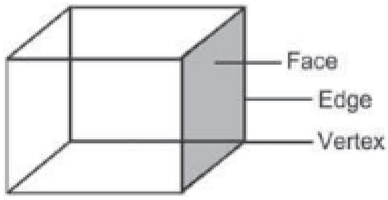
Mensuration

SOLIDS

A solid has three dimensions, namely length, breadth or width, and height or thickness. The plane surfaces that bind it are called its faces and the solid so generated is known as polyhedron.



The volume of any solid figure is the amount of space enclosed within its bounding faces. A solid has edges, vertices, and faces, which are shown in the figure.
A solid has the following two types of surface areas:
Lateral Surface Area Lateral surface area (LSA) of a solid is the sum of the areas of all the surfaces it has except the top and the base.
Total Surface Area Total surface area (TSA) of a solid is the sum of the LSA and the areas of the base and the top.

Note: In case of solids, like the cube and cuboid, the LSA consists of plane surface areas (i.e., area of all surfaces except the top and base), whereas in case of solids, like cone and cylinder, it consists of curved surface areas (CSA). Therefore, for such solids, the LSA is also called CSA.

Euler's Rule

Euler's rule states that for any regular solid:
Number of faces (F) + Number of vertices (V) = Number of edges (E) + 2

CUBOID

A cuboid is a rectangular solid having six rectangular faces. The opposite faces of a cuboid are equal rectangles. A cuboid has a length (l), breadth (b), and height (h).

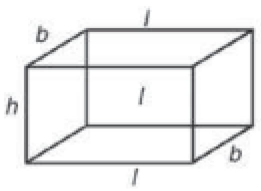


Figure 1

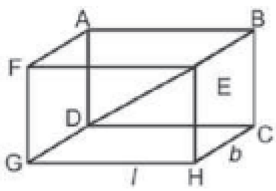


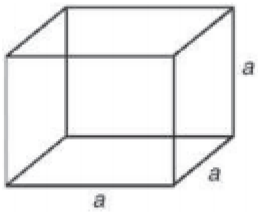
Figure 2

In Figure 2, ED is the diagonal of the cuboid. Moreover, the area of the surface GDCH is x, the area of the surface HEBC is y, and the area of the surface GFEH is z.

(i) Volume = Area of base × height = lbh
(ii) Volume = $\sqrt{xyz}$
(iii) Volume = xh = yl = zb
(iv) Lateral surface area (LSA) or area of the four walls = 2 (l + b) h
(v) Total surface area (TSA) = 2(x + y + z) = 2 (lb + bh + lh)
(vi) Diagonal = $\sqrt{l^2 + b^2 + h^2}$

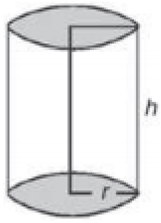
CUBE

A cube is a solid figure having six faces. All the faces of a cube are equal squares (let us say of the side 'a'). Therefore, the length, breadth, and height of a cube are equal.



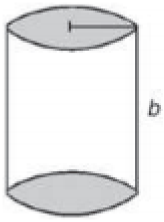
(i) Volume = a^3
(ii) Lateral surface area (LSA) or area of the four walls = $4a^2$
(iii) Total surface area (TSA) = $6a^2$
(iv) Diagonal = a $\sqrt{3}$

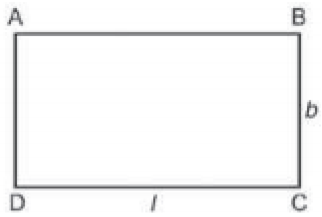
RIGHT CIRCULAR CYLINDER



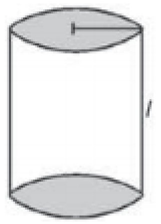
In the above figure, r is the radius of the base and h is the height of a right circular cylinder. A cylinder is generated by rotating a rectangle or a square by fixing one of its sides.
(i) Volume = area of base × height
(ii) Volume = πr^2 h
(iii) Curved surface area (CSA) = Perimeter of base × height
(iv) LSA = $2\pi rh$
(v) Total surface area (TSA) = LSA + area of the top + area of the base
(vi) TSA = $2\pi rh + \pi r^2 + \pi r^2$
(vii) TSA = $2\pi r(r + h)$

Some Important Deductions





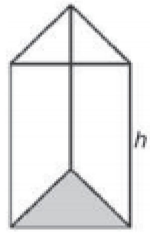
If the above rectangular sheet of paper (ABCD) is rolled along its length to form a cylinder, then the radius (r) of the cylinder will be (L/2n) and its height will be b and volume of this cylinder = $\frac{L^2 b}{4\pi}$, where l is the length of the rectangle.



If the above rectangular sheet of paper (ABCD) is rolled along its breadth to form a cylinder, then the radius (r) of the cylinder will be $\frac{b}{2\pi}$ and its height will be L. Volume of this cylinder = $\frac{b^2L}{4\pi}$.

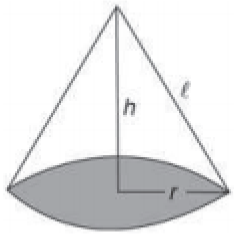
PRISM

A prism is a solid having identical and parallel top and bottom faces, that is, they will be identical polygons of any number of sides. The side faces of a prism are rectangular and are known as lateral faces. The distance between two bases is known as the height or the length of the prism.



(i) Volume = Area of base × Height
(ii) Lateral surface area (LSA) = Perimeter of the base × Height
(iii) Total surface area (TSA) = LSA + (2 × Area of the base)

RIGHT CIRCULAR CONE



In the above figure, ‘r’ is the radius of the base, h is the height, and l is the slant height of the right circular cone.

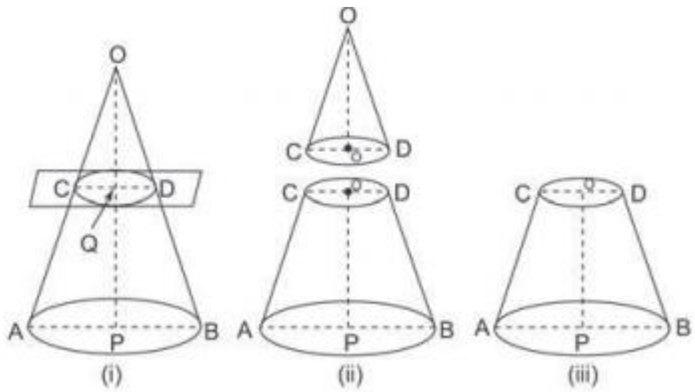
(i) Volume = $\frac{1}{3}$ × Area of the base height × height

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

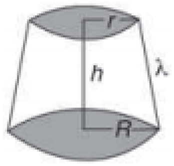
(ii) Slant height = l = $\sqrt{r^2 + h^2}$
(iii) Curved surface area (CSA) = πrl
(iv) Total surface area (TSA) = (CSA + Area of the base)
TSA = $\pi rl + \pi r^2$

Frustum of Cone

A cone whose top portion is sliced o by a plane which is parallel to the base is called frustum of cone.
Formation of frustum:



However, for the sake of representing the formula, we will use another form of frustum right now as given below:



In the above figure, r is the radius of the base, h is the vertical height of the frustum, and l is the slant height of the frustum.

(i) Volume = $\frac{\pi h}{3}(R^2 + r^2 + Rr)$
(ii) Slant height = λ= $\sqrt{(R-r)^2 + h^2}$
(iii) Curved surface area (CSA) = π (R + r) λ
(iv) Total surface area (TSA) = CSA + Area of the top + area of the base

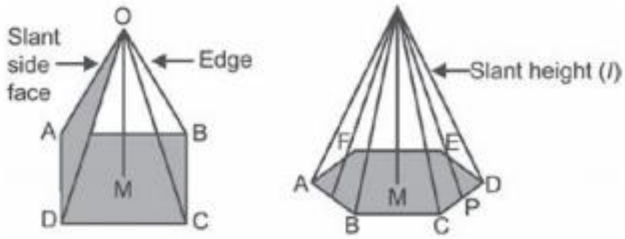
TSA = π (R + r) λ + πr^2 + πR2
TSA = π (R λ + r λ + r^2 + R^2)

(v) To find the height (H) of original cone.

H = $\frac{Rh}{R-r}$

PYRAMID

A pyramid is a solid having an n-sided polygon at its base. The side faces of a pyramid are triangular with the top as a point.

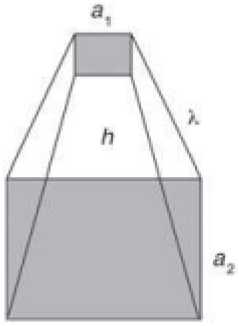


In the above figures, OM is the height of the pyramid.

(i) Volume = $\frac{1}{3}$ × Area of the base × Height

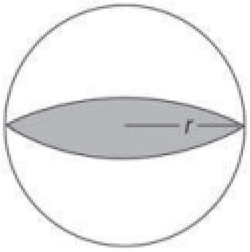
(ii) Lateral surface area (LSA) = $\frac{1}{2}$ × (Perimeter of the base) × Slant Height
(iii) Total surface area (TSA) = LSA + Area of the base

Frustum of Pyramid
A pyramid whose top portion is sliced o by a plane that is parallel to the base is called the frustum of a pyramid.



In the above figure, a_1 is the area of the top face of the frustum, a_2 is the area of the bottom face of the frustum, h is the height of the frustum, and l is the slant height of the frustum.
(i) Volume = $\frac{1}{3}$h $(a_1 + a_2 + \sqrt{a_1 a_2})$
(ii) Lateral surface area (LSA) = $\frac{1}{2}$ $(p_1 + p_1)$l
where P_1 and P_2 are perimeters of the top and the bottom faces.
(iii) Total surface area (TSA) = LSA + a_1 + a_2

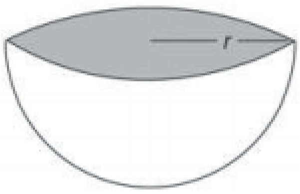
SPHERE



In the above figure, r is the radius of the sphere.

(i) Volume = $\frac{4}{3}$ πr^3
(ii) Surface area = $4\pi r^2$

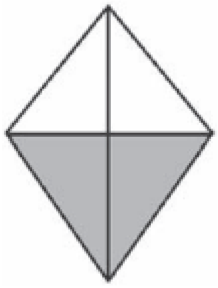
HEMISPHERE



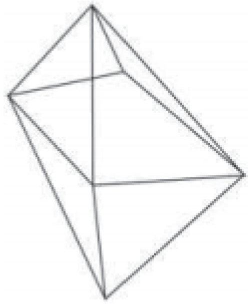
(i) Volume = $\frac{2}{3}\pi r^2$
(ii) Curved surface area (CSA) = $2\pi r^2$
(iii) Total surface area (TSA) = LSA + Area of the top face (read circle)
TSA = $2\pi r^2$ + πr^2
TSA = $3\pi r^2$

SOME MORE SOLIDS

Tetrahedron
A tetrahedron is a solid with four faces. All the faces of a tetrahedron are equilateral triangles. A tetrahedron has four vertices and six edges.

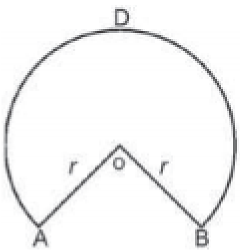


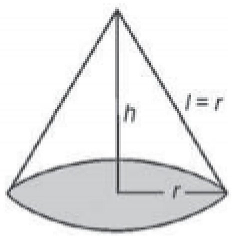
Octahedron
An octahedron is a solid that has eight faces. All the faces of an octahedron are equilateral triangles. An octahedron has six vertices and 12 edges.



Inscribed and Circumscribed Solids
If a sphere of the maximum volume is inscribed in a cube of edge 'a', then the radius of the sphere = $\frac{a}{2}$.
If a cube of the maximum volume is inscribed in a sphere of radius 'r', then the edge of the cube = $\frac{2r}{\sqrt{3}}$ × r .
If a cube of the maximum volume is inscribed in a hemisphere of radius 'r', then the edge of the cube = $\sqrt{\frac{2}{3}} \times r$.

Some Important Deductions

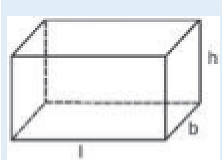




If a cone is made by a sector of a circle (AOBD), then the following two things must be remembered:
The area of the sector of a circle (AOBD) = The CSA of the cone
Radius of the circle (r) = Slant height (l) of the cone

FORMULAE

1. Cuboid



Figure

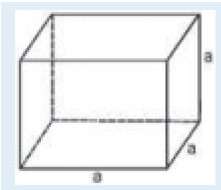
Nomenclature ⇒ l = length, b = breadth, h = height

Volume ⇒ lbh

Curved/Lateral surface area ⇒ 2(l + b) h

Total Surface area ⇒ 2 (lb + bh + hl)

3.Cube



Figure

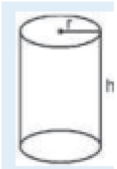
Nomenclature ⇒ a = edge/side

Volume ⇒ a^3

Curved/Lateral surface area ⇒ $4a^2$

Total Surface area ⇒ $6a^2$

3. Right circular cylinder



Figure

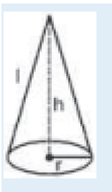
Nomenclature ⇒ R = radius of base, h = height of the cylinder

Volume ⇒ πr^2h

Curved/Lateral surface area ⇒ $2\pi rh$

Total Surface area ⇒ $2\pi r(r+h)$

4. Right circular cone



Figure

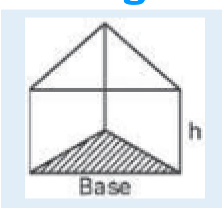
Nomenclature ⇒ r = radius, h = height, l = slant height, l = $\sqrt{r^2+h^2}$

Volume ⇒ $\frac{\pi r^2 h}{3}$

Curved/Lateral surface area ⇒ πrl

Total Surface area ⇒ $\pi r(l+r)$

5. Right triangular prism



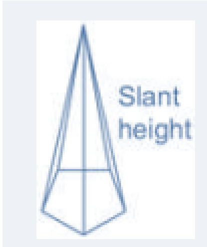
Figure

Volume ⇒ Area of the base × Height

Curved/Lateral surface area ⇒ Perimeter of the base × Height

Total Surface area ⇒ Lateral surface area + 2(Area of base)

6. Right pyramid



Figure

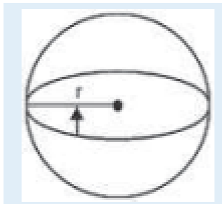
Nomenclature ⇒ height

Volume ⇒ 1/3 area of the base × Height

Curved/Lateral surface area ⇒ 1/2 ×Perimeter of the base × Slant height

Total Surface area ⇒ Lateral surface area + Area of base

7. Sphere



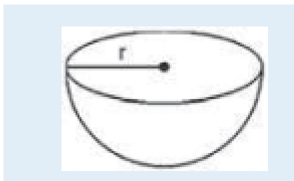
Figure

Nomenclature ⇒ r = radius

Volume ⇒ $\frac{4}{3}\pi r^3$

Total Surface area ⇒ $4\pi r^2$

8. Hemisphere



Figure

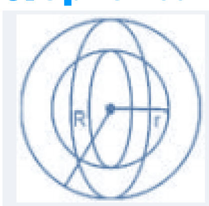
Nomenclature ⇒ r = radius

Volume ⇒ $\frac{4}{3}\pi r^3$

Curved/Lateral surface area ⇒ $2\pi r^2$

Total Surface area ⇒ $3\pi r^2$

9. Spherical Shell



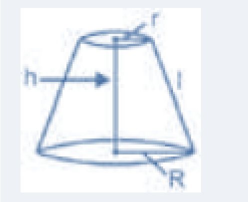
Figure

Nomenclature ⇒ r = inner radius, R = outer radius

Volume $\Rightarrow \frac{4}{3}\pi(R^3 - r^3)$

Total Surface area $\Rightarrow 4\pi(R^2 + r^2)$

10. Frustum of a Cone



Figure

Total Surface area ⇒ Lateral surface area + Area of top + Area of base

Q1.
If the length of the diagonal AC of a square ABCD is 5.2 cm, then the area of the square is
(a) 15. 12 sq. cm
(b) 13. 52 sq. cm
(c) 12.62 sq. cm
(d) 10.00 sq. cm

Q2.
The length of the diagonal of a square is 'a' cm. Which of the following represents the area of the square (in sq. cm) ?
(a) 2a
(b) a/√2
(c) $a^2/2$
(d) $a^2/4$

Q3.
The breadth of a rectangular hall is three-fourth of its length. If the area of the floor is 768 sq. m. , then the difference between the length and breadth of the hall is
(a) 8 meter
(b) 12 meters
(c) 24 meters
(d) 32 meters

Q4.
Find the length of the largest rod that can be placed in a room 16m long, 12m broad and 32/3 high
(a) 123 meters
(b) 68 meter
(c) 68/3 meter
(d) 45/2 meter

Q5.
Between a square parameter 44cm and a circle of circumference 44 cm, which figure has larger area and by how much
(a) Square 33cm^2
(b) Circle 33 cm^2
(c) Both have equal area.
(d) Dwustr 495 cm^2

Q6.
The perimeter of a square and a circular field are the same. If the area of the circular field is 3850 sq meter. What is the area (in m^2) of the square?
(a) 4225
(b) 3025
(c) 2500
(d) 2025.

Q7.
The perimeter of the top of a rectangular table is 28m., whereas its area is 48 m^2. What is the length of its diagonal?
(a) 5 m
(b) 10 m
(c) 12 m
(d) 12.5 m

Q8.
The breadth of a rectangular hall is three-fourth of its length. If the area of the floor is 192 sq. m., them the difference between the length and breadth of the hall is:
(a) 8 m
(b) 12 m
(c) 4 m
(d) 22 m

Q9.
The diagonal of a square is 4√2 cm. The diagonal of another square where area of double that of the first square is
(a) 8√2 cm
(b) 16 cm
(c) √32 cm
(d) 8 cm

Q10.
The diagonal of a square A is (a +b). The diagoanal of a square whose area is twice the area of square A is
(a) 2(a +b)
(b) $2(a+b)^2$
(c) √2(a-b)
(d) √2 (a+b)

Q11.
The length of a rectangular garden is 12 metres and its breadth is 5 metres. Find the length of the diagonal of a square garden having the same area as that of the rectangular garden
(a) 2√30 m
(b) √13 m
(c) 13 m
(d) 8√15 m

Q12.
The areas of a square and a rectangle are equal. The length of the rectangle is greater than the length of any of the square by 5 cm and the breadth is less by 3 cm. Find the perimeter of the rectangle.
(a) 17 cm
(b) 26 cm

(c) 30 cm
(d) 34 cm

Q13.
The perimeter of a rectangle is 160 meter and the difference of two sides is 48 metre. Find the side of a square whose area is equal to the area of this rectangle,
(a) 32 m
(b) 8 m
(c) 4 m
(d) 16 m

Q14.
The perimeter of two squares is 24 cm and 32 cm. The perimeter (in cm) of a third square equal in area to the sum of the areas of these squares is
(a) 45
(b) 40
(c) 32
(d) 48

Q15.
A wire when bent in the form of a square encloses an area of 484 sq. cm. What will be the enclosed area? When the wire is bent into the form of a circle?
(a) 125 cm^2
(b) 230 cm^2
(c) 550 cm^2
(d) 616 cm^2

Q16.
Find the length of the longest rod that can be placed in a hall of 10m length , 6 m breadth and 4 m height
(a) $2\sqrt{38}$ m
(b) $4\sqrt{38}$ m
(c) $2\sqrt{19}$ m
(d) $\sqrt{152}$ m

Q17.
The differences of the area of two squares drawn on two line segments of different lengths is 32sq. cm. Find the length of the greater line segment if one is longer than the other by 2 cm .
(a) 7 cm
(b) 9 cm
(c) 11 cm
(d) 16 cm

Q18.
A took 15 sec to cross a rectangular field diagonally walking at the ratio diagonally walking at the ratio of 52m/min and B took the same time to cross the same field along its sides walking at the rate of 68m/min. The area of the field is
(a) $30m^2$
(b) 40 m^2
(c) 50 m^2
(d) 60 m^2

Q19.
The difference between the length and breadth of a rectangle is 23 m. If it's perimeter is 206 m , then its area is
(a) $1520m^2$
(b)$2420m^2$
(c) $2480m^2$
(d) $2520m^2$

Q20.
The area (in m^2) of the square which has the same perimeter as a rectangle whose length is 48 m and is 3 times its breadth is
(A) 1000
(b) 1024
(c) 1600
(d) 1042

Q21.
The perimeter of two squares is 40 cm and 32 cm. The perimeter of a third square whose area is the differences of the two squares is
(a) 24 cm
(b) 42 cm
(c) 40 cm
(d) 20 cm

Q22.
The perimeter of five squares are 24 cm 32 cm ,40 cm , 76 cm and 80 cm respectively the perimeter of another square equal in area to sum of the areas of these squares is
(a) 31 cm
(b) 62 cm
(c) 124 cm
(d) 961 cm

Q23.
There is a rectangular tank of length 180 m and breadth 120 m in a circular field of the area of the land portion of the field is 40000 m^2, what is the radius of the field ?
(a) 130 m
(b) 135 m
(c) 140 m
(d) 145 m

Q24.
The length of a rectangular hall is 5m more than its breadth. The area of the hall is $750m^2$. The length of the hall is
(a) 15 m
(b) 22.5 m
(c) 25 m
(d) 30 m

Q25.
A cistern 6 m long and 4 m wide contains water up to depth of 1m 25 cm. The total area of the wet surface is
(a) $55m^2$
(b) 53.5^2
(c) $50m^2$
(d) $49m^2$

Q26.
If the length and breadth of a rectangle are in the same ratio 3:2 and its perimeter is 20 cm, then the area of the rectangle (in cm^3) is
(a) 24 cm^2
(b) 36cm^2
(c) 48cm^2
(d) 12 cm^2
Q27.
The perimeter of a rectangle and a square are 160 m each. The area of the rectangle is less than that of the square by 100 sq. m. The length of the rectangle is
(a) 30 m
(b) 60 m
(c) 40 m
(d) 50 m
Q28.
A path of uniform width runs round the inside of a rectangular field 38 m long and 32 m wide , if the path occupies 600m^2, then the width of the path is
(a) 30 m
(b) 5 m
(c) 18.75 m
(d) 10 m
Q29.
The perimeter of the floor of a room is 18 m. What is the area of the walls of the room if the height of the room is 3 m?
(a) 21m^2
(b) 42m^2
(c) 54 m^2
(d) 108 m^2
Q30.
A copper wire is bent in the shape of a square of area 81 cm^2. If the same wire is bent in the form of a semicircle , the radius (in cm) of the semicircle is (take pie = 22/7)
(a)126
(b)14
(c)10
(d)7
Q31.
A copper wire is bent in the form of a square with an area of 121 cm^2.if the same wire is bent in the form of a circle , the radius (in cm) of the circle is (take pie = 22/7)
(a)7
(b)14
(c)8
(d)12
Q32.
Water flows into a tank which is 200m long and 150 m wide through a pipe of cross-section 0.3m x 0.2m at 20km/h. then the time (in hours) for the water level in the tank to reach 8 m is
(a)50
(b)120
(c)150
(d)200
Q33.
A street of width 10 meters surrounds from outside a rectangular garden whose measurement is 200 m x 180 m. the area of the path (in square meters) is
(a) 8000
(b) 7000
(c) 7500
(d) 8200
Q34.
The area of the square inscribed in a circle of radius 8 cm is
(a) 256 sq. cm
(b) 250 sq. cm
(c) 128 sq. cm
(d) 125 sq. cm
Q35.
Area of square with diagonal $8\sqrt{2}$ cm is
(a) 64 cm^2
(b) 29 cm^2
(c) 56 cm^2
(d) 128 cm^2
Q36.
If the area of a rectangle be (x^2 +7x +10) sq. cm, then one of the possible perimeter of it is
(a) (4x + 14) cm
(b) (2x+14) cm
(c) (x+ 14 cm)
(d) (2x+7) cm
Q37.
If the perimeter of a square and a rectangle are the same. then the area P and Q enclosed by them would satisfy the condition
(a) $P < Q$
(b) $P \leq Q$
(c) $P > Q$
(d) $P = Q$
Q38.
A cube of edge 6 cm is painted on all sides and then cut into unit cubes. The number of unit cubes with no sides painted is
(a)0
(b) 64
(c) 186
(d) 108
Q39.
The length of diagonal of a square is $15\sqrt{2}$ cm. Its area is
(a)112.5 cm^2
(b)150 cm^2
(c)$255\sqrt{2}/2$ cm^2
(d)225 cm^2
Q40.

A kite in the Shape of a square with a diagonal 32 cm attached to an equilateral triangle of the base 8 cm. Approximately how much paper has been used to make it ?n (Use $\sqrt{3}$ =1.732)
(a) 539.712 cm^2
(b) 538.721 cm^2
(c) 540.712 cm^2
(d) 539.217 cm^2

Q41.
A lawn is in the form of a rectangle having its breadth and length in the ratio 3 : 4. The area of the lawn is 1/12 hectare. The breadth of the lawn is
(a) 25 meters
(b) 50 meters
(c) 75 meters s
(d) 100 meters

Q42.
The area of a rectangle is thrice that of a square. The length of the rectangle is 20 cm and the breadth of the rectangle is 3/2 times that of the side of the square. The side the square (in cm) is
(a) 10
(b)20
(c) 30
(d) 60

Q43.
The length and breadth of a rectangular field are in the ratio 7 : 4. A part n4 m wide running all around outside has an area of 416 m^2 .the breadth (in m) of the field is
(a) 28
(b) 14
(c) 15
(d) 16

Q44.
How many tiles, each 4 decimeter square will be required to cover the floor of a room 8 m long and 6 m broad?
(a) 200
(b) 260
(c) 280
(d) 300

Q45.
A godown is 15 m long and 12 m broad, The sum of the area of the floor and the celling is equal to the sum of areas of the four walls. The volume (in m^3) of the godown is :
(a) 900
(b) 1200
(c)1800
(d) 720

Q46.
Length of a side of a square inscribed in circles is a$\sqrt{2}$ units. The circumference of the circle is
(a) 2πa units
(b) πa units
(c) 4 πa units
(d) 2a/ π units

Q47.
The perimeter and length of a rectangle are 40 m and 12 m respectively Its breadth will be
(a) 10m
(b) 8 m
(c) 6 m
(d)3m

Q48.
If each edge of square are be doubled then the increase percentage in its area is
(a)200%
(b)250%
(c)280%
(d)300%

Q49.
An elephant of length 4 m is at one corner of rectangular cage of size (16 m x 30m) and faces towards the diagonally opposite corner. If the elephant starts moving towards the diagonally opposite corner it takes 15 seconds to reach this corner. Find the speed of the elephant
(a) 1 m/sec
(b) 2m/sec
(c) 1.87m/sec
(d) 1.5 m/sec

Q50.
A circle is inscribed in a square of side35cm. The area of the remaining portion of the square which is not enclosed by the circle is
(a) 962.5 cm^2
(b)262.5cm^2
(c) 762.5cm^2
(d)562.4 cm^2

Q51.
If the side of a square is 1/2 (x+1) units and its diagonal is (3-X)/$\sqrt{2}$ units, then the length of the side of the square would be
(a) 4/3 units
(b) 1umit
(c)1/2 units
(d) 2 units

Q52.
A rectangular carpet has an area of 120 m^2 and a perimeter of 46 meter. The length of its diagonal is:
(a) 17 meter
(b) 21 meter
(c) 13 meter
(d) 23 meter

Q53.
If the length of a diagonal of a square is 6$\sqrt{2}$ cm, then its area will be
(a) 24$\sqrt{2}$ cm^2
(b) 24 cm^2

(c) 36 cm^2
(d) 72 cm^2
Q54.
The length of a room is 3 meter more than its breadth. If the area of a floor of the room is 70 $meter^2$, then the perimeter of the floor will be
(a) 14 miter
(b) 28 miter
(c) 34 miter
(d) 17 miter
Q55.
The length of a rectangle is twice the breadth. If area of the rectangle be 417.605 sq. m., then length is
(a) 29.08 miter
(b) 29.80 miter
(c) 29.09 miter
(d) 28.90 miter
Q56.
The area of a sector of a circle of radius 5 cm, formed by an arc of length 3.5 cm is :
(a) 8.5 cm^2
(b) 8.75 cm^2
(c) 7.75 cm^2
(d) 7.50 cm^2
Q57.
The radius of a circular wheel is 1.75 m. The number of revolutions it will make in travelling 11 km is (use pie= 22/7)
(a)800
(b)900
(c)1000
(d)1200
Q58.
The radius of a wheel is 21cm, how many revolutions will it make in travelling 924 meters? (use pie= 22/7)
(a) 7
(b)11
(c) 200
(d) 700
Q59.
The area (in sq., cm) of the largest circle that can be drawn inside a square of side 28 cm is :
(a) 17248
(b) 784
(c) 8624
(d) 616
Q60.
The area of the ring between two concentric circles, whose circumference are 88 cm and 132 cm, is
(a) 78 cm^2
(b) 770 cm^2
(c) 715 cm^2
(d) 660 cm^2
Q61.
The diameter of a toy wheel is 14cm, What is the distance travelled by it in 15 revolutions?
(a) 880 cm
(b) 660 cm
(c) 600 cm
(d) 560 cm
Q62.
A can go round a circular path 8 times in 40 minutes. If the diameter of the circle is increased to 10 times the original diameter, the time required by A to go round the new path once travelling at the same speed as before is :
(a)25min
(b)20min
(c)50min
(d)100 min
Q63.
The base of a triangle is 15 cm and height is 12 cm. the height of another triangle of double the area having the base 20 cm is
(a) 9cm
(b) 18 cm
(c) 8 cm
(d) 12.5 cm
Q64.
If a wire is bent into the shape of a square, the area of the square is 81sq. cm, When the wire is bent into a semicircular shape, the area of the semicircle is : (use pie= 22/7)
(a) 154 cm^2
(b) 77 cm^2
(c) 44 cm^2
(d) 22 cm^2
Q65.
If the area of a triangle with base 12 cm is equal to the area of square with side 12 cm, the altitude of the triangle will be
(a) 12 cm
(b) 24 cm
(c) 18 cm
(d) 36 cm
Q66.
The sides of a triangle are 3cm, 4 cm and 5 cm. The area (in cm^2) of the triangle formed by joining the mid points of this triangle is :
(a) 6
(b)3
(c) 3/2
(d)3/4
Q67.
Three circle of radius 3.5 cm each are placed in such a way that each touches the other two. The area of portion enclosed by the circles is ,
(a) 1.975 cm^2
(b) 1.967 cm^2

(c) 19.68 cm^2
(d) 21.22 cm^2
Q68.
The area of a circular garden is 2464 sq. m. how much distance will have to be covered if you like to cross the garden along its diameter?(use pie = 22)
(a) 56 m
(b) 48 m
(c) 28 m
(d) 24 m
Q69.
Four equal circles each of radius 'a' units touch one another. The area enclosed between them (pie= 22/7).In square units, is
(a)$3a^2$
(b)6 a^2 /7
(c) 41 a^2
(d) a^2/7
Q70.
The area of the greatest circle inscribed inside a square of side 21 cm is (take pie =22/7)
(a) 703/2 cm^2
(b) 701/2 cm^2
(c)693/2 cm^2
(d) 695/2 cm^2
Q71.
The area of an equilateral triangle is 400 $\sqrt{3}$ sq. m. Its perimeter is :
(a) 120 m
(b) 150 m
(c) 90 m
(d) 135 m
Q72.
From a point in the interior of an equilateral triangle, the perpendicular distance of the sides are $\sqrt{3}$ cm, 2$\sqrt{3}$ cm and 5$\sqrt{3}$ cm, The perimeter (in cm) of the triangle is
(a) 64
(b) 32
(c) 48
(d) 24
Q73.
The perimeter of a triangle is 30 cm and its area is 30 cm^2. If the largest side measures 13 cm, What is the length of the smallest side of the triangle?
(a) 3 cm
(b) 4 cm
(c) 5 cm
(d) 6 cm
Q74.
Diameter of a wheel is 3 meter, The wheel revolves 28 times in a minute. To cover 5. 280 km distance, the wheel will take (Take pie = 22/7):
(a) 10 minutes
(b) 20 minutes
(c) 30 minutes
(d) 40 minutes
Q75.
Find the diameter of a wheel that makes 113 revolutions to go 2 km 26 decameters.(Take pie = 22/7)
(a)56/13 m
(b)70/11m
(c)136/11 m
(d) 140/11 m
Q76.
The radius of a circular wheel is 1.75 m. the number of revolutions that it will make in travelling 11 km. is
(a) 1000
(b) 10,000
(c) 100
(d) 10
Q77.
The circumference of a circle is 100 cm. The side of a square inscribed in the circle is
100$\sqrt{2}$/π cm
(b)50$\sqrt{2}$/ π cm
(c)100/ π cm
(d) 50$\sqrt{2}$ cm
Q78.
A path of uniform width surrounds a circular park, The difference of internal and external circumference of this circular path is 132 meters Its width is :
(a) 22 m
(b) 20 m
(c) 21 m
(d) 24 m
Q79.
Four equal sized maximum circular plates are cut off from a square paper sheet of area 784 sq. cm. The circumference of each plate is
(a)22cm
(b)44cm
(c)66cm
(d)88cm
Q80.
The circum radius of an equilateral triangle is 8 cm The in- radius of the triangle is
(a)3.25 cm
(b) 3.50 cm
(c) 4cm
(d) 4.25 cm
Q81.
Three coins of the same size (radius 1 cm) are placed on a table such that each of them touches the other two. The area enclosed by the coins is
(a) (π /2 -$\sqrt{3}$) cm^2
(b) ($\sqrt{3}$ - π /2) cm^2
(c) (2$\sqrt{3}$- π /2) cm^2
(d) (3$\sqrt{3}$ - π /2) cm^2
Q82.

The area of the largest triangle that can be inscribed in a semicircle of radius r cm, is
(a) $2r\ cm^2$
(b) $r^2\ cm^2$
(c) $2cm^2$
(d)$1/2\ r^2cm^2$.

Q83.

The area of the greatest circle, which can be inscribed in a square whose perimeter is 120 cm, is
(a)$22/7 \times (15)^2\ cm^2$
(b) $22/7 \times (7/2)^2\ cm^2$
(c) $22/7 \times (15/2)^2\ cm^2$
(d) $22/7 \times (9/2)^2\ cm^2$

Q84.

The area of the incircle of an, equilateral triangle of side 42 cm is (take $\pi=22/7$):
(a)$231\ cm^2$
(b) $462\ cm^2$
(c)$22\sqrt{3}cm^2$
(d) $924\ cm^2$

Q85.

The number of revolution a wheel of diameter 40 cm makes in traveling a distance of 176 m, is (take $\pi=22/7$):
(a) 140
(b) 150
(c) 160
(d) 166

Q86.

The length of the perpendiculars drawn from any point in the interior of an equilateral triangle to the respective sides are p_1, p_2, and p_3.The length of each side of the triangle is
(a)$2/\sqrt{3}(p_1+p_2+p_3)$
(b)$1/3(p_1+p_2+p_3)$
(c)$1/\sqrt{3}(p_1+p_2+p_3)$
(d)$4/\sqrt{3}(p_1+p_2+p_3)$

Q87.

A circle is inscribed in a square, An equilateral triangle of side $4\sqrt{3}$cm is inscribed in that circle. The length of the diagonal of the square (in cm) is
(a) $4\sqrt{2}$
(b) 8
(c) $8\sqrt{2}$
(d) 16

Q88.

The hypotenuse of a right angle isosceles triangle is 5 cm. its area will be
(a) 5 sq. cm
(b) 6.25 sq. cm
(c) 6. 50 sq. cm
(d) 12.5 sq. cm

Q89.

From a point within an equilateral triangle, perpendiculars drawn to the three sides are 6 cm, 7 cm and 8 cm respectively, the length of the side of the triangle is :
(a) 7 cm
(b) 10. 5 cm
(c) $14\sqrt{3}$ cm
(d) $14\sqrt{3}/3$cm

Q90.

In an isosceles triangle, the measure of each of equal sides is 10 cm and the angle between them is 45°, then area of the triangle is
(a) $25\ cm^2$
(b) $25/2(\sqrt{2})\ cm^2$
(c) $25\sqrt{2}\ cm^2$
(d) $2\sqrt{3}\ cm^2$

Q91.

The area of circle whose radius is 6 cm is trisected by two concentric circles. The radius of the smallest circle is
(a) $2\sqrt{3}$ cm
(b) $2\sqrt{6}$ cm
(c) 2 cm
(d) 3 cm

Q92.

The area of an equilateral triangle inscribed in a circle is $4\sqrt{3}\ cm^2$. The area of the circle is
(a)$16/3\ \pi\ cm^2$
(b)$22/3\ \pi\ cm^2$
(c)$28/3\ \pi\ cm^2$
(d)$42/3\ \pi\ cm^2$

Q93.

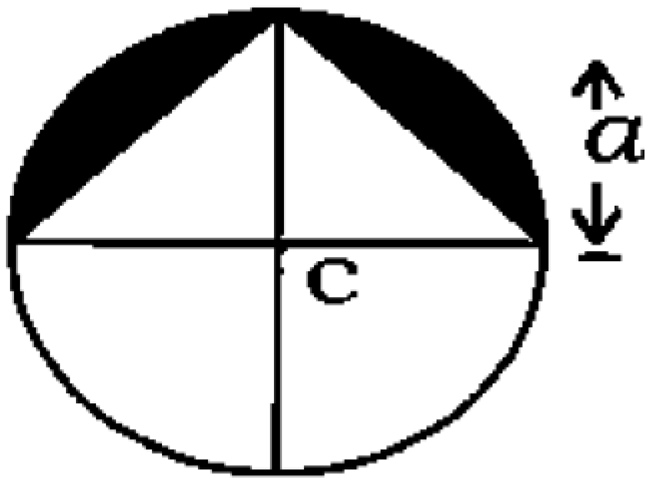
If the difference between the circumference and diameter of a circle is 30 cm, then the radius of the circle must be :
(a) 6 cm
(b)7 cm
(c) 5 cm
(d) 8 cm

Q94.

The base and altitude of a right angled triangle are 12 cm and 5 cm respectively. The perpendicular distance of its hypotenuse from the opposite vertex is
(a)56/13 cm
(b) 60/13cm
(c)5cm
(d) 7cm

Q95.

