ENGINEERING GRAPHICS

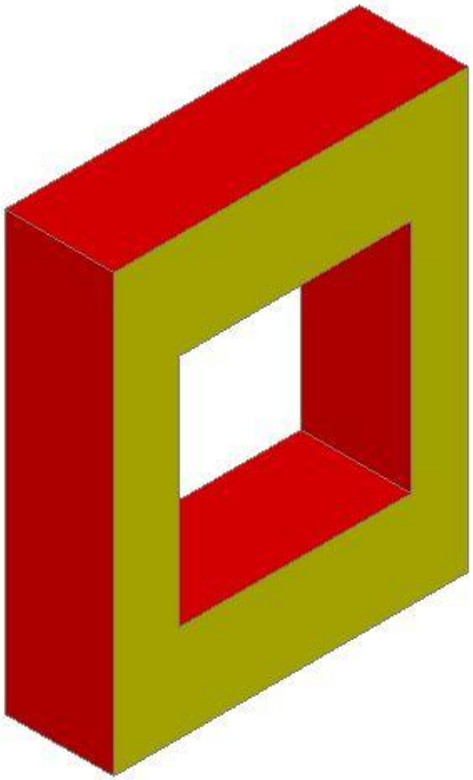
Topic:
Dimensioning

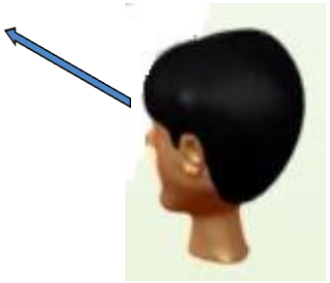
https://www.youtube.com/watch?v=bj1EhnlXVBQ

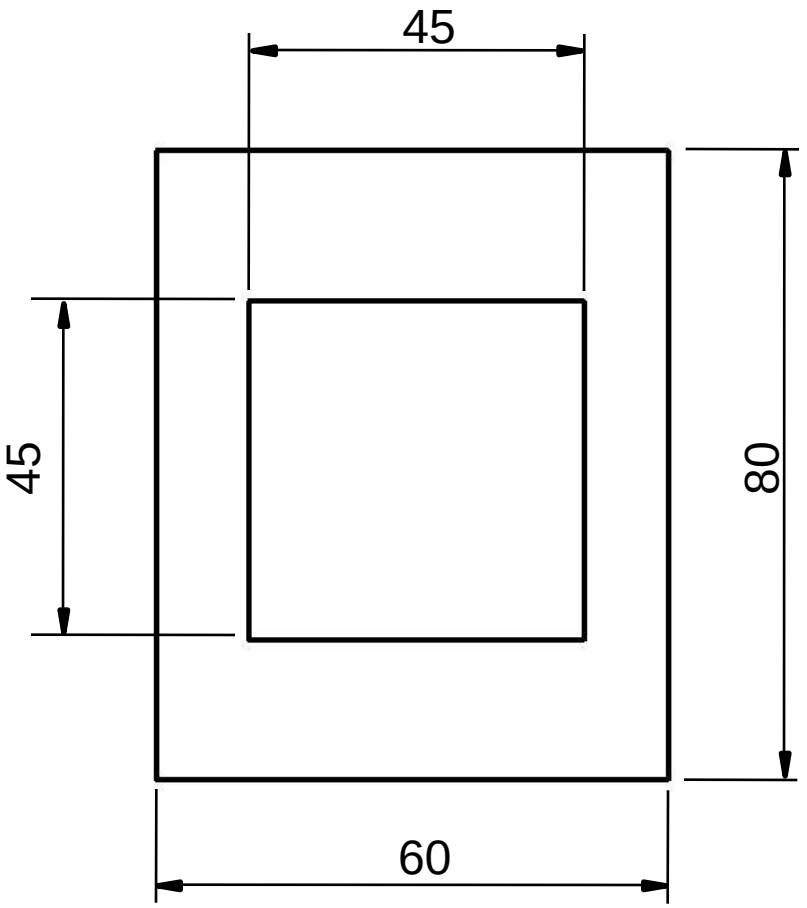
https://www.youtube.com/watch?v=WY2XFeP7Ecs

Dimensioning

- ***Dimensioning*** **refers to the act of giving dimensions.**



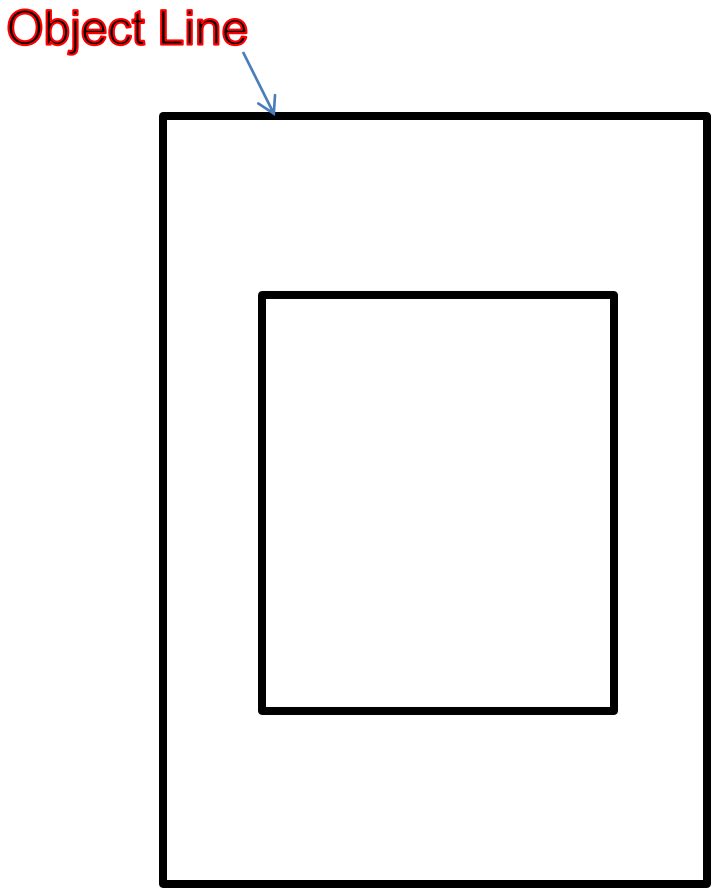




Elements of Dimensioning

- **A line on the drawing whose length is to be shown is called an *object line*.**

