Exercise 7A

Question 7:

Let the sides of the triangle be 25x, 17x and 12x.

Then, its perimeter $= (25x + 17x + 12z) = 54x$

$\Rightarrow \quad 54x = 540$

$\Rightarrow \quad x = \frac{540}{54} = 10\text{m}.$

Thus, sides of the triangle are :

$25x = 25 \times 10 = 250$ m

$17x = 17 \times 10 = 170$ m

$12x = 12 \times 10 = 120$ m

Let, $a = 250$ m, $b = 170$ m and $c = 120$ m

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

$= \left(\frac{250 + 170 + 120}{2}\right)\text{m}$

$= \left(\frac{540}{2}\right)\text{m} = 270\,\text{m}$

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

$= \sqrt{270(270-250)(270-170)(270-120)}$

$= \sqrt{3 \times 3 \times 3 \times 10 \times 10 \times 2 \times 10 \times 10 \times 10 \times 5 \times 3}$

$= 3 \times 3 \times 10 \times 10 \times 10 = 9000\,\text{m}^2$

$\therefore$ Cost of ploughing the field at the rate of Rs. 18.80 per $10\,\text{m}^2$

$= \frac{18.80}{10} \times 9000 = \text{Rs. } 16920$

$\therefore$ Cost of ploughing the field = Rs. 16920.

Question 8:

One side of a triangular field $= 85$ m

Second side of a triangular field $= 154$ m

Let the third side of a triangular field be x m

Perimeter (given) $= 324$ m

$\therefore \quad 85\text{m} + 154\text{m} + x\text{m} = 324$ m

$\Rightarrow \quad x = 324 - 239$

$\Rightarrow \quad x = 85$ m

$\therefore$ the third side $= 85$ m

Let $a = 85$ m, $b = 154$ m and $c = 85$ m

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

$= \left(\frac{85 + 154 + 85}{2}\right) = \frac{324}{2} = 162$

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

$= \sqrt{162(162-85)(162-154)(162-85)}$

$= \sqrt{162 \times 77 \times 8 \times 77}$

$= \sqrt{2 \times 9 \times 9 \times 7 \times 11 \times 2 \times 2 \times 2 \times 7 \times 11}$

$= \sqrt{11 \times 11 \times 9 \times 9 \times 7 \times 7 \times 2 \times 2 \times 2 \times 2}$

$= 11 \times 9 \times 7 \times 2 \times 2 = 2772$ m^2

$\therefore$ area of triangle $= 2772$ m^2

Also, area of triangle $= \frac{1}{2} \times$ base $\times$ height

$2772 = \frac{1}{2} \times 154 \times h = 77h$

$\therefore \quad 77h = 2772$

$\therefore \quad h = \frac{2772}{77} = 36$ m

$\therefore$ the length of the perpendicular from the opposite vertex on the side measuring 154 m $= 36$ m.

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