ENGINEERING GRAPHICS

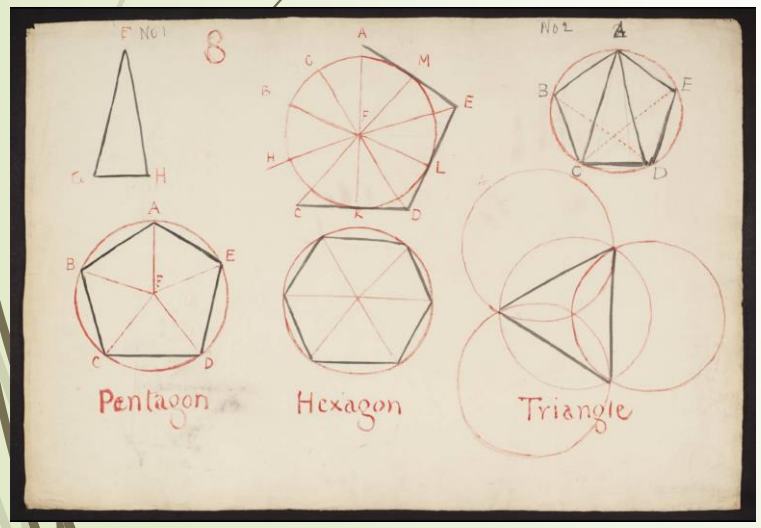
Module 1 Lecture 1

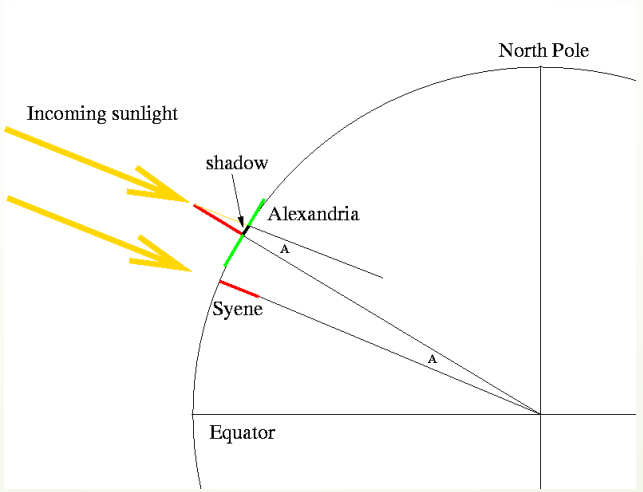
Topics covered in today's class

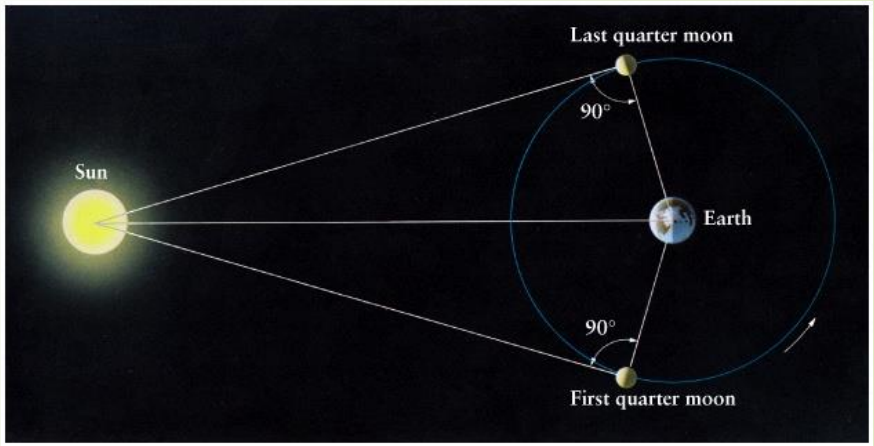
- Basics of Drawing
- Conic sections
- Basic polygons
- Basic solids

(1) Bisecting a line
(2) To draw perpendiculars
(3) To draw parallel lines
(4) To divide a line
(5) To bisect an angle
(6) To find the centre of an arc
(7) To draw tangents

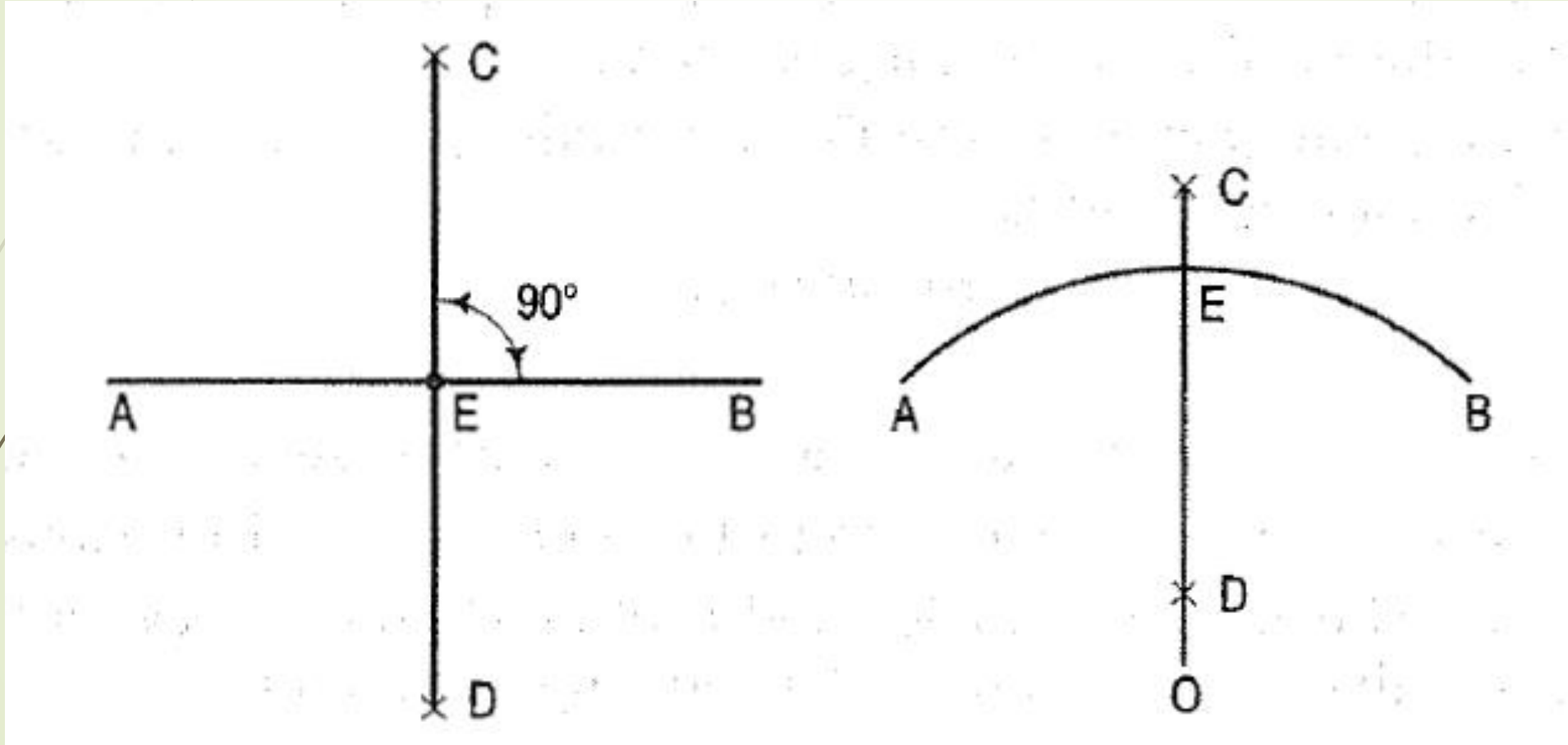
Why This?


