Grade VII

Lesson : 11 PERIMETER AND AREA

Objective Type Questions

I. Multiple choice questions

1. Perimeter of a rectangle of length l and b is :

   a) l + b   b) 2 x (l +b)   c) 3 x (l +b)   d) (l +b)

2. Area of triangle is :

   a) base x height   b) $\frac{1}{2}$ x base x height

   c) $\frac{1}{3}$ x base x height   d) $\frac{1}{4}$ x base x height

3. The circumference of a circle of radius r is :

   a) πr b) $2\pi r$ c) πr^2 d) πd^2

4. The area of a circle of radius r is :

   a) πr^2 b) $2\pi r^2$ c) $2\pi r$ d) $4\pi r^2$

5. Perimeter of a square is

   a) side x side   b) 3 x side   c) 4 x side   d) 2 x side

6. $1\, m^2$ =

   a) 10 cm^2 b) 100 cm^2 c) 1000 cm^2 d) 10000 cm^2

7. The circumference of a circle is 44 cm. What is its radius?

   a) 42 cm   b) 21 cm   c) 7 cm   d) 14 cm

8. What is the area of the circle of radius 7 cm?

   a) 49 cm^2 b) 22 cm^2 c) 154 cm^2 d) 308 cm^2

9. Diameter of a circular garden is 9.8 cm. Which of the following is its area?

   a) 75.46 cm^2 b) 76.46 cm^2 c) 74.4 cm^2 d) 76.4 cm^2

10. If each side of a square is 1 m, which of the following is its area?
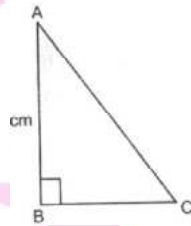
a) 10 cm^2 b) 100 cm^2 c) 1000 cm^2 d) 10000 cm^2

11. What is the area of rectangle of dimensions 12 cm x 10 cm?

a) 44 cm^2 b) 120 cm^2 c) 1440 cm^2 d) 1200 cm^2
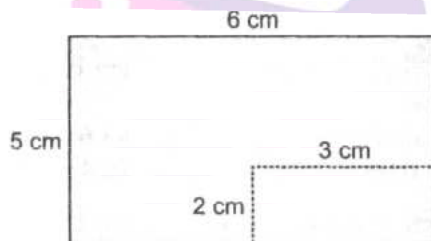
12. Area of a right triangle is 54 cm^2 . If one of its legs is 12cm long, its perimeter is :

a) 18 cm   b) 27 cm   c) 36 cm   d) 54 cm

13. A rectangular piece of dimensions 3 cm x 2 cm was cut from a rectangular sheet of paper of dimensions 6 cm x 5 cm

Area of remaining sheet of paper is :

a) 30 cm^2 b) 36 cm^2 c) 24 cm^2 d) 22 cm^2

14. 36 unit squares are joined to form a rectangle with the least perimeter. Perimeter of the rectangle is :

a) 12 units   b) 26 units   c) 24 units   d) 36 units

15. A wire is bent to form a square of side 22 cm. If the wire is rebent to form a circle, if radius is :

a) 22 cm   b) 14 cm   c) 11 cm   d) 7 cm

16. Area of the circle obtained in above Question is

a) 196 cm^2 b) 212 cm^2 c) 616 cm^2 d) 644 cm^2

17. Area of rectangle and the area of circle are equal. It the dimensions of the rectangle are 14 cm x 11 cm then radius of the circle is

a) 21 cm   b) 10.5 cm   c) 14 cm   d) 7 cm

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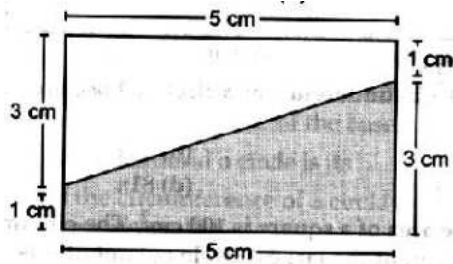
18. Area of shaded portion is

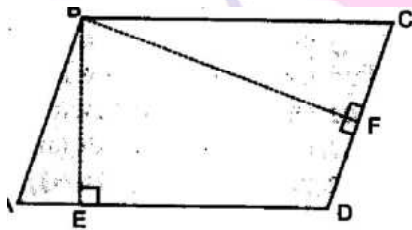   a) 25 cm^2 b) 15 cm^2 c) 14 cm^2 d) 10 cm^2

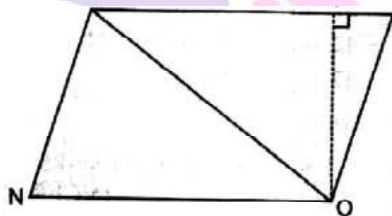19. Area of parallelogram ABCD   is not equal to

    a) DE X DC   b) BE X AD   c) BF X DC   d) BE X BC

20 Area of triangle MNO parallelogram MNOP is

    a) $\frac{1}{2}$ MN × NO   b) $\frac{1}{2}$ NO × MO   c) $\frac{1}{2}$ MN × 0Q   d) $\frac{1}{2}$ NO × OQ

21. Ratio of area of ∆ MNO to the area of parallelogram MNOP in the above figure (q.20) is

    a) 2:1   b) 1:1   c) 1:2   d) 2:1

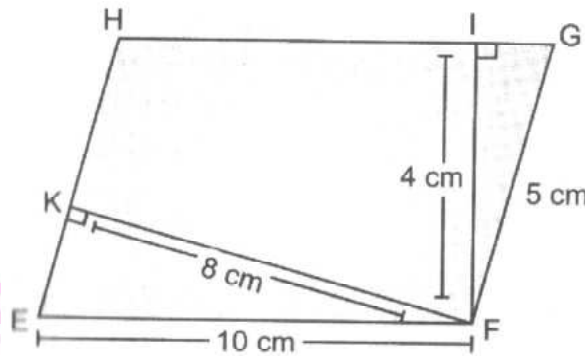22. Ratio of areas of ∆ MNO   and ∆ MOP in above figure (q.20) is

   a) 2:1   b)1:1   c) 2:3   d) 1:2

23. EFGH is a parallelogram, altitudes FK and FI are 8 cm and 4 cm respectively. If EF = 10 cm, then area of EFGH is

a) 20 cm^2 b) 32 cm^2 c) 40 cm^2 d) 80 cm^2

24. In reference to a circle the value of π is equal to

a). $\frac{Area}{Circumference}$ b) $\frac{ARea}{Diameter}$ c) $\frac{Circumferenmce}{diameter}$ d) $\frac{Circumference}{radius}$

