

**Graphic Communication**  
**BSI Drawing**  
**Standards &**  
**Dimensioning**

# BSI Drawing Standards & Symbols

## Line Types

**Construction Line** – A thin continuous line used for to help create a drawing, also used for projection lines.

**Outline** – A thick continuous line used to show visible lines and edges.

**Chain Line** – A thin broken line used to show hidden lines and edges.

**Centre Line** – A thin broken line (long dash dot) used to show the centre of shapes, for example a circle. Can be abbreviated to CL.

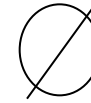
**Fold Line** – A thin broken line (long dash dot, dot) used to show where a surface development should be folded.

**Cutting Plane** – A thin chain line, with thick ends. Shows where an object has been cut or sectioned.

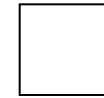
**Hatching Line** – A 45° line which shows the surface produced by a cutting plane

**Dimension Line** – Indicates the size of a edge or face

## Drawing Conventions



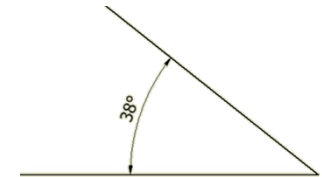
Diameter (D)



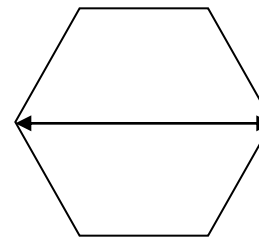
Square (SQ)



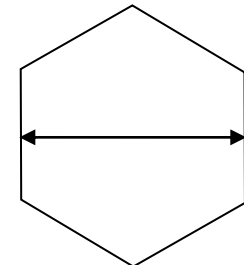
Radius



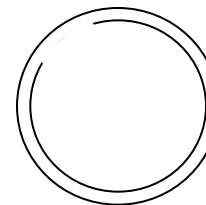
Angle



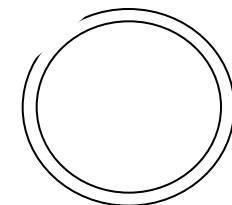
Across Corners (AC)



Across Flats (AF)



External Thread (Male)



Internal Thread (Female)

# BSI Dimensioning

## Dimensioning Standard Practice

### Radii

Always show the radius on arcs, curves and rounded corners. The letter **R** is always shown in front of the figure. Radii should be dimensioned with a line that passes through or is in line with the centre of the arc. The dimension line should have only one arrow head which touches the arc.

### Intermediate Dimensions

Intermediate dimensions give sizes for individual parts of the drawing which appear in line with each other. In this example the arrangement of these dimensions is shown as **chain dimensioning**.

### Diameters

Where a complete circle is shown in a drawing, the diameter is shown by placing the symbol  $\varnothing$  in front of the figure. The radius should never be used to dimension a complete circle. When holes or circles are dimensioned, the diameter is shown as well as the location of the centre.

### Figures on Linear Dimensions

Figures on dimension lines should be placed so that they can be read from either the bottom or the right hand side (above and along the line). Figures should not touch outlines, dimension lines or centre lines. Figures that require a decimal marker should use a comma, e.g. 22,1.

### Dimensioning Small Features

Where space is limited for dimensioning small features, the figure can be placed centrally, above or in line with one of the dimension lines.

### Angles

Figures on angular dimensions should be oriented so that they can be read from the bottom or the right hand side of the drawing.

### Datum Line

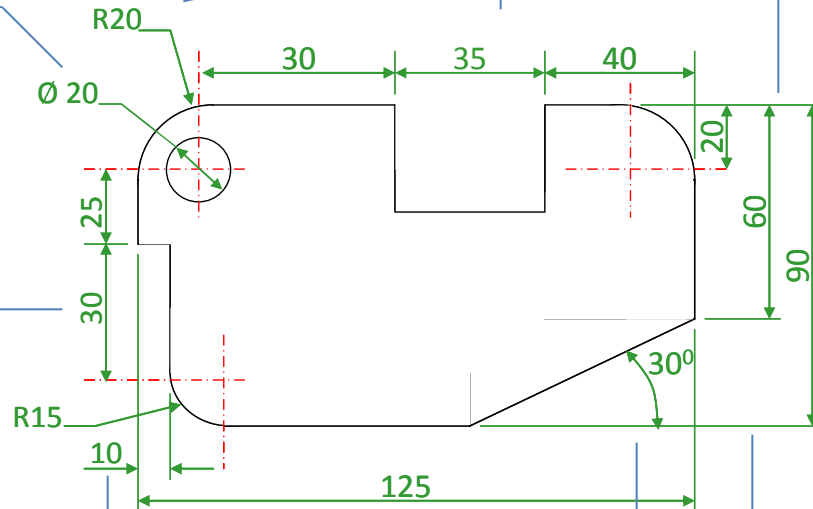
Multiple dimensions can be taken from a datum line. They are set out parallel to each other using **parallel dimensioning**.

### Overall Dimension Lines

Overall dimensions give the maximum sizes of objects (total length and total height). They should be placed outside all other dimensions.

### Projection/leader lines

Projection or leader lines are used to allow the dimension line to be placed outside the outline of the drawing to add clarity. A small gap should be left between the outline of the drawing and the projection line. Projection lines should be drawn at right angles to the dimension line and extend past it slightly.



# BSI Dimensioning

Dimensions are measurements which are essential on most production drawings since they enable the engineer or builder to manufacture products and construct buildings accurately. The dimensioning system used in Britain is set by the British Standards Institution.