Pentagon
Hexagon
Triangle

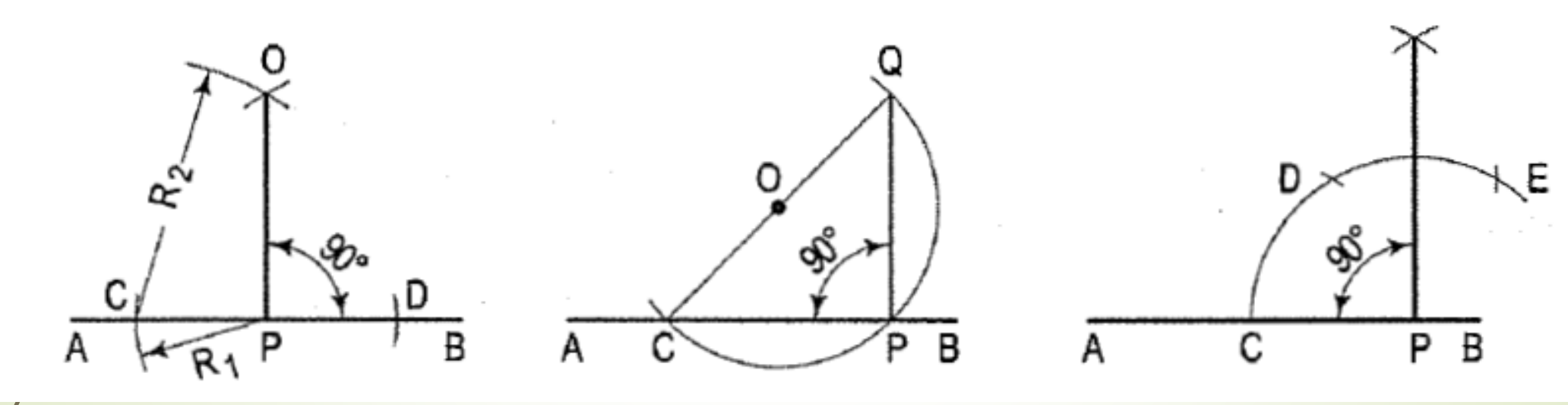

North Pole
Incoming sunlight
shadow
Alexandria
Syene
Equator


Last quarter moon
90°
Sun
Earth
90°
First quarter moon

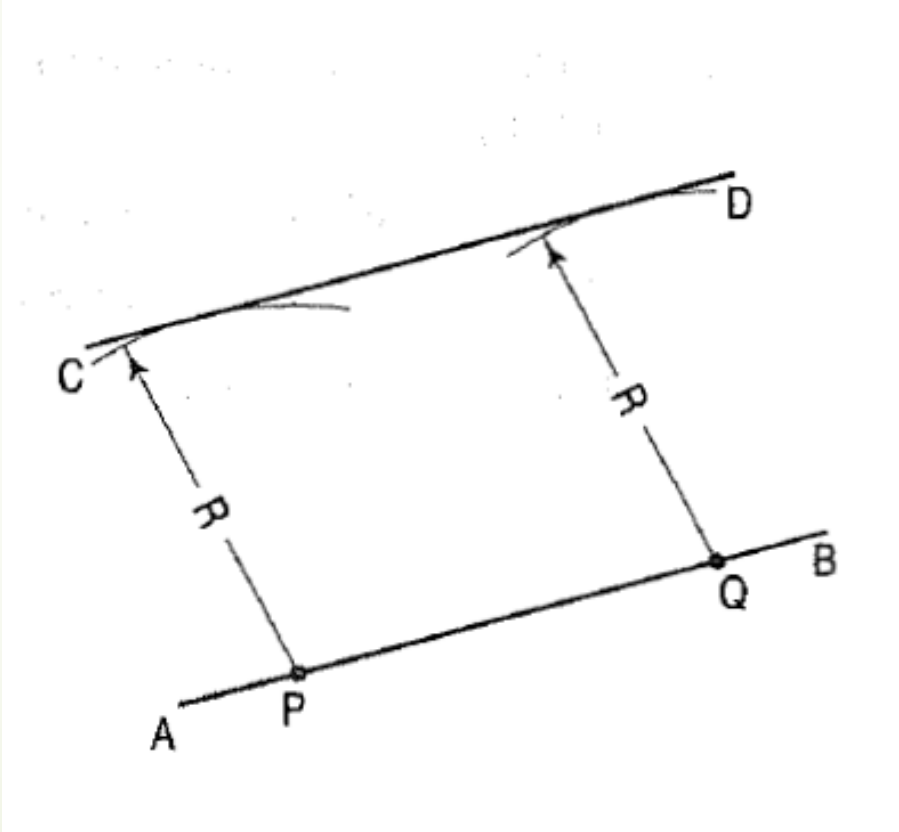
Bisecting a line



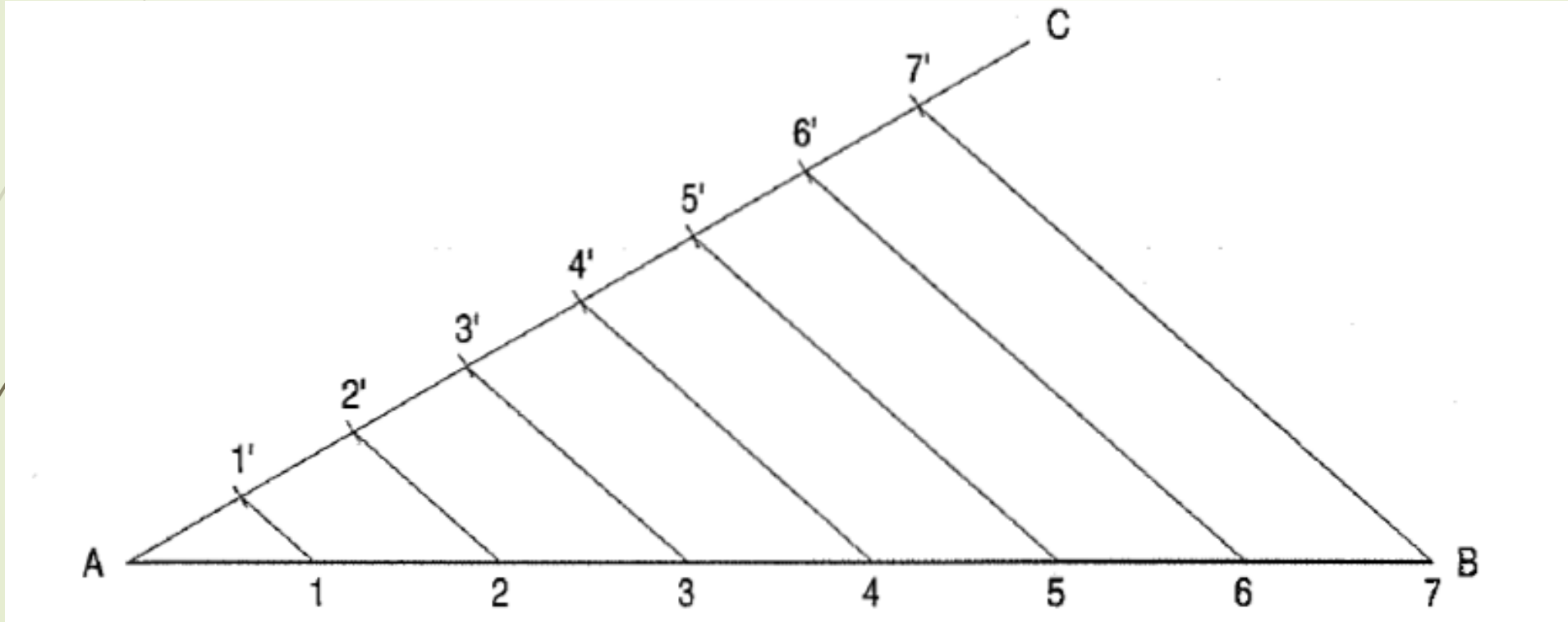
Drawing Perpendiculars



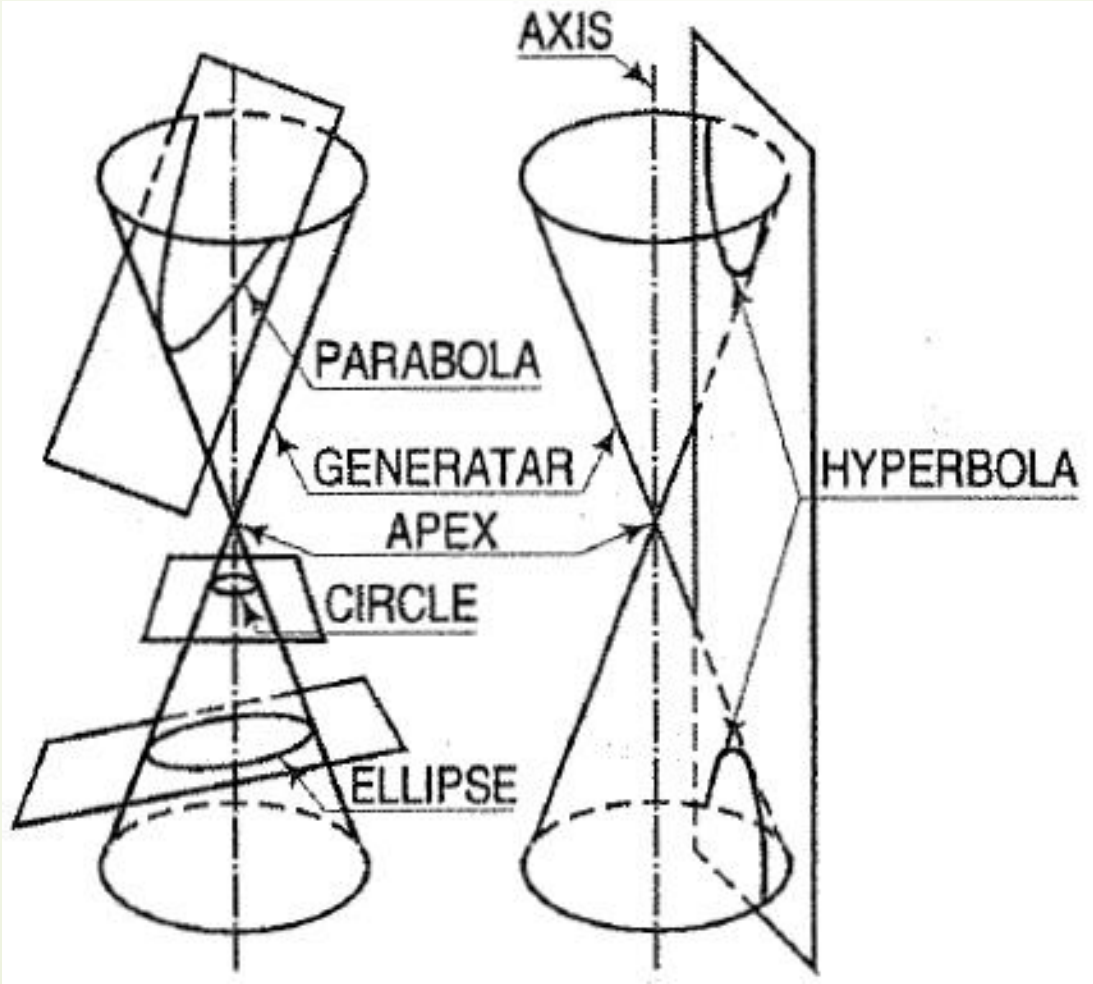
Drawing Parallels

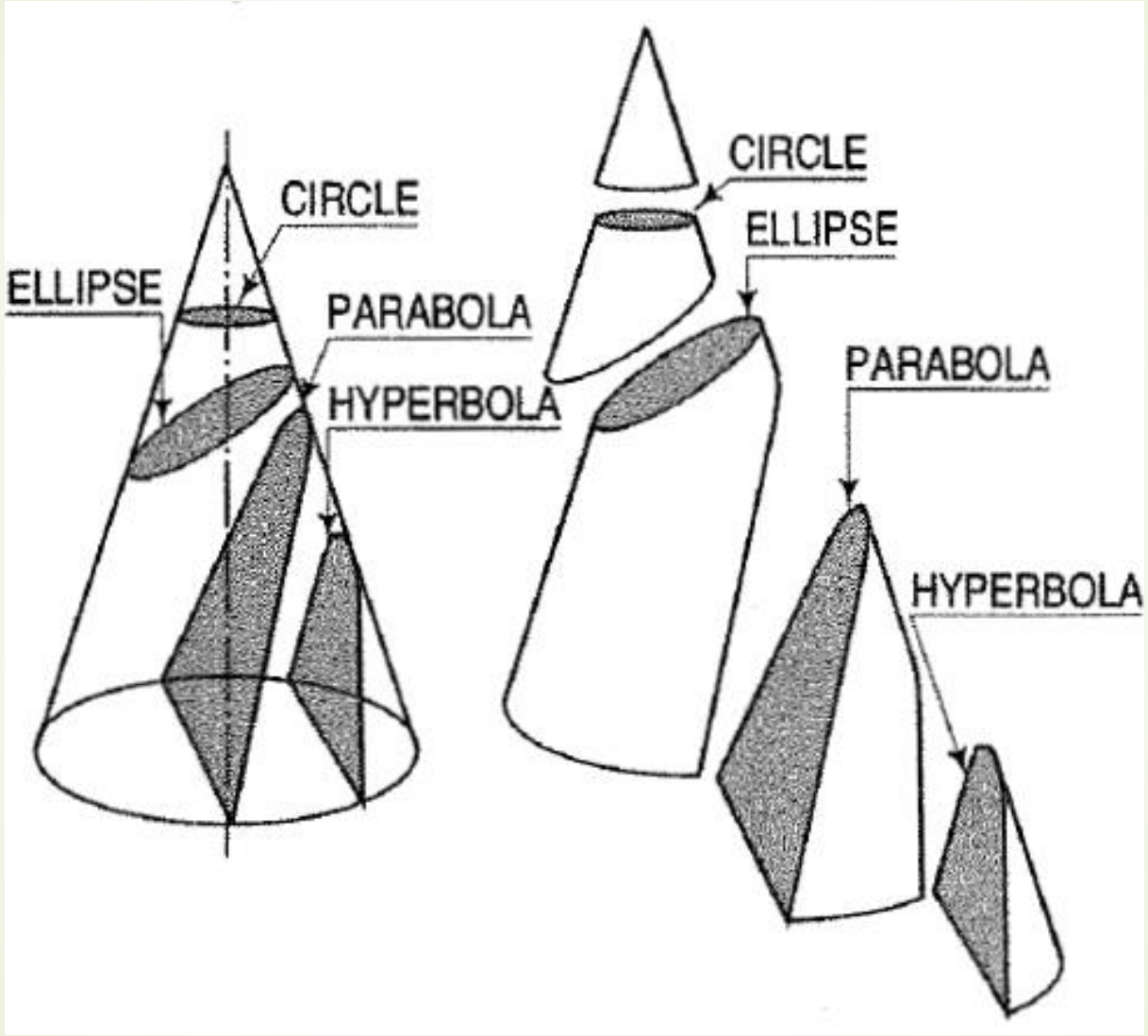


Dividing a line



Conic sections




CIRCLE
ELLIPSE
PARABOLA
HYPERBOLA
CIRCLE
ELLIPSE
PARABOLA
HYPERBOLA

Polygons

A polygon is a plane figure bounded by three or more than three straight sides.

A *Triangle* is a plane figure bounded by Three sides.