25. Circumference of circle is always

a) more than three times of its diameter

b) Three times of its diameter

c) Less than three times of its diameter

d) Three times of its radius

26. Area of triangle PQR is 100 cm^2. If altitude QT is 10 cm, then its base PR is

a) 20 cm   b) 15 cm   c) 10 cm   d) 5 cm
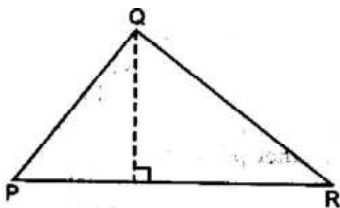
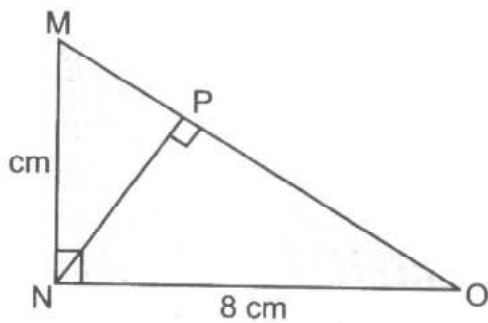27. If PR = 12cm, QR = 6 cm and PL = 8 cm, then QM is.
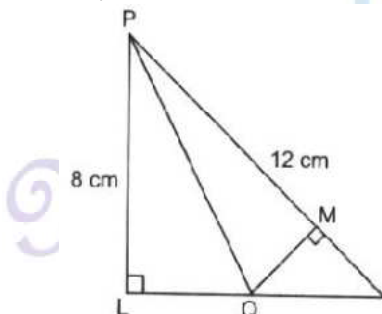
a) 6 cm   b) 9 cm   c) 4 cm   d) 2 cm

28. Δ MNO is a right – angled triangle. Its legs are 6 cm and 8 cm long, Length of perpendicular NP on the side MO is

a) 4.8 cm
b) 3.6 cm
c) 2.4 cm
d) 1.2 cm

29. Area of a right–angled triangle is 30 cm^2. If its smallest side is 5 cm, then its hypotenuse is

a) 14 cm
b) 13 cm
c) 12 cm
d) 11 cm

30. Circumference of a circle of diameter 5 cm is

a) 3.14 cm
b) 31.4 cm
c) 15.7 cm
d) 1.57 cm

31. Circumference of a circular disc is 88 cm. Its radius is

a) 8 cm
b) 11 cm
c) 14 cm
d) 44 cm

32. Length of tape required to cover the edges of a semicircular disc of radius 10 cm is

a) 62.8 cm
b) 51.4 cm
c) 31.4 cm
d) 15.7 cm

33. Area of circular garden with diameter 8 m is :

a) 12.56 m^2
b) 25.12 m^2
c) 50.24 m^2
d) 200.96 m^2

34. Area of circle with diameter 'm' radius 'n' and circumference 'p' is

a) $2\pi n$
b) πm^2
c) πp^2
d) πn^2

35. A table top is semicircular in shape with diameter 2.8m. Area of this table top is

a) 3.08 m^2
b) 6.16 m^2
c) 12.32 m^2
d) 24.64 m^2

36. If 1 m^2 = x mm^2, then the value of x is

a) 1000
b) 10000
c) 100000
d) 1000000

37. If p squares of each side 1 mm makes a square of side 1 cm, then p is equal to

a) 10
b) 100
c) 1000
d) 10000

5

38. 12 m^2 is the area of

    a) a square with side 12 m   b) 12 squares with side 1m each

    c) 3 squares with 4 m each   d) 4 squares with side 3 m each

39) If each side of a rhombus is doubled, how which will its area increase?

    a) 1.5 times   b) 2 times   c) 3 times   d) 4 times

40. If the sides of a parallelogram are increased to twice its original lengths, how much will the perimeter of the new parallelogram?

    a) 1.5 times   b) 2 times   c) 3 times   d) 4 times

41. If radius of a circle is increased to twice its original length, how much will the area of the circle increase?

    a) 1.4 times   b) 2 times   c) 3 times   d) 4 times

42. What will be the area of the largest square that can be cur out of a circle of radius 10cm?

    a) 100 cm^2 b) 200 c m^2 c) 300 cm^2 d) 400cm^2

43. It the radius of a circle is tripled, the area becomes

    a) 9 times   b) 3 times   c) 6 times   d) 30 times

44. The area of a semicircle of radius 4π is :

    a) $8\pi r2$ b) $4\pi r^2$ c) $12\pi r^2$ d) $2\pi r^2$

45. What is the radius of the largest circle that can be cut out of the rectangle measuring 10 cm in length and 8 cm in breadth ?

    a) 4 cm   b) 5 cm   c) 8 cm   d) 10 cm

46. The perimeter of the figure ABCDEFGHIJ is

    a) 60 cm   b) 30 cm   c) 40 cm   d) 50 cm
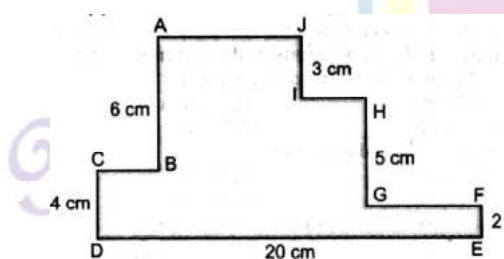
47. The circumference of a circle whose area is $81 \pi r^2$ is

    a) 8π b) 18π c) 3π d) 81π

48. The area of a square is $100\ cm^2$ .The circumference (in cm) of the largest circle cut out of it is :

    a) 5π b) $10\ \pi$ c) $15\ \pi$ d) 20π

1) b	2) b	3) b	4) a	5) c	6) d	7) c	8) c	9) a	10)d
11) b	12) c	13) c	14) c	15) b	16) c	17) d	18) d	19) a	20) d
21) c	22) b	23) c	24) c	25) a	26) a	27) c	28) c	29) b	30) c
31) c	32) b	33) c	34) d	35) a	36) d	37) a	38) b	39) d	40) b
41) d	42) a	43) a	44) a	45) a	46) a	47) b	48) b		

