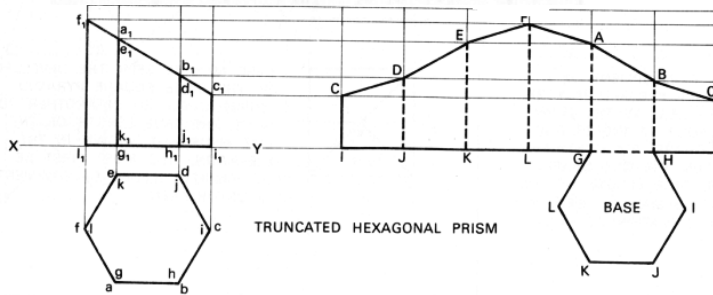
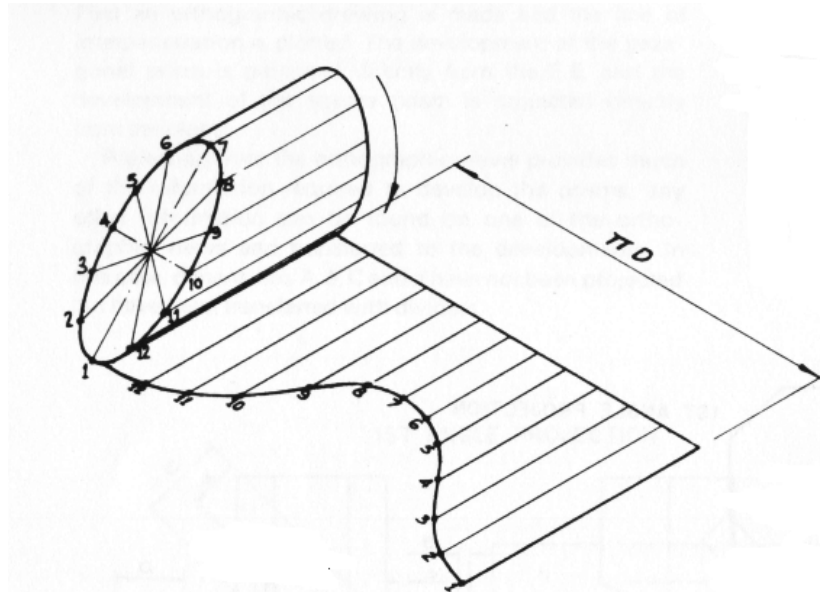


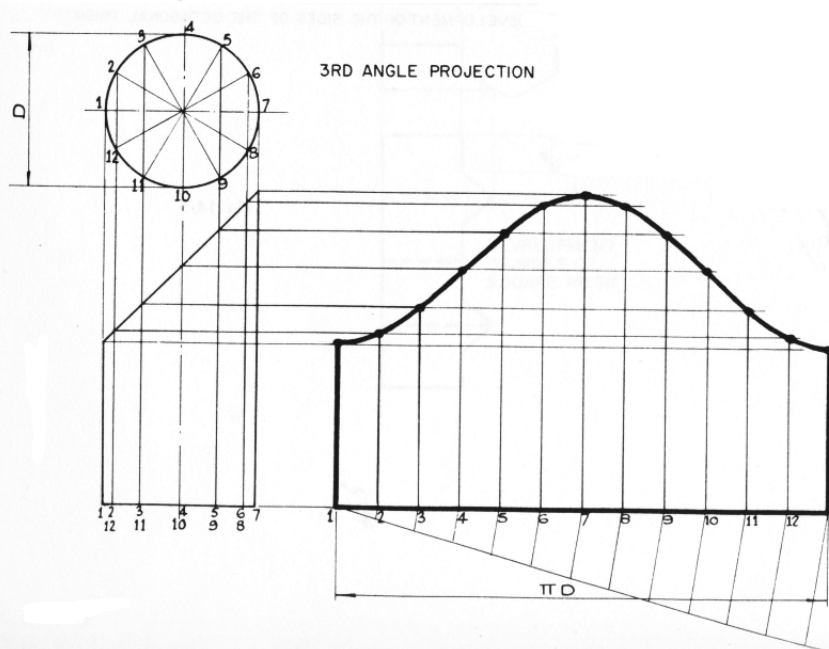
Developments: a development is the true surface of an object (flat). Heat ducts, vents and hoppers are manufactured from sheet metal before pressed into shape.