A *Quadrilateral* is a plane figure bounded by four sides.

A *pentagon* is a plane figure bounded by five sides.

A *hexagon* is a plane figure bounded by six sides.

A *heptagon* is a plane figure bounded by seven sides.

An *octagon* is a plane figure bounded by eight sides.

A *nonagon* is a plane figure bounded by nine sides.

A *decagon* is a plane figure bounded by ten sides.

Polygon	Internal angle in degrees	External angle in degrees
Triangle	60	120
Square	90	90
Pentagon	108	72
Hexagon	120	60

The Triangle

Definitions

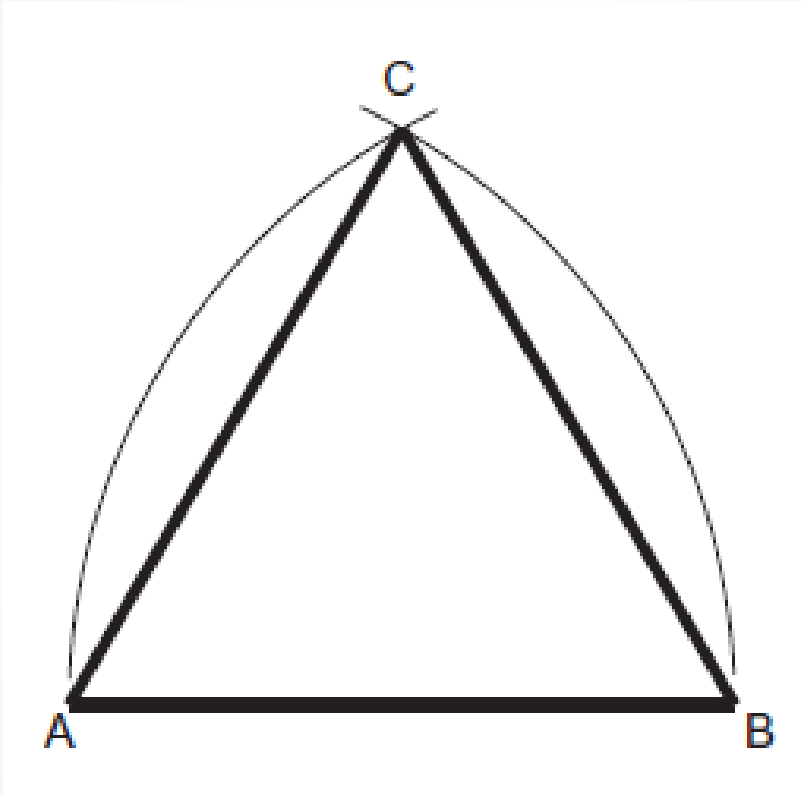
The triangle is a plane figure bounded by three straight sides.