Elements of Dimensioning

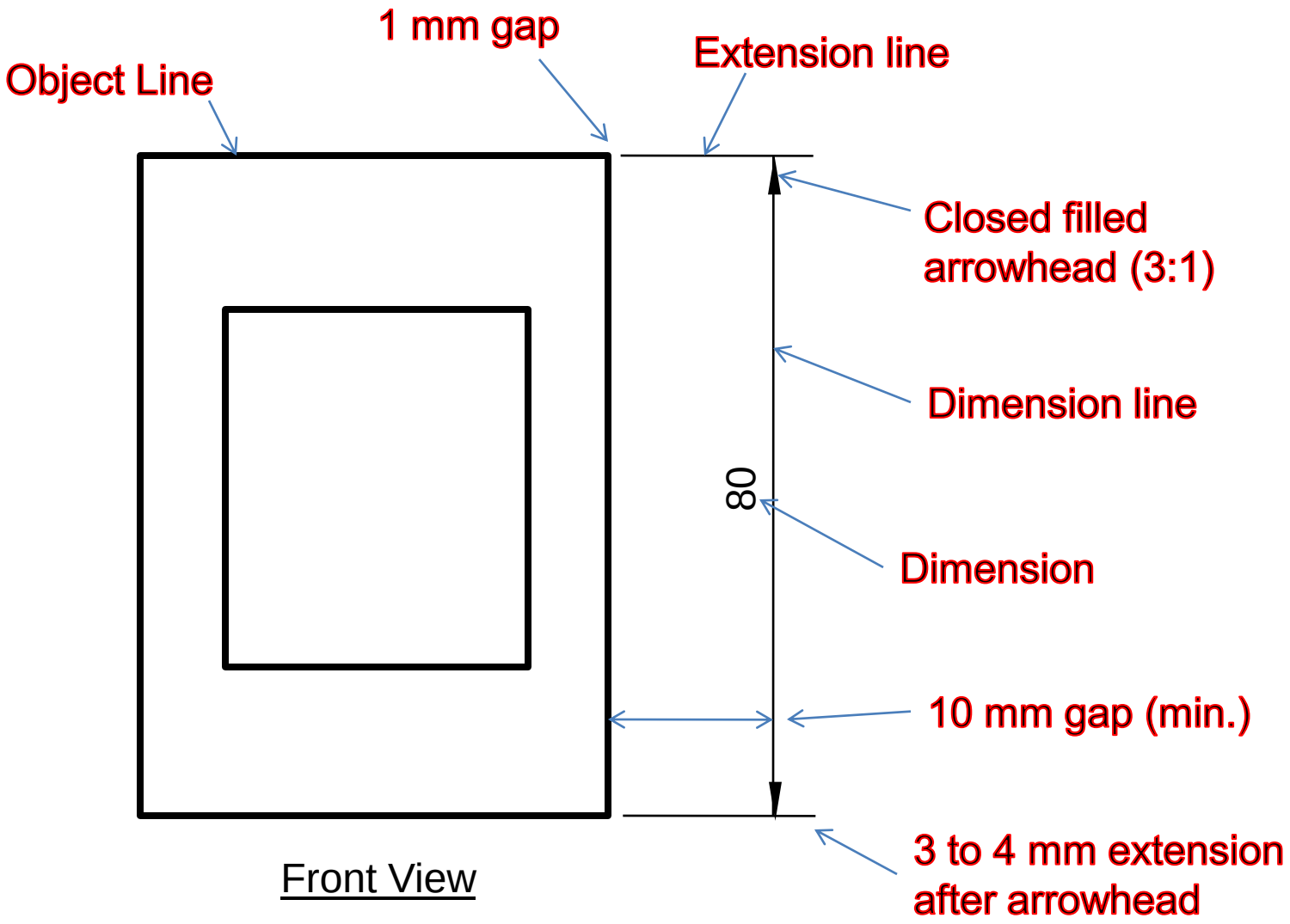


Front View

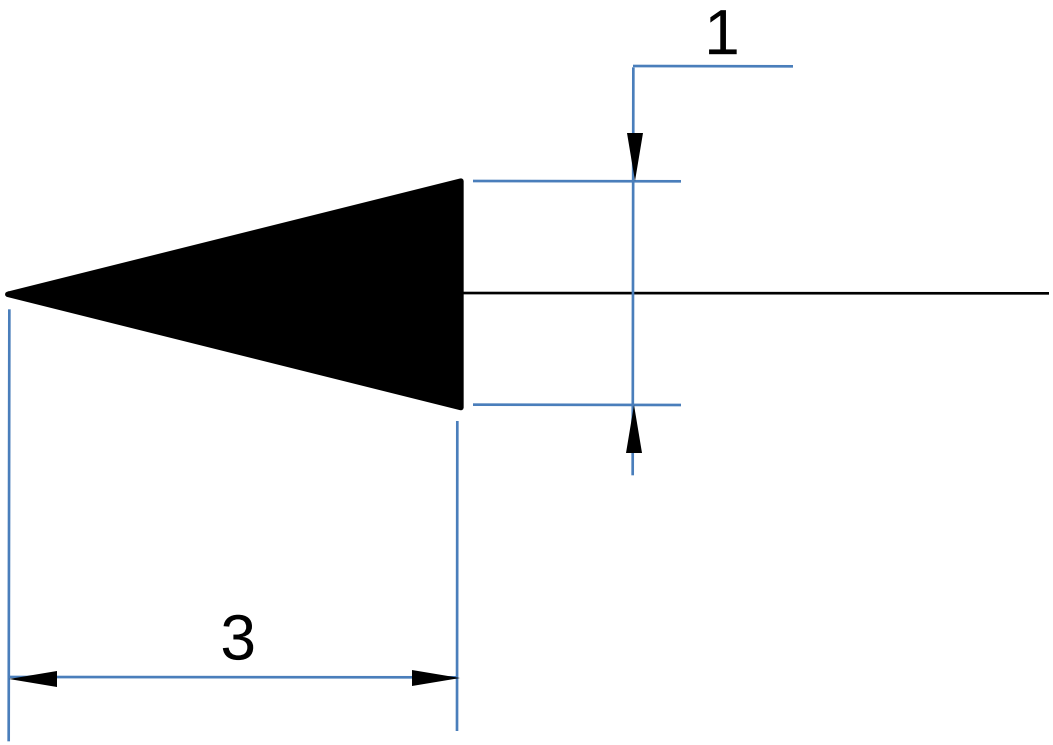
Elements of Dimensioning

- **Dimensioning is often done by a set of elements, which includes extension lines, dimension lines, leader lines, arrowheads and dimensions.**

