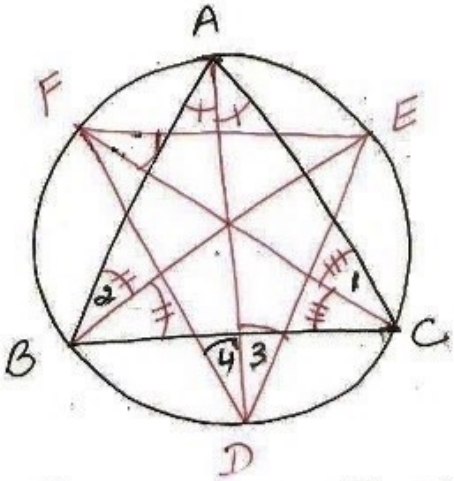
(8)



To Prove - $\angle D = 90^\circ - \frac{\angle A}{2}$,
$\angle E = 90^\circ - \frac{\angle B}{2}$, $\angle F = 90^\circ - \frac{\angle C}{2}$

Proof $\angle 2 = \angle 3 \cdots (i)$ [angles in same segment]

$\angle 1 = \angle 4 \cdots (ii)$ (do)

(i) + (ii)

$\angle 1 + \angle 2 = \angle 3 + \angle 4$

$\Rightarrow \frac{1}{2}\angle C + \frac{1}{2}\angle B = \angle D$ [CF bisects $\angle C$, BE bisects $\angle B$]

$\Rightarrow \angle D = \frac{1}{2}(\angle B + \angle C)$

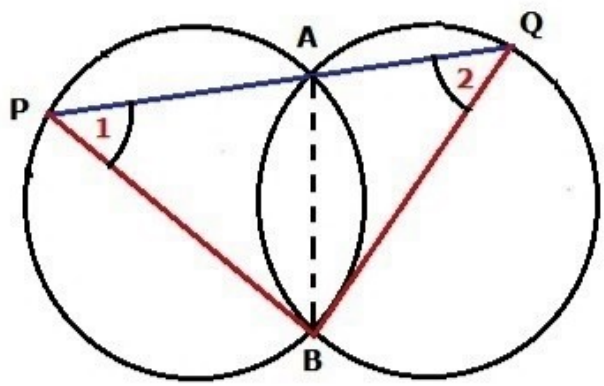
$\Rightarrow \angle D = \frac{1}{2}[180^\circ - \angle A]$

$\Rightarrow \angle D = 90^\circ - \frac{\angle A}{2}$

Sim. $\angle E = 90^\circ - \frac{\angle B}{2}$

$\angle F = 90^\circ - \frac{\angle C}{2}$

(9)



Proof **AB is common chord of congruent circles**

$\therefore \angle 1 = \angle 2$

In Δ BPQ

$\angle 1 = \angle 2$

$\therefore$ **BQ = BP** [converse of isosceles triangle property]