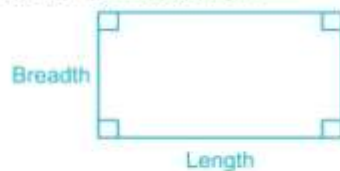# Mensuration

OnlineStudy4u

Placement for All.. All for Placement

This Video Completely covers the problems on"Mensuration" which is more than sufficient for all kind of placement Exams eg: TCS/WIPRO/AMCAT/ELITMUS/CoCubes and all other placement Exams.

Mensuration by : Pratik Shrivastava(10 years of industry experience and best Aptitude trainer)

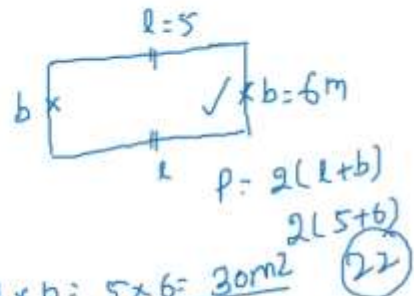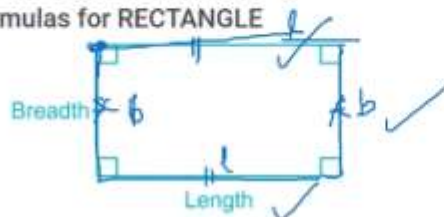## Mensuration:

1. Mensuration Formulas for RECTANGLE

Area of Rectangle = Length * Breadth

Perimeter of Rectangle = 2 * (Length * Breadth)

Length of the Diagonal = $\sqrt{Length^2 + Breadth^2}$

Mensuration:

1. Mensuration Formulas for RECTANGLE

$l = 5$

$b = 6m$

$p = 2(l+b)$
$2(5+6)$
22
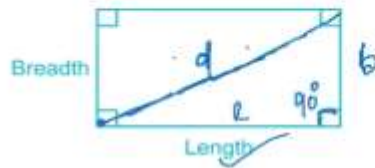
Area of Rectangle = Length Breadth

Area: $l \times b = 5 \times 6 = 30m^2$

Perimeter of Rectangle = 2 * (Length + Breadth)

$2l + 2b$
$l + b + l + b = 2(l+b)$

Length of the Diagonal = $\sqrt{Length^2 + Breadth^2}$

Mensuration:

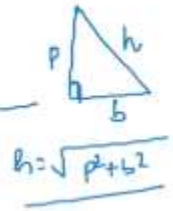### 1. Mensuration Formulas for RECTANGLE

Pythagoras theorem

$$h = \sqrt{p^2 + b^2}$$

$$d = \sqrt{l^2 + b^2}$$

Area of Rectangle = Length Breadth

Perimeter of Rectangle = 2 * (Length + Breadth)

Length of the Diagonal = $\sqrt{Length^2 + Breadth^2}$

Mensuration:

2. Mensuration Formulas for Square:

side

side

Area of Square = side * side

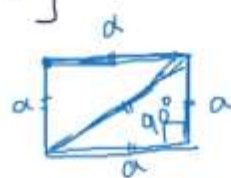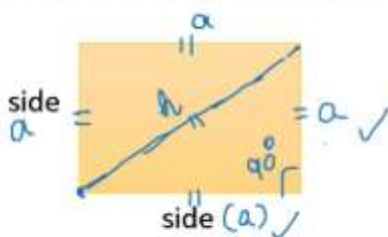Perimeter of Sqaure = 4 * side

Length of the Diagonal = $\sqrt{2}$ * side

Area (in terms of diagonal) = (diagonal)² /2

Mensuration:

2. Mensuration Formulas for Square:

side
a

side (a)

$$a + a + a + a = 4a = 4 \times side$$

$$Area = side \times side = a \times a = a^2$$
$$(side)^2$$

Area of Square = side * side

Perimeter of Sqaure = 4 * side

Length of the Diagonal = $\sqrt{2}$ * side

Area (in terms of diagonal) = (diagonal)² /2

Pythagoras $\checkmark$ $h = \sqrt{p^2 + b^2}$

$\Rightarrow$ $h = \sqrt{l^2 + b^2}$ $\checkmark$

$h = diagonal = \sqrt{a^2 + a^2}$
$= \sqrt{2}a$

Mensuration:

2. Mensuration Formulas for Square:

side

side

$Side = a$

$Area = (side)^2$,

$diagonal = \sqrt{2}\, side$

$Area = a^2$, $d = \sqrt{2}\, a$

$(d)^2 = (\sqrt{2}\, a)^2$

$d^2 = 2a^2$

$\dfrac{d^2}{2} = \dfrac{2\,a^2}{2}$

$\dfrac{d^2}{2} = a^2 = Area$

Area of Square = side * side

Perimeter of Sqaure = 4 * side

Length of the Diagonal = $\sqrt{2}$ * side

Area (in terms of diagonal) = (diagonal)² /2

$A = \dfrac{1}{2}(d)^2$

Mensuration

Q1. The length and breadth of a rectangle are in ratio 9:5 if the area is 720 m², find its perimeter.

