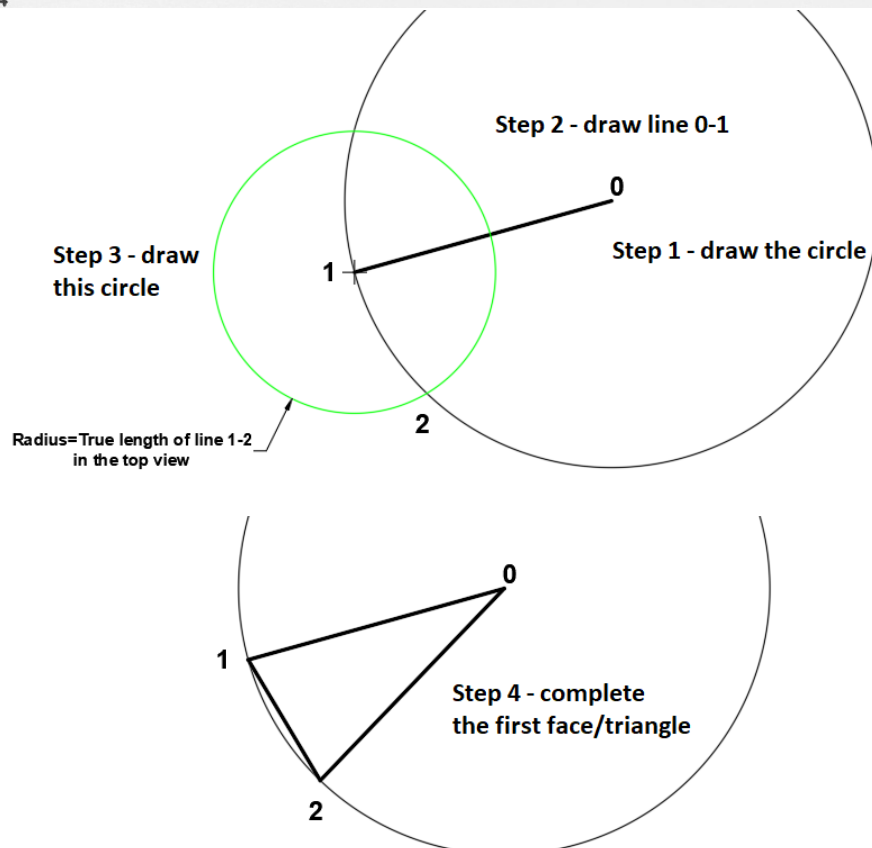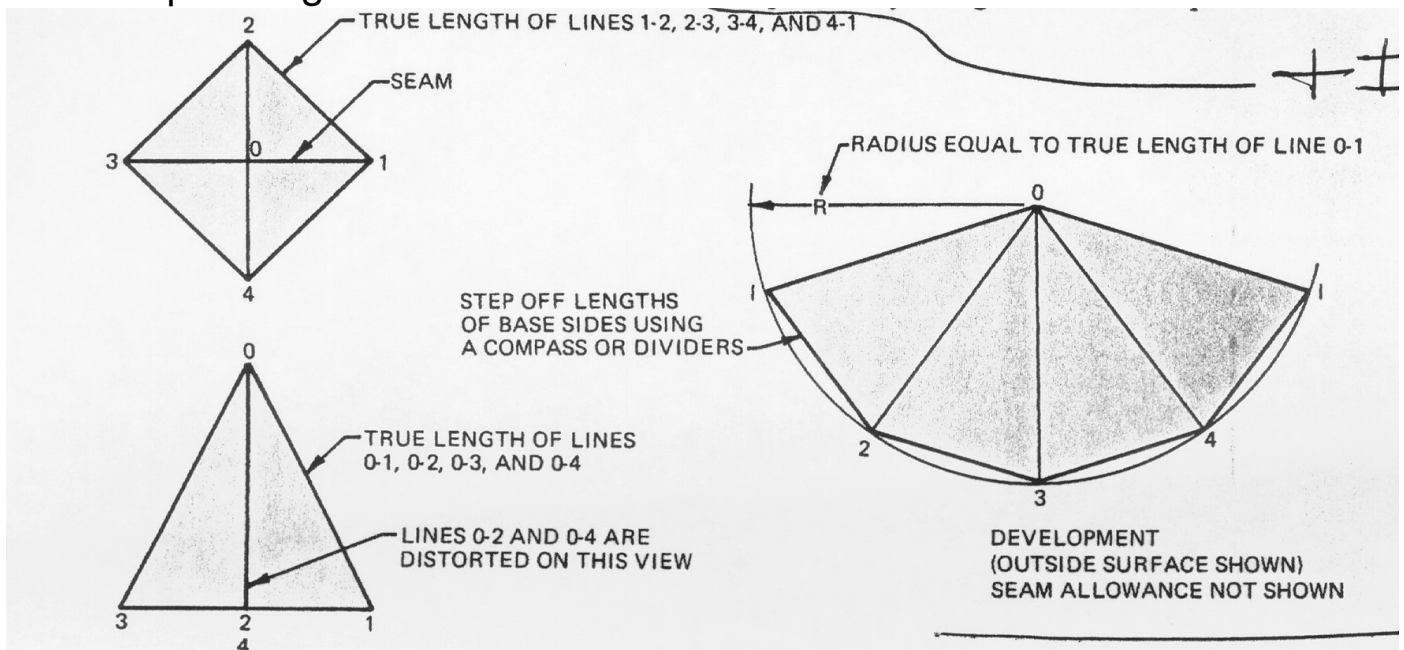# Development of a Pyramid

