Mathematics

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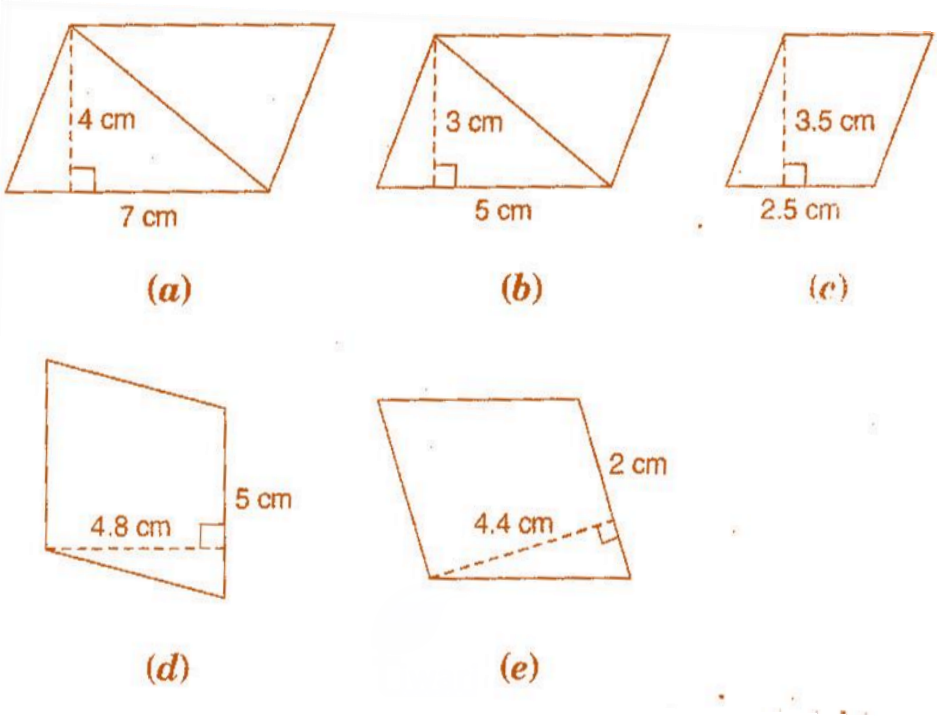
(Chapter – 11) (Perimeter and Area)

(Class – VII)

Exercise 11.2

Question 1:

Find the area of each of the following parallelograms:



Answer 1:

We know that the area of parallelogram = base x height

(a) Here base = 7 cm and height = 4 cm

∴ Area of parallelogram = 7 x 4 = 28 cm^2

(b) Here base = 5 cm and height = 3 cm

∴ Area of parallelogram = 5 x 3 = 15 cm^2

(c) Here base = 2.5 cm and height = 3.5 cm

∴ Area of parallelogram = 2.5 x 3.5 = 8.75 cm^2

(d) Here base = 5 cm and height = 4.8 cm

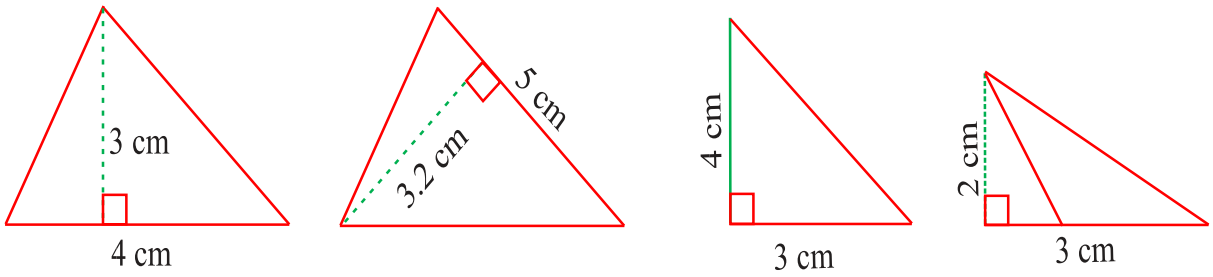
∴ Area of parallelogram = 5 x 4.8 = 24 cm^2

(e) Here base = 2 cm and height = 4.4 cm

∴ Area of parallelogram = 2 x 4.4 = 8.8 cm^2

Question 2:

Find the area of each of the following triangles:



(a) (b) (c) (d)

Answer 2:

We know that the area of triangle = $\frac{1}{2}$ x base x height

(a) Here, base = 4 cm and height = 3 cm

$\therefore$ Area of triangle = $\frac{1}{2}$ x 4 x 3 = 6 cm^2

(b) Here, base = 5 cm and height = 3.2 cm

$\therefore$ Area of triangle = $\frac{1}{2}$ x 5 x 3.2 = 8 cm^2

(c) Here, base = 3 cm and height = 4 cm

$\therefore$ Area of triangle = $\frac{1}{2}$ x 3 x 4 = 6 cm^2

(d) Here, base = 3 cm and height = 2 cm

$\therefore$ Area of triangle = $\frac{1}{2}$ x 3 x 2 = 3 cm^2

Question 3:

Find the missing values:

S. No.	Base	Height	Area of the parallelogram
a.	20 cm		246 cm^2
b.		15 cm	154.5 cm^2
c.		84 cm	48.72 cm^2
d.	15.6 cm		16.38 cm^2

Answer 3:

We know that the area of parallelogram = base x height

(a) Here, base = 20 cm and area = 246 cm^2

$\therefore$ Area of parallelogram = base x height

$\Rightarrow$ 246 = 20 x height

$\Rightarrow$ height = $\frac{246}{20}$ = 12.3 cm

(b) Here, height = 15 cm and area = 154.5 cm^2

$\therefore$ Area of parallelogram = base x height

$\Rightarrow$ 154.5 = base x 15

$\Rightarrow$ base = $\frac{154.5}{15}$ = 10.3 cm

(c) Here, height = 8.4 cm and area = 48.72 cm^2

$\therefore$ Area of parallelogram = base x height

$\Rightarrow$ 48.72 = base x 8.4

$\Rightarrow$ base = $\frac{48.72}{8.4}$ = 5.8 cm

(d) Here, base = 15.6 cm and area = 16.38 cm^2

$\therefore$ Area of parallelogram = base x height

$\Rightarrow$ 16.38 = 15.6 x height

$\Rightarrow$ height = $\frac{16.38}{15.6}$ = 1.05 cm

Thus, the missing values are:

S. No.	Base	Height	Area of the parallelogram
a.	20 cm	**12.3 cm**	246 cm^2
b.	**10.3 cm**	15 cm	154.5 cm^2
c.	**5.8 cm**	84 cm	48.72 cm^2
d.	15.6 cm	**1.05**	16.38 cm^2

Question 4:

Find the missing values:

Base	Height	Area of triangle
15 cm	-----	87 cm^2
-----	31.4 mm	1256 mm^2
22 cm	-----	170.5 cm^2

Answer 4:

We know that the area of triangle = $\frac{1}{2}$ x base x height

In first row, base = 15 cm and area = 87 cm^2

$\therefore$ $87 = \frac{1}{2} \times 15 \times \text{height}$

$\Rightarrow$ $\text{height} = \frac{87 \times 2}{15}$ 11.6 cm

In second row, height = 31.4 mm and area = 1256 mm^2

$\therefore$ $1256 = \frac{1}{2} \times \text{base} \times 31.4$

$\Rightarrow$ $\text{base} = \frac{1256 \times 2}{31.4}$ 80 mm

In third row, base = 22 cm and area = 170.5 cm^2

$\therefore$ $170.5 = \frac{1}{2} \times 22 \times \text{height}$

$\Rightarrow$ $\text{height} = \frac{170.5 \times 2}{22}$ 15.5 cm

Thus, the missing values are:

Base	Height	Area of triangle
15 cm	**11.6 cm**	87 cm^2
80 mm	31.4 mm	1256 mm^2
22 cm	**15.5 cm**	170.5 cm^2

Question 5:

PQRS is a parallelogram (Fig 11.23). QM is the height from Q to SR and QN is the height from Q to PS. If SR = 12 cm and QM = 7.6 cm. Find:

(a) the area of the parallelogram PRS

(b) QN, if PS = 8 cm

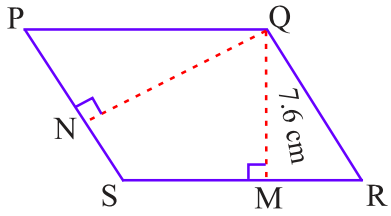


Fig 11.23

Answer 5:

Given: SR = 12 cm, QM= 7.6 cm, PS = 8 cm.