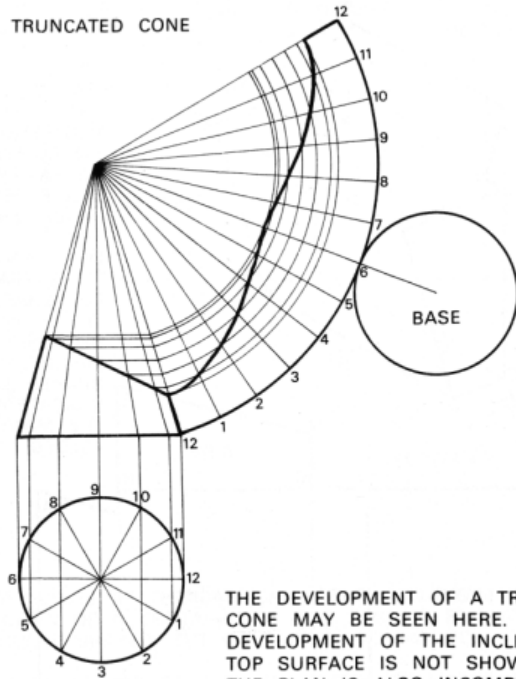
Developments fall into three categories **1.** Parallel line method page one. **2.** Radial line (first page 2) **3.** Triangulation (second question page 2)

Important: Closed or open object, projection of line, true lengths and visualisation.

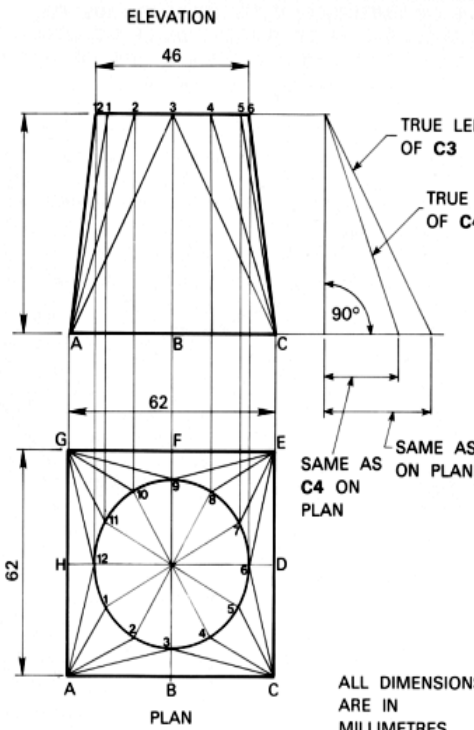


THE DEVELOPMENT OF A TRUNCATED HEXAGONAL PRISM MAY BE SEEN HERE IN THE FORM OF SIX TRAPEZIUMS AND ONE HEXAGON. THE DEVELOPMENT OF THE INCLINED TOP SURFACE IS NOT SHOWN.



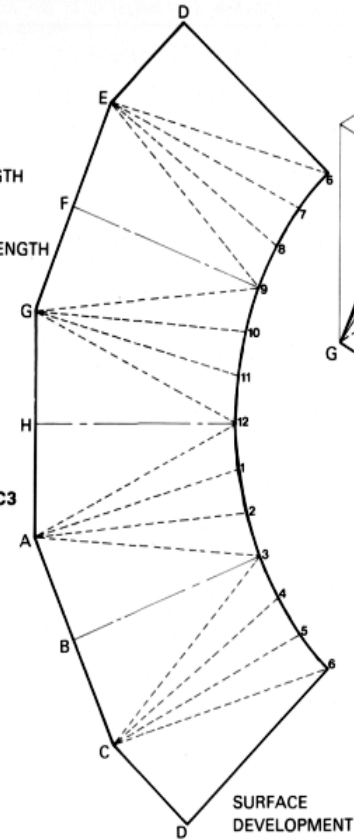


THE DEVELOPMENT OF A TRUNCATED CONE MAY BE SEEN HERE. THE DEVELOPMENT OF THE INCLINED TOP SURFACE IS NOT SHOWN. THE PLAN IS ALSO INCOMPLETE SO THAT THE CONSTRUCTION LINES FOR ITS COMPLETION ARE NOT CONFUSED WITH THE CONSTRUCTION LINES OF THE DEVELOPMENT.

