

Circle Exercise 1

Question 1

The radii of the two circles are 19 cm and 9 cm respectively. Find the radius of the circle which has circumference equal to the sum of the circumferences of the two circles.

Solution 1

According to the question

$$\text{Circumference of 1st circle} = 2\pi(19) = 38\pi \text{ cm}$$

$$\text{Circumference of 2nd circle} = 2\pi(9) = 18\pi \text{ cm}$$

Let r be the radius of the new circle

$$\text{Circumference of New circle} = 2\pi(r) = 2\pi r \text{ cm}$$

Now

$$2\pi r = 38\pi + 18\pi$$

$$\text{Or } r = 28 \text{ cm}$$

Question 2

The radii of two circles are 8 cm and 6 cm respectively. Find the radius of the circle having area equal to the sum of the areas of the two circles.

Solution 2

According to the question

$$\text{Area of 1st circle} = \pi r^2 = \pi(64) = 64\pi$$

$$\text{Area of 2nd circle} = \pi r^2 = \pi(36) = 36\pi$$

Let r be the radius of new circle

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

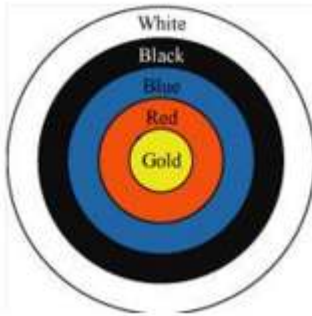
Now as per question

$$\pi r^2 = 64\pi + 36\pi$$

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

Question 3

The below depicts an archery target marked with its five scoring regions from the center outwards as Gold, Red, Blue, Black and White. The diameter of the region representing Gold score is 21 cm and each of the other bands is 10.5 cm wide. Find the area of each of the five scoring regions.


Solution:

Diameter of Gold Circle is given as =21 cm

Radius of Gold circle= $21/2=10.5$ cm

Area of Gold region is given by
 $= \pi r^2 = (22/7) (10.5)^2 = 346.5 \text{ cm}^2$

Now since each band is 10.5 cm wide

Radius of red ring= $10.5 + 10.5 = 21$ cm

Now Radius of Red ring is given as
 $= \pi(21)^2 - \pi(10.5)^2 = 1386 - 346.5 = 1039.5 \text{ cm}^2$

Radius of Blue ring = $21 + 10.5 = 31.5$ cm

Now Radius of Blue ring is given as
 $= \pi(31.5)^2 - \pi(21)^2 = 3118.5 - 1386 = 1732.5 \text{ cm}^2$

Radius of Black ring = $31.5 + 10.5 = 42$ cm

Now Radius of Black ring is given as
 $= \pi(42)^2 - \pi(31.5)^2 = 5544 - 3118.5 = 2425.5 \text{ cm}^2$

Radius of White ring = $42 + 10.5 = 52.5$ cm

Now Radius of Black ring is given as
 $= \pi(52.5)^2 - \pi(42)^2 = 8662.5 - 5544 = 3118.5 \text{ cm}^2$

Question 4

The wheels of a car are of diameter 80 cm each. How many complete revolutions does each wheel make in 10 minutes when the car is travelling at a speed of 66 km per hour?

Solution

Diameter of wheel is given as =80 cm

So radius of the wheel=40 cm

So circumference of wheel = $2\pi r = 2(22/7)(40) = (1760/7)$ cm

So in 1 revolution, Car travels the distance $(1760/7)$ cm

Now Speed of the Car= 66Km/h

= $(66 \times 1000) / 60$ meter/minute

= 1100 meter/minute

= 110000 cm/minute

This mean in simple term

Distance travelled in 1 min = 110000 cm

Distance travelled in 10 min = 1100000 cm

So Total number of revolutions $= (1100000) / (1760/7)$
 $= 4375$

Question 5

Tick the correct answer in the following and justify your choice : If the perimeter and the area of a circle are numerically equal, then the radius of the circle is

- (A) 2 units
- (B) π units
- (C) 4 units
- (D) 7 units

Solution:

Area of Circle $= \pi r^2$

Circumference of Circle $= 2\pi r$

According to the question

$$\pi r^2 = 2\pi r$$

$$r = 2 \text{ units}$$