

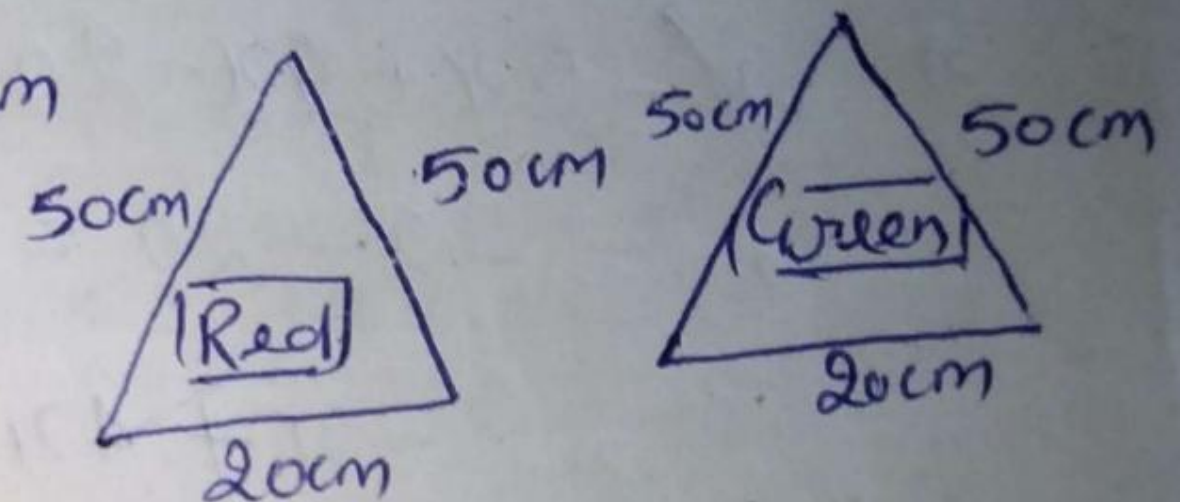
Ex.-12.2

Q.6

Solution:- Here we have, sides of each of 10 triangular pieces of two different colours are 20 cm, 50 cm and 50 cm

So semi perimeter of each triangle

$$s = \frac{a+b+c}{2} = \frac{50+50+20}{2} = \frac{120}{2} = 60 \text{ cm.}$$



now by Heron's formula

$$\text{area of each triangle} = \sqrt{s(s-a)(s-b)(s-c)} = \sqrt{60(60-50)(60-50)(60-20)}$$

$$= \sqrt{60 \times 10 \times 10 \times 40}$$

$$= \sqrt{6 \times 10 \times 10 \times 10 \times 4 \times 10} = 10 \times \sqrt{2 \times 3 \times 10 \times 10 \times 4}$$

$$= 10 \times 10 \times 2\sqrt{6} \text{ cm}^2 = 200\sqrt{6} \text{ cm}^2$$

so cloth required for 5 red pieces = $5 \times 200\sqrt{6} = 1000\sqrt{6} \text{ cm}^2$

and cloth required for 5 green pieces = $5 \times 200\sqrt{6} = 1000\sqrt{6} \text{ cm}^2$

Ans

Q-7
Solution:-

Let ABCD is a square of side 'a' cm and with diagonal

$$AC = BD = 32 \text{ cm.}$$

$$\text{So area of square} = \frac{1}{2} \times (\text{diagonal})^2 = \frac{1}{2} \times 32^2 = 512 \text{ cm}^2$$

now \therefore Diagonal of square divide it into two triangles of equal area

$$\text{So Area of I triangular shaded part} = \text{area of II triangular shaded part} \\ = \frac{1}{2} \times 512 = 256 \text{ cm}^2$$

$$\text{So ar}(\triangle ABD) = \text{ar}(\triangle BCD)$$

now in $\triangle CEF$,

sides of triangle are 6cm, 6cm and 8cm.

