
Exercise 4D

Question 11:
Let ABC be a triangle.
Given, $\angle A + \angle B = \angle C$
We know, $\angle A + \angle B + \angle C = 180^{o}$
$\Rightarrow \angle C + \angle C = 180^{o}$
$\Rightarrow 2\angle C = 180^{o}$
$\Rightarrow \angle C = 180/2 = 90^{o}$
So, we find that ABC is a right triangle, right angled at C.

Question 12:
Given : $\Delta ABC$ in which $\angle A = 90^{o}$, $AL \perp BC$
To Prove: $\angle BAL = \angle ACB$
Proof :
In right triangle $\Delta ABC$,
$\Rightarrow \angle ABC + \angle BAC + \angle ACB = 180^{o}$
$\Rightarrow \angle ABC + 90^{o} + \angle ACB = 180^{o}$
$\Rightarrow \angle ABC + \angle ACB = 180^{o} - 90^{o}$
$\therefore \angle ABC + \angle ACB = 90^{o}$
$\Rightarrow \angle ACB = 90^{o} - \angle ABC$ ....(1)
Similarly since $\Delta ABL$ is a right triangle, we find that,
$\angle BAL = 90^{o} - \angle ABC$ ...(2)
Thus from (1) and (2), we have
$\therefore \angle BAL = \angle ACB$ (Proved)

Question 13:
Let ABC be a triangle.
So, $\angle A < \angle B + \angle C$
Adding A to both sides of the inequality,
$\Rightarrow 2\angle A < \angle A + \angle B + \angle C$
$\Rightarrow 2\angle A < 180^{o}$ [Since $\angle A + \angle B + \angle C = 180^{o}$]
$\Rightarrow \angle A < 180/2 = 90^{o}$
Similarly, $\angle B < \angle A + \angle C$
$\Rightarrow \angle B < 90^{o}$
and $\angle C < \angle A + \angle B$
$\Rightarrow \angle C < 90^{o}$
$\Delta ABC$ is an acute angled triangle.

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