I. Multiple choice questions 7.1

1. The breadth of a rectangle whose length is 12cm and perimeter is 36 cm is

    a. 6cm   b. 3cm   c. 9cm   d. 12cm

2. Find the area of a square park, whose perimeter is 96cm

    a. $576\ cm^2$ b. $626\ cm^2$ c. $726\ cm^2$ d. $748\ cm^2$

3. Find the length of a parallelogram, whose area is $246cm^2$ and base is $20\ cm^2$

    a. 1.23cm   b. 13.2cm   c. 12.3cm   d. 1.32cm

4.The radio of two concentric circles are 7 m and 9m. the area enclosed between them is

    a. $90\ m^2$ b. $90.47\ m^2$ c. $100m^2$ d. $100.48m^2$

5. A copy is tied with a rope of 7m. the grass grazed field by the cow is

    a. $144m^2$ b. $140m^2$ c. $154m^2$ d. $164m^2$

| 1. a	2. a	3. c	4. d	5. c

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I. Fill in the blanks

1. 1 Hectare = _____ cm^2

2. _____ squares of each side 1 m makes a square of side 5 km

3. All the congruent triangles have _____ area

4. Perimeter of a regular polygon = Length of one side x _____

5. If a wire in the shape of a square is rebent into a rectangle, then _____ of both shapes remain same but _____ may vary.

6. Area of the square MNOP is 144 cm^2, Area of each triangle is
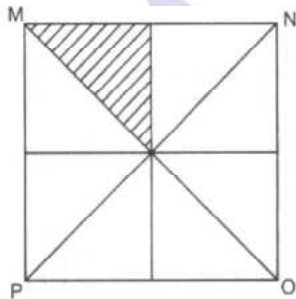
7. Area of parallelogram BCEF is _____ cm^2 where ACDF is a rectangle.
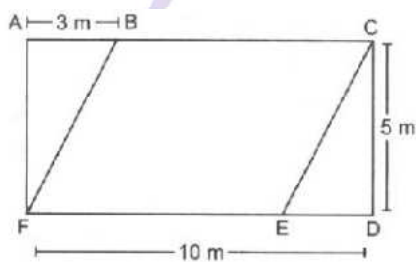
8. To Find area, any side of a parallelogram can be chosen as _____of the parallelogram.

9. Perpendicular dropped on the base of a parallelogram from the opposite vertex is known as the corresponding _____ of the base.

10. The distance around a circle is its. _____.

11. Ratio of the circumference of a circle to its diameter is denoted by symbol_____

12. If area of a triangular piece of cardboard is 90 cm^2 then the length of altitude corresponding to 20 cm long base is _____ cm

13. Value of π is _____ approximately

14. Circumference 'C' of a circle can be found by multiplying diameter 'd' with _____.

15. Circumference 'C' of a circle is equal to 2π x _____

16. 1 cm^2 = _____ cm^2

17. Area of a triangle = $\frac{1}{2}$ base x _____

18. 1 km^2 - _____ m^2

19. Area of a square of side 6m is equal to the area of _____

   Squares of each side 1 cm.

20. 10cm^2 = _____ m^2

1)10,00,00,000	2) 2,50,00,000	3) Equal	4) Number of sides
5) Perimeter, Area	6) cm^2	7)35 cm^2	8) Base
9) altitude	10) Circumference	11) π	12) 9 cm
13) 3.1415	14) π	15) Radius	16) 100
17) height	18) 10,00,000	19) 3,60,000	20) 0.001

II. Fill in the blanks

1. **If the perimeter of an equilateral triangle is 9 cm. Then, its area is _____ cm^2**

   Perimeter of an equilateral triangle = 9cm

   Side of an equilateral triangle = $\frac{9}{3}$ = $3cm$

   $\therefore$ *Area of an equilateral triangle* = $\frac{\sqrt{3}}{4}a^2$

   So, area = $\frac{\sqrt{3}}{4}(3)^2$ = $\frac{\sqrt{3}}{4}x9$ = $\frac{9x1.73}{4}$ = $\frac{15.57}{4}$

   = $3.89cm^2$

   So the area of triangle is $3.89cm^2$

2. The diameter of a circle is 4cm. Then its area is _____ cm^2

Given Diameter = 4cm

Now radius = $\frac{4}{2}$ = $2cm$

∴ Area of a circle = πr^2 = $\frac{22}{7} \times (2)^2$

= $\frac{22}{7}$ x 2 x 2 = $\frac{88}{7}$ = 12.57cm^2

3. The area of a rectangle is 200 cm^2. If its breadth is 20cm. then its length is ___ cm

Given area of a rectangle = $200cm^2$ and breadth = $20cm$

∴ Area of a rectangle = Length × Breadth

⇒ Length = $\frac{200}{20}$ = $10cm$

4. If a wire in the shape of a square is rebent into a rectangle, then the ..... Of both shapes remain same, but_____ may very

If a wire in the shape of a square is rebent into a rectangle. Then the perimeter of both shapes remain same. But area may way.

True or False

1. The area of a square of side 5cm is 30cm.

False, side = 5cm

∴ Area of a square = $(Side)^2$ = $(5)^2$ = $25cm^2$

2. The area of a rectangle of sides 45cm and 12cm is 450 cm^2

False. sides of rectangle are 45cm and 12cm

∴ Area of a rectangle = Length x Breadth

= 45 x 12 = $540m^2$

3. The perimeter of a triangle of sides 20cm. 12cm, 16cm is 48cm.

True. Sides of a triangle is 20cm, 12cm and 16cm

∴ perimeter of a triangle = Sum of the length of all three sides of the triangle

= 20 + 12 + 16 = 20 + 28 = 48cm

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4. The circumference of a circle is 85m, if the radius of circle is 8m.

   False. Radius of a circle = 8m

   $\because$ *Circumterence of a circle* $= 2\pi r = 2 \, x \, \pi \, x \, 8$

   $$= 16\pi = 16 \, x \, \frac{22}{7}$$

   $= \frac{352}{7} = 50.28 \, cm.$

5. The area of a parallelogram is 550 m^2 and its base is 55m and height is 10m.

   True, area of a parallelogram = Base x Height

   Base = 55m, Height = 10 m

6. Triangles having the same base have equal area.

   False, triangles having the same base have equal area cannot be possible in any case,

7. Ratio of circumference of a circle to its radius is always $2\pi:1$.

   True, Circumference of a Circle = $2\pi r$

   Radius of a circle = r

   Ratio of the circumference = $2\pi r : r = 2\pi : 1$

8. 5 hec. = $500m^2$

   False 1 hec. = $10000m^2$

   So, 5 hec = 5 x 10000 = 50000 m^2

9. An increase in perimeter of a figure always increases the area of the figure.

   False. An increase in perimeter of a figure always not increases the area of the figure.