Right pyramid with true length of edge lines shown

A right pyramid is a pyramid having all the lateral edges of equal length.

TRUE LENGTH OF LINES 1-2, 2-3, 3-4, AND 4-1

SEAM

RADIUS EQUAL TO TRUE LENGTH OF LINE 0-1

STEP OFF LENGTHS
OF BASE SIDES USING
A COMPASS OR DIVIDERS

TRUE LENGTH OF LINES
0-1, 0-2, 0-3, AND 0-4

LINES 0-2 AND 0-4 ARE
DISTORTED ON THIS VIEW

DEVELOPMENT
(OUTSIDE SURFACE SHOWN)
SEAM ALLOWANCE NOT SHOWN

Step 2 - draw line 0-1

Step 3 - draw
this circle

Step 1 - draw the circle

Radius=True length of line 1-2
in the top view

Step 4 - complete
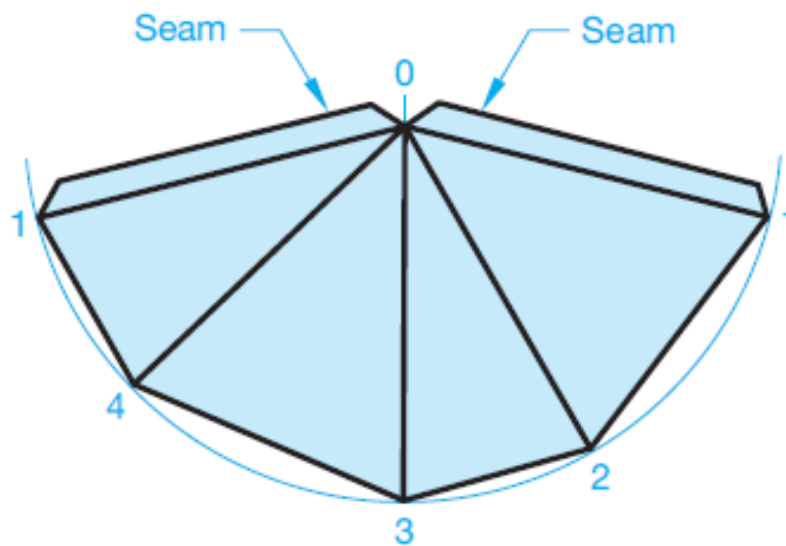the first face/triangle

With true length of edge lines shown:

- With 0 as center and with a radius equal to the true length of the lateral edges, draw an arc.
- Drop a vertical line from 0 to intersect the arc at point 3.
- With a radius equal to the length of the edges of the base, start at point 3 and step off the distances 3-2, 2-1, 3-4, and
    1 on the large arc.
- Join these points with straight lines.
- Connect these points to point 0 by straight lines to complete the development.