A *scalene* triangle is a triangle with three unequal sides and three unequal angles.

An *isosceles* triangle is a triangle with two sides, and hence two angles, equal.

An *equilateral* triangle is a triangle with all the sides, and hence all the angles, equal.

A *right-angled* triangle is a triangle containing one right angle. The side opposite the right angle is called the ‘ hypotenuse’.


C
A
B

The Quadrilateral

Definitions

The quadrilateral is a plane figure bounded by four straight sides.

A *square* is a quadrilateral with all four sides of equal length and one of its angles (and hence the other three) a right angle.

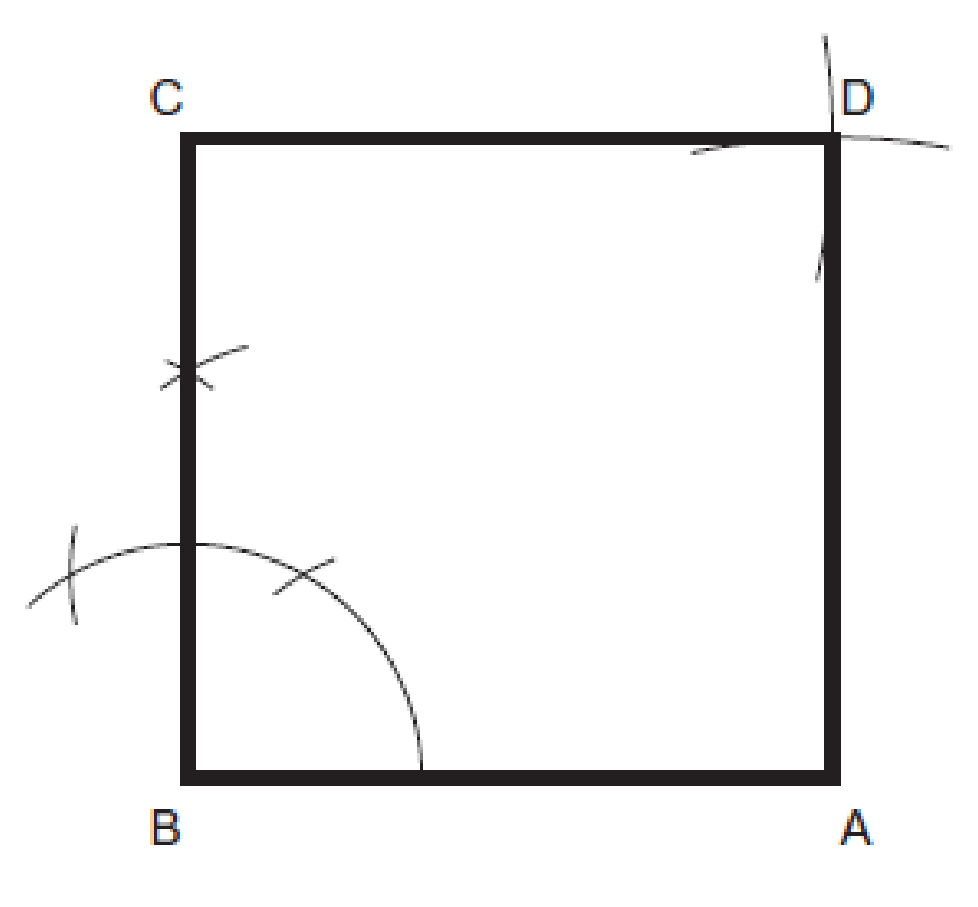
A *rectangle* is a quadrilateral with its opposite sides of equal length and one of its angles (and hence the other three) a right angle.

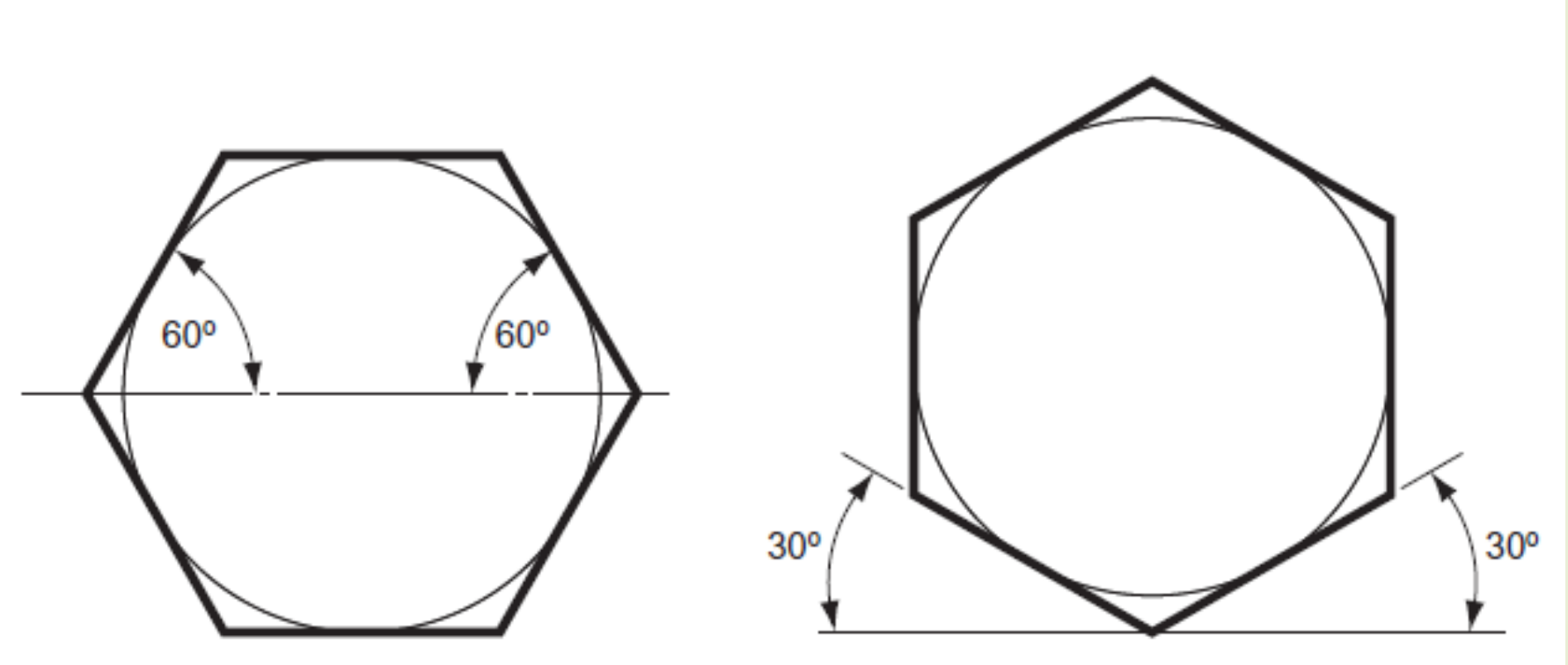
A *parallelogram* is a quadrilateral with opposite sides equal and therefore parallel.