10. Two figures can have the same areas. But different perimeters.

    True. Yes two figures can have same area. But different perimeters.
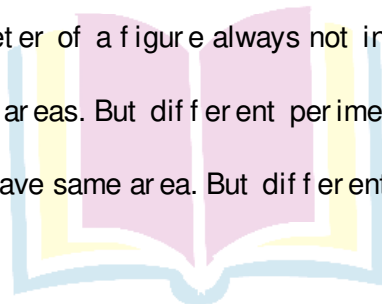
I Match the column

Column A	Column B
a. Area of a right angled triangle	i. base × height
b. Area of a parallelogram	ii. $\pi r + 2r$
c. Area of an equilateral triangle	iii. $\frac{\sqrt{3}}{4}a^2$
d. perimeter of a semi-circle	iv. $\frac{1}{2} \times Base \times Height$

(a) (iv)	(b) (i)	(c) (iii)	(d) (ii)

II Match the column

Column A	Column B
a. Area of a triangle with base 4cm and height 6cm	i. $12cm^2$
b. Area of a parallelogram with base 8cm and height 12 cm	ii. $1.29cm^2$
c. Area of a circle with diameter 22cm	iii. $96cm^2$
d. Area of an equilateral triangle with side $\sqrt{3cm}$	iv. $380.28m^2$

(a) (i)	(b) (iii)	(c) (iv)	(d) (ii)

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1. **The circumference of two circles are in the ration 5 :6 find the ration of their radius.**

$$\frac{2\pi r}{2\pi R} = \frac{5}{6}$$

$$\Rightarrow \quad \frac{r}{R} = \frac{5}{6}$$

$$\therefore \quad \text{ratio is } 5 : 6$$

2. **The length and breadth of a rectangle are 10 and 8. Find its perimeter.**

P = 2 (L + B)

= 2 (10 + 8)

= 2 X 18

= 36

3. **Find area of a square of side 8 cm**

Area = 8 x 8 = 64cm^2

4. **The radius of a circle is 1 cm. what is its circumference?**

Circumference = $2\pi r$

= $2\pi(1)$

= $2\pi \, cm$

II Very short answer

1. **What is the ratio of the circumferences and diameter of a circle?**

The ratio is always more than 3.

2. **What is the conversion between hectare and cm 2?**

1 hectare = 10,00,00,000 cm2

3. **What can you say about the area of congruent triangles?**

Area of all congruent triangles must be equal.

4. What is the perimeter of a regular polygon?

perimeter of a regular polygon = Length of one side x number of sides.

5. What is the radius of circle disk whose circumference is 88 cm

$C = 2 r$

6. What will be the area of circle if radius is trippled?

If radius is trippled then the new area of triangle will become 9 times.

7. What is the value of _____ ?

The value of _____ is either $\frac{22}{7}$ or 3.14 approximately.

I short answer Question

1. Find the area of a square park, whose perimeter is 200m

Sol. Perimeter of square = 4 x side

$\Rightarrow \qquad 4 \times side = 200$

$\Rightarrow \qquad side = \frac{200}{4} = 50m$

$\Rightarrow \quad Area\ of\ park \quad = (Side)^2$

$\Rightarrow \qquad = (50)^2 = 50 \times 50$

$= 2500 m^2$

2. In a parallelogram ABCD, if AB=8cm and the3 length of the perpendicular from C to AB is 5.2 cm . Find the area of parallelogram

Area of parallelogram = base x height

In the questions,

AB = base = 8 cm

And height = 5.2 cm

Area = 8 x 5.2

$= 41.6\ cm^2$

3. Find the area of a triangle whose base = 25 cm and height = 14 cm

$$\text{Area of A} = \frac{1}{2} \times base \times height$$

$$= \frac{1}{2} \times 25 \times 14$$

$$= 25 \times 7 = 175 \text{ cm}^2$$

4. Find the area, in square centimetres, of a square whose side is

(a) 2.4 dm   (b) 20 mm

(a) we have,

Side of the square = 2.4 dm = (2.4 x 10) cm = 24 cm

$\therefore Area\ of\ the\ square = (Side)^2 = (24)^2\ cm^2 = 576 cm^2$

(b). We have

Side of the square = 20mm=2cm

$[\because 10\ mm = 1 cm]$

$\therefore Area\ of\ the\ squre = (Side)^2 = (2)^2\ cm^2 = 4 cm^2$

5. Find the area in hectare, of a field whose length is 240m and breadth 110m

Length of the field =   240m

Breadth of the field =   110m

Area of the field   =   (240 x 110)m2

=   26400m2

=   hectare = 264 hectare

= $\frac{26400}{10000}\ hectare = 264\ hectare$

$[\because 10000 m^2 = 1 hectare]$

6. Find the area of a rectangular plot one side of which is 48m and its diagonals is 30m

Let the other side be x metres, since AABC is a right triangle. Therefore

$AC^2 = AD^2 + CD^2$

$\Rightarrow \quad 50^2 = 48^2 + x^2$

$\Rightarrow \quad x^2 = (50)^2 - (48)^2$

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$$\Rightarrow \qquad x^2 = (50+48)\ (50-48)$$

$$\Rightarrow \qquad x^2 = (98) \times 2$$

$$\Rightarrow \qquad x^2 = 14^2$$

$$\Rightarrow \qquad x = 14$$

Thus the other side of the rectangle is 14m Area of the rectangle = $(48 \times 14)m^2 = 672m^2$

1. **ABC is a right angled triangle whose sides are AB = 8cm, BC=12cm and AC=13cm, find the area of the ΔABC and height BD $\perp AC$.**
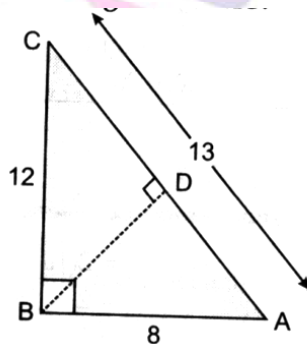
Area of the triangle ABC

