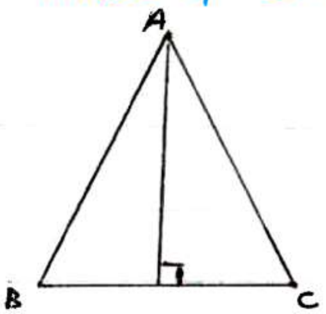
HERON'S FORMULA

Perimeter: It is the outside boundary of any closed shape.

* To find the perimeter we need to add all sides of the shape.

Area: The total space taken up by a flat 2-D shape of an object

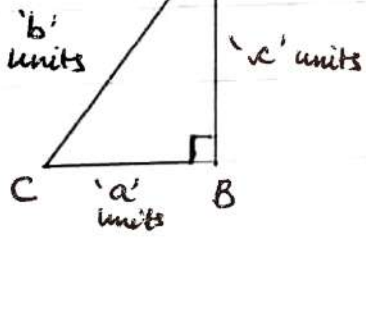
Area of a Triangle: If the height is given then area of Δ is



$$\boxed{\text{Area of triangle} = \frac{1}{2} \times \text{base} \times \text{height}} \text{ sq. unit}$$

$$\boxed{\text{Perimeter of triangle} = AB + BC + CA} \text{ units}$$

Area of a Right Angled Triangle:

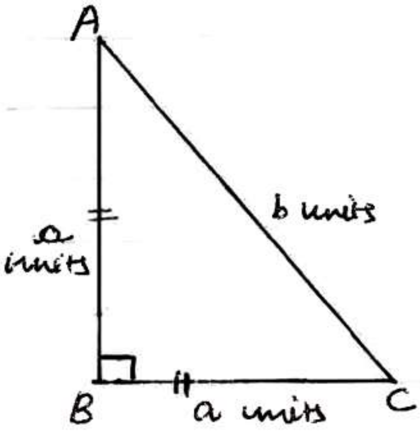


$AC^2 = AB^2 + BC^2$ (Pythagoras Theorem)

Area of $\Delta = \frac{1}{2} \times BC \times AB$ $(\text{unit})^2$

Perimeter of $\Delta = AB + BC + CA$ (units)

Area and Perimeter of Isosceles Right Angled Triangle:

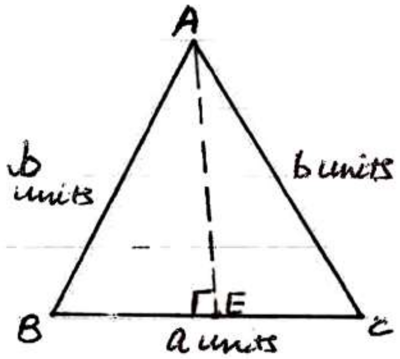


$AC^2 = AB^2 + BC^2$ (Pythagoras Theorem)

Area of $\Delta = \frac{1}{2} \times BC \times AB$ sq. units

Perimeter of $\Delta = AB + BC + CA$ units

Area and Perimeter of Isosceles Triangle:



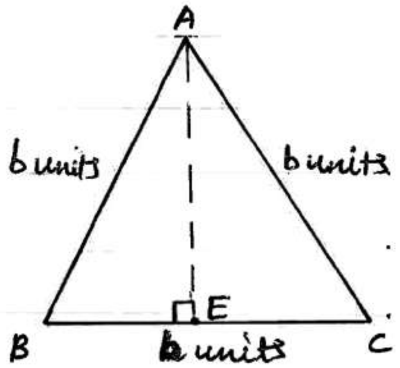
AE (height) $= \sqrt{b^2 - \frac{a^2}{4}}$ units

Area of $\Delta = \frac{1}{2} \times BC \times AE$

$= \frac{1}{2} \times a \times \sqrt{b^2 - \frac{a^2}{4}}$ sq. units

Perimeter of $\Delta = AB + BC + CA$ units

Area and Perimeter of Equilateral Triangle:

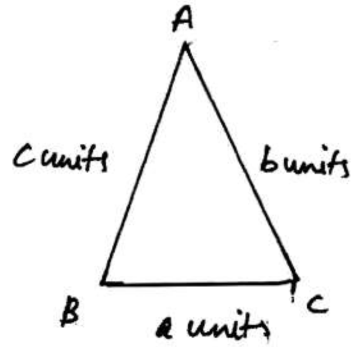


AE (height) $= \frac{\sqrt{3}}{2} b$ units

Area of $\Delta = \frac{\sqrt{3}}{4} (\text{side})^2$ units

Perimeter of $\Delta = 3 \times$ sides units

Area of a Triangle - by Heron's Formula :