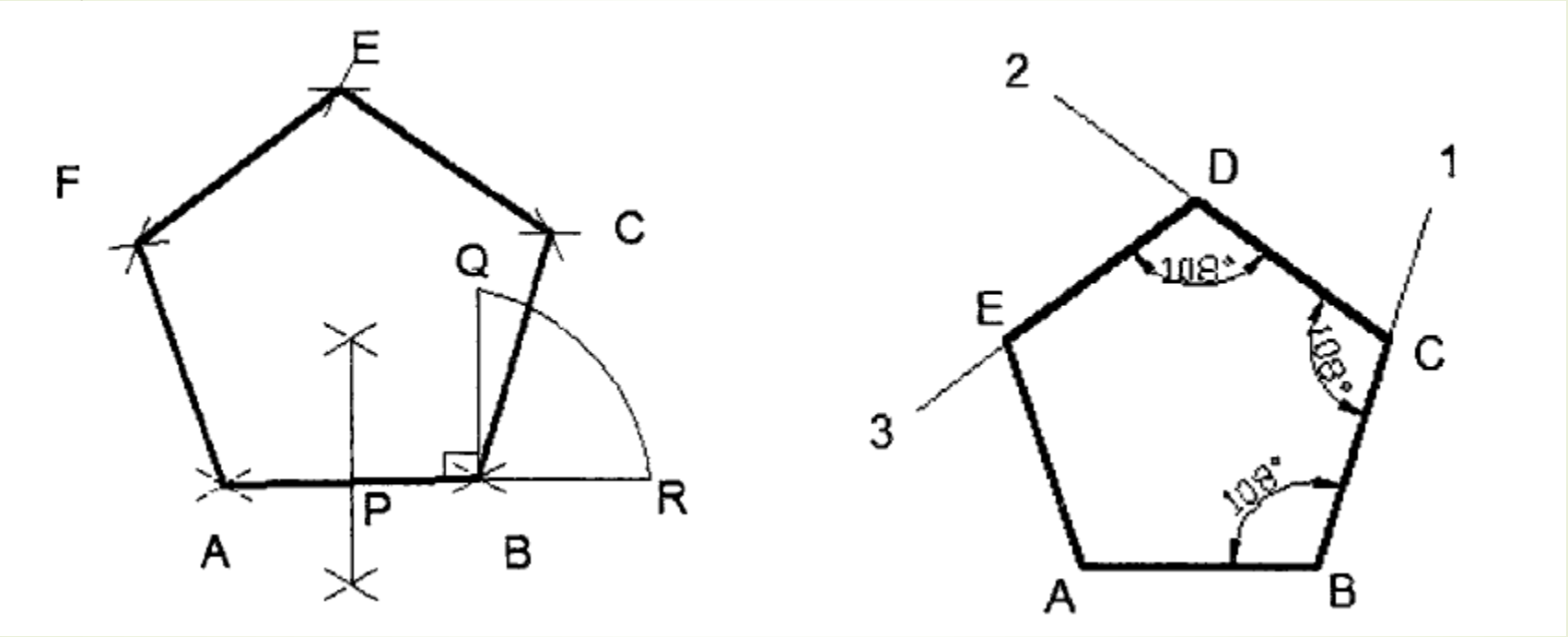
A *rhombus* is a quadrilateral with all four sides equal.

A *trapezium* is a quadrilateral with one pair of opposite sides parallel.

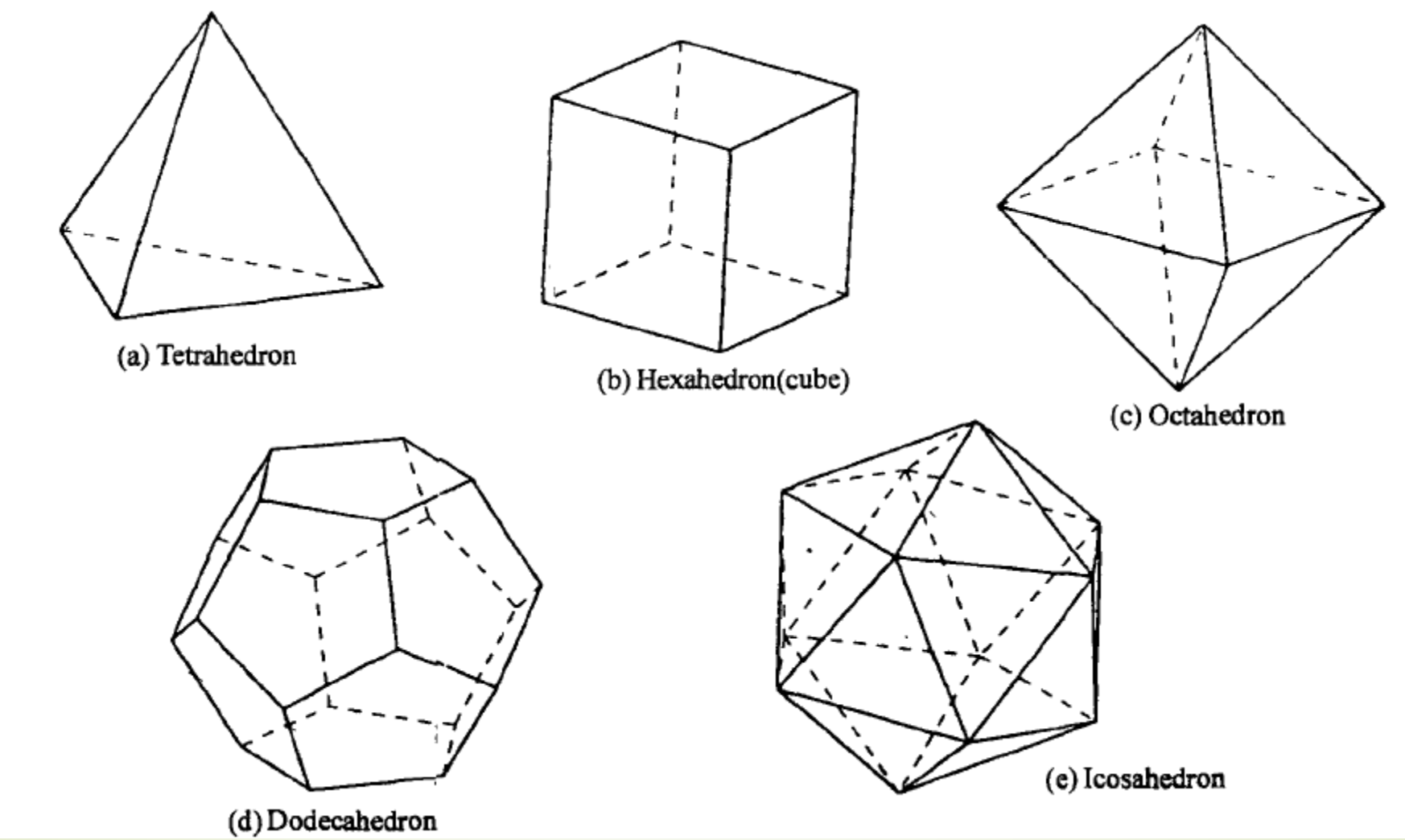
A *trapezoid* is a quadrilateral with all four sides and angles unequal.

