

Strand	TD13.1 GEOMETRY
Sub - Strand	TD13.1.4 Solid Geometry & Surface Development
Content Learning Outcome	TD13.1.4.1 Develop intersections of cones and spheres and, transition pieces.

METHOD 2

Auxiliary view method:

Draw an auxiliary view of the line with reference line parallel to the line and perpendicular to the reference line of the principle planes

The length of the auxiliary view of the line gives the True Length (TL) of the line

METHOD 1

Rotation method:

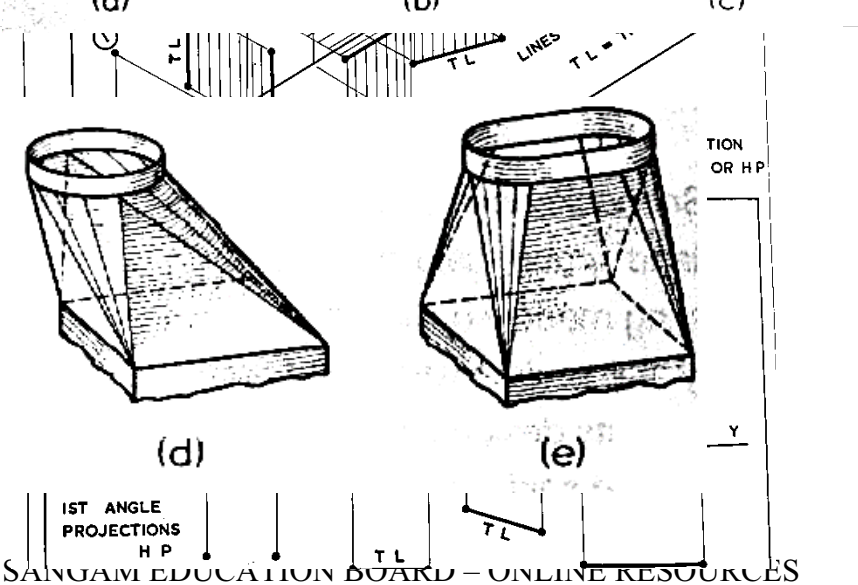
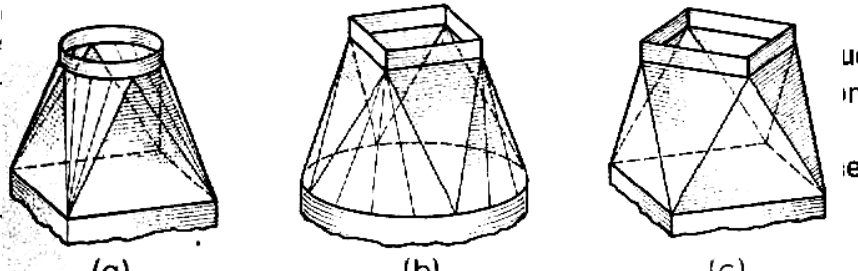
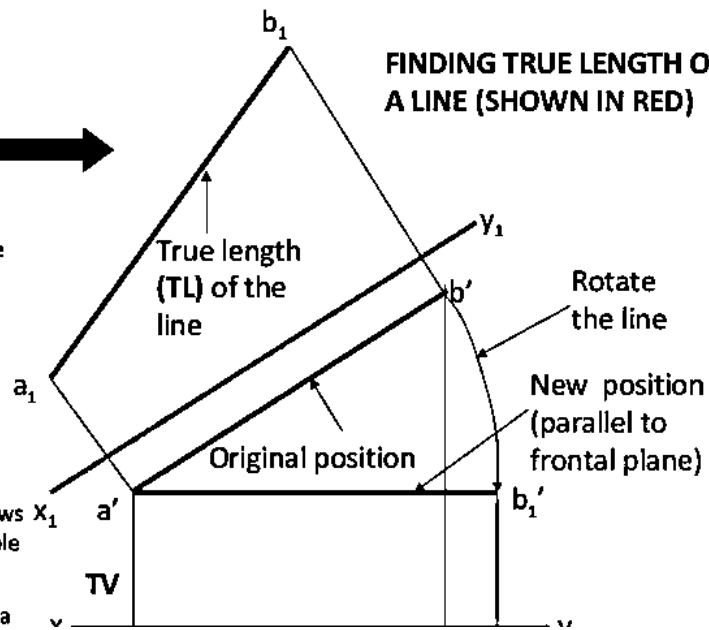
Rotate the line in one of the principle views so that it is parallel to the other principle plane