Elements of Dimensioning

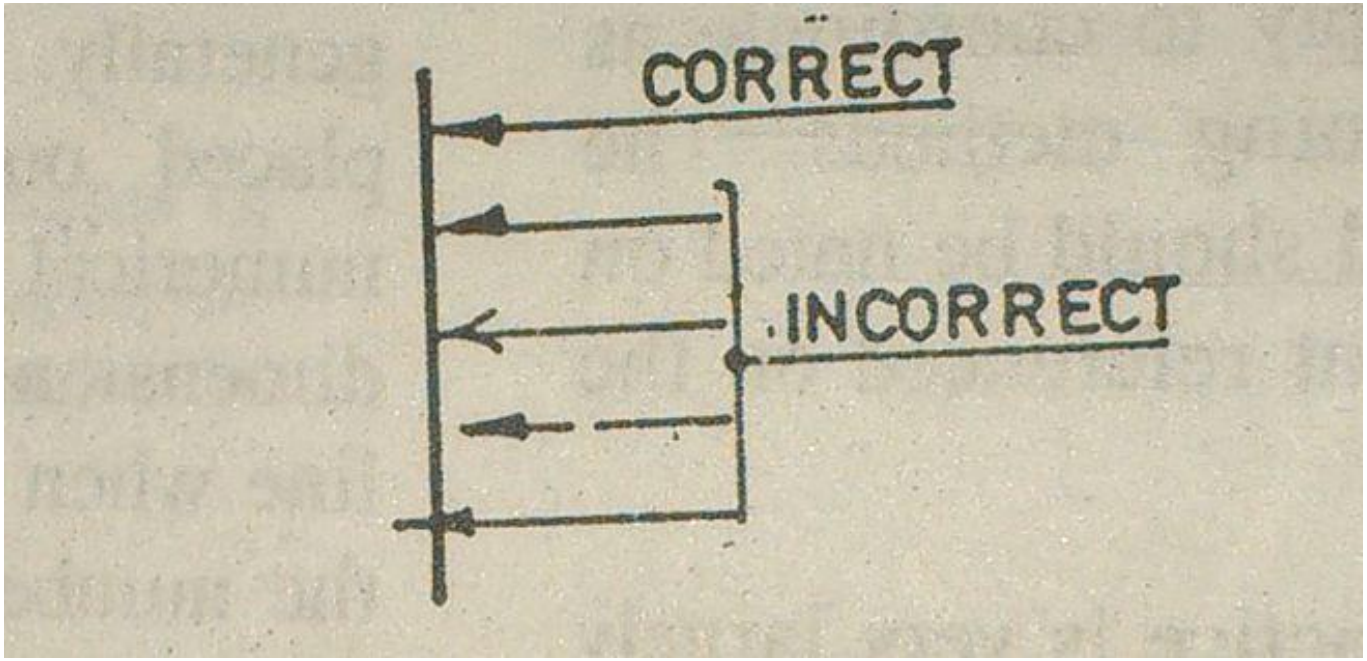


Closed filled arrowhead

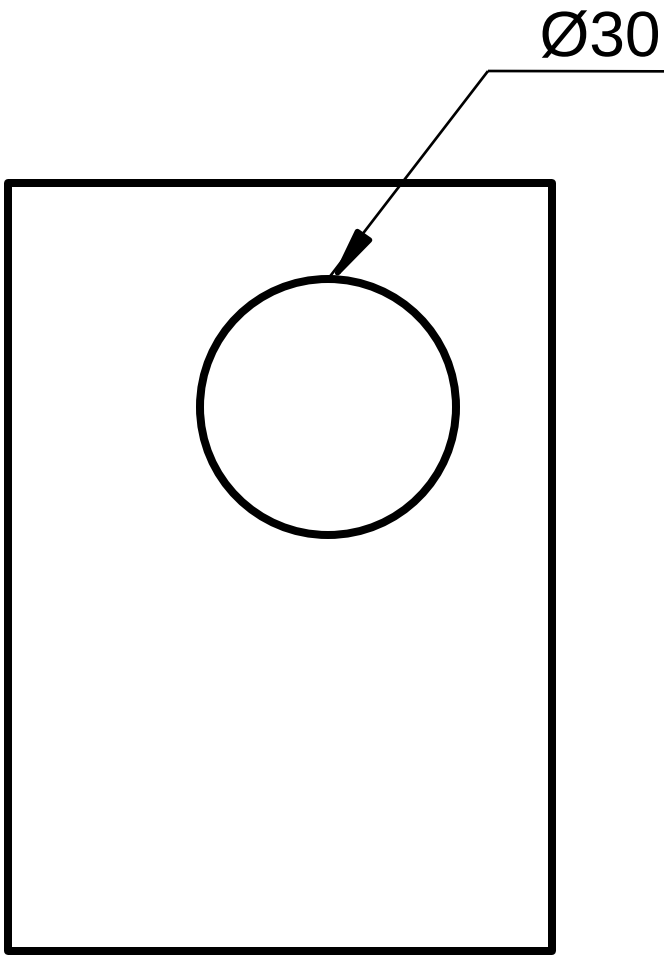


Closed filled arrowhead

Good & Bad Practices



Leader



Systems of Dimensioning

- There are two systems of dimensioning:

  a) Aligned System

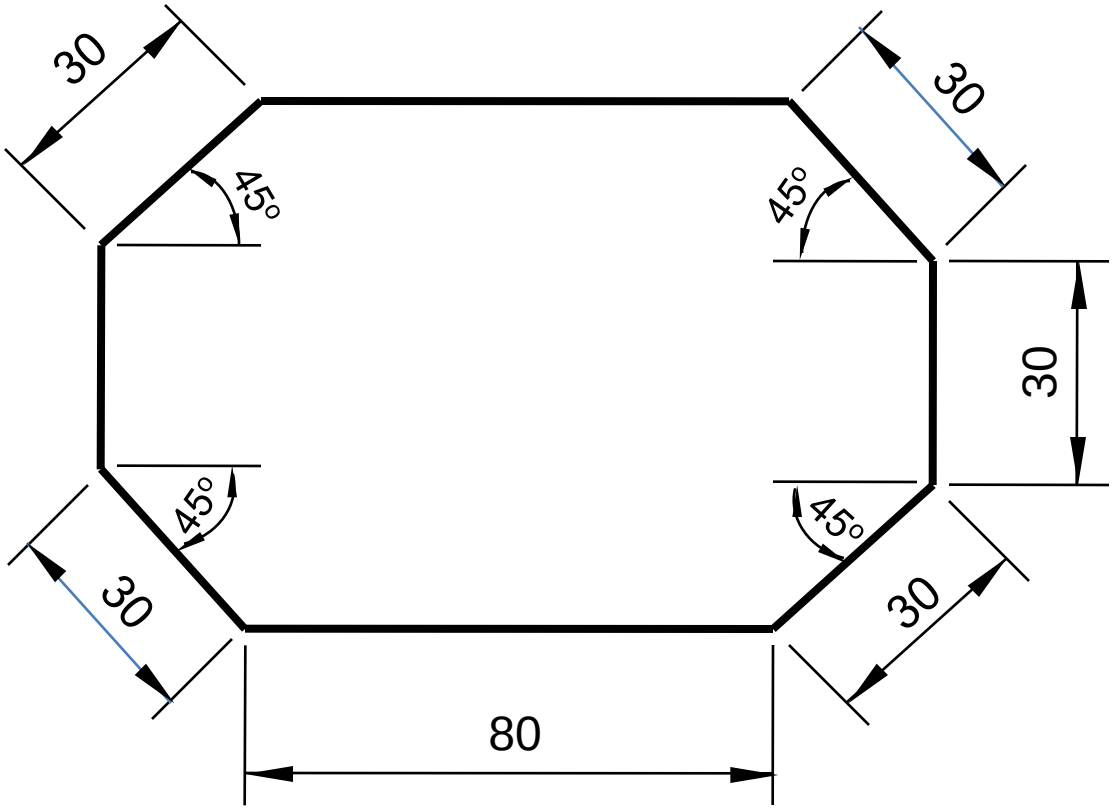
  b) Uni-directional System

Aligned System

In the aligned system, dimensions are placed perpendicular to the dimension line so that they may be read from the bottom or right-hand side of the drawing sheet. Dimensions are placed at the middle and on top of the dimension lines.