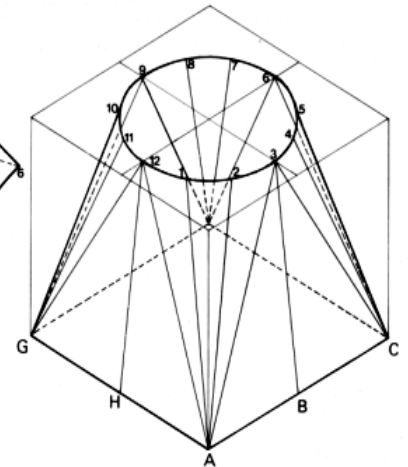


ALL DIMENSIONS ARE IN MILLIMETRES

THE OBJECT IS CIRCULAR AT THE TOP AND SQUARE AT THE BASE.

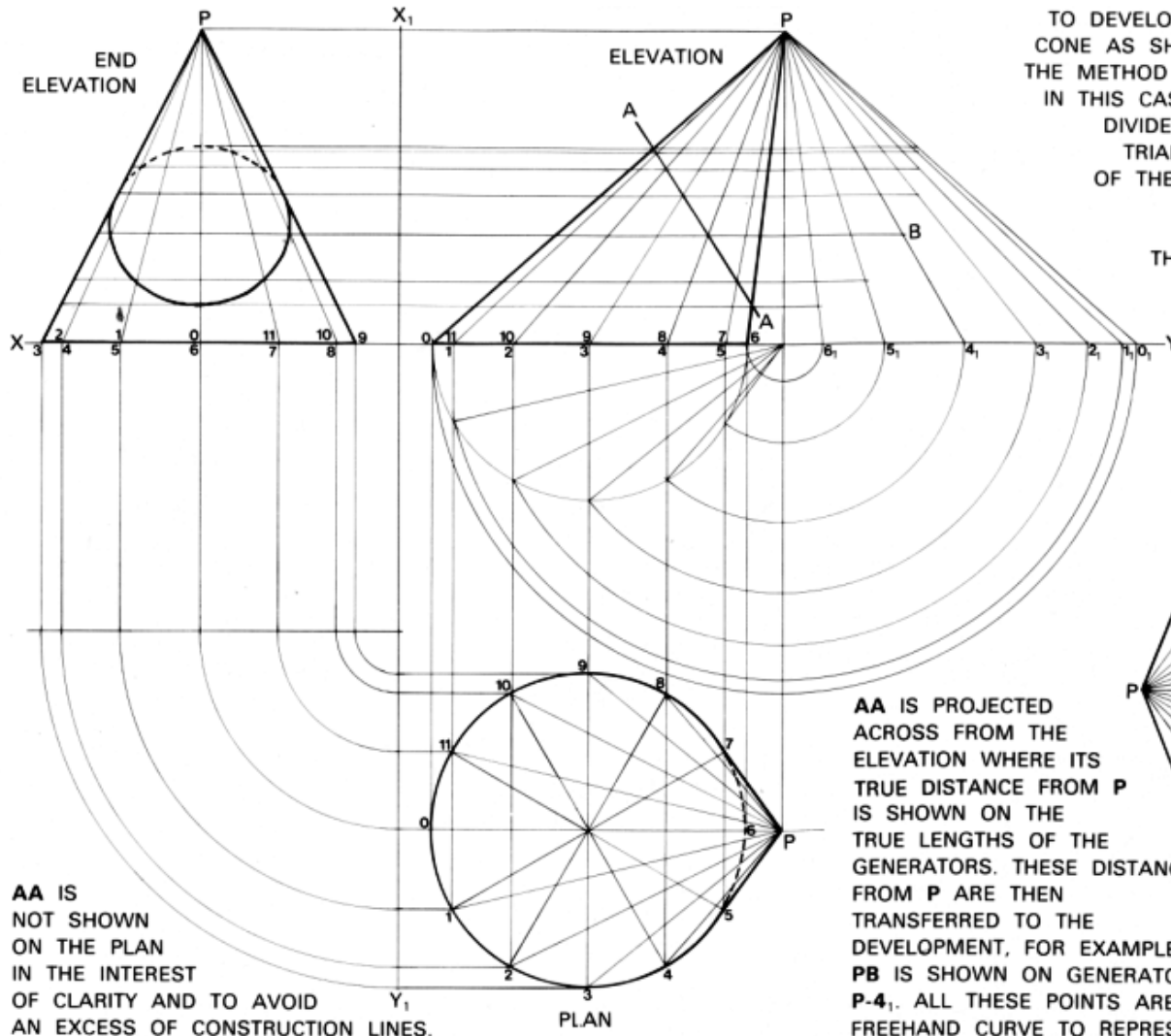


SURFACE DEVELOPMENT



ISOMETRIC PROJECTION

THE BASIC PRINCIPLE IN THIS METHOD OF DEVELOPMENT IS THAT THE OBJECT IS DIVIDED INTO TRIANGLES (TRUE SHAPES) AND ARE PLACED SIDE BY SIDE, ONE AFTER THE OTHER. IN THIS PARTICULAR DEVELOPMENT SURFACE CE6 IS DIVIDED AT D6 ALTHOUGH THIS PARTING COULD BE ELSEWHERE IN THE OBJECT. THE CURVED LINE ALONG THE NUMERALS IS DRAWN FREEHAND.

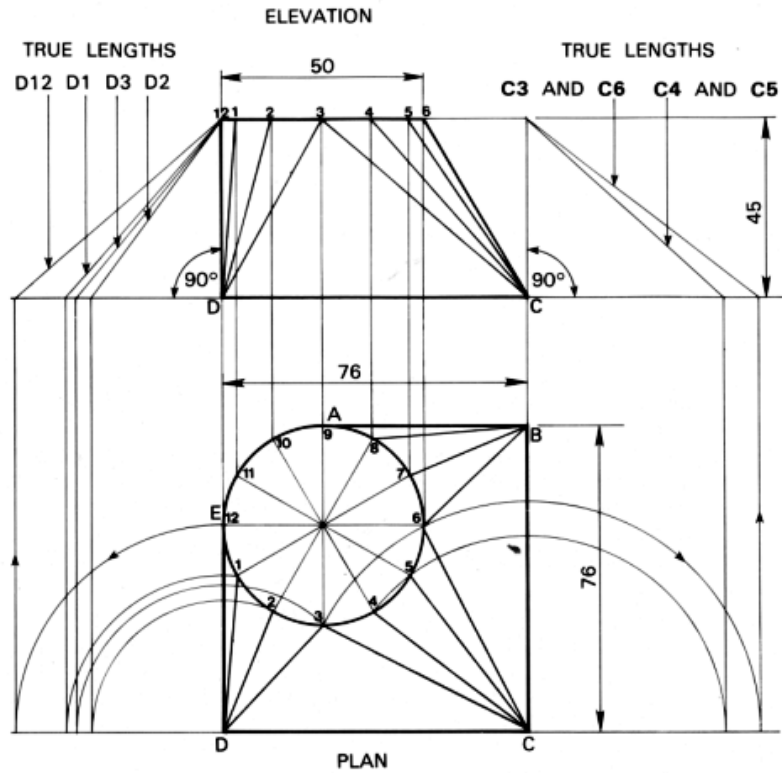


TO DEVELOP THE CURVED SURFACE OF THE OBLIQUE CONE AS SHOWN IN THE ORTHOGRAPHIC PROJECTION. THE METHOD USED IS THAT OF TRIANGULATION WHICH IN THIS CASE MEANS THAT THE CURVED SURFACE IS DIVIDED INTO 12 PARTS, EACH REGARDED AS A TRIANGULAR ENTITY. FIRST THE TRUE LENGTHS OF THE GENERATORS ARE FOUND, FOR EXAMPLE P-2₁ IS THE TRUE LENGTH OF P-2. TO START THE DEVELOPMENT DRAW P-O₁. THEN WITH CENTRE P AND P-1₁ AS RADIUS DRAW AN ARC WHICH IS INTERSECTED BY AN ARC FROM O₁ WHICH HAS O-1 AS RADIUS. THIS GIVES THE FIRST OF THE 12 TRIANGLES, THE REMAINDER BEING DRAWN IN A SIMILAR WAY.

AA IS NOT SHOWN ON THE PLAN IN THE INTEREST OF CLARITY AND TO AVOID AN EXCESS OF CONSTRUCTION LINES.