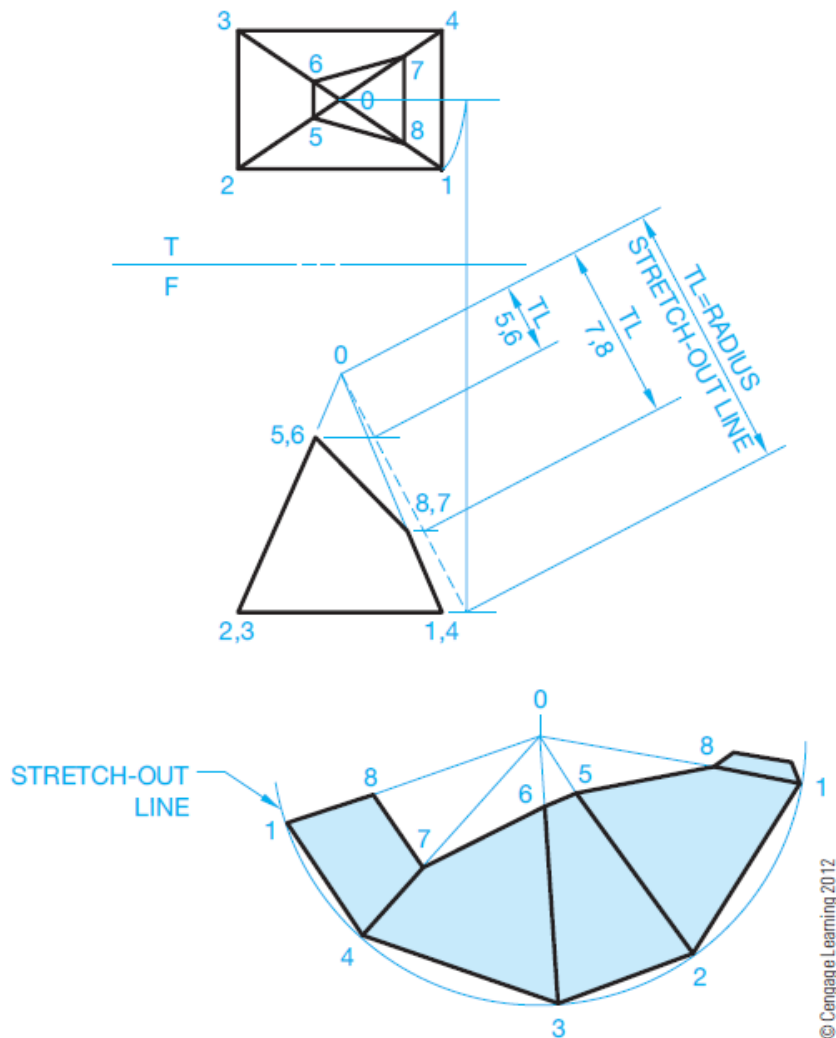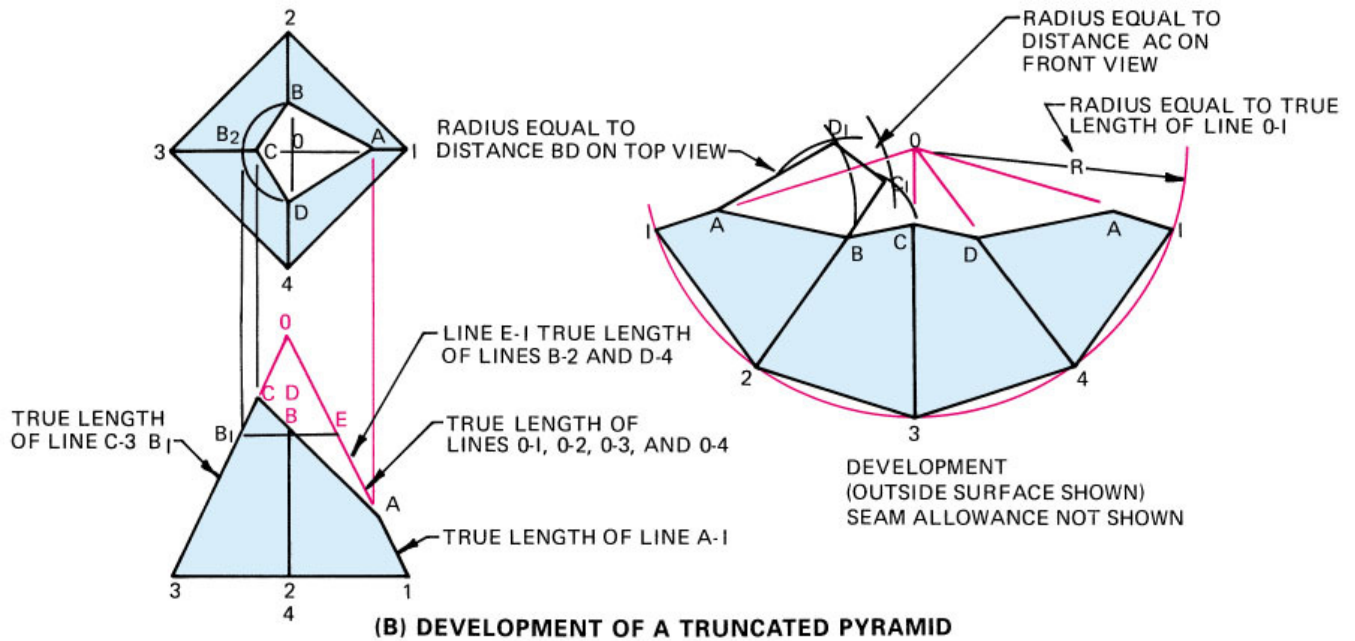# Pyramid with true length of edge lines not shown