Systems of Dimensioning

ALIGNED SYSTEM



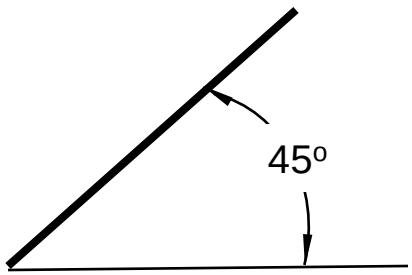
Systems of Dimensioning

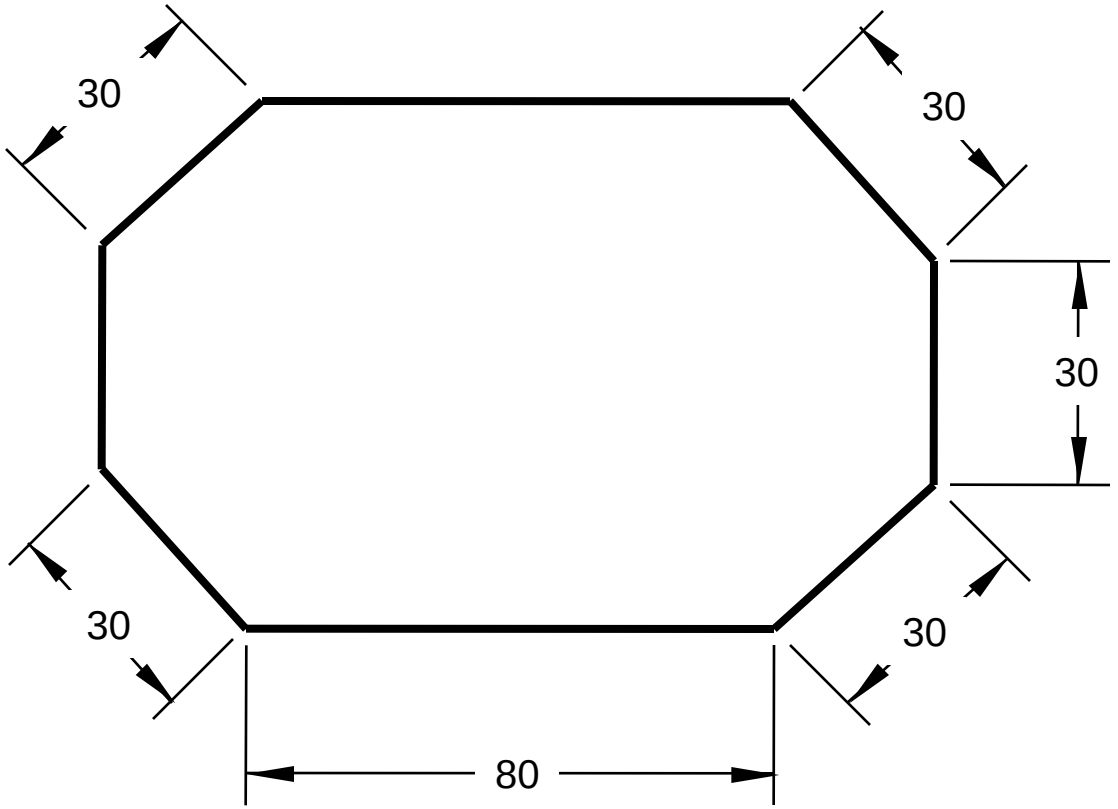
Unidirectional System

In the unidirectional system, dimensions are placed in such a way that they can be read from the bottom edge of the drawing sheet. All dimensions are placed at the middle and are inserted by breaking the dimension lines at the middle.

Systems of Dimensioning

UNI-DIRECTIONAL SYSTEM





Rule of Dimensioning

1. Between any two extension lines, there must be one and only one dimension line bearing one dimension.
2. As far as possible, all the dimensions should be placed outside the views. Inside dimensions are preferred only if they are clearer and more easily readable.
3. All the dimensions on a drawing must be shown using either Aligned System or Unidirectional System. In no case should, the two systems be mixed on the same drawing.
4. The same unit of length should be used for all the dimensions on a drawing. The unit should not be written after each dimension, but a note mentioning the unit should be placed below the drawing.
5. Dimension lines should not cross each other. Dimension lines should also not cross any other lines of the object.
6. All dimensions must be given.
7. Each dimension should be given only once. No dimension should be redundant.

Methods of Dimensioning

For dimensions in series, there are three methods:

a) **Chain Dimensioning**

b) **Parallel Dimensioning**

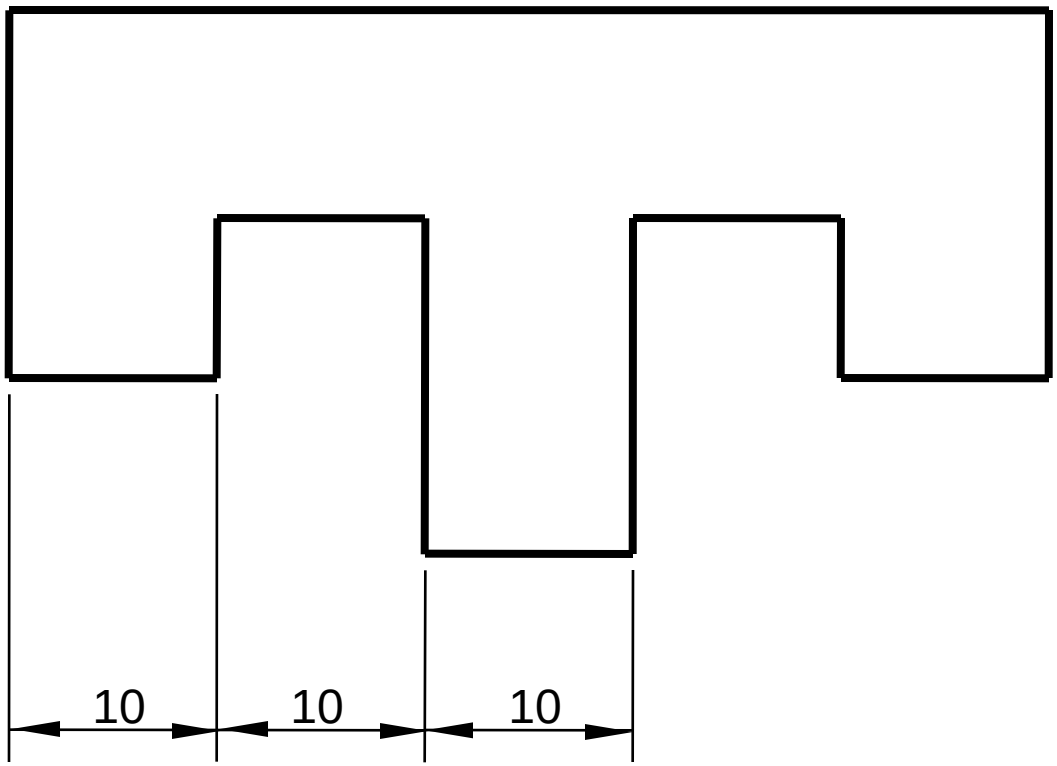
c) **Combined Dimensioning**

Adopt any one of these methods.

i. **Chain dimensioning (Continuous dimensioning): All the dimensions are aligned in such a way that an arrowhead of one dimension touches tip-to-tip the arrowhead of the adjacent dimension. The overall dimension is placed outside the other smaller dimensions.**

