PENANG SANGAM HIGH SCHOOL

P.O.BOX 44, RAKIRAKI

WEEK 15 WORKSHEET

Subject: Basic Technology **Year/Level:** 10

Strand	**BT10.5 GEOMETRICAL DRAWING**
Sub Strand	**BT 10.5.3 PRISMS AND CYCLINDERS**
Content Learning Outcome	BT10.5.3.1 Develop skills in in geometrical drawing of truncated prisms and cylinders.

LESSON NOTES

PRISMS AND CYLINDERS

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

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.

A cube is a solid contained by six equal squares.

A right regular prism is a solid whose sides consist of equal rectangles, ad two equal ends. It is named by its ends.

A right regular pyramid is a solid whose sides consist of equal isosceles triangles meeting at a point above the base called the apex. Pyramids are named from their bases.

A tetrahedron is an equilateral triangular pyramid contained by four equilateral triangles.

A right cylinder is a solid generated by the revolution of a rectangle about one of its fixed sides. The fixed side becomes the axis, that is, the line joining the centres of the circular ends.

A right cone is a solid generated by the revolution of a right-angled triangle about its perpendicular. The perpendicular then becomes the axis, i.e. the line joining the apex to the centre of the base.

A sphere is a solid generated by the revolution of a semi-circle about its diameter.

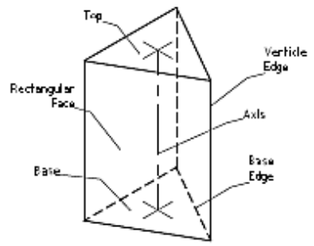
Frustum when the upper portion of the pyramid or a cone has been cut away, the remaining portion is called a frustum, and the solid is said to be truncated.

SOLID GEOMETRY

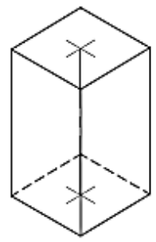
Prisms: A right regular prism is a geometrical solid consisting of equal rectangular sides and two equal ends.

Cylinder: A right regular cylinder is a geometrical solid consisting of a curved surface and two equal circular ends.

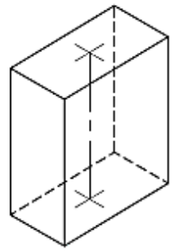
1. Triangular Prism



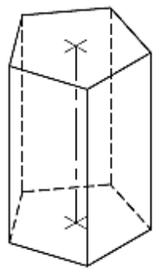
2. Square Prism



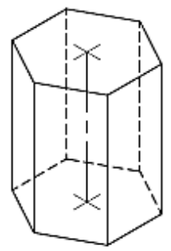
3. Rectangular Prism



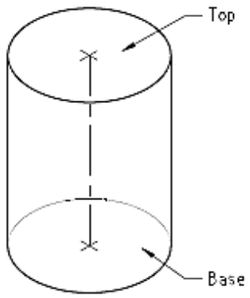
4. Pentagonal Prism



5. Hexagonal Prism



6. Cylinder



EXAMPLE 1 - DEVELOPMENT OF A TRUNCATED PRISM

GIVEN:PLAN AND SECTIONED ELEVATION OF A RIGHT SQUARE PRISM

REQUIRED: COMPLETE THE SECTIONAL PLAN AND PROJECT THE SECTIONAL END ELEVATION
PROJECT THE TRUE SECTIONAL SHAPE AND DRAW THE DEVELOPMENT
USING PARALLEL LINE DEVELOPMENT METHOD

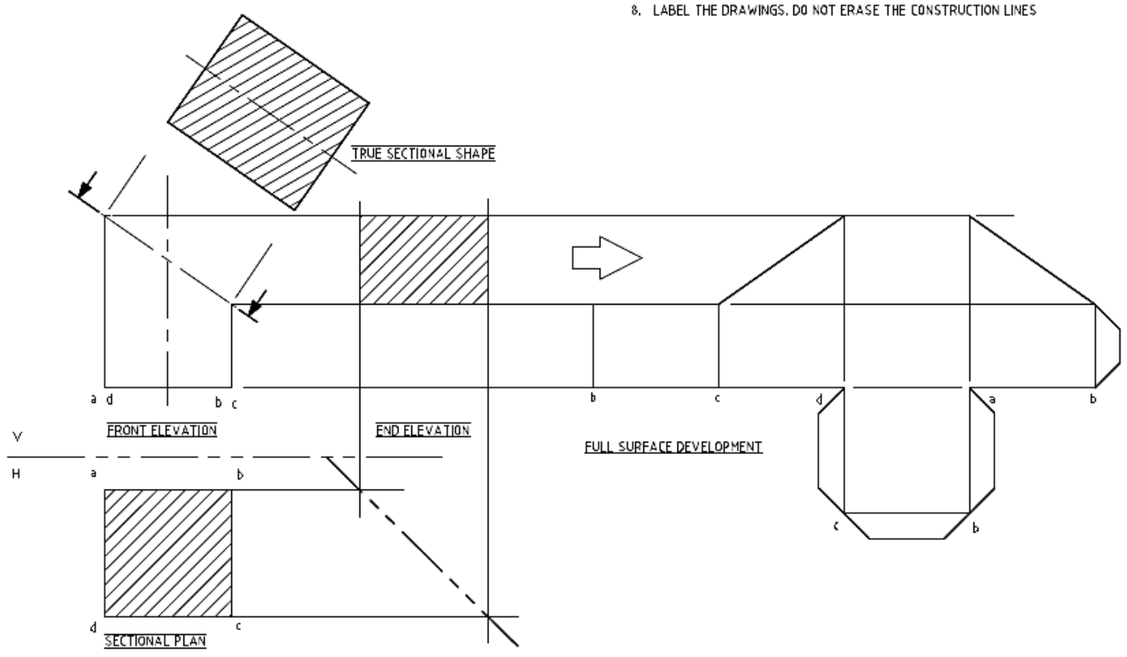
NOTE: IT IS IMPORTANT TO KNOW THE:

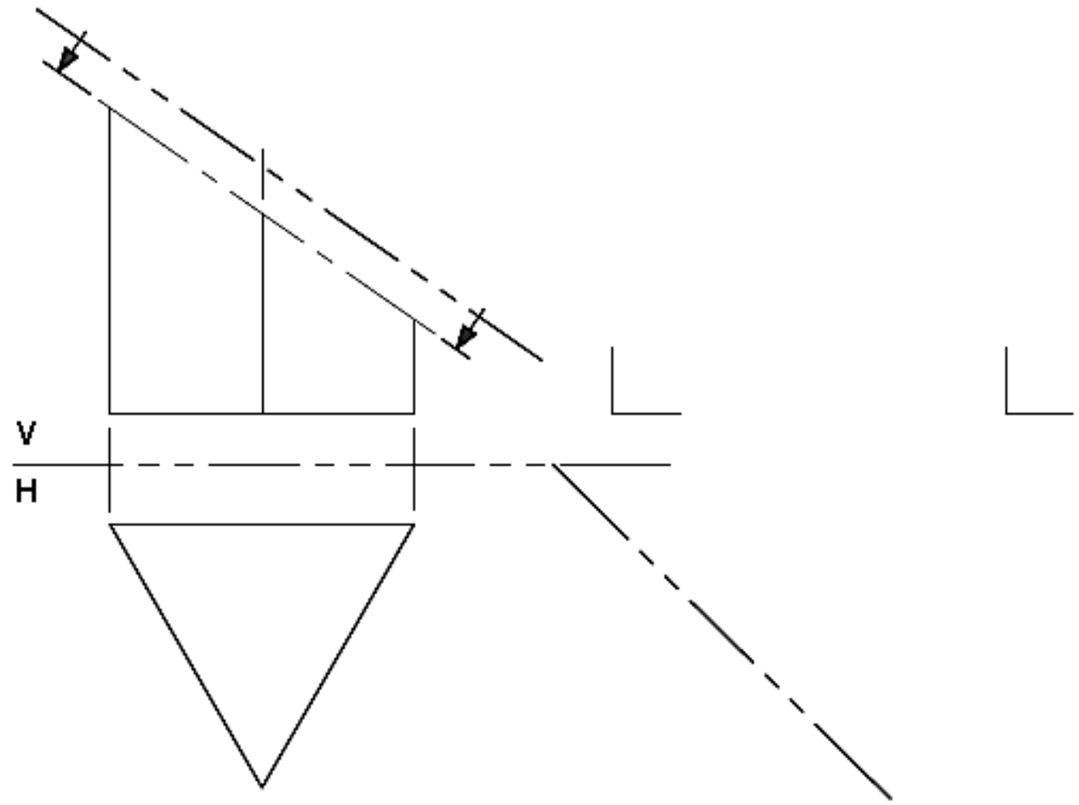
(I) HEIGHT OR THE AXIS OF THE PRISM.

(II) BASE EDGES OF THE PRISM

STEPS TO FOLLOW:

1. COMPLETE THE SECTIONAL PLAN AND PROJECT THE END ELEVATION
2. PROJECT ALL THE HEIGHTS FROM THE SECTIONAL ELEVATION
3. MARK A STARTING POINT AND STEP OFF THE BASE EDGES ON THE BASE LINE.
4. PROJECT THE FOLD LINES FROM THE MARKED BASE EDGES
5. TAKE MEASUREMENTS FROM THE PLAN AND DRAW THE END. DRAW THE SEAMS
6. DRAW THE OUTLINES TO COMPLETE THE DEVELOPMENT
7. TAKE MEASUREMENTS FROM THE PLAN TO PROJECT THE TRUE SECTIONAL SHAPE
8. LABEL THE DRAWINGS. DO NOT ERASE THE CONSTRUCTION LINES





STUDENT ACTIVITY

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

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

NOTE: DO NOT ERASE THE CONSTRUCTION LINES

THE END