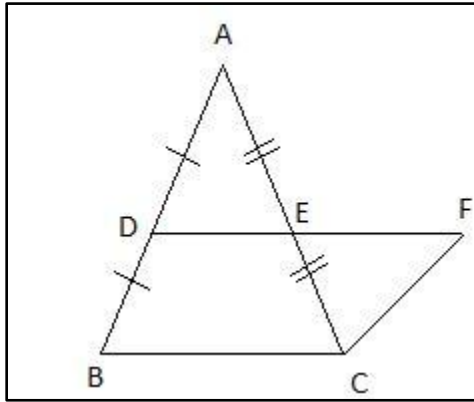


Mid-Point and Intercept Theorems

1. The line segment joining the midpoints of any two sides of a triangle is parallel to the third side and equal to half of it. (Midpoint Theorem)

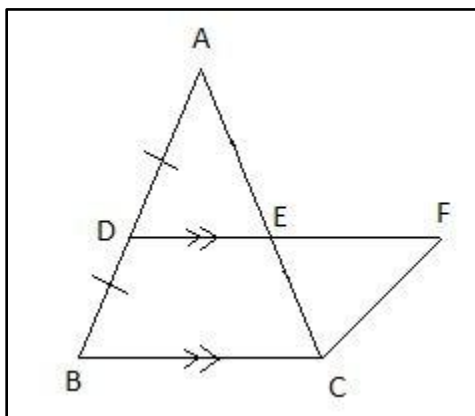
In the figure below, D and E are midpoints of sides AB and AC of $\triangle ABC$,



Then, by Midpoint Theorem, (i) $DE \parallel BC$ (ii) $DE = \frac{1}{2} BC$

2. The straight line drawn through the middle point of one side of a triangle parallel to another side bisects the third side. (Converse of Midpoint Theorem)

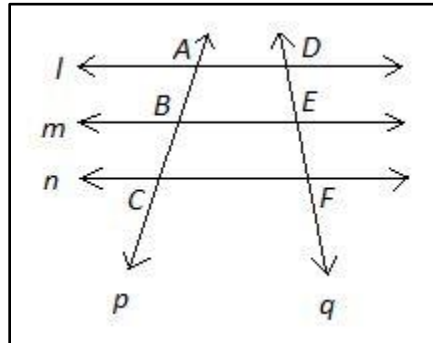
In the figure given below, in the $\triangle ABC$, D is the midpoint of side AB and Line DE through D is parallel to side BC and cuts side AC at E,



Then, by converse of midpoint theorem, we have $AE = EC$.

3. If there are three parallel lines, and the intercepts made by them on one transversal are equal, then the intercepts on any other transversal are also equal. (Equal Intercept Theorem).

In the figure given below, three parallel lines l , m and n cut off equal intercepts AB and BC from a transversal p such that $AB = BC$. Another transversal q cuts the parallel lines at D , E and F ,



Then by equal intercept theorem, $DE = EF$.

4. If three or more parallel straight lines make equal intercepts on a given transversal, they make equal intercepts on any other transversal.