Methods of Dimensioning

CHAIN DIMENSIONING



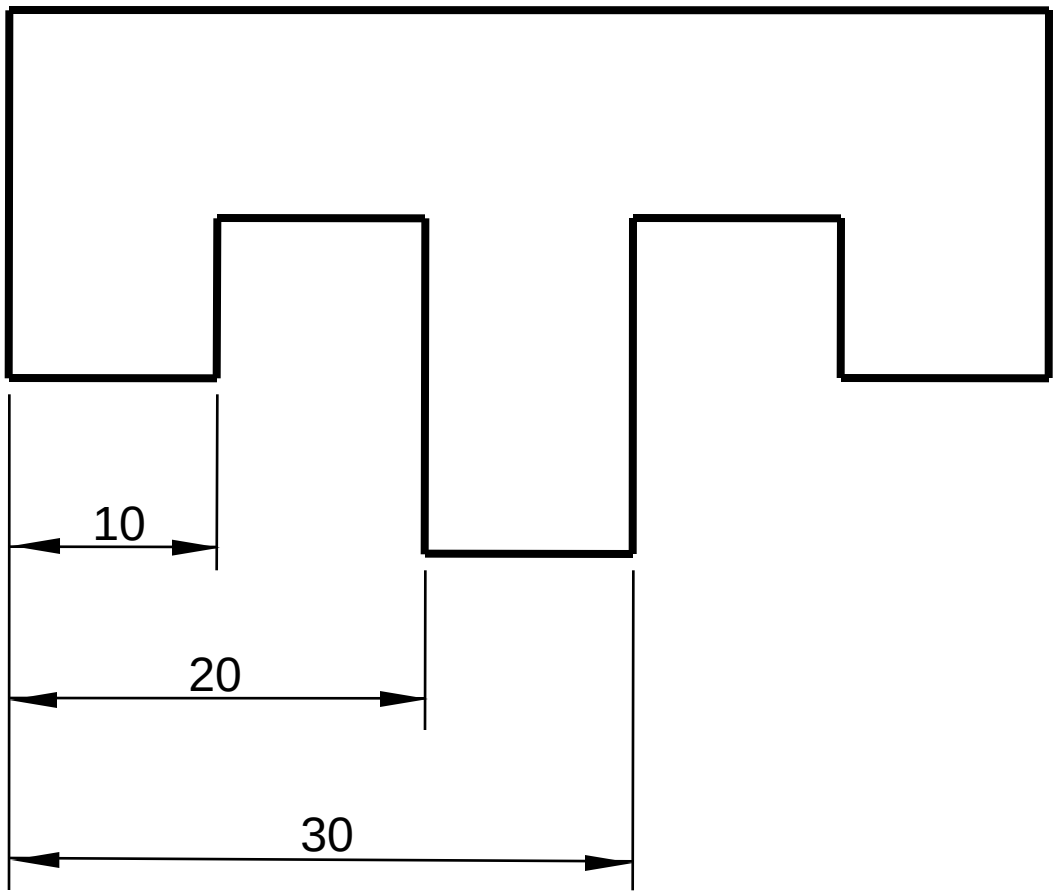
Methods of Dimensioning

Parallel dimensioning (Progressive dimensioning):

All the dimensions are shown from a common reference line. Obviously, all these dimensions share a common extension line. This method is adopted when dimensions have to be established from a particular datum surface.

Methods of Dimensioning

PARALLEL DIMENSIONING



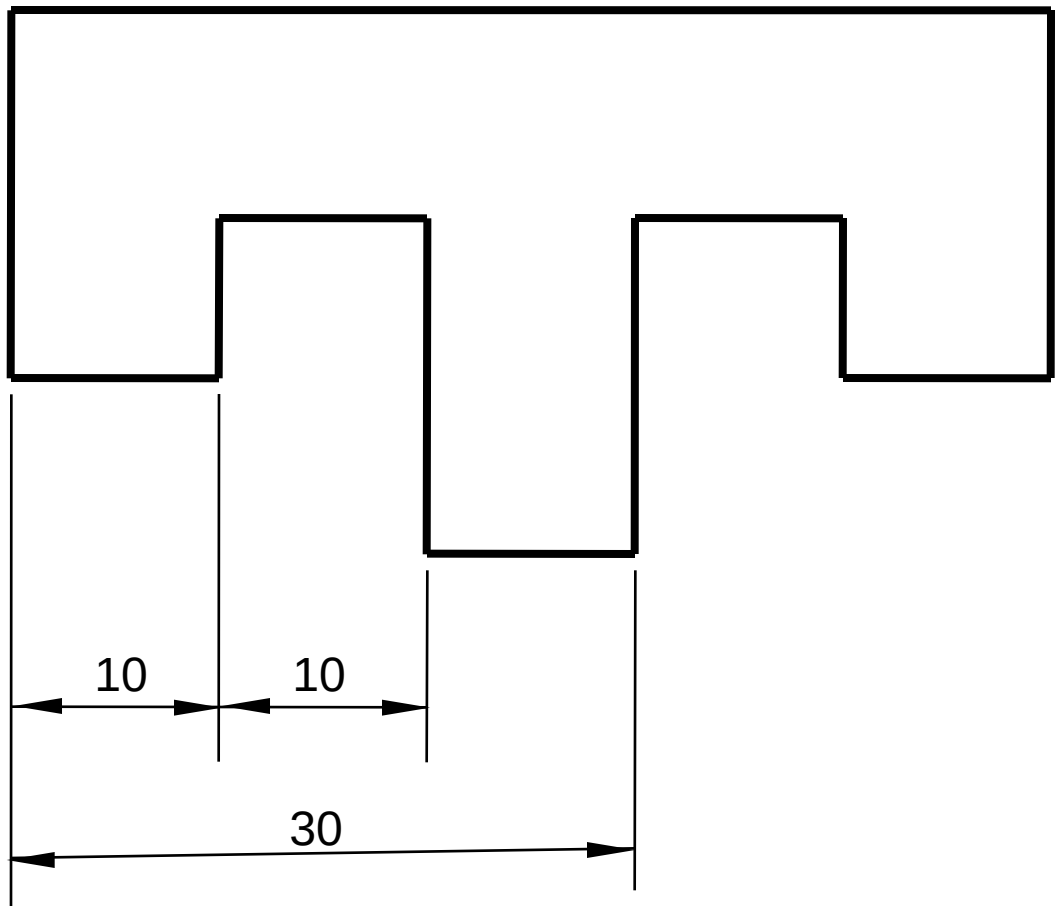
Methods of Dimensioning

Combined dimensioning:

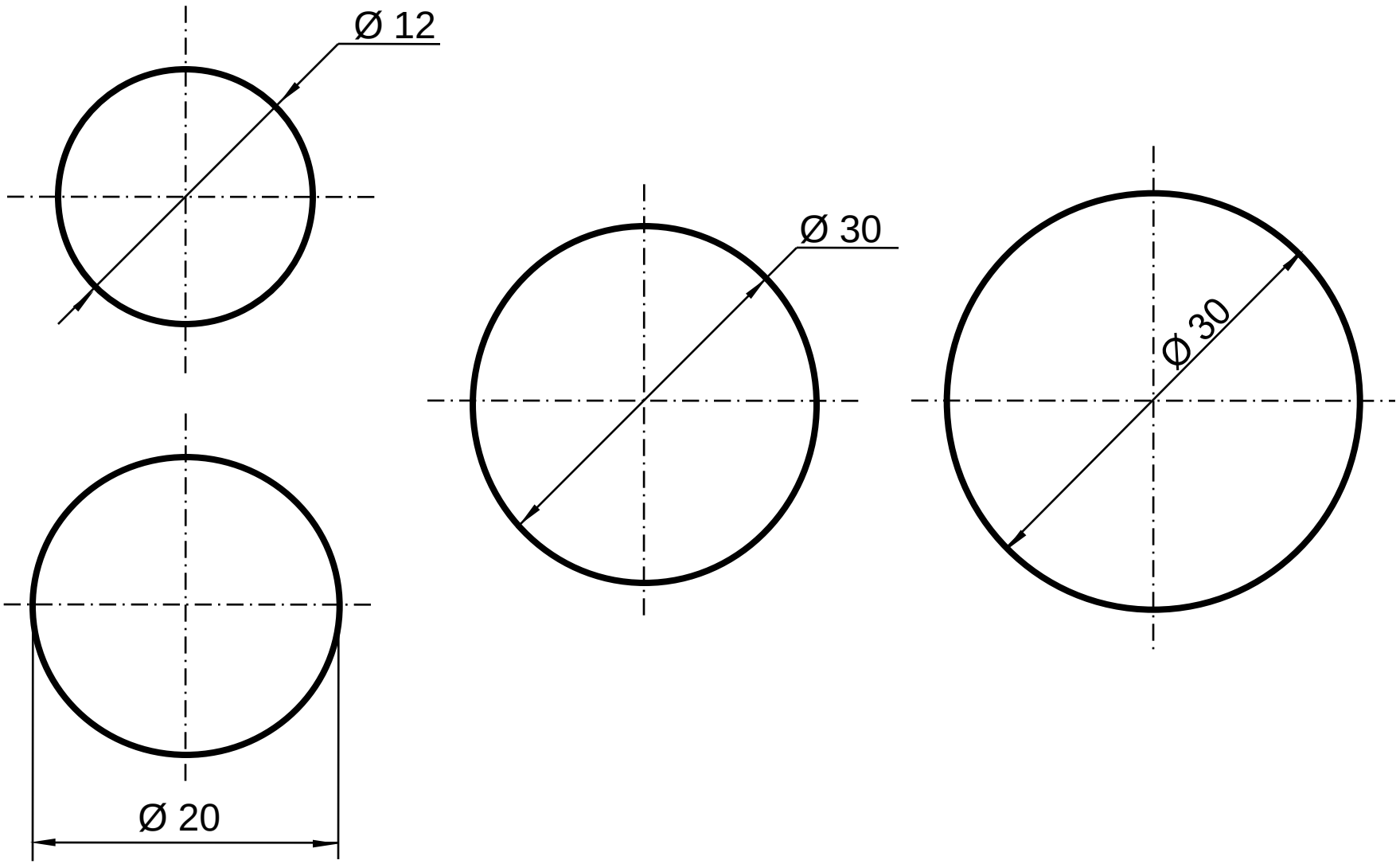
When both the methods, i.e., chain dimensioning and parallel dimensioning are used on the same drawing, the method of dimensioning is called combined dimensioning.