The area of the shaded region in the figure given below is



(a)$a^2/2(\pi/2 -1)$ sq. units
(b) $a^2 (\pi -1)$ sq. units
(c) $a^2 (\pi/2 -1)$ sq. units
(d) $a^2/b^2(\pi -1)$ sq. units

Q96.
The area of a circle is increased by 22 cm , if its radius is increased by 1 cm . the original radius of circle is
(a)6cm
(b)3.2cm
(c)3cm
(d)3.5cm

Q97.
The area of the largest circle, that can be drawn inside a rectangle with sides 148 cm . by 14 cm is
(a) 49 cm^2
(b) 154 cm^2
(c)378 cm^2
(d) 1078 cm^2

Q98.
A circle is inscribed in an equilateral triangle of side 8 cm. The area of the portion between the triangle and the circle is
(a) 11 cm^2
(b) 10.95 cm^2
(c)10 cm^2
(d)10.50 cm^2

Q99.
In a triangular field having sides 30m, 72m and 78m, the length of the altitude to the side measuring 72m is
(a) 25 m
(b) 28 m
(c)30 m
(d) 35 m

Q100.
If the perimeter of a right-angledisosceles triangle is $(4\sqrt{2} +4)$ cm,the length of the hypotenuse is
(a)4cm
(b)6cm
(c)8cm
(d)10 cm

Q101.
A right triangle with sides 3 cm,4cm and 5 m is rotated about the side 3 cm to from a cone. The volume of the cone so formed is
(a) 16 π cm^3
(b) 12 π cm^3
(c)15 π cm^3
(d)20 π cm^3

Q102.
ABC is an equilateral triangle of side 2 cm with A, B, C as center and radius 1 cm, three arcs are drawn. The area of the region with in the triangle bounded by the three arcs is
(a)($3\sqrt{3}- \pi/2$)
(b) ($\sqrt{3} - 3\pi/2$)
(c) $\sqrt{3} - \pi/2$)
(d) ($\pi/2- \sqrt{3}$)

Q103.
The circumference of a circle is 11 cm and the angle of a sector of the circle is 60°. The area of the sector is (use π =22/7)
(a)77/48cm^2
(b)125/48 cm^2
(c)75/48 cm^2
(d)123/48 cm^2

Q104.
If the difference between areas of the circum circle and the incircle of an equilateral triangle is 44 cm^2, then the area of the triangle is (Take π =22/7)
(a) 28 cm^2
(b) $7\sqrt{3}$ cm^2
(c) $14\sqrt{3}$ cm^2
(d) 21 cm^2

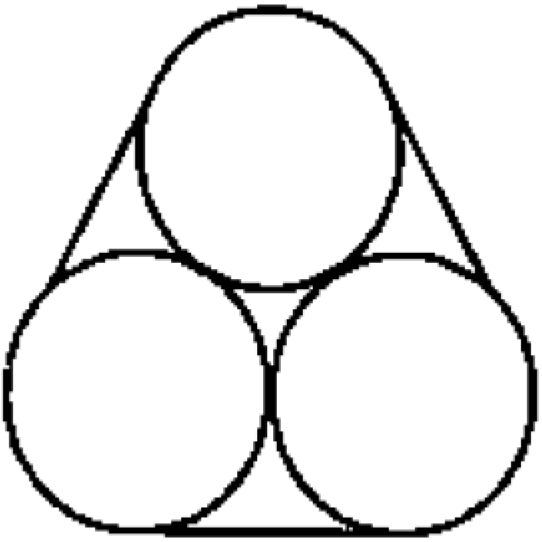
Q105.
If the area of a circle inscribed in a square is 9 π cm^2, then the area of the square is
(a) 24 cm^2
(b) 30 cm^2
(c) 36 cm^2
(d) 81 cm^2

Q106.
The sides of a triangle are 6 cm, 8 cm and 10 cm. The area of the greatest square that can be inscribed in it, is
(a)18 cm^2
(b)15 cm^2
(c) 2304/49 cm^2
(d)576/49cm^2

Q107.
The length of a side of an equilateral triangle is 8 cm. the area of region lying between the cumcircle and the incircle of the triangle is (use π =22/7)
(a)351/7 cm^2
(b)352/7 cm^2
(c)526/7 cm^2
(d)527/7 cm^2

Q108.
A wire, when bent in the form of a square, encloses a region having area 121 cm^2. If the same wire is bent into the form of a circle , then the area of the circle is (use $\pi = 22/7$)
(a)144 cm^2
(b)180cm^2
(c)154cm^2
(d) 176cm^2
Q109.
If the perimeter of a semicircular field is 36 m. Find its radius (use $\pi = 22/7$)
(a) 7 m
(b) 8 m
(c) 14 m
(d) 16 m
Q110.
The perimeter (in meters) of a semicircle is numerically equal to its area (in square meters). The length of its diameter is (use $\pi = 22/7$)
(a) 36/11m
(b)61/11m
(c)72/11m
(d)68/11m
Q111.
One acute angle of a right angled triangle is double the other. If the length of its hypotenuse is 10 cm, then its area is
(a)$25/2\ (\sqrt{3})cm^2$
(b)25 cm^2
(c) $25\sqrt{3}cm^2$
(d)75/2 cm^2
Q112.
If a triangle with base 8 cm has the same area as a circle with radius 8 cm, then the corresponding altitude (in cm) of the triangle is
(a)12 π
(b)20 π
(c)16 π
(d)32 π
Q113.
The measure (in cm) of sides of a right angled triangle are given by consecutive integers its area (in cm^2)is
(a)9
(b)8
(c)5
(d)6
Q114.
The area of a right-angled isosceles triangle having hypotenuse $16\sqrt{2}$cm is
(a) 144 cm^2
(b) 128 cm^2
(c) 112 cm^2
(d) 110 cm^2
Q115.
The area of an equilateral triangle is $4\sqrt{3}$ cm^2. The length of each side of the triangle is
(a)3cm cm
(b)$2\sqrt{2}$ cm
(c)$2\sqrt{3}$ cm
(d)4cm
Q116.
An equilateral triangle of side 6 cm has its corners cut off to form a regular hexagon In. Area (in cm^2) of this regular hexagon will be
(a)$3\sqrt{3}$
(b)$3\sqrt{6}$
(c)$6\sqrt{3}$
(d)$5\sqrt{3}/2$
Q117.
A 7 m wide road runs outside around a circular park, whose circumference is 176 m, the area of the road is (use $\pi = 22/7$)
(a)1368 cm^2
(b)1472 cm^2
(c)1512 cm^2
(d)1760 cm^2
Q118.
The length (in cm) of a chord of a circle of radius 13 cm at a distance of 12 cm from its center is
(a) 5
(b) 8
(c) 10
(d) 12
Q119.
The four equal circles of radius 4 cm drawn on the four corners of a square touch each other externally. Then the area of the portion between the square and the four sectors is
(a) $9(\pi - 4)$ sq. cm
(b) $16\ (4 - \pi)$ sq.cm
(c) $99(\pi - 4)$ sq. cm
(d) $169\ (\pi - 4)$ sq.cm
Q120.
If the four equal circles of radius 3 cm touch each other externally, then the area of the region bounded by the four circles is
(a) $4\ (9 - \pi)$ sq. cm
(b) $9\ (4 - \pi)$ sq. cm
(c) $5(6 - \pi)$ sq. cm
(d) $6(5 - \pi)$ sq.cm
Q121.
The length of each side of an equilateral triangle is $14\sqrt{3}$ cm. The area of the incircle (in cm^3) is
(a) 450
(b) 308
(c) 154
(d) 77
Q122.

Area of the incircle of an equilateral triangle with side 6 cm is
(a) π /2 sq. cm
(b) √3 π sq. cm
(c) 6 π sq. cm
(d) 3 π sq. cm
Q123.
A copper wire is bent in the form of an equilateral triangle and has area $121\sqrt{3}$ cm^2, If the same wire is bent into the form of a circle, the area (in cm^2) enclosed by the wire is (take pie = 22/7)
(a) 364.5
(b) 693.5
(c) 346.5
(d) 639.5
Q124.
At each corner of a triangular field of sides 26 m 28 m and 30 m, a cow is tethered by a rope of length 7m, the area (in m) ungrazed by the cows is
(a) 336
(b) 259
(c) 154
(d) 77
Q125.
In an equilateral triangle ABC, P&Q are midpoint of sides AB & AC respectively such that PQ || BC. If PQ = 5 cm then find the length of BC.
(a) 5 cm
(b) 10 cm
(c) 15 cm
(d) 12 cm
Q126.
ABC is an equilateral triangle P and Q are two points on AB and AC respectively such that PQ||BC. If PQ = 5 cm ,then find area of ΔAPQ
(a)25/4 sq.cm
(b)25√3 sq.cm
(c) 25√3 /4 sq.cm
(d) 25√3 sq.cm
Q127.
The area of a circle with circumference 22cm is
(a) 38.5 cm^2
(b) 39 cm^2
(c) 36.5 cm^2
(d) 40 cm^2
Q128.
In Δ ABC, O is the centroid and AD, BE, CF are three medians and the area of Δ ACO = 15 cm^2 then area of quadrilateral BDOF is
(a) 20 cm^2
(b) 30 cm^2
(c) 40 cm^2
(d) 25 cm^2
Q129.
A straight line parallel to the base BC of the triangle ABC intersects AB and AC at the points D and E respectively. If the area of the AABE be 36 sq., cm, then the area of the ΔABC is
(a) 18 sq.cm
(b) 36 sq.cm
(c) 18 cm
(d) 36 cm
Q130.
The length of two sides of an isosceles triangle is 15 and 22 respectively. What are the possible values of perimeter
(a)52 or 59
(b)52 or 60
(c)15 or 37
(d)37 or 29
Q131.
The diameter of a wheel is 98 cm. the number of revolutions in which it will have to cover a distance of 1540 m is
(a) 500
(b) 600
(c) 700
(d) 800
Q132.
The wheel of a motor car makes 1000 revolutions in moving 440 m . The diameter (in meter) of the wheel is
(a) 0.44
(b) 0.14
(c) 0.24
(d) 0.34
Q133.
A bicycle wheel makes 5000 revolutions in moving 11 km . Then the radius of the wheel (in cm) is (take pie=22/7)
(a) 70
(b) 35
(c) 17.5
(d) 140
Q134.
Three circles of diameter 10 cm each are bound together by a rubber band as shown in the figure. the length of the rubber band (in cm) if it is stretched is



(a) 30
(b) 30+ 10 π
(c) 10
(d) 60+20 π

Q135.
If chord of length 16cm on is at a distance of 15 cm from the center of circle then the length of the chord of the same circle which is at a distance of 8 cm from the center is equal to
(a) 10 cm
(b) 20 cm
(c) 30 cm
(d) 40cm

Q136.
A semicircular shaped window has diameter of 63 cm, its perimeter equals (take pie =22/7)
(a) 126 cm
(b) 162 cm
(c) 198 cm
(d) 251 cm

Q137.
In an equilateral triangle ABC of side 10 cm, the side BC is trisected at D & E. Then the length (in cm) of AD is
(a)$3\sqrt{7}$
(b)$7\sqrt{3}$
(c)$10\sqrt{7}/3$
(d)$7\sqrt{10}/3$

Q138.
The perimeter of a triangle is 40cm and its area is 60 cm^2. If the largest side measures 17 cm, then the length (in cm) of the smallest side of the triangle is
(a) 4
(b) 6
(c) 8
(d) 15

Q139.
From four corners of a square sheet of side 4 cm four pieces each in the shape of arc of a circle with radius 2 cm are cut out. The area of the remaining portion is :
(a) (8 - π) sq. cm
(b) (16 - 4 π)sq. cm
(c) (16 - 8 π) sq. cm
(d) (4 - 2 π) sq. cm

Q140.
If the numerical value of the perimeter of an equilateral triangle is $\sqrt{3}$ times the area of it, then the length of each side of the triangle is
(a) 2 units
(b) 3 units
(c) 4 units
(d) 6 units

Q141.
Each side of an equilateral triangle is 6 cm. Find its area
(a) $9\sqrt{3}$ sq. cm
(b) $6\sqrt{3}$ Sq. cm
(c)$4\sqrt{3}$ sq. cm
(d) $8\sqrt{3}$Sq. cm

Q142.
The length of three medians of a triangle are 9 cm, 12 cm and 15 cm, The area (in sq. cm) of the triangle is
(a) 24
(b) 72
(c) 48
(d) 144

Q143.
The area of the triangle formed by the straight line 3x +2y = 6 and the co-ordinate axes is
(a) 3 square units
(b) 6 square units
(c) 4 square units
(d) 8 square units

Q144.
If the length of each side of an equilateral triangle is increased by 2 units, the area is found to be increased by 3 + $\sqrt{3}$ square unit. The length of each side of the triangle is
(a) $\sqrt{3}$ unit
(b)3 units
(c) $3\sqrt{3}$ units
(d) $3\sqrt{2}$ units

Q145.
What is the area of the triangle whose sides are 9cm, 10cm and 11cm?
(a) 30 cm^2
(b)60 cm^2
(c) $30\sqrt{2}$ cm^2
(d)$62\sqrt{2}$ cm^2

Q146.
The area of an isosceles triangle is 4 square units if the length of the unequal side is 2 unit, the length of each equal side is
(a) 4 units
(b) $2\sqrt{3}$ units
(c) $\sqrt{17}$ units
(d) $3\sqrt{2}$ units

Q147.
What is the area of a triangle having perimeter 32 cm, one side 11 cm and difference of other two sides 5 cm?
(a) $8\sqrt{30}$ cm^2
(b) $5\sqrt{35}$ cm^2
(c) $6\sqrt{30}$ cm^2
(d) $8\sqrt{2}$ cm^2
Q148.
Area of equilateral triangle having side 2cm is
(a)4cm^2
(b)$\sqrt{3}$cm^2
(c)3cm^2
(d)$\sqrt{6}$cm^2
Q149.
The area of a circle is increased by 22 cm^2. when its radius is increased by 1 cm. The original radius of the circle is
(a) 3 cm
(b) 5 cm
(c) 7cm
(d) 9 cm
Q150.
The radii of two circles are and 5cm and 12 cm. The area of a third circle is equal to the sum of the area of the two circles. The radius of the third circle is
(a) 13 cm
(b)21cm
(c) 30 cm
(d)17cm
Q151.
The perimeter of a semicircle path is 36 cm. find the area of this semicircle path
(a)40 sq. m
(b)54 sq. m
(c)53 sq. m
(d) 77 sq. m
Q152.
The area of a circle inscribed in a square of area 2m^2 is
(a) $\pi/4$ m^2
(b) $\pi/2$ m^2
(c) π m^2
(d) 2π m^2
Q153.
Three circles of radii 4 cm, 6 cm and 8 cm touch each other pair wise externally, The area of the triangle formed. by the line-segments joining the centres of the three circles is
(a) $144\sqrt{13}$ sq. cm
(b) $12\sqrt{105}$ Sq. cm
(c) $6\sqrt{6}$ sq. cm
(d) $24\sqrt{16}$ sq. cm
Q154.
Two circles with center A and B and radius 2 units touch each other externally at 'C', A third circle with center 'C' and radius '2' units meet other two at D and E. Then the area of the quadrilateral ABDE is
(a)$2\sqrt{2}$ sq. units
(b)$3\sqrt{3}$ sq. units
(c)$3\sqrt{2}$ sq. units
(d)$2\sqrt{3}$ sq. units
Q155.
If the perimeter of a right angled triangle is 56 cm and area of the triangle is 84 sq. cm, then the length of the hypotenuse is (in cm)
(a) 25
(b) 50
(c) 7
(d) 24
Q156.
If the length of each median of an equilateral triangle is $6\sqrt{3}$ cm, the perimeter of the triangle is
(a) 24 cm
(b) 32 cm
(c) 36 cm
(d) 42 cm
Q157.
The area of an equilateral triangle is $4\sqrt{3}$ sq. cm. Its perimeter is
(a) 12 cm
(b) 6 cm
(c) 8 cm
(d)$3\sqrt{3}$
Q158.
A gear 12 cm in diameter is turning a gear 18 cm in diameter. When the smaller gear has 42 revolutions. how many has the larger one made?
(a) 28
(b) 20
(c) 15
(d) 24
Q159.
The perimeter of a semicircular area is 18 cm , then the radius is :(using pie =22/7)
(a) 16/3 cm
(b) 7/2 cm
(c) 6 cm
(d) 4 cm
Q160.
A circle and a rectangle have the same perimeter. The sides of the rectangle are 18 cm and 26 cm. The area of the circle is (Take pie =22/7)
(a) 125 cm^2
(b) 230 cm^2
(c) 550 cm^2
(d) 616 cm^2
Q161.
The area of a circle is 38.5 sq. cm. Its circumference (in cm) is (use pie =22/7)
(a) 22

(b) 24
(c) 26
(d) 32
Q162.
A circle is inscribed in a square whose length of the diagonal is $12\sqrt{2}$ cm. An equilateral triangle is inscribed in that circle. The length of the side of the triangle is
(a) $4\sqrt{3}$ cm
(b) $8\sqrt{3}$ cm
(c) $6\sqrt{3}$ cm
(d) $11\sqrt{3}$ cm
Q163.
The area (in sq. unit) of the triangle formed in the first quadrant by the line $3x + 4y = 12$ is
(a) 8
(b) 12
(c) 6
(d) 4
Q164.
The height of an equilateral triangle is 15 cm. the area of the triangle is
(a) $50\sqrt{3}$ sq. cm
(b) $70\sqrt{3}$ sq. cm
(c) $75\sqrt{3}$ sq. cm
(d) $150\sqrt{3}$ sq. cm
Q165.
The area of an equilateral triangle is $9\sqrt{3}$ m, The length (in cm) of median is
(a)$2\sqrt{3}$
(b)$3\sqrt{3}$
(c)$3\sqrt{2}$
(d)$2\sqrt{2}$
Q166.
The side of a triangle are 16 cm, 12 cm and 20 cm. Find the area,
(a) 64 cm^2
(b) 112 cm^2
(c) 96 cm^2
(d) 81 cm^2
Q167.
360 sq. cm and 250 sq. cm are the area of two similar triangles. If the length of one of the sides of the first triangle be 8 cm , then the length of the corresponding side of the second triangle is
(a)31/5cm
(b) 19/3cm
(c) 20/3 cm
(d) 6 cm
Q168.
The perimeter of an isosceles triangle is 544 cm and each of the equal sides is 5/6 times the base .what is the area (in cm^2) of the triangle?
(a) 38172
(b) 18372
(c) 31872
(d) 13872
Q169.
The altitude draw In o the base of an isosceles triangle is 8 cm and its perimeter is 64 cm. the area (in cm^2)of the triangle is
(a)240
(b)180
(c)260
(d)120
Q170.
Three circle of radius a, b, c touch each other externally . the area of the triangle formed by joining their center
(a) $\sqrt{(a+b+c)abc}$
(b) $(a + b + c)\sqrt{(a+b+c)}$
(c) ab + bc + ca
(d) None of the above
Q171.
The radii of two circles are 10 cm and 24 cm. The radius of a circle whose area is the sum of the area of these two circles is
(a) 36 cm
(b) 17 cm
(c) 34 cm
(d) 26 cm
Q172.
A circle is inscribed in an equilateral triangle and a square is inscribed in that circle. The ratio of the areas of the triangle and the Square is
(a)$\sqrt{3}:4$
(b) $\sqrt{3}:8$
(c) $3\sqrt{3}:2$
(d) $3\sqrt{3}:1$
Q173.
If area of an equilateral triangle is a and height b, then the value of b^2/a is
(a)3
(b)1/3
(c) $\sqrt{3}$
(d)$1/\sqrt{3}$
Q174.
ΔABC is similar to ΔDEF such that BC = 3 cm, EF = 4 cm and area of ΔABC = 54 cm^2, then the area of ΔDEF is : =
(a) 66 cm^2
(b) 78 cm^2
(c) 96 cm^2
(d) 54 cZm^2
Q175.
The area of two similar triangles ABC and DEF are 20cm^2 and 45cm^2 respectively. If AB =5 cm, then DE is equal to
(a) 6.5 cm
(b) 7.5 cm
(c) 8.5 cm
(d) 5.5 cm
Q176.

C_1 and C_2 are two concentric circles with center at O, Their radii are 12 cm, and 3 cm, respectively B and C are the point of contact of two tangents drawn to C_2 from a point A lying on the circle C_1 Then, the area of the quadrilateral ABOC is

(a)$9\sqrt{15}/2$ sq.cm

(b) $12\sqrt{15}$ sq. cm

(c) $9\sqrt{15}$ sq. cm

(d) $6\sqrt{15}$ sq. cm

Q177.

From a point P which is at a distance of 13 cm from center O of a circle of radius 5 cm in the same plane, a pair of tangents PQ and PR are drawn to the circle Area of quadrilateral PQOR is

(a) 65 cm^2

(b) 60 cm^2

(c) 30 cm^2

(d) 90 cm^2

Q178.

A circular road runs around a circular ground. If the difference between the circumference of the outer circle and the inner circle is 66 meters, the width of the road is :

(a) 10.5 meters

(b) 7 meters

(c) 5.25 meters

(d) 21 meters

Q179.

The difference of perimeter and diameter of a circle is X unit. The diameter of the circle is

(a)$X/(\pi -1)$ unit

(b) $X/(\pi+1)$ unit

(c) X/π unit

(d) $(X/\pi) -1$ unit

Q180.

The area of the circum circle of an equilateral triangle is 3π sq.cm^2. The perimeter of the triangle is

(a) $3\sqrt{3}$cm

(b) 9 cm

(c) 18 cm

(d) 3 cm

Q181.

A horse is tied to a post by a rope. If the horse moves along a circular path always keeping the rope stretched and describes 88 meters when it has traced out 72° at the center, the length of the rope is (Take pie=22/7)

(a) 70 m

(b) 75 m

(c) 80 m

(d) 65 m

Q182.

Three circles of radii 3.5 cm, 4.5 cm and 5.5 cm touch each other externally. Then the perimeter of the triangle formed by joining the centres of the circles, in cm is

(a) 27

(b) $\pi [(3.5)^2 +(4.5)^2+ (5.5)^2]$

(c) 27 π

(d) 13.5

Q183.

Three sides of a triangle field are of length 15 m, 20m and 25m long respectively. Find the cost of sowing seeds in the field at the rate of 5 rupees per m

(a) Rs. 800

(b) Rs. 600

(c)Rs.750

(d) RS.150

Q184.

A chord of length 30 cm is at a distance of 8 cm from the center of a circle. The radius of the circle is:

(a) 17 cm

(b) 23 cm

(c) 21 cm

(d) 19 cm

Q185.

The radius of the incircle of a triangle whose sides are 9cm ,12 cm and 15 cm is

(a) 9 cm

(b) 13 cm

(c)3 cm

(d) 6 cm

Q186.

The ratio of in radius' circumradius of a square is :

(a) $1:\sqrt{2}$

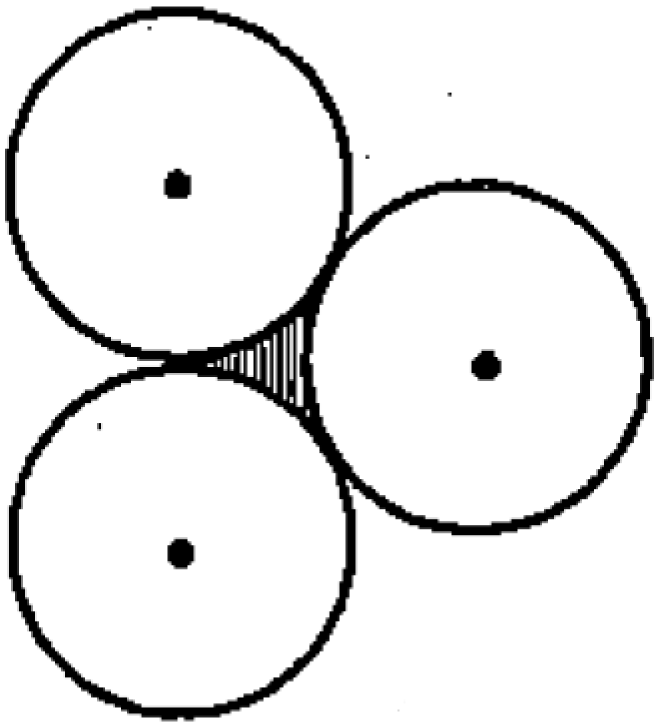
(b) $\sqrt{2}:\sqrt{3}$

(c) 1 : 3

(d) 1 : 2

Q187.

Three circles of equal radius 'a' cm touch each other. The area of the shaded region is :



(a)$(\sqrt{3}+\pi /2)a^2$sq. cm

(b) ($6\sqrt{3}$- π /2)a^2sq. cm
(c) ($\sqrt{3}$- π)a^2sq. cm
(d) ($2\sqrt{3}$- π /2)a^2sq. cm

Q188.
ABC is a right angled triangle. B being the right angle Mid- points of BC and AC are respectively B and A' Area of ΔA'B'C is
(a) 1/2 (area of ΔABC)
(b) 2/3(area of ΔABC)
(c) 1/4(area of ΔABC
(d) 1/8(area of ΔABC)

Q189.
A wire of length 44 cm is first bent to form a circle and then rebent to form a square. The difference of the two enclosed areas is
(a) 44 cm^2
(b) 33 cm^2
(c) 55 cm^2
(d) 66 cm^2

Q190.
∠ACB is an angle in the semicircle of diameter AB = 5 cm and AC : BC = 3: 4. The area of the triangle ABC is
(a) $6\sqrt{2}$ sq. cm
(b) 4 sq. cm
(c) 12 sq.cm
(d) 6 sq. cm

Q191.
If the lengths of the sides AB, BC and CA of a triangle ABC are 10 cm, 8 cm and 6 cm respectively and If M is the mid-point of BC and MN || AB to cut AC at N. then area of the trapezium ABMN is equal to
(a) 18 sq. cm
(b) 20 sq. cm
(c) 12 sq. cm
(d) 16 sq. cm

Q192.
In an equilateral triangle of side 24 cm, a circle is inscribed touching its sides, The area of the remaining portion of the triangle is($\sqrt{3}$ =1.732)
(a) 98.55 sq. cm
(b) 100 sq. cm
(c) 101 Sq. cm
(d) 95 sq. cm

Q193.
Two sides of a plot measuring 32 m and 24 m and the angle between them is a perfect right angle. The other two sides measure 25 m each and the other three angles are not right angles. The area of the plot in m^2 is
(a) 768
(b)534
(c) 696.5
(d)684

Q194.
a and b are two sides adjacent to the right angled triangle and p is the perpendicular drawn to the hypotenuse use from the opposite vertex. then p^2 is equal to
(a)a^2+b^2
(b) $(1/a^2)+(1/b^2)$
(c)$(a^2b^2)/(a^2+b^2)$
(d) $a^2 - b^2$

Q195.
A is the center of circle whose radius is 8 and B is the center of a circle whose diameter is 8. If these two circles touch externally, then the area of the circle with diameter AB is
(a) 36π
(b) 64π
(c)144π
(d) 256π

Q196.
If the numerical value of the height and the area of an equilateral triangle be same, then the length of each side of the triangle is
(a) 2 units
(b) 4 units
(c) 5 units
(d) 8 units

Q197.
If the length of a side of the square is equal to that of the diameter of a circle, then the ratio of the area of the square and that of the circle (π=22/7)
(a)14:11
(b)7:11
(c)11:14
(d)11:7

Q198.
The median of an equilateral triangle is $6\sqrt{3}$ cm. the area (in cm^2)of the triangle is
(a)72
(b)108
(c)$72\sqrt{3}$
(d)$36\sqrt{3}$

Q199.
In the numerical value of the circumference and area of a circle is same then the area is
(a) 6 π sq. unit
(b) 4 π sq. unit
(c) 8 π sq. unit
(d) 12 π sq. unit

Q200.
The area of an equilateral triangle is 48 sq. cm. The length of the side is
(a) $\sqrt{8}$ x 4 cm
(b) $4\sqrt{3}$ cm
(c) 8 cm
(d) 8 $\sqrt[4]{3}$ cm

Q201.

The external fencing of a circular path around a circular plot of land is 33m more than its interior fencing. The width of the path around the plot is
(a) 5.52 m
(b) 5.25m
(c) 2.55 m
(d) 2.25 m

Q202.
The perimeter of a triangle is 54 m and its sides are in the ratio 5 : 6 : 7. The area of the triangle is
(a)18 m^2
(b) $54\sqrt{6}$ m^2
(c)$27\sqrt{2}$ m^2
(d) 25 m^2

Q203.
A circular wire of diameter 112 cm is cut and bent in the form of a rectangle whose sides are in the ratio of 9 : 7. The Smaller Side of the rectangle is
(a) 77cm
(b)97 cm
(c) 67 cm
(d) 84 cm

Q204.
If the perimeter of an equilateral triangle be 18 cm, then the length of each median is
(a)$3\sqrt{2}$cm
(b)$2\sqrt{3}$cm
(c)$3\sqrt{3}$
(d) $2\sqrt{2}$cm

Q205.
Two equal maximum sized circular plates are cut off from a circular paper sheet of circumference 352 cm. Then the circumference of each circular plate is
(a) 176 cm
(b) 150 cm
(c) 165 cm
(d) 180 cm

Q206.
The in radius of an equilateral triangle is $\sqrt{3}$ cm, then the perimeter of that triangle is
(a) 18 cm
(b) 15 cm
(c) 2 cm
(d) 6 cm

Q207.
The difference between the circumference and diameter of a circle is 150 m. The radius of that circle is(take pie = 22/7)
(a) 25 meter
(b) 35 meter
(c) 30 meter
(d) 40 meter

Q208.
The perimeters of a circle, a square and an equilateral triangle are same and their areas are C. S and T respectively. Which of the following statement is true ?
(a) C = S = T
(b) c > S > T
(c) C < S < T
(d)S < C < T

Q209.
A horse takes 5/2 seconds to complete a round around a circular field. If the speed of the horse was 66 m/sec, then the radius of the field is, (Given it pie 22/ 7)
(a) 25.62m
(b) 26.52 m
(c) 25.26m
(d)26.25m

Q210.
The diameter of the front wheel of an engine is 2x cm and that of rear wheel is 2y cm to cover the same distance, find the number of times the rear wheel Will revolve when the front wheel revolves 'n' times ,
(a)n/xy times
(b)yn/x times
(c)nx/y times
(d) xy/n times

Q211.
A bicycle wheel has a diameter (including the tyre) of 56 cm. The number of times the wheel will rotate to cover a distance of 2.2 km is (assume pie 22 /7)
(a) 625
(b) 1250
(c) 1875
(d) 2500

Q212.
If the altitude of an equilateral triangle is $12\sqrt{3}$ cm, then its area would be ;
(a)$36\sqrt{2}$ cm^2
(b)$144\sqrt{3}$ cm^2
(c)72 cm^2
(d)12 cm^2

Q213.
Let C_1 and C_2 be the inscribed and circumscribed circles of a triangle with sides 3 cm, 4 cm and area of 5 cm then area of C_1 / area of C_2 is
(a) 9/25
(b) 16/25
(c) 9/16
(d) 4/25

Q214.
A circular swimming pool is surrounded by a concrete wall 4m.wide, If the area of the concrete wall surrounding the pool 11/25radius(in m) of the pool :
(a) 8
(b) 16
(c) 30
(d) 20

Q215.

The sides of a triangle having area 7776 sq., cm are in the ratio 3: 4: 5. The perimeter of the triangle is:

(a) 400 cm

(b) 412 cm

(c) 424 cm

(d) 432 cm

Q216.

The perimeter of a sheet of paper in the shape of a quadrant of a circle is 75 cm. Its area would be (π = 22/7)

(a) 512.25 cm^2

(b) 345.5 cm^2

(c) 100 cm^2

(d) 693 cm=2

Q217.

A circle is inscribed in an equilateral triangle of side 8m. The approximate area of the unoccupied space inside the triangle is :

(a) 21 m^2

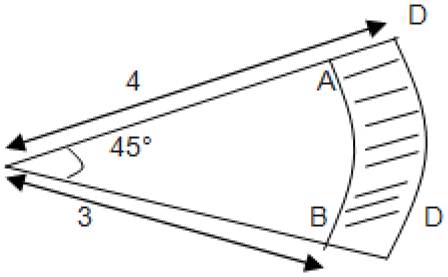
(b) 11m^2

(c) 20 m^2

(d) 22 m^2

Q218.

In the figure, OED and OBA are sectors of a circle with centre O. The area of the shaded portion.



(a) 11/16m^2

(b) 11/8 m^2

(c) 11/2 m^2

(d) 11/4 m^2

Q219.

If the circumference of a circle is then the diameter of the circle is 30/ π, then the diameter of the circle is:

(a) 30

(b) 15/ π

(c) 60 π

(d) 30/ π^2

Q220.

The outer and inner diameter of a circular path be 728 cm and 700 cm respectively. The breadth of the path is

(a) 7 cm

(b) 14 cm

(c) 28 cm

(d) 20 cm

Q221.

A piece of wire when bent to form a circle will have a radius of 84 cm. If the wire is bent to form a square, the length of a side of the square is -

(a) 152 cm

(b) 168 cm

(c) 132 cm

(d) 225 cm

Q222.

The area of a circle is 324, sq. cm, The length of its longest chord (in cm.) is

(a) 36

(b) 38

(c) 28

(d) 32

Q223.

The circumference of a triangle is 24 cm and the circumference of its in-circle is 44 cm. Then the area of the triangle is (taking π = 22/ 7)

(a) 56 square cm

(b) 48 square cm

(c) 84 square cm

(d) 68 square

Q224.

If the length of each of two equal sides of an isosceles triangle is 10 cm. and the adjacent angle is 45°, then the area of the triangle is

(a) $20\sqrt{2}$ square cm

(b) $25\sqrt{2}$ square cm

(c) $12\sqrt{2}$ Square cm

(d) $15\sqrt{2}$ square cm

Q225.

The inner-radius of a triangle is 6 cm, and the sum of the lengths of its sides is 50 cm. The area of the triangle (in sq. cm) is

(a) 150

(b) 300

(c) 50

(d)56

Q226.

One of the angles of a right angled triangle is 15°, and the hypotenuse is 1 m. the area of the triangle (in sq. cm) is

(a) 1220

(b) 1250

(c) 1200

(d) 1215

Q227.

If for an isosceles triangle the length of each equal side is 'a' units and that of the third side is 'b' units, then its area will be

(a)$(a/4)\sqrt{4a^2 - a^2}$ sq. units

(b) $(b/4)\sqrt{4a^2 - b^2}$ sq. units

(c) $(a/2)\sqrt{2a^2 - b^2}$ sq. units

(d) $(b/2)\sqrt{a^2 - 2b^2}$ sq. units

Q228.

What is the position of the Circumcentre of an obtuse-angles triangle?

(a) It is the vertex opposite to the largest side यह सबसे बड़े पाश्र्व के विपरीतशिर्ष है,

(b) It is the midpoint of the largest side यह सबसेलंबे पाश्र्व का मध्य बिंदु है|

(c)it lies outside the triangles ./यह त्रिभुज के बाहर होती है |

(d) it lies inside the triangles./यह त्रिभुज के अंदर होती है |

Q229.
The ratio of circumference and diameter of a circle is 22:7. If the circumference be 11/7 m, then the rafius of the circle is :
(a)1/ 4 m
(b) 1/3 m
(c) 1/2 m
(d) 1 m

Q230.
The area of a circle whose radius is the diagonal of a square whose area is 4 is:
(a) 4 π
(b) 8 π
(c) 6 π
(d) 16 π

Q231.
The diagonals of a rhombus are 32 cm and 24 cm. respectively. The perimeter of the rhombus is :
(a) 80 cm
(b)72 cm
(c) 68 cm
(d) 64 cm

Q232.
The diagonals of a rhombus are 24cm and 10 cm. The perimeter of the rhombus (in cm) is :
(a) 68
(b) 65
(c)54
(d) 52

Q233.
The perimeter of a rhombus is 40 cm, If one of the diagonals be 12 cm long what is the length of the other diagonal?
(a)12cm
(b)$\sqrt{136}$cm
(c)16cm
(d)$\sqrt{44}$cm

Q234.
The perimeter of a rhombus is 40 m and its height is 5m its area is :
(a) 60 m^2
(b) 50 m^2
(c) 45 m^2
(d) 55 m^2

Q235.
The perimeter of a rhombus is 40 cm. If the length of one of its diagonals be 12 cm, the length of the other diagonal is
(a) 14 cm
(b) 15 cm
(c) 16 cm
(d) 12 cm

Q236.
The area of a rhombus is 150 cm^2. The length of one of its diagonals is 10 cm. The length of the other diagonal is:
(a) 25 cm
(b) 30 cm
(c) 35 cm
(d) 40 cm

Q237.
The area of a regular hexagon of side $2\sqrt{3}$ cm is :
(a) $18\sqrt{3}$ cm^2
(b) $12\sqrt{3}$ cm^2
(c) $36\sqrt{3}$ cm^2
(d) $27\sqrt{3}$ cm^2

Q238.
Each side of a regular hexagon is 1 cm. The area of the hexagon is
(a)$3\sqrt{3}/2$ cm^2
(b)$3\sqrt{3}/4$ cm^2
(c)$4\sqrt{3}$$cm^2$
(d)$3\sqrt{2}$$cm^2$

Q239.
The length of one side of a rhombus is 6.5 cm and its altitude is 10 cm. If the length of its diagonal be 26 cm, the length of the other diagonal will be :
(a) 5 cm
(b) 10 cm
(c) 6.5 cm
(d) 26 cm

Q240.
The measure of each of two opposite angles of a rhombus is 60° and the measure of one of its sides is10 cm, The length of its smaller diagonal is :
(a) 10cm
(b) $10\sqrt{3}$ cm
(c) $10\sqrt{2}$ cm
(d) $(5/2)\sqrt{2}$ cm

Q241.
The perimeter of a rhombus is 100 cm, If one of its diagonals is 14 cm, Then the area of the rhombus is
(a) 144 cm^2
(b) 225 cm^2
(c) 336 cm^2
(d) 400 cm^2

Q242.

The ratio of the length of the parallel sides of a trapezium is 3 : 2. The shortest distance between them is 15 cm. If the area of the trapezium is 450 cm^2 the sum of the length of the parallel sides is

(a) 15 cm
(b) 36 cm
(c) 42 cm
(d) 60 cm

Q243.

A parallelogram has sides 15cm and 7 cm long . the length of one of the diagonals is 20 cm . the area of the parallelogram is

(a) 42 cm^2
(b) 60cm^2
(c) 84cm^2
(d) 96 cm^2

Q244.

Sides of a parallelogram are in the ratio 5:4. Its area is 1000 sq. units, altitude of the greater side is 20 units. Altitude on the smaller side is:

(a) 20 units

(b) 25 units

(c) 10 units

(d)15 units

Q245.

The perimeter of a rhombus is 40 cm and the measure of an angle is 60°, then the area of it is:

(a) $100\sqrt{3}cm^2$

(b) $50\sqrt{3}cm^2$

(c) $160\sqrt{3}cm^2$

(d) $100cm^2$

Q246.

Two adjacent sides of a parallelogram are of length 15 cm and 18 cm, If the distance between two smaller sides is 12 cm, then the distance between two bigger sides is

(a) 8 cm
(b) 10 cm
(c) 12 cm
(d) 15 cm

Q247.

A parallelogram ABCD has sides AB = 24 cm and AD = 16 cm. The distance between the sides AB and DC ,is 10 cn, Find the distance between the sides AD and BC.

(a) 15 cm
(b) 18 cm
(c) 16cm
(d) 9cm

Q248.

The adjacent sides of a parallelogram are 36 cm and 27cm, if the distance between the shorter sides is 12 cm, then the distance between the longer sides is:

(a) 10 cm
(b) 12 cm
(c) 16cm
(d) 9cm

Q249.

If the diagonals of a rhombus are 8 cm and 6 cm ,then the area of square having same side as that of rhombus is

(a) 25
(b) 55
(c) 64
(d) 36

Q250.

Two circles with centres A and Band radius 2 units touch each other externally at 'C' A third circle with centre 'C' and radius '2' units meets other two at D and E. Then the area of the quadrilateral ABDE is

(a) $2\sqrt{2}$ sq. units
(b) $3\sqrt{3}$ sq. units
(c) $3\sqrt{2}$ sq. units
(d) $2\sqrt{3}$ sq. units

Q251.

The perimeter of a non-square rhombus is 20 cm. One its diagonal is 8 cm, The area of the rhombus is

(a) 28 sq. cm
(b) 20 sq. cm
(c) 22 sq. cm
(d) 24 sq. cm

Q252.

The perimeter of a rhombus is 100 cm and one of its diagonals is 40 cm. Its area (in cm) is

(a) 1200
(b) 1000
(c) 600
(d) 500

Q253.

In ΔABC, D and E are the points of sides AB and BC respectively such that DE|| AC and AD : BD = 3:2 the ratio of area of trapezium ACED to that of Δ BED is

(a) 4: 15
(b) 15: 4
(c) 4 :21
(d) 21 : 4

Q254.

ABCD is a trapezium in which AB||DC and AB = 2 CD, The diagonals AC and BD meet at O. The ratio of area of triangles AOB and COD is

(a) 1 : 1 .

