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1. A sectioned surface on a drawing is represented by adding section lines to indicate a surface that has been cut by a cutting plane.
2. Principles to be followed while dimensioning a drawing:
$>$ All dimension, extension, and leader lines should be thin, sharp, dark lines.
$>$ Extension lines indicate the points between which dimension figures apply. They are drawn perpendicular to the dimension lines.
$>$ Each dimension should be terminated by arrowheads touching the extension line and pointing in opposite directions. Arrowheads are drawn manually should be filled in.
$>$ Dimensions shown with dimension lines and arrowheads should be placed to be read from the bottom of the drawing (unidirectional system).
$>$ A dimension line should never coincide with an object line or a centre line, nor should it be an extension of these lines.
> Do not repeat dimensions on the same view or in other views.
$>$ Centre lines must never be used as dimension lines but must be left clear and distinct.
$>$ Dimensions are quoted in millimetres to the minimum number of significant figures.
$>$ Try to ensure that similar spacing is made between dimension lines as this gives a neat appearance on the completed drawing.
3. (a) Half Section:

When the cutting plane is passed halfway through an object, and one-quarter of the object is removed, the resulting section is a half section. A half section has the advantage of showing both inside and outside configurations. It is frequently used for symmetrical objects.
(b)Full Section:

When a cutting plane line passes entirely through an object, the resulting section is called a full section.
4. Leader lines can be terminated using:

- An arrowhead ( $\boldsymbol{\Psi}$ ) - This is used to point to an edge of an item.
- $A \operatorname{dot}(\bullet)$ - This is used to point to a face.
- An architectural tick (/) - This is used to for referring to multiple parallel edges.

5. (a) Scale $=5: 1$

This type of scale is used to enlarge the drawing in size so that all the required details are clearly visible. In this case the scale indicates that a measurement should be 5 times more than its original size.
(b) Scale=1:10

This type of scale is used to reduce the drawing in size so that it will fit onto the page. In this case the scale indicates that a measurement should be 10 times less than its original size.
6. (a) Diameter: $\varnothing$
(b) Radius: R
(c) Square:
(d) Spherical radius: SR
(e) Centre line: -.-.-.-.--.--
(f) Cutting plane line:
(g) Long break:

7. The elements to be considered while obtaining a projection are the length, width and height/thickness.

Orthographic Projection: This is a common method of representing three-dimensional objects, usually by three two-dimensional drawings in each of which the object is viewed along parallel lines that are perpendicular to the plane of the drawing.
8. A projection of an object is called an orthographic projection when the different views (i.e. front, top, side) of an object are projected on different reference planes (i.e. horizontal, vertical, side/profile).
9. (a) First Angle Projection: This is one of the methods used for orthographic projection drawings. In this projection method, the object is places in the first quadrant and is positioned in front of the vertical plane and above the horizontal plane.

(b) Third Angle Projection: In this method of orthographic projection, the object to be projected is placed in the third quadrant and is positioned behind the vertical plane and below the horizontal plane.


## Objectives:

1. (a) Reference plane
2. (b) False
3. (c) Directly
4. (a) $60^{\circ}$
5. (a) $60^{\circ}$
6. (b) Rivet
7. (c) Crowning
8. (b) $45^{\circ}$
9. (a) A circle
10. (a) An ellipse
11. (c) Cylinder
12. (a) Cone
13. (b) Thrust bearing
14. (c) $55^{\circ}$
15. (d) Horizontal Plane
