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H.W HERON'S FORMULA · 12.1

3.) There is a slide in a park. One of its side walls has been painted in some colour with message 'Keep the park garden green and clean'. If the side walls are 15 M, 11M, 6M, find the area painted in colour.

ans) It is given that sides of the wall as 15 M, 11M and 6M.

So, the semi perimeter of triangular wall (s) = (15 + 11 + 6)/2 M
= 16M

Using Heron's formula,

Area of the message.

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

$= \sqrt{[16(16-15)(16-11)(16-6)]}\ M^2$.

$= \sqrt{[16 \times 1 \times 5 \times 10]}\ M^2 = \sqrt{800}\ M^2$.

$= 20\sqrt{2}\ M^2$.

4.) find the area of a triangle two sides of which are 18 cm and 10 cm and the perimeter is 42 cm.

ans) Assume the third side of the triangle to be x'.

Now the three sides of the triangle are 18 cm, 10 cm, and x cm.

It is given that the perimeter of the triangle: 42 cm.

So, $x = 42 - (18 + 10)$ cm = 14 cm.

∴ The semi perimeter of triangle:

42/2 = 21 cm.

Using Heron's formula,

Area of the triangle;

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

$= \sqrt{[21(21-18)(21-10)(21-14)]}\ cm^2$.

$= \sqrt{[21 \times 3 \times 11 \times 7]}\ M^2$.

$= 21\sqrt{11}\ cm^2$.

5} Sides of a triangle are in the ratio of 12:17:25 and its perimeter is 540 cm. find its area.

ans} The ratio of sides of the triangle are given as 12:17:25.
Now let the common ratio between the sides of the triangle be 'x'.
∴ The sides are 12x, 17x, and 25x.
It is also given that the perimeter of the triangle: 540 cm.
12x + 17x + 25x : 540 cm.
54x : 540 cm.
So, x = 10.
Now, the sides of the triangle are 120 cm, 170 cm, 250 cm.
So, the semi-perimeter of the triangle (s) = 540/2 = 270 cm.
Using Heron's formula,
Area of the triangle,
$= \sqrt{s(s-a)(s-b)(s-c)}$
$= [\sqrt{270(270-120)(270-170)(270-250)}]\ cm^2$
$= [\sqrt{270 \times 150 \times 100 \times 20}]\ cm^2$.
$= 9000\ cm^2$.

6} An isoscales triangle has perimeter 30 cm and each of the equal sides is 12 cm. find the area of the triangle.

ans} first, let the third side be x.
It is given that the length of the equal sides is 12 cm ~~and~~ and its perimeter is 30 cm.
So, 30 = 12 + 12 + x.
∴ The length of the third side = 6 cm.
Thus, the semi-perimeter of the isoscales triangle (s) = 30/2 cm = 15 cm.
Using Heron's formula,
Area of the triangle,
$\sqrt{s(s-a)(s-b)(s-c)}$
$= \sqrt{[15(15-12)(15-12)(15-6)]}\ cm^2$.
$= \sqrt{[15 \times 3 \times 3 \times 9]}\ cm^2$
$= 9\sqrt{15}\ cm^2$.