(b) 1: $\sqrt{2}$
(c) 4 : 1
(d) 1 : 4
Q255.
The length of each side of a rhombus is equal to the length of the side of a square whose diagonal is $40\sqrt{2}$ cm. If the length of the diagonals of the rhombus are in the ratio 3: 4, then its area (in cm^2) is
(a) 1550
(b) 1600
(c) 1535
(d) 1536
Q256.
ABCD is a parallelogram BC is produced to Q such that BC = CQ, Then
(a) area (ΔABC) = area (ΔDCQ)
(b) area (ΔABC) > area (ΔDCQ)
(c) area (ΔABC) < area (ΔDCQ)
(d) area. (ΔABC) not equal area (ΔDCQ)
Q257.
ABCD is parallelogram, P and Q are the mid- points of sides BC and CD respectively, If the area of ΔABC is 12 cm^2, then the area of ΔAPQ is
(a) 12 cm^2
(b) 8 cm^2
(c) 9 cm^2
(d) 10 cm^2
Q258.
The area of a rhombus is 216 cm^2 and the length of its one diagonal is 24 cm. The perimeter (in cm) of the rhombus is
(a) 52
(b) 6021.
(c) 120
(d) 100
Q259.
One of the four angles of a rhombus is 60°. If the length of each side of the rhombus is 8 cm, then the length of the longer diagonal is
(a) 8 $\sqrt{3}$ cm
(b) 8 cm
(c) 4$\sqrt{3}$ cm
(d) 8/$\sqrt{3}$ cm
Q260.
The diagonals of a rhombus are 12 cm and 16 cm respectively. The length of one side is
(a) 8 cm
(b) 6 cm
(c) 10 cm
(d) 12 cm
Q261.
A parallelogram has sides 60 in and 40 m and one of its diagonals is 80 m long. Its area is
(a) 500$\sqrt{15}$ m^2
(b) 600$\sqrt{15}$ m^2
(c) 400$\sqrt{15}$ m^2
(d)450$\sqrt{15}$ m^2
Q262.
Perimeter of a rhombus is 2p unit and sum of length of diagonals is m unit, then area of the rhombus is.
(a)1/4m^2 p sq unit
(b) 1/4mp^2 sq unit
(c)1/4 (m^2 – p^2) sq unit
(d) 1/4 (m^2 – p^2) sq unit
Q263.
I ΔABC, D and E are two points on the sides AB so that DE ||BC and AD/BD = 2/3. Then the area of trapezium DECB/the area of ΔABC is equal to
(a) 5/9
(b) 21/25
(c) 9/5
(d) 21/4
Q264.
The sides of a rhombus are 10cm each and a diagonal measures 16cm. Area of the rhombus is:
(a) 96sq. cm
(b) 160sq. cm
(c) 100 sq. cm
(d) 40 sq. cm
Q265.
The lengths of two parallel sides of a trapezium are 6 cm and 8 cm, If the height of the trapezium be 4 cm, then its area is
(a) 28 cm^2
(b) 56 cm^2
(c) 30 cm^2
(d) 36 cm^2
Q266.
If diagonal of a rhombus are 24 cm and 22cm then perimeter of that rhombus is
(a)80 cm
(b) 84 cm
(c)76cm
(d) 72 cm
Q267.
The area of an isosceles trapezium is 176 cm^2 and the height is 2/11^{th} of the sum of its parallel sides. If the ratio of the length of the parallel sides is 4: 7, then the length of a diagonal (in cm) is
(a) 2$\sqrt{137}$
(b) 24
(c) $\sqrt{137}$
(d) 28
Q268.
The perimeter of a rhombus is 60 cm and one of its diagonal is 24 cm. The area of the rhombus is
(a) 432 sq. cm
(b) 216 sq.cm
(c) 108 sq.cm
(d) 206 sq.cm

Q269.
The area of the parallelogram whose length is 30 cm, width is 20 cm and one diagonal is 40 cm is
(a) 200 $\sqrt{15}$ cm^2
(b) 300$\sqrt{15}$ cm^2
(c) 100$\sqrt{15}$ cm^2
(d) 150$\sqrt{15}$ cm^2
Q270.
The area of a rhombus is 256 sq. cm, and on of its diagonal is twice the other in length Then length of its larger diagonal is
(a) 32 cm
(b) 48 cm
(c) 36 cm
(d) 24 cm
Q271.
The length of two parallel sides of a trapezium is 15 cm and 20 cm. If its area is 175 sq.cm, then its height is:
(a) 25 cm
(b) 10 cm
(c) 20 cm
(d) 15 cm
Q272.
The cost of carpenting a room is Rs. 120 If the Width had been 4 meters less, the cost of the Carpet would have been Rs. 20 less. The width of the room is :
(a) 24 m
(b) 20 m
(c) 25 m
(d) 18.4 m
Q273.
The floor of a corridor is 100 m long and 3 m wide. Cost of covering the floor with carpet 50 cm wide at the ratio of Rs. 15 per m is
(a) Rs.4500
(b) Rs.9000
(c) Rs.7500
(d) Rs.1900
Q274.
A playground is in the shape of a rectangle. A sum of 1,000 was spent to make the ground usable at the rate of 25 paise per sq. m. The breadth of the ground is 50 m. if the length of the ground is increased by 20 m. what will be the expenditure (in rupees) at the same rate per sq. m.?
(a)1250
(b) 1,000
(c) 1,500
(d) 2,250
Q275.
A hall 25 meters long and 15 meters broad is surrounded by a veradah of uniform width of 3.5 meters. The cost of flooring the varandah at Rs. 27.50 per square meter is
(a) Rs. 9149.50
(b)Rs.8146.50
(c) Rs.9047.50
(d) Rs. 4186.50
Q276.
The outer circumference of a Circular race-track is 528 meter. The track is everywhere 14 meter wide, Cost of leveling the track at the rate of Rs. 10 per sq. meter is :
(a)Rs. 77660
(b) Rs.67760
(c)Rs. 66760
(d) Rs.76760
Q277.
The length and breadth of a rectangular field are in the ratio of 3 : 2. If the perimeter of the field is 80 m, its breadth (in meters) is:
(a) 18
(b) 16
(c) 10
(d)24
Q278.
The sides of a rectangular plot are in the ratio 5 : 4 equal and its area is equal to 500 sq. m the perimeter of the plot is
(a)80m
(b)100m
(c)90m
(d)95m
Q279.
ABC is a triangle with base AB, D is =5 DB=3, what is the ratio of the area of ΔADC to and its area the area of ΔABC
(a)2/5
(b)2/3
(c)9/25
(d)4/25
Q280.
If the area of a triangle is 1176 cm^2 and the ratio of base and corresponding altitude is 3 : 4, then the altitude of the triangle is :
(a) 42 cm
(b) 52 cm
(c) 54 cm
(d) 56 cm
Q281.
The sides of a triangle are in the ratio . If the perimeter of the triangle is 52 cm, the length of the smallest side is :
(a) 24 cm
(b) 10 cm
(c) 12 cm
(d) 9 cm
Q282.
If the diagonal of two squares are in the ratio of 2: 5. Their area will be in the ratio of
(a) $\sqrt{2}$: $\sqrt{5}$
(b) 2:5
(c)4:25

(d) 4: 5

Q283.

The ratio of base of two triangles is x:y and that of their areas is a : b, then the ratio of their corresponding altitudes will be :

(a)a/x : b/y

(b)ax:by

(c) ay : bx

(d) x/a : b/y

Q284.

The area of a field in the shape of a trapezium measures 1440m^2. The perpendicular distance between its parallel sides is 24m. If the ratio of the parallel sides is 5 : 3, the length of the longer parallel side is :

(a) 75 m

(b) 45 m

(c) 120 m

(d) 60 m

Q285.

If the ratio of areas of two squares is 225 : 256, then the ratio of their perimeter is :

(a) 225 : 256

(b) 256: 225

(c) 15: 16

(d) 16: 15

Q286.

The area of a triangle is 216 cm^2 and its sides are in the ratio 3 : 4 : 5. The perimeter of the triangle is :

(a) 6 cm

(b) 12 cm

(c) 36 cm

(d) 72 cm

Q287.

A circular wire of radius 42 cm is bent in the form of a rectangle whose sides are in the ratio of 6 : 5. The smaller side of the rectangle is (Take pie = 22/7)

(a) 60 cm

(b) 30 cm

(c) 25 cm

(d) 36 cm

Q288.

The ratio of the Outer and the inner perimeter of a circular path is 23:22, If the path is 5 meters wide the diameter of the inner circle is :

(a) 110 m

(b) 55m

(c) 220 m

(d) 230 m

Q289.

The ratio of the area of a square to that of the square drawn on its diagonal is:

(a) 1 : 1

(b) 1 : 2

(c) 1 : 3

(d) 1 : 4

Q290.

A square and an equilateral triangle are drawn on the same base. The ratio of their area is

(a) 2:1

(b) 1 : 1

(c)√30:√4

(d)4:√3

Q291.

If the area of a circle and a square are equal, then the ratio of their perimeter is

(a) 1 : 1

(b)2: π

(c)π:2

(d)√π :2

Q292.

The area of two equilateral triangles are in the ratio 25 : 36. Their altitudes will be in the ratio

(a) 36:25

(b) 25: 36

(c) 5: 6

(d) √5:√6

Q293.

If the length and the perimeter of a rectangle are in the ratio 5 : 16. then its length and breadth will be in the ratio

(a) 5: 11

(b) 5: 8

(c)5:4

(d) 5:3

Q294.

Through each vertex of a triangle, a line parallel to the opposite side is drawn. the ratio of the perimeter the new triangle, thus formed, with that of the original triangle is

(a) 3 : 2

(b) 1 : 2

(c) 2 : 1

(d) 2 : 3

Q295.

The ratio of the number giving the measure of the circumference and the area of a circle of radius 3 cm is:

(a) 1 : 3

(b) 2: 3

(c) 2: 9

(d) 3 : 2

Q296.

The height of an equilateral triangle is 4√3 cm. the ratio of the area of its circumcircle to that of its incircle is:

(a) 2 : 1

(b) 4: 1

(c) 4 : 3

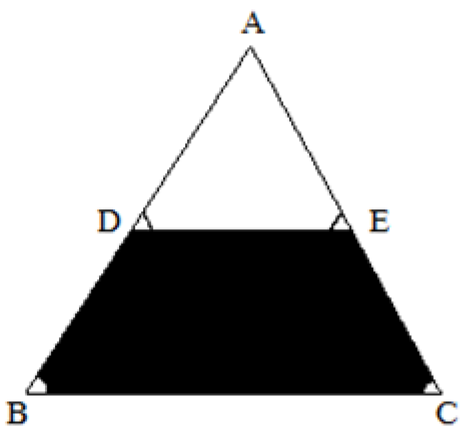
(d) 3:2

Q297.

The radius of circle A is twice that of circle B and the radius of circle B is twice of that of circle C. there area will be in the ratio:
(a) 16:4:1
(b) 4:2:1
(c) 1:2:4
(d) 1:4:16
Q298.
A circle and a square have equal areas, the ratio of a side of the square and the radius of the circle is:
(a) $1 : \sqrt{\pi}$
(b)$\sqrt{\pi} : 1$
(c) $1 : \sqrt{\pi}$
(d) $\pi : 1$
Q299.
The sides of a triangle are in the ratio 1/3 : ¼ : 1/5 and its perimeter is 94cm. the length of the smallest side of the triangle is:
(a) 18 cm
(b) 22.5 cm
(c) 24 cm
(d) 27m
Q300.
The sides of an quadrilateral are in the ratio 3 : 4 : 5: 6 and its perimeter is 72cm. the length of its greatest side (in cm) is:
(a) 24
(b) 27
(c) 30
(d) 36
Q301.
The ratio of the radii of two wheels is 3 : 4. The ratio of their circumference is:
(a) 4 : 3
(b) 3 : 4
(c) 2 : 2
(d) 3 : 2
Q302.
The sides of a triangle are in the ratio 2 : 3 : 4. The perimeter of the triangle is 18cm. the area (in cm^2) of the triangle is:
(a) 2
(b) 36
(c) $\sqrt{42}$
(d) $3\sqrt{15}$
Q303.
The ratio of the areas of the circumference circle and the incircle of an equilateral triangle is:
(a) 2 : 1
(b) 4 : 1
(c) 8 : 1
(d) 3 : 2
Q304.
If in a triangle ABC, the medians CD and BE intersect each other at O, then the ratio of the areas of triangle ODE and triangle OBC is:
(a) 1 : 4
(b) 6 : 1
(c) 1 : 12
(d) 12 : 1
Q305.
The ratio of the area of two isosceles triangles having the same vertical angle (i.e. angle between equal sides) is 1 : 4. The ratio of their heights is:
(a) 1 : 4
(b) 2 : 5
(c) 1 : 2
(d) 3 : 4
Q306.
The ratio of length of each equal side and the third side of an isosceles triangle is 3:4 . if the area is $8\sqrt{5}$ $units^2$.the third side is
(a)3 units
(b)$2\sqrt{5}$ units
(c)$8\sqrt{2}$units
(d)12 units
Q307.
The ratio of sides of a triangle is 3:4:5. If area of the triangle is 72 square unit then the length of the smallest side is
(a)$4\sqrt{3}$ unit
(b)$5\sqrt{3}$units
(c)$6\sqrt{3}$ units
(d)$3\sqrt{3}$ units
Q308.
The ratio of sides of a triangle is 3:4:5 and area of the triangle is 72 squares unit .then the area of an equilateral triangle whose perimeter is same as that of the pervious triangle is
(a)$32\sqrt{3}$ sq. units
(b)$48\sqrt{3}$ sq. units
(c)96 sq. units
(d)$60\sqrt{3}$ sq. units
Q309.
The parallel sides of a trapezium are in a ratio 2:3 and their shortest distance is 12 cm. if the area of the trapezium is 480 sq. cm. the longer of the parallel sides is of length :
(a) 56 cm
(b) 36 cm
(c) 42 cm
(d) 48 cm
Q310.
An equilateral triangle is drawn on diagonal of a square . the ratio of the area of the triangle to that of the square is
(a)$\sqrt{3}$:2
(b)1:$\sqrt{3}$

(c)2:√3
(d)4:√3
Q311.
Two triangle ABC and DEF are similar to each other in which AB =10cm, DE = 8cm.then the ratio of the are of triangle ABC and DEF is
(a) 4: 5
(b) 25: 16
(c) 64 : 125
(d) 4 : 7
Q312.
The ratio between the area of two circles is 4 : 7. What will be the ratio of their radii?
(a) 2: √7
(b) 4: 7
(c) 16: 49
(d) 4: √7
Q313.
The area of a circle is proportional to the square of its radius. A small circle of radius 3 cm is drawn within a larger circle of radius 5 cm. Find the ratio of the area of the annualar zone to the area of the larger circle (Area of the annular zone is the difference between the area of the larger circle and that of the smaller circle)
(a) 9 : 16
(b) 9:25
(c) 16:25
(d) 16 : 27.
Q314.
The diameter of two circles are the side of a square and the diagonal of the square. The ratio of the area of the smaller circle and larger circle is
(a)1:2
(b)1:4
(c)√2:√3
(d)1:√2
Q315.
The ratio of the area of an equilateral triangle and that of its circumcircle is
(a)2√3:2π
(b)4:π
(c)3√3:4π
(d)7√2:2π
Q316.
if the perimeters of a rectangle and a square are equal and the ratio of two adjacent sides of the rectangle is 1 : 2 then the ratio of area of the rectangle and that of the square is
(a) 1 : 1
(b)1:2
(c) 2 : 3
(d) 8: 9
Q317.
The perimeter of a rectangle and an equilateral triangle are same, Also, one of the sides of the rectangle is equal to the side of the triangle, The ratio of the area of the rectangle and the triangle is
(a) √3:1
(b) 1:√3
(c)2: √3
(d) 4:√3
Q318.
The radius of a circle is a side of a square. The ratio of the area of the circle and the square is
(a) 1 : π
(b) π : 1
(c) π : 2
(d) 2 : π
Q319.
ABC is an isosceles right angled triangle with ∠B 90°, On the sides AC and AB, two equilateral triangles ACD and ABE have been constructed, The ratio of area of ΔABE and ΔACD is
(a) 1 : 3
(b)2:3
(c) 1 : 2
(d) 1: √2
Q320.
Two triangles ABC and DEF are similar to each other in which AB = 10 cm, DE=8 cm. Then the ratio of the area of triangles ABC and DEF is
(a) 4 : 5
(b) 25: 16
(c) 64: 125
(d) 4: 7
Q321.
ABC is a right angled triangle, B being the right angle. Mid-points of BC and AC are respectively B' and A'. The ratio of the area of the quadrilateral AA'BB' to the area of the triangle ABC is
(a) 1 : 2
(b) 2: 3
(c) 3 : 4
(d) None of the above
Q322.
The sides of a triangle are in the ratio 1/4 : 1/6: 1/8 and its perimeter is 91 cm. The difference of the length of longest side and that of shortest side is
(a) 19 cm
(b) 20 cm
(c) 28 cm
(d) 21 cm
Q323.
If the arcs of unit length in two circles subtend angles of 60° and 75° at their centers , the ratio of their radii is
(a)3:4
(b)4:5
(c)5:4
(d)3:5
Q324.

ABCD is a parallelogram in which diagonals AC and BD intersect at O. If E,F,G and H are the mid point of AO,DO,CO and BO respectively , then the ratio of the perimeter of the quadrilateral EFGH to the perimeter of parallelogram ABCD is
(a)1:4
(b)2:3
(c)1:2
(d)1:3
Q325.
If the circumference of a circle increases from 4π to 8π , what change occurs in its area ?
(a)it doubles
(b)it triples
(c) it quadruples
(d) it is halved
Q326.
If the length of a rectangle is increased by 25% and the width is decreased by 20%, then the area of the rectangle:
(a)Increased by 5 %
(b)decrease by 5%
(c)remains unchanged
(d) Increased by 10 %
Q327.
If the circumference and area of a circle are numerically equal, then the diameter is equal to:
(a) area of circle
(b) $\pi/2$
(c)2π
(d)4
Q328.
If D and E are the midpoints of the side AB and AC respectively of the triangle ABC in the figure given here, the shaded region of the triangle is what per cent of the whole triangular region?



(a)50%
(b)25%
(c)75%
(d)60%
Q329.
The length of a rectangle is decreased by 10% and its breadth is increased by 10%. By what percent is its area changed?
(a)0%
(b)1%
(c)5%
(d)100%
Q330.
The percentage increase in the area of a rectangle. If each of its sides is increased by 20% is:
(a)40%
(b)42%
(c)44%
(d)46%
Q331.
If the circumference of a circle is reduced by 50%, the area will be reduced by?
(a)12.5%
(b)25%
(c)50%
(d)75%
Q332.
If the side of a square is increased by 25%, then its area is increased by:
(a)25%
(b)55%
(c)40.5%
(d)56.25%
Q333.
If the radius of a circle is increased by 50%, its area is increased by:
(a)125%
(b)100%
(c)75%
(d)50%
Q334.
If the length of a rectangle is increased by 20% and its breadth is decreased by 20% then its area
(a) Increased by 4 %(
(b) decrease by 4%(
(c) decrease by 1%(
(d) none of these
Q335.
If each side of a rectangle is increased by 50%, its area will be increased by
(a)50%
(b)125%
(c)100%
(d)250%
Q336.
If the altitude of a triangle is increased by 10% while its area remains same, its corresponding base will have to be decreased by
(a)10%
(b)9%

(c)100/11%
(d)100/9%

Q337.

If the circumference of a circle is increased by 50%, then the area will be increased by
(a)50%
(b)75%
(c)100%
(d)125%

Q338.

The length and breadth of rectangle are increased by 12% and 15% respectively. Its area will be increased by
(a)136/5%
(b)144/5%
(c)27%
(d)28%

Q339.

If the sides of an equilateral triangle are increased by 20%, 30% and 50% respectively to form a new triangle the increase in the perimeter of equilateral triangle is
(a)25%
(b)100/3%
(c)75%
(d)100%

Q340.

Each side of a rectangular field is diminished by 40%. By how much percent is the area of the field diminished?
(a)32%
(b)64%
(c)25%
(d)16%

Q341.

The length of rectangle is increased by 60%. By what percent would the breadth to be decreased to maintain the same area?
(a)75/2%
(b)60%
(c)75%
(d)120%

Q342.

The length and breadth of rectangle are increased by 20% and 25% respectively. The increased in the area of the resulting rectangle will be:
(a)60%
(b)50%
(c)40%
(d)30%

Q343.

If each side of a square is increased by 10%, its area will be increased by
(a)10%
(b)21%
(c)44%
(d)100%

Q344.

If the length of a rectangular plot of land is increased by 5% and the breadth is decreased by 10% how much will its area increase or decrease
(a)6.5% increase
(b)5.5 % decrease
(c)5.5 increase
(d) 6.5% decrease

Q345.

The radius of circle is increased by 1%. How much does the area of the circle increase?
(a)1%
(b)1.1%
(c)2%
(d)2.01%

Q346.

The length of a room floor exceeds its breadth by 20m. the area of the floor remains unaltered when the length is decreased by 10m but breadth is increased by 5m. the area of the floor (in square meters) is:
(a)280
(b)325
(c)300
(d)420

Q347.

In measuring the sides of a rectangle, there is an excess of 5% on one side and 2% deficit on the other. Then the error percent in the area is:
(a)3.3%
(b)3%
(c)2.9%
(d)2.7%

Q348.

The length and breadth of a square are increased by 30% and 20% respectively. The area of the rectangle so formed exceeds the area of the square by:
(a)46%
(b)66%
(c)42%
(d)56%

Q349.

If side of a square is increased by 40%, the percentage increase in its surface area is:
(a)40%
(b)60%
(c)80%
(d)96%

Q350.

If the diameter of a circle is increased by 8%, then its area is increased by:
(a)16.64%
(b)6.64%
(c)16%
(d)16.45%

Q351.

One side of a rectangle is increased by 30%. To maintain the same area, the other side will be have to be decreased by:
(a)300/13%
(b)1000/13%
(c)30%
(d)15%

Q352.
The length and breadth of a rectangle are doubled. Percentage increase in area is:
(a)150%
(b)200%
(c)300%
(d)400%

Q353.
The length of a rectangle is increased by 10% and breadth decreased by 10%. The area of the new rectangle:
(a)neither increased nor decreased
(b)increased by 1%
(c)increased by 2%
(d)decreased by 1%

Q354.
If diagonal of a cube is $\sqrt{12}$ cm, the its volume in cm^3 is:
(a)8
(b)12
(c)24
(d)$3\sqrt{2}$

Q355.
How many cubes, each of edge 3cm, can be cut from a cube of edge 15cm?
(a)25
(b)27
(c)125
(d)144

Q356.
What is the volume of a cube in cubic cm whose diagonal measures $4\sqrt{3}$ cm?
(a)16
(b)27
(c)64
(d)8

Q357.
A cuboidal water tank has 216 liters of water. Its depth is 1/3 of its length and breadth is ½ of 1/3 of the difference of length and breadth. The length of the tank is:
(a)72dm
(b)18dm
(c)6dm
(d)2dm

Q358.
The volume of cuboid is twice the volume of a cube. If the dimensions of the cuboid are 9 cm, 8 cm, 6 cm the total surface area of the cube is:
(a)72 cm^2
(b)216 cm^2
(c)432 cm^2
(d)108 cm^2

Q359.
The length, breadth and height of a room is 5m , 4 m and 3m respectively. Find the length of the largest bamboo that can be kept inside the room.
(a) 5 m
(b) 60 m
(c) 7m
(d) $5\sqrt{2}$ m

Q360.
A wooden box measures 20 cm by 12 cm by 10 cm. Thickness of wood is 1 cm. volume of wood to make the box (in cube cm) is
(a) 960
(b) 519
(c)2400
(d) 1120

Q361.
A cuboidal block of 6 cm x 9 cm x 12 cm is cut up into exact number of equal cube, The least possible number of cubes will be
(a)6
(b) 9
(c) 24
(d) 30

Q362.
A cistern of capacity 8000 liters measures externally 3.3m by 2.6 m by 1.1 m and its walls are 5 cm thick. The thickness of the bottom is:
(a)1m
(b)10cm
(c)1cm
(d)90cm

Q363.
The area of three adjacent faces of a cuboid are c, y, z square units respectively If the volume of the cuboid by v, cube units, then the correct relation between x, y, z is
(a) $v^2 = xyz$
(b) $v^3 =xyz$
(c) $v^2 = x^3 y^3 z^3$
(d) $v^3 =x^2y^2z^2$

Q364.
The largest sphere is carved out of side 7 cm.The volume of the sphere (in cm^3) will be
(a)718.66
(b)543.72
(c)481.34
(d)179.67

Q365.
The length (in meters) of the longest rod that can be put in a room of (in m?) is dimensions 10 m x 10 m x 5 m is

(a)$15\sqrt{3}$
(b)15
(c)$10\sqrt{2}$
(d)$5\sqrt{3}$
Q366.
A rectangular sheet of metal is 40 cm by 15 cm. equal squares of side 4cm are cut off at the corners and the remainder is folded up to form an open rectangular box. The volume of the box is
(a)896cm^3
(b)986 m^3
(c)600 m^3
(d)916 m^3
Q367.
The areas of three consecutive faces of a cuboid are 12 cm^2, then the volume (in cm^3) of the cuboid is
(a) 3600
(b) 100
(c) 80
(d) $24\sqrt{3}$
Q368.
The length of the longest rod that can be placed in a room which is 12 m long. 9 m broad and 8 m high is:
(a) 27m
(b) 19m
(c) 17m
(d) 13m
Q369.
The floor of a room is of size 4m × 3m and its height is 3m. the walls and ceiling of the room require painting. The area to be painted is:
(a) 66m^2
(b) 54m^2
(c) 42 m^2
(d) 33m^2
Q370.
If the sum of three dimensions and the total surface area of a rectangular box are 12cm and 94 cm^2 respectively, then the maximum length of a stick that can be placed inside the box is:
(a) $5\sqrt{2}$ cm
(b) 5 cm
(c) 6 cm
(d) $2\sqrt{5}$ cm
Q371.
The area of the four walls of a room is 660m^2 and its length is twice its breadth, if the height of the room is 11 m, then area of its floor in m. sq. is:
(a) 120
(b) 150
(c) 200
(d)330
Q372.
If the length of the diagonal of a cube is $8\sqrt{3}$ cm, then its surface area is:
(a) 192cm^2
(b) 512cm^2
(c) 768cm^2
(d)384cm^2
Q373.
The maximum length of a pencil that can be kept in a rectangular box of dimensions 8 cm × 6cm × 2cm
(a) $2\sqrt{13}$cm
(b) $2\sqrt{14}$cm
(c) $2\sqrt{26}$cm
(d) $10\sqrt{2}$cm
Q374.
The volume of cubical box is 3.375 cubic meters. The length of edge of the box is:
(a)75m
(b) 1.5m
(c) 1.125m
(d)2.5m
Q375.
Two cubes of sides 6 cm each are kept side to form a rectangular parallelepiped. The area (in sq.cm) of the whole surface of the rectangular parallelepiped is:
(a)432
(b) 360
(c) 396
(d) 340
Q376.
2 cm of rains has fallen on a square km of land. Assuming that 50% of the raindrops could have been collected and contained in a pool having a 100m × 10m, by what level would the water level in the pool have increased?
(a)1km
(b) 10m
(c)10cm
(d)1m
Q377.
A parallelepiped whose side are in ratio 2 : 4: 8 have the same volume as a cube. The ratio of their surface area is:
(a)7:5
(b) 4:3
(c)8:5
(d) 7:6
Q378.
If two adjacent sides of a rectangular parallelepiped are 1cm and 2cm and the total surface area of the parallelepiped is 22 square cm, then the diagonal of the parallelepiped is:
(a)$\sqrt{10}$
(b) $2\sqrt{3}$
(c) $\sqrt{14}$
(d) 4cm
Q379.
If the sum of the length, breadth and height of a rectangular parallelepiped is 24cm and the length of its diagonal is 15cm, then its total surface area is:

(a) $256cm^2$
(b) $265cm^2$
(c) $315cm^2$
(d) $351cm^2$
Q380.
If the total surface area of a cube is 96 cm square, its volume is:
(a) $56cm^3$
(b) $16cm^3$
(c) $64cm^3$
(d) $36cm^3$
Q381.
The length of the largest possible road that can be placed in a cubical room is $35\sqrt{3}$m. the surface area of the largest possible sphere that fit within the cubical room(assuming $\pi = 22/7$) in sq. m is:
(a)3500
(b) 3850
(c) 2450
(d)4250
Q382.
The volume of air in a room is 204 m^3. The height of the room is 6m. what is the floor area of the room?
(a) $32m^2$
(b) $46m^2$
(c) $44m^2$
(d)$34m^2$
Q383.
A square of side 3 cm is cut off from each corner of a rectangular sheet of length 24cm and breadth 18cm and the remaining sheet is folded to form an open rectangular box. The surface area of the box is:
(a)$468m^2$
(b) $396m^2$
(c) $615m^2$
(d) $423m^2$
Q384.
Three solid iron cubes of edges 4cm, 5cm, and 6 cm are melted together to make a new cube. $62cm^3$of the melted material is lost due to improper handing. The area of the whole surface of the newly formed cube is:
(a) 294
(b) 343
(c) 125
(d) 216
Q385.
Area of the floor of a cubical room is 48sq.m. the length of the longest rod that can be kept in that room is:
(a)9m
(b) 12m
(c) 18m
(d) 6m
Q386.
Three cubes of sides 6cm, 8cm, 1cm are melted to form a new cube. The surface area of the new cube is:
(a) $486cm^2$
(b) $496cm^2$
(c) $256cm^2$
(d)$658cm^2$
Q387.
Some bricks are arranged in an area measuring $20m^3$. if the length, breadth and height of each brick is 25cm, 12.5cm and 8cm respectively, then the number of bricks are suppose there is no gap in between two bricks:
(a) 6000
(b) 8000
(c) 4000
(d)10000
Q388.
The whole surface of a cube is 150sq.cm. then the volume of the cube is:
(a) $125cm^3$
(b) $216cm^3$
(c) $343cm^3$
(d) $512cm^3$
Q389.
The ratio of the length and breadth of a rectangular parallelepiped is 5 : 3 and its height is 6cm. if the total surface area of the parallelepiped be 558sq.cm, then its length in dm is:
(a)9
(b) 1.5
(c) 10
(d) 15
Q390.
If the sum of the dimensions of a rectangular parallelepiped is 24cm and the length of the diagonal is 15cm, then the total surface area of it is:
(a) $420cm^2$
(b) $275cm^2$
(c) $351cm^2$
(d) $378cm^2$
Q391.
The length, breadth and height of a cuboid are in the ratio 3 : 4 : 6 and its volume is $576cm^3$. The whole surface area of the cuboid is:
(a)$216cm^2$
(b) $324cm^2$
(c) $432cm^2$
(d) $460cm^2$
Q392.
If the number of vertices, edges and faces of a rectangular parallelepiped are denoted by v, e and f respectively the value of (v- e + f) is:
(a) 4
(b) 1
(c) 0
(d) 2
Q393.

A low land, 48m long and 31.5m broad is raised to 6.5dm. for this, earth is removed from a cuboidal hole, 27m long and 18.2m broad, dug by the side of the land. The depth of the hole will be:
(a) 3m
(b) 2m
(c) 2.2m
(d) 2.5m

Q394.
A cuboidal shaped water tank 2.1m long and 1.5m broad is half filled with water. If 630 litres more water is poured into tank, the water level will rise.
(a)2cm
(b)0.15cm
(c) 0.20 m
(d)0.18cm

Q395.
A solid cuboid of dimensions 8 cm× 4cm× 2cm is melted and cast into identical cubes of edge 2cm. number of such identical cubes is.
(a)16
(b)4
(c)10
(d)8

Q396.
A metallic hemisphere is melted and recast in the shape of cone with the same base radius (R) as that of the hemisphere. If H is the height of the cone, then:
(a)H=2R
(b)H=2/3R
(c) H=√3R
(d)B=3R

Q397.
If the radius of a sphere is increased by 2cm, its surface area increased by 352cm^3 the radius of sphere before change is:
(a)3cm
(b) 4cm
(c)5cm
(d)6cm

Q398.
The height of a conical tank is 60cm and the diameter of its base is 64cm. the cost of painting it from outside at the rate of Rs. 35 per sq. m is:
(a)Rs. 52 approx
(b)Rs. 39.20 approx
(c)Rs. 35.20 approx
(d)Rs. 23.94 approx

Q399.
A solid metallic cone of height 10cm, radius of base 20cm is melted to make spherical balls each of 4 cm diameter, how many such balls can be made?
(a)25
(b)75
(c)50
(d)125

Q400.
A cylindrical tank of diameter 35 cm is full of water. If 11 litres of water is drawn off, the water level in the tank will drop by:
(a)21/2cm
(b)9/7cm
(c)14cm
(d)80/7 cm

Q401.
The volume of a right circular cylinder whose height is 40cm, and circumference of its base is 66 cm is:
(a)55440cm^2
(b)3465cm^2
(c)7720cm^2
(d)13860cm^2

Q402.
The circumference of the base of a circular cylinder is 6π cm. the height of the cylinder is equal to the diameter of the base. How many litres of water can it hold?
(a)54 π cc
(b)36 π cc
(c)0.054π cc
(d)0.54πcc

Q403.
The volume of a right circular cylinder is equal to the volume of that right circular cone whose height is 108cm and diameter of base is 30cm. if the height of the cylinder is 9cm, the diameter of its base is:
(a)30cm
(b)60cm
(c)50cm
(d)40cm

Q404.
Three solid metallic spheres of diameter 6cm, 8 cm, and 10cm are melted and recast into a new solid sphere. The diameter of the new sphere is:
(a)4cm
(b)6cm
(c)8cm
(d)12cm

Q405.
Three slid metallic balls of radii 3cm, 4cm, 5cm, are melted and molded into a single solid ball. The radius of the new balls is:
(a)2cm
(b)3cm
(c)4cm
(d)6cm

Q406.
Three solid spheres of a metal whose radii are 1cm, 6cm and 8 cm are melted to form another solid sphere. The radius of this new sphere is:
(a)10.5cm
(b)9.5cm

(c)10cm
(d)9cm
Q407.
The slant height of a conical mountain is 2.5 km and the area of its base is 1.54 km^2. Taking $\pi = 22/7$, the height of the mountain is:
(a)2.2km
(b)2.4km
(c)3km
(d)3.11km
Q408.
The base of a conical a tent is 19.2 metres in diameter and the height is 2.8metrres. the area of the canvas required to put up such a tent (in square meters) (taking $\pi = 22/7$) is nearly:
(a)3017.1
(b)3170
(c)301.7
(d)30.17
Q409.
A hollow cylindrical tube 20cm long. Is made of iron and its external and internal diameters are 8cm and 6cm respectively. The volume of iron used in making the tube is ($\pi = 22/7$)
(a)1760cu.cm
(b)880 cu.cm
(c)440 cu.cm
(d)220 cu.cm
Q410.
A sphere of radius 2cm is put into water contained in a cylinder of base radius 4cm. if the sphere is completely immersed in the water, the water level in the cylinder rise by:
(a)1/3cm
(b)1/2cm
(c)2/3cm
(d)2cm
Q411.
A solid metallic spherical ball of diameter 6cm is melted and recast into a cone with diameter of the base as 12cm. the height of the cone is:
(a)6cm
(b)2cm
(c)4cm
(d)3cm
Q412.
The volume of a right circular cone is 1232cm^3 and its vertical height is 24cm. its curved surface area is:
(a)154cm^2
(b)550cm^2
(c)604cm^2
(d)704cm^2
Q413.
The volume of a sphere is $88/21 \times (14)^3$ cm^3 the curved surface of the sphere is assuming $\pi = 22/7$.
(a)2424cm^2
(b)2446cm^2
(c)2484cm^2
(d)2464cm^2
Q414.
The surface area of a sphere is 64π cm^2. Its diameter is equal to:
(a) 16 cm
(b) 8 cm
(c) 4 cm
(d) 2 cm
Q415.
The diameter of the base of a cylindrical drum is 35dm. and the height is 24 dm. it is a full of kerosene. How many tins each of size 25 cm × 22cm × 35cm can be filled with kerosene from the drum?
(a) 1200
(b) 1020
(c) 600
(d) 120
Q416.
A hollow iron pipe is 21cm long and its exterior diameter is 8cm. if the thickness of the pipe is 1cm and iron weights 8g/cm^3, then the weight of the pipe is:
(a) 3.696 kg
(b) 3.6 kg
(c) 36 kg
(d) 36.9 kg
Q417.
The volume of a right circular cylinder, 14 cm in height, is equal to that of a cube whose edge is 11cm, the radius of the base of the cylinder is:
(a) 5.2 cm
(b) 5.5 cm
(c) 11.0 cm
(d) 22.0 cm
Q418.
If the volume of a right circular cylinder is $9\pi h$ m^3, where h is its height (in meters) then the diameter of the base of the cylinder is equal to:
(a) 3 m
(b) 6 m
(c) 9 m
(d) 12 m
Q419.
Each of the measure of the radius of base of a cone and that of a sphere is 8cm. also, the volume of these two solids are equal. The slant height of the cone is:
(a)$8\sqrt{17}$cm
(b) $4\sqrt{17}$cm
(c) $34\sqrt{2}$cm
(d)3cm
Q420.

A well 20m in diameter is dug 14 m deep and the earth taken out is spread all around it to a width of 5m to form an embankment. The height of the embankment is:
(a) 10 m
(b) 11 m
(c) 11.2 m
(d) 11.5 m

Q421.
The diameter of the iron ball used for the shot put game is 14cm. It is melted and then a solid cylinder of height 7/3 cm is made. What will be the diameter of the base of the cylinder?
(a)14cm
(b)28cm
(c)14/3cm
(d)28/3cm

Q422.
The sum of radii of two spheres is 10cm and the sum of their volume is 880cm^3. What will be the product of their radii?
(a)21
(b)79/3
(c)100/3
(d)70

Q423.
A rectangular paper sheet of dimensions 22cm × 12cm is folder in the form of a cylinder along its length. What will be the volume of this cylinder?
(a)460cm^2
(b)462cm^2
(c)624cm^2
(d)400cm^2

Q424.
A copper rod of 1cm diameter and 8cm length is drawn into a wire of uniform diameter and 18m length. The radius (in cm) of the wire is:
(a)1/15
(b)1/30
(c)2/15
(d)15

Q425.
12 spheres of the same size are made by melting a solid cylinder of 16cm diameter and 2cm height. The diameter of each sphere is:
(a) 2 cm
(b) 4 cm
(c) 3 cm
(d) $\sqrt{3}$ cm

Q426.
When the circumference of a toy balloon is increased from 20cm to 25cm its radius (in cm) is increased by:
(a)5
(b)5/π
(c)5/2π
(d)π/5

Q427.
If the volume and surface area of a sphere are numerically the same, then its radius is:
(a) 1 unit
(b) 2 units
(c) 3 units
(d) 4 units

Q428.
In a right circular cone, the radius of its base is 7cm and its height 24cm. a cross section is made through the midpoint of the height parallel to the base.
(a)169 cm^3
(b)154cm^3
(c)1078 cm^3
(d)800 cm^3

Q429.
Some solid metallic right circular cones, each with radius of the base 3cm and height 4cm, are melted to form a solid sphere of radius 6cm. the number of right circular cones is:
(a) 12
(b) 24
(c) 48
(d) 6

Q430.
A right circular cylinder of height 16 cm is covered by a rectangular tin foil of size 16 cm x 22 cm, The volume of the cylinder is
(a) 352 cm^3
(b) 308 cm^3
(c) 616 cm^3
(d) 176 cm^3

Q431.
If the area of the base of a core is 770 cm^2 and the area of the its curved surface is 814 cm^2. then find its volume.
(a) 213$\sqrt{5}$ cm^2
(b) 392$\sqrt{5}$ cm^2
(c) 550 $\sqrt{5}$ cm^2
(d) 616$\sqrt{5}$ cm^2

Q432.
The size of a rectangular piece of paper is 100 cm x 44 cm. A cylinder is formed by rolling the paper along its breadth. The volume of the cylinder is (use pie =22/7)
(a) 4400 cm^3
(b) 15400 cm^3
(c) 35000 cm^3
(d) 144 cm^3

Q433.
The radius of the base and height of a metallic solid cylinder are r cm and 6 cm respectively. It is melted and recast into a solid cone of the same radius of base, The height of the cone is :
(a) 54 cm
(b) 27 cm
(c) 18 cm

(d) 9 cm

Q434.

The total surface area of a metallic hemisphere is 1848 cm^2. The hemisphere is melted to form a solid right circular cone. If the radius of the base of the cone is the same as the radius of the hemisphere its height is

(a) 42 cm

(b) 26 cm

(c) 28 cm

(d) 30 cm

Q435.

A right circular cylinder is formed by rolling a rectangular paper 12 cm long and 3 cm wide along its length. The radius of the base of the cylinder will be

(a)$3/2\ \pi$

(b)$6/\ \pi$

(c)$9/2\ \pi$

(d)$2\ \pi$

Q436.

What part of a ditch, 48 metres long. 16.5 metres broad and 4 meters deep can be filled by the earth got by digging a cylindrical tunnel of diameter 4 meters and length 56 metres?

(a)1/9

(b)2/9

(c)7/9

(d)8/9

Q437.

The volume of the metal of cylindrical pipe is 748 cm^3. The length of the pipe is 14 cm and its external radius is 9 cm. its thickness is:

(a) 1 cm

(b) 5.2 cm

(c) 2.3 cm

(d) 3.7 cm

Q438.

Two iron sphere each of diameter 6 cm are immersed in the water contained in a cylindrical vessel of radius 6 cm. the level of the water in the vessel will be raised by:

(a) 1 cm

(b) 2 cm

(c) 3 cm

(d) 6 cm

Q439.

The height of the cone is 30cm. a small cone is cut off at the top by a plane parallel to its base. If its volume is 1/27 of the volume of the cone. At what height above the base, is the section made?

(a)6cm

(b)8cm

(c)10cm

(d)20cm

Q440.

The total surface area of a solid hemisphere is $108\pi\ cm^2$. The volume of the hemisphere is:

(a)$72\ \pi\ cm^3$

(b)$144\ \pi\ cm^3$

(c)$108\sqrt{}cm^3$

(d)$54\sqrt{6}cm^2$

Q441.

A solid metallic sphere of radius 3 dm is melted to form a circular sheet 1 mm thickness. The diameter of the sheet so formed is:

(a)26 m

(b)24m

(c)12m

(d)6m

Q442.

Water flows through a cylindrical pipe, whose radius is 7cm, at 5 meter per second. The time, it takes to fill an empty water tank with height 1.54 metres and area of the base (3×5) square metres is:

(a)6 minutes

(b)5 minutes

(c)10 minutes

(d)9 minutes

Q443.

If S denotes the area of the curved surface of a right circular cone of height h and semi-vertical angle A then S equals

(a)$\pi\ h^2\tan^2\ \alpha$

(b)$1/3\ \pi\ h^2\tan^2 \alpha$

(c) $\pi\ h^2 \sec \alpha \tan^2\ \alpha$

(d) $1/3\ \pi \sec \alpha \tan^2\ \alpha$

Q444.

The height and the radius of the base of a right circular cone are 12 cm and 6 cm respectively. The radius of the circular cross section of the cone cut by a plane parallel to base at a distance of 3cm from the base is:

(a) 4 cm

(b) 5.5 cm

(c)4.5cm

(d)3.5 cm

Q445.

If S_1 and S_2 be the surface areas of a sphere and the curved surface area of the circumscribed cylinder respectively, then S_1 is equal to

(a)$3/4\ S_2$

(b)$1/2\ S_2$

(c)$2/3\ S_2$

(d)S_2

Q446.

The volume of a right circular cylinder and that of a sphere are equal and their radii are also equal. If the eight of the cylinder be h and the diameter of the sphere d. then which of the following relation is correct?

