NCERT Solutions For Class 7 Maths Perimeter and Area Exercise 11.3

Q1. Find the circumference of the circles with the following radius: (Take $\pi = \frac{22}{7}$)

(a) 14 cm (b) 28 mm (c) 21 cm

Ans:

(a) r = 14 cm

$$\text{Circumference} = 2\pi r = 2 \times \frac{22}{7} \times 14 = 88 \text{ cm}$$

(b) r = 28 mm

$$\text{Circumference} = 2\pi r = 2 \times \frac{22}{7} \times 28 = 176 \text{ mm}$$

(c) r = 21 cm

$$\text{Circumference} = 2\pi r = 2 \times \frac{22}{7} \times 21 = 132 \text{ cm}$$

Q2.

Find the area of the following circles, given that:

(a) radius = 14 mm (Take $\pi = \frac{22}{7}$) (b) diameter = 49 m

(c) radius = 5 cm

Ans:

(a) r = 14 mm

$$\text{Area} = \pi r^2 = \frac{22}{7} \times 14 \times 14 = 616 \text{ mm}^2$$

(b) d = 49 m

$$r = \frac{49}{2} \text{ m}$$

$$\text{Area} = \pi r^2 = \frac{22}{7} \times \frac{49}{2} \times \frac{49}{2} = 1886.5 \text{ m}^2$$

(c) $r = 5$ cm

$$\text{Area} = \pi r^2 = \frac{22}{7} \times 5 \times 5 = \frac{550}{7} = 78.57 \text{ cm}^2$$

Q3. If the circumference of a circular sheet is 154m, find its radius. Also find the area of the sheet. (Take $\pi = \frac{22}{7}$)

Ans:

Circumference = $2\pi r$ =154 m

$$2\times\frac{22}{7}\times r = 154$$

$$r = 154\times\frac{7}{44} = \frac{49}{2} = 24.5 \text{ m}$$

$$\text{Area} = \pi r^2 = \frac{22}{7}\times r^2$$

$$= \frac{22}{7}\times\frac{49}{2}\times\frac{49}{2} = 1886.5 \text{ m}^2$$

Q4. A gardener wants to fence a circular garden of diameter 21 m. Find the length of the rope he needs to purchase, if he makes 2 rounds of fence. Also find the costs of the rope, if it cost Rs 4 per meter. (Take $\pi = \frac{22}{7}$)

Ans:

d = 21 m

$$r = \frac{21}{2} \text{ m}$$

$$\text{Circumference} = 2\pi r = 2\times\frac{22}{7}\times\frac{21}{2} = 66 \text{ m}$$

Length of rope required for fencing = 2 × 66 m = 132 m

Cost of 1 m rope = Rs 4

Cost of 132 m rope = 4 × 132 = Rs 528

Q5. From a circular sheet of radius 4 cm, a circle of radius 3 cm is removed. Find the area of the remaining sheet. (Take π = 3.14)

Ans:

Outer radius of circular sheet = 4 cm

Inner radius of circular sheet = 3 cm

Remaining area = 3.14 x 4 x 4 - 3.14 x 3 x 3

= 50.24 - 28.26

= 21.98 cm^2

Q6. 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 Rs 15.(Take π = 3.14)

Ans:

Circumference = $2\pi r$

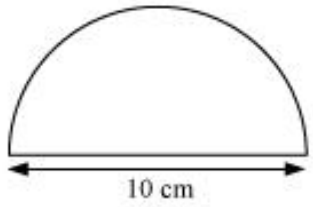
$$= 2 \times 3.14 \times \frac{d}{2}$$

$$= 2 \times 3.14 \times \frac{1.5}{2} = 4.71 \text{ m}$$

Cost of 1 m lace = Rs 15

Cost of 4.71 m lace = 4.71 × 15 = Rs 70.65

Q7. Find the perimeter of the adjoining figure, which is a semicircle including its diameter.



Ans:

Radius = 5 cm

Length of curved part = πr

$$= \frac{22}{7} \times 5$$

= 15.71 cm

Total perimeter = Length of curved part + Length of diameter

= 15.71 + 10 = 25.71 cm

Q8. Find the cost of polishing a circular table-top of diameter 1.6 m, if the rate of polishing is

Rs 15/m2. (Take $\pi = 3.14$)

Ans:

Diameter = 1.6 m

Radius $= \frac{1.6}{2} = 0.8$ m

Area = $3.14 \times 0.8 \times 0.8$

= 2.0096 m2

Cost for polishing 1 m2 area = Rs 15

Cost for polishing 2.0096 m2 area = 15×2.0096 = 30.14

Therefore, it will cost Rs 30.14 for polishing such circular table.

