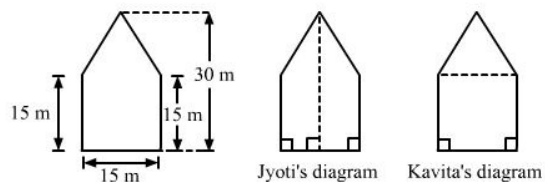




Mensuration-I area of a trapezium and a polygon Ex 20.3 Q3

Answer :

A pentagonal park is given below:



Jyoti and Kavita divided it in two different ways.

(i) Jyoti divided it into two trapeziums as shown below:

It is clear that the park is divided into two equal trapeziums whose parallel sides are 30 m :

And, the distance between the two parallel lines: $\frac{15}{2} = 7.5$ m

\therefore Area of the park = $2 \times (\text{Area of a trapezium})$

$$= 2 \times \left[\frac{1}{2} \times (30 + 15) \times (7.5) \right]$$

$$= 337.5 \text{ m}^2$$

(ii)

Kavita divided the park into a rectangle and a triangle, as shown in the figure.

Here, the height of the triangle = $30 - 15 = 15$ m

\therefore Area of the park = (Area of square with sides 15 cm) + (Area of triangle with base 15 m :

$$= (15 \times 15) + \left(\frac{1}{2} \times 15 \times 15 \right)$$

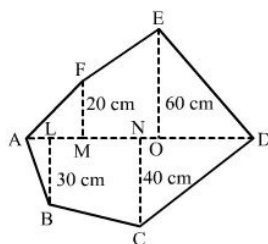
$$= 225 + 112.5$$

$$= 337.5 \text{ m}^2$$

Mensuration-I area of a trapezium and a polygon Ex 20.3 Q4

Answer :

The given polygon is:



Given:

AL=10 cm, AM=20 cm, AN=50 cm

AO=60 cm, AD=90 cm

Hence, we have the following:

MO=AO-AM=60-20=40 cm

OD=AD-AO=90-60=30 cm

ND=AD-AN=90-50=40 cm

LN=AN-AL=50-10=40 cm

From given figure:

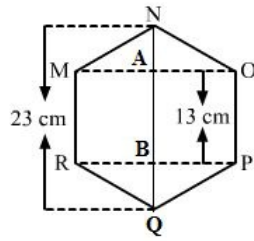
Area of Polygon = (Area of triangle AMF) + (Area of trapezium MOEF) + (Area of triangle

Mensuration-I area of a trapezium and a polygon Ex 20.3 Q5

Answer :

The given figure is:

Join QN.



It is given that the hexagon is regular. So, all its sides must be equal to 13 cm.

Also, $AN = BQ$

$QB + BA + AN = QN$

$AN + 13 + AN = 23$

$2AN = 23 - 13 = 10$

$AN = \frac{10}{2} = 5 \text{ cm}$

Hence, $AN = BQ = 5 \text{ cm}$

Now, in the right angle triangle MAN:

$$MN^2 = AN^2 + AM^2$$

$$13^2 = 5^2 + AM^2$$

$$AM^2 = 169 - 25 = 144$$

$$AM = \sqrt{144} = 12 \text{ cm.}$$

$$\therefore OM = RP = 2 \times AM = 2 \times 12 = 24 \text{ cm}$$

Hence, area of the regular hexagon = (area of triangle MON) + (area of rectangle MOPR) +

$$= \left(\frac{1}{2} \times OM \times AN \right) + (RP \times PO) + \left(\frac{1}{2} \times RP \times BQ \right)$$

$$= \left(\frac{1}{2} \times 24 \times 5 \right) + (24 \times 13) + \left(\frac{1}{2} \times 24 \times 5 \right)$$

$$= 60 + 312 + 60$$

$$= 432 \text{ cm}^2$$

***** END *****