**PARAGON CONVENT SCHOOL**

**SECTOR – 24 B , CHANDIGARH**

**CLASS – 7 SUB – MATHS**

 **EXERCISE – 16A**

Q-1. Find the perimeter of Rectangle ABCD, given that –

1. AB = 13 cm , BC = 8cm

Perimeter of rectangle = 2 x ( L + B)

 = 2 x ( 13 + 8) = 2 x 21 = 42cm

1. CD = 7cm , AD = 3.5cm

Perimeter = 2 x ( L + B)

 = 2 x ( 7 + 3.5 ) = 2 x 10.5 = 21cm

Q-2. Find the perimeter of square ABCD , given that –

1. AB = 8cm

Perimeter of square = 4 x side = 4 x 8 = 32cm

1. BC = 11cm

Perimeter of square = 4 x side = 4 x 11 = 44cm

Q-3. The perimeter of a rectangle is equal to that of a square with side 13m . If the rectangle is 16m long , what is its breadth?

Sol: Side of square = 13m

Perimeter = 4 x side = 4 x 13 = 52m

According to question:

Perimeter of rectangle = Perimeter of rectangle = 52cm

 2 x ( L + B ) = 52

 2 x ( 16 + B ) = 52

 32 + 2 B = 52

 2B = 52 – 32

 2B = 20 => B = $\frac{20}{2} $= 10 m

Q-4. What is the length of the side of a square whose perimeter is 36cm?

Sol : Perimeter of square = 4 x side = 36

 Side = 36 ÷ 4 = 8 cm

Q-7. The length of a rectangular hallway is 3 times its breadth. If the perimeter of the hallway is 48m. Find its length and breadth.

Sol : Let the breadth be = x cm

Length = 3x

Perimeter = 2 x ( L + B) = 2 ( x + 3x ) = 48

 2 X 4x = 48

 8x = 48 => x = 48 ÷ 8 = 6m

So , Breadth = 6m

 Length = 3x = 3 X 6 = 18m.

Q-9. One side of a parallelogram is 2.5 m longer is than its adjacent side . If the perimeter of the parallelogram is 51m, find the measure of all sides.

Sol: Let first side of a parallelogram = x m

 Other side = (x + 2.5)m

According to question:

 Perimeter = 51m

2 X (L +B) = 51m

2 X ( x + 2.5 + x) = 51

2 X ( 2x + 2.5) = 51

4x + 5 = 51

4x = 51- 5

4x = 46 => x = 46 ÷ 4 => x = 11.5m

Length = x = 11.5m , Breadth = x + 2.5 = 11.5+2.5=14m

**EXERCISE – 16B**

Q-1. Find the area of rectangle ABCD , given that –

Area of rectangle = length x breadth

1. AB = 13cm , BC = 8cm

 Area = l x b

 = 13 x 8 = 104cm2

1. CD = 7cm , AD = 3.5cm

Area = l x b = 7 x 3.5 = 24.5cm2

Q-2. Find the area of square ABCD , given that –

 Area of square = side x side

1. AB = 8cm

Area of square = side x side = 8 x 8 = 64 cm2

1. BC = 11 cm

Area = side x side = 11 x11 = 121cm2

Q-3. Find the area of triangle ABC , given that –

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

1. AB = BC = 8cm , angle ABC = 900

Area = $\frac{1}{2 }$ x 8x8 = 32cm2

d.. AB = 3cm , BC = 8cm and angle ABC = 900

 Area = 1 x3x8 4 = 12cm2

  2

f.. AB = 6cm , AC = 7cm , angle BCA = 500 , angle ABC = 400

Area = $\frac{1}{2}$ x 6 x 7 = 21cm2

Q-5. The area of a rectangular lawn is 255m2.  . If its length is 15m , find its perimeter .

Sol : Area of rectangular lawn = 255 , length = 15m

 Length x breadth = 255

15 x b =255

 b = 255 ÷ 15

b = 17m

now , length = 15m and breadth = 17 m

then perimeter of rectangle = 2 x ( l + b)

 = 2 x ( 15 +17)

 = 2x 32 = 64m

Q-6.The area of a rectangular lawn is the same as the area of an 18m long square. If the length of the rectangular lawn is 27m , find its perimeter.

