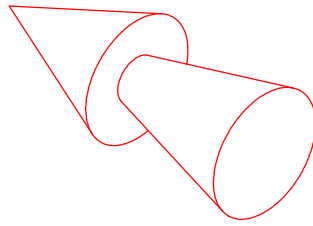
In this other video; <https://www.youtube.com/watch?v=BvKWIQpTMxQ>, the same object is shown with its surfaces colour coded. The surfaces that can be seen from the **front elevation** are coded in **green**, the ones seen from the **end elevation** are coded in **blue** and the ones seen from the **plan view** are coded in **red**.

When drawn in **orthographic projection**, this object is drawn as shown below.



Note that the views are neatly **labelled** so that we know what we are looking at. Also note that they are drawn **aligned to each other**. This is shown by the faint lines projected from one view to the other. The **positioning** of the views is also important. An easy way to know where you should place a view is by looking at its **arrow** in the three dimensional view of the object.

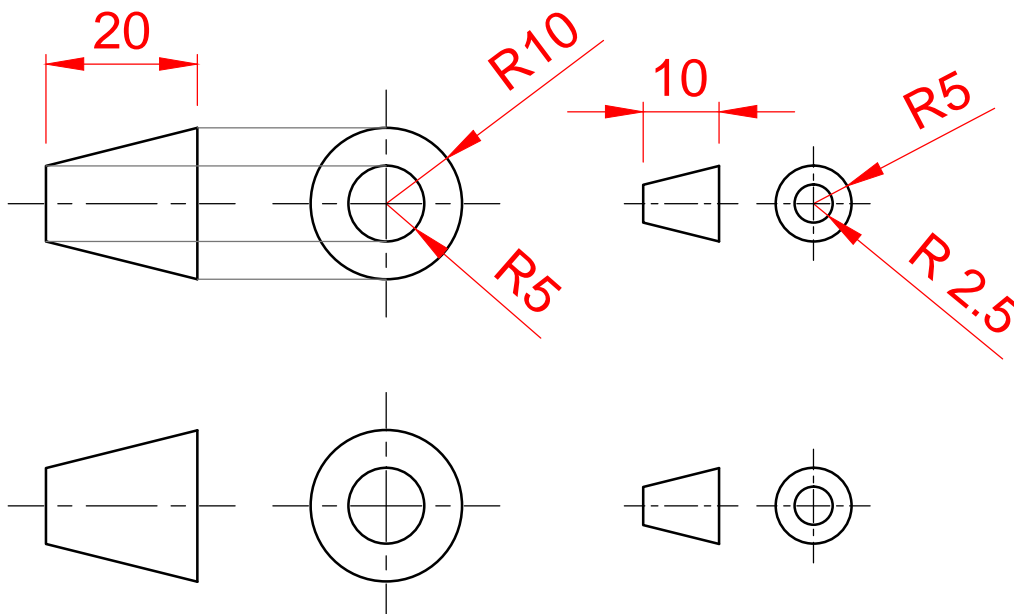
For example, the **arrow of the front elevation** is pointing to the **top left hand corner** of the paper.



FRONT ELEVATION

This means that the front elevation should be drawn at the top left hand side of the paper. In the same way, since the arrow of the end elevation is pointing to the top right hand corner, the end elevation is to be drawn in the top right hand corner. The arrow for the plan is pointing directly downwards, but in the case of the plan, we do not draw it in the bottom centre area of the paper. Instead **we draw the plan aligned to the front elevation**.

The **first angle symbol** and its dimensions are given below.



FIRST ANGLE SYMBOL