

Subject: Basic Technology

Year/Level

Strand	BT10.5 GEOMETRICAL DRAWING
Sub Strand	BT 10.5.4 PYRAMIDS AND CONES
Content Learning Outcome	BT10.5.4.1 Develop skills in geometrical drawing of truncated pyramids and cones.

LESSON NOTES

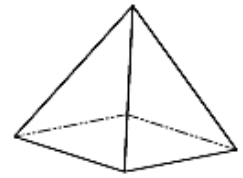
Triangular prism

Two triangular bases and three rectangular sides make a triangular prism. It falls in the category of a tetrahedron. It has 3 lateral faces and 2 triangular bases.

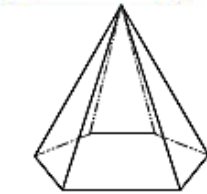
THE GEOMETRICAL SOLIDS

Pyramids

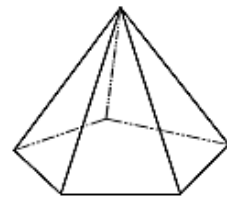
In technical drawing, objects are usually composed of an arrangement of geometrical solids, either in one piece or fastened together. An understanding of the geometrical solids is therefore essential before objects can be satisfactorily represented in technical drawing.



Square Based Pyramid



Hexagonal Based Pyramid



Pentagonal Based Pyramid

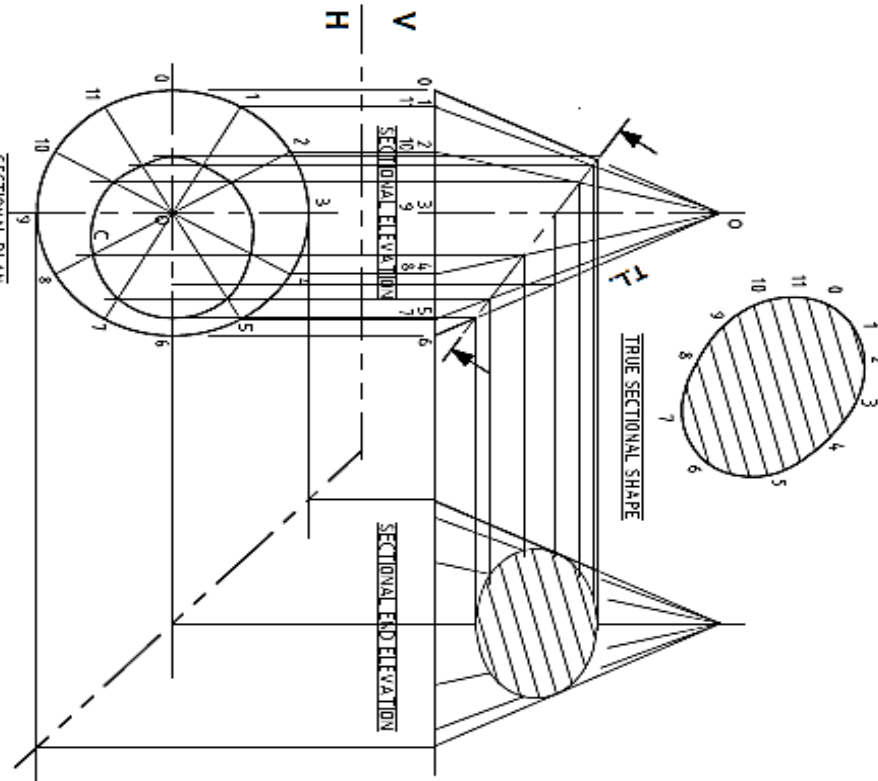


Triangular Based Pyramid

The axis of a solid is the imaginary line drawn from the centre of the top to the centre of the base of the solid. When the axis is at right angle to the base, it is called a right solid, and when the axis is inclined to the base or end of a solid it is called an oblique solid. When the edges of the base or end of a solid are equal, it is called regular.

A cube is a solid contained by six equal squares. The axis is the imaginary line joining the centres of the opposite sides. A cube can thus have three axes.

A right regular prism is a solid whose sides consist of equal rectangles, and two equal ends. It is named by its ends. The axis is the line joining the centres of the ends. The axis is the line joining the centres of the ends. Examples of right regular prisms are: square prism, equilateral triangular prism, right pentagonal prism, etc. (A rectangular prism is not a regular prism).