Sol : side of square = 18m

Area of square = side x side = 18 x 18 = 324m2

Length of rectangle = 27m

1. T . Q

Area of rectangle = Area of square = 324m2

 l x b = 324

 27 x b = 324

b = 324 ÷ 27

= 12m

Perimeter of rectangle = 2 x ( l +b)

 = 2x ( 27 + 12)

 = 2x 39 = 78m

Q-7. The area of a parallelogram with height 7.5cm is 71.25cm2 . What is the corresponding base of the parallelogram ?

Sol : area of parallelogram = base x height = 71.25cm2

 Base x 7.5 = 71.25

 Base = 71.25 ÷ 7.5 = 9.5cm

Q-9. What is the area of a square if its perimeter is 64cm.

Sol: perimeter of square = 4 x side =64

Side = 64 ÷ 4

 = 16cm

Area of square = side x side = 16 x 16 = 256cm2

Q-13. The area of a parallelogram is 420m2 . If the distance between two parallel sides is 15m , find the length of these sides.

Sol : Height = 15m

Area of parallelogram = base x height = 420

 Base x 15 = 420

 Base = 420/15

 = 28m

Q-14. If the perimeter of a parallelogram is 140m , the distance between a pair of opposite sides is 7m and its area is 210sq.m, find the length of the two adjacent sides of the parallelogram.

Sol : Height = 7m

Area = b x h = 210

 b x 7 = 210

 b = 210/7 => 30m

 According to question :

Perimeter = 2 x ( l + b ) = 140

 2 x ( l + 30 ) = 140

 2l + 60 = 140

 2l = 140-60

 2l = 80

 L = 80/2 => 40m

So sides are 30m and m.

  **EXERCISE – 16C**

Q-1. A square park is of side100 m. A path 5m is made all around the garden inside it. Find the area of the path.s

Sol : Side of square park = 100m

Area of square park (outer square )= s x s = = 100 x 100 = 10000m2

Side of inside square = 100 – ( 5+5)

 **=** 90m

Area of inside square = sxs = 90x 90

 = 8100m2

**Area** of path = area of outer square – area of inner square

 = 10000 – 8100 = 1900m2

Q-2 A lawn is 80m long and 60m wide .There is a swimming pool of length 20mx6m in this lawn. What will be the cost of putting grass in the remaining part of the field at Rs 30per square metre?

Sol: Length of lawn = 80m

Breadth = 60m

Area of lawn = 80 x 60 = 4800m2

Area of swimming pool = 20 x 6 = 120m2

Area of left part of the field = area of lawn – area of swimming pool

 = 4800 – 120 = 4680m2

Cost of putting grass per metre square = Rs 30

Cost of putting grass 4680 metre square = 4680 x 30 = Rs 140400

Q-4. A school auditorium is 50m long and 30m wide . This auditorium is surrounded by by a verandah 5 m wide on the outside of it. Find the area of the verandah. If tiles of 50cm x 50cm are fixed on the verandah, how many tiles will be required?

Sol : Area of auditorium (inner rectangle)= l x b

 = 50 x 30 = 1500m2

Length of of outer rectangle = 50 + (5+5)

 = 60m

Breadth = 30 + (5+5)

 = 40m

Area = l x b = 60 x 40= 2400m2

Area of verandah = area of outer rectangle – area of auditorium (inner rectangle

 = 2400 – 1500= 900m2

 = 900 x 100 x 100 = 9000000cm2

Area of 1 tile = 50 x 50 = 2500cm2

No of tiles required = area of veranda ÷ area of 1 tile

 = 9000000 ÷ 2500

 = 3600 tiles .

Q-5. A rectangular field 750m long and 450m broad has two roads in the middle of it, which are 5m wide running at right angles to each other. One is along the length and the other along the breadth. Find the area of the road.