(a)h=d

(b) 2h=d

(c) 2h=3d

(d) 3h=2d

Q447.
Water is being pumped out through a circular pipe whose internal diameter is 7cm. if the flow of water is 12cm. if the flow of water is 12cm per second, how many litres of water is being pumped out in one hour?
(a) 1663.2
(b) 1500
(c) 1747.6
(d) 2000
Q448.
The lateral surface area of a cylinder is $1056cm^2$ and its height is 16cm. find its volume.
(a) 4545 cm^3
(b) 4455 cm^3
(c) 5445 cm^3
(d) 5544 cm^3
Q449.
A solid metallic cone is melted and recast into a solid cylinder of the same base as that of the cone. If the height of the cylinder is 7cm, the height of the cone was
(a) 20 cm
(b) 21 cm
(c) 28 cm
(d) 24 cm
Q450.
A copper wire of length 26m and diameter 2mm is melted to form a sphere. The radius of the sphere (in cm) is:
(a) 2.5
(b) 3
(c) 3.5
(d) 4
Q451.
The diameter of the base of a right circular cone is 4cm and its height $2\sqrt{3}$ cm. the slant height of the cone is:
(a)5cm
(b)4cm
(c)$2\sqrt{3}$cm
(d)3cm
Q452.
The rain water from a roof 22m × 20m drains into a cylindrical vessel having a diameter of 2m and height 3.5m, if the vessel is just full, then the rainfall (in cm) is:
(a)2
(b)2.5
(c)3
(d)4.5
Q453.
From a solid cylinder of height 10cm and radius of the base 6cm, a cone of same height and same base is removed. The volume of the remaining solid is:
(a)240 π cu. cm
(b)5280 π cu. cm
(c)620 π cu. cm
(d)360 π cu. cm
Q454.
Two solid right cones of equal height and of radii r1 and r2 are melted and made to form a solid sphere of radius R. then the height of the cone is:
(a)$4R^2/ r_1^2r_2^2$
(b)$4R/ r_1 r_2$
(c) $4R^3/ r_1^2r_2^2$
(d) $R^2/ r_1^2r_2^2$
Q455.
The ratio of height and the diameter of a right circular cone is 3 : 2 and its volume is 1078cc, then its height is:
(a)7
(b)14
(c)21
(d)28
Q456.
From right circular cylinder of radius 10cm and height 21 cm a right circular cone of the same base radius removed. If the volume of the remaining portion is $4400cm^3$ then the height of the removed cone is:
(a) 15 cm
(b) 18 cm
(c) 21 cm
(d) 24 cm
Q457.
A child reshapes a cone made up of a clay of height 24cm and radius 6 cm into a sphere. The radius (in cm) of the sphere is:
(a)6
(b)12
(c)24
(d)48
Q458.
A solid cylinder has total surface area of 462sq.cm. its curved surface area is one third of the total surface area. Then the radius of the cylinder is:
(a)7cm
(b)3.5cm
(c)9cm
(d)11cm
Q459.
The diameter of a cylinder is 7cm and its height is 16cm. using the value of π=22/7 the lateral surface area of the cylinder is::
(a)$352cm^2$
(b)$350cm^2$
(c)$355cm^2$
(d)$348cm^2$
Q460.
The height of a solid right circular cylinder is 6 metres and three times the sum of the area of its two end faces is twice the area of its curved surface, the radius of its base(in meters) is:
(a) 4
(b) 2

(c) 8
(d) 10
Q461.
A semi- circular sheet of metal of diameter 28 cm is bent into an open conical cup. The depth of the cup is approximately
(a) 11 cm
(b) 12 cm
(c) 13 cm
(d) 14 cm
Q462.
A right angled sector of radius r cm is rolled up into a cone in such a way that the two binding radii are joined together. Then the curved surface area of the cone is:
(a) πr^2 cm^2
(b) $\pi r^2 /4$ cm^2
(c) $\pi r^2 /2$ cm^2
(d) $2\pi r^2$ cm^2
Q463.
The radius of the base of a conical tent is 16 meter. if 2992/7 sq. meter canvas is required to construct the tent , then the slant height of tent is (take pie =22/7)
(a) 17 metres
(b) 15 metres
(c) 19 metres
(d) 8.5 metres
Q464.
A circus tent is cylindrical up to a height of 3 m and conical above it. If its diameter is 105 m and the slant height of the conical part is 63 m, then the total area of the canvas required to make the tent is (take pie =22/7)
(a) 11385 m^2
(b) 10395 m^2
(c) 9900 m^2
(d) 990 m^2
Q465.
A toy is in the form of a cone mounted on a hemisphere, The radius of the hemisphere and that of the cone is 3 cm and height of the cone is 4 cm. The total surface area of the toy (take pie =22/7)n is
(a)75.43 sq.cm
(b)103.71 sq.cm
(c)85.35 sq.cm
(d)120.71 sq.cm
Q466.
A cylindrical rod of iron whose height is eight times its radius is melted and cast into spherical balls each of half the radius of the cylinder. The number of such spherical balls is
(a) 12
(b) 16
(c)24
(d) 48
Q467.
A cylinder has 'r' as the radius of the base and 'h' as the height. The radius of base 'of another cylinder, having double the volume but the same height as that of the first cylinder must be equal to
(a)$r/\sqrt{2}$
(b)2r
(c)$r\sqrt{2}$
(d)$\sqrt{2}r$
Q468.
From a solid cylinder whose height is 12 cm and diameter 10cm a conical cavity of same height and same diameter of the base is hollowed out. The volume of the remaining solid is approximately (pie =22/7)
(a) 942. 86 cm^3
(b) 314.29 cm^3
(c) 628. 57 cm^3
(d) 450.76 cm^3
Q469.
The radius of a cylinder is 10 cm and height is 4 cm. The number of centimeters that may be added either to the radius or to the height to get the same increase in the volume of the cylinder is
(a) 5 cm
(b) 4 cm
(c) 25 cm
(d) 16 cm
Q470.
The radius of the base of a right circular cone is doubled keeping its height fixed. The volume of the cone will be :
(a) Three times of the previous volume
(b) four times of the previous volume
(c) $\sqrt{2}$ times of the previous volume
(d)double of the pervious volume
Q471.
The base of a right circular cone has the same radius a as that of a sphere, Both the sphere and the cone have the same volume. Height of the cone is
(a) 3a
(b) 4a
(c)7/4 a
(d) 7/3 a
Q472.
The circumference of the base of a 16 cm high solid cone is 33 cm What is the volume of the cone in cm^3 ?
(a)1028
(b) 616
(c)462
(d) 828
Q473.
A solid sphere of 6 cm diameter is melted and recast into 8 solid spheres of equal volume. The radius(in cm) of each small sphere is
(a) 1.5
(b) 3
(c) 2

(d) 2.5

Q474.

In a cylindrical vessel of diameter 24 cm filled up with sufficient quantity of water, a solid spherical ball of radius 6 cm is completely immersed. Then the increase in height of water level is :

(a) 1.5 cm

(b) 2 cm

(c) 3 cm

(d)4.2 cm

Q475.

A solid wooden toy is in the shape of a right circular cone mounted on a hemisphere. If the radius of the hemisphere is 4.2 cm and the total height of the toy is 10.2 cm find the volume of wooden toy (nearly),

(a) 104 cm^3

(b) 162 cm^3

(c) 421 cm^3

(d) 266 cm^3

Q476.

If a solid cone of volume 27π cm^3 is kept inside a hollow cylinder whose radius and height are that of the cone, then the volume of water needed to fill the empty space is

(a) 3π cm^3

(b) 18π cm^3

(c) 54π cm^3

(d) 81π cm^3

Q477.

A cylindrical can whose base is horizontal and is of internal radius 3.5 cm contains sufficient water so that when a solid sphere is placed inside, water just covers the sphere. The sphere fits in the can exactly. The depth of water in the can before the sphere was put, is

(a)35/3cm

(b)17/3cm

(c)7/3 cm

(d)14/3 cm

Q478.

The base of a right circular come has the same radius 'a' as that of a sphere, Both the sphere and the cone have the same volume. Height of the come is

(a) 3a

(b) 4a

(c) 7/4a

(d) 7/3a

Q479.

The radius and height of a cylinder are in the ratio 5: 7 and its volume is 550 cm^3. Calculate its curved surface area in sq. cm.

(a) 110

(b) 444

(c) 220

(d) 616

Q480.

The area of the curved surface and the area of the base of a right circular cylinder is a square cm b by square cm respectively. The height of the cylinder is

(a)$2a\sqrt{\pi b}$ cm

(b)$a\sqrt{b}/2\sqrt{\pi}$ cm

(c)$a/2\sqrt{\pi b}$ cm

(d)$a\sqrt{\pi}/2\sqrt{b}$

Q481.

The volume of a solid hemisphere is 19404 cm^3. Its total surface area is

(a) 4158 cm^2

(b) 2858 cm^2

(c) 1738 cm^2

(d) 2038 cm^2

Q482.

A solid hemisphere is of radius 11 cm. the curved surface area in sq.

(a) 1140.85

(b) 1386.00

(c) 760.57

(d) 860.57

Q483.

The base of a cone and a cylinder have the same radius 6 cm. They have also the same height 8 cII. The ratio of the curved surface of the cylinder to that of the cone is

(a) 8: 5

(b) 8 : 3

(c) 4:3

(d) 5 : 3

Q484.

A right cylindrical vessel is full with water. How many right cones having the same diameter and height as that of the right cylinder will be needed to store that water (take 22/7)

(a)4

(b)2

(c)3

(d)6

Q485.

A spherical lead hall of radius 10 cm is melted and small lead balls of radius 5 mm are made the total number of possible small lead balls is (take pie =22/7)

(a)8000

(b) 400

(c) 800

(d) 125

Q486.

The number of spherical bullets that can be made out of solid cube of lead whose edge measures 44 cm each bullet being of 4 cm diameter is (take pie =22/7)

(a) 2541

(b) 2451

(c) 2514

(d) 2415

Q487.

The radius of a metallic cylinder is 3 cm and its height is 5 cm. It is melted and molded into small cones, each of height 1 cm and base radius 1 mm. The number of such cones formed is
(a) 450
(b) 1350
(c) 8500
(d) 13500

Q488.

A sector is formed by opening out a cone of base radius 8 cm and height 6 cm. Then the radius of the sector is (in cm)
(a) 4
(b) 8
(c) 10
(d) 6

Q489.

A solid cone of height 9 cm with diameter of is base 18 cm is cut out from a wooden solid sphere of radius 9cm the percentage of wood wasted is :
(a)25%
(b) 30%
(c)50%
(d) 75%

Q490.

The perimeter of the base of a right circular cylinder is 'a' unit. If the volume of the cylinder is V cubic unit, then the height of the cylinder is
(a)$4a^2V/\pi$ unit
(b) $4 \pi a^2 /V$ unit
(c) $\pi a^2 V/4$ unit
(d) $4 \pi V/a^2$ unit

Q491.

What is the height of a cylinder that has the same volume and radius as a sphere of diameter 12 cm ?
(a) 7 cm
(b) 10 cm.
(c) 9 cm
(d) 8 cm

Q492.

The perimeter of the base of a right circular cone is 8 cm. If the height of the cone is 21 cm, then its volume is :
(a) 108π cm^3
(b) $112/ \pi$ cm^3
(c) 112π cm^3
(d) cm $108/ \pi$ cm^3

Q493.

If the volume of two right circular cones are in the ratio 4 : 1 and their diameter are in the ratio 5 : 4, then the ratio of their height is
(a) 25 : 16
(b) 25 : 64
(c) 64 : 25
(d) 16:25

Q494.

The volume of a conical tent is 1232 cu. m and the area of its base is 154 sq. m Find the length of the canvas required to build the tent, if the canvas is 2 m in width. (Take pie =22/7)
(a) 270 m
(b) 272 m
(c) 276 m
(d) 275 m

Q495.

If the ratio of the diameters of two right circular cones of equal height be 3: 4 then the ratio of their volume will be
(a) 3: 4
(b) 9 : 16
(c) 16 : 9
(d) 27 : 64

Q496.

The surface area of two spheres are in the ratio 4 : 9. Their volumes will be in the ratio
(a) 2: 3
(b) 4: 9
(c) 8:27
(d) 64 : 729

Q497.

A semicircular sheet of metal of diameter 28 cm is bent in an open conical cup. The capacity of the cup (take pie =22/7)
(a) 624.26 cm^3
(b) 622.36 cm^3
(c) 622.56 cm^3
(d) 623.20 cm^3

Q498.

A conical flask is full of water. The flask has base radius r and height h, This water is poured into a cylindrical flask of base radius m, height of cylindrical flask is
(a)$m/2h$
(b)$h/2 m^2$
(c)$2h/m$
(d) $r^2h/3m^2$

Q499.

A solid spherical copper ball whose diameter is 14 cm is melted and converted into a wire having diameter equal to 14 cm. The length of the Wire is
(a) 27 cm
(b) 16/3 cm
(c) 15 cm
(d)28/3 cm

Q500.

A sphere of diameter 6cm is dropped in a right circular cylindrical vessel partly filled with water. The diameter of the cylindrical vessel is 12 cm. If the sphere is just completely submerged in water, then the rise of water level in the cylindrical vessel is
(a)2cm
(b)1cm

(c)3cm
(d)4cm
Q501.
A copper sphere of diameter 18 cm is drawn into a wire of diameter 4 mm The length of the wire in meter is :
(a) 2.43 m
(b) 243 m
(c) 2430 m
(d) 24.3 m
Q502.
In A rectangular block of metal has a dimension 21 cm, 77 cm and 24 cm, The block has been melted into a sphere. The radius of the sphere .is (take pie 22/7)
(a) 21 cm
(b) 7 cm
(c) 14 cm
(d) 28 cm
Q503.
The radius of cross-section of a solid cylindrical rod of iron is 50 cm. the cylinder is melted down and formed into 6 solid spherical balls of the same radius as that of the cylinder. The length of the rod (in metres) is
(a)0.08
(b)2
(c)3
(d)4
Q504.
Two right circular cones of equal height of radii of base 3 cm and 4cm melted together and made a solid sphere of radius 5 cm, the height of a cone is
(a) 10 cm
(b) 20 cm
(c) 30 cm
(d) 40 cm
Q505.
The radius of the base and the height of a right circular cone are doubled, The volume of the cone will be
(a) 8 times of the previous volume
(b) three times of the previous volume
(c) $3\sqrt{2}$ times of the previous volume
(d) 6 times of the previous volume
Q506.
If h, c, v are respectively the height, curved surface area and volume of a light circular cone then the value of $3\pi vh^3 - c^2h^2 + 9v^2$ is
(a) 2
(b) - 1
(c) 1
(d) 0
Q507.
The total number of spherical bullets, each of diameter 5 decimeter , that can be made by utilizing the maxim In of a rectangular block of lead with 11 meter length, 10 meter breadth and 5 meter width is (assume pie =3)
(a) equal to 8800
(b) less than 8800
(c) equal to 8400
(d) greater than 9000
Q508.
If a metallic cone of radius 30 cm and height 45 cm is melted and recast into metallic spheres of radius 5 cm, find the number of spheres,
(a) 81
(b) 41
(c) 80
(d) 40
Q509.
A metallic sphere of radius 10.5 cm is melted and then recast into small cones each of radius 3.5 cm and height 3 cm. The number of cones thus formed is
(a) 140
(b) 132
(c) 112
(d) 126
Q510.
A right circular cone is 3.6 cm high and radius of its base is 1.6 cm. It is melted and recast into a right circular cone with radius of its base as 1.2 cm. Then the height of the cone (in cm) is
(a) 3.6 cm
(b) 4.8 cm
(c) 6.4 cm
(d) 7.2 cm
Q511.
If surface area and volume of a sphere are S and V respectively ,then value of S^3/V^2 is
(a)36 π units
(b)9 π units
(c)18π units
(d) 27 π units
Q512.
Assume that a drop of water is spherical and its diameter is one tenth of 1 cm. a conical glass has a height equal to the diameter of its rim. If 32,000 drops of water fill the glass completely, Then the height of the glass (in cm) is
(a) 1
(b) 2
(c) 3
(d) 4
Q513.
A tank 40 m long, 30 m broad and 12 m deep is dug in a field 1000 m long and 30 m wide. By how much will the level of the field rise if the earth dug out of the tank is evenly spread over the field?
(a) 2 meter
(b) 1.2 meter
(c) 0.5 meter
(d) 5 meter
Q514.

A sphere is cut into two hemispheres. One of them is used as bowl. It takes 8 bowlfuls of this to fill a conical vessel of height 12 cm and radius 6 cm. The radius of the sphere (in centimeter)

(a)3
(b)2
(c)4
(d)6

Q515.

The height of a cone is 30 cm, A small cone is cut off at the top by a plane parallel to the base . if its volumebe $1/27^{th}$ of the volume of the given cone, at what height above the base is the section made?

(a) 19 cm
(b) 20 cm
(c) 12 cm
(d) 15 cm

Q516.

A ball of lead 4 cm in diameter is covered with gold. If the volume of the gold and lead are equal then the thickness of gold [given $3\sqrt{2}$ =1.259) is approximately

(a) 5.038 cm
(b) 5.190 cm
(c) 1.038 cm
(d) 0.518 cm

Q517.

A conical cup is filled with ice cream. The ice-cream forms a hemispherical shape on its open top. The height of the hemispherical part is 7 cm. the radius of the hemispherical part equals the height of the cone. Then the volume of the ice cream is

(a)1078 cubic cm
(b)1708 cubic cm
(c)7108 cubic cm
(d)7180 cubic cm

Q518.

A hollow sphere of internal and external diameter 6 cm and 10 cm respectively is melted into a right circular cone of diameter 8 cm. The height of the cone is

(a) 22.5 cm
(b) 23.5 cm
(c) 24.5 cm
(d) 25.5 cm

Q519.

A flask in the shape of a right circular cone of height 24 cm is filled with water. The water is poured in right circular cylindrical flask whose radius is 1/3 rd of radius of the base of the circular cone. Then the height of the water in the cylindrical flask is

(a) 32 cm
(b) 24 cm
(c) 48 cm
(d) 72 cm

Q520.

A solid metallic spherical ball of diameter 6 cm is melted and recast into a cone with diameter of the base as 12 cm. The height of the cone is

(a) 2 cm
(b) 3 cm
(c) 4 cm
(d) 6 cm

Q521.

A hemispherical bowl of internal radius 15 cm contains a liquid. The liquid is to be filled into cylindrical shaped bottles of diameter 5 cm and height 6 cm. The number of bottles required to empty the bowl is

(a) 30
(b) 40
(c) 50
(d) 60

Q522.

If V_1 , V_2 and V_3, be the volumes of a right circular cone, a sphere and aright circular cylinder having the same radius and same height then

(a)$V_1 = V_2/4 = V_3/3$
(b) $V_1/2 = V_2/3 = V_3$
(c) $V_1/3 = V_2/2 = V_3$
(d) $V_1/3 = V_2 = V_3 = V_3/2$

Q523.

the surface area of a sphere is 346.5 cm^2, then its radius [taking Pie =22/7]

(a)7cm
(b)3.25cm
(c)5.25 cm
(d) 9 cm

Q524.

Deepali makes a model of a cylindrical kaleidoscope for her science project. she uses a chart paper to make it . if the length of the kaleidoscope is 25 cm and radius 35 cm , the area of the paper she used , in sq. cm. is [take pie = 22/7]

(a) 1100
(b) 5500
(c) 500
(d) 450

Q525.

If the volume of a sphere is numerically equal to its surface area then its diameter is;

(a) 4 cm
(b) 6 cm
(c) 3 cm
(d) 2 cm

Q526.

5 persons live in a tent. If each person requires 16 m^2 of floor area and 100 m^3 space for air then the height of the cone of smallest size to accommodate these persons would be?

(a) 16m
(b) 18.75 m

(c) 10.25 m
(d) 20 m
Q527.
The numerical values of the volume and the area of the lateral surface of a right circular cone are equal. If the height of the cone be h and radius be r, the value of $1/h_2+$ $1/r^2$ is
(a) 9/1
(b) 3/1
(c) 1/3
(d) 1/9
Q528.
Then is wooden sphere of radius $6\sqrt{3}$ cm. the surface area of the largest possible cube cut out from the sphere will be
(a) 464 $\sqrt{3}$ cm^2
(b) $646\sqrt{3}$ cm^2
(c) 864 cm^2
(d) 462 cm^2
Q529.
If a hemisphere is melted and four spheres of equal volume are made, the radius of each sphere will be equal to
(a) 1/4th of the hemisphere
(b) radius of the hemisphere
(c) 1/2 of the radius of the hemisphere
(d) 1/6 th of the radius of the hemisphere
Q530.
The portion of a ditch 48 m long. 16.5 m wide and 4 m deep that can be filled with stones and earth available during excavation of a tunnel, cylindrical in shape, of diameter 4 m and length 56 m is[take pie =22/7]
(a) 1/9 भाग
(b)1/2 भाग
(c)1/4 भाग
(d) 2/9 भाग
Q531.
From a solid right circular cylinder of length 4 cm and diameter 6 cm, a conical cavity of the same height and base is hollowed out. The whole surface of the remaining solidi [in square cm.) is
(a) 48 π
(b) 63 π
(c) 15 π
(d) 24 π
Q532.
A spherical ball of radius 1 cm is dropped into a conical vessel of radius 3 cm and slant height 6 cm, The volume of water (in cm^3), that can just immerse the ball is
(a)5 π /3
(b)3 π
(c) π /3
(d)4 π/3
Q533.
Assume that a drop of water is spherical and its diameter is one tenth of a cm. A conical glass has a height equal to the diameter of its rim. If 32000 drops of water fill the glass completely, then the height of the glass is
(a) 3
(b) 4
(c) 1
(d) 2
Q534.
If the height of a cylinder is 4 times its circumference, the volume of the cylinder in terms of its circumference, c is
(a) $2c^3/ \pi$
(b)c^3 / π
(c) 4 πc^3
(d) 2 π c^3
Q535.
The radii of a sphere and a right circular cylinder are 3 cm each. If their volumes are equal, then curved surface area of the cylinder is (Assume π =22/7)
(a) 528/7 cm^2
(b)458/ 7 cm^2
(c)521/7 cm^2
(d)507/3 cm^2
Q536.
The radius of a hemispherical bowl is 6 cm. The capacity of the bowel is: (take π =22/7)
(a) 452.57 cm^3
(b) 452 cm^3
(c) 345.53 cm^3
(d) 405.51 cm^3
Q537.
The total surface area of a right circular cylinder with radius of the base 7 cm and height 20cm is :
(a)140 cm^2
(b)1000 cm^2
(c)900 cm^2
(d) 1188 cm^2
Q538.
The radius of base and curved surface area of a right cylinder 'r' units and 4 πrh square units respectively. The height of the cylinder is:
(a)4h units
(b)h/2 units
(c)h units
(d) 2h units
Q539.
A hemi-spherical bowl has 3.5 cm radius. It is to be painted inside as well as outside. The cost of painting it at the rate of Rs. 5 per 10sq. cm. will be:
(a) Rs. 77
(b) Rs. 175
(c)Rs. 50
(d) Rs. 100
Q540.

The volume of a right circular cone which is obtained from a wooden cube of edge 4.2 dm wasting minimum amount of wood is:

(a) 194.04 cu.dm

(b) 19.404 cu. dm

(c) 1940.4 cu. dm

(d) 1940. 4cu. dm

Q541.

If the radius of a sphere is increased by 2 cm, then its surface area increase by 352cm^2. The radius of the sphere initially was : [use π=22/7]

(a) 3 cm

(b) 5 cm

(c) 4 cm

(d) 6 cm

Q542.

A right triangle with sides 9 cm, 12cm and 15 cm is rotated about the side of 9 cm to form a cone. The volume of the cone so formed is:

(a) 432 π cm^2

(b) 327 π cm^3

(c) 334 cm^2

(d) 324 cm^2

Q543.

The volume of the largest right circular cone that can be cut Out of a cube of edge 7 cm? (use π= 22/7)

(a) 13.6 cm^3

(b) 147.68 cm^3

(c) 89.9 cm^3

(d) 121 cm^3

Q544.

By melting two solid metallic spheres of radii 1 cm and 6 cm, a hollow sphere of thickness 1 cm is made. The external radius of the hollow sphere will be

(a)8cm

(b)9cm

(c)6 cm

(d)7 cm

Q545.

Water is flowing at the rate of 5 km/ h through a pipe of diameter 14 cm into a rectangular tank which is 50 m long 44m wide, The time taken (in hours) for the rise in the level of water in the tank to be 7 cm is

(a) 2

(b)3/2

(c) 3

(d) 5/2

Q546.

The volume (in m^3) of rain water that can be collected from 1.5 hectares of ground in a rainfall of 5 cm is

(a) 75

(b) 750

(c) 7500

(d) 75000

Q547.

Water is flowing at the rate of 3 km/ Hr. through a circular pipe of 20 cm internal diameter into a circular cistern of diameter 10 m and depth 2m. In how much time will the cistern be filled?

(a) 1 hour

(b) 1 hour 40 minutes

(c) 1 hour 20 minutes

(d) 2 hours 40 minutes

Q548.

Water flows at the rate of 10 metres per minute from cylindrical pipe 5 mm in diameter, How long it will take to fill up a conical vessel whose diameter, at the base is 30 cm and depth 24 cm?

(a) 28 minutes 48 seconds

(b) 51 minutes 12 seconds

(c) 51 minutes 24 seconds

(d) 28 minutes 36 seconds

Q549.

The radius of the base of conical tent is 12 m, The tent is 9 m high. Find the cost of canvas required to make the tent, if one square meter of canvas costs Rs. 120 (Take pie = 3.14)

(a) Rs.67,830

(b) Rs.67,800

(c) Rs.67,820

(d) Rs.67,824

Q550.

A plate of square base made of brass is of length x cm and thickness 1 mm. The plate weighs 4725 gm., If 1 cubic cm of brass weighs 8.4 gram, then the value of c is:

(a) 76

(b) 72

(c) 74

(d) 75

Q551.

The diameter of a 120 cm long roller is 84 cm . it takes 500 complete revolution of the roller to level a ground. The cost of travelling the ground at Rs. 1.50 sq.cm. is

(a) Rs. 5750

(b) Rs. 6000

(c) Rs. 3760

(d) Rs. 2376

Q552.

Two right circular cylinders of equal volume have their heights in the ratio 1 : 2. The ratio of their radii is

(a)$\sqrt{2}$:1

(b) 2 : 1

(c) 1 : 2

(d) 1 : 4

Q553.

If the volume of two cubes are in the ratio 27: 1, the ratio of their edge is :

(a) 3 : 1

(b) 27: 1

(c) 1 : 3

(d) 1:27

Q554.

The edges of a cuboid are in the ratio 1 : 2 : 3 and its surface area. is 88cm. The volume of the cuboid is :

(a) 48 cm^3

(b) 64 cm^3

(c) 16 cm^3

(d) 100 cm^3

Q555.

The volume of two spheres is in the ratio 8: 27. The ratio of their surface area is :

(a) 4: 9

(b) 9:3

(c)4:5

(d)5:6

Q556.

The curved surface area of a cylindrical pillar is 264 m^2 and its volume is 924 m^2 (take π =22/7) find the ratio of its diameter to its height .

(a) 7 : 6

(b) 6: 7

(c) 3: 7

(d) 7 : 3

Q557.

The ratio of the volume of two cones is 2 : 3 and the ratio of radii of their base is 1 : 2 The ratio of their height is

(a) 3: 8

(b) 8: 3

(c) 4 : 3

(d) 3 : 4

Q558.

If the volume of two cubes are in the ratio 27 : 64, then the ratio of their total surface area is:

(a) 27 : 64

(b) 3: 4

(c) 9 : 16

(d) 3: 8

Q559.

A hemisphere and a cone have equal base. If their heights are also equal, the ratio of their curved surface will be:

(a)1:$\sqrt{2}$

(b) $\sqrt{2}$:1

(c)1:2

(d) 2 : 1

Q560.

If the height of a given cone be doubled and radius of the base remains the same the ratio of the volume of the given cone to that of the second cone will be

(a) 2 : 1

(b) 1 : 8

(c) 1 : 2

(d) 8 : 1

Q561.

Spheres A and B have their radii 40 cm and 10 cm respectively, Ratio of surface area of A to the surface area of B is :

(a) 1 : 16

(b) 4: 1

(c) 1 : 4

(d) 16: 1

Q562.

If the radius of the base of a cone be doubled and height is left unchanged, then ratio of the volume of new cone to that of the original cone Will be :

(a) 1 : 4

(b)2 : 1

(c)1 : 2

(d) 4: 1

Q563.

A cube of edge 5 cm is cut into cubes each of edge of 1 cm. The ratio of the total surface area of one of the small cubes to that of the large cube is equal to :

(a) 1 : 125

(b) 1 : 5

(c) 1 : 625

(d) 1 : 25

Q564.

The diameter of two hollow spheres made from the same metal sheet is 21 cm and 17.5 cm respectively. The ratio of the area of metal sheets required for making the two spheres is

(a) 6: 5

(b) 36:25

(c) 3 : 2

(d) 18: 25

Q565.

By melting a solid lead sphere of diameter 12 cm, three small spheres are made whose diameters are in the ratio 3 : 4 : 5. The radius (in cm) of the smallest sphere is

(a) 3

(b) 6

(c) 1.5

(d) 4

Q566.

A cone is cut at mid-point of its height by a frustum parallel to its base. The ratio between the volumes of two parts of cone would be

(a)1 : 1

(b) 1: 8

(c) 1 : 4

(d) 1 : 7

Q567.

The ratio of the area of the in-circle and the circum-circle of a square is

(a) 1 : 1

(b) $\sqrt{2}$:1

(c) 1: $\sqrt{2}$

(d) 2 : 1

Q568.
The ratio of the surface area of a sphere and the curved surface area of the cylinder circumscribing the sphere is
(a) 1 : 2
(b) 1 : 1
(c) 2 : 1
(d) 2: 3
Q569.
The radii of two spheres are in the ratio 3 : 2. Their volume will be in the ratio:
(a)9:4
(b)3:2
(c)8:27
(d)27:8
Q570.
The volume of a sphere and a right circular cylinder having the same radius are equal the ratio of the diameter of the sphere to the height of the cylinder is
(a) 3: 2
(b) 2: 3
(c)1:2
(d)2:1
Q571.
A cone, a hemisphere and a cylinder stand on equal bases and have the same height. The ratio of their respective volume is
(a) 1 : 2: 3
(b) 2 : 1 : 3
(c) 1 : 3 : 2
(d) 3 : 1 : 2
Q572.
dii of the base of two cylinders are in the ratio 3 : 5 and their heights in the ratio 2 : 3. The ratio of their curved surface will be :
(a) 2: 5
(b) 2: 3
(c) 3 : 5
(d) 5:3
Q573.
If the radii of two spheres are in the ratio 1 : 4, then their surface area are in the ratio :
(a) 1: 2
(b) 1:4
(c) 1 : 8
(d) 1 :16
Q574.
The radii of the base of two cylinders A and B are in the ratio 3:2 and their height in the ratio x:1 If the volume of cylinder A is 3 times that of the cylinder B, the value of x is
(a)4/3
(b)2/3
(c)3/4
(d)3/2
Q575.
A solid metallic sphere of radius 8 cm is melted to form 64 equal small solid spheres, The ratio of the surface area of this sphere to that of a small sphere is
(a) 4: 1
(b) 1:16
(c) 16:1
(d) 1 : 4
Q576.
The diameter of two cylinders, whose volumes are equal, are in the ratio 3 : 2, Their heights will be in the ratio
(a) 4: 9
(b) 5: 6
(c) 1 :2
(d) 8: 9
Q577.
The radius of base and slant height of a cone are in the ratio 4 : 7. If slant height is 14 cm then the radius (in cm) of its base is 2 (use pie = 22/7)
(a) 8
(b) 12
(c) 14
(d) 16
Q578.
A right circular cylinder just encloses a sphere of radius r. The ratio of the surface area of the sphere and the curved surface area of the cylinder is
(a)2:1
(b)1:2
(c)1:3
(d)1:1
Q579.
The ratio of radii of two cone is 3:4 and the ratio of their height is 4: 3. Then the ratio of their volume will be
(a) 3: 4
(b) 4:3
(c) 9 : 16
(d) 16:9
Q580.
If a right circular cone is separated into solids of volumes V_1, V_2, V_3 by two planes parallel to the base which also trisect the altitude, then V_1: V_2:V_3 is
(a) 1 : 2 : 3
(b) 1: 4: 6
(c) 1: 6:9
(d) 1 : 7 : 19
Q581.
The total surface area of a solid right circular cylinder is twice that of a solid sphere. If they have the same radii, the ratio of the volume of the cylinder to that of the sphere is given by
(a) 9 : 4
(b) 2 : 1
(c) 3 : 4

(d) 4:9

Q582.

The respective height and volume of a hemisphere and a right circular cylinder are equal, then the ratio of their radii is -

(a)$\sqrt{2}:\sqrt{3}$

(b)$\sqrt{3}:1$

(c)$\sqrt{3}:2$

(d)$2:\sqrt{3}$

Q583.

The ratio of the volume of a cube and of a solid sphere is 363 : 49. The ratio of an edge of the cube and the radius of the sphere is (take pie =22/7)

(a) 7: 11

(b) 22: 7

(c) 11:7

(d) 7 : 22

Q584.

The radius and the height of a cone are in the ratio 4 : 3. The ratio of the curved surface area and total surface area of the cone is

(a) 5: 9

(b) 3: 7

(c) 5 :4

(d) 16:9

Q585.

A sphere and a cylinder have equal volume and equal radius. The ratio of the curved surface area of the cylinder to that of the sphere is

(a) 4: 3

(b) 2: 3

(c) 3 : 2

(d) 3: 4

Q586.

A right circular cylinder and a cone have equal base radius and equal height. If their curved surfaces are in the ratio 8: 5, then the radius of the base to the height are in the ratio :

(a) 2: 3

(b) 4: 3

(c) 3 : 4

(d) 3: 2

Q587.

The edges of a rectangular box area in the ratio 1 : 2: 3 and its surface area is 88 cm^2. The volume of the box is

(a) 24 cm^3

(b)48cm^3

(c) 64 cm^3

(d)120 cm^3

Q588.

The radii of the base of cylinder and cone are in ratio $\sqrt{3}:\sqrt{2}$ and their heights are in the ratio $\sqrt{2}:\sqrt{3}$. their volumes are in the ratio of

(a)$\sqrt{3}:\sqrt{2}$

(b)$3\sqrt{3}:\sqrt{2}$

(c)$\sqrt{3}:2\sqrt{2}$

(d)$\sqrt{2}:\sqrt{6}$

Q589.

The heights of two cones are in the ratio 1 : 3 and the diameters of their base are in the ratio 3 : 5, The ratio of their volume is

(a) 3 : 25

(b) 4: 25

(c) 6: 25

(d) 7 : 25

Q590.

A sphere and a hemisphere have the same volume. The ratio of their radii is

(a) 1 : 2

(b) 1 : 8

(c) 1 :$\sqrt{2}$

(d) 1 : $3\sqrt{2}$

Q591.

The diameter of the moon is assumed to be one fourth of the diameter of the earth. Then the ratio of the volume of the earth to that of the moon is

(a)64:1

(b)1:64

(c)60:7

(d)7:60

Q592.

If A denotes the volume of a right circular cylinder of same height as its diameter and B is thevolume of a sphere of same radius then A/B is :

(a)4/3

(b)3/2

(c)2/3

(d)3/4

Q593.

The radii of the base of cylinder and cone are in ratio $\sqrt{3}:\sqrt{2}$ and their heights are in the ratio $\sqrt{2}:\sqrt{3}$. their volumes are in the ratio of

(a) $\sqrt{3}:\sqrt{2}$

(b)$3\sqrt{3}:\sqrt{2}$

(c) $\sqrt{3}:2\sqrt{2}$

(d)$\sqrt{2}:\sqrt{6}$

Q594.

Diagonal of a cube is $6\sqrt{3}$ cm. ratio of its total surface area and volume (numerically) is

(a)2:1

(b)1:6

(c)1:1

(d)1:2

Q595.

A sphere and a hemisphere have the same volume. The ratio of their curved surface area is :
(a)$2^{3/2}$: 2
(b)$2^{2/3}$:1
(c)$4^{2/3}$:1
(d)$2^{1/3}$:1
Q596.
The volume of a cylinder and a cone are in the ratio 3 : 1. Find their diameters and then compare them when their height is equal.
(a) diameter of cylinder = 2 times of diameter of cone
(b) diameter of cylinder = diameter of cone
(c) diameter of cylinder > diameter of cone
(d) diameter of cylinder < diameter of cone
Q597.
A solid sphere is melted and recast into a right circular cone with a base radius equal to the radius of sphere. What is the ratio of the height and radius of the cone so formed
(a) 4 : 3
(b) 2 : 3 (1)
(c) 3 : 4
(d) 4: 1
Q598.
Two cubes have their volumes in the ratio 27 : 64, The ratio of their surface areas is
(a) 9 : 25
(b) 16: 25
(c) 9 : 16
(d) 4: 9
Q599.
The ratio of weights of two spheres ratio of different materials is 8 : 17 and the ratio of weights per 1 cc of materials of each is 289 : 64. The ratio of radii of the two spheres is
(a) 8:17
(b)4:17
(c)17:4
(d)17:8
Q600.
The total number of spherical bullets each of diameter 5 decimeter that can be made by utilizing the maximum of a rectangular block of lead with 11 meter length , 10 meter breadth and 5 meter is (assume that π =3)
(a) 8800
(b) 8000
(c) 7800
(d) 7790
Q601.
If the ratio of volumes of two cones is 2 : 3 and the ratio of the radii of their bases is 1 : 2, then the ratio of their heights will be
(a) 8 : 3
(b) 3 : 8
(c) 4: 3
(d) 3 : 4
Q602.
The volumes of a right circular cylinder and a sphere are equal. The radius of the cylinder and the diameter of the sphere are equal, The ratio of height and radius of the cylinder is
(a) 3 : 1
(b) 1 : 3
(c) 6: 1
(d) 1 : 6
Q603.
A large solid sphere is melted and molded to form identical right circular cones with base radius and height same as the radius of the sphere. One of these cones is melted and molded to form a smaller solid sphere. Then the ratio of the surface area of the smaller to the surface area of the larger sphere is
(a) 1: $3^{4/3}$
(b) 1: $2^{3/2}$
(c) 1:$3^{2/3}$
(d) 1:$3^{4/3}$
Q604.
A plane divided a right circular cone into two parts of equal volume . if the plane is parallel to the base, then the ratio in which the height of the cone is divided, is
(a)1:√2
(b) 1:3√2
(c) 1:3√2-1
(d) 1:3√2+1
Q605.
On increasing each side of a squire by 50%, the ratio of the area of new formed square and the given square will be
(a) 9 : 5
(b) 9 :7
(c) 9: 3
(d) 9 : 4
Q606.
A cone of height 7 cm and base radius 1 cm is carved from a cuboidal block of wood 10 cm x 5 cm x 2 cm[assume π=22/7]
(a)278/3%
(b)139/3%
(c)127/2%
(d)124/3%
Q607.
If radius of a cylinder is decreased by 50% and the height is increased by 50% to from a new cylinder , the volume will be decreased by
(a)6%
(b)25%
(c)62.5%
(d)75%
Q608.

Each of the height and base radius of a cone is increased by 100%. The percentage increase in the volume of the cone is

(a) 700%

(b) 400%
(c) 300%
(d) 100%

Q609.

If both the radius and height of a right circular cone are increased by 20%, its volume will be increased by
(a) 20%
(b) 40%
(c) 60%
(d) 72.8%

Q610.

A cone of height 15 cm and base diameter 30 cm is carved out of a wooden sphere of radius 15 cm. The percentage of used wood is :
(a) 75%
(b) 50%
(c) 40%
(d) 25%

Q611.

If the height of a right circular cone is increased by 200% and the radius of the base is reduced by 50%, the volume of the come
(a) increases by 25%
(b) increases by 50%
(c) remains unaltered
(d) decreases by 25%

Q612.

If the height and the radius of the base of a cone are each increased by 100%, then the volume of the cone become
(a) double that of the original
(b) three times that of the original
(c) six times that of the original
(d) eight times that of the original

Q613.

If the height of a cylinder is increased by 15 per cent and the radius of its base is decreased by 10 percent then by what percent will its curved surface area change?
(a) 3.5 percent decrease
(b) 3.5 percent increase
(c) 5 percent increase
(d) 5 percent decrease

Q614.

If the radius of a sphere is doubled, its volume becomes
(a) double
(b) four times
(c) six times
(d) eight times

Q615.

If the radius of a right circular cylinder is decreased by 50% and its height is increased by 60% its volume will be decreased by

(a) 10%
(b) 60%
(c) 40%
(d) 20%

Q616.

The length, breadth and height of a cuboid are in the ratio 1 : 2: 3. If they are increased by 100%, 200% and 200% respectively. then compared to the original volume the increase in the volume of the cuboid will be
(a) 5 times
(b) 18 times
(c) 12 times
(d) 17 times

Q617.

Each of the radius of the base and the height of a right circular cylinder is increased by 10%. The volume of the cylinder is increased by
(a) 3.31%
(b) 14.5%
(c) 33.1%
(d) 19.5%

Q618.

If the height of a cone is increase by 100% then its volume is increased by :
(a) 100%
(b) 200%
(c) 300%
(d) 400%

Q619.

A hemispherical cup of radius 4 cm is filled to the brim with coffee, The coffee is then poured into a vertical cone of radius 8 cm and height 16 cm. The percentage of the volume of the cone that remains empty is :
(a) 87.5%
(b) 80.5%
(c) 81.6%
(d) 88.2%

Q620.

The height of a circular cylinder is increased six times and the base area is decreased to one ninth of its value. The factor by which the lateral surface of the cylinder increases is
(a) 2
(b)1/2
(c) 2/3

(d) 3/2

Q621.

If the radius of a sphere be doubled the area of its surface will become

(a) Double

(b) Three times
(c) Four times
(d) None of mentioned

Q622.

If each edge of a cube is increased by 50 % the percentage increase in its surface area is

(a) 150%

(b) 75%

(c) 100%

(d) 125 %

Q623.

If the radius of a sphere be doubled, then the percentage increase in volume is

(a) 500%

(b) 700%

(c) 600%

(d)800%

Q624.