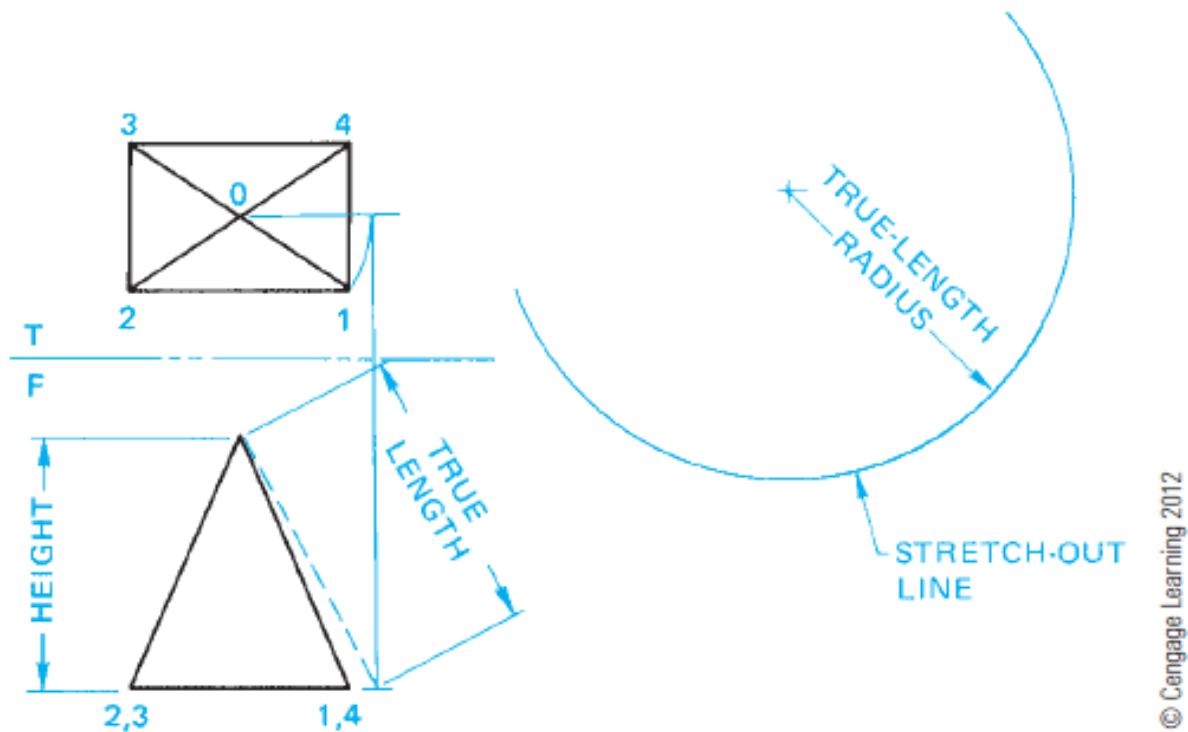
FIGURE 23.61 Step 1: Right pyramid development. A right pyramid has the vertex (0) centered over the base.

