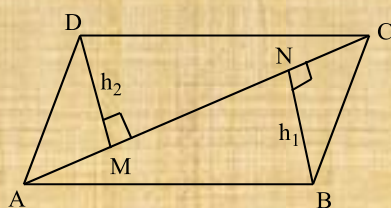


Chapter 12

HERON'S FORMULA

If h_1 and h_2 are perpendicular distance of the diagonal AC of quadrilateral ABCD from vertices B and D respectively, then

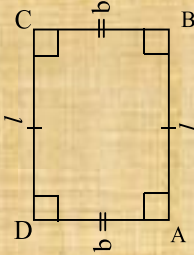


$$\text{Area} = \frac{1}{2} \times AC \times (h_1 + h_2).$$

Area of Some Special Quadrilaterals

The following area formulae can be derived by Heron's Formula

Rectangle



Let

l = length of Rectangle

b = breadth of Rectangle

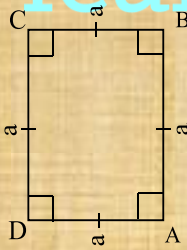
(i) Perimeter = $2(l+b)$

(ii) Area = length $\times$ breadth

$$= l \times b$$

(iii) Diagonal = $\sqrt{l^2 + b^2}$

Square



Let

a = side of a square

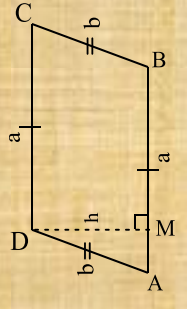
(i) Perimeter = $4a$

(ii) Area = a^2

(iii) Diagonal = $\sqrt{a^2 + a^2}$

$$= \sqrt{2}a$$

Parallelogram



Let

Adjacent sides of parallelogram = a

Adjacent sides of parallelogram = b

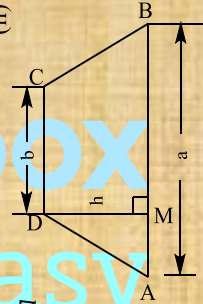
height of parallelogram = h

(i) Perimeter = $2(a+b)$

(ii) Area = Base $\times$ height

$$= a \times h$$

Trapezium



Let

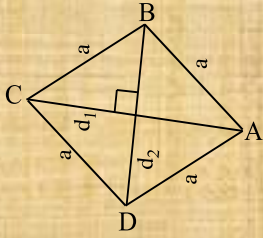
a = one of length of parallel side

b = one of length of parallel side

h = distance between height of parallel lines

(i) Area = $\frac{1}{2}(a+b) \times h$

Rhombus



Let

a = side of Rhombus

d_1 = length of Diagonal AC

d_2 = length of Diagonal BD

(i) Perimeter = $4a$

(ii) Area = $\frac{1}{2}(d_1 \times d_2)$