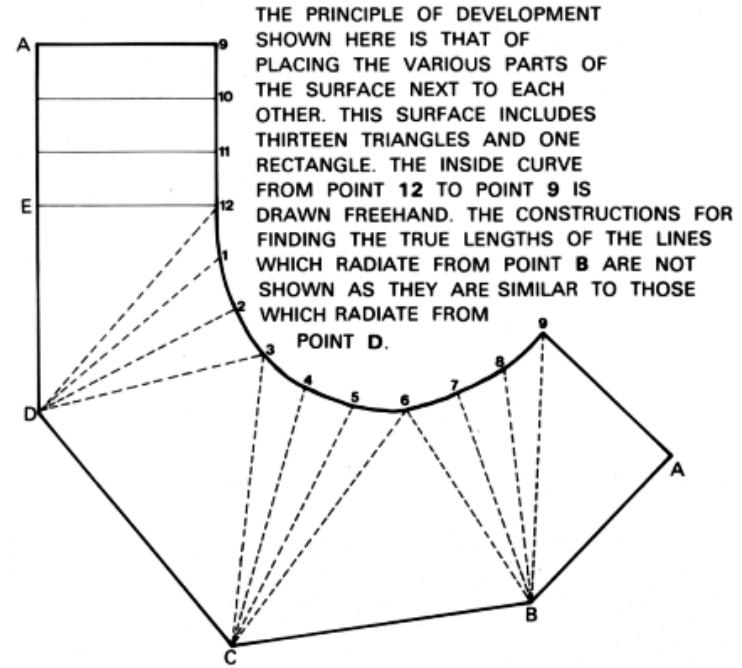
AA IS PROJECTED ACROSS FROM THE ELEVATION WHERE ITS TRUE DISTANCE FROM P IS SHOWN ON THE TRUE LENGTHS OF THE GENERATORS. THESE DISTANCES FROM P ARE THEN TRANSFERRED TO THE DEVELOPMENT, FOR EXAMPLE PB IS SHOWN ON GENERATOR P-4₁. ALL THESE POINTS ARE THEN JOINED WITH A FREEHAND CURVE TO REPRESENT AA.

DEVELOPMENT OF CURVED SURFACE



THIS OBJECT IS CIRCULAR AT THE TOP AND HAS A SQUARE BASE WHICH HAS ONE CORNER ROUNDED TO A QUADRANT.

ALL DIMENSIONS ARE IN MILLIMETRES.



SURFACE DEVELOPMENT OF THE SIDES. THE DEVELOPMENT OF THE TOP (NOT SHOWN) IS A CIRCLE OF 50 mm DIAMETER AND THAT OF THE BASE IS A SQUARE (76 mm x 76 mm) WITH ONE CORNER ROUNDED.

NOTE: THE ACCURACY OF ANY DEVELOPMENT MAY BE TESTED BY CUTTING THE DEVELOPED SHAPE FROM PAPER AND BY FOLDING. FLAPS MAY BE ADDED AT THE EXTREMITIES FOR PASTING.

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- (a) Draw the given views and produce a one piece development of the transition piece. The development should have the shortest seam possible.
- (b) Sketch freehand and name a sheetmetal joint suitable for this transition piece. Using a separate sketch show the seam allowance necessary to make the joint.