Methods of Dimensioning

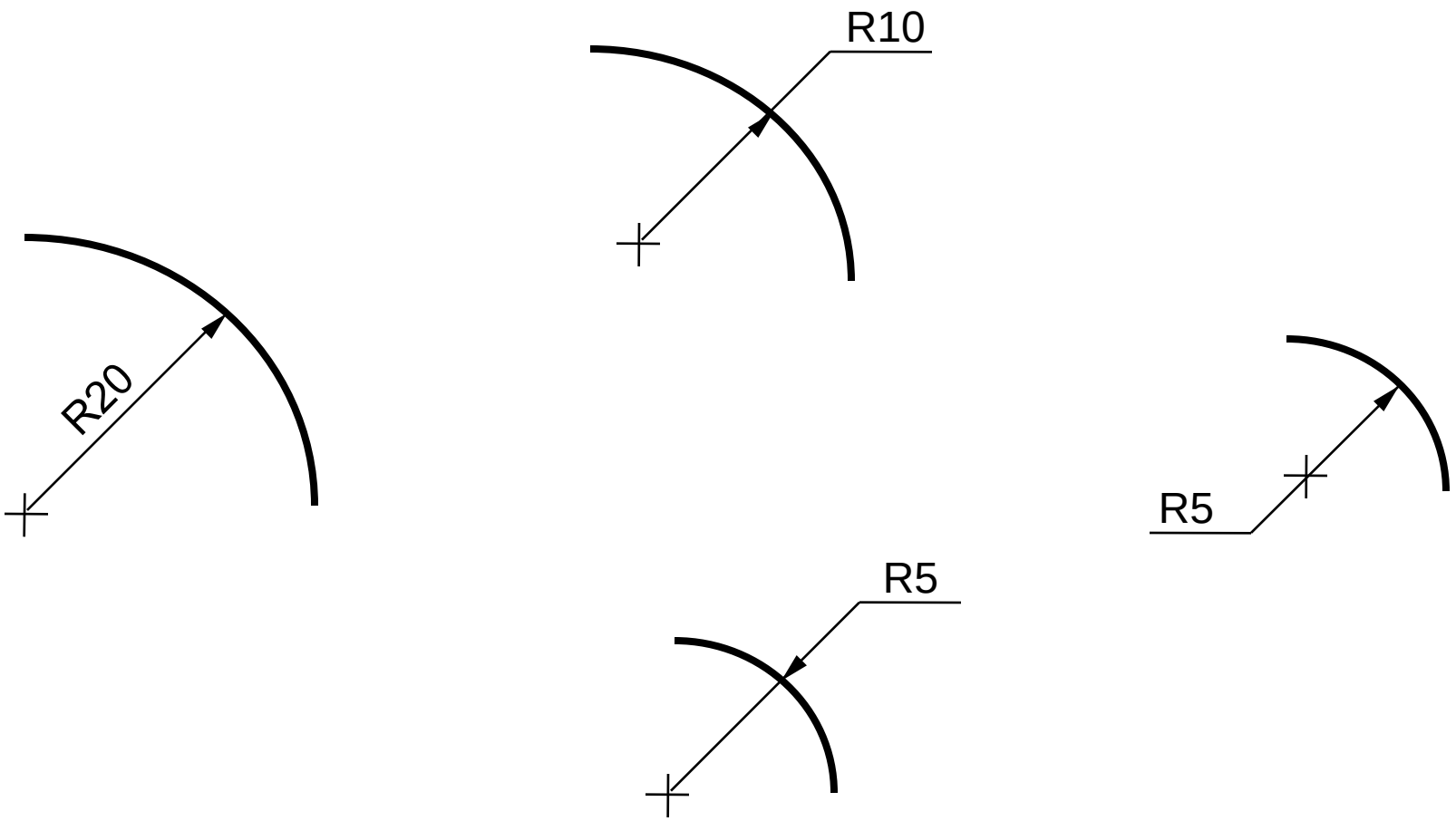
COMBINED DIMENSIONING



Dimensioning of Circular Features



Dimensioning of Circular Features



Theory of Dimensioning

Theory of Dimensioning:-

Dimensioning should be undertaken with a view to carefully defining the shape or form and overall size of the component and also the sizes and positions of the various features from the necessary datum planes or axes.

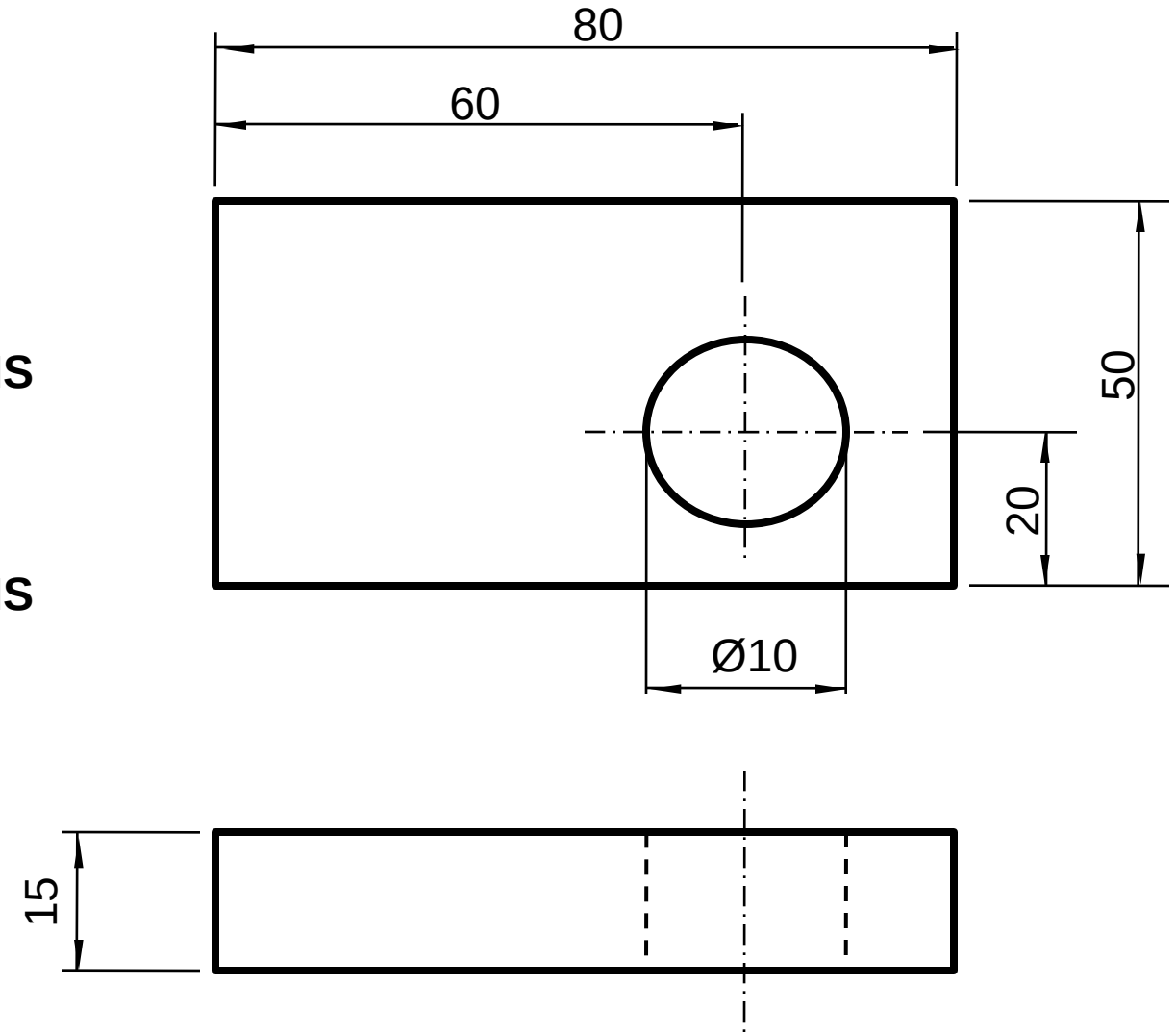
A drawing usually requires two types of dimensions:-

1. **Size dimensions**
2. **Location Dimensions**

Theory of Dimensioning

SIZE DIMENSIONS

LOCATION DIMENSIONS



Thanks