Exercise 4D

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

Question 12:
Given : ΔABC in which $\angle A = 90^\circ$, $AL \perp BC$
To Prove: $\angle BAL = \angle ACB$
Proof :
In right triangle ΔABC,
$\Rightarrow \angle ABC + \angle BAC + \angle ACB = 180^\circ$
$\Rightarrow \angle ABC + 90^\circ + \angle ACB = 180^\circ$
$\Rightarrow \angle ABC + \angle ACB = 180^\circ - 90^\circ$
$\therefore \angle ABC + \angle ACB = 90^\circ$
$\Rightarrow \angle ACB = 90^\circ - \angle ABC$ ....(1)
Similarly since ΔABL is a right triangle, we find that,
$\angle BAL = 90^\circ - \angle ABC$ ...(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,
$\Rightarrow 2\angle A < \angle A + \angle B + \angle C$
$\Rightarrow 2\angle A < 180^\circ$ [Since $\angle A + \angle B + \angle C = 180^\circ$]
$\Rightarrow \angle A < 180/2 = 90^\circ$
Similarly, $\angle B < \angle A + \angle C$
$\Rightarrow \angle B < 90^\circ$
and $\angle C < \angle A + \angle B$
$\Rightarrow \angle C < 90^\circ$
ΔABC is an acute angled triangle.

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