Exercise 6A

Question 5:

Here, $a = 91$ m, $b = 98$ m and $c = 105$ m

Therefore, $s = \frac{91+98+105}{2} = \frac{294}{2} = 147$

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

$= \sqrt{147(147-91)(147-98)(147-105)}$

$= \sqrt{147 \times 56 \times 49 \times 42}$

$= \sqrt{49 \times 3 \times 7 \times 2 \times 2 \times 2 \times 49 \times 7 \times 3 \times 2}$

$= 49 \times 3 \times 2 \times 2 \times 7$

$= 4116 \text{ m}^2$

Longest side = 105m $\Rightarrow$ b=105

Let h be the height corresponding to the longest side.

Area of the triangle $= \frac{1}{2} \times b \times h$

$\Rightarrow \frac{1}{2} \times b \times h = 4116$

$\Rightarrow 105 \times h = 2 \times 4116$

$\Rightarrow h = \frac{2 \times 4116}{105} = 78.4 \text{ m}$

Question 6:

Let the sides of the triangle be 5x, 12x and 13x.

Its perimeter $= (5x + 12x + 13x) = 30x$

$\therefore 30x = 150$ m [given]

$\Rightarrow x = \frac{150}{30} = 5$ m

Thus, sides of the triangle are;

$5x = 5 \times 5 = 25$ m

$12x = 12 \times 5 = 60$ m

$13x = 13 \times 5 = 65$ m

Let $a = 25$ m, $b = 60$ m and $c = 65$ m.

Now $s = \frac{1}{2}(a+b+c)$

$= \left(\frac{25+60+65}{2}\right) \text{ m} = \frac{150}{2} = 75$ m.

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

$= \sqrt{75(75-25)(75-60)(75-65)}$

$= \sqrt{75 \times 50 \times 15 \times 10}$

$= \sqrt{25 \times 3 \times 25 \times 2 \times 5 \times 3 \times 5 \times 2}$

$= \sqrt{25 \times 25 \times 5 \times 5 \times 3 \times 3 \times 2 \times 2}$

$= 25 \times 5 \times 3 \times 2 = 750$ sq m.

$\therefore$ area of the triangle = 750 sq m.

********** END **********