If radius of a circle is increased by 5%, then the increment in its area is

(a) 10.25%

(b) 5.75%

(c) 10%

(d) 5%

Q625.

If the length of each side of a regular tetrahedron is 12 cm, then the volume of the tetrahedron is

(a) $144\sqrt{2}$ cu. Cm

(b) $72\sqrt{2}$ cu. Cm

(c) $8\sqrt{2}$ cu. Cm

(d) $12\sqrt{2}$ Cu. cm

Q626.

If the radii of the circular ends of a truncated conical bucket which is 45cm high be 28 cm and 7cm then the capacity of the bucket in cubic centimeter is[take $\pi=22/7$]

(a)48510

(b)45810

(c)48150

(d)48051

Q627.

There is a pyramid on a base which is a regular hexagon of Side 2a cm. if every slant edge of this pyramid is of length 5a/2 cm then the value of the pyramid is

(a) $3a^3cm^3$

(b)$3\sqrt{2}\ a^3cm^3$

(c)$3\sqrt{3}\ a^3cm^3$

(d) $6\ a^3cm^3$

Q628.

The base of a right pyramid is a surface of the prism is square of side 40 cm long. If the volume of the pyramid is 8000 cm^3 , then its height is

(a) 5 cm

(b) 10 cm

(c) 15 cm

(d)20 cm

Q629.

The base of a right prism is a trapezium . the length of the parallel sides are 8 cm and 14 cm and the distance between the parallel sides is 8 cm , if the volume of the prism is 1056 $cm^{3,}$ then the height of the prism is

(a) 44cm

(b) 16.5 cm

(c)12 cm

(d) 10.56 cm

Q630.

Each edge of a regular tetrahedron is 3cm, then its volume is

(a)$9\sqrt{2}/4$ c.c.

(b)$27\sqrt{3}$ c.c.

(c)$4\sqrt{2}/9$ c.c.

(d)$9\sqrt{3}$ c.c.

Q631.

The perimeter of the triangular base of a right prism is 15 cm and radius of the incircle of the triangular base is 3 cm. If the volume of the prism be 270 cm^3 then the height of the prism is

(a) 6 cm

(b) 7.5 cm

(c)10cm

(d)12 cm

Q632.

The base of a solid right prism is a triangle whose sides are 9 cm, 12 cm and 15 cm, The height of the prism is 5 cm. Then the total surface area of the prism is

(a) 180 cm^2

(b) 234 cm^2

(c) 288 cm^2

(d) 270 cm^2

Q633.

The base of a right prism is an equilateral triangle of area 173 cm^2 and the volume of the prism is10380 cm^2. The area of the lateral surface of the prism is

(a) 1200 cm^2

(b)2400 cm^2

(c)3600 cm^2

(d) 4380 cm^2

Q634.

The base of a right pyramid is a square of side 16 cm long. If its height be 15 cm , then the area of the lateral surface in square cm is:

(a) 136

(b) 544

(c) 800

(d) 1280

Q635.

Area of the base of a pyramid is 57 sq. cm and height is 10 cm, then its volume (in cm^3), is

(a) 570

(b) 390

(c) 190

(d) 590

Q636.

The height of a right prism with a square base is 15 cm, If the area of the total surface of the prism is 608 sq. cm, its volume is
(a) 910 cm^3
(b) 920 cm^3
(c) 960 cm^3
(d) 980 cm^3
Q637.
The base of a right prism is an equilateral triangle of side 8 cm and height of the prism is 10 cm. Then the volume of the prism is
(a) 320 $\sqrt{3}$ cubic cm
(b) 160$\sqrt{3}$ cubic cm
(c) 150 $\sqrt{3}$ cubic cm,
(d) 300 $\sqrt{3}$ cubic cm
Q638.
A prism has as the base a right angled triangle whose sides adjacent to the right angles are 10 cm and 12 cm long. The height of the prism is 20 cm. the density of the material of the prism is 6 gm /cubic cm. the weight of the prism is
(a) 6.4 kg
(b)7.2 kg
(c) 3.4 kg
(d) 4.8 kg
Q639.
If the slant height of a right pyramid with square base is 4 meter and the total slant surface of the pyramid is 12 sq. m. then the ratio of total slant surface and area of the base is
(a) 16: 3
(b) 24 : 5
(c) 32 : 9
(d) 12: 3
Q640.
The length of each edge of a regular tetrahedron is 12 cm. The area (in sq. cm) of the total surface of the tetrahedron is
(a) 288$\sqrt{3}$
(b) 144$\sqrt{2}$
(c) 108$\sqrt{3}$
(d) 144$\sqrt{3}$
Q641.
The base of right prism is a triangle whose perimeter is 28 cm and the in radius of the triangle is 4 cm. If the volume of the prism is 366 cc, then its height is
(a) 6 cm
(b) 8 cm
(c) 4 cm
(d) None of these
Q642.
The base of a right pyramid is equilateral triangle of side 10$\sqrt{3}$ cm. if the total surface are of the pyramid is 270$\sqrt{3}$ cm^2. its height is
(a) 12$\sqrt{3}$ cm
(b) 10 cm
(c) 10$\sqrt{3}$cm
(d)12 cm
Q643.
A right prism stands on a base of 6 cm side equilateral triangle and its volume is 8 1$\sqrt{3}$ cm^3. the height (in cm) of the prism is
(a) 9
(b) 10
(c) 12
(d) 15
Q644.
A right pyramid stands on a square base of diagonal 10$\sqrt{2}$ cm. If the height of the pyramid is 12 cm, the area (in cm^2) of its slant surface is
(a) 520
(b) 420
(c) 360
(d) 260
Q645.
If the altitude of a right prism is 10 cm and its base is an equilateral triangle of side 12 cm, then its total surface area (in cm^2) is
(a)(5+ 3$\sqrt{3}$)
(b)36$\sqrt{3}$
(c)360
(d)72(5+$\sqrt{3}$)
Q646.
A right pyramid stands on a square base of side 16 cm, and its height is 15 cm. The area (in cm^2) of its slant surface is
(a) 514
(b) 544
(c) 344
(d) 444
Q647.
The base of a right prism is a right angled triangle whose sides are 5 cm, 12 cm and 13 cm. If the total surface area of the prism is 360 cm^2, then its height (in cm) is
(a) 10
(b) 12
(c) 9
(d) 11
Q648.
A right pyramid 6 m high has a square base of which the diagonal is $\sqrt{1152}$ m. Volume of the pyramid is
(a) 144 m^3
(b) 288 m^3
(c) 576 m^3
(d) 1152 m^3
Q649.
The height of the right pyramid whose area of the base is 30 m and volume is 500 m^3 is
(a) 50 m
(b) 60 m

(c) 40 m
(d) 20 m
Q650.
The base of a right prism is an equilateral triangle . if the lateral surface area and volume is 120 cm^2 , $40\sqrt{3}$ cm^3 respectively then the side of base of the prism is
(a) 4 cm
(b)5 cm
(c) 7 cm
(d) 40 cm
Q651.
Each edge of a regular tetrahedron is 14cm. its volume (in cubic cm) is
(a)$16\sqrt{3}/3$
(b)$16\sqrt{3}$
(c)$16\sqrt{2}/3$
(d)$16\sqrt{2}$
Q652.
The base of a prism is a right angled triangle with two side 5 cm and 12 cm. the height of the prism is 10 cm. the total surface area of the prism is
(a)360 sq. cm
(b)300 sq. cm
(c)330 sq. cm
(d)325 sq. cm
Q653.
The base of a right prism is a quadrilateral ABCD, given that AB = 9cm , BC=14 cm, CD =13 cm, DA=12 cm and ∠DAB =90° . if the volume of the prism be 2070 cm^3then the area of the lateral surface is
(a)720cm^2
(b)810 cm^2
(c)1260cm^2
(d)2070 cm^2
Q654.
If the area of the base , height and volume of a right prism be $\{3\sqrt{3}/2\}$ p^2c m^2, $100\sqrt{3}$ cm and 7200 cm^3 respectively, then the value of P (in cm) will be ?
(a)4
(b)$2\sqrt{3}$
(c)$\sqrt{3}$
(d)3/2
Q655.
If the base of right prism remains same and the lateral edges are halved then it s volume will be reduced by
(a) 33.33%
(b)50%
(c)25%
(d)66%
Q656.
The total surface area of a regular triangular pyramid with each edges of length 1 cm is?
(a)$4/2(\sqrt{2})$$cm^2$
(b)$\sqrt{3}$ cm^2
(c)4 cm^2
(d)$4\sqrt{3}$ cm^2
Q657.
Base of a right pyramid is a square of side 10 cm . if the height of the pyramids 12 cm, then its total surface area is
(a)360 cm^2
(b)400cm^2
(c)460cm^2
(d)260cm^2
Q658.
A right prism has a triangular base whose sides are 13 cm, 20 cm and 21cm, if the altitude of the prism is 9 cm, then its volume is
(a)1143 cm^3
(b)1314 cm^3
(c)1413 cm^3
(d)1134 cm^3
Q659.
Base of a prism of height 10 cm square. Total surface area of the prism is 192 sq. cm . the volume of the prism is
(a)120cm^3
(b)640 cm^3
(c) 90 cm^3
(d)160 cm^3
Q660.
A right prism has triangular base. If v be the number of vertices, e be the number of faces of the prism. The value of $v + e - f/2$ is
(a)2
(b)4
(c)5
(d)10
Q661.
The base of a right prism is a trapezium whose lengths of two parallel sides are 10 cm and 6 cm and distance between them is 8 cm , its volume is
(a)300cm^3
(b)300.5 cm^3
(c)320 cm^3
(d)310 cm^3
Q662.
Base of a right prism is a rectangle, the ratio of whose length and breadth is 3:2 if the height of the prism is 12 cm and total surface area is 288 sq. cm, the volume of the prism is :
(a)288 cm^3
(b)290 cm^3
(c)286 cm^3
(d)291 cm^3
Q663.
Height of a prism shaped part of a machine is 8 cm and its base is an isosceles triangle, whose each of the equal sides is 5 cm and remaining side is 6 cm. the volume of part is

(a) 90 cm^3
(b) 96 cm^3
(c) 120 cm^3
(d) 86 cm^3

Q664.
The sides of a triangle are 7 cm,8 cm, 9 cm, then the area of the triangle (in cm^2) is
(a) $12\sqrt{5}$
(b) $6\sqrt{5}$
(c) $24\sqrt{5}$
(d) $30\sqrt{5}$

Q665.
A cylindrical rod of radius 30 cm and length 40 cm is melted and made into spherical balls of radius 1 cm. The number of spherical balls is.
(a) 40000
(b) 90000
(c) 27000
(d) 36000

Q666.
The ratio of the radii of two cylinders is 2: 1 and their heights are in the ratio 3: 2. Then their volumes are in the ratio.
(a) 4:3
(b) 6:5
(c) 3 : 1
(d) 6:1

Q667.
The radii of the base of a cylinder and a cone are equal and their volumes are also equal. Then the ratio of their heights is
(a) 1 :2
(b) 2: 1
(c) 1: 4
(d) 1 : 3

Q668.
The curved surface area of a cylinder with its height equal to the radius, is equal to the curved surface area of a sphere. The ratio of volume of the cylinder to that sphere is
(a) 3:2 $\sqrt{2}$
(b) $\sqrt{2}$:3
(c)2 $\sqrt{2}$:3
(d) 3: $\sqrt{2}$

Q669.
The base of a right prism whose height is 2cm is a square. If he total surface area of the prism is 10 cm^2
(a)2 cm^3
(b)1 cm^3
(c)4 cm^3
(d)3 cm^3

Q670.
The radius of a wire is decreased to one third. If volume remains the same, length will increase by:
(a) 3 times
(b) 1 times
(c) 9 times
(d) 6 times

Q671.
Let ABCDEF be a prism whose base is a right angled triangle, where sides adjacent to 90° are 9 cm and 12 cm, If the cost of painting the prism is Rs. 151.20 at the rate of 20 paisa per sq. cm then the height of the prism is:
(a)16 cm
(b) 17 cm
(c) 18 cm
(d) 15 cm

Q672.
The total surface area of a right pyramid on a square base of side 10 cm with height 12 cm is
(a) 260 square cm
(b) 300 square cm
(c) 330 square cm.
(d) 360 square cm

Q673.
If the area of a square is increased by 44%, retaining its shape as a square, each of its sides increases by :
(a) 20%
(b) 19%
(c) 22%
(d) 21%

ANSWER :

1 b	2 c	3 a	4 c	5 b	6 b	7 b	8 c	9 d	10 d	11 a	12 d	13 a	14 b
15 d	16 d	17 b	18 d	19 d	20 b	21 a	22 a	23 c	24 d	25 d	26 a	27 d	28 b
29 c	30 d	31 a	32 d	33 a	34 c	35 a	36 a	37 c	38 b	39 d	40 a	41 a	42 a
43 d	44 d	45 b	46 a	47 b	48 d	49 b	50 b	51 b	52 a	53 c	54 c	55 d	56 b
57 c	58 d	59 d	60 b	61 b	62 c	63 b	64 b	65 b	66 c	67 b	68 a	69 b	70 c
71 a	72 c	73 c	74 b	75 b	76 a	77 b	78 c	79 b	80 c	81 b	82 b	83 a	84 b
85 a	86 a	87 c	88 b	89 c	90 c	91 a	92 a	93 b	94 b	95 c	96 c	97 b	98 b
99 c	100 a	101 a	102 c	103 a	104 c	105 c	106 d	107 b	108 c	109 a	110 c	111 a	112 c
113 d	114 b	115 d	116 c	117 a	118 c	119 b	120 b	121 c	122 d	123 c	124 b	125 b	126 c
127 a	128 b	129 b	130 a	131 a	132 b	133 b	134 b	135 c	136 b	137 c	138 c	139 b	140 c
141 a	142 b	143 a	144 a	145 c	146 c	147 a	148 b	149 a	150 a	151 d	152 b	153 d	154 b
155 a	156 c	157 a	158 a	159 b	160 d	161 a	162 c	163 c	164 c	165 b	166 c	167 c	168 d
169 d	170 a	171 d	172 c	173 c	174 c	175 b	176 c	177 b	178 a	179 a	180 b	181 a	182 a
183 c	184 a	185 c	186 a	187 d	188 c	189 b	190 d	191 a	192 a	193 d	194 c	195 a	196 a
197 a	198 d	199 b	200 d	201 b	202 b	203 a	204 c	205 a	206 a	207 b	208 b	209 d	210 c
211 b	212 b	213 d	214 d	215 d	216 b	217 b	218 d	219 d	220 b	221 c	222 a	223 c	224 b
225 a	226 b	227 b	228 c	229 a	230 b	231 a	232 d	233 c	234 b	235 c	236 b	237 a	238 a
239 a	240 a	241 c	242 d	243 c	244 b	245 b	246 b	247 a	248 d	249 a	250 b	251 d	252 c
253 d	254 c	255 d	256 a	257 c	258 b	259 a	260 c	261 b	262 c	263 b	264 a	265 a	266 a
267 a	268 b	269 d	270 a	271 b	272 a	273 b	274 a	275 d	276 b	277 b	278 c	279 d	280 d
281 c	282 c	283 c	284 a	285 c	286 d	287 a	288 c	289 b	290 d	291 d	292 c	293 d	294 c
295 b	296 b	297 a	298 b	299 c	300 a	301 b	302 d	303 b	304 a	305 c	306 a	307 c	308 b
309 d	310 a	311 b	312 a	313 c	314 a	315 c	316 d	317 c	318 b	319 c	320 b	321 c	322 d
323 c	324 c	325 c	326 c	327 d	328 c	329 b	330 c	331 d	332 d	333 a	334 b	335 b	336 c
337 d	338 b	339 b	340 b	341 a	342 b	343 b	344 b	345 d	346 c	347 c	348 d	349 d	350 a
351 a	352 c	353 d	354 a	355 c	356 c	357 b	358 b	359 d	360 a	361 c	362 b	363 a	364 d
365 b	366 a	367 d	368 .c	369 b	370 a	371 c	372 d	373 c	374 b	375 b	376 b	377 d	378 c
379 d	380 c	381 b	382 d	383 b	384 a	385 b	386 a	387 b	388 a	389 b	390 c	391 c	392 d
393 b	394 c	395 d	396 a	397 d	398 d	399 d	400 d	401 d	402 a	403 b	404 d	405 d	406 d
407 b	408 c	409 c	410 c	411 d	412 b	413 d	414 b	415 a	416 a	417 b	418 b	419 a	420 c
421 b	422 b	423 b	424 b	425 b}	426 c	427 c	428 b	429 b	430 c	431 d	432 b	433 c	434 c
435 b	436 b	437 a	438 b	439 d	440 b	441 d	442 b	443 c	444 c	445 d	446 d	447 a	448 d
449 b	450 b	451 b	452 b	453 a	454 c	455 c	456 c	457 a	458 a	459 a	460 a	461 b	462 b
463 d	464 a	465 b	466 d	467 c	468 c	469 a	470 b	471 b	472 c	473 a	474 b	475 c	476 c
477 e	478 b	479 c	480 c	481 a	482 c	483 a	484 c	485 a	486 a	487 d	488 c	489 a	490 d
491 d	492 b	493 c	494 d	495 b	496 c	497 b	498 d	499 d	500 b	501 b	502 a	503 d	504 b
505 a	506 d	507 a	508 a	509 d	510 c	511 a	512 d	513 c	514 a	515 b	516 d	517 a	518 c
519 d	520 b	521 d	522 a	523 c	524 b	525 b	526 b	527 d	528 c	529 c	530 d	531 a	532 a
533 b	534 b	535 a	536 a	537 d	538 d	539 a	540 b	541 d	542 a	543 c}	544 b	545 a	546 b
547 b	548 a	549 d	550 d	551 d	552 a	553 a	554 a	555 a	556 d	557 b	558 c	559 b	560 c
561 d	562 d	563 d	564 b	565 a	566 d	567 a	568 b	569 d	570 a	571 a	572 a	573 d	574 a
575 c	576 a	577 a	578 d	579 a	580 d	581 c	582 c	583 b	584 a	585 b	586 c	587 b	588 b
589 a	590 d	591 'a	592 b	593 b	594 c	595 d	596 b	597 d	598 c	599 a	600 a	601 a	602 d
603 d	604 c	605 d	606 a	607 c	608 a	609 d	610 d	611 d	612 d	613 b	614 d	615 b	616 d

617 c	**618** a	**619** a	**620** a	**621** c	**622** d	**623** b	**624** a	**625** a	**626** a	**627** c	**628** c	**629** c	**630** a
631 d	**632** b	**633** c	**634** b	**635** c	**636** c	**637** b	**638** b	**639** a	**640** d	**641** d	**642** d	**643** a	**644** d
645 d	**646** b	**647** a	**648** d	**649** a	**650** a	**651** c	**652** a	**653** a	**654** a	**655** b	**656** b	**657** a	**658** d
659 d	**660** c	**661** c	**662** a	**663** d	**664** a	**665** c	**666** d	**667** d	**668** d	**669** a	**670** c	**671** c	**672** d
673 a													

1. (b) Side of square = $\frac{Diagnnal}{\sqrt{2}}$

Area of square = $\frac{Diagnnal^2}{\sqrt{2}}$

= $\frac{(5.2)^2}{2} = \frac{5.2\times5.2}{2}$

= 2.6 × 5.2 = 13.52 cm^2

2. (c) Area of square

= $\frac{Diagnnal^2}{2}$ = $\frac{a^2}{2}$

3. (a) Let the length of rectangular hall = x

Thus, Breadth of rectangular hall

= $\frac{3}{4}x$

According to Question,

Area = 768 m^2

x × $\frac{3}{4}x = 768$

$\frac{3}{4}x^2 = 768$

$x^2 = \frac{768\times4}{3}$

= 256 × 4

x = $\sqrt{256\times4}$

= 32m

Difference of length and breadth

= x – $\frac{3}{4}x = \frac{x}{4}$

$= \frac{32}{4} = 8\,m$

4. (c) Since the room is in cuboid shape =

Length of largest rod = = Diagonal of cuboid

= √$(l^2 + b^2 + h^2)$

= √$(16^2 + 12^2 + \frac{32^2}{3^2})$

√ $\left(256 + 144 + \frac{1024}{9}\right)$

= √$\frac{2304+1296+1024}{9}$

= √$(\frac{4624}{9})$ = $\frac{68}{3} = 22\frac{2}{3}\ m$

5. (b) Perimeter of square = 44 cm

4 × side = 44

side = 11 cm

area of square = $side^2$ = 11^2 = 121 cm^2

Circumference of circle = 44cm

2 π(radius) = 44

radius = $\frac{44\times7}{2\times22} = 7\,cm$

area of circle = $\frac{22}{7}\times7\times7 = 154$ cm^2

Option (b) is the answer. (circle, 33 cm^2)

6. (b) Let the side of square = a

and the radius of circle = r

perimeter of square = circumference of circle = 4a

= 2πr

r = $\frac{4a}{2\pi}$

area of circle = 3850 m^2

π × $\frac{4a}{2\pi}\times\frac{4a}{2\pi} = 3850$

$16a^2$ = $\frac{3850\times2\times2\times22}{7}$, a^2 = 3025m^2

7. (b) 2(l + b) = 28

l + b = 14

and l × b = 48

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

$(14)^2 = l^2 + b^2 + 48 \times 2$

196 – 96 = $l^2 + b^2$

$l^2 + b^{2} = 100$

√($l^2 + b^2$) = 10

Diagonal = 10m

8. (c) Let the length of rectangular hall = x

Thus, Breadth of rectangular hall

= $\frac{3}{4}\ x$

According to question,

Area = 192m^2

x × $\frac{3}{4}x = 192$

$\frac{3}{4}x2 = 192$

x^2 - $\frac{192\times4}{3}$ = 64 × 4

x = √(64 × 4) = 16 cm

Difference of length and breadth

$= x - \frac{3}{4}x = \frac{x}{4}$

= 16/4

= 4 cm

9. (d) Side of the square

$= \frac{Diagonal}{\sqrt{2}} = \frac{4\sqrt{2}}{\sqrt{2}}$ = 4

Area of the square = 16

Area of new square =32

Side of new square = √32

$= 4\sqrt{2}$

Diagonal of new square = $4\sqrt{2} \times \sqrt{2}$

= 8 cm

10. (d)

Diagonal of square A = (a + b)

Side of square = $\frac{Diagonal}{\sqrt{2}} = \left[\frac{a+b}{\sqrt{2}}\right]^2$

$= \frac{(a+b)^2}{2}$

Area of square = B = 2 × Area of square

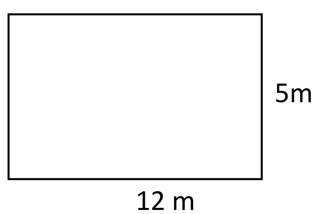
$= 2 \times \frac{(a+b)^2}{2} = (a+b)^2$

side of square B = $\sqrt{(a+b)^2}$

= (a + b)b

Diagonal of square B =√2(a + b)

11. (a)



Area of the rectangular garden = 12 × 5 = 60 m^2

Thus, Area of square = 60

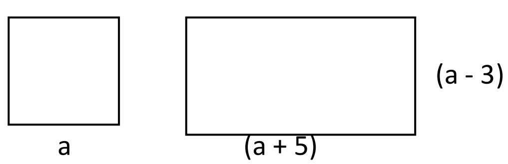
$(side)^2 = 60$

Side = √60

Diagonal of the square = √2 = √2 × √60 = √120

= 2√30 m

12. (c)



According to question,

$a^2 = (a + 3 (a + 5)$

$a^2 = a^2 + 5a - 3a - 15$

2a = 15

$a = \frac{15}{2}$

Length = a + 5 $= \frac{15}{2} + 5$

$= \frac{25}{2}$

Breadth = a – 3 $= \frac{15}{2} - 3 = \frac{15-6}{2}$

$= \frac{9}{2}$

perimeter of the rectangular = 2(l + b)

$= 2\left(\frac{25}{2} + \frac{9}{2}\right) = 34\ cm$

13. (a) According to question,

2(l + b) = 160

(l + b) = 80 .... (i)

(l - b) = 48 .... (ii)

on solving (i) and (ii)

1 = 64, b = 16

Area of square = Area of rectangle

$(side)^2 = 64 \times 16$

side = $\sqrt{64} \times 16$

= 32 m

14. (b) Side of square, whose perimeter = 24 cm

$= \frac{24}{4} = 6$ cm

So area of square = $6^2 = 36\ cm^2$

Again, side of square, whose perimeter is 32 cm

= 32/4 = 8 cm

So area of this square = 8^2

= 64 cm^2

According to the question,

Area of new square = 64 + 36 = 100 cm^2

Side of the new square

= √100 = 10 cm

Hence perimeter of new square = 10 × 4 = 40 cm

15. (d) $(side)^2 = 484$ cm

side = 22 cm

Perimeter of square = 4 × 22 = 88 cm

According to question, 2πr = 88 cm

$r = \frac{88\times7}{2\times22} = 14\ cm$

Area of circle = $\pi r^2 = \frac{22}{7} \times 14 \times 14$

= 616 cm^2

16. (d) l = 10 m, b = 6 m, h = 4 m

Length of diagonal (longest + rod)

$= \sqrt{100+36+16} = \sqrt{152}$ m

17. (b) Let the length of smaller line segment = x cm

The length of larger line segment = (x + 2) cm

According to question,

$(x+2)^2 - x^2 = 32$

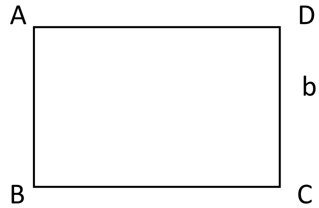
$x^2 + 4x + 4 - x^2 = 32$

$x = \frac{28}{4} = 7$

The required length = x + 2

= 7 + 2 = 9 cm

18. (d)



BD = Length of diagonal = Speed ×Time

$\frac{52}{60} \times 15 = 13\ cm$

BD = $\sqrt{(l^2 + b^2)}$

$\rightarrow (l^2 + b^2) = 13^2 = 169$

Again, $(l^2 + b^2) = \frac{68}{60} \times 15 = 17$

$(l + b) = l^2 + b^2 + 21b$

$17^2 = 169 + 21B$

$1B = \frac{120}{2} = 60m^2$

19. (d) Let the breadth be = x m

Thus, Length = 206

2 (x + 23 + x) = 206

4x = 206 – 46

$x = \frac{160}{4} = 40$ m

Thus, Length = 40 + 23 = 63 m

Thus, Required area= 63 × 40 = 2520 m^2

20. (b) Length of rectangle = 48 m

Breadth of rectangle = 16m

According to question,

Perimeter of square =

Perimeter of rectangle = 2 (48 + 16)

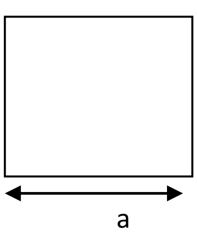
4 × side = 2 × 64

side = $\frac{2\times 64}{4} = 32$

Thus, Area of the square = $(side)^2 = (32)^2$

= 1024

21. (a)



Area of third square= $a^2 – b^2$

= $10^2 – 8^2$

= 100 – 64

= 36 cm^2

Side of third square= √36 = 6 cm

Perimeter of third square = 4 × 6

= 24 cm

22. (a) Side of the square= $\frac{Perimeter}{4}$

thus, Sides of all five squares are

$= \frac{24}{2}, \frac{32}{4}, \frac{40}{4}, \frac{76}{4}, \frac{80}{4} = 6, 8, 10, 19, 20$

ATQ

Area of another square = $6^2 + 8^2, 10^2, 19^2, 20^2$

$Side^2$= 36 + 64 + 100 + 361 + 400

side = √961 = 31

23. (c)

Area of the tank = Length × breadth

= 180 × 120 = 21600 m^2

Total area of the circular plot

= 40000 + 21600 = 61600

$\pi\ (radius)^2 = \frac{61600\times 7}{22}$

radius = $\sqrt{2800 \times 7}$

$= \sqrt{7} \times 7 \times 100$

= 7 × 20

= 140

24. (d) Let the breadth of rectangle = x m

Thus, Length = (x + 5) m

Thus, Area of hall = Length × breadth

(x + 5)x

= 750

= 30 × 25

(clearly 750 = 30 × 25)

Thus, x = 25, Breadth = 25m

Length = 25 + 5 = 30 m

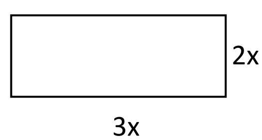
25. (d) Required total area

= Area of four walls + Area of base

= 2 × 1.25(6 + 4) + 6 × 4

= 49 m^2

26. (a)



Ratio of length and breadth = 3 2

2(l + b) = 20 cm

2 (3x + 2x) = 20 cm

2 × 5x = 20 cm

10x = 20

x = 2

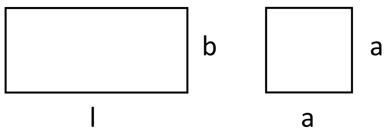
Thus, Length = 3 × 2 = 6 cm

breadth= 2 × 2 = 4 cm

area = Length × breadth

$= 6 \times 4 = 24 \text{ cm}^2$

27. (d)



$2(l + b) = 160$ m $4a = 160$

$(l + b) = 80$ m .... (i)

$a = 40$ m

ATQ

$a^2 – lb = 100$

$(40)^2 - lb = 100$

$1600 – lb = 100$

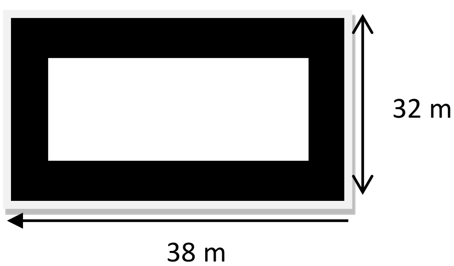
$lb = 1500$

Clearly, $50 + 30 = 80$

and $50 \times 30 = 1500$

length = 50 m

28. (b)



area of path = 600 m^2

$(l + b – 2x) = 600$

$(38 + 32 - 2x)2x = 600$

$(70 + 2x)2x = 60$

$(70 – 2x)x = 600/2 = 300$

$70x – 2x^2 = 300$

$2x^2 - 70x + 300 = 0$

$x^2 – 35x + 150 = 0$

$x^2 - 30x + 5x + 150 = 0$

$x(x – 30) – 5(x - 30) = 0$

$(x – 30)(x - 5) = 0$

$x = 30$ not possible

$x = 5$ (right)

29. (c) Area of walls = Perimeter of base × height = 18 × 3 = 54 m^2

$a = 9$

30. (d) $a^2 = 81$, $a = 9$

→ Perimeter of square

$= 9 \times 4$

$= 36$ cm

→ $2r + \pi r = 36$

$r(r + \pi) = 36$

$r = \frac{36}{2+\frac{22}{7}} = 7c$

31. (a) $a^2 = 21$ $a = 11$

→ Perimeter of square

$= 11 \times 4$

$= 44$ cm

→ Cricumference of circle

$= 44$

$2\pi r = 44$

$2 \times \frac{22}{7} \times r = 44$

→ $r = 7$cm

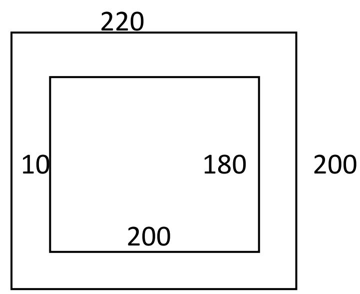
32. (d)

Let the no. of hours be x

→ $(0.3 \times 0.2 \times 20000) \times x = 200 \times 150 \times 8$

→ $x = \frac{200 \times 150 \times 8}{3 \times 2 \times 200} = 200$ hrs

33. (a)



Area of path = $200 \times 220 – 200 \times 180$

$= 44000 – 36000 = 8000 \text{ m}^2$

34. (c) Diagonal of square = diaeter of circle

$= 8 \times 2$

$= 16$ cm

Thus, Side of square $= 16/\sqrt{2}$

→ Area of square $(8\sqrt{2})^2$

$= 128 \text{ cm}^2$

35. (a) Side of square $= \frac{8\sqrt{2}}{\sqrt{2}} = 8$ cm

Thus, Area of square = $8 \times 8 = 64 \text{ cm}^2$

36. (a) $x^2 + 7x + 10 = x^2 + 5x + 2x + 10$

$= x(x + 5) + 2(x + 5)$

$= (x + 2)(x + 5)$

Thus, Two sides of rectangle

$= (x + 2)(x + 5)$

Thus, Perimeter = $2(x + 2 + x + 5)$

$= 2(2x + 7) = 4x + 14$

37. (c) Let the sides of rectangle be 6 cm and 2 cm (or any other number)

→ Area of rectangel Q = 6×2

$= 12 \text{ cm}^2$

Side of square = 4 cm

→ Side of square (P) = 4 × 4 = 16 cm^2

→ P > Q

38. (b) No. of cubes with no side painted = $(n - 2)^8$

Where n is the side of the bigger cube

Requried number = $(6 - 2)^8$ = 64

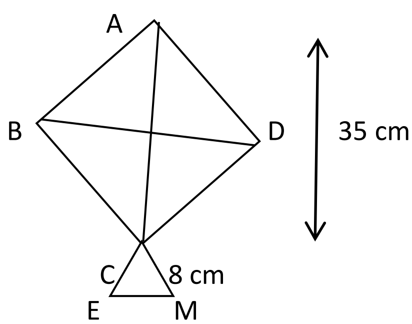
39. (d) Side of squre = $\frac{Diagonal}{\sqrt{2}}$

$= \frac{15\sqrt{2}}{\sqrt{2}} = 15\ cm$

Area of square= $(side)^2 = (15)^2$

= 225 cm^2

40. (a)



Area of square = $\frac{1}{2}\ (Diagonal)^2$

$= \frac{1}{2}(32)^2$

$= \frac{1}{2} \times 32 \times 32 = 16 \times 32$

= 512 cm^2

Area of triangel = $\frac{\sqrt{3}}{4}(8)^2 = \frac{1.732 \times 8 \times 8}{4}$

= 1.732 × 2 × 8

= 27.712 cm^2

Required are = (512 + 27.712) cm^2

= 539. 712 cm^2

41. (a) Area of the lawn $= \frac{1}{12}$ hectare

Length × breadth = 1/12 × 10000 m^2

Length × breadth = $\frac{1}{12} \times 10000\ m^2$

= 4x × 3x = $\frac{10000}{12}$ m^2

= $12x^2 = \frac{10000}{12}$

= $x^2 = \frac{10000}{12}$

x = $\frac{100}{112}$

Breadth =

$\frac{100}{4}$ = 25

42. (a) Let the side of squqre = a cm

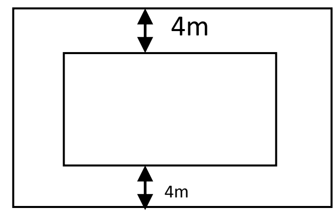
ATQ

l × 2 = 3x

$20 \times \frac{3}{2}\ a = 3a^2$

a = 10

43. (d)



Area of path = (l + b + 2x)2x

Thus, Where x = thinkness of path

Let 1 = 7p,b = 4p

7p + 4p + 2(4) 2(4) = 416

(11p + 8)8 = 416

11p + 8 = 52

11p = 44

p = $\frac{44}{11}$ = 4, p = 4

Thus, breadth = 4 × 4 = 16 m

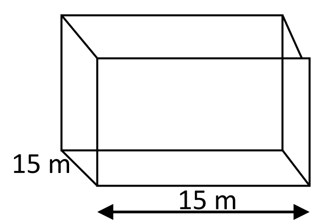
44. (d) Area of the floor= 8 × 6 = 48 m^2

= 4800 dm^2 (1m = 10 dm)

= 4 × 4 = 16 dm^2

No. of tiles = $\frac{4800}{16} = 300$

45. (b)



Shape of godown is cuboidal

(1) Length = 15 m , breadth = 12 m height

Area of four walls = 2 (l + b) × h

area of floor = (l + b)

ATQ

(l + b) + (l + b)= 2(l + b) × h

2(l + b)= 2(l + b) × h

2(15 × 12) = 2(15 + 12) × h

= 2 × 27 × h

2 × 180 = 2 × 27 × h

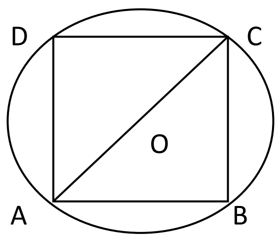
h $= \frac{180}{27} = \frac{20}{3}\ m$

Volume of the cuboid = 1 × b × h

$= 15 \times 12 \times \frac{20}{3}$

= 60 × 20 = 1200 m^3

46. (a)



side of a square = AB

= √2 a units

Thus, AC = Diagonal = √2 × √2 a

Thus, Diameter = 2 a units

Circumference = π × diameter

= π × 2a = 2πa units

47. (b) Perimeter of rectangle = 40m

Length = 12 meter

Thus, 2(12 + b) = 40

$12 + b = \frac{40}{2} = 20$

b = 20 – 12 = 8 m

48. (d) Percentage increase in area

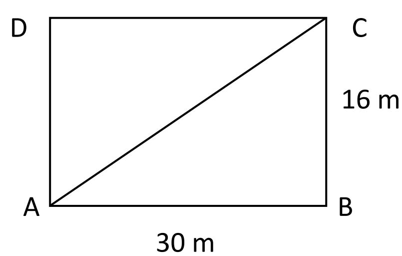
$= \left(x + y + \frac{xy}{100}\right)\%$

Here, x = 100%, y = 100%

$= 100 + 100 + \frac{100 \times 100}{100}\ \%$

= 300%

49.



