Exercise 15C

Q4

Answer :

Sum of any two sides of a triangle is greater than the third side.

In △AMB:

AB + BM >AM.....(i)

In △AMC:

AC + CM >AM.....(ii)

Adding the above two equation:

AB + BM + AC + CM >AM + AM

AB + BC + AC > 2AM

Hence, proved.

Q5

Answer :

Sum of any two sides of a triangle is greater than the third side.

$$In\ \triangle APB:$$
$$AB + BP > AP$$
$$In\ \triangle APC:$$
$$AC + PC > AP$$
$$Adding\ the\ correspondong\ sides:$$
$$AB + BP + AC + PC > AP + AP$$
$$AB + AC + BC > 2AP$$

Hence, proved.

Q6

Answer :

Sum of any two sides of a triangle is greater than the third side.

In △ABC:
AB + BC > AC

In △ADC:
CD + DA > AC

Adding the above two:

AB + BC + CD + DA > 2 AC ... (i)

In △ADB:
AD + AB > BD

In △BDC:
CD + BC > BD

Adding the above two:

AB + BC + CD + DA >2 BD ... (ii)

Adding equation (i) and (ii):

AB + BC + CD + DA+AB + BC + CD + DA> 2(AC+BD)
=> 2(AB + BC + CD + DA)>2(AC+BD)
=> AB + BC + CD + DA > AC+BD

Q7

Answer :

We know that the sum of any two sides of a triangle is greater than the third side.

In △AOB:
OA + OB > AB.....(1)

In △BOC:
OB + OC > BC..... (2)

In △AOC:
OA + OC > CA.....(3)

Adding (1), (2) and (3):

OA + OB + OB + OC + OA + OC > AB + BC + CA

2(OA + OB + OC) > AB +BC + CA

Hence, proved.

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