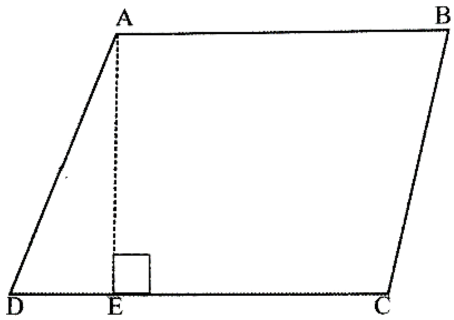
Areas of Parallelograms & Triangles

OLYMPIAD EXCELLENCE BOOK MATHEMATICS

NOTES

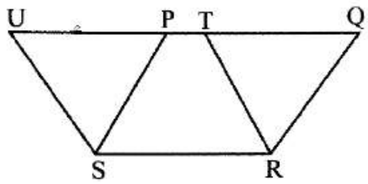
FUNDAMENTALS

- The area of a parallelogram is the product of its base and the corresponding altitude.



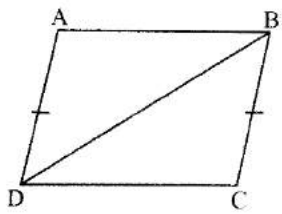
Area of parallelogram $= \frac{1}{2} \times CD \times AE$

- Parallelogram on the same base and between the same parallels are equal in areas.



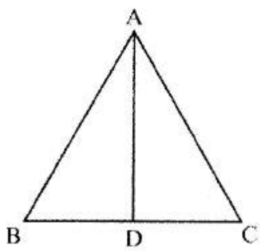
i.e., Area of parallelogram PQRS = Area of Parallelogram SRTU.

- A diagonal of a parallelogram divides it into two triangles of equal areas.



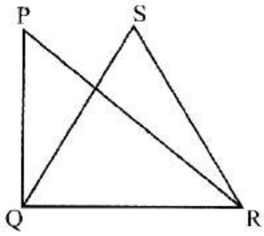
Area of ΔABD = Area of ΔBCD

- The area of a triangle is half the product of any of its side and the corresponding altitude.



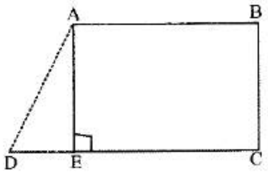
Area of $\Delta ABC = \frac{1}{2}(BC \times AD)$

- Triangles on the same base and between the same parallel lines are equal in area.



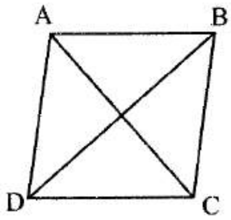
i.e., Area of ΔPQR = Area of ΔQRS

- The area of trapezium is half the product of its altitude and sum of parallel lines.



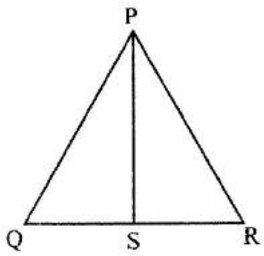
Area of trapezium $ABCD = \frac{1}{2}(AB + CD) \times AE$

- The area of a rhombus is half the product of the lengths of its diagonals.



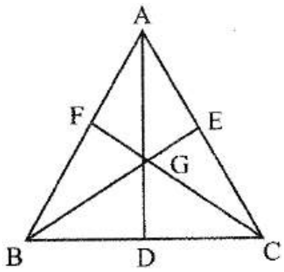
Area of Rhombus $= \frac{1}{2} AC \times BD$

- A median of a triangle divides it into two triangles of equal area.



Area of $\Delta PQS = \Delta PRS$.

- Area of equilateral triangle is equal to $\frac{\sqrt{3}}{4}a^2$, where a is the side of the triangle.
- If the medians of ΔABC intersect at G, Then



Area of ΔAGB = Area of ΔBGC

= Area of ΔAGC.

- The formula given, by heron about the area of triangle is known as heron's formula. It is stated as Area of triangle= $\sqrt{s(s-a)(s-b)(s-c)}$

Where a, b, c are the sides of the triangle and s is semiperimetre. i.e., half of the perimeter of the triangle= $\frac{a+b+c}{2}$