1)112m 2)115m 3)110m 4)118m

Solution:

Normal

$l : b = 9:5$

$9x = l$

$5x = b$ $\begin{bmatrix} l = 9x \\ b = 5x \end{bmatrix}$

Trick:

Perimeter = 2(l+b)

10sec

$2(9+5)$

2×14

$\boxed{7}$

Perimeter = 2(l+b)

$= 2(9x + 5x)$

$= 2 \times 14x$

$= 2 \times 14 \times 4$

$= 112\, m$

$x = 4$

Area = $l \times b$

$\Rightarrow 720 = 9x \times 5x$

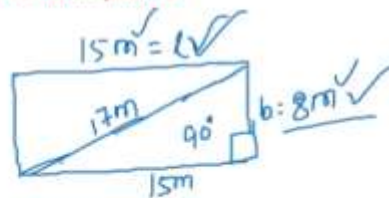$\dfrac{720}{8}{}_{16}$

$x^2 = 16$

$x = \pm 4$

Mensuration

Q2. One side of a rectangular field is 15m and one of its diagonal is 17m. Find the area of the field.

a)60 msquare b)110 msquare c)120 msquare d)140 msquare

Solution:

$\rightarrow$ Area = $l \times b$

$\Rightarrow 15 \times 8$

$= \boxed{120\, m^2}$

$15m = l$

$17m$ $90°$ $b = 8m$

$15m$

Pythagoras

$h^2 = p^2 + b^2$

$P = 8m$

$\Rightarrow (17)^2 - (15)^2 = p^2$

$289 - 225 = p^2$

$64 = p^2$

Mensuration

Q3. The length of rectangle is twice the breadth. If the length is decreased by 5cm and breadth is increased by 5cm, the area of the rectangle is increased by 75cmsquare. Find the length of the rectangle.

a)10cm b)20cm c)30cm d)40 cm

$l = 2x$
$2 \times 20 = 40cm$ $b = x$, $l = 2x$

Solution:

$\checkmark$ $l = 2b$

$$\begin{cases} (l-5) = (2x-5) \\ (b+5) = (x+5) \end{cases}$$

$\Rightarrow A_2 - A_1 = 75$

$\Rightarrow (2x-5)(x+5) - 2x \times x = 75$

$\Rightarrow 2x^2 + 10x - 5x - 25 - 2x^2 = 75$

$5x = 100$

$\boxed{x = 20}$

Mensuration

Q4. Find the cost of carpeting a room 13m long and 9m broad with a carpet 75cm wide at the rate of 12.40rs per square meter.
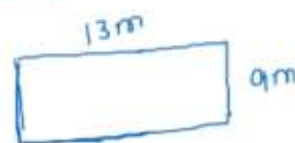
a)1720rs b)1934.40rs c)2120rs d)1220rs

[Placement]

Solution:

Area $= l \times b$

$\Rightarrow 13 \times 9 = 117 \, m^2$

156×12.4 ₹4

length of carpet $= \dfrac{117 \, m^2}{75cm}$

$= \dfrac{\overset{39}{117} \times \overset{4}{100}}{\underset{\cancel{5}}{75} \cancel{5}}$

$= 156 \, m \checkmark$

$1m = 100 cm$
$1cm = \dfrac{1}{100} m$

13m

9m

$156 \times 12.4 = 1934.4 \, rs$

```
156
 12.4
  624
 312
156
  1934
```

Mensuration

Q5. Find the largest size of bamboo that can be placed in a square of area 100sqm.

a)7.7m b)14.14m c)24.24m d)None

Solution:

Area $= 100 m^2$

$a^2 = 100$

$a = 10m$

$a = 10m$
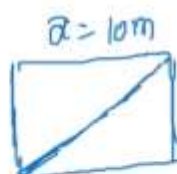
diagonal $= \sqrt{2} \, a$

$= 10 \times 1.414$

$\Rightarrow 14.14 m$

Mensuration

Q6. If the diagonal of a square is increased by 15%, find the percentage increase in the area.

a) 25% b) 32.25% c) 40% d) 35%

Solution:

common sense   (5min) ✓ Placement

old Area

$$\text{assume } a = 5\sqrt{2}$$

$$d = \sqrt{2}\,a = \sqrt{2} \times 5\sqrt{2} = 10\,m$$
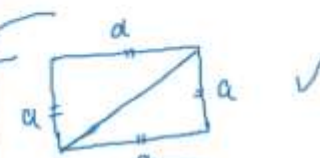
$$A = \tfrac{1}{2}(d)^2 = \frac{10 \times 10}{2} = \frac{100}{2}$$

