

WORKSHOP CALCULATION AND SCIENCE-UNIT 8: MENSURATION

SEMESTER-II

1. What is the area of a square whose side is 18 cm?
a) 26 cm² b) 36 cm² c) 72 cm² d) 324 cm²
Ans: Area = a x a = 18 x 18 = **324 cm²**
2. What is the diagonal of a square plate whose side is 28 cm?
a) 39.29 cm b) 39.39 cm c) 39.49 cm d) 39.59 cm
Ans: Diagonal of square = $\sqrt{2} \times a = \sqrt{2} \times 28 = 39.59$ cm
3. What is the side of a square whose area is 625 mm²?
a) 15 mm b) 20 mm c) 25 mm d) 30 mm
Ans: Area = a² = 625 ;
A = 25 mm
4. What is the perimeter of a rectangle whose length and breadth are 20 cm and 18 cm?
a) 56 cm b) 66 cm c) 76 cm d) 86 cm
Ans: Perimeter of a rectangle = 2 (l + b) = 2 (20 + 18) = **76 cm**
5. What is the area of a rectangle, whose length and breadth are 10 cm and 8 cm respectively?
a) 75 cm² b) 80 cm² c) 85 cm² d) 90 cm²
Ans: Area of rectangle = l x b = 10 x 8 = **80 cm²**
6. What is the formula for area of parallelogram?
a) A = b x h b) a = 2 (a+b) c) a = $\frac{1}{2}$ (l+b)h d) a = πr^2
Ans: a = b x h
7. What is the area of a right angled triangle having a base 10 cm and height 5 cm?
a) 20 sq.cm b) 25 sq.cm c) 30 sq.cm d) 35 sq.cm
Ans: Area of a right angle triangle = $\frac{1}{2} \times b \times h = \frac{1}{2} \times 10 \times 5 = 25$ sq.cm
8. What is the perimeter of scalene? Triangle having sides of 40mm, 20mm and 28 mm?
a) 68 mm b) 78 mm c) 88 mm d) 98 mm
Ans: Perimeter of a any triangle = a+b+c = 40+20+28 = **88 mm**
9. What is the area of an equilateral triangle of side 450 mm?
a) 856.82 cm² b) 866.82 cm² c) 876.82 cm² d) 886.82 cm²
Ans: Area of equilateral triangle = $\frac{\sqrt{3}}{4} \times a^2 = \frac{\sqrt{3}}{4} \times 45^2 = 876.82$ cm²
10. What is the area of a circle of diameter 50 cm?
a) 1932.5 cm² b) 1942.5 cm² c) 1952.5 cm² d) 1962.5 cm²
Ans: Area of circle = $\pi r^2 = \frac{\pi \times d^2}{4} = \frac{\pi \times 50^2}{4} = 1962.5$ cm²

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11. What is the area of A semicircle whose dia is 20 cm (d)?

- a) 147.1 cm² b) 157.1 cm² c) 167.1 cm² d) 177.1 cm²

Ans: d = 20 cm; r = 10cm;

$$\text{Area of semicircle} = \frac{\pi \times r^2}{2} = \frac{\pi \times 10^2}{2} = \mathbf{157.1 \text{ cm}^2}$$

12. What is the cross sectional area of a circular ring of D = 38 mm, d = 32 mm?

- a) 320 mm² b) 330 mm² c) 340 mm² d) 350 mm²

Ans: D = 38mm; R = 19mm;

 d = 32mm; r = 16mm;

$$\text{Area of ring} = \pi(R + r)(R - r) = \pi(19 + 16)(19 - 16) = 329.7 = \mathbf{330 \text{ mm}^2}$$

13. What is the area of a sector of a circle of radius 5 cm and its angle is 96°?

- a) 20.39 cm² b) 20.93 cm² c) 20.89 cm² d) 20.98 cm²

Ans: Area of a sector = $\frac{\theta}{360} \times \pi \times r^2 = \frac{96}{360} \times \pi \times 5^2 = \mathbf{20.93 \text{ cm}^2}$

14. What is the formula for area and perimeter of a hexagon?

- a) $3x\frac{\sqrt{3}}{4} \times a^2 \text{ unit}^2$ & 3a unit b) $4x\frac{\sqrt{3}}{4} \times a^2 \text{ unit}^2$ & 4a unit

- c) $5x\frac{\sqrt{3}}{4} \times a^2 \text{ unit}^2$ & 5a unit d) $6x\frac{\sqrt{3}}{4} \times a^2 \text{ unit}^2$ & 6a unit

