ST. LAWRENCE HIGH SCHOOL

A JESUIT CHRISTIAN MINORITY INSTITUTION

CLASS 8

SUBJECT :Arithmetic Work sheet27 Answer key

Marks:15 Circle

Date:29.5.21

Answer all thefollowing 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
   Explaination: Reason: Let the radii of two circles be r_1 and r_2 and the radius of large circle be r.
   ∴ r_1 = 19 cm, r_2 = 9 cm
   Circumference of two circles = C_1+ C_2…(where C = circle)
   = $2\pi r_1 + 2\pi r_2 = 2\pi \times 19 + 2\pi \times 9 = 38\pi + 18\pi = 56\pi$
   ∴ Circumference of large circle = 56π
   ⇒ 2πr = 56π
   ⇒ r = 28
   ∴ Radius of large circle = 28 cm

2. The perimeter (in cm) of a square circumscribing a circle of radius a cm, is
   (a) 8 a
   (b) 4 a
   (c) 2 a
   (d) 16 a
   Answer: a
   Explaination:
   (a) Side of a square circumscribing a circle of radius a cm = diameter of circle = 2 a cm

∴ Perimeter of the square
= 4 × 2a = 8a 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 = 1.262 = 0.63 m
   Distance travelled in one revolution
   = 2πr = 2 × $22/7$ × 0.63
   = 3.96 m
   ∴ Distance travelled in 500 revolutions
   = 500 × 3.96
   = 1980 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) $2\pi R_1 + 2\pi R_2 = 2\pi R$
   ⇒ $R_1 + R_2 = R$.

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: 2πr=2π, r=1, 2r=2

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

Answer: b
Explanation:

(*b*) A.T.Q.

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

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

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

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

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 πr = 2 × $22/7$ × 352
   = 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 = 2πr
   = 2 × $22/7$ × 42 = 264 cm
   Let sides of rectangle are 6x and 5x
   ⇒ 2(6x + 5x) = 264
   ⇒ 11x = 132
   ⇒ x = 12
   ∴ Smaller side = 12 × 5 = 60 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)25km/hr
Answer: a
Explaination:

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

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

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

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

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

10. If the wheel of an engine of a train is 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)25km/hr
Answer: a
Explaination:
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 wheelis

(a)70cm
(b)60cm
(c)50 cm
(d)25cm

Answer:a
Explaination:
Distance covered in 5000 revolutions

$$= 11 \text{ km}$$

Distance covered in 1 revolution

$$= \frac{11000}{5000}\text{m} = \frac{11}{5}\text{m}$$

Distance covered in 1 revolution

= circumference of the wheel

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

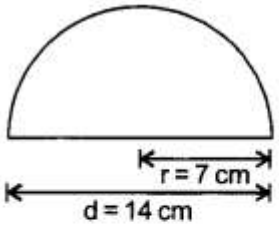
$$\Rightarrow \qquad r = \frac{11}{5} \times 7 \times \frac{1}{2 \times 22} = \frac{7}{20}\text{m}$$

$$\therefore \quad \text{Diameter} = 2 \times r = 2 \times \frac{7}{20} = \frac{7}{10} \text{ m}$$

$$= \frac{7}{10} \times 100 \text{ cm} = 70 \text{ cm}$$

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
Explaination:



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

$$\text{Perimeter} = \frac{1}{2} \times 2\pi r + d$$

$$= (22 + 14) \text{ cm}$$

$$= 36 \text{ cm}$$

13.Perimeter of semi circle of radius r is

(a)πr +2r

b)3r
(c)π+r
(d)π-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)πr/2 +2r
(b)3r
(c)π+r
(d)π-2r
Answer:a

Indranil Ghosh