

Exercise 4D

Question 20:

Given : A ΔABC in which BC, CA and AB are produced to D, E and F respectively.

To prove: Exterior $\angle DCA + Exterior \angle BAE + Exterior \angle FBD = 360^{\circ}$

Proof : Exterior $\angle DCA = \angle A + \angle B(i)$

Exterior $\angle FAE = \angle B + \angle C(ii)$

Exterior \angle FBD = \angle A + \angle C(iii)

Adding (i), (ii) and (iii), we get,

Ext. \angle DCA + Ext. \angle FAE + Ext. \angle FBD

 $= \angle A + \angle B + \angle B + \angle C + \angle A + \angle C$

 $= 2\angle A + 2\angle B + 2\angle C$

 $=2\left(\angle \mathsf{A}+\angle \mathsf{B}+\angle \mathsf{C}\right)$

= 2 × 180°

[Since, in triangle the sum of all three angle is 180°]

= 360°

Hence, proved.

Question 21:

In Δ ACE, we have,

 $\angle A + \angle C + \angle E = 180^{\circ}(i)$

In \triangle BDF, we have,

 $\angle B + \angle D + \angle F = 180^{\circ}(ii)$

Adding both sides of (i) and (ii), we get,

 $\angle A + \angle C + \angle E + \angle B + \angle D + \angle F = 180^{\circ} + 180^{\circ}$

 $\Rightarrow \angle A + \angle B + \angle C + \angle D + \angle E + \angle F = 360^{\circ}$.

********** END ********