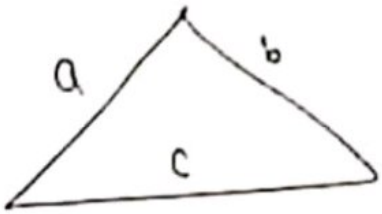
formulas

Herons formula

Heron's formula -



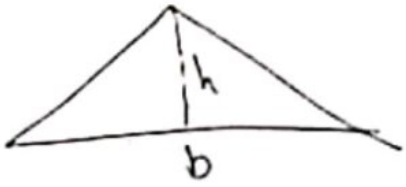
Semi perimeter

$$s = \frac{a+b+c}{2}$$

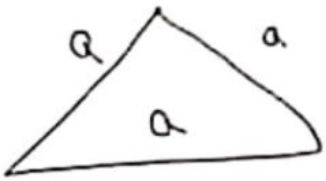
Area of Triangle $A = \sqrt{s(s-a)(s-b)(s-c)}$

Area of Δ

$$A = \frac{1}{2} b \times h$$

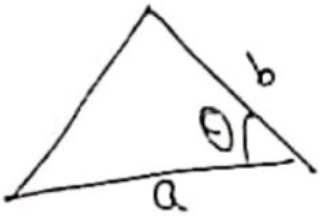


Area of Equilateral Δ -



$$A = \frac{\sqrt{3}}{4} a^2$$

Area of Δ -



$$A = \frac{1}{2} ab \sin\theta$$

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formula

Topic - Herons formula

① find the area of Triangle whose sides are 3cm, 4cm, 5cm. (Ans - 6 cm²)

② find the area of Triangle two sides of which are 18 cm, 10cm and Perimeter is 42 cm (Ans - $21\sqrt{11}$ cm²)

③ Sides of Triangle are in the ratio 12:17:25 and its Perimeter is 540 cm. find its Area. (Ans - 9000 cm²)

④ An isosceles triangle has Perimeter 30cm and each of equal side is 12cm. find the area of triangle. (Ans - $9\sqrt{15}$ cm²)

⑤ find the Area of quadrilateral ABCD in which AB = 3cm, BC = 4cm, CD = 4cm, DA = 5cm, AC = 5cm. (Ans $6+2\sqrt{21}$ cm²)

⑥ A Rhombus shape field has green grass for 18 cows to graze. If each side of Rhombus is 30m and its longer diagonal is 48cm. how much area of grass field will each cow be getting? (Ans - 48 m²)

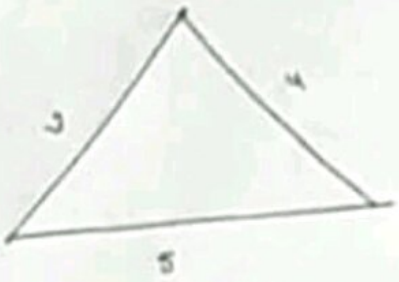
⑦ find the Area of Equilateral Δ whose side is 30cm. (Ans - $175\sqrt{3}$ cm²)

⑧ find the Area of Δ whose two sides are 6cm and 12cm and Angle b/w sides is 30°. find its area (Ans - 18 cm²)

⑨ A Triangle in which two sides are 8cm, 11cm and Perimeter of Δ is 32cm. find its area. (Ans - $8\sqrt{5}$ cm²)

Some Solutions

(3)



$s = \frac{a+b+c}{2} = \frac{3+4+5}{2}$

$= 6$

$A = \sqrt{s(s-a)(s-b)(s-c)}$

$A = \sqrt{6(6-3)(6-4)(6-5)}$

$= \sqrt{2 \times 3 \times 3 \times 2 \times 1}$

$= 2 \times 3 = 6 \text{ cm}^2$

(4) $a = 12, \; b = 12$

Perimeter = 30

$12 + 12 + c = 30$

$c = 30 - 24$

$c = 6$

$s = \frac{30}{2} = 15$

$A = \sqrt{s(s-a)(s-b)(s-c)}$

$= \sqrt{15(15-12)(15-12)(15-6)}$

$= \sqrt{5 \times 3 \times 3 \times 3 \times 9} = 3 \times 3\sqrt{15}$

$= 9\sqrt{15} \text{ cm}^2$

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