

## Areas of Parallelograms and Triangles Ex 15.3 Q28 Answer:

Given:

In  $\Delta ABC,$  if L and M are points on AB and AC such that  $LM\|BC$ 

To prove:

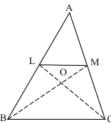
(i)  $ar(\Delta LCM) = ar(\Delta LBM)$ 

(ii)  $ar(\Delta LBC) = ar(\Delta MBC)$ 

(iii)  $ar(\Delta ABM) = ar(\Delta ACL)$ 

(iv)  $ar(\Delta LOB) = ar(\Delta MOC)$ 

**Proof:** We know that triangles between the same base and between the same parallels are equal in area



(i) Here we can see that  $\Delta LMB$  and  $\Delta LMC$  are on the same base BC and between the same parallels LM and BC

## Therefore

$$ar(\Delta LBC) = ar(\Delta LBM)$$
 ..... (2)

(iii) From equation (1) we have,

$$ar(\Delta LMC) = ar(\Delta LBM)$$

$$ar(\Delta ALM) + ar(\Delta LMC) = ar(\Delta ALM) + ar(\Delta LBM)$$

$$\Rightarrow ar(\Delta ABM) = ar(\Delta ACL)$$

(iv) From (2) we have,

$$ar(\Delta LBC) = ar(\Delta MBC)$$

$$ar(\Delta LBC) - ar(\Delta BOC) = ar(\Delta MBC) - ar(\Delta BOC)$$

$$\Rightarrow \overline{\operatorname{ar}(\Delta LOB) = \operatorname{ar}(\Delta MOC)}$$

Areas of Parallelograms and Triangles Ex 15.3 Q29

## Answer:

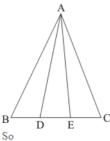
Given: In  $\triangle ABCD$ , D and E are two points on BC such that BD = DE = EC

To prove:

$$ar(\Delta ABD) = ar(\Delta ADE) = ar(\Delta AEC)$$

**Proof:** The  $\triangle ABD$ ,  $\triangle ADE$ , and  $\triangle AEC$ , are on the equal bases and their heights are equal

Therefore their areas are equal



$$ar(\Delta ABD) = ar(\Delta ADE) = ar(\Delta AEC)$$

Hence we get the result as  $ar(\Delta ABD) = ar(\Delta ADE) = ar(\Delta AEC)$ 

\*\*\*\*\*\*\*\*\* END \*\*\*\*\*\*\*\*