Sol : Length of 1st road = 750m 450m

Breadth = 5m

Area = l x b = 750 x 5 = 3750m2

Length of 2nd road = 450m 5m

Breadth = 5m

Area = 450 x 5 = 2250m2 750m

Area of middle part (square PQRS) = 5 x 5 = 25m2

Area of the road = area of 1st road + area of 2nd road – area of middle part ( square PQRS)

 = 3750 + 2250 – 25

 = 6000 – 25

 = 5975m2

**EXERCISE – 16D**

Q-1. Find the circumference of these each of the circles with the following diameters-

1. D = 36cm

R = 36÷ 2 = 18cm

Circumference = 2π r

 = 2 x $\frac{22}{7}$ x 18 = $\frac{792}{7}$ **=** 113.14cm.

 c.. D = 3.8cm

R = 3.8÷2 = 1.9cm

Circumference = 2πr

 = 2 x 22 x 1.9 = 2 x 22 x 19 = 418 = 11.94cm

 7 7 x 105 35

Q-2. Find the circumference of each of the circles with the following radius-

1. R = 10cm

Circumference = 2πr = 2 x 22 x 10 = 440 = 62.85cm

1. 7

 d.. 9.01cm

 circumference = 2πr = 2 x 22 x 9.01 = 2 x 22 x 901 = 39644 = 56.63cm

 7 7 x 100 700

Q-3. Find the radius of a circle with the following circumference –

1. Circumference = 44cm

2πr = 44

2 x 22 x r = 44

 7

44r = 44

 7 1

 44r = 44 x 7

 R = 44 x 7 = 7cm

 44

1. Circumference = 132cm

2πr = 132

2 x 22 x r = 132

 7

44r = 132

 7 1

44r = 132 x 7

 R = 132 3 x 7 = 21cm

 44 1

Q-5. The circumference of a circular ground is 396m . Find the diameter.

Sol : circumference = 396

 2π r = 396

 2 x 22 x r = 396

 7

 44r = 396

 7 1

 44r = 396 x 7

 R = 396 9 x 7 = 63m

 44 1

Diameter = 2r = 2 x 63 = 126m

Q-6. To fence a circular garden , the total cost is Rs 26,400 at the cost of Rs50 per metre. Find the radius of the circle .

Sol: Circumference of circle = $\frac{Total cost}{cost per metre}$ = $\frac{26400}{50}$ = 528m

 2πr = 528

 2 x 22 x r = 528

 7

 44r = 528

 7 1

 44r = 528 x 7

 R = 528 12 x 7 = 84m

 44

Q-8. A wire in the shape of a rectangle of length 18cm and width 15cm is reshaped and bent in the form of a circle . Find the radius and area of the circle .

Sol : Perimeter of rectangle = 2 x ( l +b )

 = 2 x ( 18 + 15)

 = 2 x 33 = 66cm

According to question :

Perimeter of rectangle = circumference = 66

 = 2πr = 66

 2x $\frac{22}{7}$ x r = 66

 44r = 66

 7 1

 44r = 66 x 7

 R = 66 3 x 7 = 21 = 10.5cm

 44 2 2

 Area of circle = π r2 = 22 x 10.5 x 10.5 = 2425.5 = 346.5cm2

 7 7

Q-10. A small metallic washer is of 7mm radius with a hole of 3.5mm radius . What is the area of the washer?

Sol : Area of washer = Area of outer circle – Area of inner circle

 = πR2 – πr2

 = π ( R2 – r2 )

 = 22 x ( (7)2 - (3.5)2 )

 7

 = 22 x ( 49 – 12.25)

 7

 = 22 x 36.75 5.25 = 115.5mm2

 7

Q-12. The inner and outer radii of a cylindrical pipe are 4cm and 5cm respectively. Find the area of the cross section of the pipe. Use π = 3.14

Sol : Area of cross section = area of outer circle – area of inner circle

 = π R2 – πr2

 = π ( R2 – r2 )

 = 3.14 x ( (5)2 – (4)2)

 = 3.14 x ( 25 – 16 )

 = 3.14 x 9 = 28.26cm2

Q-13. From a rectangular piece of metal sheet of length and breadth 1.60m and 80cm respectively , 3 circular sheets of 20cm radius are cut out . What area of metal is left? Use π = 3.14

Sol: length of rectangle = 1.60m

 = 1.60 x 100 = 160cm

Breadth = 80cm

Area of rectangle = l xb

= 160 x 80 = 12800cm2

Area of 1 circle = π r2 = 3.14 x (20)2 = 3.14 x 400 = 1256cm2

Area of 3 circles = 3 x area of 1 circle = 3 x 1256 = 3768cm2

Area of metal = area of rectangle – area of 3 circles

 = 12800 – 3768 = 9032cm2