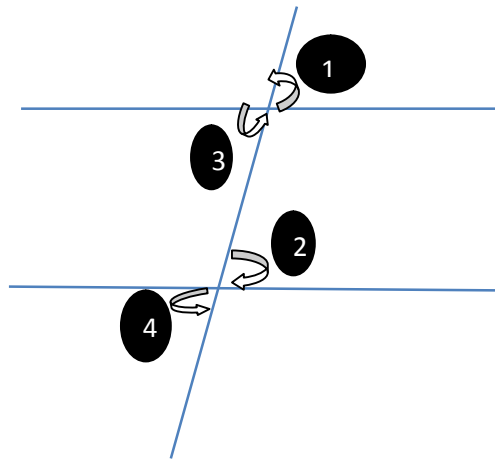


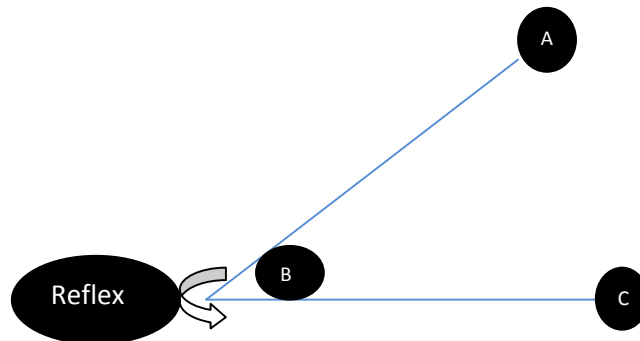
1. ANGLES

- Relationship between angles



- Corresponding Angles are equal.
Example: ($\angle 1$ & $\angle 2$) and ($\angle 3$ & $\angle 4$)
- Alternate Angles are equal.
Example: $\angle 3$ & $\angle 2$
- Vertical opposite Angle are equal.
Example: ($\angle 3$ & $\angle 1$) and ($\angle 2$ & $\angle 4$)

- Reflex Angle



- Reflex Angle is always greater than 180 degree.
- Reflex Angle = $360^\circ - \angle ABC$

2. POLYGON

- Sum of all angles of polygon = $(n-2) * 180^\circ$
- Sum of all exterior angles of polygon = 360°
- Sum of all angle of star = $(n-4) * 180^\circ$
- No. of sides of polygon = $360^\circ / \text{Exterior angle}$
- Perimeter of polygon = $n * s$
- Area of polygon = $((n*s^2)/4) * (180^\circ/2)$
- No. of diagonal in polygon = $(n(n-2)/2) - n$



3. TRIANGLE

1) Sine Rule

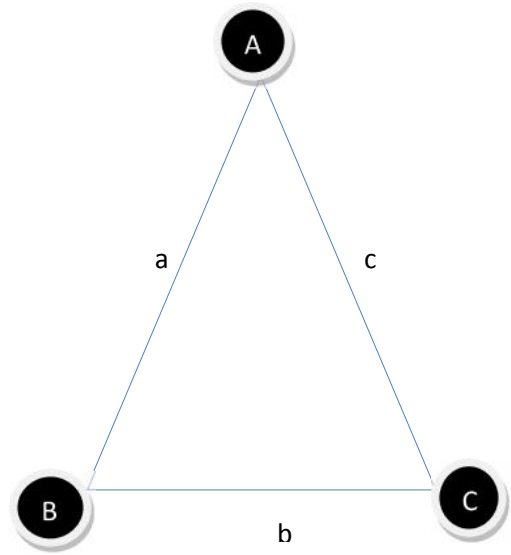
i) $a / \sin A = b / \sin B = c / \sin C$

2) Cosine Rule

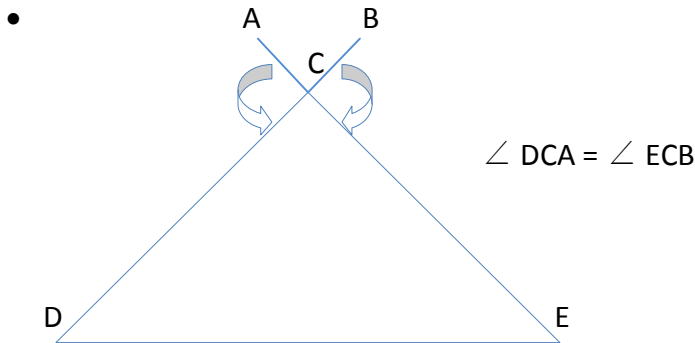
i) $c^2 = b^2 + a^2 - 2ba \sin C$

ii) $b^2 = a^2 + c^2 - 2ac \sin B$

iii) $a^2 = b^2 + c^2 - 2bc \sin A$



NOTE : Side opposite to greater angle must be greater



3) Area of Triangle

i) $A = \frac{1}{2} * H * B = \sqrt{s(s-a)(s-b)(s-c)}$

ii) $A = abc / 4R$

Where,

$s = (a + b + c) / 2$

R = Circumradius

H = Height of Triangle

B = Breath of Triangle

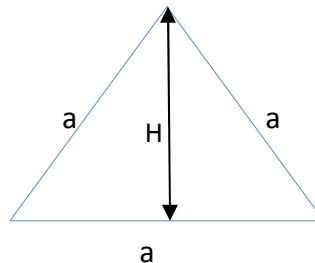
4) Equilateral Triangle

i) Height "H" = $a \cos 30^\circ = a\sqrt{3}/2$

ii) Area "A" = $\frac{1}{4} * a^2 * \sqrt{3}$

iii) Circumradius "R" = $2H/3$

iv) In radius "r" = $H/3$



NOTE:

- Equilateral triangle having maximum area when it is in circle as compare to other triangle.
- Orthogonal center of equilateral triangle lies outside \blacktriangle .
- Circum center radius coincides with the orthogonal center.
- In circle and circum radius lies at a point that divide the height in ratio 2:1.

5) Isosceles Triangle

i) Area "A" = $(b/4) * (\sqrt{4a^2 - b^2})$

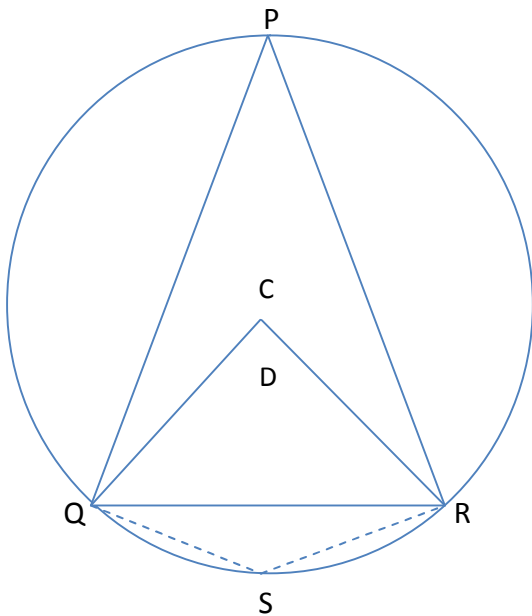
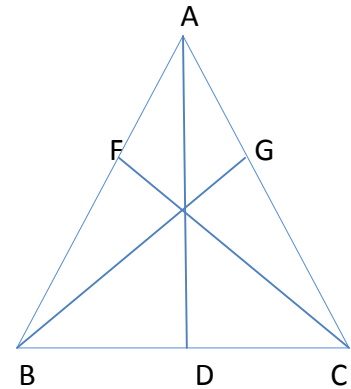
6) Median of Triangle

Median divide triangle into 2 having equal area.

Suppose **AD, CF, BG** are median, then

- i) $AE/ED = CE/EF = BE/EG = 2/1$
- ii) Sum of square of each side
 $= 2 * (\text{median})^2 + 2(\frac{1}{2} \text{ third side})^2$
 $= 2 * (AD)^2 + 2(BC/2)^2$

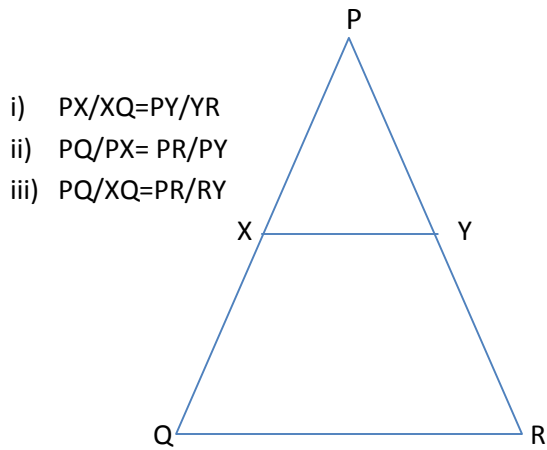
- iii) $\angle A + \angle BEC = 180^\circ$
- iv) $\angle B + \angle AEC = 180^\circ$
- v) $\angle C + \angle AEB = 180^\circ$



1. $\angle QCR = 2 \angle QPR$
 2. $\angle C = 2 \angle P$
 3. $\angle D = 2 \angle S$
 4. $\angle C + \angle D = 2(\angle P + \angle S)$
- As,
 $\angle C + \angle D = 180^\circ * 2$ &
 $\angle P + \angle S = 180^\circ$



7) Basic Proportionality Theorem



- i) $PX/XQ=PY/YR$
- ii) $PQ/PX= PR/PY$
- iii) $PQ/XQ=PR/RY$

8) Area of Similar Triangle

- i) $\text{Area}(\triangle ABC)/\text{Area}(\triangle PQR) = (AB)^2/(PQ)^2 = (AC)^2/(PR)^2 = (BC)^2/(QR)^2$
- ii) $BE^2 = CE * AE$
- iii) $AB^2 = AE * AC$
- iv) $BC^2 = CE * CA$