AC =√(AB^2 + BC^2) = √(30^2 + 16^2)

= √(900 + 256)

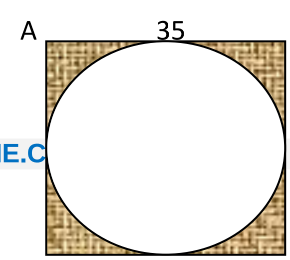
= √1156 = 34 meter

Distance travelled by elephant

= 34 – 4 = 30 meter

Speed of elephant $= \frac{30}{15} = 2\ m/s$

50. (b)



35 35

D 35 C

According to the question,

Radius of circle = $= \frac{35}{2}$

Required area of shaded portion

$= (35)^2 - \frac{22}{7} \times \frac{35}{2} \times \frac{35}{2}$

= 1225 – 962.5 = 262.5 m^2

51. (b) Diagonal of square = √2 side of square

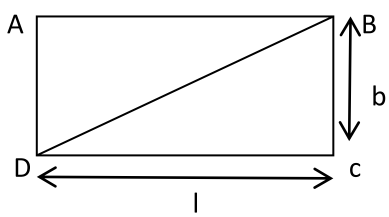
Here $a = \frac{1}{2}$ (x + 1) and $d = \frac{3-x}{\sqrt{2}}$

Thus, d = √2a

→ $\frac{3-x}{\sqrt{2}} = \sqrt{2}\ [\frac{1}{2}\ (x+1)]$

Thus, x = 1 unit

52. (a)



Let ABCD is a rectangular carpet having length 1 meter and breadth b meter and BD is a diagonal

→ As we know

→ l × b = 120 ……. (i)

→ Area

→

2(l × b) = 46

→ Perimeter

Using formula

→ $(l \times b)^2 = l^2 \times b^2 + 2lb$

→ $(23)^2 = l^2 \times b^2 + 2 \times 120$

→ $529 = l^2 \times b^2 + 240$

$l^2 \times b^2 = 529 - 240$

→ $l^2 \times b^2 = 529 - 240$

→ $l^2 \times b^2 = 289$

→ $\sqrt{(l^2 \times b^2)} = \sqrt{289}$

Diagonal = 17

Diagonal of carpet is17 meters

53. (c)

Diagonal of a square = 6√2 cm

Side of a square = $\frac{6\sqrt{2}}{\sqrt{2}}$ cm

Area of a square = = 6 × 6 = 36 cm^2

54. (c)

Let the breadth; of floor = x m

Then the length of floor = (x + 3)m

ATQ

$x^2 + (x + 3) = 70$

$x^2 + 3x - 70 = 0$

$x^2 + 10x + 7x – 70 = 0$

$(x + 10)(x - 7) = 0$

x = 7 , x = - 10

Breadth = 7m

Length = 10m

Perimeter of floor = 2 (l + b)

= 2 (10 + 7)

= 34m

55. (d) Let the breadth of rectangle = x m

then the length of rectangle = 2x m

ATQ

x × 2x = 417.605

$2x^2 = 417.605$

$x^2 = \frac{4170.605}{2}$

x = √(83521/400)

$x = \frac{289}{20}$

Breadth = $\frac{289}{20}$ m

Length = $\frac{289}{20} \times 2 = 28.90\ m$

56. (b) Radius of circle = 5 cm

Length of arc = l = 3.5 cm

Thus, Area of sector = $\frac{1}{2} lr.$

$= \frac{1}{2} \times 3.5 \times 5 = 8.75$ cm^2

57. (c)

Radius of circular wheel = 1.75m

Circumference of circular wheel = 2πr = 2 $\frac{22}{7} \times 1.75\ m$

No. of revolutions = $\frac{Distance\ to\ be\ covered}{Circumference\ of\ cicle}$

$= \frac{11000m}{2\times\frac{22}{7}\times 1.75\ m} = \frac{11000}{11} = 1000$

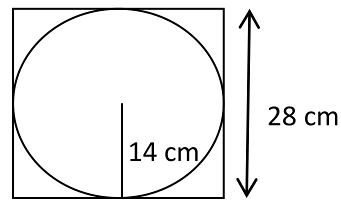
58. Circumference of wheel = 2 π r\

= 2 × $\frac{22}{7}$ × 21 cm = 132 cm

No. of revolutions = $\frac{(Distance\ to\ be\ covered)}{Circumference\ of\ circle}$

$= \frac{924\times 100}{132}$ = 700

59. (d)



Radius to the largest circle

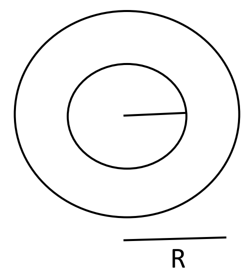
$= \frac{1}{2} \times (side\ of\ squre)$

$= \frac{1}{2} \times 28$ = 14 cm

Area of the circle = π $(radius)^2$

$= \frac{22}{7} \times 14 \times 4$ = 616 cm^2

60. (b)



Thus: 2 πr = 88

r $= \frac{88\times 7}{2\times 22}$ = 14 cm

2 πR = 88

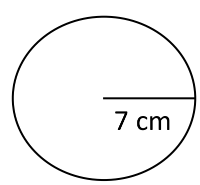
R $= \frac{132\times 7}{2\times 22} = 21\ cm$

The area between two circle

π (21 + 14) (21 – 14)

$= \frac{2}{7} \times 35 \times 7 = 770$ cm^2

61. (b)



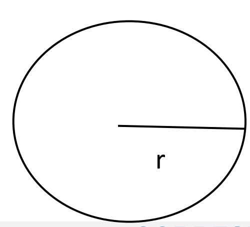
Circumference of wheel = 2 π r

= 2 × $\frac{22}{7}$ × 7

= 44 cm

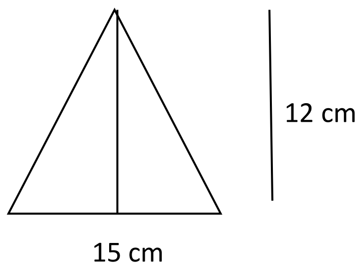
Thus, total distnace travelled by wheel in 15 revolutions = 15 × 44 cm = 660 cm

62. (c)



Circumference = 2 π r
Distance covered in 1 min
= 52 × $\frac{8}{40}\pi\, r$
new circumference = 2 × π × r × 10
Time taken = $\frac{2\pi r \times 10 \times 40}{2\pi r\ \times 8}$ = 50 min

63. (b)



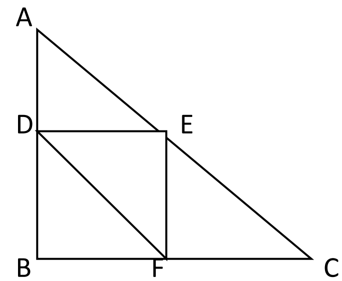
Areao fthe triangel = $\frac{1}{2} \times base \times heinght$
= +1/2 × 15 × 12
= 90 cm^2
Area of another triangle = 2 × 90 = 180 cm^2
$\frac{1}{2} \times base \times height = 180$
$\frac{1}{2} \times 20\ height = 180$
Height = $\frac{180 \times 2}{20}$ $= 18\ cm$

64. (b)

Area of the square = 81 cm^2
Side of the square = √81 = 9 cm
Perimeter of the squre = 4 × 9 = 36 cm
Now, According to the question,
π r + 2r = 36
r (π + 2) = 36
r = $\frac{36}{\frac{22}{7}+2}$ = $\frac{36 \times 7}{22+14}$
= $\frac{36 \times 7}{36}$ = 7
Area of the semi circle with radius 7
= $\frac{22}{7}$ ×7^2/ 2 = 77 cm^2

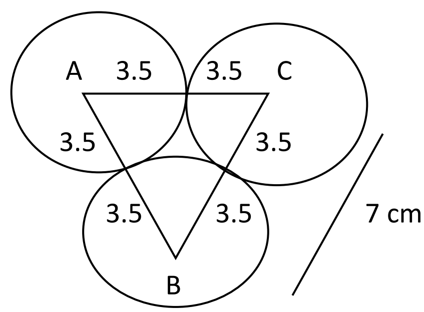
65. (b) Area of square = (12)^2
= 144 cm^2
Area of triangel = $\frac{1}{2} \times base \times height$
= $\frac{1}{2}$× 12 × height
= $\frac{1}{2} \times 12 \times height$ = 144
Height = $\frac{144 \times 2}{12}$ $= 24\ cm$

66. (c)



Thus, 3^2 + 4^2 = 5^2
ABC is a right angled triangle
ar(ABC) = $\frac{1}{2} \times AB\ \times BC$
$\frac{1}{2}$ × 3 × 4 = 6 cm^2
thus, Requred Area of (Δ DEF)
= $\frac{1}{4}$× 6 = $\frac{3}{2}$ cm^2
= $\frac{1}{4}$× 6 = $\frac{3}{2}$ cm^2

67.



AB = BC = AC = 7 cm
Area enclosed =
Area of equilateral Δ ABC -
$\frac{1}{2}$ $(area\ of\ 1\ circle)$
= $\frac{\sqrt{3}}{4}$ × 7 × 7 - $\frac{1}{2}$ $\left[\frac{22}{7} \times 3.5 \times 3.5\right]$
= 1.967 cm^2

68. (a) Thus, πr^2 = 2464 cm^2
→ r = $\frac{\sqrt{2464 \times 7}}{22}$
= √794 = 28 m
Thus, Diameter = 2r = 2 × 28 = 56 cm
=

69. (b) Requried area = Area o0f square Area of circle
= (2a)^2 - π (a)^2
= 4a - $\frac{22}{7}$a^2

$= \frac{28a^2 - 22a^2}{7} = \frac{6a^2}{7}$

70. (c) Diameter of the circle = Side of square

2r = 21

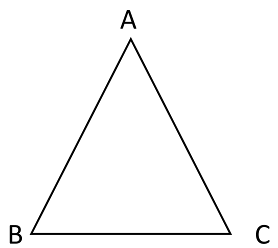
r = $\frac{21}{2} m$

Area = π r² = π $(\frac{22}{2})^2$

$= \frac{22}{7} \times \frac{21}{2} \times \frac{21}{2} = \frac{693}{2}$ cm²

$= 346\frac{1}{2}$ cm²

71. (a)



Thus, Area of an equilateral triangle = 400 √3

$\frac{\sqrt{3}}{4}$ (side)² = 400√3

(side)² = $\frac{400\sqrt{3}\times 4}{\sqrt{3}}$ = 1600

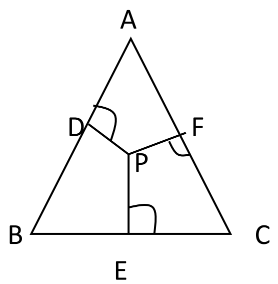
side = 40m

perimeter = 3 × side

= 3 × 40

= 120 m

72. (c)



Let P be the point inside the equilateral Δ ABC

Let, PD = √3, PE = 2√3

PF = 5√3

and = AB = BC = AC = x

ar (ABC)

$(\frac{1}{2} \times x \times \sqrt{3} + \frac{1}{2} \times x \times 2\sqrt{3} + \frac{1}{2} \times x \times 5\sqrt{3})$

$\sqrt{3x} = 2\sqrt{3} + 4\sqrt{3} + 10\sqrt{3}$ = 16

Thus, Perimeter of triangel = 3x = 3 × 16 = 48 cm

Alternative :

Side of equilatera Δ

$= \frac{2}{\sqrt{3}} (\sqrt{3} + 2\sqrt{3} + 5\sqrt{3})$

$= (\frac{2}{\sqrt{3}} \times \frac{8}{\sqrt{3}} = 16\ cm)$

Perimeter = 3 × sides

= 3 × 16

= 48 cm

73. (c) Perimeterof Δ = 30 cm

Area = 30 cm²

Check the triplet =

{(5, 12, 13), (3, 4, 5)}

Whose largest side is 13,

Also, 5² + 12² = 13²

And perimeter = 5 + 12 + 13

= 30 cm

Smallest side = 5 cm

74. (b) Diameter of the wheel = 3m

Circumference = (π × diameter $= \frac{22}{7} \times 3 = \frac{66}{7}$)

Since a wheel covers a distance equal to its circumfrerence in one revolution therefore distance covered in 28 revolutions

= 28 × $\frac{66}{7} = 264\ m$

264 meters covered = 1 minute

1 meter covered = $\frac{1}{264} minute$

5280 meters covered = $\frac{5280}{264}$

= 20 minutes

75. (b) Distance covered = 2 km 26 decameters

= (2 × 1000 + 26 × 10)

(1 decameter = 10 meter)

= 2260 m

Distance coverd in 1 revolution =

$\frac{Total\ Distance}{Number\ of\ revolutions} = \frac{2260}{113}$

= 20 m

Now, π × dameter = 20

diameter = $\frac{20\times 7}{22}$

$= \frac{70}{11} = 6\frac{4}{11}$ m

76. (a) Distance coverd in 1 revolution

= Circumference of wheel

= 2 × $\frac{22}{7}$ × 1.75 m

No. of revolution

$= \frac{11\times 1000}{2\times\frac{22}{7}\times 1.75} = 1000$

77. (b) Radius of circle = $\frac{Circumference}{2\pi} = \frac{100}{2\pi}$

When a square is inscribed in the circle, diagonal of the squre is equal to diameter of the circle

Thus, Diagonal of square = $2 \times \frac{100}{2\pi} = \frac{100}{\pi}$

Thus, side of square= $\frac{Diagonal}{\sqrt{2}} = \frac{100}{\sqrt{2}\pi} = \frac{50\sqrt{2}}{\pi}$

78. (c) Let outer Radius =R

and inner Radius = r

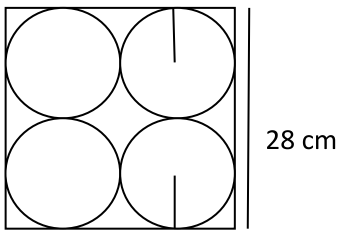
2πR - 2πr = 132

2π(R - r) = 132

R – r = $\frac{132\times7}{2\times22} = 21$

Hence, width of path = 21 meters

79. (b)



side of squre papersheep

= √794 = 28 cm

= $\frac{28}{4} = 7\ cm$

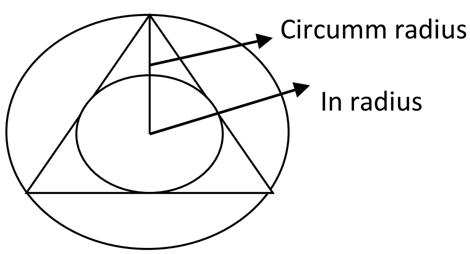
Thus, Circumference of each circular plate

= 2 π r

= 2 × 22/7 × 7

= 44 cm

80. (c)



Circum radius of equilateral triangle

= $\frac{side}{\sqrt{3}}$

In radius of equilatera tringle

= $\frac{Side}{2\sqrt{3}}$

$\frac{Side}{\sqrt{3}}$ = 8

Side = 8√3

Thus, In radius of equilateral triangle

= $\frac{side}{2\sqrt{3}}$ = $\frac{8\sqrt{3}}{2\sqrt{3}}$ = 4 cm

81. (b) radius of each circle = 1 cm

with all the three centres an equilateral triangle of side 1 cm is formed.

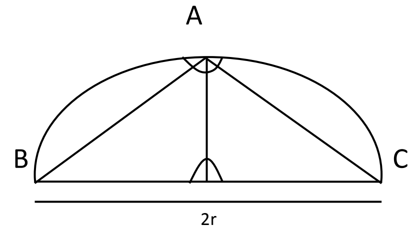
area enclosed by conins = (Area of equilateral triangle – 3x (area of sector of angle 60°)

= $\frac{\sqrt{3}}{4}$ $(2\times2) - 3\times\frac{60}{360}\times\pi(1\times1)$

= $\frac{\sqrt{3}}{4}\times4 - 3\times\frac{1}{6}\times\pi$

= $\left(\sqrt{3}-\frac{\pi}{2}\right)$ cm^2

82. (b)

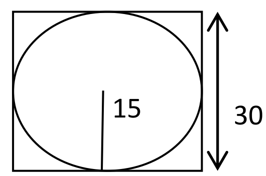


M is the centre , BM = CM = r

AM ⊥ BC_1 (AM = r)

area of Δ ABC = $\frac{1}{2}\ r\times2r$ = r^2

83. (a)



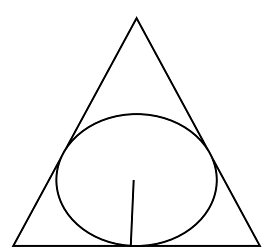
Side of the square = $\frac{Perimeter}{4}$ = 120/4 = 30 cm

radius of the circle = $\frac{Side}{2} = \frac{30}{2} = 15\ c,$

Area of the circle = $\frac{22}{7}\times(radius)^2$

= $\frac{22}{7}\times(15)^2$

84.



radius of in circle

$\frac{Side}{2\sqrt{3}} = \frac{42}{2\sqrt{3}} = 21\sqrt{3}$ cm

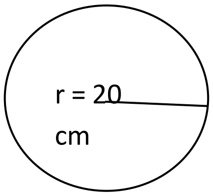
area of incricle

= $\frac{22}{7}\times\left(\frac{21}{\sqrt{3}}\right)^2$

$= \left(\frac{22}{7}\right) \times \frac{21\times21}{3}$

$= 22 \times 21 = 462\ cm^2$

85.

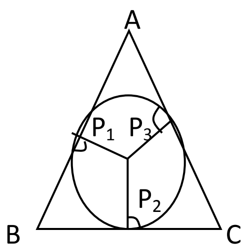


whell of radius 20 cm no. of revolutions

$\frac{distance\ to\ cover}{circumference\ of\ wheel}$

$= \frac{17600\times7}{2\times22\times20} = 140$

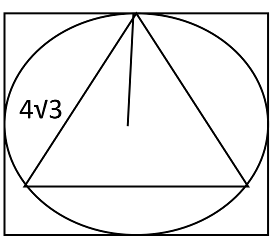
86. (a)



In an equilatera triangel

side = $\frac{2}{\sqrt{3}}(P_1 + P_2 + P_3)$

87. (c)



side of equilateral triangle

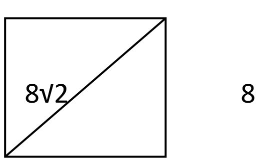
= 4√3

Ccircumradius of traingle = $\frac{Side}{\sqrt{3}} = \frac{4\sqrt{3}}{\sqrt{3}} = 4$

See the figure

side of square = 2 × circum radius

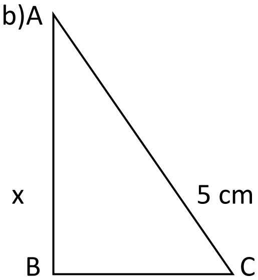
= 2 × 4 = 8



8

Diagonal of square = 8√2 cm

88. (b)



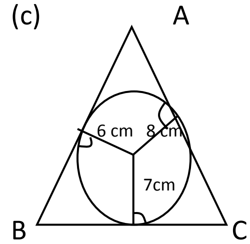
isoceleus right traingle

Thus, $x^2 + x^2 = 5^2 = 25$

Area of trinagle

$= \frac{1}{2} \times x^2 = \frac{1}{2} \times \frac{25}{2} = 6.25 cm^2$

89. (c)



Length of side = $\frac{2}{\sqrt{3}}(P_1 + P_2 + P_3)$

$= \frac{2}{\sqrt{3}}(6+7+8)$

$= \frac{2}{\sqrt{3}} \times 21$

$= \frac{42}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = \frac{42\sqrt{3}}{3}$

= 14√3 cm

90. (c) Remember : area of isoceleus triangle

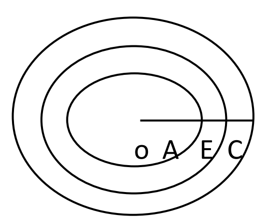
$= \frac{1}{2}a^2 \sin\theta$ (θ is angle between equal sides)

$= \frac{1}{2}(10)^2 \times \sin 45°$

$= \frac{100}{2} \times \frac{1}{\sqrt{2}} = \frac{50}{\sqrt{2}} \times \frac{\sqrt{2}}{\sqrt{2}}$

$= 25\sqrt{2}\ cm^2$

91. (a)



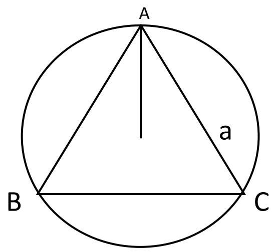
Radius of circule = 6 cm

Area of smallest circle = $\frac{6^2\times2}{3} = 12\pi$

Radius of smallest circle

$= \frac{\sqrt{12\pi}}{\pi} = 2\sqrt{3}$ cm

92.



$\frac{\sqrt{3}}{4}a^2 = 4\sqrt{3}$

$a^2 = 4 \times 4$

$a = 4$ cm

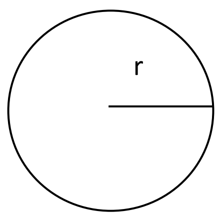
Circum radius = $\frac{a}{\sqrt{3}} = \frac{4}{\sqrt{3}}$

Area of circle = πr^2

$= \pi \left(\frac{4}{\sqrt{3}}\right)^2$

$= \frac{16}{3}\pi$ cm^2

93. (b)



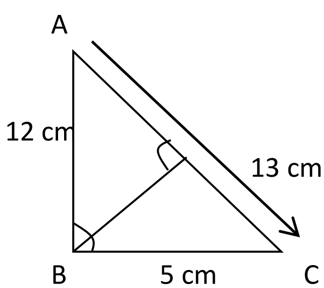
Circumference – diameter = 30 cm

$2\pi r - 2r = 30$

$2r(\pi - 1) = 30$

$r = \frac{30}{2(\frac{22}{7} - 1)} = \frac{30 \times 7}{2 \times 15} = 7\ cm$

94. (b)



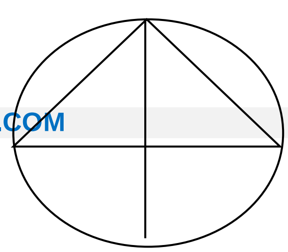
AC $= \sqrt{[(12)^2 + (5)^2} = \sqrt{(144 + 25)}$

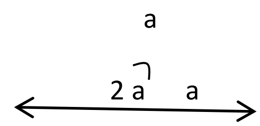
$= \sqrt{169} = 12\ cm$

Thus, Length of perpendicular to hypotenuse to = $\frac{Perpendicular \times Base}{Hyopotence}$

$= \frac{12 \times 5}{13} = \frac{60}{13} = 4\frac{8}{13}\ c$

95. (c)





Area of shaded region

= area of semicircle - area of triangle

$= \frac{\pi(a)^2}{2} - \frac{1}{2} \times a \times 2a$

$= \frac{\pi(a)^2}{2} - a^2 = a^2\left(\frac{\pi}{2} - 1\right)\ sq\ units$

96. (c) According to question

$\pi(R + 1)^2 - \pi R^2 = 22$

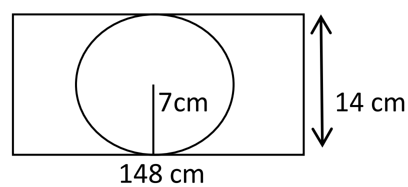
$\pi\{(R + 1)^2 - R^2\} = 22$

$(R + 1 + R)(R + 1 - R) = \frac{22 \times 7}{22} = 7$

$2R + 1 = 7$

$R = 3$ cm

97. (b)

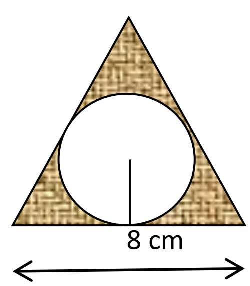


radius of lartgest circle

$= \frac{breadth}{2} = \frac{14}{2} = 7\ cm$

Area $= \frac{22}{7} \times 7 \times 7 = 154$ cm^2

98.



In radius of circle (r) =

side/$\sqrt{3}$ $= \frac{8}{2\sqrt{3}} = \frac{4}{\sqrt{3}}$

Area of circle = $\pi \left(\frac{4}{\sqrt{3}}\right)^2$

$= \frac{22}{7} \times \frac{4 \times 4}{3}$

$= \frac{22 \times 16}{21}$

= 16.76

Required area

$\left(\frac{\sqrt{3}}{4}\right)(8)^2$ - $\frac{22\times16}{21}$

= $\left(\frac{\sqrt{3}}{4}\times 64 - 16.76\right)$

$= 16\sqrt{3} - 16.76$

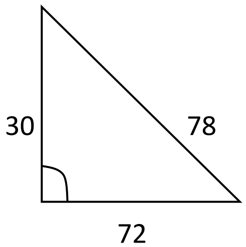
$= 27.71 - 16.76$

$= 10.95\text{cm}^2$

99. (c) 30 : 72 : 78

5 : 12 : 13

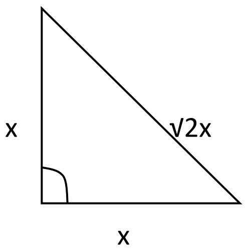
So the trinagle is right tirangle



$\frac{1}{2}\times 30\times 72 = \frac{1}{2}\times aptitude \times 72$

$altitude = 30\,m$

100. (a)



Perimeter of triangle

= $4\sqrt{2} + 4$

x + x + √2x = 4√2 + 4

2x + √2x = 4√2 + 4

x(2 + √2) = 4(√2 + 1)

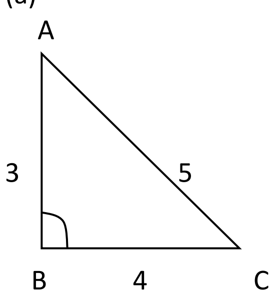
x = $\frac{4}{\sqrt{2}}$

Hypotenuse = √2x

= $\sqrt{2}x$

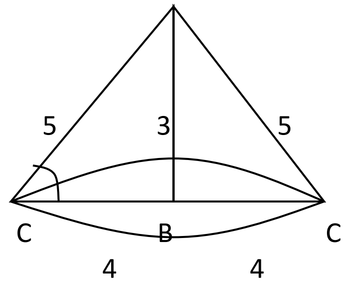
= $\sqrt{2}\times\frac{4}{\sqrt{2}} = 4cm$

101. (a)



cone is rotated about

A



The cone so formed after rotating about Side AB.

So, slant height of cone

= 5 cm

radius = 4 cm

Height = 3 cm

Thus, Volume of cone

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

r = radius

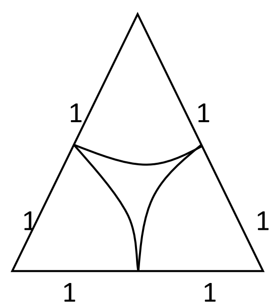
h = height

Thus, Volume of cone

= $\frac{1}{3}\times\frac{22}{7}\times 4\times 4\times 3$

= $16\,\pi\,\text{cm}^3$

102. (c)



Area of bounded region

$\frac{\sqrt{3}}{4}\times 2^2 - \frac{1}{2}\pi\,(1)^2$

$=\left(\sqrt{3}-\frac{\pi}{2}\right)\text{cm}^2$

103. (a)

2πr = 11

→ r = $\frac{11\times7}{22\times2} = \frac{7}{4}$

Area of sector

= $\frac{0}{360}\times\pi r^2$

$= \frac{60}{360}\times\frac{22}{7}\times\frac{7}{4}\times\frac{7}{4}$

= $\frac{77}{48} = 1\frac{29}{48}\text{cm}^2$

104. (c) Let the side of the triangle be ‘a’ cm

→ Circumradius = $\frac{a}{\sqrt{3}}$

and In radius = $\frac{a}{2\sqrt{3}}$

$\rightarrow \pi\left(\frac{a^2}{3} - \frac{a^2}{12}\right) = 44$

$$\rightarrow \frac{4a^2 - a^2}{12} = \frac{44 \times 7}{22} = 14$$

$\rightarrow \frac{3a^2}{12} = 14$

$\rightarrow a^2 = 56$

$a = 2\sqrt{14}$

$\rightarrow$ Area $= \frac{\sqrt{3}}{4} \times 2\sqrt{14} \times a\sqrt{14}$

$= 14\sqrt{3}$ cm^2

105. (c) Side of square = Daimeter of the circle

$\pi r^2 = 9\pi$

$\rightarrow r = 3$cm

$\rightarrow$ Side of squre $= 3 \times 2 = 6$ cm

$\rightarrow$ Area $= 6 \times 6 = 36$ cm^2

106. (d) The given triangle is a right angled triangle

$\rightarrow$ Side of the square $= \frac{P \times b}{P + b} = \frac{8 \times 6}{8 + 6} = \frac{24}{7}$

$\rightarrow$ Area of square$= \frac{576}{49}$ cm^2

107. (b) Radius of circumcirclel $= \frac{8}{\sqrt{3}}\ cm$

Radius of incricle =

$$\frac{8}{2\sqrt{3}} = \frac{4}{\sqrt{3}}\ cm$$

$\rightarrow$ Required area $= \pi\,(R^2 - r^2)$

$= \frac{22}{7}\left(\frac{64}{3} - \frac{16}{3}\right)$

$= \frac{22}{7} \times 16 = 50\frac{2}{3}$ cm^2

108. (c) Side of square$= \sqrt{121} = 11$ cm

Perimeter of squre = Circumference of circle = 44 cm

$\rightarrow 2\pi r = 44$

$\rightarrow r = \frac{(44 \times 7)}{22 \times 2} = 7\ cm$

$\rightarrow$ Area $= \pi r^2$

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

$= 154$ cm^2

109. (a) $2r + \pi r = 36$

$\rightarrow r(2 + \pi) = 36$

$\rightarrow r\,(2 + \frac{22}{7}) = 36$

$\rightarrow r = \frac{36 \times 7}{36} = 7$ m

110. (c) $2 + \pi r = \frac{1}{2}\pi r$

$\rightarrow r(2 + \pi) = \pi r$

$\rightarrow 4 + 2\pi = \pi r$

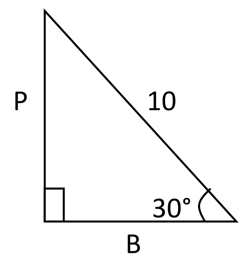
$\rightarrow r = \frac{4}{\pi} + 2$

$\rightarrow$ Diameter $= 2\,(\frac{4}{\pi} + 2)$

$= 6\frac{6}{11}$ m

111. (a)

The angles of the given tinagle are 90° , 30° and 60°



$P = 10/2 = 5$

$B = 5\sqrt{3}$

$\rightarrow$ Area $= \frac{1}{2} \times 5\sqrt{3} \times 5$

$= \frac{25\sqrt{3}}{2}\ cm^2$

112. (c) Let the altitude = x cm

$\rightarrow \frac{1}{2} \times z \times 3 = \pi \times 8^2$

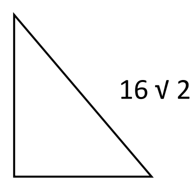
$\rightarrow x = \frac{\pi \times 64}{4}$

$\rightarrow x = 16\pi$

113. (d) The sides of the given tiangle are 3,4 and 5 cm

Area $= \frac{1}{2} \times 3 \times = 6\ cm^2$

114. (b)



Other sides $= \frac{16\sqrt{2}}{\sqrt{2}} = 16$ cm

(as the Δ issosceles)

$\rightarrow$ Area $= \frac{1}{2} \times 16 \times 16 = 128$ cm^2

115. (d) $\frac{\sqrt{3}}{4} a^2 = 4\sqrt{3}$

$\rightarrow a^2 = 16$

$\rightarrow a = 4$ cm

116. (c)

Side of hexagon

$= \frac{Side\ of\ equilatera\ tringle}{3} = 2$cm

Area of hexagon $= \frac{3\sqrt{3}}{2} a^2 = \frac{3\sqrt{3}}{2} \times 4$

$= 6\sqrt{3}$ cm^2

117. (a) The radius of park $= \frac{176}{2\pi}$

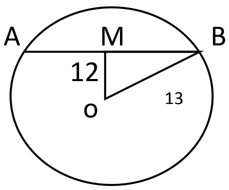
$= 28$m

→ Area of road = π(28 + 7)^2 - π(28)^2 = 28 m

→ Area of road = π (35 + 28)(38 - 28)

$= \frac{22}{7} \times 7 \times 63 \ = 1386\ \ m^2$

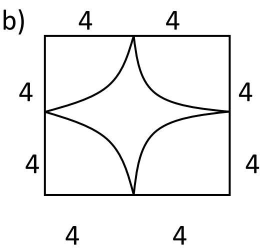
118. (c)



In Δ OMB MB = √(13^2 – 12^2) = 5

→ AB = 5 × 2 = 10 cm

119. (b)



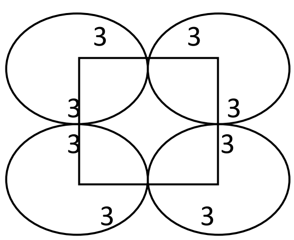
Area of shaded portion

= 8 × 8 – π × 4^2

= 64 – 16π

= 16(4 – π) cm^2

120.



Area orf shaded portion

= 6 × 6 – π 3^2

= 36 – 3π

= 9 (4 - π) cm^2

121. (c) Radius of incircle

$= \frac{14\sqrt{3}}{2\sqrt{3}}$

= 7 cm

→ Area = πr^2 $= \frac{22}{7} \times 7 \times 7$

= 154 cm^2

122. (d)

Radius of incircle

$\frac{6}{2\sqrt{3}} = \sqrt{3}cm$

Area = π r^2

= 3π cm^2

123. (c) $\frac{\sqrt{3}}{4}a^2$ = 121 √3

→ a = 2 cm

→3a = 66 cm

Circumference of circle = 66 cm

2π r = 66

r $= \frac{66\times7}{2\times22} = \frac{21}{2}$

Area = πr^2 $= \frac{22}{7} \times \frac{21}{2} \times \frac{21}{2}$

= 346.5 cm^2

124. (b) Area grazed by the cow

$= \frac{1}{2}\pi r^2$

$= \frac{1}{2} \times \frac{22}{7} \times 7 \times 7$

= 77 m^2

S $= \frac{26+30+28}{2}$ = 42

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

$= \sqrt{12 \times 16 \times 14 \times 12}$

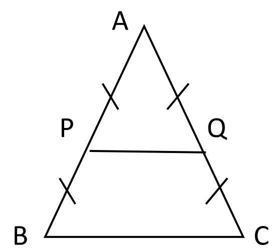
= 836m^2

→ Remaining area

= 336 – 77

= 259 m^2

125. (b)



As P and Q are mid-point and PA

→ Δ APQ – ABC

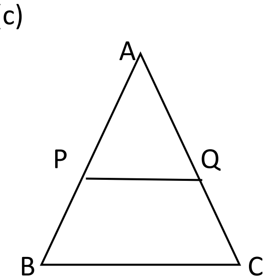
→ AP/AB = PA/BC $= \frac{1}{2}$

→ PQ $= \frac{BC}{2}$

→ BC = 2PQ = 2 × 5

= 10 cm

126. (c)



As PQ || BC

→ Δ APQ – ΔABC

→ APQ is also an equilatera Δ

→ Δ APQ $= \frac{\sqrt{3}}{4}(5)^2$

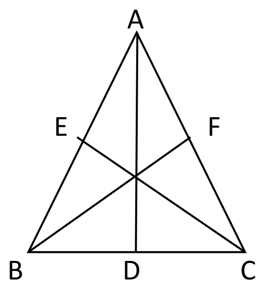
$\rightarrow \frac{25\sqrt{3}}{4}\,m^2$

127. (a) $2\pi r = \frac{\sqrt{3}}{4}(5)^2$

$\rightarrow r = \frac{22\times7}{22\times2} = \frac{7}{2}$

$\rightarrow \pi r^2 = \frac{22}{7}\times\frac{7}{2}\times\frac{7}{2} = \frac{77}{2} = 38.5cm$

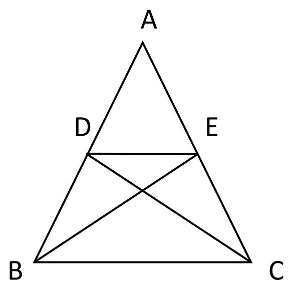
128.



ar Δ AOE = 15 cm^2

ar BOFD = 2 × ar Δ AOE = 30 cm^2

129. (b)



ar ABE = ar Δ ACD = 36 cm^2

130. (a) The third side will be either 15 or

→ Possible perimeter

= 15 × 2 + 22

= 52

and 22 × 2 + 15

= 59

131. (a)

No. of revolutions

$\frac{Distnace}{Circumference}$

$\frac{1540\times100}{2\times\frac{22}{7}\times\frac{98}{2}}$ = 500

132. (b) $2\pi r = \frac{400}{1000}$

$\rightarrow r = \frac{22\times7}{50\times22\times2}$ = 0.7

→ Diameter = .14 cm

133. (b) $2\pi r = \frac{11000\times100}{5000}$

$\rightarrow r = \frac{11\times100\times7}{5\times2\times22}$ = 35 cm

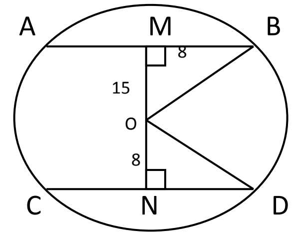
134. (b)

Length of rubber band

= 3d + 2πr

= 30 + 10π

135. (c)



In Δ OMB

OB = √(15^2 + 8^2) = 17 cm

OB = OD = radius

In Δ OND

ND = √(17^2 - 8^2)

= 15 cm

CD = 15 × 2

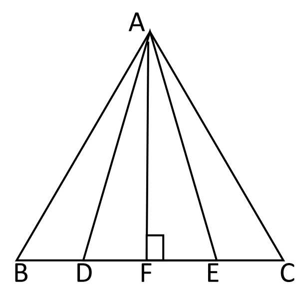
= 30 cm

136. (b) Perimeter = 2r + πr

= 63 + $\frac{22}{7}\times\frac{63}{2}$

= 63 + 99 = 162 cm

137. (c)



In triangle AFB

AF ⊥ BC

$AF^2 = AB^2 - FB^2$ = 100 = 25

AF = 5√3

In triangle ADF

$AD^2 = AF^2 + BF^2$

$AD^2 = 75 + (5 + \frac{10}{3})^2$

AD = $\frac{10\sqrt{7}}{3}$

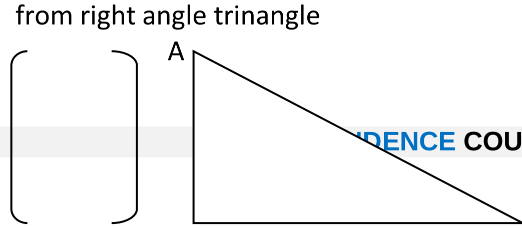
138. (c) Let sides of trangel are, a,b, and c respectively

Thus, Largest side given = 17 cm

= Perimeter = a + b + c = 40 cm (given)

area = 60 cm^2 (given)

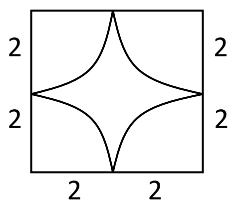
In such questions take the help of triplets which from right angle trinangle



3, 4, 5
6, 8, 10 8 17
8, 15, 17
etc.
B C
15

So, here we have a side 17 cm
→ by triplet we git sides 8 and 15
→ check the sides periemter = 8 + 15 + 17 = 40
Area = $\frac{1}{2} \times 8 \times 15 = 60$
Hence sides are 15,8
smaller side = 8 cm

139. (b) 2 2



Area of shaded region
= $(4)^2 - \pi(2)^2$ = $16 - 4\pi$ cm^2

140. (c) Let the side of the triangle be a
→ Perimeter = 3a
3a = $(\frac{\sqrt{3}}{4}a^2)$ √3
3 = $\frac{3}{4}$a
a = 4 units

141. (a)
Area of Δ = $\frac{\sqrt{3}}{4}$ a^2 = $\frac{\sqrt{3}}{4} \times 36 = 9\sqrt{3}$ cm^2

142. (b)
Area of Δ =
$\frac{4}{3}$ $(Area\ of\ \Delta\ formed\ bymedian\ as\ side)$
$= \frac{4}{3}\left(\frac{1}{2} \times 9 \times 12\right)$
(Thus, 9, 12, 15 from triplet)
= $\frac{4}{3} \times 54 = 72$ cm^2

143. (a) 3x + 2y = 6
$\frac{x}{2} + \frac{y}{3} = 1$
(Make R.H.S. equal to one)
→ Coordinates of Δ
= (0,3), (2,0), (0,0).
Area of Δ = $\frac{1}{2} \times 3 \times 2 = 3\ units^2$

144. (a)
Let each side of the triangle be a units
→ $\frac{\sqrt{3}}{4}$ $(a + 2^2 - a^2)$ = 3 + √3
$\frac{1}{4}$ $(a^2 + 4 + 4a - a^2)$ = 1 + √3
= $\frac{1}{4}$ $(4 + 4a)$ = 1 + √3
1 + a = 1 + √3
a = √3 units

145. (c) S = $\frac{9+10+11}{2}$ = 15
Area = $\sqrt{s}(s-9)(s-10)(s-11)$
$= \sqrt{15\ 1\ 6 \times 5 \times 4}$
=$\sqrt{1800} = 30\sqrt{2}$ cm^2

146. (C) Let the length of each equal of each side be a unit
→ $\frac{2}{4}$ $\sqrt{(4a^2 - 4)}$ = 4
$\sqrt{(4a^2 - 4)}$ 8
$4a^2 - 4$ = 64
$a^2 - 1$ = 16
$a^2 - 1$ = 16
a^2 = 17
a = √17 units

147. (a)
Sum of other two sides
(a + b) = 32 – 11 = 21
and a- b = 5
→ a = $\frac{21+5}{2} = 13\ cm$
b = $\frac{21-5}{2} = 8\ cm$
Sides of the Δ = 11, 8 , 13 cm
S = $\frac{13+8+11}{2} = 16$
→ Area
=
$\sqrt{16}(16-13)(16-8)(16 - 11)$
= $\sqrt{(16 \times 3 \times 8 \times 5)}$
= $8\sqrt{30}$ cm^2

148. (b)
Area of Δ $\frac{\sqrt{3}}{4}$ a^2 = $\frac{\sqrt{3}}{4} \times (2)^2$
√3 cm^2

149. (a) Let the original radius
= r cm
→ $\pi\ (r + 1)^2 - r^2$ = 22
$r^2 + 1 + 2r - r^2 = \frac{22 \times 7}{22}$ = 7
2r + 1 = 7
r = 3 cm

150. (a) Area of two circles = $\pi(5^2 + 12^2)$
= 169π
→ πr^3 = 169π
r^2 = 169

r = 13 cm

Thus, Radius of thir circlel = 13 cm

151. (d) Let the radius of the semicircle be = r

→ 2r + πr = 36

r (2 + π) = 36

r $(2 + \frac{22}{7})$ = 36

r $\left(\frac{36}{7}\right)$ = 36

→ Area = $\frac{\pi \times 7^2}{7}$

= $\frac{22 \times 7 \times 7}{7 \times 2}$ = 77 m^2

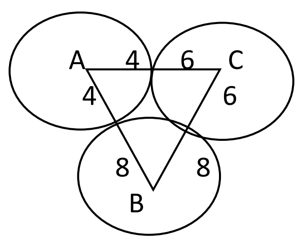
152. (b) Side of squqre = √2 m

= Diameter of circle

→ Radius of circle = $\frac{\sqrt{2}}{2}$ = $\frac{1}{\sqrt{2}}$ m

Thus, Area = 22/7 × $(\frac{1}{\sqrt{2}})^2$ = $\frac{\pi}{2}$ m^2

153. (d) k



k

Side of Δ ABC = 10, 14, 12

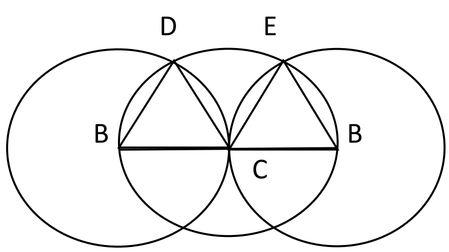
S = $\frac{10+14+12}{2}$ = 18

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

= $\sqrt{18 \times 8 \times 4 \times 6}$

= 24√6 cm^2

154.