FIGURE 23.62 Step 2: Pyramid development.

Truncated Pyramid Development

RADIUS EQUAL TO
DISTANCE AC ON
FRONT VIEW

RADIUS EQUAL TO TRUE
LENGTH OF LINE 0-1

RADIUS EQUAL TO
DISTANCE BD ON TOP VIEW

LINE E-1 TRUE LENGTH
OF LINES B-2 AND D-4

TRUE LENGTH
OF LINE C-3

TRUE LENGTH OF
LINES 0-1, 0-2, 0-3, AND 0-4

DEVELOPMENT
(OUTSIDE SURFACE SHOWN)
SEAM ALLOWANCE NOT SHOWN

TRUE LENGTH OF LINE A-1

(B) DEVELOPMENT OF A TRUNCATED PYRAMID

TL = RADIUS

STRETCH-OUT LINE

TL 5,6

TL 7,8

TL

STRETCH-OUT
LINE

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FIGURE 23.63 Truncated pyramid development.

Oblique Pyramid Development

The surface development can't start with a circle anymore.
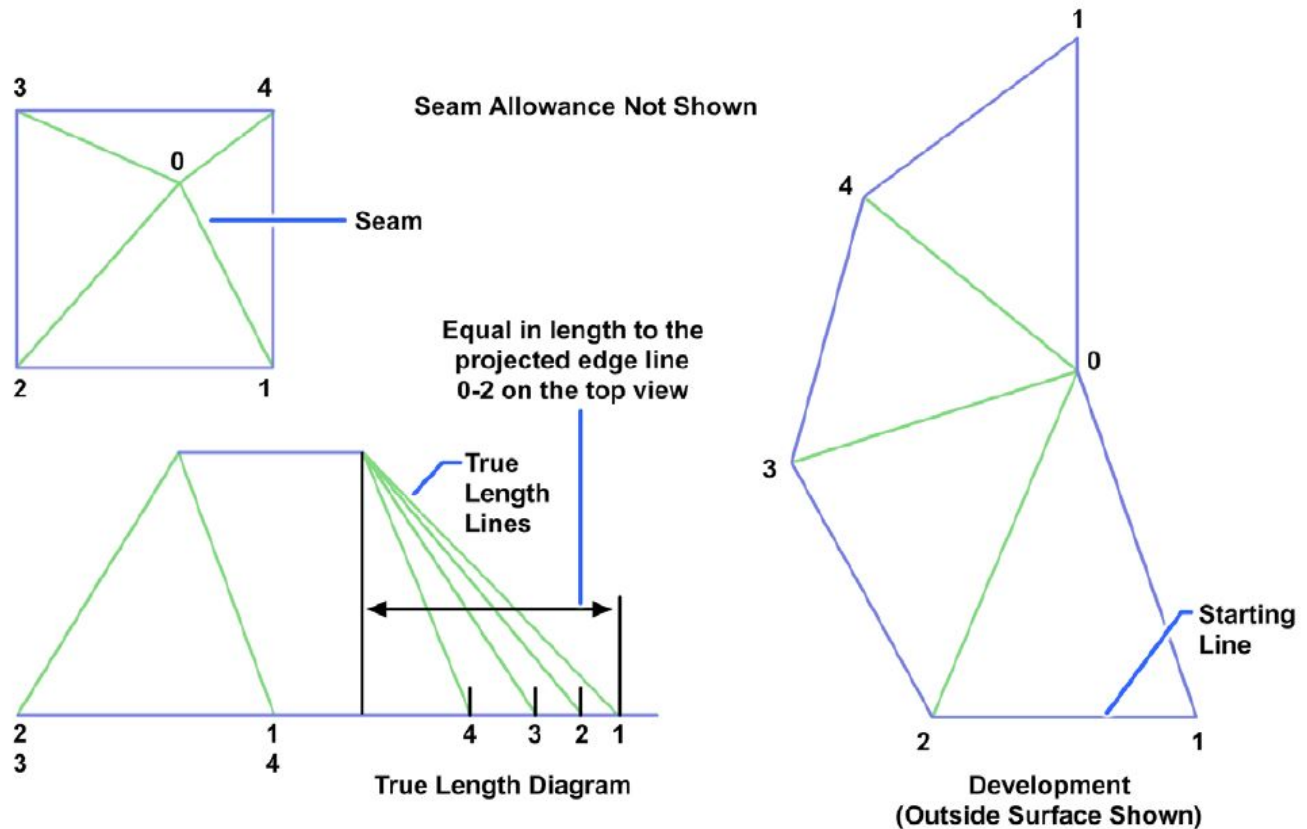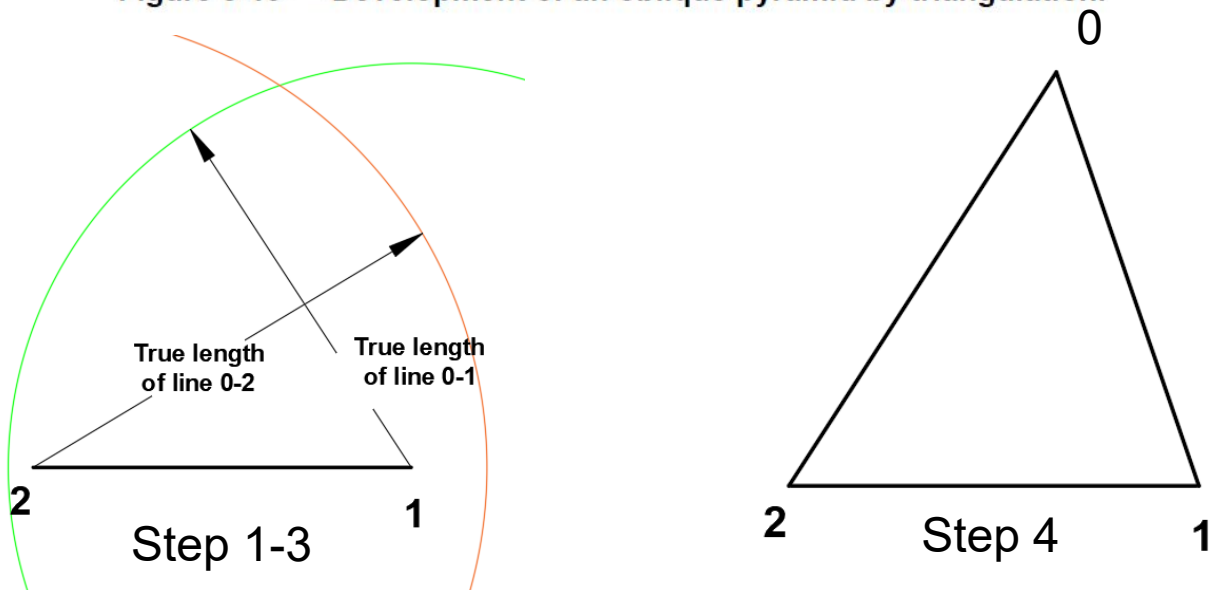We have to build one triangle at a time.