Ans: $6x\frac{\sqrt{3}}{4} \times a^2 \text{ unit}^2$ & 6a unit

15. What is the area of an ellipse if the major and minor axes are 5 cm and 3 cm respectively?

- a) 27 cm² b) 37 cm² c) 47 cm² d) 57 cm²

Ans: area of ellipse A = $\pi \times a \times b = \pi \times 5 \times 3 = \mathbf{47 \text{ cm}^2}$

16. Find the total surface area of cube whose side is 25cm?

- a) 3740 cm² b) 3745 cm² c) 3750 cm² d) 3755 cm²

Ans: Total Surface Area of a Cube = $6a^2 = 6 \times 25^2 = 6 \times 625 = \mathbf{3750 \text{ cm}^2}$

17. Find the total surface area of a cast iron bar whole length, width and height are 20m, 15m and 12m?

- a) 1340 m² b) 1440 m² c) 1540 m² d) 1640 m²

Ans: Total Surface Area of a Cuboid = $2(lb+bh+lh)$
 $= 2(20 \times 15 + 15 \times 12 + 20 \times 12) = \mathbf{1440 \text{ m}^2}$

18. What is the formula for total surface area of a cylinder?

- a) $2\pi r(h+r) \text{ unit}^2$ b) $\pi r(h+r) \text{ unit}^2$ c) $\pi rh \text{ unit}^2$ d) $2\pi rh \text{ unit}^2$

Ans: $2\pi r(h+r) \text{ unit}^2$

19. What is the volume of a rectangular tank of 30m length 20m width and 10m height?

- a) 5900 m³ b) 6000 m³ c) 6100 m³ d) 6200 m³

Ans: Volume of cuboid = $l \times b \times h = 30 \times 20 \times 10 = \mathbf{6000 \text{ m}^3}$

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20. What is volume of the cylinder whose radius is 7 cm and height 12 cm?

- a) 1842 cc b) 1844 cc c) 1846 cc d) 1848 cc

Ans: Volume of cylinder $= \pi \times r^2 \times h = \pi \times 7^2 \times 12 = \mathbf{1846 \text{ cc}}$

21. What is the volume of sphere of radius 7 cm?

- a) 1436 cm³ b) 1463 cm³ c) 1346 cm³ d) 1636 cm³

Ans: Volume of sphere $= \frac{4}{3} \pi r^3 = \frac{4}{3} \times \pi \times 7^3 = \mathbf{1436 \text{ cm}^3}$

22. What is the formula for finding volume of a hollow cylinder having outer radius R inner radius r and height h?

- a) $\pi (R^2-r^2)h \text{ unit}^2$ b) $\pi /3(R^2-r^2)h \text{ unit}^2$ c) $2/3 \pi (R^2-r^2)h \text{ unit}^2$ d) $4 /3 \pi (R^2-r^2)h \text{ unit}^2$

Ans: $\pi (R^2-r^2)h \text{ unit}^2$

23. What is the capacity of a conical tank of radius 2 m and height 5m?

- a) 11 m² b) 21 m² c) 31 m² d) 41 m²

Ans: Volume of a cone $= \frac{1}{3} \times \pi \times r^2 \times h = \frac{1}{3} \times \pi \times 2^2 \times 5 = \mathbf{21 \text{ m}^2}$

24. How many litres of water a cylindrical tank of radius 75 cm and height 100 cm can hold?

- a) 1766.25 litres b) 1767.25 litres c) 1768.25 litres d) 1769.25 litres

Ans: Volume of a cylinder $= \pi r^2 h = 3.14 \times 0.75 \text{m} \times 0.75 \times 1 \text{m}$
 $= 1.76625 \text{m}^3$
 $= \mathbf{1766.25 \text{ litres}}$ (1m³=1000 litres)

25. What is the total surface area of a cylinder having radius 2 metres and height 5 metres?

- a) 86 sq.m b) 88 sq.m c) 90 sq.m d) 92 sq.m

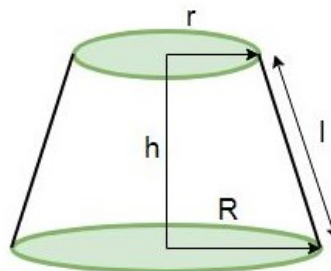
Ans: Total surface area of a cylinder $= 2\pi r (h + r)$
 $= 2 \times 3.14 \times 2 \times (5 + 2)$
 $\mathbf{S = 87.92 = 88 \text{ sq.Metre}}$

26. Find the curved surface area of a cylinder 10 cm dia and 20 cm height?

- a) 620 cm² b) 628 cm² c) 630 cm² d) 638 cm²

Ans: Curved Surface Area of a Cylinder $= 2\pi r h = 2 \times 3.14 \times 5 \times 20 = 628 \text{ cm}^2$

27. What is the name of the object?



- a) Triangular prism b) frustum of a pyramid c) frustum of a cone d) hexagonal prism

Ans: frustum of a cone