Area □ ABDE = 3 × ar Δ ADC

= 3 × $\frac{\sqrt{3}}{4}$ $(2)^2$ (ADC is equinteral triangel)

=3√3 $units^2$

155. (a) Check tripletes

3, 4, 5

6, 8, 10

7, 24, 25

→ 7,24,25 ful fill the given conditions

area = $\frac{1}{2} \times 24 \times 7 = 84\ cm^2$

Perimeter

156. (c) Length of median = $\frac{\sqrt{3}}{2}$a

= 6√3

= a = 12 cm

Thus, Perimeter = 12 × 3 = 36 cm

157. (a) Area of equilateral Δ

= $\frac{\sqrt{3}}{4}$ a^2 = 4√3

= a^2 = 16

a = 4

Thus, Perimeter = 4 × 3 = 12 cm

158. (a) Distance covered by small gear = 2 πr × 42

= 84 π × $\frac{12}{2}$ = 504π

= No. of revolution by big gear

= $\frac{504\pi}{2\pi \times 9} = 28$

159. (b) Perimeter of semi-circle = 2r + πr = r(2 + r)

= 18

= $\frac{18}{2}$

160. (d) Perimeter of circle = 2πr

= 2(18 + 26)

= 88 cm

= π r = 44 cm

r = 14 cm

Thus, Area of circle = $\frac{22}{7} \times 14 \times 14 = 616\ cm^2$

161. (a)

Area of circle = 38.5 cm^2

πr^2 = 38.5

r^2 = $\frac{38.5 \times 7}{22}$

r = 7/2 cm

Cricumference of a circle = 2πr

2 × $\frac{22}{7}$ × $\frac{7}{2}$ = 22 cm

162. (c) Diameter of circle

$\frac{Diagonal}{\sqrt{2}} = \frac{12\sqrt{2}}{\sqrt{2}}$ = 12 cm

Radius of circle = $\frac{12}{2} = 6\ cm$

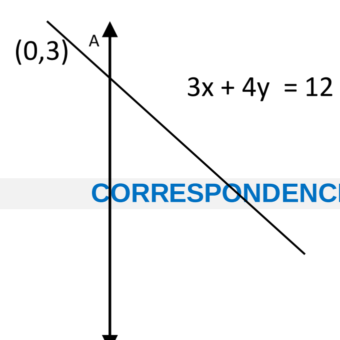
Radius of circumcircle of equilaternal Δ

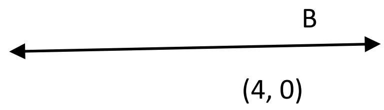
= a/√3

→ a = Radius × √3 = 6√3

cm

163. (c)





3x + 4y – 12

$$\frac{3x}{12}+\frac{4y}{12}=1$$

Thus, Divide by 12 on both sides make R.H.S. = 1

$$\frac{x}{4}+\frac{y}{3}=1$$

Thus, Cordinates of point A = (0,3)

Point B = (4,0)

Area of Δ OAB = $\frac{1}{2}$× 4 × 3 = 6 sq. units

164. (c) hight of equilateral Δ = 15 cm

$\frac{\sqrt{3}}{2}(side) = 15$

side = $\frac{15\times2}{\sqrt{3}}$

Area = $\frac{\sqrt{3}}{4}$ $(side)^2$

$= \frac{\sqrt{3}}{4}\left(\frac{15\times2}{\sqrt{3}}\right)^2 = \frac{\sqrt{3}}{4}\times\frac{225\times4}{3}$

= 75√3 cm^2

165. (b) $\sqrt{3}/4$ $(side)^2$ = 9√4

$(side)^2$ = 9 × 4 = 36

side = √36 = 6 cm

Length of median = $\sqrt{3}/2$ (side)

= $\frac{\sqrt{3}}{2}\times 6 = 3\sqrt{3}$ cm

Note: In an equilatera triangle, length of median, angle bisector, altitude is equal to √3/2 sides

166. (c) Clearly,

12 cm, 16 cm and 20 cm from a triplet

3 4 5 → triplet

× 4 × 4 × 4

12 16 20 → triplet

They from a right triangle

area of triangle = $\frac{1}{2}$× 16 × 12 = 96 cm^2

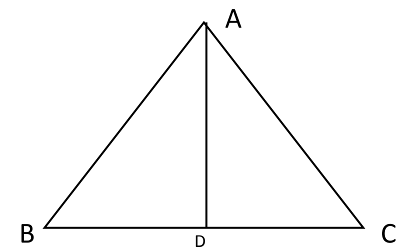
167. (c) $\frac{8^2}{x^2} = \frac{360}{250} = \frac{36}{25}$

$\frac{8}{x} = \frac{\sqrt{36}}{25} = \frac{6}{5}$

x = $\frac{40}{6} = \frac{20}{3}$ =

Note: The ratio of area of two similar triangles is equal to the ratio fo square of their corresponding sides.

168. (d)



AB = AC = $\frac{5}{6}$BC

AB + BC + AC = 544

$\frac{5}{6}$ BC BC + $\frac{5}{6}$ BC = 544

$\frac{5BC+6BC\ 6\ 5BC}{6}$ = 544

$\frac{16BC}{6}$ = 544

BC= $\frac{544\times6}{16}$

= 204

→ AB = AC = $\frac{5}{6}\times 204 = 140\ cm$

Area of Δ ABC = b/4 √$(4a^2 - b^2)$

Thus, Where = equal side

b = base

= $\frac{204}{4}$ $\sqrt{4[(170)^2}$ - $(204)]^2$

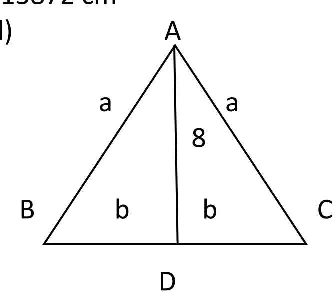
= 51 √(115650 - 41616)

= 51 √73984

= 51 × 272

= 13872 cm^2

169. (d)



AB = AC = a cm

BD = DC = b cm

Altitude of isoscles triangel is also median

In right Δ ADC

$AD^2 = a^2 - b^2$

$64 = a^2 - b^2$ …… (i)

Perimeter = 64

a + a + 2b = 64

2a + 2b = 64

a + b = 32 ……….. (ii)

On dividing $\left(\frac{a^2 - b^2}{a+b}\right) = \frac{64}{32} = 2$

Thus, $a^2 - b^2$ = (a + b) (a - b)

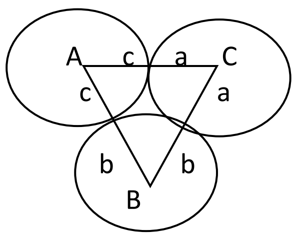
a – b = 2

a + b = 32

On solving a = 17, b = 15

area of Δ ABC $= \frac{1}{2} \times 8 \times 30$ = 120 cm^2

170. (a)



x = AB = b + c

y = BC = a + b

z = AC = a + c

Thus, semi-perimeter,s

$= \frac{AB+BC+AC}{2} = \frac{2a+2b+2c}{2}$

$= \frac{a+b+c}{\sqrt{[s(s-x)(s-y)(s-z)]}}$

$= \sqrt{(a+b+c)abc}$

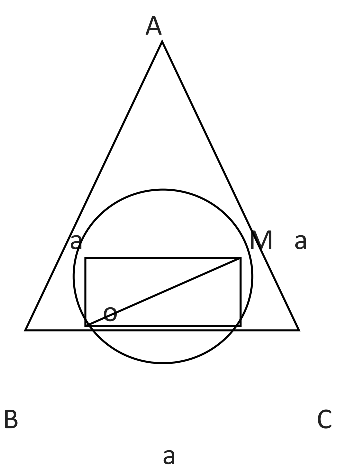
171. (d) π R^2 = π (10)^2 + π (24)^2

R^2 = 10^2 + 24^2 = 100 + 576

R = √676

= 26 cm

172. (c)



Let the side of equilateral triangle = 'a'

and the side of square = 'b'

in circle radius of equilateral Δ

$= \frac{a}{2\sqrt{3}}$

Thus, Diagonal of square = $2\frac{a}{2\sqrt{3}} = \frac{a}{\sqrt{3}}$

Now, b = $\frac{Diagonal}{\sqrt{2}} = \frac{a}{\sqrt{3}} = \frac{a}{\sqrt{6}}$

Required ratio = $\frac{\frac{\sqrt{3}}{4}a2}{(\frac{a}{\sqrt{6}})^2} = \frac{\sqrt{3}}{4}$a^3 × 6/a^2

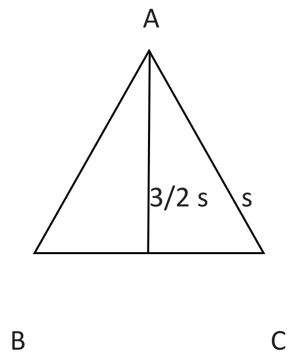
$= \frac{3\sqrt{3}}{2}$ → 3√3 : 2

173. (c)

Let the side of equilateral triangle

=s

Area of equilateral = $\frac{\sqrt{3}}{4}$s^2



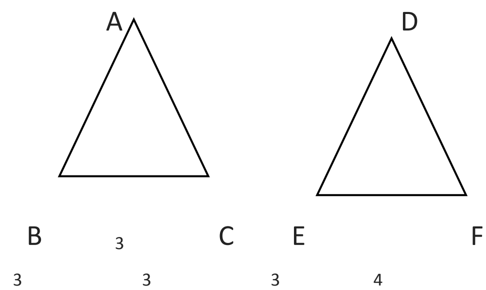
Height of equilateral triangle

$= \frac{\sqrt{3}}{2}s$

$\frac{b^2}{a} = \frac{(\frac{\sqrt{3}}{2}^2)}{\sqrt{\frac{3}{4}s^2}} = \frac{\frac{3}{4}s^2}{\sqrt{\frac{3}{4}s^2}} = \frac{3}{\sqrt{3}} = \sqrt{3}$

174. (c)

.



Δ ABC - ΔDEF

$\frac{[ar(\Delta ABC)]}{[ar(\Delta DEF)]} = \frac{3^2}{4^2}$

$\frac{54}{ar\ (\Delta DEF)} = \frac{9}{16}$

ar(ΔDEF = $\frac{16 \times 54}{9} = 96\ cm^2$

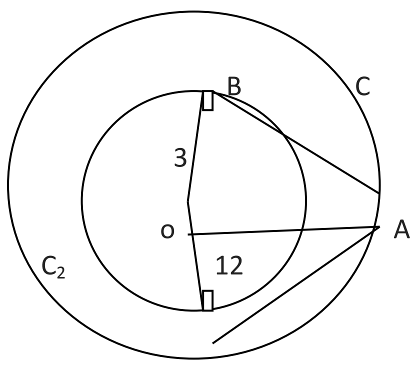
175. (b) $\frac{[ar(\Delta ABC)]}{[ar(\Delta DEF)]} = \frac{3^2}{4^2}$

$\frac{20}{45} = \frac{25}{DE^2}$

$DE^2 = \frac{45 \times 25}{20} = \frac{225}{4}$

$DE = \frac{\sqrt{225}}{4} = \frac{15}{2} = 7.5\ cm$

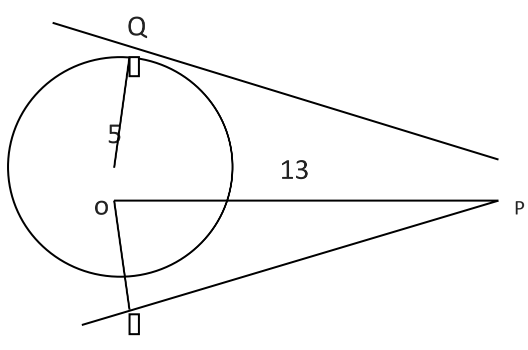
176. (c)



C

AB = AC triangle drawn from the same point equal
OB = OC = 3cm
OA = 12 cm
$\angle ABO = \angle ACO = 90°$
In right ΔABO
$AB = \sqrt{(12^2 - 3^2)} = \sqrt{135}$
$\sqrt{(15 \times 9)} = 3\sqrt{15}$
ar ABOC = 2 × ar (ABO) = $2 \times \frac{1}{2} \times AB \times OB$
$= 3\sqrt{15} \times 3 = 9\sqrt{15}\ cm^2$

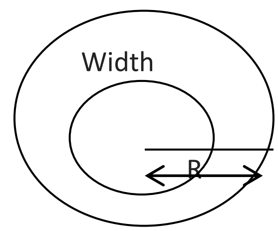
177.



R

$\angle OQP = \angle ORP = 90°$
(radius is ⊥ tangent)
and PQ = PR (tangent drawn from same point are equal)
$PQ = \sqrt{(OP)^2 - (OQ)^2} = \sqrt{(13^3 - 5^2)} = 12$
ar of (PQOR) = 2 × ar (PQO)
$= 2 \times \frac{1}{2} \times PQ \times OQ$
$= 12 \times 5 = 60\ cm^2$

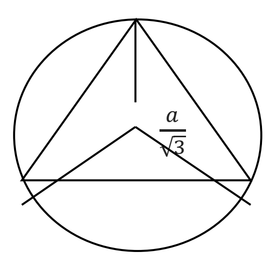
178.



Let radius of outer circle = R
and radius of inner circle = r
2 π R 2 π r = 66
$2\pi(R - r) = 66$
$R - r = \frac{66}{2\pi} = \frac{66 \times 7}{2 \times 22} = \frac{21}{2}$
width = 10.5

179. (a)
Perimeter of the circle =
Circumference of circle =
Let ‘R’ be the radius
ATQ
$2\pi R - 2R = x$
$2R(\pi - 1) = x$
$2R = \frac{x}{(\pi - 1)}$
Diameter = $\frac{x}{\pi - 1}$
Thus, 2R = Diameter of the circle

180.



Let the side of equilateral triangle = 'a'

Thus, Circumcircle radius = $\frac{a}{\sqrt{3}}$

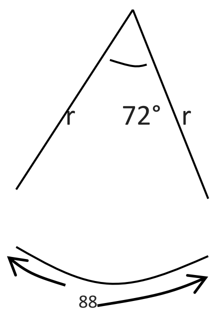
Area of circumcircle = $\pi \left(\frac{a}{\sqrt{3}}\right)^2 = \pi a^2/3$

$\pi a^2/3 = 3\pi$

$a^2 = 9$. $a = 3$

Perimeter = 3 × a = 3 × 3 = 9 cm

181. (a)

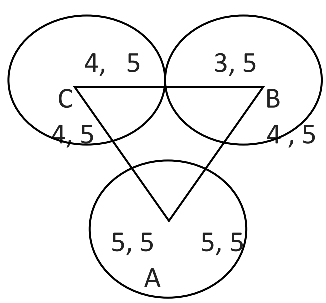


Length of are = $\frac{\theta}{360} \times 2\pi r$

$$\frac{72}{360} \times 2 \times \frac{22}{7} \times r = 88$$

r $\frac{88\times7\times360}{72\times2\times22}$ = 70 m

182. (A)



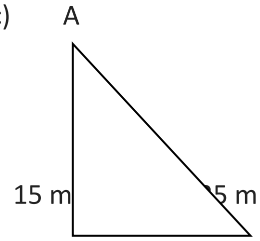
In Δ ABC

Perimeter of ΔABC = (AB + BC + AC)

= 2 (3.5 + 4.5 + 5.5)

= (13.5 × 2) = 27

183. (c)



Thus 15, 20, 25 from a triplet

Clearly, $25^2 = 15^2 + 20^2$

ABC is a right triangle

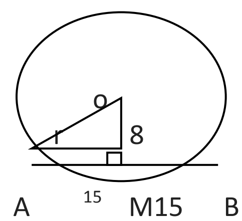
Area of Right ΔABC = $\frac{1}{2} \times AB \times BC$

= $\frac{1}{2}$ × 15 × 20

= 150

Cost of sowing seeds = 150 × 5 = 750

184. (a)



AB = 30 cm

OM ⊥ AB and OM = 8

Thus, AM = BM = 15 cm

In right Δ OMA

$OA^2 = OM^2 + AM^2$

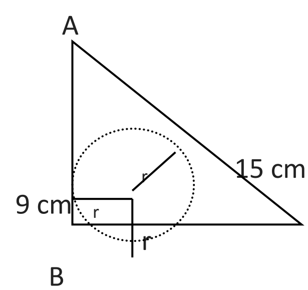
$OA^2 = 289$

AO = $\sqrt{289}$

OA = 17 cm

Radius of circle = 17cm

185. (c)



Since, 9 , 12, 15 forms a triplet

area of Δ ABC = $\frac{1}{2} \times 9 \times 12 = 54\ cm^2$

In circle radius of triangle

$= \frac{area\ of\ triangle}{Semiperimeter\ of\ triangle}$

$= \frac{54}{\frac{9+15+12}{2}} = \frac{54\times2}{36} = 3\ cm$

Alternate:

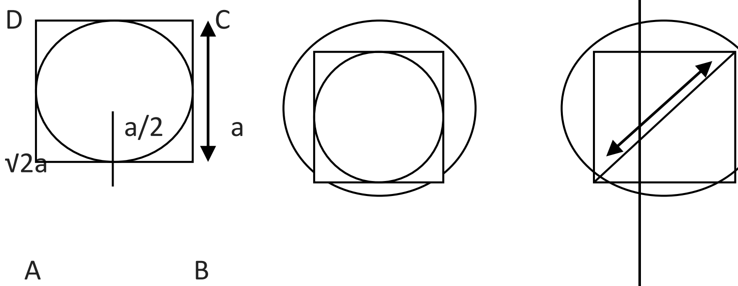
In a right triangle, with , P, B and H incircle radius

$= \frac{P+B-H}{2}$

Hence, r = $\frac{9+12-15}{2} = \frac{6}{2} = 3\ cm$

Also circum circle radius = $\frac{H}{2} = \frac{15}{2} = 7.5\ cm$

186.



Let the side of square = a

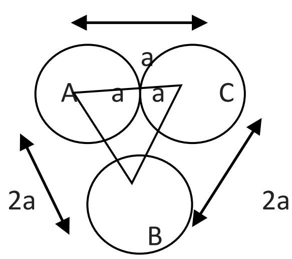
in circle radius of square = $\frac{a}{2}$

Circumcircle radius of square = $\frac{Diagonal}{2} = \frac{a\sqrt{2}}{2}$

Thus, $\frac{Incircle\ radius}{Circumcircle\ radius} = \frac{\frac{a}{2}}{\frac{a\sqrt{2}}{2}} = \frac{1}{\sqrt{2}}$

= 1 : √2

187. (d)



Hence, ABC is the equilateral triangle

AB= BC = AC = '2a' cm

area of Δ ABC = $\frac{\sqrt{3}}{4}(2a)^2$ = = $\frac{\sqrt{3}}{4} \times 4a^2$

= $\sqrt{3}\ a^2$ -

area of 3 sectors of θ = 60°

$= 3 \times \frac{60°}{360°} \times \pi a^2$

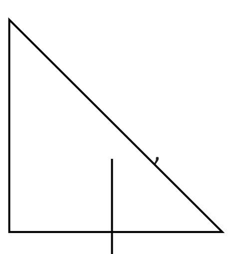
$= \pi a^2/ 2$

Area of shaded region = area of Δ ABC - Area of 3 sector

$= \Delta 3a^2 - \pi a^2/ 2$

$= \frac{2\sqrt{3}-\pi}{2}\ a^2\ cm^2$

188. (c) A



B B C

In Δ ABC and Δ A'B'C'

$\angle C = \angle C$ (common)

$\angle B = \angle B$ (Thus, AB || AB)

→ Δ ABC - Δ A'B'C

$\rightarrow \left(\frac{Area\ \Delta\ A'B'C'}{area \Delta ABC}\right) = \left(\frac{B'C}{BC}\right)^2$

$= \left(\frac{1}{2}\right)^2 = ¼$

$\rightarrow$ arΔ A'B'C $= \frac{1}{4}(Area\ \Delta\ ABC)$

189. (b) Perimeter of square = 44 cm

Area of square = $\left(\frac{44}{4}\right)^2$ = 121 cm^2

Circumference of circle = 2 π r = 44

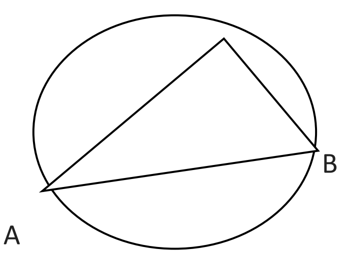
r = $\frac{22\times7}{22} = 7\ cm$

→ Area of circle = $\pi r^2 = \frac{22}{7} \times (7)^2$

= 154 $cm,^2$

Required difference = 154 – 121 = 33 cm

190. (d) C



$\angle ACB = 90°$ (angle in semi-circle)

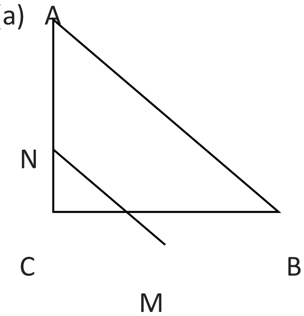
AC:BC = 3 : 4

$AB^2 = \sqrt{(AC^2 + BC^2)} = \sqrt{(3^2+ 4^2)} = 5$ units

5 units = 5 cm

Thus, ar Δ ABC $= \frac{1}{2} \times 3 \times 4 = 6\ cm^2$

191. (a) A



ar Δ ABC $= \frac{1}{2} \times 6 \times 8 = 24$ cm^2

Δ ABC - Δ MCN

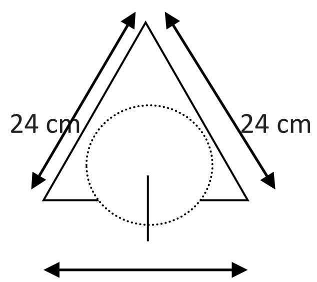
$\angle C \ = \angle C$

$\angle M = \angle B$ (Thus MN | | AB)

Thus, $\frac{ar\ \Delta\ CMN}{dr\ \Delta\ ABC}$ $(\frac{CM}{BC})^2 = (\frac{1}{2})^2$ = ¼

ar□MNAB = $\frac{24}{4} \times 3 \ = 18\ cm^2$

192. (a)



Inradius of an equilateral triangle

$= \frac{side}{2\sqrt{3}}$ $= \frac{24}{2\sqrt{3}}$ = 4√3 cm

Area of equilatera triangle

$= \frac{\sqrt{3}}{4} \times (side)^2$ = √3/4 × 24 × 24

= √3 × 6 × 24

= 144 √3 cm^2

= 144 × 1.732

= 249.408 cm^2

Now, Area of incircle

$= \frac{22}{7} \times (Inradius)^2$

$= \frac{22}{7} \times 4\sqrt{3} \times 4\sqrt{3}$

$= \frac{22 \times 16 \times 3}{7} \ = \left(\frac{1056}{7}\right)$

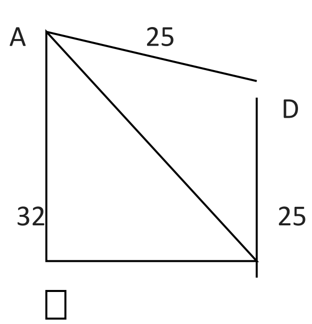
= 150.86 cm^2

Area of remaining part = area of Δ - area of incircle

= 249.408 – 150.86

= 98.548 cm^2

193. (d)



B 24 C

$\angle ABC \ = 90^\circ$

$AC \ = \sqrt{(AB^2) \ + (BC^2)} \ = \sqrt{(32^2) \ + (24^2)}$

$= \sqrt{(1024 + 576)}$

$= \sqrt{1600} \ = 40$ m

Now, area of Δ ABC

= ½ × AB × BC

= ½ × 32 × 24 = 384 cm^2

Now, in Δ ADC,

$s \ = \frac{25+25+40}{2} \ = 45\ m$

area of Δ ADC $= \sqrt{s(s-a)\ (s-b)(s+c)}$

$= \sqrt{45(45-25)(45-25)(45-40)}$

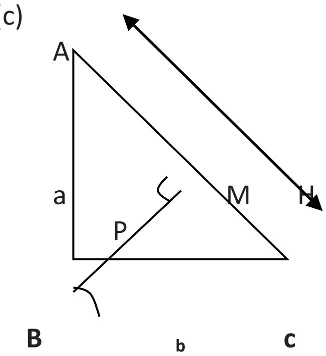
$= \sqrt{45 \times 20 \times 20 \times 5}$ $= 20 \times 3 \times 5$

= 300 m^2

Area of the plot

= 3841 + 300 = 684 m^2

194. (c)



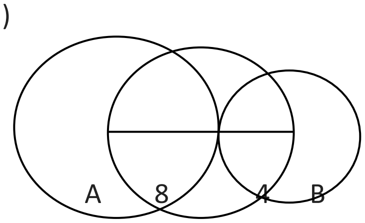
Lengthof perpendicular drawn from the right angle hypotenuse,

$P = \frac{a \times b}{H}$

$P^2 = \frac{a^2\ b^2}{H^2}$

$P^2 = \frac{a^2 b^2}{a^2 + b^2}$ **(Thus, $H^2 = a^2 + b^2$)**

195. (a)



Diameter of the circle = AB = 8 + 4 = 12 units

Raduys = $\frac{12}{2} \ = 6\ units$

Thus, Area of circle

$= \pi r^2 = \pi \times (6)^2$
$= 36\,\pi\ sq.units$

196. (a) $\frac{\sqrt{3}}{2}\ (side) = \frac{\sqrt{3}}{4}(\text{side})^2$
side = 2 units

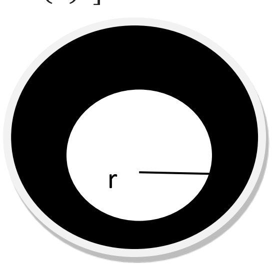
197. (a) Let the ;emgtj pf sode pf sqiare= a
Let the diameter of circle = d
According to the question,
a = d
Thus, $\frac{Area\ of\ square}{Area\ of\ circle} = \frac{a^2}{\pi\left(\frac{d^2}{4}\right)}$
$= \frac{(a^2\times 4)}{\pi d^2} = \frac{(a^2\times 4)}{\pi a^2}$
$= \frac{4}{\pi} = \frac{4\times 7}{22} = \frac{14}{11}$
$\rightarrow$ 14 : 11

198. (d) Length of median of an equilateral triangle
$= \frac{\sqrt{3}}{2}$(side)
Length of median, altitude, and angle bisector is
= √3/2 (side)
Thus, $\frac{\sqrt{3}}{2}\ a = 6\sqrt{3}$
$a = \frac{6\sqrt{3}\times 2}{\sqrt{3}} = 12$ cm
Thus, Area of Δ ABC $= \frac{\sqrt{3}}{4}\ a^2$
$= \frac{\sqrt{3}}{4} \times 12 \times 12$
$= \sqrt{3} \times 3 \times 12 = 36\sqrt{3}\ \ cm^2$

199. (b) $\pi r^2 = 2\pi r$
r = 2 units
Thus, Area of circle = $\pi(2)^2$
= 4 π sq. units

200. (d) Area of equilateral triangle
$= \frac{\sqrt{3}}{4}(\text{side})^2$
$= \frac{\sqrt{3}}{4}(\text{side})^2 = 48$
$(\text{side})^2 = (48 \times 4)/\sqrt{3} = 64\sqrt{3}$
side = $64\ (3)^{\frac{1}{2}}]^{1/2}$

201. (b)



R
$2\pi R - 2\pi r = 33$
$(R - r) = \frac{33}{2\pi} = \frac{33\times 7}{2\times 22} = \frac{3\times 7}{2\times 2} = \frac{21}{4}$
thickness = 5.25 m

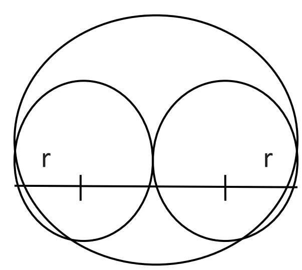
202. (b) Ratio = 5 : 6 : 7
Sum of sides = perimeter
= 18
sides, $\frac{5}{18}\times 54 = 15$ $\frac{6}{18}\times 54 = 18$
$\frac{7}{18}\times 54 = 21\ meter$
$= S = \frac{(15+18+21)}{2} = 27$
$Thus,\quad Area\ of\ \Delta = \sqrt{s}(s-a)(s-b)(s-c)$
$= \sqrt{27\times 12\times 9\times 6} = 54\sqrt{6}\ m^2$

203. (a) Circumference of circle
= π × diameter
$= \frac{22}{7}\times 112 = 352$ cm
2 (l + b) = 352
$l + b = \frac{352}{2} = 176$
Thus, smaller side $= \frac{7}{16}\times 176$
= 77 cm

204. (c) Perimeter of equilateral triangle
= 18
3 × side = 18 cm
side $= \frac{3}{18} = 6$ cm
Length of median = $\frac{\sqrt{3}}{2}$ side
$= \frac{\sqrt{3}}{2}\times 6$
= 3√3 cm

205. (a)

.



Circumference of paper sheet
= 352
2πR = 352
$R = \frac{352}{2\pi} = \frac{352\times 7}{2\times 22} = 56\ cm$

$r = \frac{R}{2} = \frac{56}{2} = 28\ cm$

. Thus, Circumference of circular plate = 2 π r

= $2 \times \frac{22}{7} \times 28$

= 176 cm

206. (a) Inradius of equilatera triangle

= $\frac{Side}{2\sqrt{3}}$

√3 = $\frac{Side}{2\sqrt{3}}$

side = 6 cm

perimeter of of equilateral triangle = 3 × 6 = 18 cm

207. (b) Circumference of circle = πd

Thus, πd - d = 150

d (π - 1) = 150

$d(\frac{22}{7} - 1)$ = 150

$d \times \frac{15}{7}$ = 150

$d = \frac{150\times7}{15} = 70$

Radius = $\frac{d}{2} = \frac{70}{2}$ = 35 m

208. (b)

Let radius of circle = r

Side of square = a

Side of equilateral Δ = b

According to question,

2πR = 4a = 3b

Thus, $a = \frac{\pi R}{2}$ $\quad b = \frac{2}{3}\pi R$

Ratio of their areas

$\pi R^2 : a^2 \quad \frac{\sqrt{3}}{4} b^2$

$\pi R^2 : (\frac{\pi R}{2})^2 : \frac{\sqrt{3}}{4} (\frac{2}{3}\pi R)^2$

$1 : \frac{\pi}{4} : \frac{\sqrt{3}}{9}\pi$

C : S : T

Here, we can see that C>S>T

Quicker approach: When primeter of two or more figures are same then the figure who has more vertex is greater in the area. Since, here, circle has infinite vertex.

Therefore, C>S>T

209. (d)

Distance covered in 1 revolution

= Circumference of circular field = 2πr

Distance = Speed × Time

= 66 m/s × $\frac{5}{2}s = 165\ m$

Thus, 2 πr = 165

$2 \times \frac{22}{7} \times r$ = 165

$r = \frac{165\times7}{2\times22} = 26.25\ m$

210. (c) Circumference of front wheel × no. of its revolutions= circumference of rear wheal × no. of its revolutions

2πx × n = 2πx y × m (let 'm' is the revolution of rear wheel)

$m = \frac{mx}{y}$

211. (b) Distance to be covered in one revolution = Circumference of wheel = π × diameter

$= \frac{22}{7} \times 56 = 176\ cm$

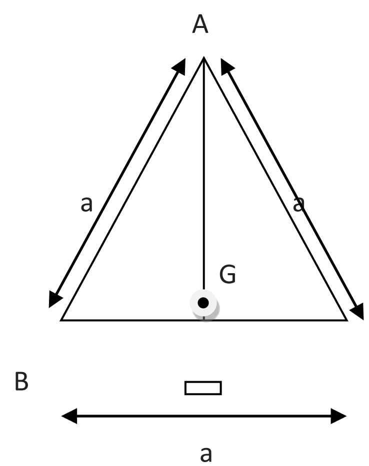
Total distance = 2.2 km

= (2.2 × 1000 × 100)cm

= 220000 cm

.Thus, Number of revolutions = $\frac{220000}{176}$ = 1250

212. (b)



We know that in an equ7ilateral trinagle a median also be a altitude

→Altitude of an equilateral triangle

= $\frac{\sqrt{3}}{2}\ a$

→ $\frac{\sqrt{3}}{2}a$ = 12√3 (given)

→ a = 24 cm

→ Then ara of an equilatera triangle

= $\frac{\sqrt{3}}{4} a^2$

= $\frac{\sqrt{3}}{4} \times 24 \times 24$

= 144√3 cm^2

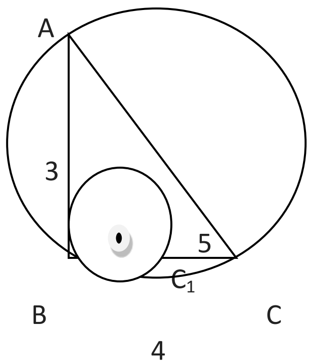
213. (d) Let a triangle ABC has sides of measurement 3 cm, 4 cm, and 5 cm

→ Δ ABC will be a right angled tri-angle

→ Inner radius of circle C_1

$= \frac{AB + BC - CA}{2} = \frac{4+3-5}{2}$

= r = 1 cm



→Circum-radius of cirlce = C_2

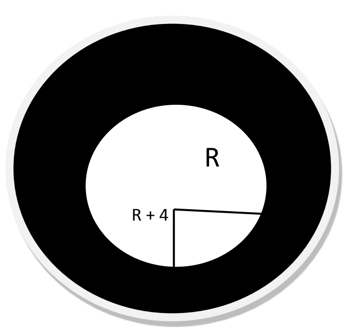
R = $\frac{Hypotenuse}{2}$

In a right angled triangle half of hypotenuse is circum radius

R = $\frac{5}{2} = 2.5\ cm$

→ $\frac{Ara\ of\ C1}{Area\ of\ C2}$ = $\pi r^2/\pi r^2$ = $l^2/(\frac{5}{2})^2$ = $\frac{4}{25}$

214. (d) Let the radius of swinmming pool =R



Outer radius of Pool with concrete wall = (R + 4)

According to question ,

$\pi R \times \frac{11}{25} = \pi\ (R+4)^2 - \pi R^2$

$R^2 \times \frac{11}{25} = R^2 + 16 + 8R - R^2$

$= \frac{11}{25} R^2 = 16 + 8R$

$11R^2 - 200R - 400 = 0$

By option (d), In such type of equation go through the option to save your valuable time

R = 20

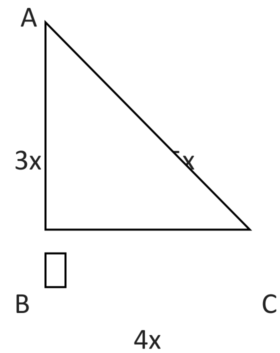
$11 \times 20^2 - 200 \times 20 - 400 = 0$

4400 - 4000 - 400 = 0

0 = 0

Therefore, radius of pool R = 20 cm

215. (d)



Area of right angled triangle = 7776

→ $\frac{1}{2} \times 4x \times 3x = 7776$

→ $6x^2 = 7776$

→ $x^2 = 1296$

→ x = 36

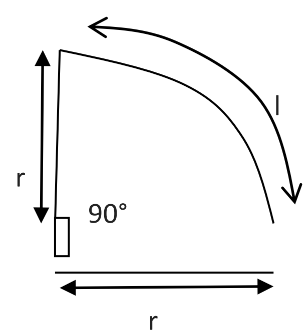
→ Perimeter of triangle =

3x + 4x + 5x = 12x

= 12 × 36

= 432 cm Ans.

216. (b)



According to the firgure,

→ Perimeter = r +r+ l

3→ 75 cm = 2r + Length of arc

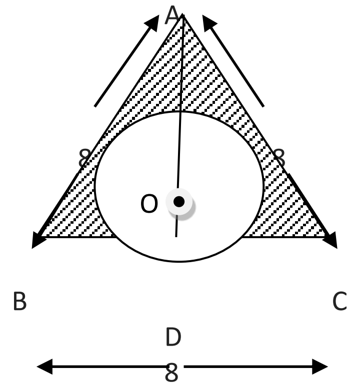
→ 75 cm = 2r + $\frac{22 \times r}{7 \times 2}$

→ r = 21 cm

→ Its area = $\frac{1}{4}\left(\frac{22}{7} \times 21 \times 21\right)$

= 346.5 cm^2

217.



According to the question,

Here OD = radius,

Thus, r $= \frac{a}{2\sqrt{3}} = \frac{8}{2\sqrt{3}}$

r $= 4/\sqrt{3}$

Required area of slided portion

$= \frac{\sqrt{3}}{4} \times 8^2 - \pi\left(\frac{4}{\sqrt{3}}\right)^2$

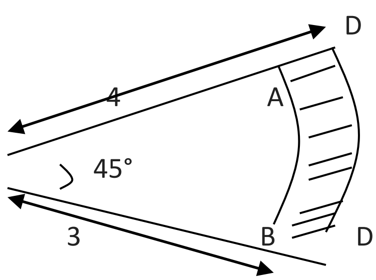
$= \frac{\sqrt{3}}{4} \times 64 - \pi \times \frac{16}{3}$

$= \sqrt{3} \times 16 - \frac{22}{7} \times \frac{16}{3}$

= 10.95 m^2

=11 m^2

218. (d)



According to the question

Area of sector OED

$= \pi r^2 \times \frac{\theta}{360}$

$= \pi \times 4 \times 4 \times \frac{45}{360}$

= 2r m^2

Area of the sector OAB

$= \pi r^2 \times \frac{\theta}{360} = \pi \times 3 \times 3 \times \frac{45}{360}$

$= = \frac{9}{8}\pi\ m^2$

So, Area of shaded protion = Area of OED – Area of OAB

$= 2\pi - \frac{9}{8}\pi = \frac{16\pi - 9\pi}{8}$

$= \frac{7}{8}\pi = \frac{7}{8} \times \frac{22}{7} = \frac{11}{4}\ m^2$

219. (d) According to the question,

Circumference of a circle= 2 π sr

$2\pi r = \frac{30}{\pi}$

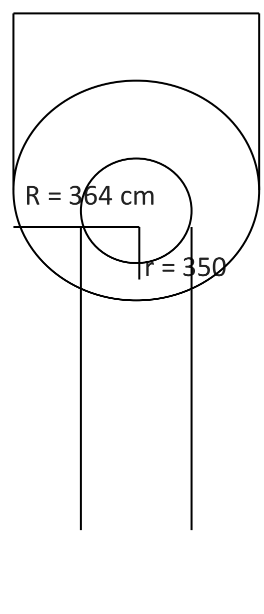
$r = 15/\pi^2$

$D = 2 = 30/\pi^2$

220. (b) According to the question

D = 728 m

SD = 728



d = 700 m

The breadth of the path

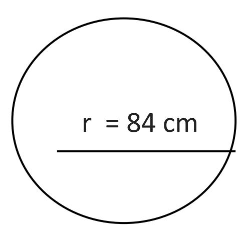
= (R - r)

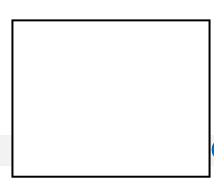
= (364 – 350) cm

= 14 cm

221. (c)

According to the questions





a = ?

Let the length of side of the square be a cm

Circumference c = 4a (Peimeter square) = 2πr = 4a

= $2 \times \frac{22}{7} \times 84$ = 4a

132 cm = a

222. (a) Area of circle= 324 π cm^2

π r^2 = 324 π

r = 18 cm

Longest chord = diameter = 2r

= 2 × 18

= 36 cm

223. (c) Circumference of a Δ = 24 cm

a + b + c = 24 cm

or S $= \frac{a+b+c}{2}$ = 12 cm

Cricumference of incircle

2πr (Inner) = 14 cm

Area of Δ = S × r (inner)

= $12 \times 7 = 84\ cm^2$

224. (b) Area of Δ = $\frac{1}{2}\ ab\ sin\theta$

$= \frac{1}{2} \times 10 \times 10 \times sin45°$

= 25 √2 cm^2

225. (a) Accroding to the question

r = $\frac{\Delta}{s}$

Semiperimeter = $\frac{50}{2} = 25$

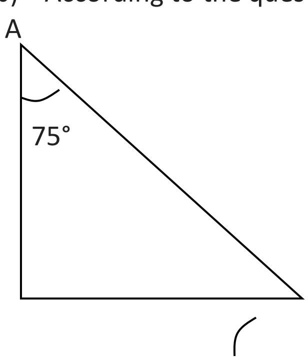
Inner radius = $\frac{Area}{Semi-Perimeter}$

(Semiperimeter)

6 = $\frac{Area}{25}$

Area = 150 cm^2

226. (b) According to the question



15°

B C

Sin 15° $= \frac{P}{H} = \frac{AB}{1}$

AB = Sin15°

Cos15° $= \frac{B}{H} = \frac{BC}{1}$

BC = Cos15°

Area of ΔABC $= \frac{1}{2} \times AB \times BC$

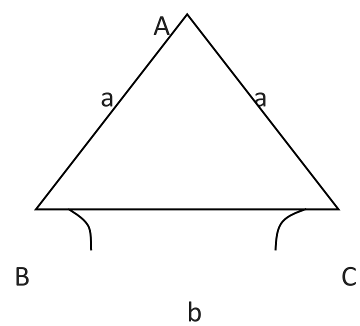
$= \frac{1}{2} \times sin15°\ \ cos15°$

$= \frac{1}{4} \times sin2 \times 15$ [Thus, sin2 θ = 2 sinθ cosθ]

$= \frac{1}{4} \times \frac{1}{2} = \frac{1}{8}$ m^2

$= \frac{1}{8} \times 100 \times 100$ = 1250 cm^2

227.



AB = AC = a

BC = b

Thus, S $= \frac{a+a+b}{2}$

S = a + $\frac{b}{2}$

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

Area =

$$\sqrt{\left(a+\frac{b}{2}\right)\left(a+\frac{b}{2}-a\right)\left(a+\frac{b}{2}-a\right)\left(a+\frac{b}{2}-b\right)}$$

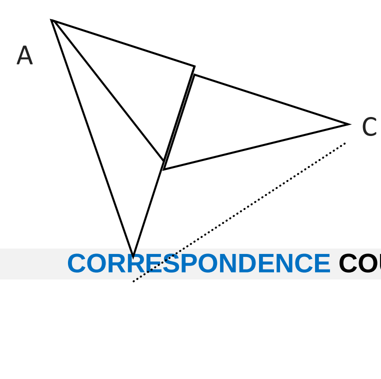
Area = $\sqrt{\left(a+\frac{b}{2}\right)\left(\frac{b}{2}\right)\left(\frac{b}{2}\right)\left(a-\frac{b}{2}\right)}$

Area = b/2 $\sqrt{(a^2 - b^2/4)}$

Area = $\frac{b}{4}\ \sqrt{(a^2 - b^2)}$ sq. units

228. (c) As we know circum centre always made by the intersection of half altitude

→ In obtuse angle it will always be out.