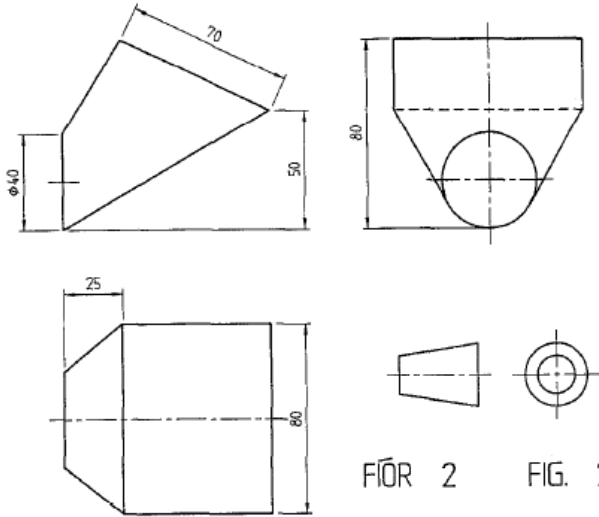
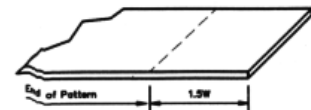
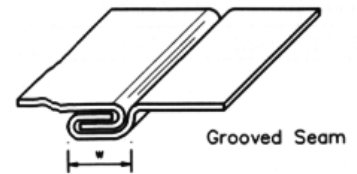
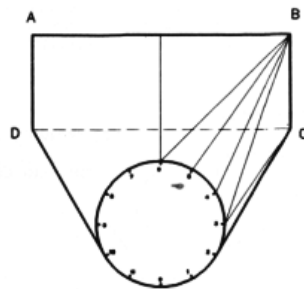
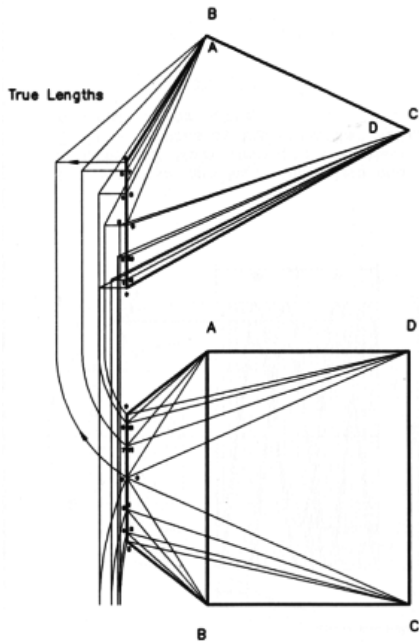
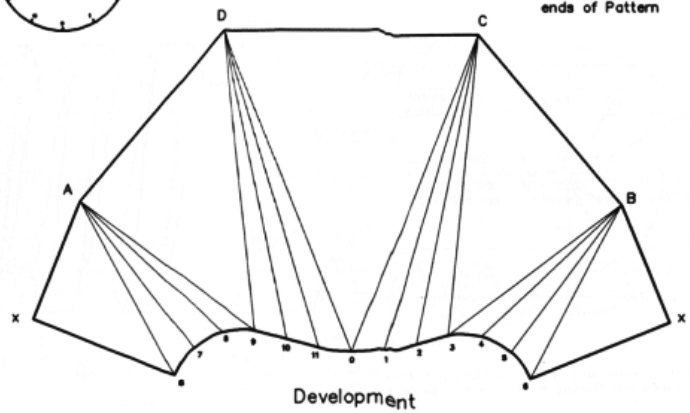


FIG. 2 FIG. 2



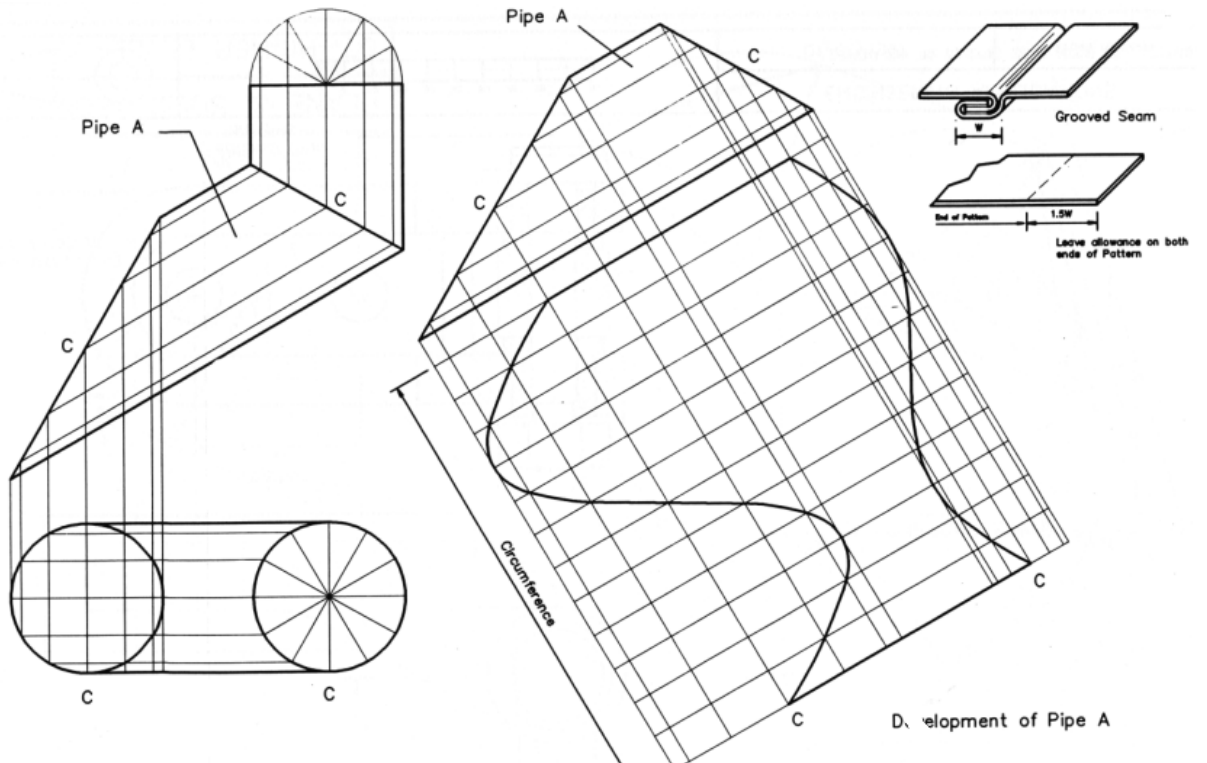
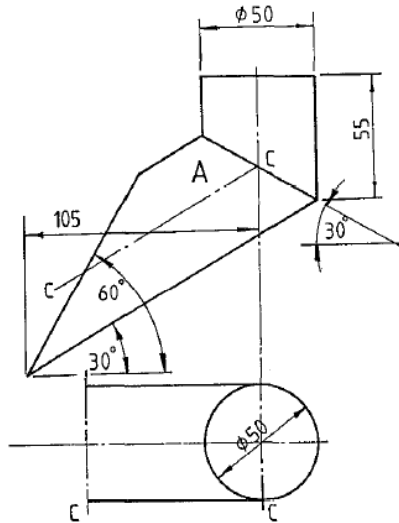
Leave allowance on both ends of Pattern