new Area $d = 11.5$

$$A = \tfrac{1}{2}(d)^2 = \frac{11.5 \times 11.5}{2} = \frac{132.25}{2}$$

100

132.25

$$\boxed{32.25\%}$$

$+12 \begin{pmatrix} 11 & 5 \\ 11 & 5 \end{pmatrix}$ ✓

132 95

$d = a\sqrt{2}$ ✓

$$A = \tfrac{1}{2}(d)^2 ✓$$

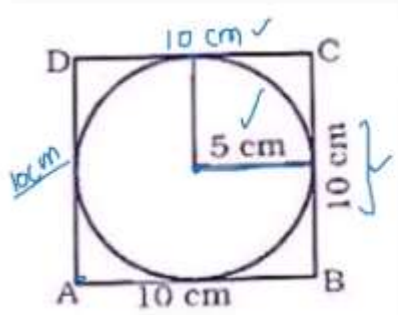$10 + \frac{10 \times 15}{100}$

$10 + 1.5 \; 11.5$

Mensuration

Q7. From a square piece of paper having each side equal to 10cm, the largest possible circle is being cutout. The ratio of the area of the circle to the area of the original square is nearly.

a) 4:5 b) 3:5 c) 5:6 d) 6:7 $\frac{4}{5} = 0.8$

Solution:

$$\checkmark \frac{A_0}{A_\square} = \frac{\frac{22}{7} \times 5 \times 5}{10 \times 10 \; 4}$$

$$\frac{22}{28}\left(\frac{11}{14}\right) = 0.8$$

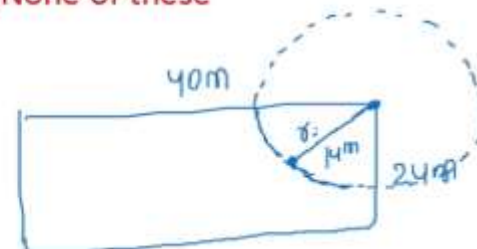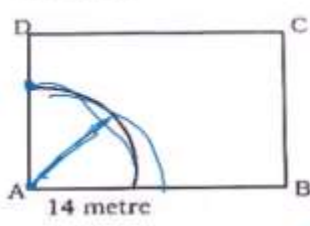$\boxed{\pi r^2}$ $\pi = \frac{22}{7}$

$14 \times 8 = 112$

Mensuration

Q8. A horse is tethered to one corner of a rectangular grassy field 40m by 24m with a rope 14m long. Over how much area of the field can it graze?

a) 154 cmsquare b) 308 cmsqaure c) 150 cmsqaure d) None of these

Solution:

$$\boxed{A = \pi r^2 \\ \pi = \frac{22}{7}}$$

$\frac{1}{4}$ th of Area of circle

$$\frac{1}{4} \times \pi r^2 = \frac{1}{4} \times \frac{22}{7} \times 14 \times 14$$
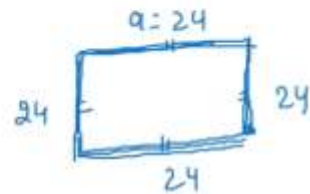
$$\checkmark \; 11 \times 14 = 154 \checkmark$$

Q9. The area of a square field is 576kmsquare. How long it take for a horse to run around at the speed of 12km/h.

a)12h b)10h c)8h d)6h

Solution:

Speed = 12 km/hr

$a = 24$

$\Rightarrow$ Area = 576 km square

$a^2 = 576$ $\boxed{\sqrt{576} = 24}$

$a = 24$

Total distance = perimeter = $24 \times 4 = 96$ km

$D = S \times t \Rightarrow 96 = 12 \times t$ $t = \dfrac{96}{12} = \boxed{8h}$

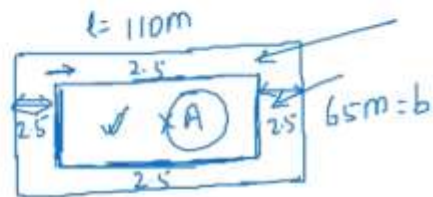**Q10.** A rectangular grassy filed 110m by 65m has a gravel path 2.5m wide all around it on the inside. Find the cost of gravelling the path at 80 paise per sqm.

a)700 b)800 c)680 d)740

Solution:

Area of rectangle = $\ell \times b$
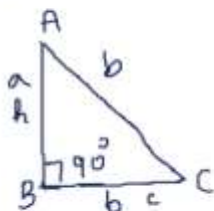
$= 110 \times 65$

