

Name: Nnamah Onyinye

Department: Biomedical Engineering

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Course Title: Engineering Drawing

1. How do you represent a sectioned surface on a drawing?

The process of sketching the internal configuration of an object by showing it cut apart is known as sectioning. A sectioned surface uses section lines drawn at 45 degrees angle.

2. List the principles of dimensioning?

- All dimension, extension, and leader lines should be thin, sharp, dark lines (.5mm/2H).
- Extension lines indicate the points between which the dimension figures apply. They are drawn perpendicular to the dimension lines.
- Each dimension should be terminated by arrowheads touching the extension lines and pointing in opposite directions. Arrowheads are drawn freehand with .7mm/HB lead.
- Dimensions shown with dimension lines and arrowheads should be placed to be read from the bottom of the drawing (unidirectional system).
- All dimensions should be given in decimal format.
- A dimension line should never coincide with an object line or a center line, nor should it be an extension of these lines. Both, however, may be used as extension lines
- Crossing of extension lines or dimension lines should be avoided if possible, there should be no break in either of the lines.
- Dimensions should be at least 3/8" (10 mm) from the object outline, then equally spaced at least 1/4" (6 mm) apart.
- Dimensions are preferably placed outside the outlines of the views
- When placement outside the views will result in (a) dimensions too far from the distance they indicate, (b) long and confusing extension lines or leader lines that cross other lines of the drawing, or (c) any confusion in understanding where the dimension applies, they may be placed inside the view and close to the distance they indicate.

3. Explain the terms (i)Half Section (ii)Full section

- Half Section

A **half-section** is a view of an object showing one-half of the view in **section**, as in the drawing below. The diagonal lines on the **section** drawing are used to indicate the area that has been theoretically cut. These lines are called **section lining** or cross-hatching.

- Full Section

A **full section** is the most widely-used sectional view. This is when the imaginary cutting plane passes through the entire object, splitting the drawn object in two with the interior of the object revealed, this is called a "**full section**."

4. How are leader line terminated?

It can be terminated with an arrowhead

5. What do you understand by (i) Scale =5:1 (ii) Scale=1:10

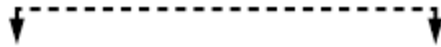
- Scale =5:1
This indicates that the drawing should be 5 times more than its original size.
- Scale=1:10
This indicates that the drawing should be 10 times less than its original size.

6. Give the shape identification symbols of the following

- Radius; **R**
- Spherical Radius: **SR**
- Centre Line; **⊕**



- Cutting plane line;



- Long break



- Diameter; \varnothing
- Square;



7. What are the elements to be considered when obtaining a orthographic projection? What is an Orthographic projection?

- Elements to be considered;
 - a. The top view
 - b. The front view
 - c. The side view
- Orthographic Projection

Orthographic projection is a means of representing three-dimensional objects in two dimensions. It is a form of parallel projection, in which all the projection lines are orthogonal to the projection plane, resulting in every plane of the scene appearing in affine transformation on the viewing surface

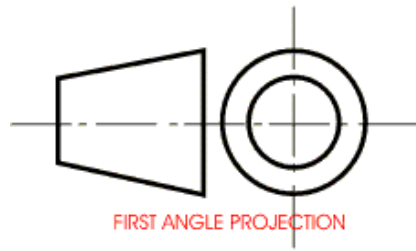
8. When the projection of an object is called an Orthographic projection?

Typically, an orthographic projection drawing consists of three different views. All the views are on same page, the front view is in the lower left corner of the page, the top view is in the upper left corner, and the right side view is in the lower right corner. All the projection lines are orthogonal to the projection plane

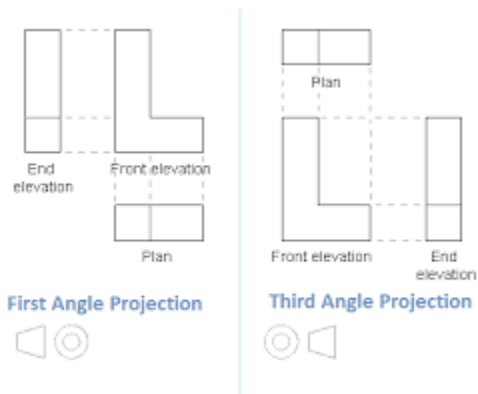
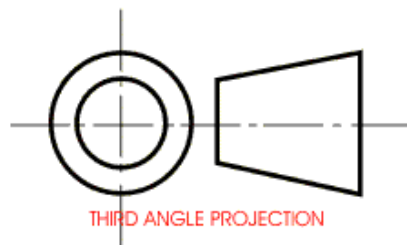
It is also called an orthographic projection when the figure is drawn in first or third angle elevation.

9. Explain the following indicating the symbols to be used (i)First angle projection (ii)Third angle projection

- **First angle projection** is a method of creating a 2D drawing of a 3D object. In this projection method, the object is placed in the first quadrant and is positioned in front of the vertical plane and above the horizontal plane.



- **Third Angle projection** is a method of orthographic **projection** which is a technique in portraying a 3D design using a series of 2D views. In third angle projection, the 3D 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
2. A
3. C
4. B
5. A
6. B
7. C
8. B
9. A
10. A
11. C
12. A
13. A
14. C
15. D