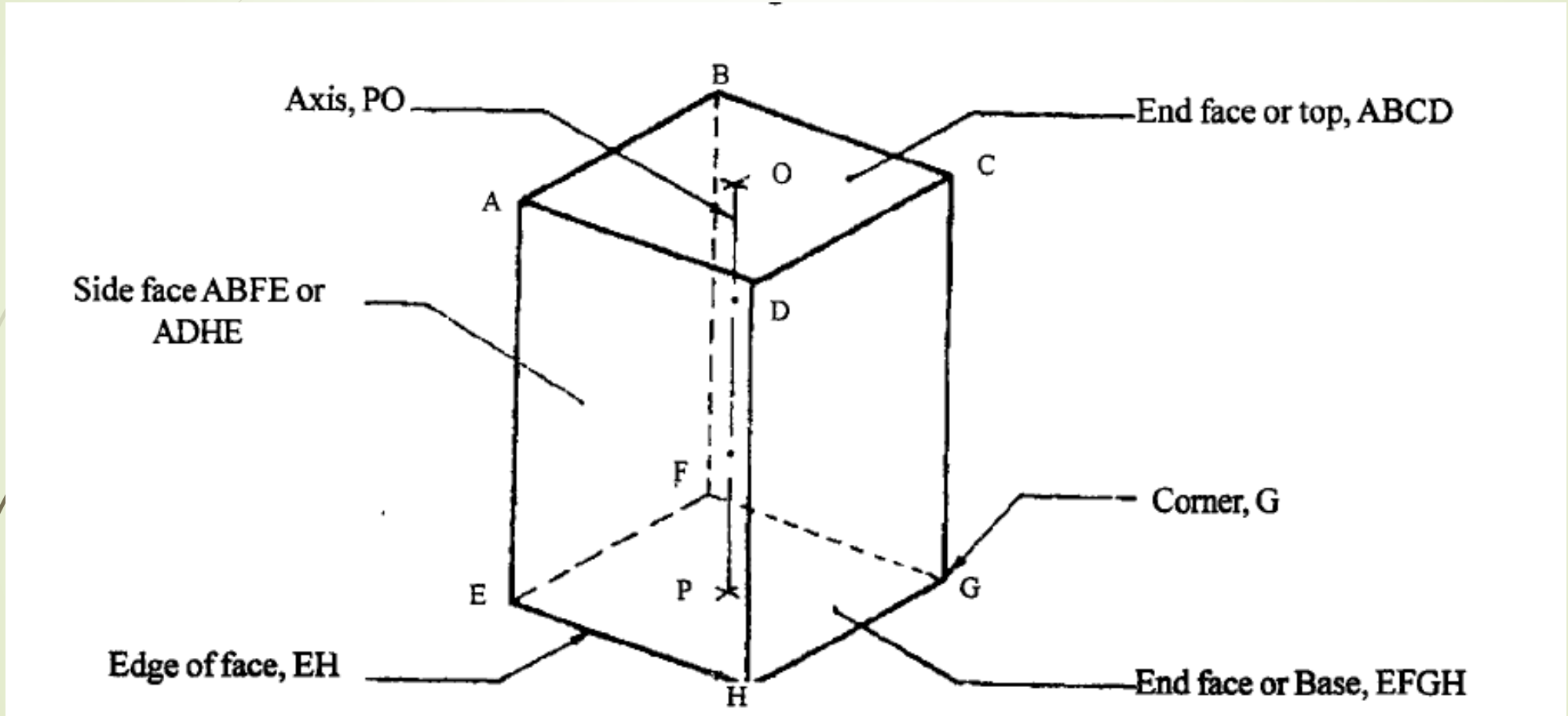

C
D
B
A


60°
60°
30°
30°

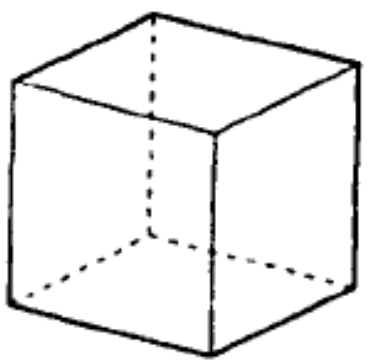

E
F
C
Q
R
P
A
B
2
D
1
108°
E
C
108°
3
108°
A
B

Regular Polyhedron



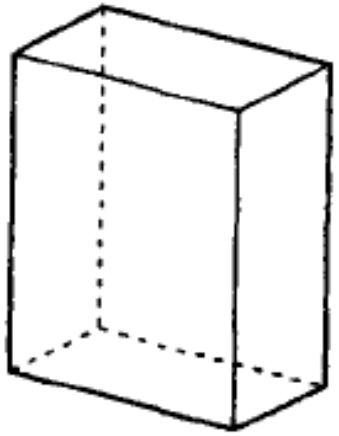

Axis, PO
B
End face or top, ABCD
O
C
A
Side face ABFE or
ADHE
D
F
Corner, G
E
P
G
Edge of face, EH
End face or Base, EFGH
H