$= 7150 m^2$

Area of inner rectangle = $(110 - 5) \times (65 - 5)$

$= 105 \times 60$

$= 6300$

Area of path needs to gravel

$= 7150 - 6300$

$= 850 m^2$

$\Rightarrow 850 m^2 \times \dfrac{80 \, \$}{100 \, \$}$

$= 680 \, rs$

65×11

$\begin{array}{r} 6\,15 \\ \hline 7150 \end{array}$

170

Triangle:
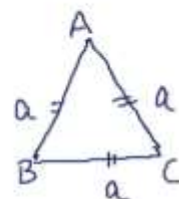

Area of $\triangle ABC$

$= \dfrac{1}{2} \times b \times h$

Perimeter = sum of all sides

$a + b + c$
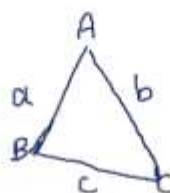
Area of $\triangle ABC$

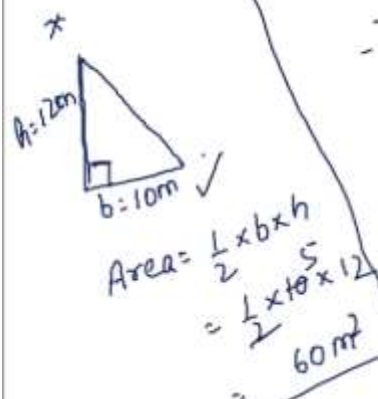$= \sqrt{s(s-a)(s-b)(s-c)}$

$\left[S = \dfrac{a+b+c}{2} \right]$

$\Rightarrow$ Area = $\dfrac{\sqrt{3}}{4} a^2$

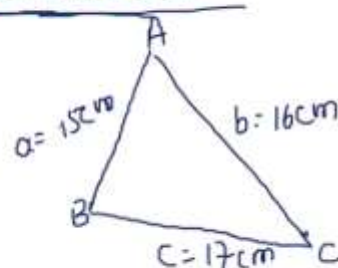$\Rightarrow$ perimeter

$= a + a + a$

$= 3a$

Q11. Find the area of triangle whose sides are 15cm,16cm and 17cm.

Solution:

$$Area = \sqrt{S(S-a)(S-b)(S-c)}$$

$$\Rightarrow \sqrt{24(24-15)(24-16)(24-17)}$$

$$\Rightarrow \sqrt{24 \times 9 \times 8 \times 7}$$

$$= \sqrt{8 \times 3 \times 3 \times 3 \times 8 \times 7}$$

$$8 \times 3 \sqrt{21}$$

$$24\sqrt{21}$$

$$a = 15cm \qquad b = 16cm$$

$$C = 17cm \quad C$$

$$S = \frac{a+b+c}{2} \leftarrow \text{Perimeter}$$

$$\downarrow$$

semi perimeter

$$S = \frac{15+16+17}{2} = \frac{48}{2} = 24$$

$h = 12m$

$b = 10m$ ✓

$$Area = \frac{1}{2} \times b \times h$$
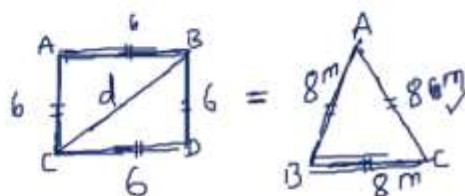
$$= \frac{1}{2} \times 10 \times 12$$

$$60 m^2$$

Q12. The cost of fencing an equilateral triangular park and a square park is the same.If the area of the triangular park is 16√3 msqaure . Find the length of the diagonal of the square park.

a.8.484 b.8 c.9 d.12

Solution:

$$Area\ of\ \triangle ABC = \frac{\sqrt{3}}{4}a^2 = 16\sqrt{3}$$

$$a^2 = 64 \Rightarrow a = 8$$

Perimeter of square = perimeter of $\triangle$

$$\Rightarrow 4 \times a = 24$$

$$4a \quad a = \frac{24}{4} = 6$$

$$d = a\sqrt{2}$$

$$= 6 \times \sqrt{2}$$

$$6 \times 1.414 = 8.484$$

Perimeter ✓

$$= 8+8+8$$

$$= 3 \times 8 = 24m$$

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3. Mensuration Formulas for PARALLELOGRAM
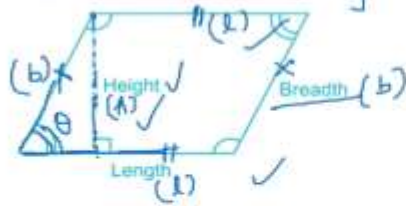
Height
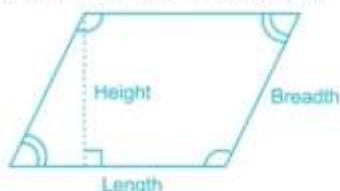
Breadth

Length

Area of parallel gram = Length * Height

Perimeter of Rectangle = 2 * (Length * Breadth)

Mensuration:

4. Mensuration Formulas for PARALLELOGRAM

[Quidalateral]

① Area of parallelogram
$= \ell \times h.$

Area of parallelogram = Length * Height

Perimeter of parallelogram = 2 * (Length + Breadth)

② Area of Parallelogram
$a \times b \times \sin\theta$

Sum of Sides: $\ell + b + \ell + b$

$2\ell + 2b = 2(\ell + b)$

Mensuration

Q13. In a diagram shown, Quadrilateral ABCD is parallelogram. Find its Area.

