Herons Formula Ex 12.2 Q13

Answer :

We have to find the area of each type of triangular strips needed for the fan.

There are 5 strips of each type having equal dimensions, so we will calculate the area of a single strip and then multiply it by 5 to ascertain the area of each type of strip needed.

The area of a triangle having sides a, b, c and s as semi-perimeter is given by,

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

$s = \dfrac{a+b+c}{2}$ Therefore the area of a triangular strip, say A_1 having sides 25 cm, 25 cm and 14 cm is given by:

$a = 25$ cm ; $b = 25$ cm ; $c = 14$ cm

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

$s = \dfrac{25+25+14}{2}$

$s = \dfrac{64}{2}$

$s = 32$ cm

$A_1 = \sqrt{(32-25)(32-25)(32-14)}$

$A_1 = \sqrt{32(7)(7)(18)}$

$A_1 = \sqrt{28224}$

$A_1 = 168 \text{ cm}^2$

Area of each type of strip needed, say A.

$A = 5 \times$ Area of each traingular strip

$A = 5 \times A_1$

$A = 5 \times 168$

$\boxed{A = 840 \text{ cm}^2}$

Herons Formula Ex 12.2 Q14

Answer :

It is given that the area of triangle and parallelogram are equal.

We will calculate the area of triangle with the given values and it will also give us the area of parallelogram as both are equal.

The area of a triangle having sides a, b, c and s as semi-perimeter is given by,

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

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

Therefore the area of a triangle; say A, having sides 15 cm, 13 cm and 14 cm is given by

$a = 15$ cm ; $b = 13$ cm ; $c = 14$ cm

$s = \dfrac{15+13+14}{2}$

$s = \dfrac{42}{2}$

$s = 21$ cm

$A = \sqrt{21(21-15)(21-13)(21-14)}$

$A = \sqrt{21(6)(8)(7)}$

$A = \sqrt{7056}$

$A = 84 \text{ cm}^2$

We have to find the height of the parallelogram, say h

Area of parallelogram AECD say A_1 is given by

$A_1 = \text{Base} \times \text{Height}$

Base $= 60$ cm; Height $= h$ cm; $A = A_1 = 84$ cm^2

$84 = 14 \times h$

$h = \dfrac{84}{14}$

$\boxed{h = 6 \text{ cm}}$

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