Transfer the new position of the line onto a line through the end point of the line in the other view

The length of the projector gives the True Length (TL)

This line represents the true length of the line

FINDING TRUE LENGTH OF A LINE (SHOWN IN RED)



WORKED EXAMPLE

SQUARE TO ROUND, AXES IN LINE

Draw the full size elevation, plan and development of the transition piece shown below.

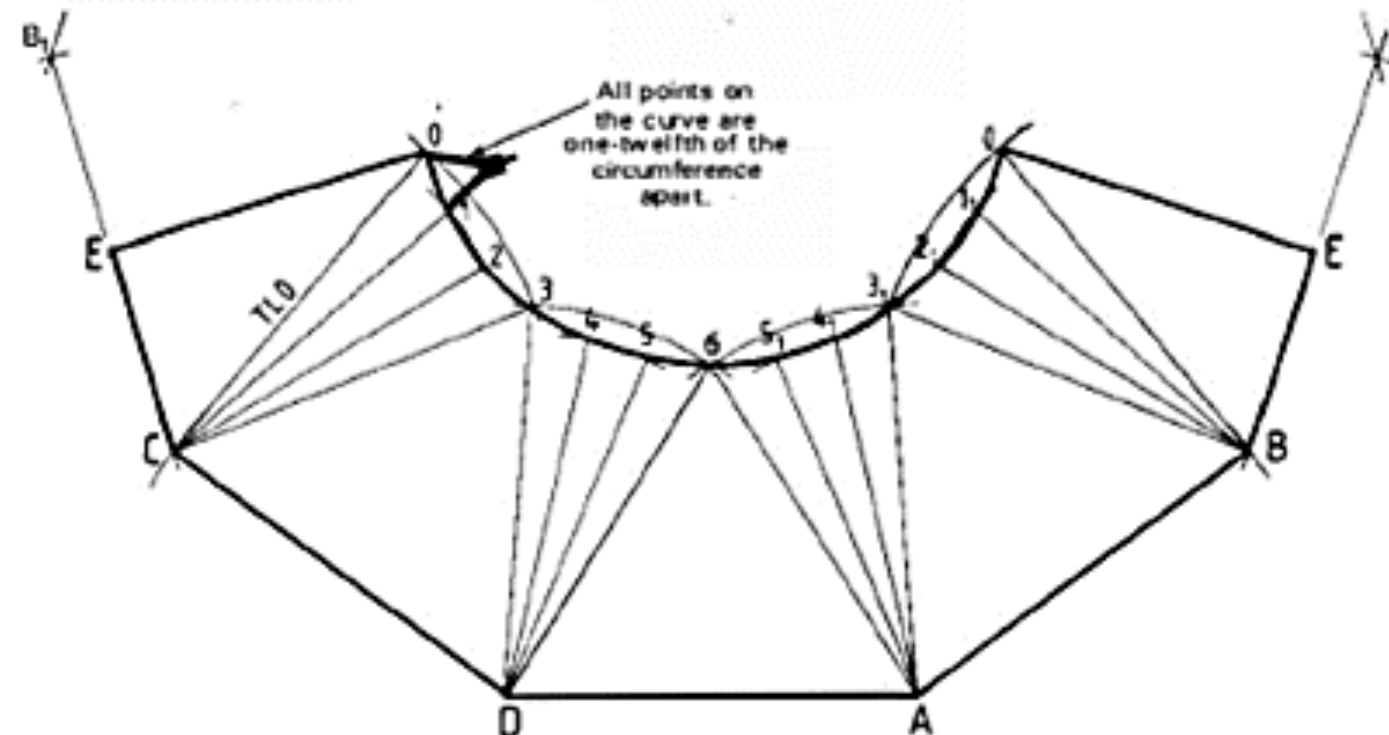
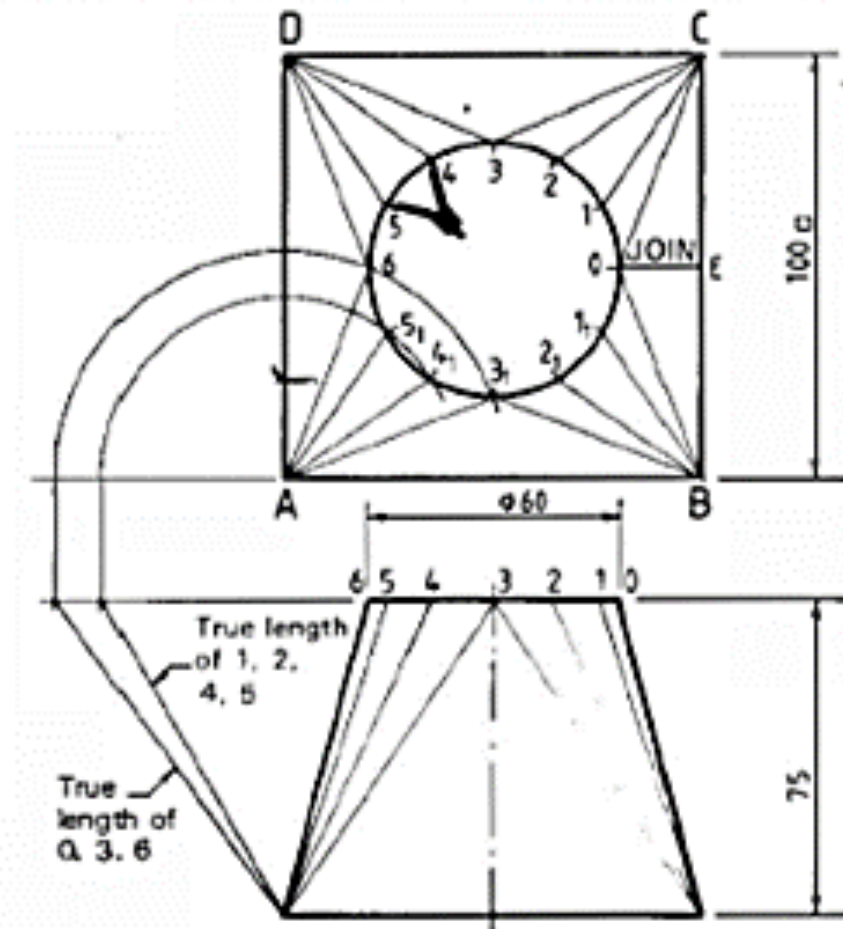
METHOD

Draw the elevation and plan.
 Divide the circumference of the circle into twelve congruent segments and join back to the corner of the square.
 Determine the true lengths of the crease lines by rotating them about a corner of the square until they are parallel to the VP. The elevation in this position will show true length.

DEVELOPMENT

Draw in the base line B1C.
 Determine point 0 by drawing arcs from B1 and C with radius equal to TL 0.
 Draw EO at right angles to B1C.
 With C as centre, draw arcs, radii TL 0, 3 and TL 1, 2.
 With dividers set to one-twelfth of the circumference, mark off 7, 2 and 3 on the appropriate arcs.

To determine point D
 Draw an arc, radius TL 3, to intersect an arc drawn from point C, radius 50 mm.
 Repeat these steps until the complete development is drawn.