$= \dfrac{1}{2}$ x base x height

$= \dfrac{1}{2}$ x AB x BC

$= \dfrac{1}{2}$ x 8 x 12

= 4 X 12

$= 48m^2$

Again, also area of ΔABC

$= \dfrac{1}{2}$ x AC x BD

$\Rightarrow \qquad 48 = \frac{1}{2}$ x 13 x BD

$\Rightarrow \qquad 13BD = 96$

Thus $\quad BD = \frac{96}{13} = 7.38$cm

2. If the circumference is 30cm more than the diameter of the circle, find the radius of the circle.

According to the question,

Circumference - diameter = 30 cm

$\Rightarrow \qquad 2\pi r - 2r = 30$

$\Rightarrow \qquad 2r(\pi - 1) = 30$

$\Rightarrow \qquad 2r\left(\frac{22}{7} - 1\right) = 30$

$\Rightarrow \qquad 2r = \frac{30 \, x \, 7}{15} = 14$

r $= \frac{14}{2} = 7cm$

3. The circumference of two circles are in the ratio 3:4 find the ratio of their areas.

Let the radio of circles are r_1 and r_2

According to question,

$\frac{2\pi r_1}{2\pi r_2} = \frac{3}{4}$

$\frac{r_1}{r_2} = \frac{3}{4}$

Ratio of areas $= \frac{\pi r_1^2}{\pi r_3^2} = \left(\frac{r_1}{r_t}\right)^2$

$\qquad = \left(\frac{3}{4}\right)^2$

$\qquad = \frac{9}{4} = 9 : 4$

4. If the diameter of a circular park is 84m. A 3.5m broad road runs round it. Find the cost of constructing the road at Rs.200 per m².

Radius of circular park $= \frac{84}{2} = 42m \, (given)$

Width of the road = 3.5m [given]

Radius of outer circle = 42 + 35 = 45.5m

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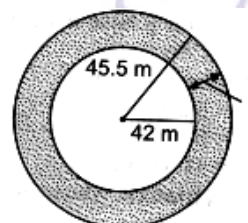
Area of the road = [Area of outer circle]

$$- \quad [\text{Area} \times X\,(42)^2$$

$$= \pi \times \{(45.5)2 - |(42)2\} \quad [\ (45.5)^2 - (42)^2$$

$$= \pi \times 87.5 \times 3.5$$

$$= \frac{22}{7} \times 87.5 \times 3.5 = 11 \times 87.5$$

$$= 962.5 m^2$$

Cost of the road = 962.5 × Rs.200

$$= \text{Rs.}1,92,500$$

5. A wall 4.84 m long and .1m high is covered with rectangular tiles of size 22 cm by 10cm. Find the total cost of the tiles at the rate of Rs. 1.50 per tiles

Area of the wall = 4.84 X 3.1m²

$$= 15.004 m^2$$

$$= 15.004 \ X \ 10000 \ cm^2$$

$$[\because 1m^2 = 10000 cm^2]$$

$$= 150040 \ cm^2$$

Area of one tile $\quad = 22 \ x \ 10 cm^2 = 220 \ cm^2$

Number of tiles $\quad = \dfrac{Area\ of\ the\ wall}{Area\ of\ one\ tile}$

$$= \dfrac{150040}{220} = 682$$

Cost of one tile $\quad = $ Rs.1.50

Total cost = Number of tiles x Cost of one tile

$$= \text{Rs. } (682 \ x \ 1.50) = \text{Rs.}1023$$

6. Find the base of a triangle of area 36cm² and height 3cm

Height = 3cm

Area of triangle $\quad = \frac{1}{2}$bh

$$36 = \frac{1}{2}bh$$

$$\Rightarrow \qquad 36 = \frac{1}{2} \ Xb \ X \ 3$$

$$\Rightarrow \qquad 72 = b \times 3$$

$$\Rightarrow \quad \frac{72}{3} = b$$

$$\Rightarrow \qquad b = 24 \; cm$$

Base is 24 cm

7. **ABCD is a parallelogram in which AB=8cm,=6cm and AE=4cm, Find the altitude corresponding to side AD**
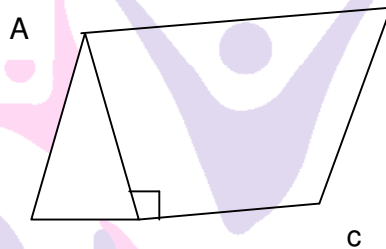
Sol. Area of parallelogram ABCD = AB X AE

$$= 8 \times 4 cm^2 = 32 cm^2$$

Let altitude corresponding to AD be h. then,

$$h \times AD = 32$$

or $\qquad h \times 6 = 32$

or $\qquad h = \frac{32}{6} = \frac{16}{3}$

Thus altitude corresponding to AD is $\frac{16}{3} \; cm$

8. **Circumference of a circle is 33cm. Find its area**

Sol. Let the radius of the circle be r.

Then, $2\pi r = 33$

i.e. $\quad r = \frac{33}{2\pi} = \frac{33}{2} \times \frac{7}{22} = \frac{21}{4}$

Thus radius is $\frac{21}{4} cm$

So area of the circle $= \pi r^2 = \frac{22}{7}, \frac{21}{7}, \frac{21}{7} = \frac{693}{8}$

Thus area of the circle is $\frac{693}{8} cm^2$

9. Rectangle ABCD is formed in a circle as shown. If AE = 8cm and AD = 5cm find the perimeter of the rectangle.
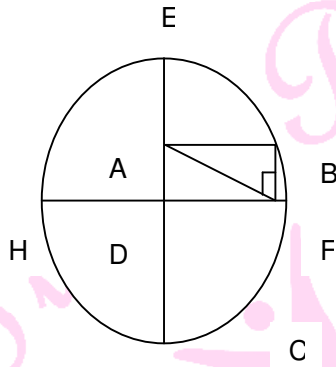
Sol.   DE = EA + AD = (8+5)CM = 33CM

DE is the radius of the circle

Also DB is the radius of the circle

Next AC = DB [since diagonals of a rectangle are equal in length]

Therefore.   AC=13cm

From ΔADC $DC^2 = AC^2 - AD^2 = 13^2 - 5^2$

                = 169 - 25 = 144 = 12^2

So   DC = 12

Thus length of DC is 12 cm

Hence perimeter of the rectangle ABCD

                = 2(12 + 5) CM = 34CM
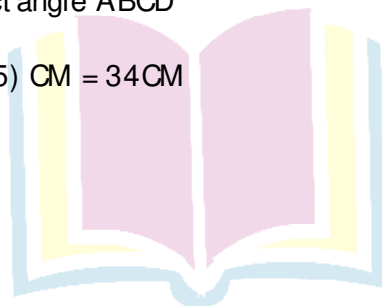
1. **A door-frame of dimension 3m x2m is fixed on the wall of dimension 10 m x 10 m. Find the total labour charges for painting the wall if the labour charges for painting 1m² of the wall is Rs.2.50**

   Painting of the wall has to be done excluding the area of the door.

   Area of the door = l x b= 3x2 m² = 6 m²

   Area of wall including door = side x side = 10m x 10 m = 100 m²

   Area of wall excluding door = (100 -6) m² = 94 m²

   Total labour charges for painting the wall = Rs.2.50 x 94 = Rs.235

2. **The area of a rectangular sheet is 500 m. If the length of the sheet is 25 cm what is its width.? Also find the perimeter f the rectangular sheet.**

   Area of the rectangular sheet = 500 cm2

   Length (l) =25 cm

   Area of the rectangle = l x b (where b = width of the sheet)

   Therefore, width b = $\frac{Area}{l} = \frac{500}{25}$ = 20 cm.

   Perimeter of sheet = 2 x (l b)=2x(25 +20)m = 90cm

3. **Find the area of square park whose perimeter is 320 cm**

   Perimeter of square = 4 x side = 320

   = side of square = 80 m

   Now = area of square = side x side

   = 80 x 80 = 6400 m2

   Hence the area of square = 6400 m2

4. **The perimeter of a rectangle is 30 cm, find its length. Also find the area of the rectangle.**

   Perimeter of rectangle = 2(l+b

   130 = 2(l + 30)

   $\frac{130}{2}$ = 65= l + 30

l = 65-30=35 cm

Now area of the rectangle = l x b =35 x 30 = 1050 cm 2

Hence the length of rectangle = 35 cm2

And the area of rectangle = 1050 cm2

5. Find the height 'x' if the area of the parallelogram is 24 cm2 and the base is 4 cm in given

Fig. 11.5
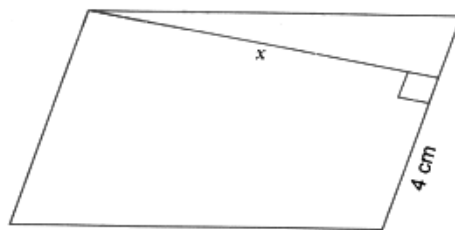
Area of parallelogram = b x h

Therefore 24= 4 x x

$\frac{24}{4} = x$ or

x = 6cm

So the height of the parallelogram is 6cm.
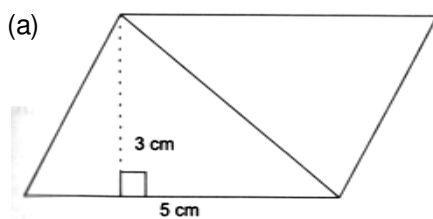
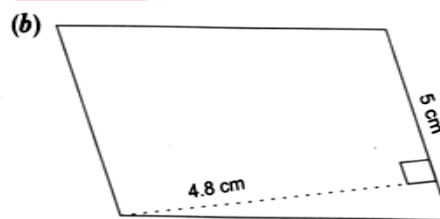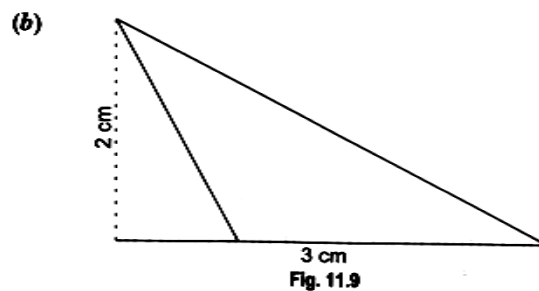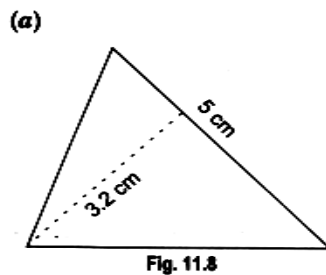6. Find the area of each of the following parallelogram

(a)

Fig. 11.6

(b)

Fig. 11.7

a) Area of parallelogram base x height

= 5 x3

= 15 cm2

b) Area of parallelogram = 5 x 4.8 = 24 m^2

7. Find the area of each of the following triangles

(a)

(b)

Fig. 11.8

Fig. 11.9

a) Area of triangle $= \frac{1}{2}$ x base x height

$= \frac{1}{2}$ x 5 x 3.2 = 8 cm2

b) Area of triangle = 3 x 2 = 6 cm2

8. **PQRS is a parallogram (Figure) QM is the height from Q to SR and QN is the height from Q to PS. If SR = 12cmand Qm = 7.6cm. Find**

a) the area of the parallelogram PQRS

b) QN, if PS = 8 cm.

a) Area of parallelogram PQRS= SR X QM

= 12 x 7.6 =91.2cm2

b) Again area of parallelogram PQRS=PS X QN

91.2 = 8 x QN

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

9. **ΔABC IS ISOSCELESS with AB=AC=7.5cm and BC = 9 m (Fig 11.11) The height AD from A to BC , is 6 cm. Find the area of Δ ABC. What will be the height from C to AB i.e.CE?**
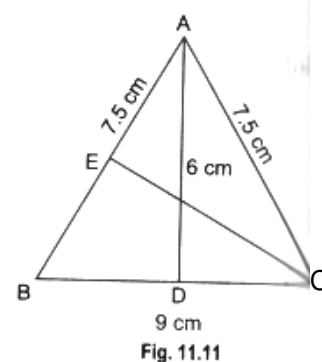
Area of ΔABC $= \frac{1}{2}$ x Base x height

$\frac{1}{2}$ x 9 x6 = 27 cm2

Again area of Δ ABC $= \frac{1}{2}$ x AB x CE

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

CE $= \frac{27 \times 2}{7.5}$ = 7.2 cm

Fig. 11.11

10. **The radius of a circular pipe is 10cm. What length of a tape is required to wrap once around the pipe ($\pi = 3.14$)?**

   Radius of the pipe (r) = 10 cm

   Length of tape required is equal to the circumference of the pipe.

   Circumference of the pipe = $2\pi r$

   = 2 x 3.14 x 10cm = 62.8cm

   Therefore length of the tape needed to wrap once around the pipe is 62.8cm.