a)700 b)800 c)680 d)740   (a) $120 m^2$

(None of these)

Solution:
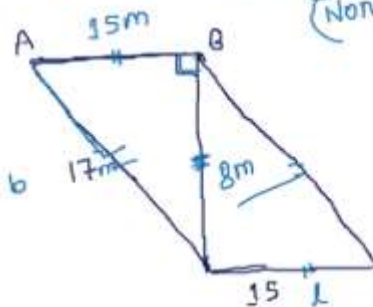
Area of $\parallel = \ell \times h$

$\Rightarrow$ $8m \times 15 m = 120 m^2$

Pythagoras $\Rightarrow h^2 = p^2 + b^2$

$17^2 = p^2 + 15^2$

$= 289 - 225 = p^2$

$= 64 = p^2$

$P = 8$

Mensuration

Q14. A parallelogram has sides 30m and 14m and one of its diagonal is 40m long. Then its area is .

a)168msqaure b)336msquare c)370msqaure d)480msquare   (V.9)
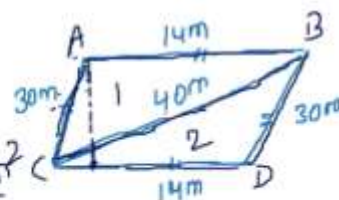
Solution:

Area $= \ell \times h$

$= \triangle ABC + \triangle BCD$ ✓

$= 2 \triangle ABC = 2 \times 168 = 336 m^2$

$6 \times 2 \pm 7 \times 8$

$= 6 \times 28$

$\boxed{168 m^2}$

168×2

$= 168 \times 2$

$A = \sqrt{S(S-a)(S-b)(S-c)}$

$= \sqrt{42 \times (42-30)(42-40)(42-14)}$

$= 4\sqrt{6 \times 7 \times 6 \times 2 \times 2 \times 28}$

$S = \dfrac{30 + 14 + 40}{2}$

$= \dfrac{84}{2}$ (42)

$= \sqrt{6 \times 6 \times 2 \times 2 \times 7 \times 7 \times 2 \times 2}$

$= 6 \times 2 \times 7 \times 2$
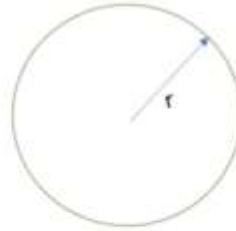
Mensuration:

r = radius

d = diameter = 2r

➢ Area of circle : πr²

➢ Circumference of Circle = 2πr

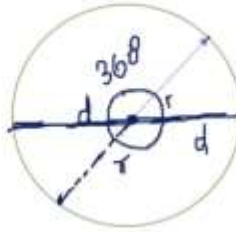➢ Circumference of semi circle = (πr + d)

➢ Area of Semi circle : πr²/2

$Circle$

Mensuration:

r = radius ✓

d = diameter = 2r

➢ Area of circle : (πr²) ✓

➢ Circumference of Circle = 2πr

➢ Circumference of semi circle = (πr + d)   2πr

➢ Area of Semi circle : (πr²/2)

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

$360^\circ = 2\pi$

$2\pi r$

$Circle$

circumference = Perimeter

πr

radius = r
diamter = 2r
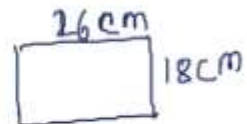
$\pi : \frac{22}{7} = 3.14$

πr

d

Mensuration

Q15. A circle and A rectangle have the same perimeter. The sides of the rectangle are 18cm and 26cm. what is the area of the circle?

a)88 cmsqaure   b)154 cmsqaure   c)1250cmsqaure   d)616 cmsqaure

Solution:

✓ Perimeter ○ = Perimeter ▭

$2\pi r = 2(l + b)$

$2 \times \frac{22}{7} \times r = 2(26 + 18)$

$\frac{22}{7} \times r = 442$

$\boxed{r = 14cm}$

26 cm
18cm

Area of ○
= πr²

$14 \times (40 + 4) = \frac{22}{7} \times 14 \times 14$

$= 44 \times 14$

$560 + 56$

$616 \, cm^2$

Q16 When the circumference and area of a circle are numerically equal, then the diameter is numerically equal to

a)Area b)circumference c)4 d)2pi

Solution:

$$\Rightarrow \text{Circumference} \ O = \text{Area} \ O$$

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

$$\boxed{r = 2}$$

$$d = 2 \times r$$

$$= 2 \times 2 = 4$$

Q17 If the area of a circle decreased by 36%, then the radius of a circle decreased by

a)20% b)18% c)36% d)64%

Option   assume   Important

Solution: Common sense

$$r = 10 cm$$

$$A = \pi \times r^2 = \pi \times 10 \times 10 = 100\pi$$

$$\downarrow 20\% \quad | 36\%.$$

NOW $A =$ $= \pi \times 8 \times 8$

$$64\pi$$

$$100 - 36 = 64$$

$$\underline{10 - 8}$$

$$100 - 80$$

20 diff

20%

Q18. A wire can be bent in the form of a circle of radius 56cm. If it is bent in the form of a square, then its area will be