In your S4 exam you will most likely be required to show dimensions on drawings. The next few slides show the rules and regulations set by BSI which should be followed when dimensioning. Once you have learned these rules, your skills will be put into practice within specific task and your course work drawings.

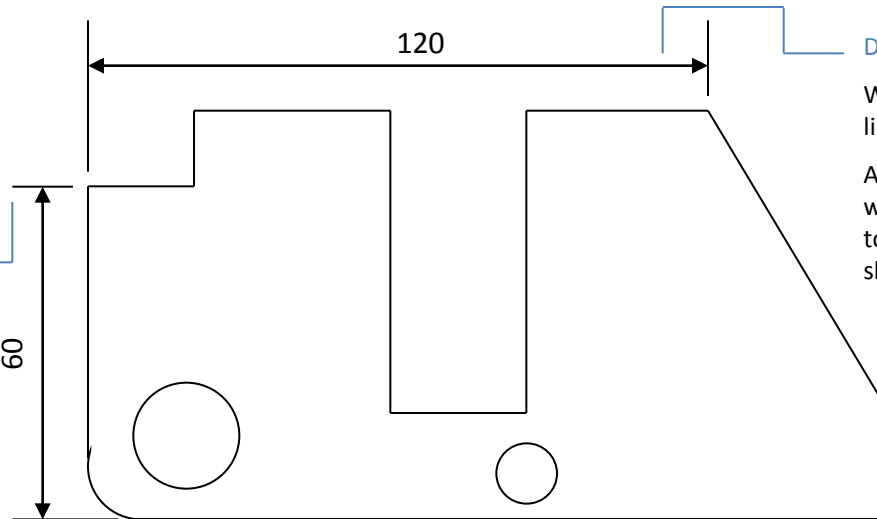
## Dimensioning Rules

- Each size should only be shown on the drawing once.
- Figures should not touch outlines, centre lines or dimension lines .
- Measurements should always be shown in millimetres unless otherwise instructed.
- Circles should always be dimensioned using a diameter.
- Curves and arcs should always use a radius.
- Dimensions should be read from the bottom or the right hand side of the drawing.

### Projection/Leader Lines

These Lines enable the dimension to be placed outside the outline of the Drawing.

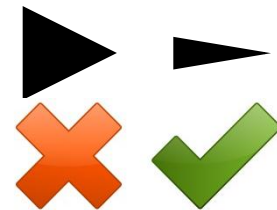
A small gap should be left to avoid confusing the leader line with the outline.



### Dimension Lines

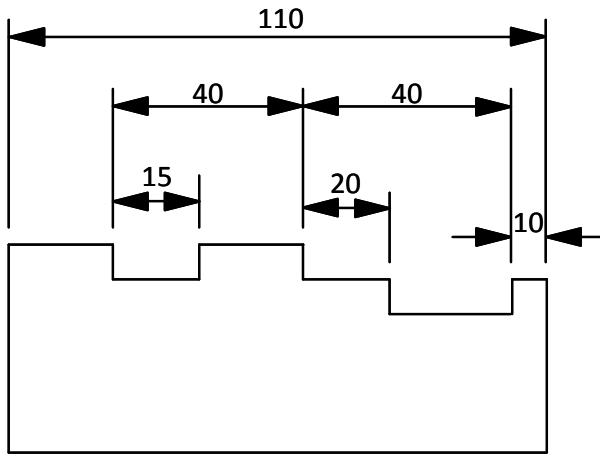
Where possible place the dimension lines outside of the outline.

Arrow heads should be small and slim, with the point of the arrow head just touching the projection lines. They should be filled in black.



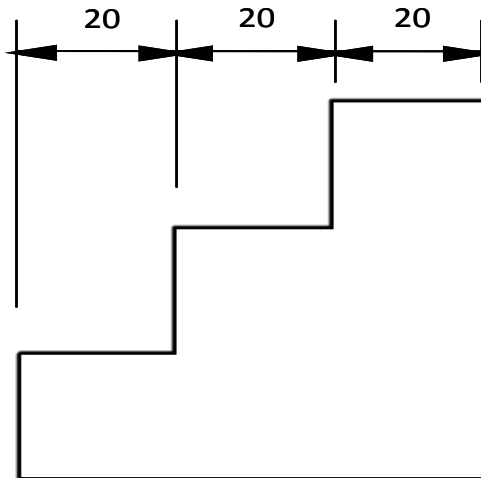
# BSI Dimensioning

## Dimensioning Standard Practice



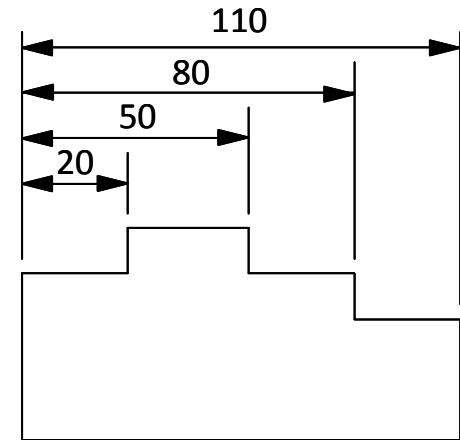
### Combined Dimensioning

Combined Dimensioning is a combination of parallel and Chain Dimensioning that can be used when space is very limited or the drawing is complex.



### Chain Dimensioning

Chain Dimensioning consists of a chain of dimensions. This method can lead to an accumulation of tolerances that will affect the function of the part.



### Parallel Dimensioning

Parallel Dimensioning consists of a number of dimensions that originate from a common reference feature (datum line or edge).