Prisms

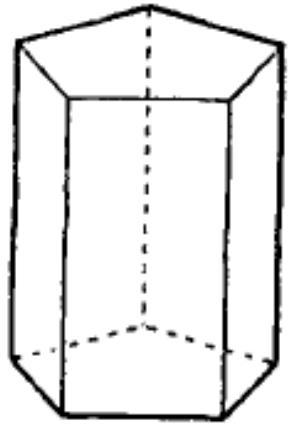


Cube

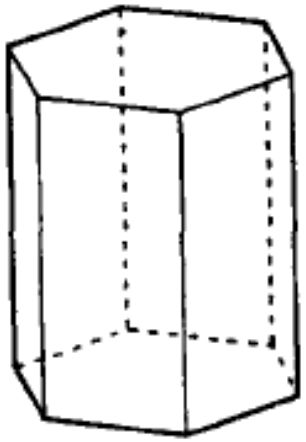
Right prism



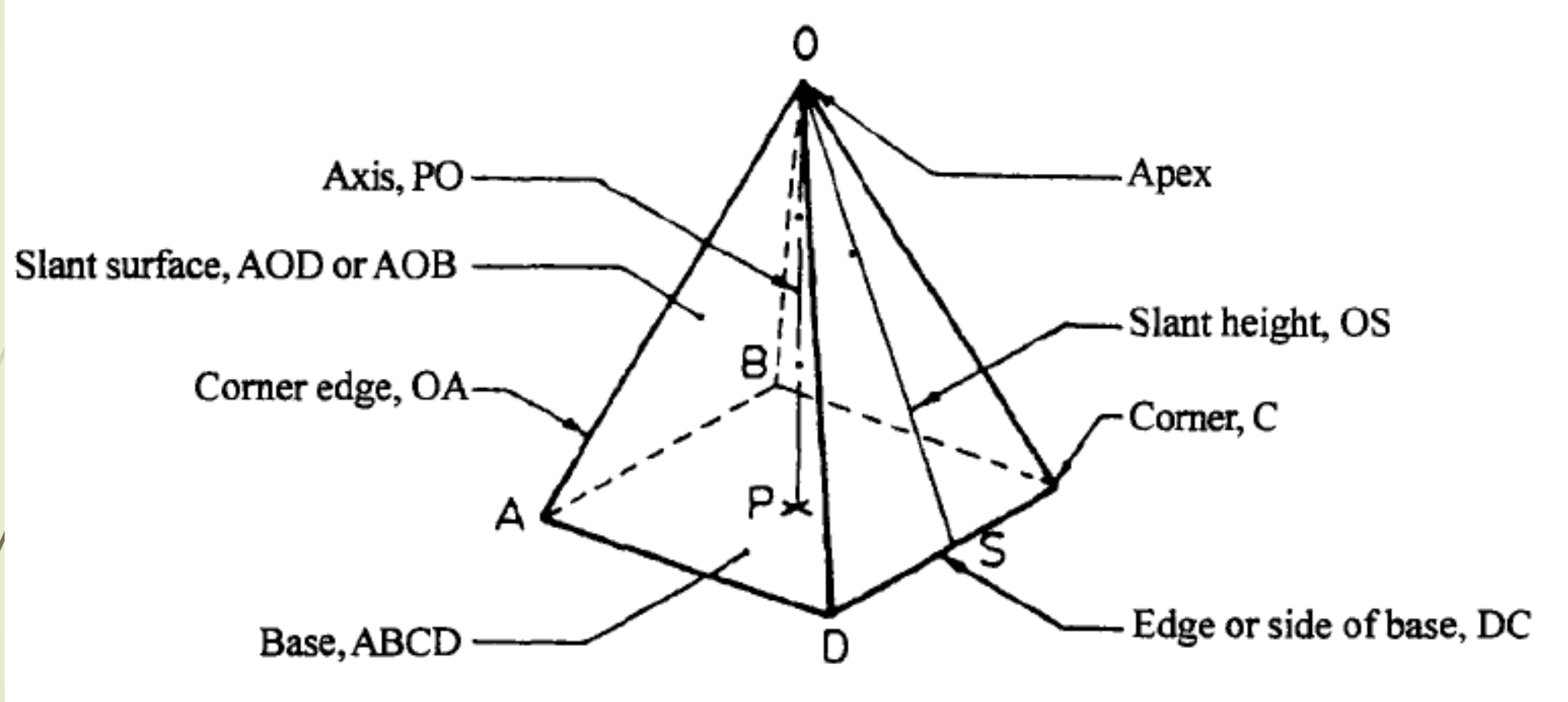
Right rectangulr prism



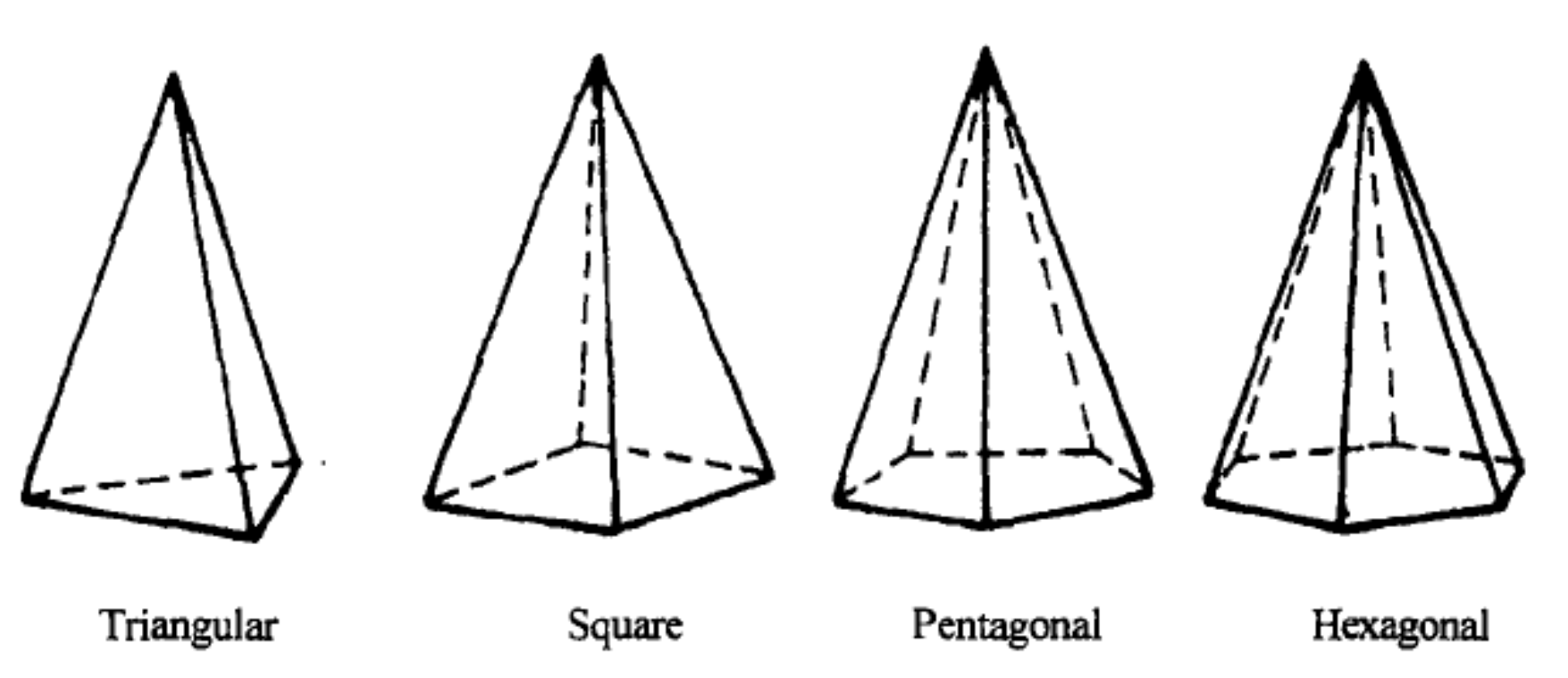
Right pentagonal prism



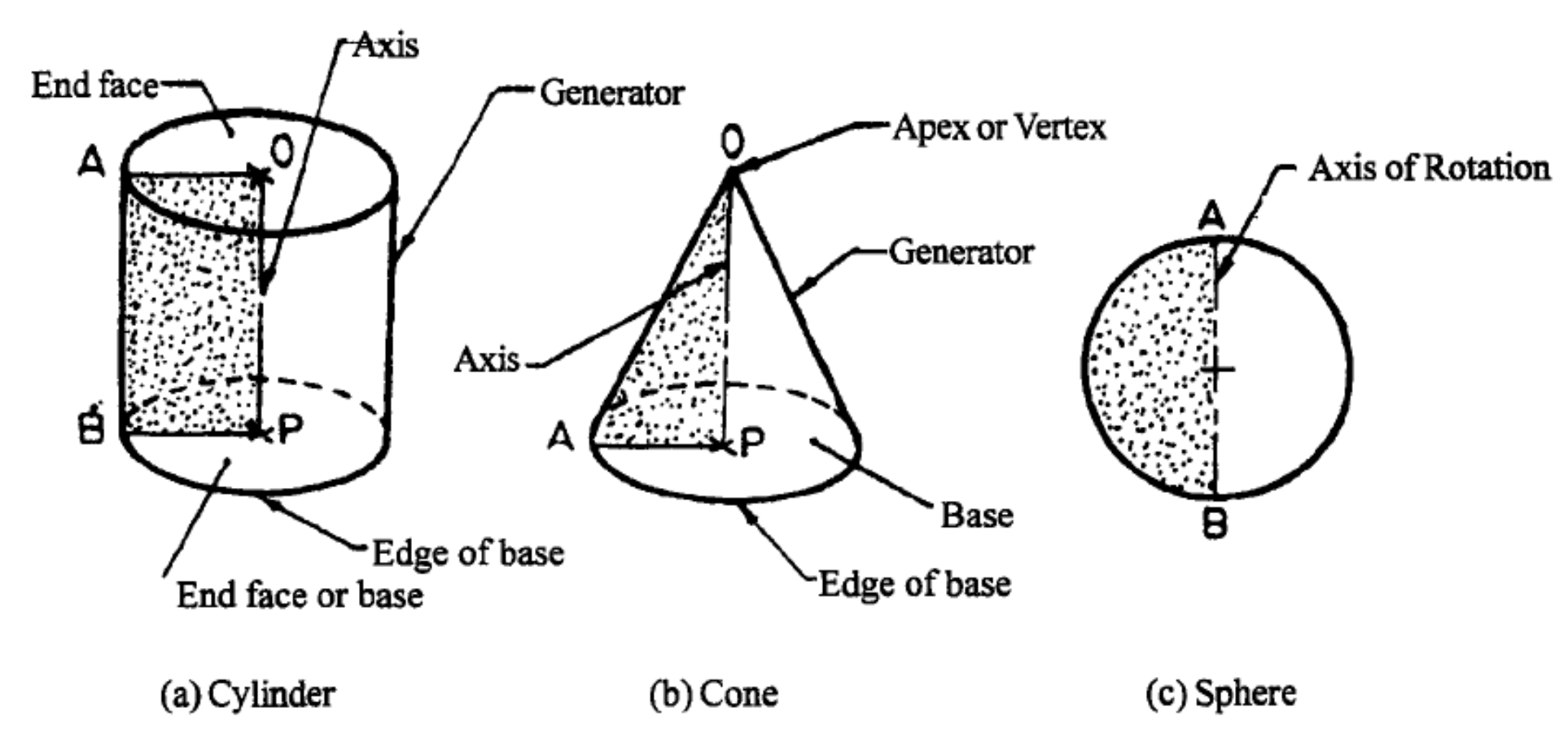
Hexagonal prism


O
Axis, PO
Apex
Slant surface, AOD or AOB
Slant height, OS
B
Corner edge, OA
Corner, C
P
A
S
Base, ABCD
D
Edge or side of base, DC

