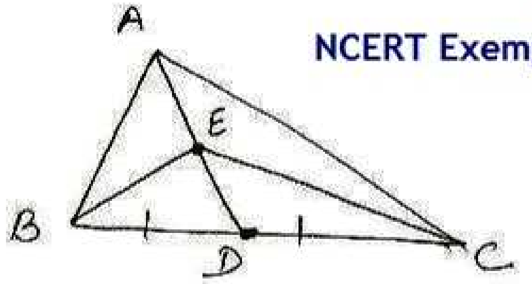
NCERT Exemplar Solutions by Dev Anoop (Bathinda)

(1)



To prove ar(ABE) = ar(ACE)

Proof ar($\triangle$ABD) = ar($\triangle$ACD) ... (I) [Median divides a $\triangle$ into 2 $\triangle$s equal in area]

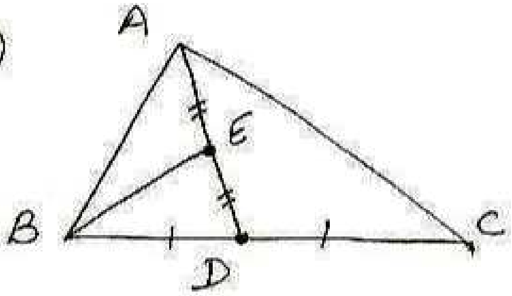
ar($\triangle$EBD) = ar($\triangle$ECD) ... (II) (do)

(I) − (II)

ar($\triangle$ABD) − ar($\triangle$EBD) = ar($\triangle$ACD) − ar($\triangle$ECD)

$\Rightarrow$ ar($\triangle$ABE) = ar($\triangle$ACE)

(2)



To show ar(BED) = $\frac{1}{4}$ ar(ABC)

Proof ar($\triangle$ABD) = $\frac{1}{2}$ ar($\triangle$ABC) ... (I)

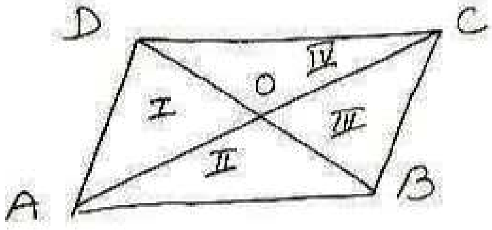
[Median divides a $\triangle$ into 2 $\triangle$s equal in area]

ar($\triangle$BED) = $\frac{1}{2}$ ar($\triangle$ABD) ... (II) (do)

From (I) and (II)

ar($\triangle$BED) = $\frac{1}{4}$ ar($\triangle$ABC)

(3)



To prove ar($\triangle$I) = ar($\triangle$II) = ar($\triangle$III) = ar($\triangle$IV)

Proof diagonals of a ||gm bisect each other

$\therefore$ OA = OC, OB = OD

In $\triangle$DAC, DO is median to side AC [$\because$ OA = OC]

$\therefore$ ar($\triangle$I) = ar($\triangle$IV) ... (I) [median divides the $\triangle$ into 2 $\triangle$s equal in area]

Sim. ar($\triangle$IV) = ar($\triangle$III) ... (II)

ar($\triangle$III) = ar($\triangle$II) ... (III)

From (I), (II), (III)

ar($\triangle$I) = ar($\triangle$II) = ar($\triangle$III) = ar($\triangle$IV)

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