$$\text{So Semi Perimeter of triangle (s)} = \frac{6+6+8}{2} = \frac{20}{2} = 10 \text{ cm}$$

now area of triangle by Heron's formula

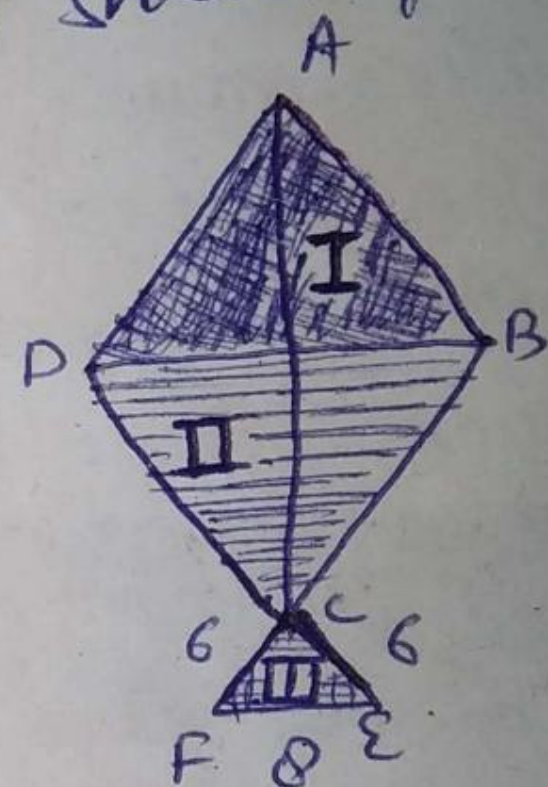
$$= \sqrt{s(s-a)(s-b)(s-c)} = \sqrt{10(10-6)(10-6)(10-8)}$$

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

$$= 2 \times 2 \times \sqrt{2 \times 2 \times 5} = 2 \times 2 \times 2\sqrt{5} = 8\sqrt{5} \text{ cm}^2$$

$$= 8 \times 2.236 = 17.808 \text{ cm}^2 \quad [\because \sqrt{5} = 2.236]$$

Ans



Q.8

Solution: - Here we have sides of triangular shaped tiles are 9cm, 28cm and 35cm.

So semi perimeter of triangular tile (s) = $\frac{9+28+35}{2} = \frac{72}{2} = 36\text{cm}$.

now by Heron's formula

area of one triangular tile = $\sqrt{s(s-a)(s-b)(s-c)} = \sqrt{36 \cdot (36-9)(36-28)(36-35)}$

= $\sqrt{36 \times 27 \times 8 \times 1} = \sqrt{6 \times 6 \times 9 \times 3 \times 4 \times 2}$

= $\sqrt{6 \times 6 \times 9 \times 4 \times 3 \times 2} = 6 \times 3 \times 2 \times \sqrt{6}$

= $36\sqrt{6}\text{ cm}^2 = 36 \times 2.45 = 88.2\text{ cm}^2$

So area of such 16 tiles = $16 \times 88.2 = 1411.2\text{ cm}^2$

\therefore cost of polishing 1 cm^2 of tile = £ 0.50

\therefore cost of polishing 1411.2 cm^2 of the tiles = £ 0.50×1411.2

= £ 705.60 (Approx)

Ans

Q.9

Solution:- Let ABCD be a field in the shape of trapezium and parallel side $AB = 10m$ and $CD = 25m$

also non-parallel sides $AD = 13m$ and $BC = 14m$

now draw $BM \perp DC$ and $BE \parallel AD$, so that ABED is a \square .