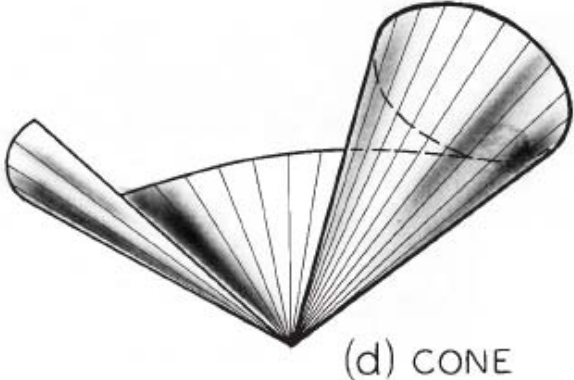
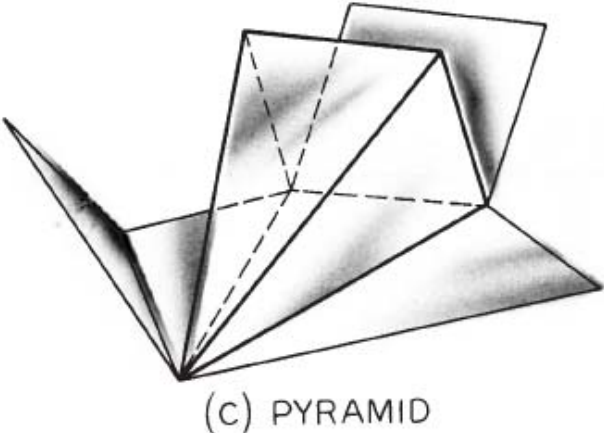
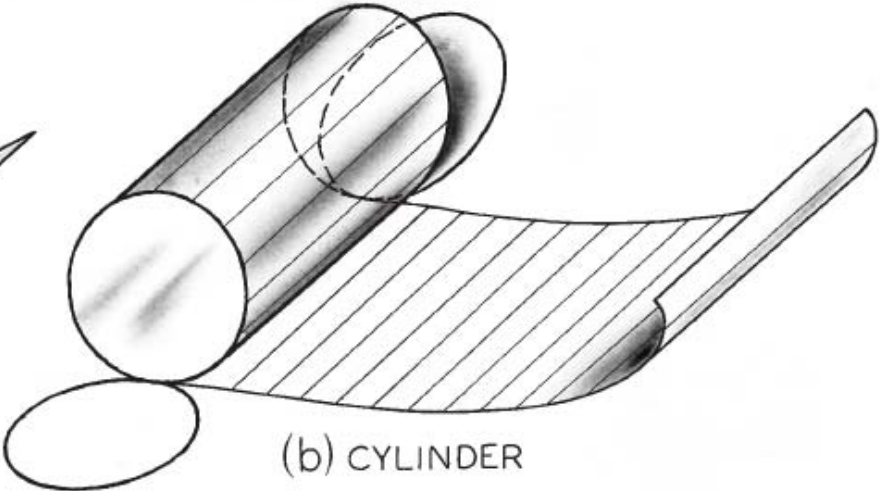
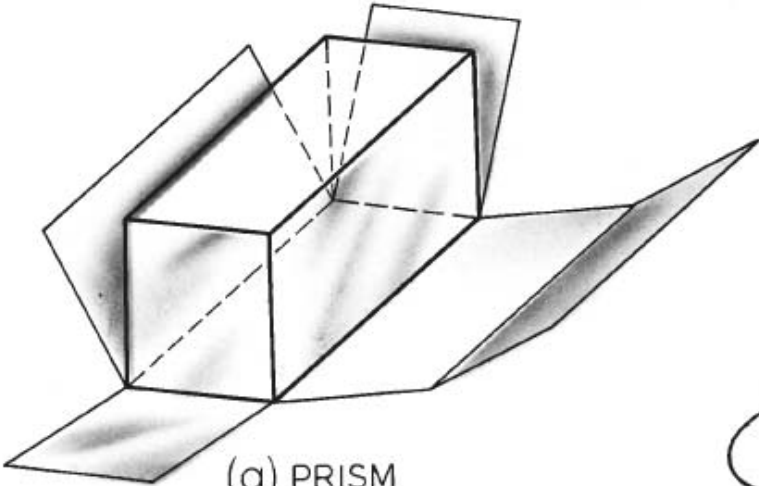
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2. The elevation and incomplete plan of a pair of pipes are shown in Fig. 2.
 - (a) Draw the given elevation and complete the plan.
 - (b) Draw the surface development of pipe A making the seam on CC.
 - (c) Make a large neat freehand sketch of a suitable joint for seam CC.

