Ch-12

Heron's Formula

Example-2

Sol:- For finding area of the park, we have

$2s = 50m + 80m + 120m = 250m$.

$s = 125m$

$(s-a) = (125-120)m = 5m$.

$(s-b) = (125-80)m = 45m$

$(s-c) = (125-50)m = 75m$.

Therefore, area of the park $= AB + BC + CA = 250m$.

Therefore, length of the wire needed for fencing $=$
$250m - 3m = 247m$.

And so the cost of fencing $= ₹20 \times 247 = ₹4940$.

Example-3

Sol:- Suppose that the sides, in metres, are $3x$, $5x$, and $7x$.

Then, we know that $3x + 5x + 7x = 300$.

Therefore, $15x = 300$, which gives $x = 20$

So the side of the triangle are $3 \times 20m$, $5 \times 20m$ and $7 \times 20m$
i.e., $60m$, $100m$ and $140m$.

~~Can you find the area~~ [Using

we have $s = \frac{60+100+140}{2} m = 150m,$

and area will be $\sqrt{150(150-60)(150-100)(150-140)} m^2.$

$= \sqrt{150 \times 90 \times 50 \times 10} m^2.$

$= 1500\sqrt{3} m^2.$

EX - 12·1

(4) ~~Here~~ Here $a = 18 cm, b = 10 cm, c = ?$

Perimeter of the triangle $= 42 cm$

$\Rightarrow a+b+c = 42$
$\Rightarrow 18+10+c = 42$
$\Rightarrow c = 42-28 = 14$

Now, $s = \frac{a+b+c}{2} = \frac{42}{2} cm = 21 cm$

Area of the triangle $= \sqrt{s(s-a)(s-b)(s-c)}$

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

$= \sqrt{21 \times 3 \times 11 \times 7} cm^2$

$= \sqrt{7 \times 3 \times 3 \times 11 \times 7} cm^2$

$= 7 \times 3 \sqrt{11} cm^2 = 21\sqrt{11} cm^2.$

(5) Let the side of triangle be $12x$ cm $17x$ cm $25x$ cm.

Perimeter of the triangle $= 540$ cm

$\therefore 12x + 17x + 25x = 540$

$\Rightarrow 54x = 540$

$\Rightarrow x = \frac{540}{54} = 10$

$\therefore$ side of the triangle are (12×10) cm, (17×10) cm and (25×10) cm i.e., 120 cm, 170 cm and 250 cm.

Now, Suppose $a = 120$ cm, $b = 170$ cm, $c = 250$ cm

$\therefore s = \frac{a+b+c}{2} = \frac{540}{2}$ cm $= 270$ cm.

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.