11. **A gardener wants to fence a circular garden of diameter 21m. Find the length of the rope he needs to purchase, if he makes 2 rounds of fence. Also find the cost of the rope, if it costs Rs.4 per meter.(Take $\pi = \frac{22}{7}$). $2\pi r$**

   Diameter of circular garden = 21m

   Therefore the radius = $\frac{21}{2}$ m

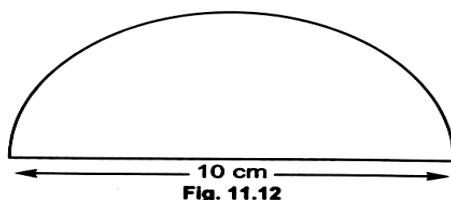   The length of rope be needed = circumference of circle = $2\pi r$

   $2 \times \frac{22}{7} \times \frac{21}{2} = 66$m

   ∵ He makes 2 rounds of fence

   ∴ The length of rope = 2x66=132m

   Cost of rope = 132 x 4 = Rs.528.

12. **Find the perimeter of the adjoining figure which is a semicircle including its diameter. Diameter=10cm, radius = $\frac{10}{2}$= 5cm**

   10 cm
   Fig. 11.12

   Circumference of semi circle πr

   = $\frac{22}{7}$ x 5 = $\frac{110}{7}$cm

   ∴ The perimeter of adjoining figure = Diameter + Circumference of semicircle

   = 10 + $\frac{110}{7}$ = $\frac{180}{7}$ cm = 25.7cm

1. **A copper wire, when bent in the forms of a square encloses an area of 121cm2. If the same wire is bent in the form of a circle. Find the area enclosed by it**

   Sol. Area enclosed the copper wire

   In square shape $= (side)^2$

   $(side)^2 = 121\text{cm}^2$

   $\Rightarrow \qquad$ Side $= \sqrt{121} = 11\text{cm}$

   Hence length of wire $= 11 \times 4$

   $\qquad = 44\text{cm}$

   Now this length = circumference of the circle

   $\Rightarrow \qquad 2\pi r = 44$

   $\Rightarrow \qquad 2 \times \dfrac{22}{7} \times r = 44$

   $\Rightarrow \qquad r = \dfrac{44}{2 \times 22} \times 7$

   Thus $\qquad r = 7\text{cm}$

   Hence area enclosed by the wire when it is bent in circular shape

   $\qquad = \pi r^2$

   $= \dfrac{22}{7} X (7)^2$

   $= \dfrac{22}{7} X 7 \times 7$

   $= 154\text{m}^2$

2. **The floor of a building is covered with 2760 tiles. Each of the tiles is in the shape of a parallelogram of altitude 3 cm and base 4.5cm. Find the cost of polishing the tiles at the rate of Rs.20 per m^2**

   Sol. Area of one tile [parallelogram shape]

   $\qquad = \text{base} \times \text{height}$

   $\qquad = 3 \times 45$

   $\qquad = 13.5\text{cm}^2$

Area of such 2760 tiles   = 2760 x 13.5

                 = 37,260cm2

                 = 3.726m2

Cost of polishing= 3.726 x 20

                 = Rs.74.52

3. Find the heights of the wall whose length is 4m and which can be covered by 2400 tiles of size 25 cm by 20cm

Area of a tile   = 25x20 cm^2 =500 cm^2

Area of 2400 tiles   = 2400 x 500 cm^2

                  = 1200000 cm^2

$$= \frac{1200000}{10000}\,m^2$$

$$[\because 10000cm^2 = 1m^2]$$

$$= 120m^2$$

Let the height of the wall be h metres then

Area of the wall   =   4h m^2

Since 2400 tiles completely cover the wall

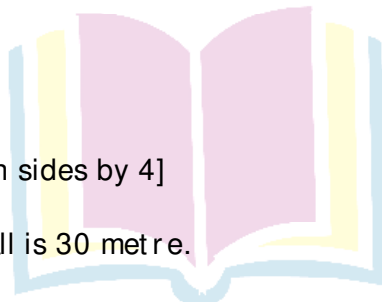   Area of the wall = Area of 2400 tiles

$\Rightarrow 4h = 120$

$\Rightarrow \quad \dfrac{4h}{4} = \dfrac{120}{4}$

$\Rightarrow \quad\quad h = 30$

        [Dividing both sides by 4]

Hence the height of the wall is 30 metre.

1. In △ PQR, PR=8 cm, QR=4 cm and PL =5cm(Figure)

   i.   the area of the △ PQR

   ii.   QM

   QR = base =4cm, PL = height = 5cm

   Area o the triangle PQR = $\frac{1}{2}$ bh

   =$\frac{1}{2}$ x 4cm x 5 = cm = 10cm^2

   ii) PR = base = 8cm   QM = height =?

   Area of triangle = $\frac{1}{2}$ x b x h i.e. 10 = $\frac{1}{2}$ x 8 x h

   H = $\frac{10}{4}$ = $\frac{5}{2}$ =2.5   So, QM = 2.5 cm
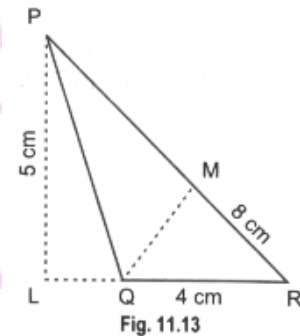
2. **Find the perimeter of the given shape. In this shape we need to find circumference of semicircles on each side of the square. Do you need to find the perimeter of the square also? No, the outer boundary, of this figure is made up semicircles Diameter of each semicircle is 14 cm .**

   We know that,
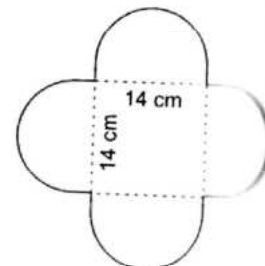
   Circumference of semicircle = πd

   Circumference of semi circle = $\frac{1}{2}$ πd

   =$\frac{1}{2}$ x $\frac{22}{7}$ x 14 cm = 22cm.

   Circumferences of the semicircle is 22 cm.