good

A) 7744   B) 8844   Concept

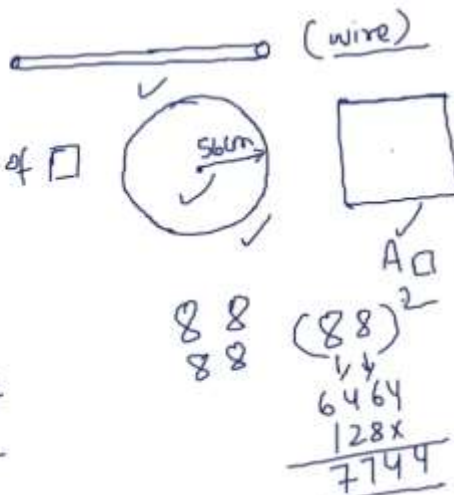C) 5544   D) 4444   (wire)

Solution: [Perimeter (length)]

Area = (Side)²   Perimeter of O = Perimeter of □

$$= (88)^2$$ $\Rightarrow 2\pi r = 4 \times a$

$$= 7744$$ $2 \times \frac{22}{7} \times 56 = 4 \times a$

$$a = 22 \times 2 \times 2$$

$$= 88 cm$$

8 8 $(88)^2$
8 8   ↓ ↓
            64 64
            128 x
            7744

Mensuration:

➢ **Length of Arc = (2πrθ) /360 where**

θ **is the central angle in degrees.**
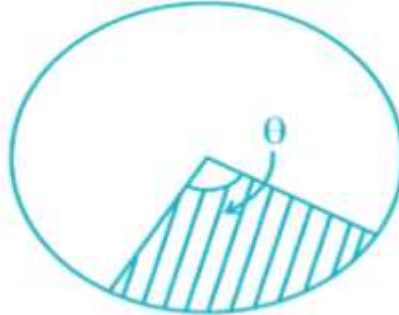
- Area of a sector = (1/2) × (length of arc) × r = (πr²θ)/360

Mensuration:

➢ **Length of Arc = (2πrθ) /360 where**

θ **is the central angle in degrees.**

$$① \quad \text{Length of Arc} = \frac{\theta}{360°} \times 2\pi r \quad ✓$$

$$② \quad \text{Area of sector} = \frac{\theta}{360°} \times \pi r^2$$
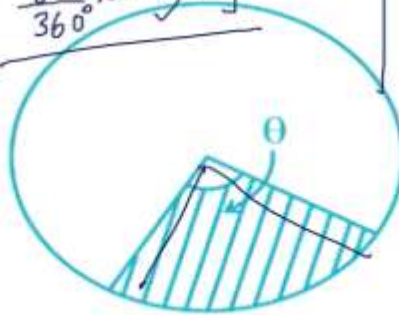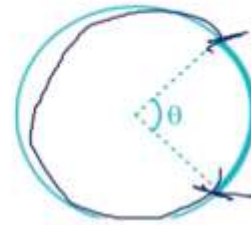
- Area of a sector = (1/2) × (length of arc) × r = (πr²θ)/360

Mensuration

Q19. In a circle of radius 7cm, an arc subtends an angle of 108^0 at the center. The area of the sector is.

A) 43.2cmsquare   B) 44.2cmsquare

C) 45.2cmsquare   D) 46.2cmsquare

Solution:

$$\text{Area of Sector} = \frac{\theta}{360°} \times \pi r^2$$

$$= \frac{3 \; \cancel{108}}{10 \; \cancel{360}} \times \frac{22}{\cancel{7}} \times 7 \times 7$$

$$\frac{66 \times 7}{10} = 46.2 \; cm^2$$
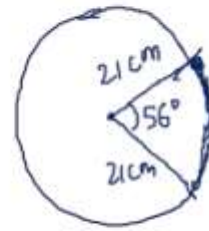
Mensuration

Q20. If in a circle of radius 21cm, an arc subtends an angle of 56^0 at the center, the length of the arc is .

A) 15.53cm   B) 16.53cm

C) 18.53cm   D) 20.53cm

Solution:

$$\text{Length of Arc} = \frac{\theta}{360^0} \times 2\pi r$$

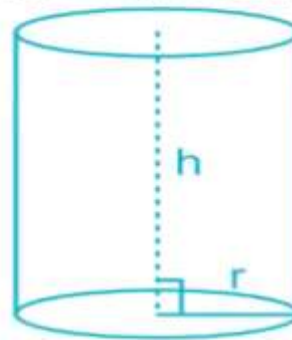$$= \frac{56^\circ}{360^\circ} \times 2 \times \frac{22}{7} \times 21$$

$$\frac{616}{30} \quad 20.53cm$$

Mensuration:

Mensuration formula for CYLINDER:

In the following formulae, r = radius of base, h = height of cylinder

- Curved surface area of a cylinder = 2πrh
- Total surface area of a cylinder = 2πr(r + h)
- Volume of a cylinder = πr²h

Mensuration:

① $\pi r^2 h$ ✓

② $2\pi r h$

③ $2\pi r h + 2\pi r^2$

     $2\pi r(r+h)$

curved surface
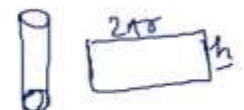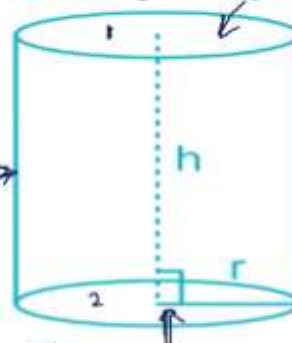
placement

cylinder

[two circles + Rectangle]

- Curved surface area of a cylinder = 2πrh
- Total surface area of a cylinder = 2πr(r + h)
- Volume of a cylinder = πr²h

Q21. The radius and height of a cylinder are in the ratio 5:7 and its volume is 4400cm^3 .then it radius will be?

A) 4cm　　　　B) 10cm

C) 5cm　　　　D) 12cm

$r : h : 5 : 7$ ✓

$r : 5x$

$h : 7x$

Solution:

volume of cylinder $= \pi r^2 h$

$2 \; 4400 = \dfrac{22}{7} \times 5x \times 5x \times 7x$

$5 \times 2 = 10cm$

$x^3 = 8 cm^3$

$\sqrt[3]{8}$

$x = 2cm$ ✓

Q22. The volume of a right circular cylinder whose curved surface area is 2640 cm^3 and circumference of it base is 66cm is?

A) 3465cm^3　　　　B) 13860cm^3 ✓

C) 7720cm^3　　　　D) 55440cm^3

Circumference of base (0) $= 2\pi r$

$2 \times \dfrac{22}{7} \times r = 66 \; 3$

$r = \dfrac{21}{2} cm$

Solution:

Curved Surface $= 2\pi r h = 2640$

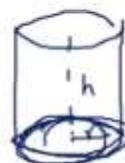$\Rightarrow 2 \times \dfrac{22}{7} \times \dfrac{21}{2} \times h = 2640 \; 40$

$h = 40cm$

$\begin{array}{l} 6 \; 3 \\ 2 \; 2 \\ \hline 12 6 \\ 12 6 \\ \hline 1386 \end{array}$

2 circle +

$\pi r^2 h \Rightarrow \dfrac{22}{7} \times \dfrac{21}{2} \times \dfrac{21}{2} \times 40 \; 10$
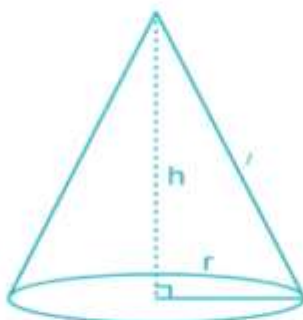
$= 22 \times 63 \times 10$

$= 13860$

Mensuration:

Mensuration formula for Cone:

In the following formulae, r = radius of base, l = slant height of cone and h = height of the cone (perpendicular to base)

- Slant height of a cone = l = √(h^2+r^2)

- Curved surface area of a cone = C = π × r × l

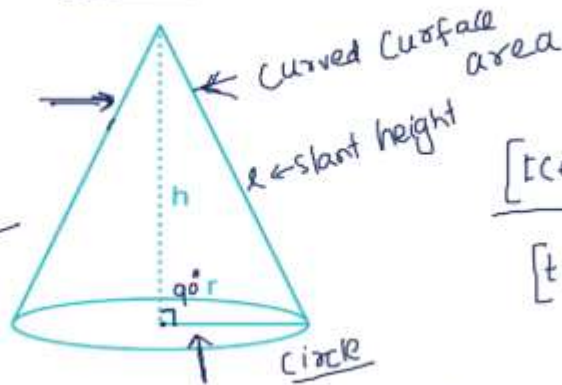- Total surface area of a cone = π × r × (r + l)

Mensuration:

Mensuration formula for Cone:

In the following formulae, r = radius of base, l = slant height of cone and h = height of the cone (perpendicular to base)

Pythagoras

$$l = \sqrt{h^2 + r^2}$$

$$\frac{1}{3}\pi r^2 h$$

Curved Curface area

l ←slant height

h

90° r

Circle

$\pi r^2 h$

$\frac{1}{3}\pi r^2 h$

[Icecream]

[tent] ✓

- Slant height of a cone = l = √(h²+r²)
- Curved surface area of a cone = C = π × r × l
- Total surface area of a cone = π × r × (r + l) ✓

$A\pi r l + \pi r^2$

$\pi r(r + l)$

Mensuration

Q23 Find the slant height, volume , curved surface area and the whole surface area of a cone of radius 21cm and height 28cm?