so $BE = AD = 13m$ and $DE = AB = 10m$

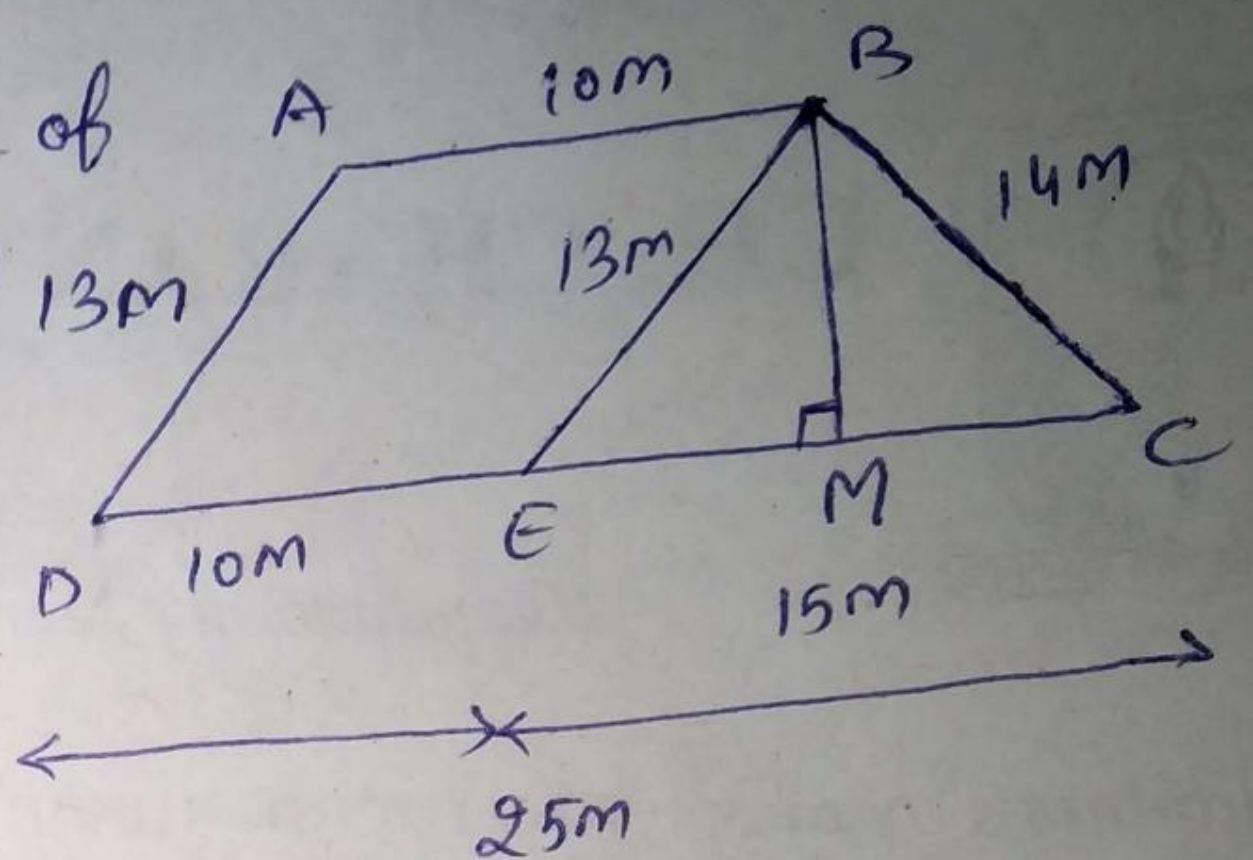
now in triangle BEC,

$$\text{Semi Perimeter of triangle } (s) = \frac{a+b+c}{2} = \frac{BE + BC + EC}{2} = \frac{13 + 14 + 15}{2} = \frac{42}{2} = 21 \text{ cm}$$

now by Heron's formula

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

$$= \sqrt{21(21-13)(21-14)(21-15)} = \sqrt{49 \times 8 \times 6}$$



$$\begin{aligned}
 \text{area of triangle (BEC)} &= \sqrt{21 \times (21-13) \times (21-14) \times (21-15)} \\
 &= \sqrt{21 \times 8 \times 7 \times 6} = \sqrt{3 \times 7 \times 7 \times 3 \times 2 \times 2 \times 2 \times 2} \\
 &= \sqrt{3 \times 3 \times 7 \times 7 \times 2 \times 2 \times 2 \times 2} = 3 \times 7 \times 2 \times 2 \\
 &= 84 \text{ m}^2 \quad \text{--- (1)}
 \end{aligned}$$

$$\text{also area of } \triangle BEC = \frac{1}{2} \times B \times H$$

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

$$\Rightarrow BM = \frac{84 \times 2}{15} = \frac{168}{15} = 11.2 \text{ m.}$$

we now

$$\begin{aligned}
 \text{area of trapezium} &= \frac{1}{2} \times (\text{sum of || sides}) \times \text{height} \\
 &= \frac{1}{2} \times (AB + CD) \times BM = \frac{1}{2} \times (10 + 25) \times 11.2 \\
 &= \frac{35 \times 11.2}{2} = 35 \times 5.6 = 196 \text{ m}^2 \quad \text{--- (Ans)}
 \end{aligned}$$