   Therefore, perimeter of the given figure = 4x22cm = 88cm

3. **From a circular card sheet of radius 14 cm two circles of radius 3.5 cm and a rectangle of length 3 cm and breadth 1 m are removed. (as shown in the adjoining figure.) Find the area of the remaining sheet .(Take = π= $\frac{22}{7}$)**
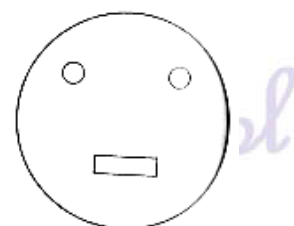
   Total area of circle = πr^2

   =$\frac{22}{7}$ x 14 x 14 = 616cm^2

   Area of 2 small circles = 2 x πr^2

   =2 x $\frac{22}{7}$ x $\frac{35}{10}$ x $\frac{35}{10}$= 77cm2 and

   Area of a rectangle l x b =3 x 1 =3 cm2

Now area of the remaining sheet.

= Total area of circle=area 0f small circle – area of a rectangle

= 616-77-3= 536 cm2.

4. **A circular flower bed is surrounded by a path 4m wide. The diameter of the flower bed is 66m. What is the area of this path? ($\pi = 3.14$)**

Diameter of flower bed = 66 m

Radius of flower bed =33m

Radius of flower bed + path)= (3 + 4) = 37m

Now area of the path Area of circle including flower bed and path-Area of circle including flower. bed.

= π x 372- π x 3 = $\pi(372 - 332)$

= $\frac{22}{7}$ x 4 x 270 = 880 cm2

5. **How many times a wheel of radius 28 mcm must rotate to go 352m?**

(Take $\pi = \frac{22}{7}$)

Radius = 28 cm

Distance =352 m = 35200 cm

Circumferences of wheel = 2 πr

= 2x $\frac{22}{7}$x28=176 cm

Number of rotation = $\frac{Total\ distance}{Distane\ covered\ in\ one\ rotation}$= $\frac{35200}{176}$=200

Hence, the wheel will rotate 200 times

6. **The minute hand of a circular clock is 15 cm long. How far does the tip of the minute hand move in1 hour. (Take $\pi = 3.14$)**

Radius = length of minute hand = 15 cm

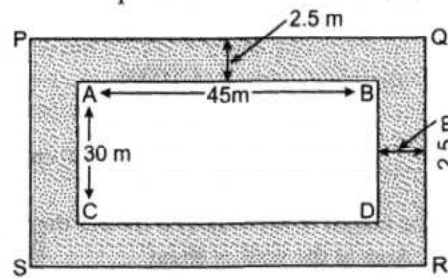Distance travelled by minute hand in 1 hour.

= circumstances of circle.

= 2 πr = 2x3.14 x 15=94.2 cm

7. **A rectangular park is 45m long and 30m wide. A path 2.5m wide is constructed outside the   park. Find the area of the path.**

Sol.   Let ABCD represent the rectangular park and the shaded region represent the path 2.5 m wide. To find the area of the path, we need to find [Area of rectangle PQRS – Area of rectangle ABCD]

We have

$$PQ = (45 + 2.5 + 2.5)M = 50M$$

$$PS = (30 + 2.5 + 2.5)M = 35M$$

Area of the rectangle ABCD = L X B

$$= 45 \text{ X } 30m^2 = 1350 \ m^2$$

Area of the rectangle PQRS = L X B

$$= 50 \text{ X } 30m^2 = 1750 \ m^2$$

Area of the path = Area of the rectangle PQRS = Area of the rectangle ABCD

$$= (1750 - 1350)m^2 = 400m^2$$

8. **A path 5m wide runs along inside a square park of side 100m. Find the area of the path. Also find the cost of cementing it at the rate of Rs.250 per $10m^2$**

Sol.   Let ABCD be the square park of side 100 m. The shaded region represents the path 5m wide.

$$PQ = 100 - (5 + 5) = 90m$$

Area of square ABCD = $(side)^2$

$$= (100)^2 m^2 = 10000m^2$$

Area of square PQRS = $(side)^2$

$$= (90)^2 m^2 = 8100m^2$$

Fig. 11.17

Created by Pinkz
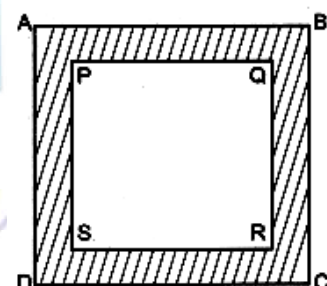
Therefore, area of the path = $(10000 - 8100) m^2 = 1900 m^2$

Cost of cementing $10 m^2$ = Rs.250

Therefore, cost of cementing $1 m^2 = Rs. \frac{250}{10}$

So, cost of cementing $1900 m^2 = Rs. \frac{250}{10} \times 1900$ = Rs.47500

9. **A verandah of width 2.25 m is constructed all along outside a room which is 5.5 m long and 4 m wide. Find ;**

   i) the area of the veranda

   ii) The cost of cementing the floor of the veranda at the rate of Rs.200 per m2.

   Length of the rectangle PQRS

   =5.5 + 2.25 + 2.25 = 10 M
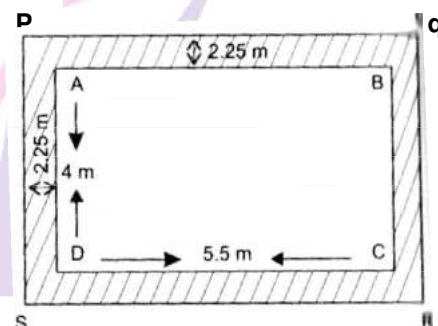
   Breadth of rectangle PQRS

   = 4+ 2.25+2.25 = 8.5

Fig. 11.18

   i)   Area of veranda

          = Area of PQRS – Area of _____ABCD= (10 x 8.5) – (4 x 5.5)

          =85-22= 63 m2

   ii)   Cost of commencing of floor = 63 x200 = Rs.12,600

          Hence the area of veranda = 63m2

          and cost of cementing at the rate Rs.200/m2 = Rs.12,600.

10. **Find the area of the quadrilateral ABCD. Here AC = 22cm, BM = 3cm, DN =3 cm and BM $\perp$ AC,   DN $\perp$ AC.**

    Area of quadrilateral

    =Area of Δ ABC + Area of Δ ACD

    =$\frac{1}{2}$ xAC x BM +$\frac{1}{2}$ AC X DN

    =$\frac{1}{2}$ x 22 X 3 +$\frac{1}{2}$ 22 X 3

    = 33 + 33 = 66 CM^2

Fig. 11.19

Created by Pinkz