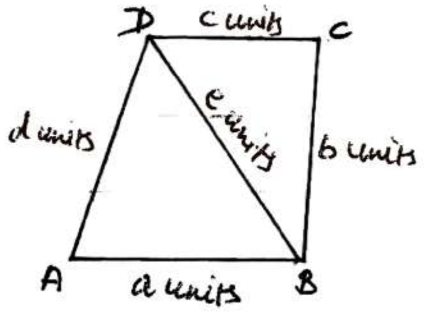
Area of $\Delta = \sqrt{s(s-a)(s-b)(s-c)}$ sq. units

Where,

a, b, c : are the sides of Δ

s (semiperimeter) : $s = \frac{a+b+c}{2}$

Area of a Quadrilateral - by Heron's Formula :

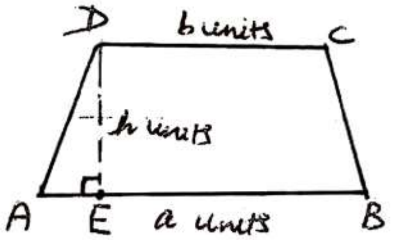


If we know the sides and 1 diagonal of the quadrilateral then we can find area by using Heron's Formula.

Area of quadrilateral ABCD = Area of ΔABD + Area of ΔBD sq. units.

Area of Trapezium :

Case 1 : If length of parallel sides and height is given, then



Area of Trapezium $= \frac{1}{2}$ (sum of parallel sides) x height

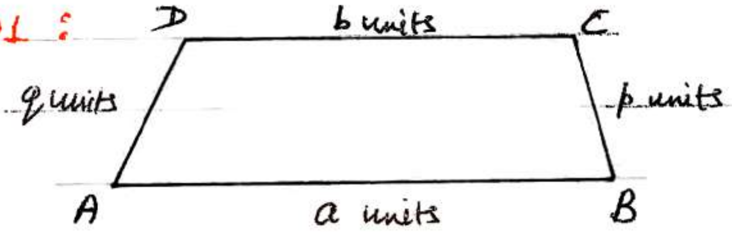
or

$= \frac{1}{2}(a+b) \times h$ sq. units

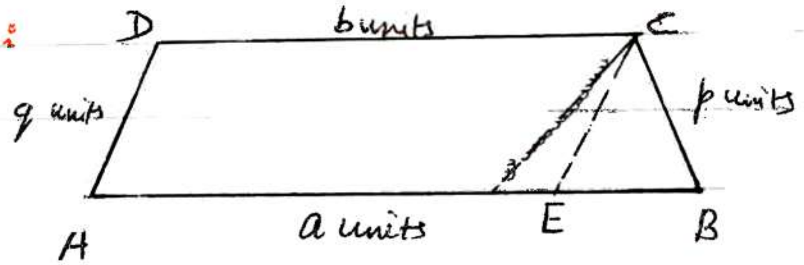
Case 2: If all sides of trapezium then area:

Procedure:

Step 1:



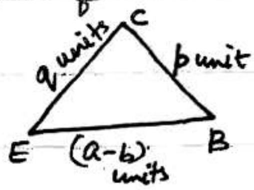
Step 2:



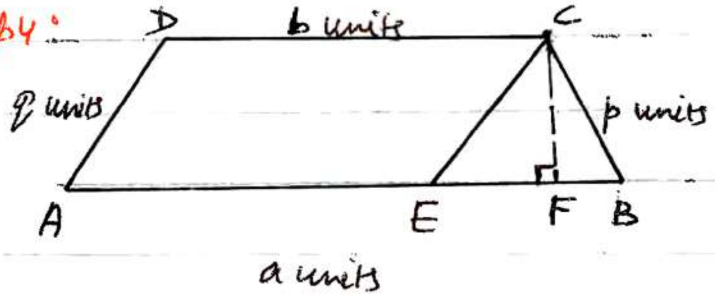
$AD = EC$
$AD \parallel EC$

$EB = AB - DC$

Step 3: From above step 2, we can find area of ΔCEB with the help of Heron's Formula.



Step 4:



we can calculate height CF with the help of area of ΔCEB.

$$\boxed{\text{Area } \Delta CEB = \frac{1}{2} \times BE \times CF}$$

Step 5:

$$\boxed{\text{Area Trapezium} = \frac{1}{2}(AB + DC) \times CF} \quad \text{sq. units}$$