

# Mathematics

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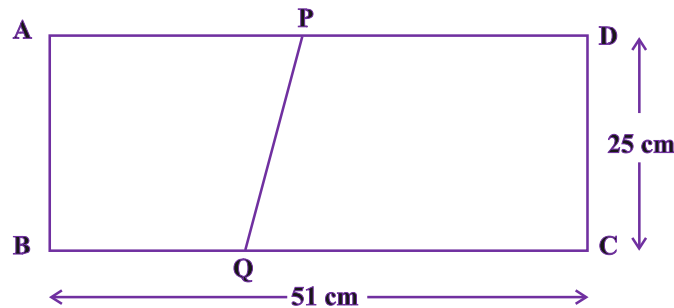
(Chapter – 12) (Heron's Formula)(Exemplar Problems)

(Class – IX)

## Exercise 12.4

### Question 7:

The dimensions of a rectangle ABCD are 51 cm  $\times$  25 cm. A trapezium PQCD with its parallel sides QC and PD in the ratio 9:8, is cut off from the rectangle as shown in the Fig. 12.6. If the area of the trapezium PQCD is  $\frac{5}{6}$  th part of the area of the rectangle, find the lengths QC and PD.



### Answer 7:

We have dimensions of a rectangles ABCD as 51 cm and 25cm. Also, in trapezium PQCD, parallel sides QC and PD are in the ratio: 9:8

i.e.,  $QC:PD = 9:8$

Let, length  $QC = 9x$

and  $PD = 8x$

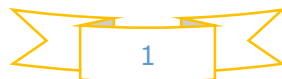
According to the question,

$$\text{Area of trapezium PQCD} = \frac{5}{6} \text{ area of rectangle ABCD}$$

$$\Rightarrow \frac{1}{2} (\text{Sum of parallel Sides}) \times \text{distance between parallel sides}$$

$$= \frac{5}{6} \times (BC \times CD)$$

$$\Rightarrow \frac{1}{2} (8x + 9x) \times 25 = \frac{5}{6} \times 51 \times 25$$



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$$\Rightarrow \frac{1}{2} \times 17x \times 2 = \frac{5}{6} \times 51 \times 25$$

$$\Rightarrow x = \frac{5 \times 51 \times 25 \times 2}{25 \times 17 \times 6}$$

$\therefore$  Length,  $x = 5$

And  $QC = 9 \times 5 = 45\text{cm}$

$PD = 8 \times 5 = 40\text{ cm}$