EXAMPLE 1 - DEVELOPMENT OF A TRUNCATED CONE
 GIVEN: PLAN AND SECTIONED ELEVATION OF A RIGHT CONE
 REQUIRED: COMPLETE THE SECTIONAL PLAN AND PROJECT THE SECTIONAL END ELEVATION USING RADIAL LINE DEVELOPMENT METHOD
 IT IS IMPORTANT TO KNOW THE:
 (i) TRUE LENGTH OF THE EDGE OF THE CONE

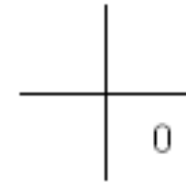
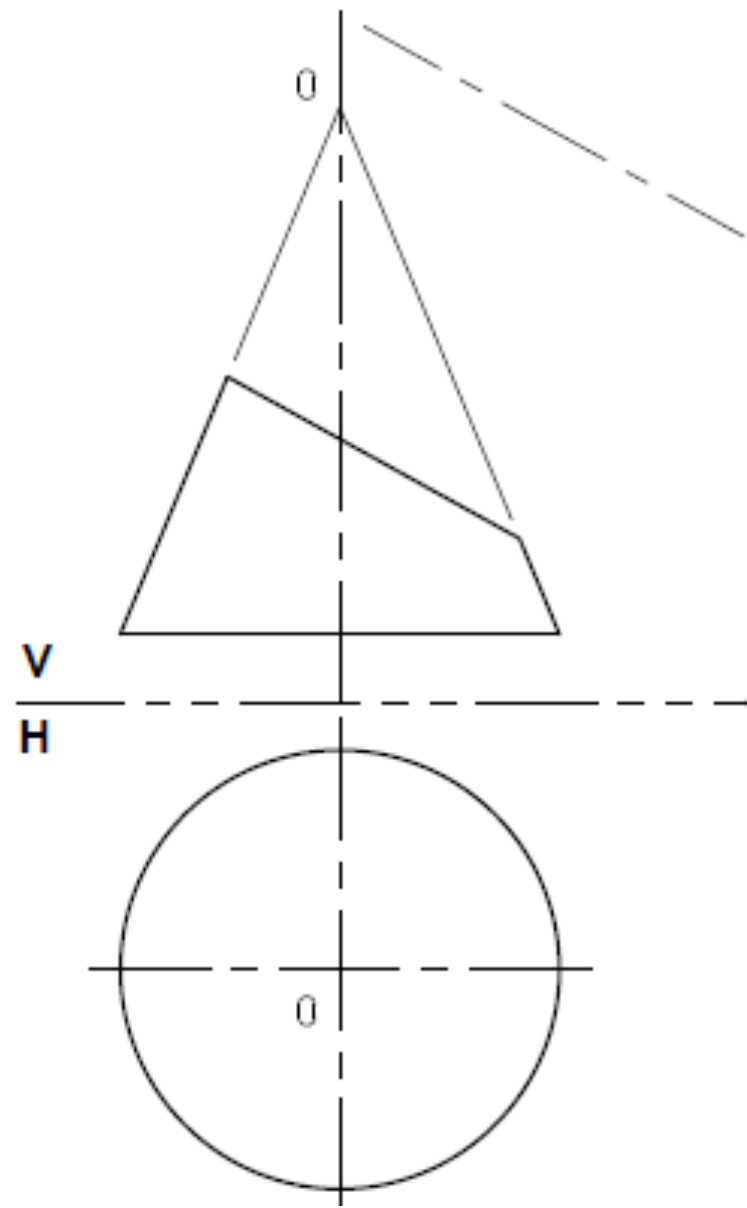
III CIRCUMFERENCE OF THE BASE OF THE CONE
 STEPS TO FOLLOW:

1. COMPLETE THE SECTIONAL PLAN AND PROJECT THE END ELEVATION
2. IDENTIFY THE TRUE LENGTH OF THE CONE AND USE IT TO DRAW AN ARC FROM THE STARTING POINT
3. DIVIDE THE PLAN INTO 12 EQUAL PARTS AND STEP OFF ON THE BASE ARC BY MARKING 0, 1, 2, 3, 4, ..., 11, 0.
4. PROJECT THE FOLD LINES FROM THE MARKED BASE POINTS TO THE STARTING POINT.
5. IN THE ELEVATION, PROJECT ALL THE GENERATOR LINES FROM THE SECTIONED POINTS TO THE TRUE LENGTH.
6. USING THE TRUE LENGTHS FROM THE ELEVATION, MARK THE CORRECT DISTANCE FROM THE FOLD LINES.
7. TAKE MEASUREMENTS FROM THE PLAN AND DRAW THE END AND ADD THE SEAMS.
8. DRAW THE OUTLINES TO COMPLETE THE DEVELOPMENT.
9. PROJECT THE TRUE SECTIONAL SHAPE FROM THE ELEVATION PERPENDICULAR TO THE SECTIONAL PLANE BY TAKING MEASUREMENTS FROM THE SECTIONAL PLAN.
10. LABEL THE DRAWINGS. DO NOT ERASE THE CONSTRUCTION LINES.

STUDENT ACTIVITY

GIVEN: THE PLAN OF A TRUNCATED CONE DRAWN IN THE FIRST ANGLE ORTHOGRAPHIC PROJECTION.

REQUIRED: A. COMPLETE THE SECTIONAL PLAN
 B. PROJECT THE TRUE SECTIONAL SHAPE
 C. DRAW THE FULL SURFACE DEVELOPMENT
 D. LABEL ALL THE DRAWINGS.



THE END