Solution:

① $l = \sqrt{h^2 + r^2} = \sqrt{28^2 + 21^2} = \sqrt{784 + 441} = \sqrt{1225}$

$= 35 \, cm$

② $\pi r l = \frac{22}{7} \times 21 \times 35\; 5 = 22 \times 105$

$= 2200 + 110 = 2310 \, cm^2$

③ $\frac{1}{3}\pi r^2 h = \frac{1}{3} \times \frac{22}{7} \times 21 \times 28\; 4 = 22 \times 21 \times 28 = 12936 \, cm^3$

④ $\pi r l + \pi r^2 \Rightarrow 2310 + 1386 = 3696$

$\frac{22}{7} \times 21 \times 21 + 3$

22×63

1386

OnlineStudy4u: A Complete Placement Solution
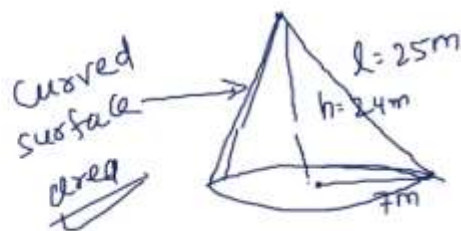

Mensuration

Q24 How many meters of cloth 5m wide will be required to make a conical tent, the radius of whose base is 7m and height is 24m?

A) 100m   B) 110m
C) 120m   D) 150m

Solution:

$l = \sqrt{h^2 + r^2}$

$= \sqrt{24^2 + 7^2}$

$= \sqrt{576 + 49}$

$= \sqrt{625} = 25$

Curved Surface area = $\pi r l$

$= \frac{22}{7} \times 7 \times 25$

$= 22 \times 25$

l = 25m
h = 24m
7m

Required cloth = $\frac{22 \times 25\; 5}{5} = 110m$

Mensuration formula for Sphere:

Surface Area of sphere = 4πr²

Volume of sphere = (4/3)πr³ $\dfrac{4}{3}\pi r^3$

Sphere

footbell

Mensuration

Q25. find out the volume and Surface area of a sphere of radius 10.5cm.

Solution:

$$r = 10.5cm = \frac{21}{2} \ cm$$

① $\dfrac{4}{3}\pi r^3 = \dfrac{4}{3} \times \dfrac{22}{7} \times \dfrac{21}{7} \times \dfrac{21}{2} \times \dfrac{21}{2}$

$= 11 \times 441$

$= 4851 = 4851 \ cm^3$ ✓

② $4\pi r^2$

$4 \times \dfrac{22}{7} \times \dfrac{21}{2} \times \dfrac{21}{2}$

$= 21 \times 66$

$1320 + 66 = 1386 \ cm^2$

Mensuration

Q26. A copper sphere of radius 3cm is beaten and drawn into a wire of diameter 0.2cm. The length of the wire is
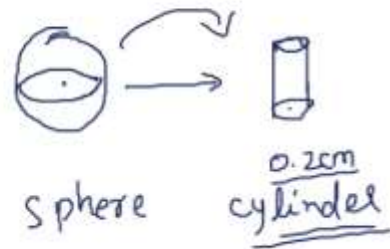
a)9m b)12m c)18m d)36m

Solution:

S ⟹ V sphere = V cylinder

$\dfrac{4}{3} \times \dfrac{22}{7} \times 3 \times 3 \times 3 = \pi \times 0.1 \times 0.1 \times h$

⟹ $36 = \dfrac{1}{10} \times \dfrac{1}{10} \times h$

$h = \dfrac{3600 \ CM}{}$

$h = 36 M$

Sphere   cylinder

0.2cm

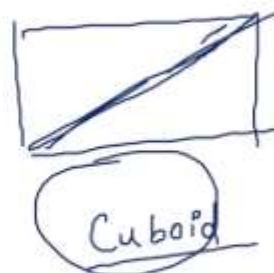1m = 100cm   d = 0.2cm

3600 $r = \dfrac{d}{2} = 0.1cm$

Q27. The length of longest rod that can be placed in a room which is 12m long, 9m broad and 8m high is

a)27m b)19m c)17m d)13m

Placement

Solution:

$$\text{longest rod} = \sqrt{l^2 + b^2 + h^2}$$

$$= \sqrt{12^2 + 9^2 + 8^2}$$

$$= \sqrt{144 + 81 + 64}$$

$$= \sqrt{289}$$

$$= 17m$$

Cuboid

Q28 A cube has a surface area 150 msquare. The length of its diagonal is?

a)5sqrt(3) b)5m c)10/ sqrt(3) d)15m

Solution: $5\sqrt{3}m$

(a) Surface area of cube = $6a^2$

(b) volume of cube = a^3

$$6a^2 = \frac{\cancel{150}^{25} m^2}{}$$

$$\boxed{a = 5m}$$

Cube

$\sqrt{3}\, a$

$5\sqrt{3}$