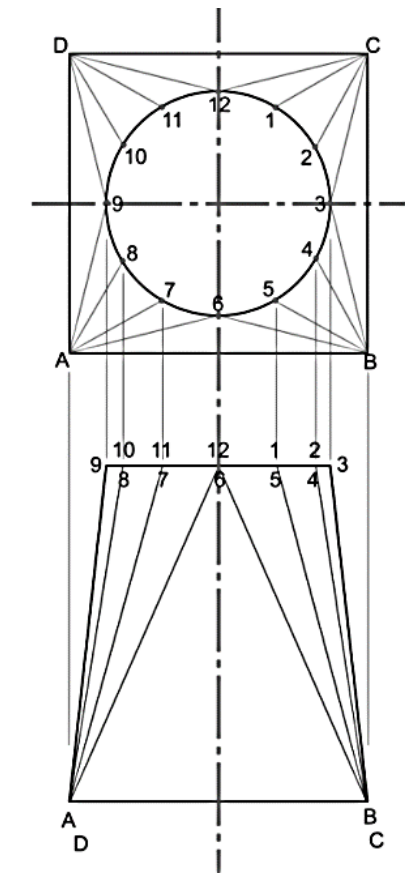
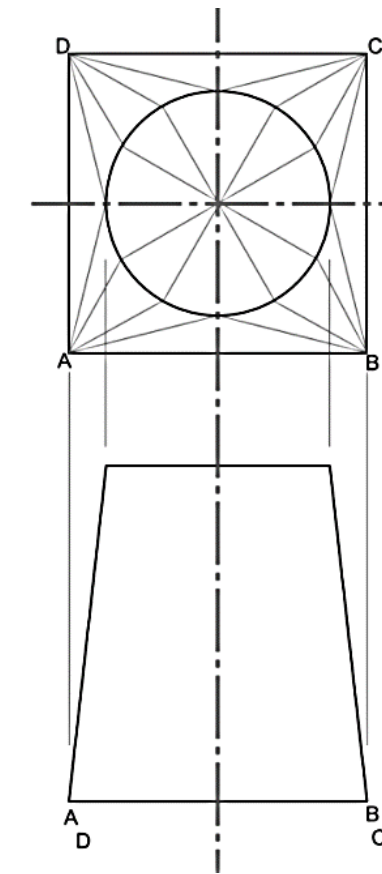
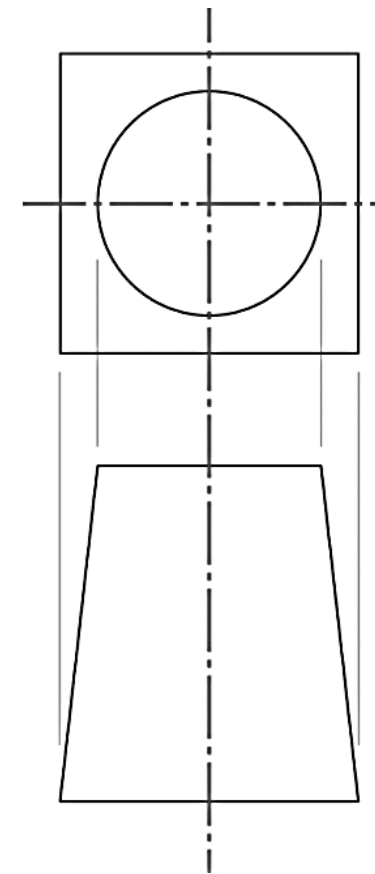
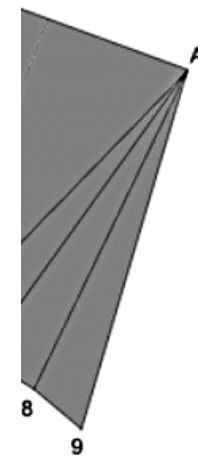
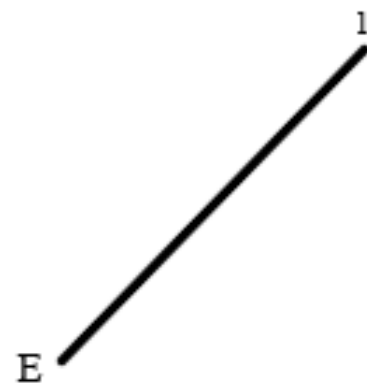
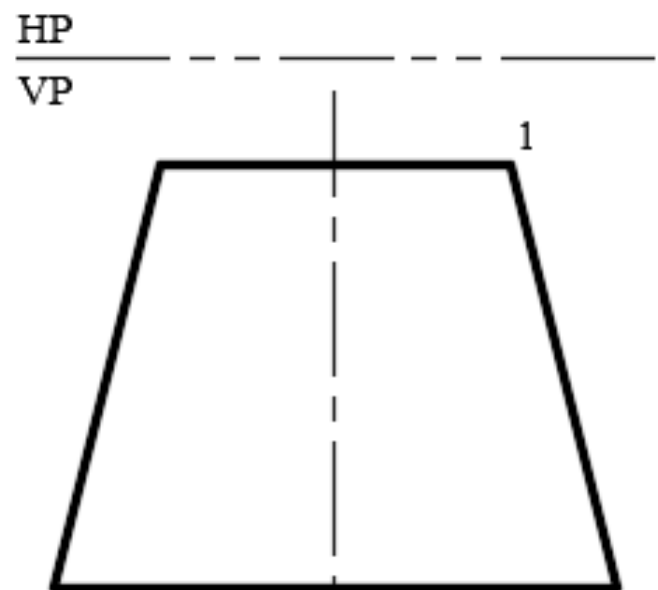
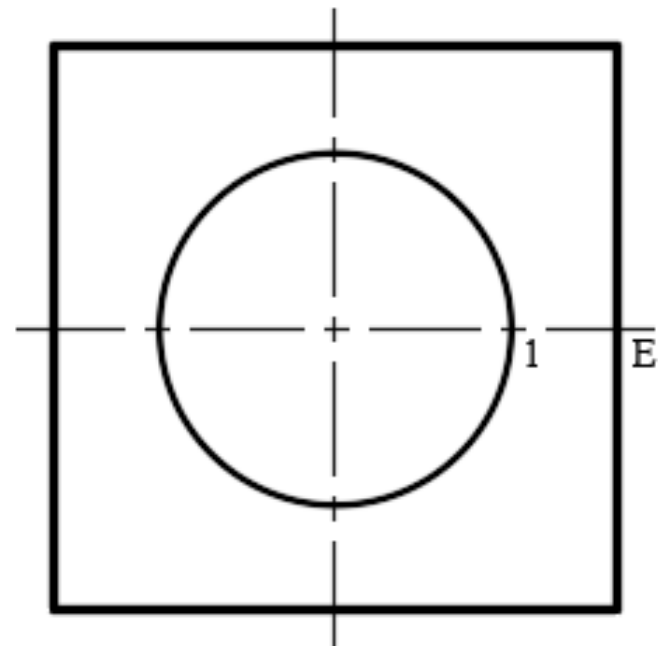


WORKED EXAMPLE

Construction for a Square to Round Transition Piece

Consider the example of a **Square to Round Transition Piece** with both **Axes** directly in line with each other.

- Draw **Plan** and **Elevation** of the required **Transition Piece**,
- Divide the circle into, say, 12 equal points (*Note : in this case, the distances in **Plan View** around the circle between these points; and the lengths of the sides of the square are all **True Views** because neither the circle nor the square are tilted in any way - i.e they both lie in the horizontal plane)*



QUESTION 1

Given: An incomplete views of the round to square transition piece