Q9. 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 $\pi = \frac{22}{7}$)

Ans:

Circumference = $2\pi r = 44$ cm

$2 \times \frac{22}{7} \times r = 44$

$r = 7$ cm

Area = $\pi r2 = \frac{22}{7} \times 7 \times 7 = 154 \text{ cm}^2$

If the wire is bent into a square, then the length of each side would be $= \frac{44}{4} = 11$ cm

Area of square = (11)2 = 121 cm2

Therefore, circle encloses more area.

Q10. 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 following figure). Find the area of the remaining sheet. (Take $\pi = \frac{22}{7}$)

Ans:

Area of bigger circle $= \frac{22}{7} \times 14 \times 14 = 616 \text{ cm}^2$

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

$= 2 \times \frac{22}{7} \times 3.5 \times 3.5 = 77 \text{ cm}^2$

Area of rectangle = Length × Breadth = 3 × 1 = 3 cm^2

Remaining area of sheet = 616 - 77 - 3 = 536 cm^2

Q11. 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 $\pi = 3.14$)

Ans:

Area of square-shaped sheet = $(\text{Side})^2 = (6)^2 = 36 \text{ cm}^2$

Area of circle = 3.14 x 2 x 2 = 12.56 cm^2

Remaining area of sheet = 36 - 12.56 = 23.44 cm^2

Q12. The circumference of a circle is 31.4 cm. Find the radius and the area of the circle? (Take $\pi = 3.14$)

Ans:

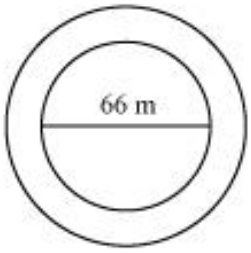
Circumference = $2\pi r = 31.4$ cm

2 x 3.14 x r = 31.4

r = 5 cm

Area = 3.14 x 5 x 5 = 78.50 cm^2

Q13. 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? ($\pi = 3.14$)



Ans:

Radius of flower bed $= \frac{66}{2} = 33$ m

Radius of flower bed and path together = 33 + 4 = 37 m

Area of flower bed and path together = $3.14 \times 37 \times 37 = 4298.66$ m^2

Area of flower bed = $3.14 \times 33 \times 33 = 3419.46$ m^2

Area of path = Area of flower bed and path together - Area of flower bed

= 4298.66 - 3419.46 = 879.20 m^2

Q14. A circular flower garden has an area of 314 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 $\pi = 3.14$)

Ans:

Area = $\pi r^2 = 314$ m^2

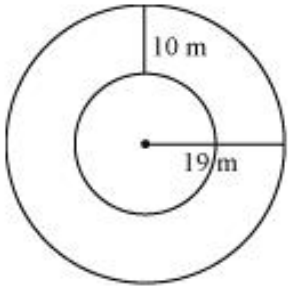
$3.14 \times r^2 = 314$

$r^2 = 100$

$r = 10$ m

Yes, the sprinkler will water the whole garden.

Q15. Find the circumference of the inner and the outer circles, shown in the adjoining figure? (Take $\pi = 3.14$)



Ans:

Radius of outer circle = 19 m

Circumference = $2\pi r$ = 2 x 3.14 x 19 = 119.32 m

Radius of inner circle = 19 - 10 = 9 m

Circumference = $2\pi r$ = 2 x 3.14 x 9 = 56.52 m

Q16. How many times a wheel of radius 28 cm must rotate to go 352 m?

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

Ans:

r = 28 cm

Circumference = $2\pi r = 2 \times \frac{22}{7} \times 28 = 176$ cm

Number of rotations = $\frac{\text{Total distance to be covered}}{\text{Circumference of wheel}} = \frac{352\text{m}}{176\text{cm}} = \frac{35200}{176} = 200$

Therefore, it will rotate 200 times.

Q17. 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 π = 3.14)

Ans:

Distance travelled by the tip of minute hand = Circumference of the clock

= $2\pi r$ = 2 x 3.14 x 15

= 94.2 cm

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