Pyramids

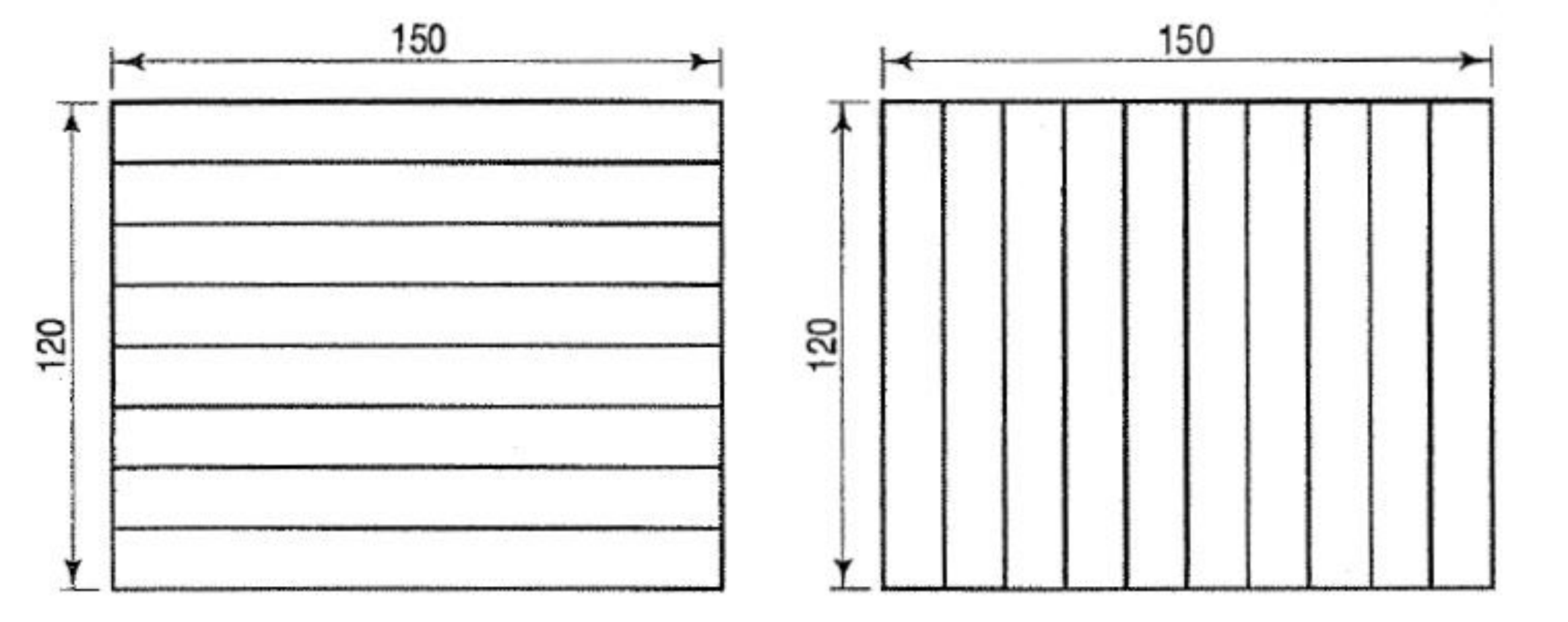


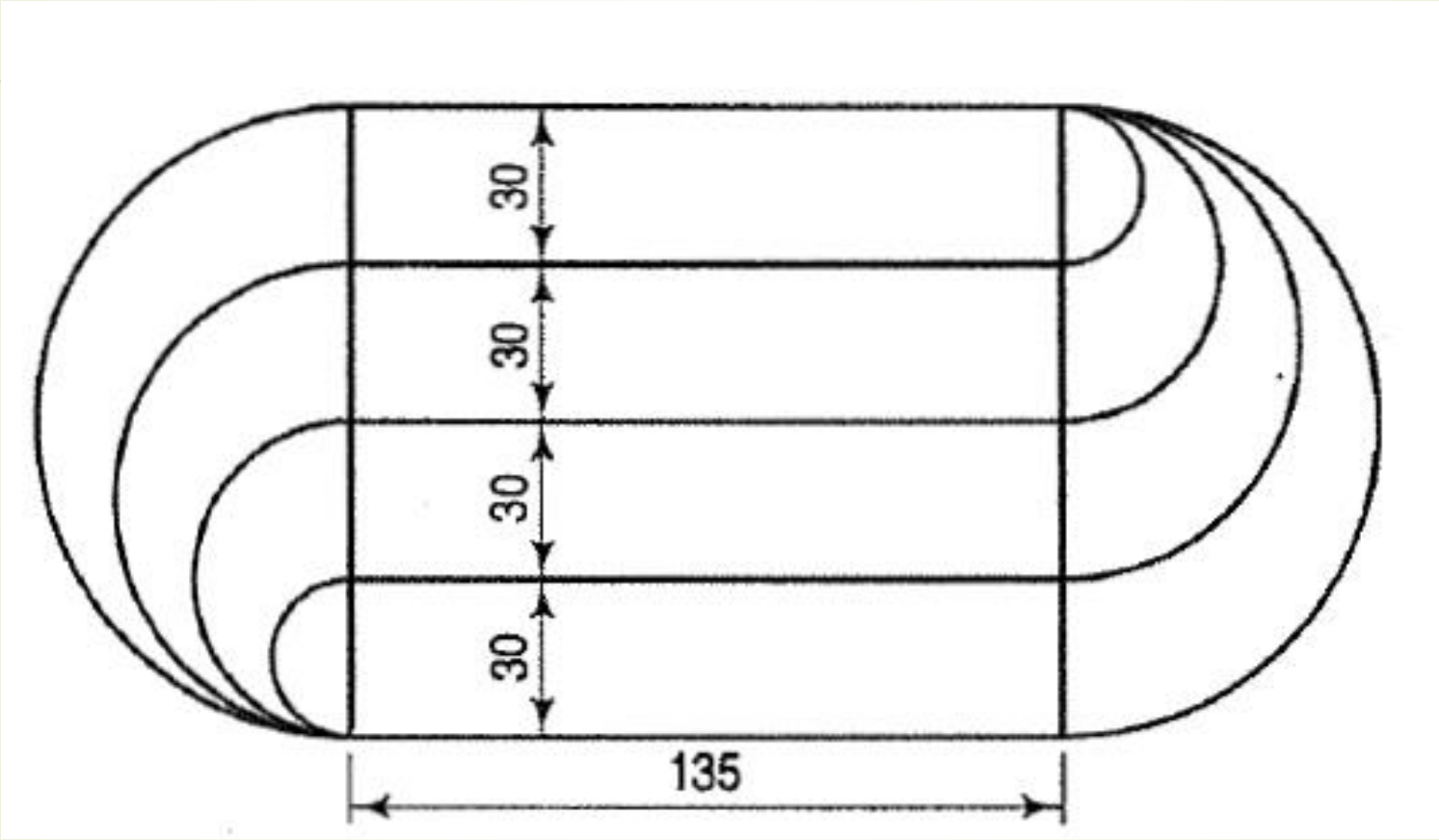
Solids of revolution

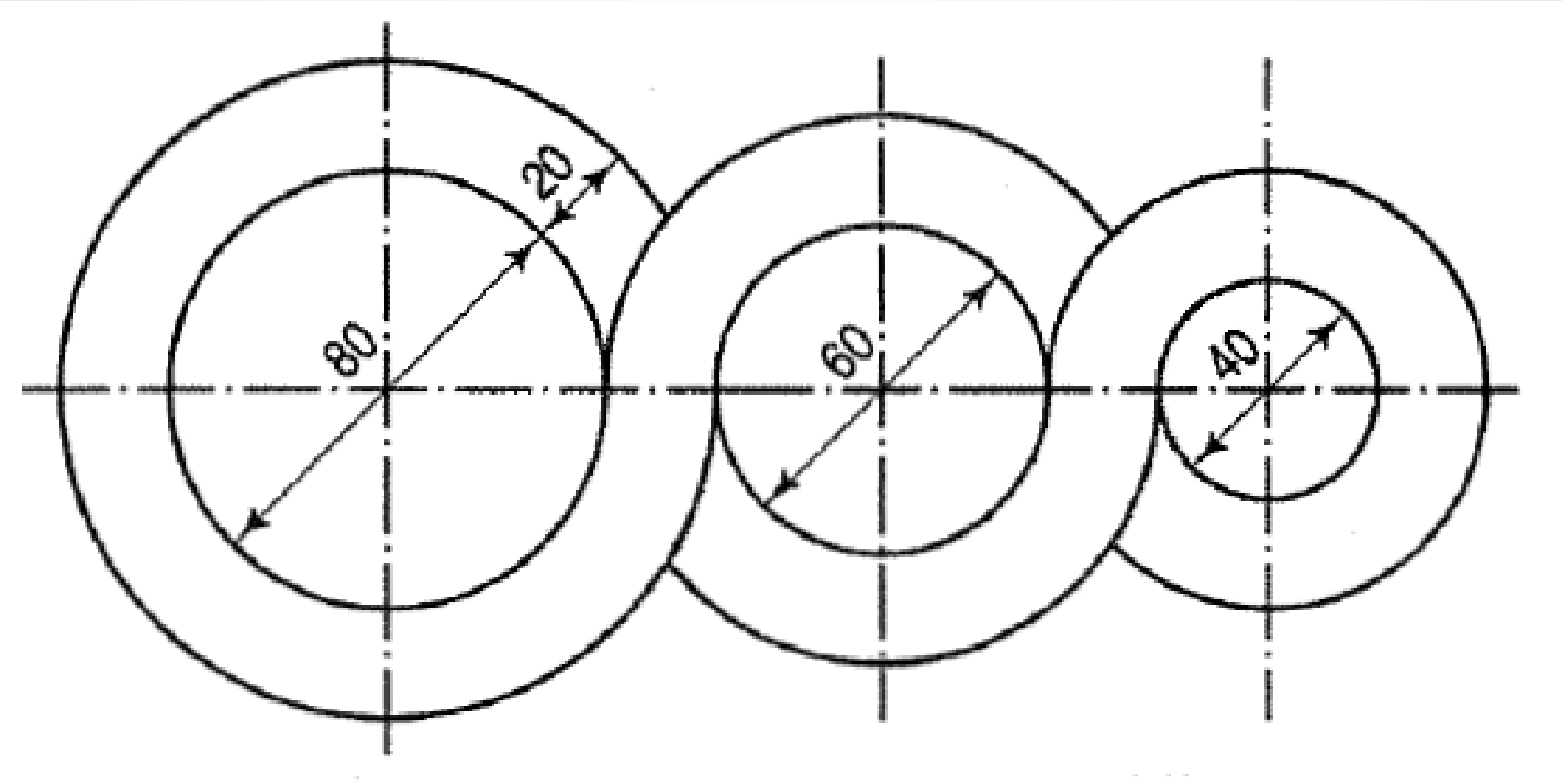


Sketches for practice

Alternate thick and thin lines, Gap of 15 mm between each line




30
30
30
30
135


20
80
60
40

Thank You