

## **Access answers to Maths NCERT Solutions for Class 7** **Chapter 11 – Perimeter and Area Exercise 11.3**

**1. Find the circumference of the circle with the following radius: (Take  $\pi = 22/7$ )**

**(a) 14 cm**

**Solution:-**

Given, radius of circle = 14 cm

Circumference of the circle =  $2\pi r$

$$= 2 \times (22/7) \times 14$$

$$= 2 \times 22 \times 2$$

$$= 88 \text{ cm}$$

**(b) 28 cm**

**Solution:-**

Given, radius of circle = 28 cm

Circumference of the circle =  $2\pi r$

$$= 2 \times (22/7) \times 28$$

$$= 2 \times 22 \times 4$$

$$= 176 \text{ cm}$$

**(c) 21 cm**

**Solution:-**

Given, radius of circle = 21 cm

Circumference of the circle =  $2\pi r$

$$= 2 \times (22/7) \times 21$$

$$= 2 \times 22 \times 3$$

$$= 132 \text{ cm}$$

**2. Find the area of the following circles, given that:**

**(a) Radius = 14 mm (Take  $\pi = 22/7$ )**

**Solution:**

Given, radius of circle = 14 mm

Then,

Area of the circle =  $\pi r^2$

$$= 22/7 \times 14^2$$

$$= 22/7 \times 196$$

$$= 22 \times 28$$

$$= 616 \text{ mm}^2$$

**(b) Diameter = 49 m**

**Solution:**

Given, diameter of circle (d) = 49 m

We know that, radius (r) =  $d/2$

$$= 49/2$$

$$= 24.5 \text{ m}$$

Then,

Area of the circle =  $\pi r^2$

$$\begin{aligned}
 &= 22/7 \times (24.5)^2 \\
 &= 22/7 \times 600.25 \\
 &= 22 \times 85.75 \\
 &= 1886.5 \text{ m}^2
 \end{aligned}$$

**(c) Radius = 5 cm**

**Solution:**

Given, radius of circle = 5 cm

Then,

$$\begin{aligned}
 \text{Area of the circle} &= \pi r^2 \\
 &= 22/7 \times 5^2 \\
 &= 22/7 \times 25 \\
 &= 550/7 \\
 &= 78.57 \text{ cm}^2
 \end{aligned}$$

**3. If the circumference of a circular sheet is 154 m, find its radius. Also find the area of the sheet. (Take  $\pi = 22/7$ )**

**Solution:-**

From the question it is given that,

Circumference of the circle = 154 m

Then,

We know that, Circumference of the circle =  $2\pi r$

$$154 = 2 \times (22/7) \times r$$

$$154 = 44/7 \times r$$

$$r = (154 \times 7)/44$$

$$r = (14 \times 7)/4$$

$$r = (7 \times 7)/2$$

$$r = 49/2$$

$$r = 24.5 \text{ m}$$

Now,

$$\begin{aligned}
 \text{Area of the circle} &= \pi r^2 \\
 &= 22/7 \times (24.5)^2 \\
 &= 22/7 \times 600.25 \\
 &= 22 \times 85.75 \\
 &= 1886.5 \text{ m}^2
 \end{aligned}$$

So, the radius of circle is 24.5 and area of circle is 1886.5.

**4. 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 ₹ 4 per meter. (Take  $\pi = 22/7$ )**



**Solution:-**

From the question it is given that,

Diameter of the circular garden = 21 m

We know that, radius (r) = d/2

$$= 21/2$$

$$= 10.5 \text{ m}$$

Then,

Circumference of the circle =  $2\pi r$

$$= 2 \times (22/7) \times 10.5$$

$$= 462/7$$

$$= 66 \text{ m}$$

So, the length of rope required =  $2 \times 66 = 132 \text{ m}$

Cost of 1 m rope = ₹ 4 [given]

Cost of 132 m rope = ₹ 4 × 132

$$= ₹ 528$$

**5. From a circular sheet of radius 4 cm, a circle of radius 3 cm is removed. Find the area of the remaining sheet. (Take  $\pi = 3.14$ )**

**Solution:-**

From the question it is give that,

Radius of circular sheet R = 4 cm

A circle of radius to be removed r = 3 cm

Then,

The area of the remaining sheet =  $\pi R^2 - \pi r^2$

$$= \pi (R^2 - r^2)$$

$$= 3.14 (4^2 - 3^2)$$

$$= 3.14 (16 - 9)$$

$$= 3.14 \times 7$$

$$= 21.98 \text{ cm}^2$$

So, the area of the remaining sheet is  $21.98 \text{ cm}^2$ .

**6. Saima wants to put a lace on the edge of a circular table cover of diameter 1.5 m. Find the length of the lace required and also find its cost if one meter of the lace costs ₹ 15. (Take  $\pi = 3.14$ )**

**Solution:-**

From the question it is given that,

Diameter of the circular table = 1.5 m

We know that, radius (r) = d/2

$$= 1.5/2$$

$$= 0.75 \text{ m}$$

Then,

Circumference of the circle =  $2\pi r$

$$= 2 \times 3.14 \times 0.75$$

$$= 4.71 \text{ m}$$

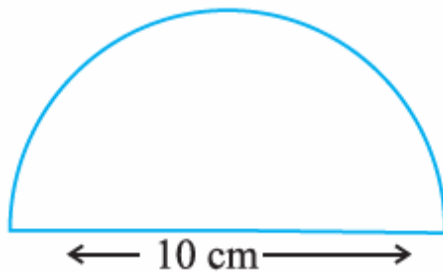
So, the length of lace = 4.71 m

Cost of 1 m lace = ₹ 15 [given]

Cost of 4.71 m lace = ₹ 15 × 4.71

$$= \square 70.65$$

**7. Find the perimeter of the adjoining figure, which is a semicircle including its diameter.**



**Solution:-**

From the question it is given that,

Diameter of semi-circle = 10 cm

We know that, radius ( $r$ ) =  $d/2$

$$= 10/2$$

$$= 5 \text{ cm}$$

Then,

Circumference of the semi-circle =  $\pi r$

$$= (22/7) \times 5$$

$$= 110/7$$

$$= 15.71 \text{ cm}$$

Now,

Perimeter of the given figure = Circumference of the semi-circle + semi-circle diameter

$$= 15.71 + 10$$

$$= 25.71 \text{ cm}$$

**8. Find the cost of polishing a circular table-top of diameter 1.6 m, if the rate of polishing is  $\square 15/\text{m}^2$ . (Take  $\pi = 3.14$ )**

**Solution:-**

From the question it is given that,

Diameter of the circular table-top = 1.6 m

We know that, radius ( $r$ ) =  $d/2$

$$= 1.6/2$$

$$= 0.8 \text{ m}$$

Then,

Area of the circular table-top =  $\pi r^2$

$$= 3.14 \times 0.8^2$$

$$= 3.14 \times 0.8 \times 0.8$$

$$= 2.0096 \text{ m}^2$$

Cost for polishing 1  $\text{m}^2$  area =  $\square 15$  [given]

Cost for polishing 2.0096  $\text{m}^2$  area =  $\square 15 \times 2.0096$

$$= \square 30.144$$

Hence, the Cost for polishing 2.0096  $\text{m}^2$  area is  $\square 30.144$ .

**9. Shazli took a wire of length 44 cm and bent it into the shape of a circle. Find the radius of that circle. Also find its area. If the same wire is bent into the shape of a square, what will be**

**the length of each of its sides? Which figure encloses more area, the circle or the square?  
(Take  $\pi = 22/7$ )**

**Solution:-**

From the question it is given that,

Length of wire that Shazli took = 44 cm

Then,

If the wire is bent into a circle,

We know that, circumference of the circle =  $2\pi r$

$$44 = 2 \times (22/7) \times r$$

$$44 = 44/7 \times r$$

$$(44 \times 7)/44 = r$$

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

$$\text{Area of the circle} = \pi r^2$$

$$= 22/7 \times 7^2$$

$$= 22/7 \times 7 \times 7$$

$$= 22 \times 7$$

$$= 154 \text{ cm}^2$$

Now,

If the wire is bent into a square,

$$\text{The length of the each side of square} = 44/4$$

$$= 11 \text{ cm}$$

$$\text{Area of the square} = \text{length of the side of square}^2$$

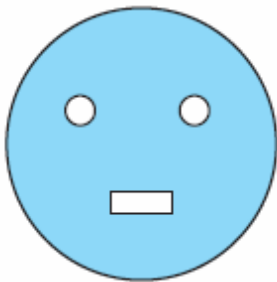
$$= 11^2$$

$$= 121 \text{ cm}^2$$

By comparing the two areas of the square and circle,

Clearly, circle encloses more area.

**10. 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 cm are removed. (as shown in the adjoining figure). Find the area of the remaining sheet. (Take  $\pi = 22/7$ )**



**Solution:-**

From the question it is given that,

Radius of the circular card sheet = 14 cm

Radius of the two small circle = 3.5 cm

Length of the rectangle = 3 cm

Breadth of the rectangle = 1 cm

First we have to find out the area of circular card sheet, two circles and rectangle to find out the remaining area.

Now,

Area of the circular card sheet =  $\pi r^2$

$$= 22/7 \times 14^2$$

$$= 22/7 \times 14 \times 14$$

$$= 22 \times 2 \times 14$$

$$= 616 \text{ cm}^2$$

Area of the 2 small circles =  $2 \times \pi r^2$

$$= 2 \times (22/7 \times 3.5^2)$$

$$= 2 \times (22/7 \times 3.5 \times 3.5)$$

$$= 2 \times ((22/7) \times 12.25)$$

$$= 2 \times 38.5$$

$$= 77 \text{ cm}^2$$

Area of the rectangle = Length  $\times$  Breadth

$$= 3 \times 1$$

$$= 3 \text{ cm}^2$$

Now,

The area of the remaining part = Card sheet area – (area of two small circles + rectangle area)

$$= 616 - (77 + 3)$$

$$= 616 - 80$$

$$= 536 \text{ cm}^2$$

**11. A circle of radius 2 cm is cut out from a square piece of an aluminium sheet of side 6 cm. What is the area of the left over aluminium sheet? (Take  $\pi = 3.14$ )**

**Solution:-**

From the question it is given that,

Radius of circle = 2 cm

Square sheet side = 6 cm

First we have to find out the area of square aluminium sheet and circle to find out the remaining area.

Now,

Area of the square = side<sup>2</sup>

$$= 6^2$$

$$= 36 \text{ cm}^2$$

Area of the circle =  $\pi r^2$

$$= 3.14 \times 2^2$$

$$= 3.14 \times 2 \times 2$$

$$= 3.14 \times 4$$

$$= 12.56 \text{ cm}^2$$

Now,

The area of the remaining part = Area of aluminum square sheet – area of circle

$$= 36 - 12.56$$

$$= 23.44 \text{ cm}^2$$

**12. The circumference of a circle is 31.4 cm. Find the radius and the area of the circle? (Take  $\pi = 3.14$ )**

**Solution:-**

From the question it is given that,

Circumference of a circle = 31.4 cm

We know that,

Circumference of a circle =  $2\pi r$

$$31.4 = 2 \times 3.14 \times r$$

$$31.4 = 6.28 \times r$$

$$31.4/6.28 = r$$

$$r = 5 \text{ cm}$$

Then,

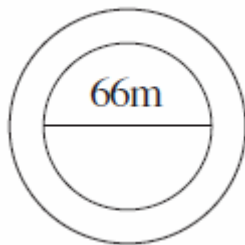
Area of the circle =  $\pi r^2$

$$= 3.14 \times 5^2$$

$$= 3.14 \times 25$$

$$= 78.5 \text{ cm}$$

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

**Solution:-**

From the question it is given that,

Diameter of the flower bed = 66 m

Then,

Radius of the flower bed =  $d/2$

$$= 66/2$$

$$= 33 \text{ m}$$

Area of flower bed =  $\pi r^2$

$$= 3.14 \times 33^2$$

$$= 3.14 \times 1089$$

$$= 3419.46 \text{ m}$$

Now we have to find area of the flower bed and path together

So, radius of flower bed and path together =  $33 + 4 = 37 \text{ m}$

Area of the flower bed and path together =  $\pi r^2$

$$= 3.14 \times 37^2$$

$$= 3.14 \times 1369$$

$$= 4298.66 \text{ m}$$

Finally,

Area of the path = Area of the flower bed and path together – Area of flower bed

$$= 4298.66 - 3419.46$$

$$= 879.20 \text{ m}^2$$

**14. A circular flower garden has an area of  $314 \text{ m}^2$ . A sprinkler at the centre of the garden can cover an area that has a radius of 12 m. Will the sprinkler water the entire garden? (Take  $\pi = 3.14$ )**

**Solution:-**

From the question it is given that,

Area of the circular flower garden =  $314 \text{ m}^2$

Sprinkler at the centre of the garden can cover an area that has a radius = 12 m

Area of the circular flower garden =  $\pi r^2$

$$314 = 3.14 \times r^2$$

$$314/3.14 = r^2$$

$$r^2 = 100$$

$$r = \sqrt{100}$$

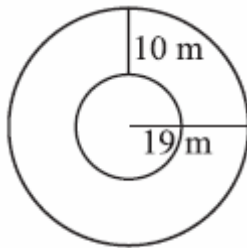
$$r = 10 \text{ m}$$

$\therefore$  Radius of the circular flower garden is 10 m.

Since, the sprinkler can cover an area of radius 12 m

Hence, the sprinkler will water the whole garden.

**15. Find the circumference of the inner and the outer circles, shown in the adjoining figure? (Take  $\pi = 3.14$ )**



**Solution:-**

From the figure,

Radius of inner circle = outer circle radius – 10

$$= 19 - 10$$

$$= 9 \text{ m}$$

Circumference of the inner circle =  $2\pi r$

$$= 2 \times 3.14 \times 9$$

$$= 56.52 \text{ m}$$

Then,

Radius of outer circle = 19 m

Circumference of the inner circle =  $2\pi r$

$$= 2 \times 3.14 \times 19$$

$$= 119.32 \text{ m}$$

**16. How many times a wheel of radius 28 cm must rotate to go 352 m? (Take  $\pi = 22/7$ )**

**Solution:-**

From the question it is given that,

Radius of the wheel = 28 cm



Circumference of the wheel =  $2\pi r$

$$= 2 \times \frac{22}{7} \times 28$$

$$= 2 \times 22 \times 4$$

$$= 176 \text{ cm}$$

Now we have to find the number of rotation of the wheel,

= Total distance to be covered/ circumference of wheel

$$= 352 \text{ m}/176 \text{ cm}$$

$$= 35200 \text{ cm}/176 \text{ cm}$$

$$= 200$$

**17. The minute hand of a circular clock is 15 cm long. How far does the tip of the minute hand move in 1 hour. (Take  $\pi = 3.14$ )**

**Solution:-**

From the question it is given that,

Length of the minute hand of the circular clock = 15 cm

Then,

Distance travelled by the tip of minute hand in 1 hour = circumference of the clock

$$= 2\pi r$$

$$= 2 \times 3.14 \times 15$$

$$= 94.2 \text{ cm}$$