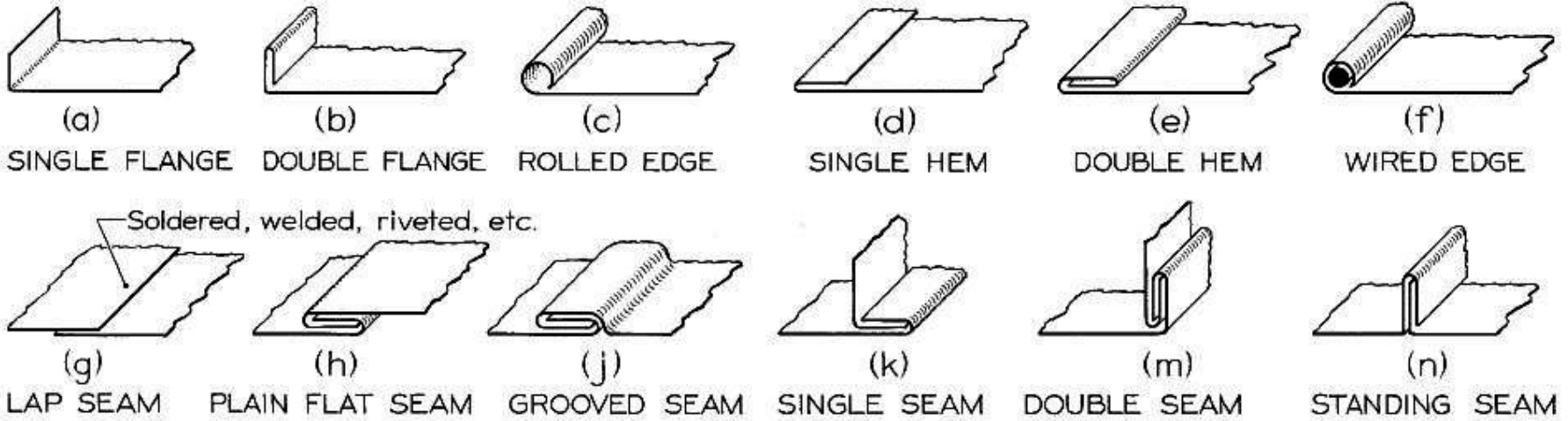
FIG.2.



Developments of common solids:



Sheet metal joints:



Transition pieces:

