



ST. LAWRENCE HIGH SCHOOL



A JESUIT CHRISTIAN MINORITY INSTITUTION

CLASS 8

SUBJECT :ArithmeticWork sheet16 answer key

Marks:15 Circle(Circumference)

Date:24.4.2020

Answer all the following questions(1×15=15)

1. The radii of two circles are 19 cm and 9 cm respectively. The radius of the circle which has circumference equal to the sum of the circumference of two circles is
- (a) 35 cm
 - (b) 10 cm
 - (c) 21 cm
 - (d) 28 cm

Answer: d

Explanation: Reason: Let the radii of two circles be r_1 and r_2 and the radius of large circle be r .

$$\therefore r_1 = 19 \text{ cm}, r_2 = 9 \text{ cm}$$

Circumference of two circles = $C_1 + C_2 \dots$ (where C = circle)

$$= 2\pi r_1 + 2\pi r_2 = 2\pi \times 19 + 2\pi \times 9 = 38\pi + 18\pi = 56\pi$$

\therefore Circumference of large circle = 56π

$$\Rightarrow 2\pi r = 56\pi$$

$$\Rightarrow r = 28$$

\therefore Radius of large circle = 28 cm

2. The perimeter (in cm) of a square circumscribing a circle of radius a cm, is
- (a) $8a$
 - (b) $4a$
 - (c) $2a$
 - (d) $16a$

Answer: a

Explanation:

(a) Side of a square circumscribing a circle of radius a cm = diameter of circle = $2a$ cm

\therefore Perimeter of the square
 $= 4 \times 2a = 8a \text{ cm}$

3. The diameter of a wheel is 1.26 m. The distance travelled in 500 revolutions is
(a) 2670 m
(b) 2880 m
(c) 1980 m
(d) 1596 m

Answer: c

Explanation:

(c) Radius of the wheel $= \frac{1.26}{2} = 0.63 \text{ m}$

Distance travelled in one revolution

$$= 2\pi r = 2 \times \frac{22}{7} \times 0.63$$

$$= 3.96 \text{ m}$$

\therefore Distance travelled in 500 revolutions

$$= 500 \times 3.96$$

$$= 1980 \text{ m.}$$

4. If the sum of the circumferences of two circles with radii R_1 and R_2 is equal to the circumference of a circle of radius R , then
(a) $R_1 + R_2 = R$
(b) $R_1 + R_2 > R$
(c) $R_1 + R_2 < R$
(d) nothing definite can be said about the relation among R_1 , R_2 and R

Answer: a

Explanation:

$$(a) 2\pi R_1 + 2\pi R_2 = 2\pi R$$

$$\Rightarrow R_1 + R_2 = R.$$

5. If the circumference of a circle is 2π units, then diameter of circle is
(a) 4
(b) 2
(c) 1
(d) 5

Answer: b

Explanation: $2\pi r = 2\pi$, $r = 1$, $2r = 2$

6. If the difference between the diameter and the radius of a circle is 37 cm, then using $\pi = \frac{22}{7}$ the circumference (in cm) of the circle is:
(a) 154
(b) 44
(c) 14
(d) 7

Answer: b

Explanation:

(b) A.T.Q.

$$2\pi r - r = 37$$

$$\Rightarrow 2 \times \frac{22}{7} r - r = 37$$

$$\frac{37}{7} r = 37 \Rightarrow r = 7 \text{ cm}$$

$$\therefore \text{Circumference} = 2 \times \frac{22}{7} \times 7 = 44 \text{ cm}$$

7. If π is taken as $22/7$, the distance (in metres) covered by a wheel of diameter 35 cm, in one revolution, is
- (a) 2.2
 - (b) 1.1
 - (c) 9.625
 - (d) 96.25

Answer: b

Explanation:

(b) Distance covered by a wheel in one revolution = $2\pi r = 2 \times 22/7 \times 35$
= 110 cm = 1.1 m

8. A circular wire of radius 42 cm is cut and bent into the form of a rectangle whose sides are in the ratio of 6 : 5. The smaller side of the rectangle is
- (a) 30 cm
 - (b) 60 cm
 - (c) 70 cm
 - (d) 80 cm

Answer: b

Explanation:

(b) Length of wire = $2\pi r$
= $2 \times 22/7 \times 42 = 264 \text{ cm}$

Let sides of rectangle are $6x$ and $5x$

$$\Rightarrow 2(6x + 5x) = 264$$

$$\Rightarrow 11x = 132$$

$$\Rightarrow x = 12$$

\therefore Smaller side = $12 \times 5 = 60 \text{ cm}$

9. The diameter of the wheel of a bus is 1.4 m. The wheel makes 10 revolutions in 5 seconds. The speed of the vehicle (in kmph) is _____ .
- (a) 31.68 km/hr
 - (b) 30 km/hr

(c) 28 km/hr

(d) 25 km/hr

Answer: a

Explanation:

Circumference of the wheel = $\pi \times 1.4$ m

$$= \frac{22}{7} \times 1.4 = 4.4 \text{ m}$$

\therefore Distance covered in 10 revolutions

$$= 10 \times 4.4 \text{ m} = 44 \text{ m}$$

\therefore Speed = $\frac{44}{5}$ m/s.

$$= \frac{44}{5} \times \frac{18}{5} \text{ km/h}$$

$$= 31.68 \text{ km/h}$$

10. If the wheel of an engine of a train is $\frac{30}{7}$ m in circumference makes seven revolutions in 4 seconds, then the speed of the train is _____ km/h

(a) 27 km/hr

(b) 30 km/hr

(c) 28 km/hr

(d) 25 km/hr

Answer: a

Explanation:

27 km/h

Hint: Speed of the train

$$= 7 \times \frac{30}{7} \times \frac{60}{4} \times \frac{60}{1000} = 27 \text{ km/h}$$

11. A bicycle wheel makes 5000 revolutions in moving 11 km. The diameter of the wheel is

(a) 70 cm

(b) 60 cm

(c) 50 cm

(d) 25 cm

Answer:a

Explanation:

$$\begin{aligned} \text{Distance covered in 5000 revolutions} \\ = 11 \text{ km} \end{aligned}$$

$$\begin{aligned} \text{Distance covered in 1 revolution} \\ = \frac{11000}{5000} \text{ m} = \frac{11}{5} \text{ m} \end{aligned}$$

Distance covered in 1 revolution
= circumference of the wheel

$$\Rightarrow 2\pi r = \frac{11}{5} \Rightarrow 2 \times \frac{22}{7} \times r = \frac{11}{5}$$

$$\Rightarrow r = \frac{11}{5} \times 7 \times \frac{1}{2 \times 22} = \frac{7}{20} \text{ m}$$

$$\begin{aligned} \therefore \text{Diameter} &= 2 \times r = 2 \times \frac{7}{20} = \frac{7}{10} \text{ m} \\ &= \frac{7}{10} \times 100 \text{ cm} = 70 \text{ cm} \end{aligned}$$

12. If the diameter of a semicircular protractor is 14 cm, then its perimeter is

(a)36cm

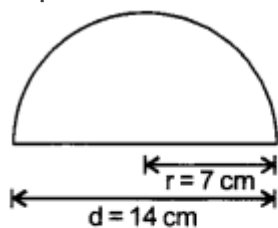
(b)30cm

(c)40cm

(d)45cm

Answer:a

Explanation:



$$d = 14 \text{ cm} \Rightarrow r = 7 \text{ cm}$$

$$\begin{aligned} \text{Perimeter} &= \frac{1}{2} \times 2\pi r + d \\ &= (22 + 14) \text{ cm} \\ &= 36 \text{ cm} \end{aligned}$$

13. Perimeter of semi circle of radius r is

(a) $\pi r + 2r$

- b) $3r$
- (c) $\pi+r$
- (d) $\pi-2r$

Answer: a

14. Value of π is

- (a) 3.14
- (b) 3.20
- (c) 3.41
- (d) 31.4

Answer: a

15. Perimeter of quadrant of a circle of radius r is

- (a) $\pi r/2 + 2r$
- (b) $3r$
- (c) $\pi+r$
- (d) $\pi-2r$

Answer: a

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