Seam Allowance Not Shown

Seam

Equal in length to the projected edge line 0-2 on the top view

True Length Lines

True Length Diagram

Starting Line

Development
(Outside Surface Shown)

Figure 8-19 — Development of an oblique pyramid by triangulation.

True length of line 0-2

True length of line 0-1

Step 1-3

Step 4

Step 5 - at 2 draw a circle with the radius = true length of 2-3
Step 6 - at 0 draw a circle with the radius = true length of 0-3

Development of an Oblique Cone

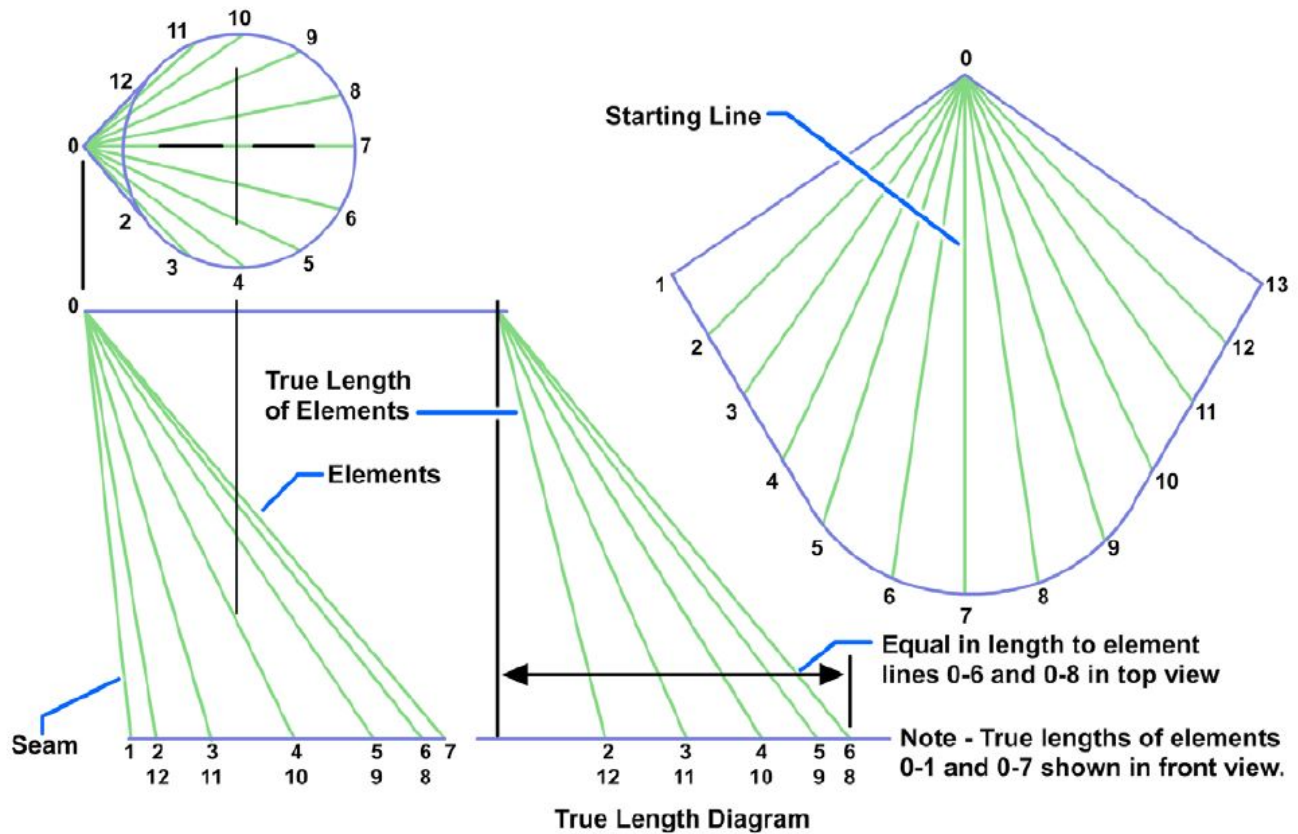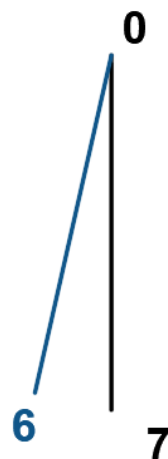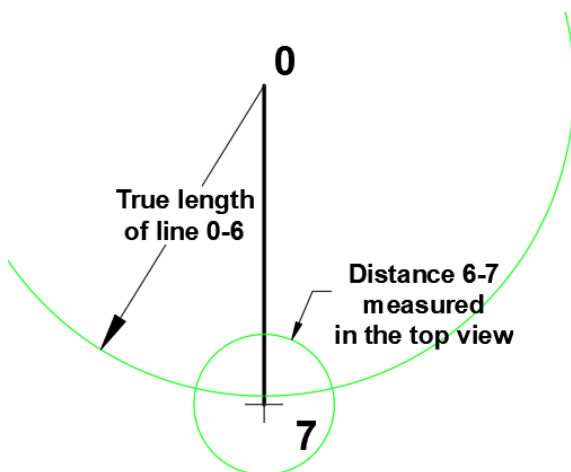The oblique cone has the vertex offset from the center of the base.