(a) Area of parallelogram = base x height

= 12 x 7.6 = 91.2 cm^2

(b) Area of parallelogram = base x height

$\Rightarrow$ 91.2 = 8 x QN

$\Rightarrow$ $QN = \frac{91.2}{8} = 11.4$ cm

Question 6:

DL and BM are the heights on sides AB and AD respectively of parallelogram ABCD (Fig 11.24). If the area of the parallelogram is 1470 cm^2, AB = 35 cm and AD = 49 cm, find the length of BM and DL.

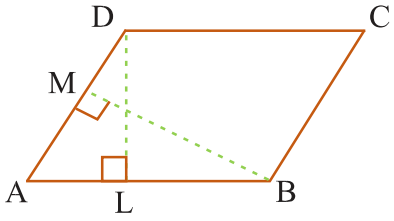


Fig 11.24

Answer 6:

Given: Area of parallelogram = 1470 cm^2

Base (AB) = 35 cm and base (AD) = 49 cm

Since Area of parallelogram = base x height

$\Rightarrow$ 1470 = 35 x DL

$\Rightarrow$ DL = $\frac{1470}{35}$

$\Rightarrow$ DL = 42 cm

Again, Area of parallelogram = base x height

$\Rightarrow$ 1470 = 49 x BM

$\Rightarrow$ BM = $\frac{1470}{49}$

$\Rightarrow$ BM = 30 cm

Thus, the lengths of DL and BM are 42 cm and 30 cm respectively.

Question 7:

ΔABC is right angled at A (Fig 11.25). AD is perpendicular to BC. If AB = 5 cm, BC = 13 cm and AC = 12 cm, find the area of ΔABC. Also, find the length of AD.

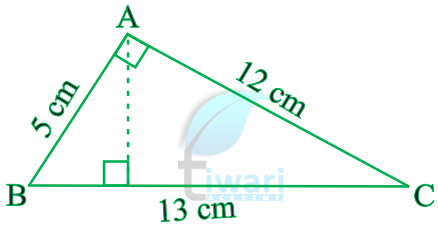


Fig 11.25

Answer 7:

In right angles triangle BAC, AB = 5 cm and AC = 12 cm

Area of triangle = $\frac{1}{2}$ x base x height = $\frac{1}{2}$ x AB x AC

= $\frac{1}{2}$ x 5 x 12 = 30 cm^2

Now, in ΔABC,

Area of triangle ABC = $\frac{1}{2}$ x BC x AD

$\Rightarrow$ 30 = $\frac{1}{2}$ x 13 x AD

$\Rightarrow$ AD = $\frac{30\times 2}{13}$ = $\frac{60}{13}$ cm

Question 8:

ΔABC is isosceles with AB = AC = 7.5 cm and BC = 9 cm (Fig 11.26). The height AD from A to BC, is 6 cm. Find the area of ΔABC. What will be the height from C to AB i.e., CE?

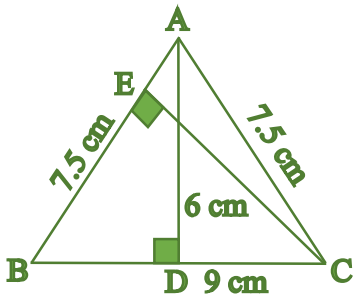


Fig 11.26

Answer 8:

In ΔABC, AD = 6 cm and BC = 9 cm

Area of triangle = $\frac{1}{2}$ x base x height = $\frac{1}{2}$ x BC x AD

= $\frac{1}{2}$ x 9 x 6 = 27 cm^2

Again, Area of triangle = $\frac{1}{2}$ x base x height = $\frac{1}{2}$ x AB x CE

$\Rightarrow$ 27 = $\frac{1}{2}$ x 7.5 x CE

$\Rightarrow$ CE = $\frac{27 \times 2}{7.5}$

$\Rightarrow$ CE = 7.2 cm

Thus, height from C to AB i.e., CE is 7.2 cm.