



## MATHS

## **BOOKS - NCERT EXEMPLAR**

## PERIMETER AND AREA

Solved Examples

**1.** Area of a right triangle is  $54cm^2$ . If one of its

legs is 12 cm long, its perimeter is



A. 18 cm

B. 27 cm

C. 36 cm

D. 54 cm

Answer: C





**5.** All the congruent triangles have \_\_\_\_\_ area.

A. Unequal

B. one third

C. equal



7. The area of any parallelogram ABCD, is AB X



**9.** A nursery school play ground is 160 m long and 80 m wide. In it 80 m  $\times$  80 m is kept for swings and in the remaining portion, there is 1.5 m wide path parallel to its width and parallel to its remaining length as shown in Fig. 9.9. The remaining area is covered by grass. Find the area covered by grass.



A.  $6456.25m^2$ 

B.  $5676.25m^2$ 

C.  $7962.25m^2$ 

D.  $6162.25m^2$ 

#### Answer: D



**10.** In Fig. 9.10, ABCD is a parallelogram, in which AB = 8 cm, AD = 6 cm and altitude AE = 4 cm. Find the altitude corresponding to side AD.





**11.** A rectangular shaped swimming pool with dimensions 30 m x 20 m has 5 m wide cemented path along its length and 8 m wide path along its width (as shown in Fig. 9.11). Find the cost of cementing the path at the rate of Rs 200 per  $m^2$ 





**13.** Rectangle ABCD is formed in a circle as shown in Fig. 9.12. If AE = 8 cm and AD = 5 cm,

find the perimeter of the rectangle.



**14.** Find the area of a parallelogram shaped shaded region of Fig. 9.13. Also, find the area of

each triangle. What is the ratio of area of shaded portion to the remaining area of rectangle?







**1.** 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.  $30 cm^2$
- $\mathsf{B.}\,36cm^2$
- $C.24cm^2$
- $\mathsf{D.}\,22cm^2$

Answer: C



**2.** 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

Answer: B



**3.** A wire is bent to form a square of side 22 cm. If the wire is rebent to form a circle, its radius is

A. 22 cm

B. 14 cm

C. 11 cm

D. 7 cm

Answer: B



**5.** Area of a rectangle and the area of a circle are equal. If the dimensions of the rectangle are 14cm x 11 cm, then radius of the circle is

B. 10.5 cm

C. 14 cm

D. 7 cm.

#### Answer: D

#### 6. Area of shaded portion in Fig. 9.15 is



A.  $25cm^2$ 

 $\mathsf{B}.\,15cm^2$ 

 $\mathsf{C}.\,14cm^2$ 

 $\mathsf{D.}\,10cm^2$ 

#### Answer:



## 7. Area of parallelogram ABCD (Fig. 9.16) is not





#### A. DEX DC

#### B. BE X AD

#### C. BF X DC

#### D. BEX BC

#### Answer:

### 8. Area of triangle MNO of Fig. 9.17 is



A. 
$$rac{1}{2}MN imes NO$$
  
B.  $rac{1}{2}NO imes MO$   
C.  $rac{1}{2}MN imes OQ$   
D.  $rac{1}{2}NO imes OQ$ 

#### **Answer:**



# **9.** Ratio of area of AMNO to the area of parallelogram MNOP in the same figure 9.17 is

A. 2:3

B.1:1

C. 1: 2

D. 2:1

#### Answer:





A. 2:1:3

#### B. 1:3:2

C.2:3:1

#### D. 1:2:3

#### **Answer:**

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## **11.** In Fig. 9.19, EFGH is a parallelogram, altitudes FK and FI are 8 cm and 4cm

respectively. If EF = 10 cm, then area of EFGH is



A.  $20cm^2$ 

- ${\rm B.}\, 32 cm^2$
- $\mathsf{C.}\,40 cm^2$
- $\mathsf{D.}\,80 cm^2$

#### **Answer:**



### **12.** In reference to a circle the value of $\pi$ is

#### equal to



- area diameter Β.
- $\mathsf{C}. \frac{\operatorname{circumference}}{\operatorname{diameter}}$
- D.  $\frac{\text{circumference}}{\text{radius}}$

#### Answer: C



**13.** The ratio of radius and circumference of a circle is :

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

#### Answer:

## 14. Area of triangle PQR is $100 cm^2$ (Fig. 9.20). If

altitude CT is 10 cm, then its base PR is



A. 20 cm

- B. 15 cm
- C. 10 cm

#### D. 5 cm

#### Answer:





R

6 cm

A. 6 cm

B. 9 cm

C. 4 cm

D. 2 cm

#### **Answer:**

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16. In Fig. 9.22  $\Delta MNO$  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

#### **Answer:**





**17.** Area of a right-angled triangle is  $30cm^2$ . If

its smallest side is 5 cm, then its hypotenuse is

A. 14cm

B. 13 cm

C. 12 cm

D. 11 cm

Answer: B

#### 18. 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

#### Answer: C

19. Circumference of a circle disc is 88 cm. Its

radius is

A. 8 cm

B. 11 cm

C. 14 cm

D. 44 cm

#### **Answer:**

20. 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

Answer: B

21. Area of circular garden with diameter 8 m is

A.  $12.56m^2$ 

 $\mathsf{B}.\,25.12m^2$ 

 $\mathsf{C.}\,50.12m^2$ 

 $\mathsf{D}.\,200.96m^2$ 

#### **Answer:**


22. Area of a circle with diameter 'm' radius 'n'

and circumference 'p' is

A.  $2\pi n$ 

B.  $\pi m^2$ 

 $C. \pi p^2$ 

D.  $\pi n^2$ 

#### **Answer: D**

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

A.  $3.08m^2$ 

 $\mathsf{B.}\,6.16m^2$ 

 $\mathsf{C}.\,12.32m^2$ 

 $\mathsf{D.}\,24.64m^2$ 

Answer: A



**24.** If 1  $m^2 \equiv xmm^2$ , then the value of x is

A. 1000

B. 10000

C. 100000

D. 1000000

**Answer:** 

**25.** If p squares of each side 1mm makes a square of side 1cm, then p is

A. 10

B. 100

C. 1000

D. 10000

Answer: B

# **26.** 12 $m^2$ is the area of

A. a square with side 12 m

B. 12 squares with side Im each

C. 3 squares with side 4 m each

D. 4 squares with side 3 m each

Answer:

27. If each side of a rhombus is doubled, how

much will its area increase?

A. 1.5 times

B. 2 times

C. 3 times

D. 4 times

Answer: C

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

A. 1.5 times

B. 2 times

C. 3 times

D. 4 times

Answer: D

**29.** If the radius of a circle is doubled, its area is increased by (a) 100% (b) 200% (c) 300% (d) 400%

A. 1.4 times

B. 2 times

C. 3 times

D. 4 times

Answer:

**30.** What will be the area of the largest square that can be cut out of a circle of radius 10 cm?

A.  $100 cm^2$ 

 $\mathsf{B.}\,200cm^2$ 

 $\mathsf{C.}\,300 cm^2$ 

D.  $400 cm^2$ 

#### Answer:

**31.** 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

Answer: A







A. 60 cm

## B. 30 cm

### C. 40 cm

#### D. 50 cm

#### Answer:



# **33.** The circumference of a circle whose area is

 $81\pi r^2$ , is

A.  $9\pi r$ 

B.  $18\pi r$ 

C.  $3\pi r$ 

D.  $81\pi r$ 

#### Answer:

**34.** The area of a square is 100 cm. The circumference (in cm) of the largest circle cut of it is

A.  $5\pi$ 

 $\mathsf{B.}\,10\pi$ 

C.  $15\pi$ 

D.  $20\pi$ 

#### **Answer:**





# 35. If the radius of a circle is tripled, the area

#### becomes

A. 9 times

B. 3 times

C. 6 times

D. 30 times

#### Answer: A

## 36. The area of a semicircle of radius 4t is

A.  $5\pi t^2$ 

B.  $4\pi t^2$ 

C.  $12\pi t^2$ 

D.  $2\pi t^2$ 

#### **Answer:**

37. All triangles have the same base and the

same altitude. True or false.



**38.** All triangles are congruent. True or false.

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**39.** All triangles are equal in area. True or false.

40. All triangles have the same perimeter. True

or false.

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**41.** In Fig. 9.29 ratio of the area of triangle ABC to the area of triangle ACD is the same as the ratio of base BC of triangle ABC to the base CD



area. True or false



43. Ratio of circumference of a circle to its

radius is always  $2\pi$ : *I*.



45. An increase in perimeter of a figure always

increases the area of the figure.





**47.** If area of a parallelogram is  $24cm^2$  and one of the side is of length 6 cm, then length of the corresponding altitude is.

**48.** A hedge boundary needs to be planted around a rectangular lawn of size 72 m x 18 m. If 3 shrubs can be planted in a metre of hedge. how many shrubs will be planted in all?

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**49.** The perimeter of a rectangle is 40 m. Its length is four metres less than five times its breadth. Find the area of the rectangle.

**50.** A wall of a room is of dimensions 5 mx 4 m. It has a window of dimensions 1.5 mx 1m and a door of dimensions 2.25 m x 1m. Find the area of the wall which is to be painted.

**D** Wat

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**51.** Rectangle MNOP is made up of four congruent rectangles (Fig. 9.31). If the length of one of the rectangle is 8 m and breadth is 2

m, then find the perimeter of MNOP.





**52.** In Fig. 9.32, area of  $\Delta AFB$  is equal to the area of parallelogram ABCD. If altitude EF is 16 cm long, find the altitude of the parallelogram to the base AB of length 10 cm. What is the area of  $\Delta DAO$ , where O is the mid point of





 $\Delta WZY$  is 3:4 (Fig. 9.33). If the area of



**54.** Rani bought a new field that is next to one she already owns (Fig. 9.34). This field is in the shape of a square of side 70 m. She makes a

semi circular lawn of maximum area in this field.

(i) Find the perimeter of the lawn. (ii) Find the

area of the square field excluding the lawn.





55. In Fig. 9.35, find the area of parallelogram

ABCD if the area of shaded triangle is  $9cm^2$ .



**56.** Pizza factory has come out with two kinds of pizzas1 A square pizza of side 45 cm costs

150 and a circular pizza of diameter 50 cm costs 160 (Fig. 9.36). Which pizza is a better deal?



**57.** Three squares are attached to each other as shown in Fig1 9.37. Each square is attached at the mid point of the side of the square to

its right. Find the perimeter of the complete

## figure.



# **58.** In Fig1 9.38. ABCD is a square with AB= 15 cm. Find the area of the square BDFE.



**59.** In the given triangles of Fig. 9.39, perimeter of  $\Delta ABC$  = perimeter of  $\Delta PQR$ . Find the area of  $\Delta ABC$ .



**60.** Altitudes MN and MO of parallelogram MGHK are 8 cm and 4 cm long respectively

(Fig. 9.40). One side GH is 6 cm long1 Find the

perimeter of MGHK.



**61.** In Fig1 9.41, area of  $\Delta PQR$  is 20 cm and area of  $\Delta POSis44cm^2$  Find the length RS, if PO is perpendicular to OS and QR is 5cm.



**62.** Area of an isosceles triangle is  $48cm^2$ . If the altitudes corresponding to the base of the triangle is 8 cm, find the perimeter of the triangle.



**63.** Perimeter of a parallelogram shaped land is 96 m and its area is 270 square metres1 If one of the sides of this parallelogram is 18 m, find the length of the other side1 Also, find the lengths of altitudes 1 and m (Fig. 9.42).