Figure 8-22 — Development of an oblique cone.

FIGURE 23.60 Offset cone development.

Development of Transition Pieces by Triangulation

Triangulation developments divide surfaces into a series of triangles.

To create developments by triangulation, you must find the **true length of each side of the triangle** and draw the triangles next to each other on a flat surface.

They are used for oblique cones and for transition pieces made up of curved and plain surfaces and different polygons.
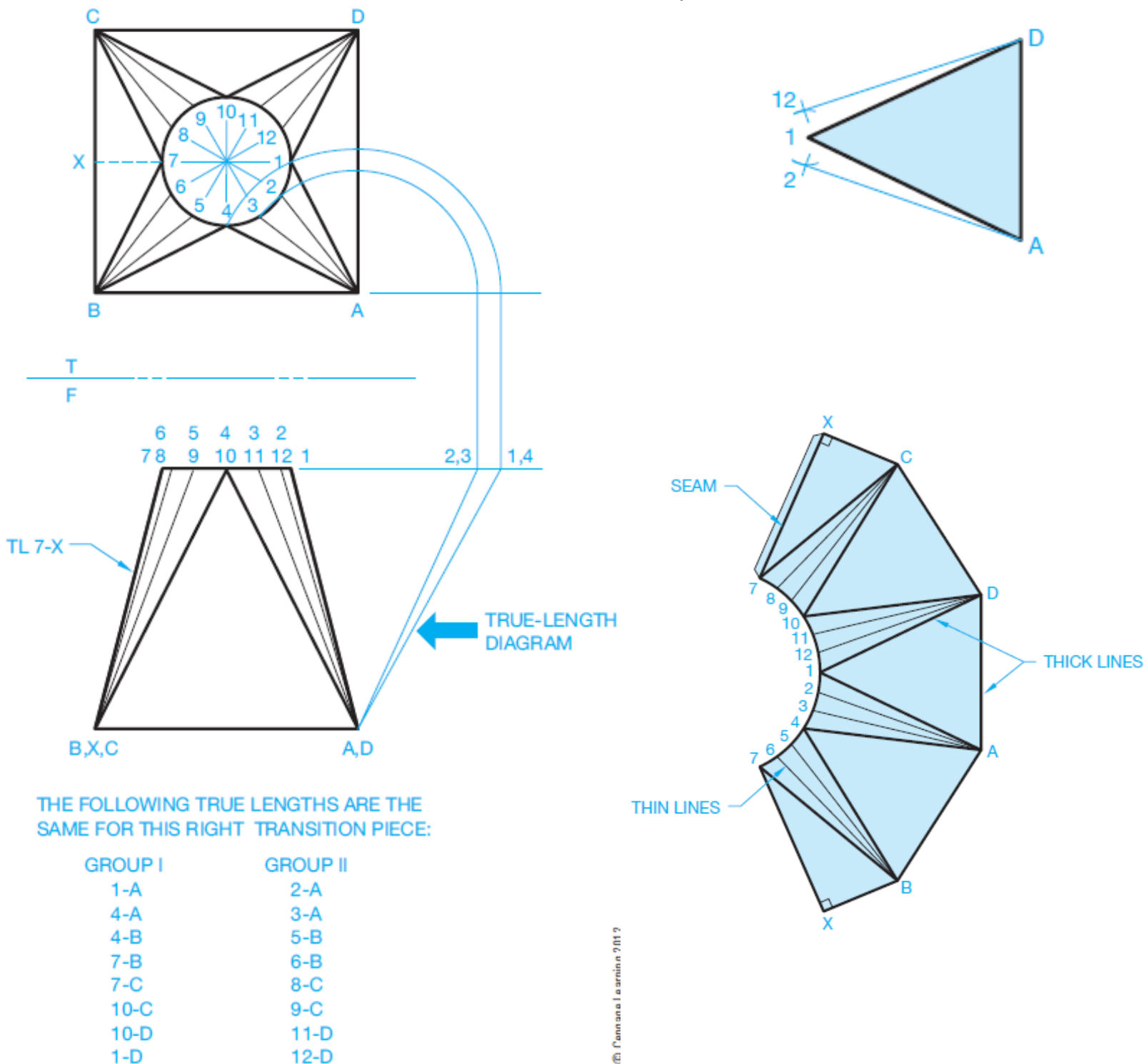
Such as:

- Square to round
- Rectangular to round
- Curve to curve

Development of a Transition Piece

- **Square to Round** (Start with the opposite triangle than the Seam)

C   D

9 10 11
8   12
X   7   1
6   2
5   4   3
B   A

T
F

6 5 4 3 2
7 8   9 10 11 12 1   2,3   1,4

TL 7-X

B,X,C   A,D

TRUE-LENGTH
DIAGRAM

12
1
2

D

A

SEAM

7 8
9
10
11
12
1
2
3
4
5
6
7

THICK LINES

THIN LINES

X

C

D

A

B

X

THE FOLLOWING TRUE LENGTHS ARE THE
SAME FOR THIS RIGHT TRANSITION PIECE:

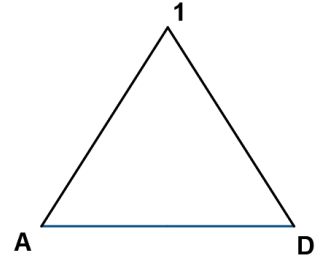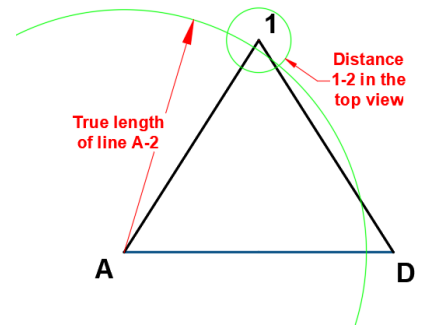| GROUP I	GROUP II
1-A	2-A
4-A	3-A
4-B	5-B
7-B	6-B
7-C	8-C
10-C	9-C
10-D	11-D
1-D	12-D

Step 1 - draw line AD

Step 2 - draw line 1-A,D

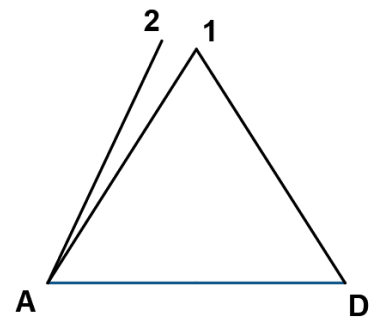(you can measure it in the front view)
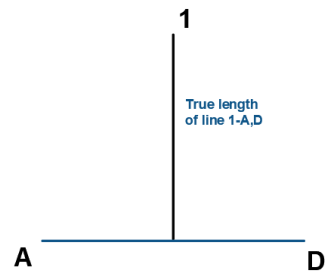
Step 3 - complete the triangle

Step 4-5 - draw the two circles

Step 6 - draw line A-2

Repeat steps 4-6 to get A-3 and A-4

AB4 is an isoscel triangle !
(A-4 same as B-4)
- draw two circles: one at A and one at 4