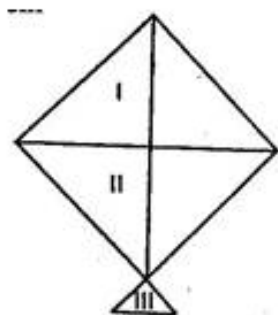




Exercise 12.2

$$\begin{aligned}\text{And Cloth required to 5 green pieces} &= 5 \times 200\sqrt{6} \\ &= 1000\sqrt{6} \text{ cm}^2\end{aligned}$$

Q7. A kite is in the shape of a square with a diagonal 32 cm and an isosceles triangle of base 8 cm and sides 6 cm each is to be made of three different shades as shown in figure.



How much paper of each side has been used in it?

Ans. Let ABCD is a square of side a cm and diagonals $AC = BD = 32$ cm

In right triangle ABC, $AB^2 + BC^2 = AC^2$ [Using Pythagoras theorem]

$$\Rightarrow a^2 + a^2 = (32)^2$$

$$\Rightarrow 2a^2 = 32 \times 32$$

$$\Rightarrow a^2 = \frac{32 \times 32}{2} = 512$$

$$\Rightarrow \text{Area of square} = 512 \text{ cm}^2 \text{ [Area of square} = \text{side} \times \text{side}]$$

Diagonal BD divides the square in two equal triangular parts I and II.

\therefore Area of shaded part I = Area of shaded part II

$$= \frac{1}{2} \times 512 = 256 \text{ cm}^2$$

Now, semi-perimeter of shaded part III

$$(s) = \frac{6+6+8}{2} = 10 \text{ cm}$$

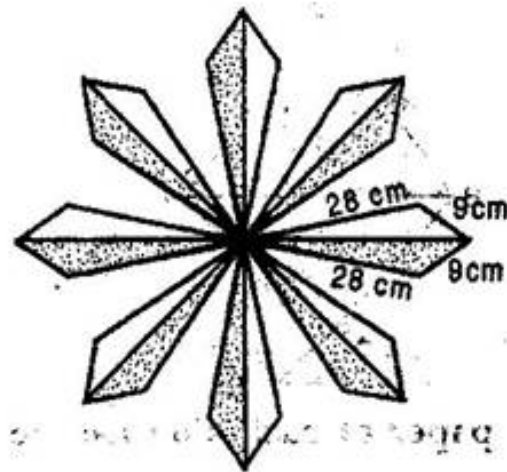
$$\text{Area of shaded part III} = \sqrt{s(s-a)(s-b)(s-c)}$$

$$= \sqrt{10(10-6)(10-6)(10-8)}$$

$$= \sqrt{10 \times 4 \times 4 \times 2} = 8\sqrt{5}$$

$$= 8 \times 2.236 = 17.88 \text{ cm}^2$$

Q8. A floral design on a floor is made up of 16 tiles which are triangular, the sides of the triangle being 9 cm, 28 cm and 35 cm (see figure). Find the cost of polishing the tiles at the rate of 50 paise per cm^2 .



Ans. Here, Sides of a triangular shaped tile are 9 cm, 28 cm and 35 cm.

$$\text{Semi-perimeter of tile } (s) = \frac{9+28+35}{2} = 36 \text{ cm}$$

Area of triangular shaped tile =

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

$$= \sqrt{36(36-9)(36-28)(36-35)}$$

$$= \sqrt{36 \times 27 \times 8 \times 1} = 36\sqrt{6}$$

$$= 36 \times 2.45 = 88.2 \text{ cm}^2 \text{ (approx.)}$$

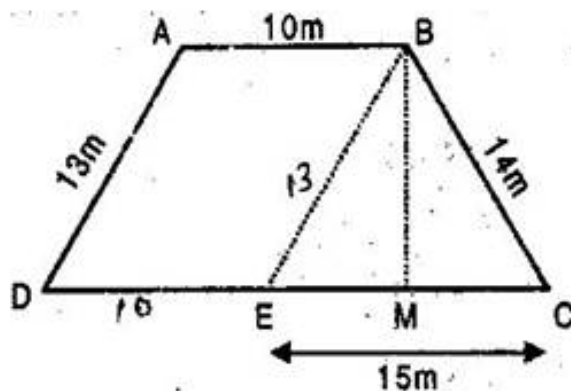
\therefore Area of 16 such tiles = $16 \times 88.2 = 1411.2 \text{ cm}^2$
(Approx.)

\therefore Cost of polishing 1 cm^2 of tile = Rs. 0.50

\therefore Cost of polishing 1411.2 cm^2 of tile =
 $\text{Rs. } 0.50 \times 1411.2 = \text{Rs. } 705.60 \text{ (Approx.)}$

Q9. A field is in the shape of a trapezium whose parallel sides are 25 m and 10 m. The non-parallel sides are 14 m and 13 m. Find the area of the field.

Ans. Let ABCD be a field in the shape of trapezium and parallel side AB = 10 m & CD = 25 m



And Non-parallel sides AD = 13 m and BC = 14 m

Draw $BM \perp DC$ and $BE \parallel AD$ so that $ABED$ is a parallelogram.

$$\therefore BE = AD = 13 \text{ m and } DE = AB = 10 \text{ m}$$

$$\text{Now in } \triangle BEC, \text{ Semi-perimeter } (s) = \frac{13+14+15}{2}$$

$$= 21 \text{ m}$$

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

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

$$= \sqrt{21 \times 8 \times 7 \times 6} = 84 \text{ m}^2$$

$$\text{And Area of } \triangle BEC = 84 \text{ m}^2$$

$$\Rightarrow \frac{1}{2} \times EC \times BM = 84$$

$$\Rightarrow \frac{1}{2} \times 15 \times BM = 84$$

$$\Rightarrow BM = \frac{84 \times 2}{15} = 11.2 \text{ m}$$

Now area of trapezium $ABCD$ =

$$\frac{1}{2}(AB + CD) \times BM$$

$$= \frac{1}{2}(10 + 25) \times 11.2$$

$$= 196 \text{ m}^2$$

***** END *****