**64.** Area of a triangle PQR right-angled at gis  $60cm^2$  (Fig. 9.43). If the smallest side is 8cm
#### long, find the length of the other two sides.



#### 65. In Fig. 9.44 a rectangle with perimeter 264

cm is divided into five congruent rectangles.

Find the perimeter of one of the rectangles.





**66.** Find the area of a square inscribed in a circle whose radius is 7 cm (Fig. 9.45). (Hint: Four right-angled triangles joined at

## right angles to form a square]



#### 67. Find the area of the shaded region in





# 68. In Question find the area enclosed by each



# **69.** In Question find the area enclosed by each



# 70. In Question find the area enclosed by each



## 71. In Question find the area enclosed by each



#### 72. Find the area of shaded region





#### 73. Find the area of shaded region



**74.** A circle with radius 16 cm is cut into four equal parts and rearranged to form another shape as shown in Fig. 9.52:



Does the perimeter change? If it does change,

by how much does it increase or decrease?



**75.** A large square is made by arranging a small square surrounded by four congruent rectangles as shown in Fig. 9.53. If the perimeter of each of the rectangle is 16 cm, find the area of the large square.





**76.** ABCD is a parallelogram in which AE is perpendicular to CD (Fig. 9.54). Also AC = 5 cm, DE = 4 cm, and the area of  $\Delta AED = 6cm^2$ . Find the perimeter and area of ABCD.



**77.** Ishika has designed a small oval race track for her remote control car. Her design is shown in the figure 9.55. What is the total distance around the track? Round your answer

to the nearest whole cm.



**78.** A table cover,  $4 m \times 2 m$ , is spread on a meeting table. If 25 cm of the table cover is hanging all around the table, find the cost of polishing the table top at Rs. 2.25 per square metre.

**79.** The dimensions of a plot are 200 m x 150 m. A builder builds 3 roads which are 3 m wide along the length on either side and one in the

middle. On either side of the middle road he builds houses to sell. How much area did he get for building the houses?

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**80.** A room is 4.5 m long and 4 m wide. The floor of the room is to be covered with tiles of size 15 cm by 10 cm. Find the cost of covering the floor with tiles at the rate of Rs.4.50 per tile.

**81.** Find the total cost of wooden fencing around a circular garden of diameter 28 m, if 1m of fencing costs 300Rs.



**82.** Priyanka took a wire and bent it to form a circle of radius 14 cm. Then she bent it into a rectangle with one side 24 cm long. What is the length of the other side?

83. How much distance, in metres, a wheel of

25 cm radius will cover if it rotates 350 times?

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**84.** A circular pond is surrounded by a 2 m wide circular path. If outer circumference of circular path is 44 m, find the inner circumference of the circular path. Also find area of the path.

**85.** A carpet of size 5 mx 2 m has 25 cm wide red border. The inner part of the carpet is blue in colour (Fig. 9.56). Find the area of blue portion. What is the ratio of areas of red portion to blue portion?





**86.** A 10 m long and 4 m wide rectangular lawn is in front of a house. Along its three sides a 50 cm wide flower bed is there as shown in Fig.

9.58. Find the area of the remaining portion.



**87.** Dimensions of a painting are 60 cm x 38 cm. Find the area of the wooden frame of

width 6 cm around the painting as shown in

Fig. 9.62.



**88.** A rectangular field is 48 m long and 12 m wide. How many right triangular flower beds

can be laid in this field, if sides including the right angle measure 2 m and 4 m, respectively?

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**89.** Ramesh grew wheat in a rectangular field that measured 32 metres long and 26 metres wide. This year he increased the area for wheat by 650 square metres, by increasing the length but not the width. What is the length of the expanded wheat field?



**90.** In Fig. 9.65, triangle AEC is right-angled at E, B is a point on EC, BD is the altitude of triangle ABC, AC = 25 cm, BC = 7 cm and AE = 15 cm. Find the area of triangle ABC and the

#### length of DB.



**91.** If the sum of second and tenth terms of an arithmetic sequence is equal to 12, then find

the sum of fourth, sixth and eighth terms.

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**92.** ABCD is a given rectangle with length as 80 cm and breadth as 60 cm. P. G. R, S are the mid points of sides AB, BC, CD, DA respectively. A circular rangoli of radius 10 cm is drawn at the centre as shown in Fig. 9.69. Find the area of

#### shaded portion.



**93.** 4 squares each of side 10 cm have been cut from each corner of a rectangular sheet of

paper of size 100 cm x 80 cm. From the remaining piece of paper, an isosceles right triangle is removed whose equal sides are each of 10 cm length. Find the area of the remaining part of the paper.

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**94.** A dinner plate is in the form of a circle. A circular region encloses a beautiful design as shown in Fig. 9.70. The inner circumference is 352 mm and outer is 396 mm. Find the width

# of circular design.





**95.** The moon is about 384000 km from earth and its path around the earth is nearly circular. Find the length of path described by moon in one complete revolution. (Take  $\pi=3.14$ )

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**96.** A photograph of Billiard/Snooker table has dimensions as to th of its actual size as shown in Fig. 9.71:



The portion excluding six holes each of diameter 0.5 cm needs to be polished at rate of 200 per mo. Find the cost of polishing.

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#### **Exercise Fill In The Blanks**

1. The perimeter of a polygon is the ttal length of its sides. In a regular polygon of n sids with x as the length of a side, the perimeter P is\_\_\_\_\_

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2. If a wire in the shape of a square is rebent

into a rectangle, then the \_\_\_\_ of both shapes

remain same, but \_\_\_\_\_ may vary.

**3.** Area of the square MNOP of Fig. 9.24 is  $144cm^2$  Area of each triangle is\_\_\_\_\_.



**4.** In Fig. 9.25, area of parallelogram BCEF is  $cm^2$  where ACDF is a rectangle.



## 5. Find the sides of the parallelogram

**6.** Area of a parallelogram = Base xx Altitude





# **9.** If area of a triangular piece of cardboard is $90cm^2$ , then the length of altitude corresponding to 20 cm long base is \_\_\_\_ cm.

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**10.** Value of  $\pi$  is \_\_\_\_\_ approximately.
**11.** Circumference 'C' of a circle can be found by

multiplying diameter 'd with \_\_\_\_\_ .

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12. Circumference 'C' of a circle is equal to

 $2\pi$  × \_\_\_\_\_.

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**13.** 
$$1m^2 = \_ cm^2$$











**1.** In Fig. 9.26. perimeter of (ii) is greater than that of (i), but its area is smaller than that of



**2.** In Fig. 9.27

area of (i) is the same as the area of (ii).





### **3.** In Fig. 9.27

#### Perimeter of (ii) is the same as (i).





#### 4. In Fig. 9.27

If (ii) is divided into squares of unit length,

then its area is 13 unit squares.





# 5. In Fig. 9.27 if 1 box is of unit length

Perimeter of (ii) is 18 units.





# 6. If perimeter of two parallelograms are equal,

then their areas are also equal.



7. All congruent triangles are equal in area.



## **Think And Discuss**

1. Find the area of rectangle whose perimeter

is 36 cm and one side is of length 11 cm.

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**2.** Can you frame. Question in which areas of all the plane figures rctangle. Square, triangle and a parallelogram are to be calculated?



3. Compare the area of a rectangle with base b

and height h with the area of a rectangle with

base 2b and height 2h.



**4.** Express the formulas for the area and perimeter of a square using s for the length of a side.



5. Give the formula for the area of a circle in

terms of the diameter d.



**6.** Describe what happens to the area of a triangle when the base is doubled and the height remains the same.



**7.** Describe what happens to the area of a parallelogram when the length of its base is

doubled but the height remains the same.

