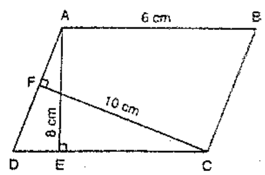
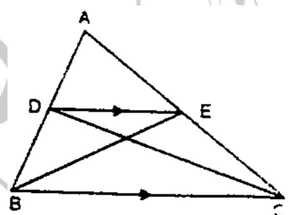
AREA THEOREMS

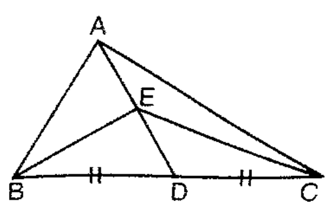
1. Show that the line segment joining the mid-point of a pair of opposite sides of a parallelogram divide it into two equal parallelograms.
2. In fig ABCD is a parallelogram AE⊥DC and CF ⊥ AD. If AB = 6cm, CF =10 cm and AE = 8 cm, find AD.



3. In △ABC, D and E are points on sides AB and AC respectively such that segment DE ∥side BC. Prove that △ABE is equal in area to △ACD



4. If AD is median of △ABC, prove that △ABD is equal in area to △ADC. OR shoe that a median divides a triangle into two triangles of equal area.
5. In fig ABC is a triangle and segment AD is one of its medians. If E is any point on AD, show that △ABE =△ACE.



6. Parallelogram ABCD and rectangle ABEF are on the same base AB and also have equal areas. Show that perimeter of the parallelogram is greater than that of the rec tangle.
7. A point E is taken on the side BC of a parallelogram ABCE; AE and DC are produced to meet at F prove that:
   (i) ar(△DCE) = ar (△DEF)
   (ii) ar(△ADF) = ar (quad ABFC)
8. show that the area of a rhombus is half the product of the length of its diagonals.

9. A point O inside a rectangle ABCD is joined to the vertices. Prove that ar(△AOD)+ ar(△BOC)= ar(△AOB)+ ar(△COD)
10. If the median of ΔABC interest at G, show that ar (ΔAGB) = ar(ΔBGC) = ar(AGC)=$\frac{1}{3}$ ar(ΔABC)
11. The side AB of a parallelogram ABCD is produced to a point P. A line through A∥ to CP meets CB produced in Q and parallelogram PBQR is completed. Show that ar (∥gm ABCD) ar(∥gmPBQR)
12. In fig BC∥XY, CY∥AB and XB∥AC. Prove that ar(ΔAXB)= ar(ΔAYC).