B

D → Circum centre

229. (a) According to the question,

$2\pi r$ → Circumference

$2r$ → Diameter

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

$\rightarrow \frac{1\frac{4}{7}}{2r} = \frac{22}{7}$

$\rightarrow \frac{11}{7\times 2r} = \frac{22}{7}$

$\rightarrow \frac{1}{2r} \times \frac{2}{1}$

$\rightarrow R = \frac{1}{4}\ m$

230. (b) Given

→ Area of square = 4

$Side^2 = 4$

side = 2

→ Diagonal of square = radius of circle

$\sqrt{2}$ side = r

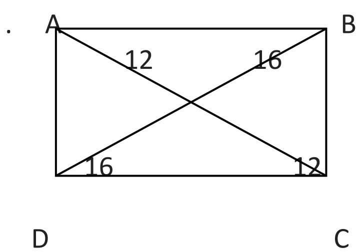
→ $r = 2\sqrt{2}$

→ Area of circle = πr^2

→ $\pi \times (2\sqrt{2})^2 = 8\pi\ cm^3$

231. (a)

We know that rhombus is parallegogram whose all four sides area equal and its diagonals bisect each other at 90°



Thus, AB = $\sqrt{(16)^2 + (12)^2} = \sqrt{400}$ = 20 cm

= side of rhombus

Thus, Perimeter of the rhombus = 20 × 4 = 80 cm

232. (d) If d_1 and d_2 are the lengths of diagonals of rhombus.

then,

Perimeter = $2\sqrt{(d_1^2 + d_2^2)}$

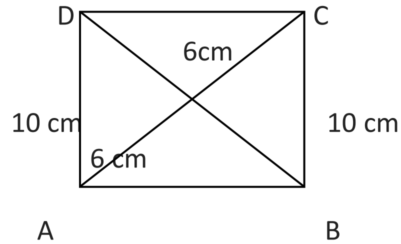
= $2\sqrt{(24^2 + 10^2)}$

= $2\sqrt{676}$

= 2 × 26 = 52 cm

233. (c) 4 × side = 40 cm (given)

→ side = $\frac{40}{4} = 10\ cm$



In Δ AOB,

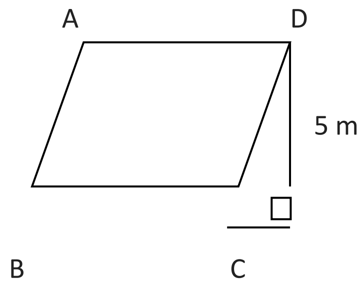
OB = $\sqrt{(10^2 - 6^2)}$

= $\sqrt{(100 - 36)}$

= $\sqrt{64}$ = 8 cm

Diagonal BD = 8 × 2 = 16 cm

234. (b)



4 × side of rhombus = 40m

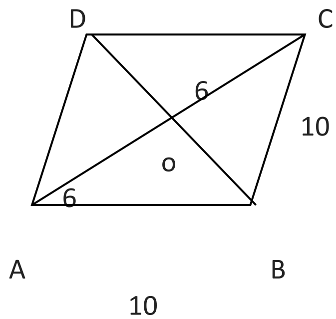
side of rhombus = 10 m

Since rhombus is also a parallelogram

Therefore its area = base × height

= 10 × 5 = 50 m^2

235.



Perimeter of Rhombus = 40 cm

4 × side = 40

side = 10 cm

We know that diagonals of rhombus bisect each other at right angle,

Therefore, In right Δ OAB

$OB^2 = AB^2 - OA^2$

$= 10^2 - 6^2 = 100 - 36 = 64$

OB = $\sqrt{64}$ = 8 cm

Diagonal BD = 2 × OB = 2 × 8

= 16 cm

Alternative:

Side of rhombus

$= \frac{1}{2}\sqrt{(d_1^2 + d_2^2)}$

$10 = \frac{1}{2}\sqrt{(12)^2 - d^2}$

$20 = \sqrt{144 + d_2^2}$

$144 + d_2^2 = 400$

$d_2^2 = 400 - 144 = 256$

$d_2 = \sqrt{256} = 16$ cm

236. (b) diagonal $= d_1 = 10\ cm$

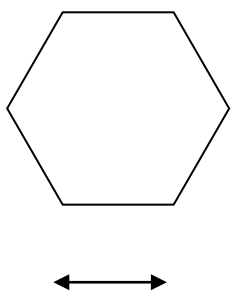
Area of Rhombus = 150

$\frac{1}{2} \times d_1 \times d_2 = 150$

$\frac{1}{2} \times 10 \times d_2 = 150$

$d_2 = \frac{150 \times 2}{10} = 30\ cm$

237. (a)



1

A regular hexagon consists of 6 equilateral triangle area of regular hexagon

$= 6 \times \frac{\sqrt{3}}{4}(\text{side})^2$

$6 \times \frac{\sqrt{3}}{4} a^2$

$= 6 \times \frac{\sqrt{3}}{4} \times (2\sqrt{3})^2$

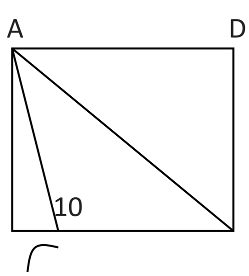
$= 6 \times \frac{\sqrt{3}}{4} \times 12 = 18\sqrt{3}\ cm^2$

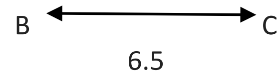
238. (a) Area of Hexagon = $= 6 \times \frac{\sqrt{3}}{4}(\text{side})^2$

$= 6 \times \frac{\sqrt{3}}{4}(1)^2$

$= 6 \times \frac{\sqrt{3}}{4} = \frac{3\sqrt{3}}{2}\ cm^2$

239. (a)





(Thus, Rhombus is a | | gm, Thus, Area of Rhombus = Base × Heinght)

Area of Rhombus = Base × Height

$= 6.5 \times 10 = 65\ cm^2$

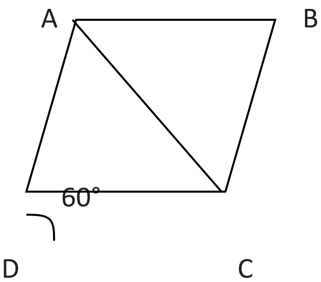
Also area of Rhombus $= \frac{1}{2} \times d_1 \times d_2$

$= \frac{1}{2} \times 26 \times d_2 = 65$

$= 13 \times d_2 = 65$

$d_2 = 5$ cm

240.



In the above figure Δ ADC is equilateral triangel (as AC is angle bisector)

→ AC = 10 cm (smaller diagonal)

241. (c) Side of rhombus

$= \frac{100}{4} = 25\ cm$

We know that in a rhhombus $= 4a^2 = d_1^2 + d_2^2$

$\rightarrow d_2^2 = 4 \times 25^2 - 14^2 = 2500 - 196$

$= 2304$

$\rightarrow d_2 = \sqrt{2304} = 48$ cm

$\rightarrow$ Area $= \frac{1}{2} \times d_1 \times d_2$

$= \frac{1}{2} \times 14 \times 48 = 336\ cm^2$

242. (d) Let the parallel sides be 3x and 2x

$\rightarrow \frac{1}{2}(3x + 2x) \times 15 = 450$

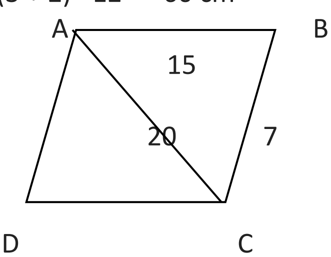
$\rightarrow 5x = 60$

$x = 12$

→ Sum of length of parallel sides

$= (3 + 2) \times 12 = 60$ cm

243. (c)



Using Hero's formula

$S = \frac{15+7+20}{2} = 21$ cm

Area of Δ ABC

$= \sqrt{[21(21-20)(21-7)(21-15)]}$

$= \sqrt{(21 \times 1 \times 14 \times 6\,)}$

= 42 cm^2

→ Area of □ ABCD = 42 1 2 = 84 cm^2

244. (b) Area of parallelogram = 1000 $units^2$

Let the altitude on smaller side = x units

→ 5 × 20 = 1000

100 units → 1000

1 unit 10

→ Greater side = 10 × 5

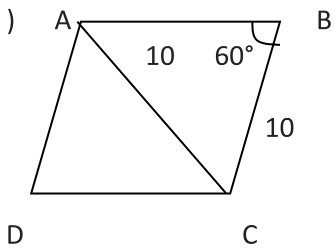
= 50 units

and smaller side = 10 × 4 = 40 units

→ 40 × x = 1000 units

→ x = 25 units

245. (b))



as □ ABCD is a rhombus

Thus, Δ is equilateral

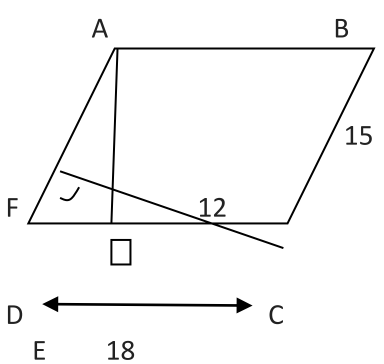
→ ar Δ ABC $= \frac{\sqrt{3}}{4} \times 10 \times 10$

= 25√3 cm^2

→ ar □ ABCD = 25√3 × 2

= 50√3 cm^2

246. (b)



Area of parallegogramm

= BC × FC = 15 × 12 = 180 cm^2

Area of parallegogram =

DC × AE = 180

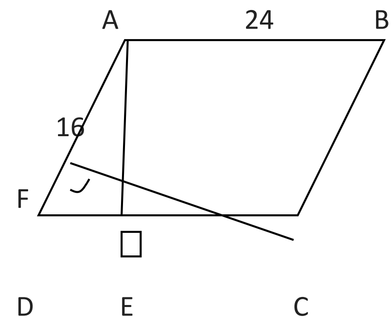
18 × AE = 180

AE = 10 cm

Thus, Distance between bigger sides

= 10 cm

247.



AB = 24 cm

AD = 16 cm

AE = 10 cm (given)

Area of Parallelogram = AE × DC = 10 × 24 = 240 cm^2

Also, area of Parallelogram = FC × AD = 10 × 24

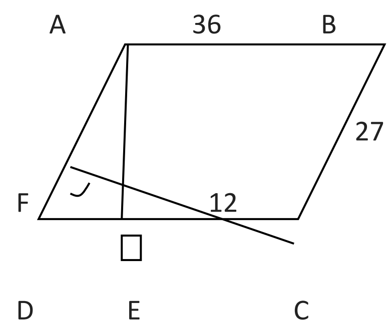
= 240 cm^2

FC × 16 = 240

FC = 15

Thus, Distance between AD and BC = 15 cm

248. cm



Area of parallegogram

= AE × DC

= CF × AD

AE × 36 = 12 × 27

= AE = 9 cm

Thus, Distance between bigger sides = 9 cm

249. (a) In a rhombus

$4a^2 = d_1^2 + d_2^2$

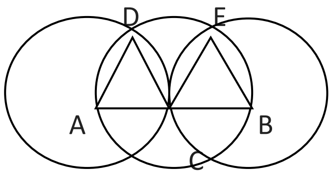
$4a^2 = 8^2 + 6^2$

$a^2 = \frac{100}{4} = 25$

→ Side of square = 5 cm

Thus, Area of square = 25 cm^2

250. (b)



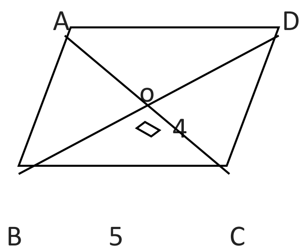
Area □ ABDE = 3 × ar Δ ADC

(ADC is equilateral triangle)

$3 \times \frac{\sqrt{3}}{4} \times 2^2 = 3\sqrt{3}$ unit^2

251. (d) Side of rhombus = $\frac{20}{4}$

= 5 cm



AC = 8 cm

OC = 4 cm

In Right Δ OBC

$OB^2 = BC^2 – OC^2$

$= 5^2 - 4^2 = 9$

OB = √9 = 3

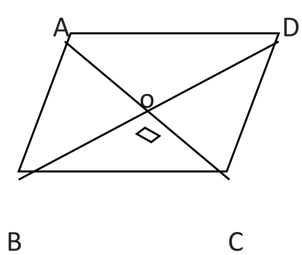
BD = 2 × OB = 2 × 3 = 6 cm

Area of Rbombus

$= \frac{1}{2} \times 8 \times 6 = 24\ cm^2$

Note : in the question do not get confused with the words non – square its simply to clear that it is Rhombus.

252. (c)



Side of Rhombus = $\frac{100}{4} = 25\ cm$

Let BD = 40 cm

OB = 20 cm

In right Δ OBC

$OC^2 = BC^2 - OB^2$

OC = $\sqrt{25^2 - 20^2}$ = 15 cm

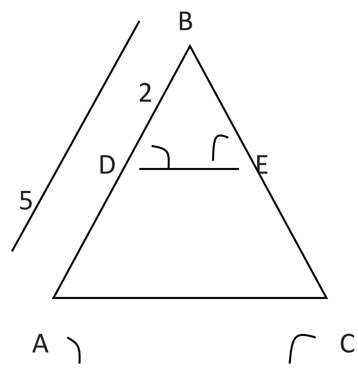
Thus, AC = 2 × OC = 2 × 15 = 30 cm

Area = $\frac{1}{2} \times BD \times AC$

$= \frac{1}{2} \times BD \times AC$

$= \frac{1}{2} \times 40 \times 30 = 600\ cm^2$

253.



Thus, DE | | AC

Thus, BDE – ΔBAC

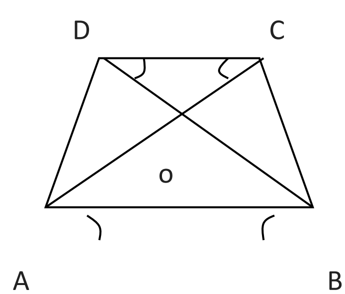
$\frac{ar(BDE)}{ar(BAC)} = 2^2/5^2 = \frac{4}{25}$

ar (trap ACED) = ar(BAC) - ar(BDE)

= 25 – 4 = 21

Thus, $\frac{ar(ACED)}{ar(BDE)} = \frac{21}{4}$ = 21: 4

254. (c)



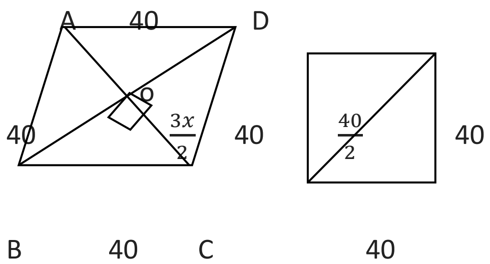
Thus, AB = 2 CD

$\frac{AB}{CD} = \frac{2}{1}$

$\frac{ar(AOB)}{ar(COD)}$ = $(\frac{2}{1})^2$ = $\frac{4}{1}$ = 4 : 1

Thus, ΔAOB - Δ COD

255. (d)



Let AC =4x and BD = 3x

Thus, OA = 2x and OB = $\frac{3x}{2}$

In Right Δ OAB

√$[(2x)^2 + (\frac{3x}{2})^2]$ = 40

$4x^2 + 9x^2/2 = 40^2 = 1600$

$16x^2 + 9x^2 = 1600 \times 4$

$25x^2 = 6400$

$x^2 = \frac{6400}{25}$

$x = \frac{\sqrt{6400}}{25} = \frac{80}{5} = 16$

Thus, Ac = 4x = 4 × 16 = 64

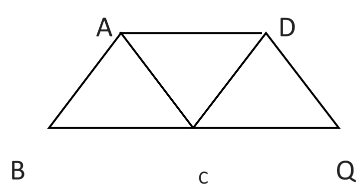
BD = 3x = 3 × 16 = 48

area = $\frac{1}{2} \times AC \times BD$

= $\frac{1}{2} \times 64 \times 48$

= 1536 cm^2

256. (a)



in Δ ABC & Δ DCQ

$\angle ABC = \angle DCQ$

$\angle ACB = \angle DQC$

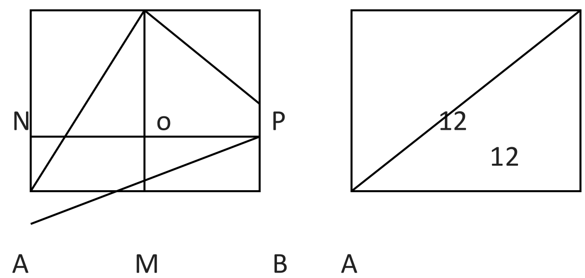
$BC = CQ$

$\Delta AABC = \Delta DCQ$

$ar\Delta\ ABC = ar\Delta DCQ$

257. (c) D Q C D

C



B

ara of ABCD = 24 ar (ABCD) = 24

Draw QM and PN and intersect them a O

ar□ POQC = $\frac{1}{4} \times 24 = 6$

Thus, area PQC = $\frac{1}{2} \times 6 = 3$

PQC = 3

QMAD = $\frac{1}{2} \times 24 = 12$

QAD = $\frac{1}{2} \times 12 = 6$

ABP = 6

ar(PQC) + ar(QAD) ar(ABP) = 15

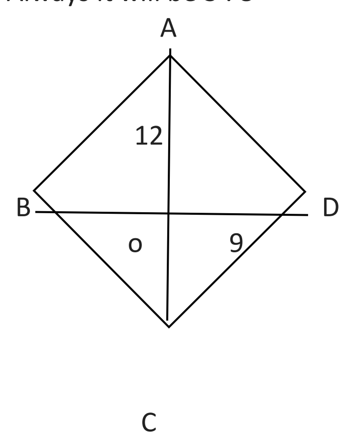
ar(APQ) = 24 – 15 = 9 cm^2

Also

$\frac{ar(APQ)}{ar(ABCD)} = \frac{9}{24} = \frac{3}{8}$

Thus, Always it will be 3 : 8

258. (b)



Let d_1 = 24 cm

area of Rhombus = 216

$\frac{1}{2} \times d_1 \times d_2 = 216$

$d_2 = \frac{1}{2} \times 24 \times d_2 = 216$

$d_2 = \frac{216 \times 2}{24} = 18\ cm$

OA = $\frac{1}{2} \times d_1 = \frac{1}{2} \times 24 = 12\ cm$

Thus,

Diagonals of Rhombus bisect each other at right angle

OD $= \frac{1}{2} \times d_2 = \frac{1}{2} \times 18 = 9\ cm$

Now, In right ΔAOB

$AD^2 = AO^2 + OD^2 = 12_2 + 9_2$

$= 144 + 81 = 225$

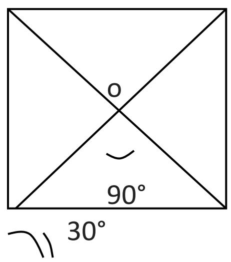
$AD = \sqrt{225} = 15$ cm

Thus, Perimeter of Rhombus

$= 4 \times AD$

$= 4 \times 15 = 60$ cm

259. (a) A D



B 8 C

Let $\angle ABC = 60^\circ$

$\angle OBC = 30°$

Thus, Diagonals of Rhombus area the angle bisectors

In right Δ BOC

$\frac{OB}{BC} = \text{Cos } 30°$

$\frac{OB}{8} = \frac{\sqrt{3}}{2}$

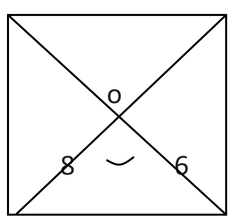
$OB = 4\sqrt{3}$

Thus, $BD = 2 \times OB$

$= 2 \times 4\sqrt{3}$

$= 8\sqrt{3}$ cm

260. (c)) A D



B 10 C

AC = 16, BD = 12 cm

Thus, OA = 8 cm, OB = 6 cm

Thus, Diagonals of rhombus bisect each other at 90°

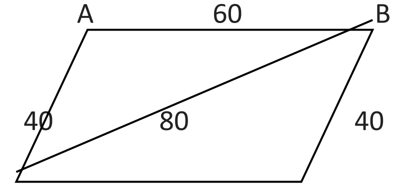
In right Δ OAB

$AB^2 = OA^2 + OB^2$

$8^2 + 6^2 = 100$

$AB = \angle 100 = 10$ cm

261. (b)



D 60 C

$S(\Delta\ ABD) = \frac{60+80+40}{2} = 90$

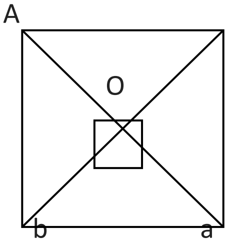
arΔ ABD

$= \sqrt{90(90-80)(90-60)(90-40)}$

$= \sqrt{90} \times 10 \times 30 \times 50 = 300\sqrt{15}m^2$

ar□ABCD = 2 × arΔABD $= 600\sqrt{15}\ m^2$

262. (c) A D



$\frac{p}{2}$

side of Rhombus $= \frac{Perimeter}{4} = \frac{2P}{4} = \frac{P}{2}$

Let, AC = 2a

thus, OA =OC = a

CD = 2b

OB = OD = b

In right Δ OBC,

$a^2 + b^2 = \frac{P2}{4}$

$4a^2 + 4b^2 = p^2$ ………. (i)

Also, 2a + 2b = m

On squareing, $4a^2 + 4b^2 + 2ab = m$

$4a^2 + 4b^2 = m^2 - 8ab$

from (i) and (ii)

$m^2 - 8ab = P_2$

$8ab = m^2 - P^2$

$4 \times (2ab) = m^2 - p^2$

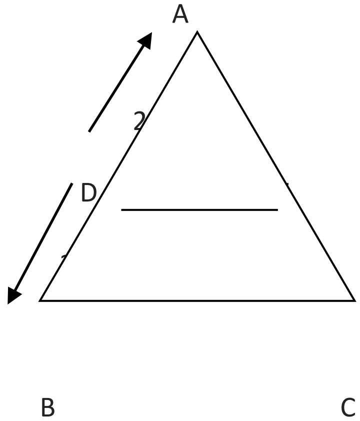
$2ab = \frac{1}{4}(m^2 - p^2)$

Area of Rhombus

$= 1/2 \times s1 \times d2 = \frac{1}{2} \times 2a \times 2b$

$= 2ab = \frac{1}{4}(m^2 - P^2)$

263. (b)



Thus, DE || BC

Thus, $\angle ADE = \angle ABC$ and $\angle AED = \angle AEB$

Thus, ΔADE - ΔABC

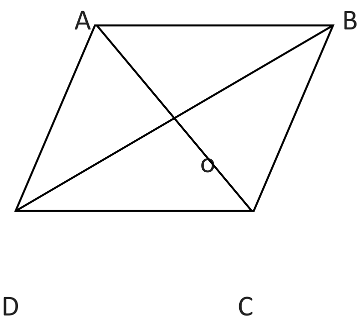
$\frac{ar(ADE)}{ar(ABC)} = 2^2/5^2 = \frac{4}{25}$

Thus, Area DECB = Area(ABC) - area (ADE)

$= 25 - 4 = 21$

Thus, $\frac{(ar\ \Delta\ DECB)}{ar\Delta ABC} = \frac{21}{25}$

264. (a)



AB = BC = CD = DA = 10 cm

BD = 16 cm

In Δ ODC

OD = 8, CD = 10, $\angle DOC = 90^\circ$

Thus, $OC = \sqrt{(CD^2 - OD^2)} = \sqrt{(10^2 - 8^2)}$

$= 6$ cm

Thus, Now, Area of Rhombus ABCD $= \frac{1}{2} d_1 \times d_2$

$\frac{1}{2} \times 16 \times 12 = 96\ cm^2$

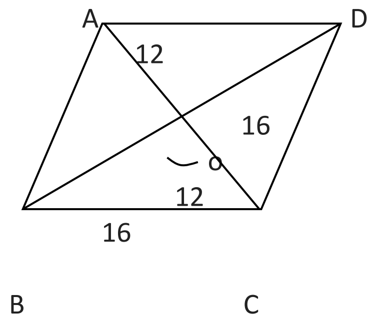
265. (a)

Area if trapezium

$= \frac{1}{2}(6 + 8) \times 4 = \frac{1}{2} \times 14 \times 4$

$= 28\ cm^2$

266. (a)



Thus, OB = OD = 16 and OA = OC = 12

(Diaggonals of Rhombus bisect each other at 90°)

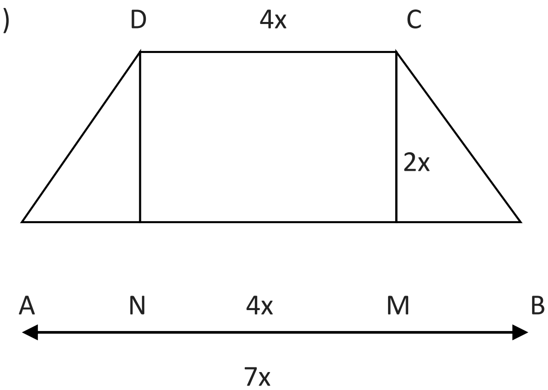
In Δ OBC,

$BC^2 = OB^2 + OC^2 = 16^2 + 12^2 = 400$

$BC = \sqrt{400} = 20$ cm

Perimeter = 20 1 4 = 80 cm

267. (a)



area =

$\frac{1}{2}(sum\ of\ parallel\ sides) \times$
$distance\ between\ them$

$$\frac{1}{2}(7x + 4x \times 2x) = 176$$

$11x^2 = 176 \rightarrow x^2 = 16$

$x = 4$

AB $= 7 \times 4 = 28$ cm

CD $= 4 \times 4 = 16$ cm

CM $= 2 \times 4 = 8$ cm

AM = AN + NM

→ AN + 16

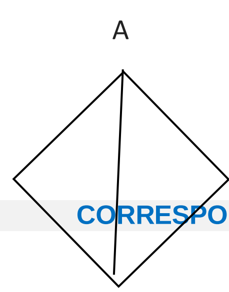
→ 6 + 16 = 22 (AN = BM $= \frac{12}{2} = 6$

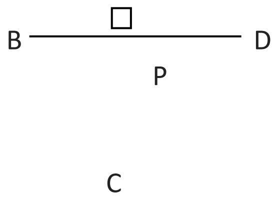
$AC^2 = CM^2 + AM^2$

$AC^2 = 8^2 + 22^2$

$AC = \sqrt{64} + 484 \rightarrow \sqrt{548} \rightarrow 2\sqrt{137}$

268. (c)





ABCD is a rhombus

AB = $6\frac{60}{4} = 15\ cm$

(Perimeter = 60 cm)

AC = 24

AP = 12

[Diagnonals of rhombus bisect perpendicularly]

In Δ APB

AB = 15, AP = 12

Thus, BP = 9

(By pythagoras theorm)

Bd = 9 × 2 = 18

Area of rhombus

$= \frac{1}{2} \times$ Diagonal$_1$ × diagonal$_2$

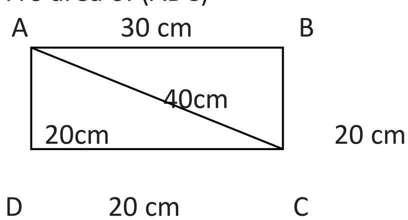
= $\frac{1}{2} \times 18 \times 24$

→ 216 sq cm

269. (d) Let ABCD is || gm

|| Gm area of ABCD = 1 ÷ area of ADC

Fro area of (ADC)



Let a = 20 cm, b = 30 cm, c = 40cm

S = $\frac{a+b+c}{2}$ = $\frac{20+30+40}{2}$ = 45 cm

area = ADC

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

= $\sqrt{45(45-20)(45-30)(45-40)}$

= $\sqrt{45} \times 25 \times 15 \times 5$

= $75\sqrt{15}$ cm^2

270. (a)

Let the diagonal of rhombus

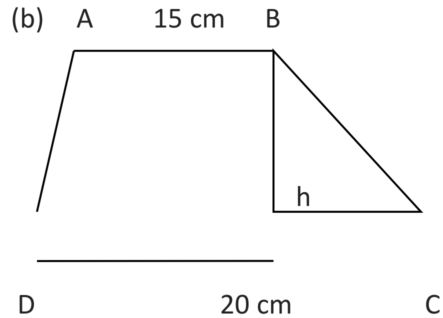
d_1 = x & d_2 = 2x

Area of rhombus = $\frac{1}{2} d_1 d_2$

$256 = \frac{1}{2}(x)(2x)$

$Longer\ diagonal = 2x = 2 = 32\ cm$

271. (b)



As we know

→ Area of trapezium

$= \frac{1}{2}(sum\ of\ parallel\ sides) \times height$

→ 175 = $\frac{1}{2}(20+15)\times$ h

→ height = 10 cm

272. (a) Let the rate of carpenting = Rs. x meter^2

Thus, Length × breadth × x = Rs. 120 ……… (i)

Length × breadth – 4 × x = Rs. 100 ………. (ii)

$\frac{Breadth}{(breadth-4)} = \frac{20}{100} = \frac{6}{5}$

Breadth = 24 m

273. (b) Area of Room = 100 × 3 = 300 m^2

Carpet Length = $\frac{300\times100}{50} = 600\ cm$

$Cost\ of\ Carpet = 15 \times 600 = 9000$

274. (a) Old expenditure = 1000

Increase in area = 50 × 20 m^2

Increase in expenditure = 50 × 20 × 25 = 250

→ New expenditure = 1000 + 250 = 1250

275. (d) Area of veramdhah =

(25 + 3.5) × (15 + 3.5) – 25 × 15

= 527.25 – 375 = 152.25 m^2

cost of flooring = 152.25 × 27.5 = Rs. 4186.50 (app.)

276. (b) 2 πR_1 = 528

→ 2 × $\frac{22}{7}$ × R_1 = 528

→ R_1 = 84 m

→ New Radius = R_1 - K = R_2

→ R_2 = 84 – 14 = 70

New Radius R_2 = 84 – 14 = 70

Area of Road = π(R_1^2 - R_2^2)

→ π × 14(154)

→ Total expenditure

→ $\frac{22}{7} \times 14 \times 154 \times 10 = Rs.\ 67760$

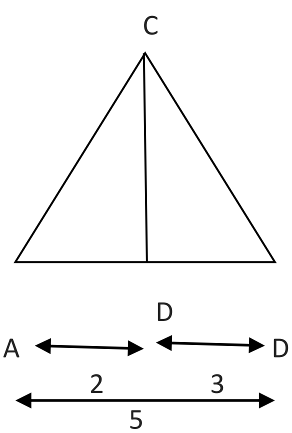
277. (b) Since the ratio of length and breadth = 3 : 2

Let length of rectangular field = 3x

Breadth of rectangular field = 2x
Perimeter of the filed = 80 m
2 (l + b) = 80
2 (2x + 3x) = 80
2 × 5x = 80
x = $\frac{80}{10}$ = 8
then breath = 2x
= 2 × 8 = 16 cm

278. (c) Since the sides of a rectangular plot are in the ratio = 5 : 4
Let the length of rectangular field = 5x
and the breadth of rectangualr field = 4x
According to tquestion =
Area = 500 m^2
5x × 4x = 500 m^2
x^2 = $\frac{500}{20}$ = 25
x = 5
Length = 5x = 5 × 5 = 25 m
Breadth = 4x = 4 × 5 = 20 m
Perimeter of the rectangle = 2 (25 + 20)
= 2 × 45 = 90 m

279. (d)



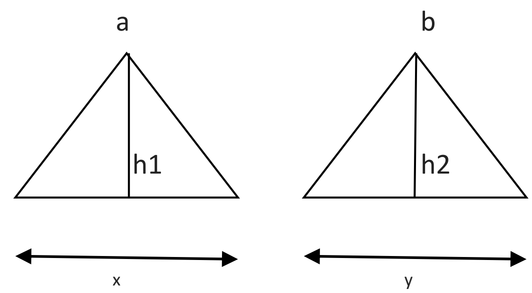
AB = 5cm
DB = 3cm
Thus, AD = 2 cm
$\frac{ar(\Delta ADC)}{ar(\Delta ABC)}$ = $(AD/AB)^2$
$(2/5)^2$ = $\frac{4}{25}$

280. (d) Base = Corresponding altitude
= 3 :4
Let the base = 3x
Altitude = 4x
Thus, Area of triangle = 1176
$\frac{1}{2} \times 3x \times 4x = 1176$
x^2 = $\frac{(1176\times2)}{3\times4}$ = 196
x = 14
Thus, Altitude = 4 × 14 = 56 cm

281. (c) According to question,
Ratio of sides of triangle are =
$$\frac{1}{2} : \frac{1}{3} : \frac{1}{4}$$
(Take LC M of 2, 3, and 4 which is 12)
Now, 6x + 4x + 3x = 52
13x = 52
x = 4
Thus, Length of smallest side = 3x = 3 × 4 = 12 cm

282. (c) Let diagonals the 2x and 5x
$$\frac{A_1}{A_2} = \frac{\left[\frac{1}{2} \times (2x)^2\right]}{\frac{1}{2} \times (5x)^2} = \frac{4}{25}$$
→ 4 : 25

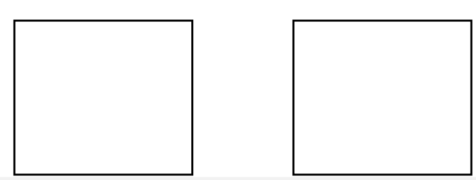
283. (c)



$$\frac{\left[\frac{1}{2} \times h1 \times x\right]}{\frac{1}{2} \times h2 \times y} = \frac{a}{b}$$
$\frac{h1}{h2} \times \frac{x}{y} = \frac{a}{b}$, $\frac{h1}{h2} = \frac{ay}{bx}$
ay : bx

284. (a) Ratio of parallel sides = 5 : 3
Let sides are 5x and 3x
$\frac{1}{2}$ (sum of parallel sides) × Perpendicular distance = 1440 m^2
$\frac{1}{2}(5x + 3x) \times 24 = 1440$
4x × 24 = 1440
x = $\frac{1440}{4\times24}$ = 15 m
Thus, Length of longer side = 5x
= 5 × 15
= 75 m

285. (c)



a_1 a_2

$a_1^2 / a_2^2 = \frac{225}{256}$

$a_1 / a_2 = \frac{\sqrt{225}}{256} = \frac{15}{16}$

Ratiio of their perimeters

$= 4a_1/4a_2 = a_1/a_2 = \frac{15}{16}$

→ 15 : 16

286. (d) Clearly, 3, 4, 5, from a triplet therefore, consider the triangle, a right triangle

Let the sides are 3, 4, 5 triplet

Perimeter = 3x + 4x + 5x = 12x

area of triangle = $\frac{1}{2} \times 3x \times 4x =$

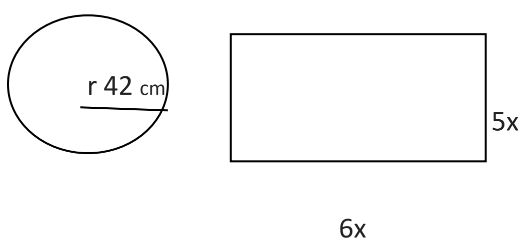
$\frac{1}{2} \times 3x \times 4x$ = 216

$x^2 = \frac{216 \times 2}{3 \times 4} = 36$

x = √36 = 6

thus, Perimeter = 12 × 6 = 72 cm

287. (a)



Perimeter of rectangle = circumference of circlare wire

$2\,(6x + 5x) = 2\,\frac{22}{7} \times 42$

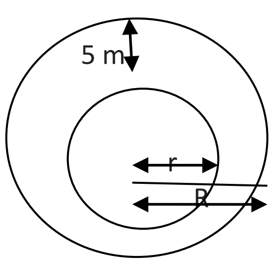
22x = 2 × 22 × 6

x = 12

Clearly,

Smaller side of rectangle = 5 × 12 = 60 cm

288. (c)



$\left(\frac{2\pi R}{2\pi r}\right) = \frac{23}{22}$

$\frac{R}{r} = \frac{23}{22}$

Let R = 23x , s = 22x

Thus, R – r = 5

23x – 22x = 5

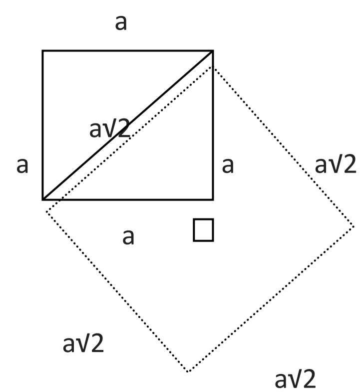
→ r = 22 × 5 = 110

Diameter of inner circle = 2r

= 2 × 110

= 220 m

289. (b)



Ket tge sude if sqyare = a

Thus, Diagonal = a√2

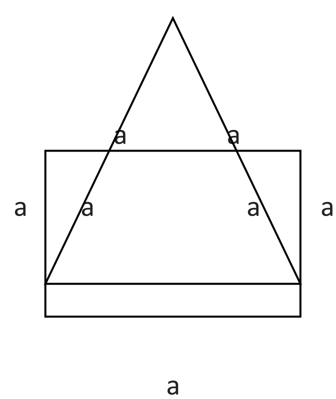
{√(a^2 + a^2) / a√2}

$\frac{Area\ of\ square\ on\ diagonal}{AReaof\ square\ on\ diagonal}$

$\frac{a^2}{a\sqrt{2}^2} = \frac{a^2}{a^2 \times 2} = \frac{1}{2}$

$= 1 : 2$

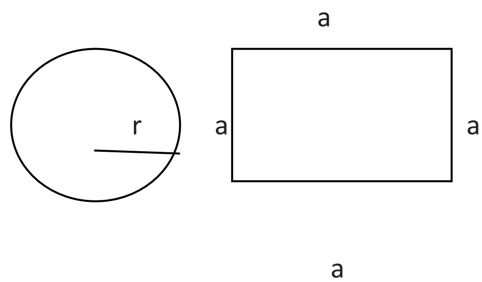
290.



$$\frac{area\ of\ square}{area\ of\ equilateral\ triangle}$$

$\frac{a^2}{\frac{\sqrt{3}}{4}a^2} = \frac{4}{\sqrt{3}}$ = 4 : √3

291.



$\pi r^2 = a_2$

$r^2 = \frac{a^2}{\pi}$

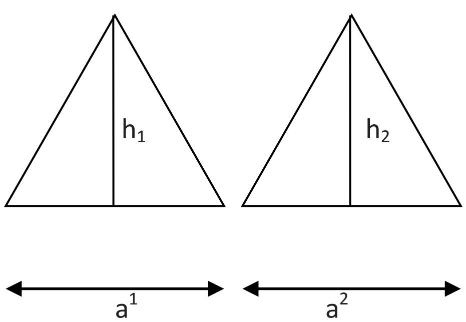
$r = \frac{a}{\sqrt{\pi}}$

Rato of perimeter = $\frac{2\pi r}{4a}$

$\frac{\pi r}{2a}$

$= \frac{\pi \times \frac{a}{\sqrt{\pi}}}{2a} = \frac{\sqrt{\pi}}{2} = \sqrt{\pi} : 2$

292.



$$\frac{\frac{\sqrt{3}}{4}{a_1}^2}{\frac{\sqrt{3}}{4}{a_2}^2} = = \frac{25}{36}$$

$$\frac{a_1}{a_2} = \frac{\sqrt{25}}{\sqrt{36}} = \frac{5}{6}$$

$$Ratio\ of\ altitudes = \left[\frac{\sqrt{3}}{2}a_1\right] / \left[\frac{\sqrt{3}}{2}a_2\right]$$

$= \frac{a_1}{a_2} = \frac{5}{6} = 5 : 6$

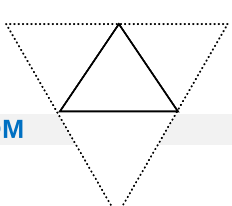
293. (d) Let length = 5x

→ Breadth = $\frac{16x - 2\times 5x}{2} = 3x$

Thus, Required ratio = $\frac{5x}{3x}$

= 5 : 3

294. (c)



When we draw such figures as mentioned in the question the vertex of the old triangle are the mid points of the sides of new traingle and the sides of the old triangle are half of the opposite side.

Thus, Required ratio = 2 : 1

295. (b)

$\frac{Circumference}{Area} = 2\pi r/\pi r^2 = \frac{2}{r} = \frac{2}{3}$

296. (b) Ratio of area = (Ratio of radius)^2 = $\left(\frac{\frac{a}{\sqrt{3}}}{\frac{a}{2\sqrt{3}}}\right)^2$

= 4 : 1

297. (a)

Ratio of area = (Ratio of Radius)^2

	A		B		C
Radius	4	:	2	:	1
Area	16	:	4	:	1

298. (b) $\pi r^2 = a^2$

$\frac{a^2}{r^2} = \frac{\pi}{1}$

$\frac{a}{r} = \sqrt{\pi} : 1$

299. (c)

Ratio of sides = $\frac{1}{3} : \frac{1}{4} : \frac{1}{5}$

= 20 : 15 : 12

= 20 + 15 + 12 = 47

→ 47 → 94

→ 1 → 2

→ Smallest side = 12 × 2 = 24 cm

300. (a) Let the sides be = 3x, 4x, 5x, and 6x

→ 18x → 72, x → 4

→ Greatest side = 6 × 4 = 24 cm

301. (b) Ratio of circumference = Ratio of radius

= 3 : 4

302. (b)

Let the sides be = 2x, 3x and 4x

→ 9x = 18 = x = 12

→ Sides are 4, 6 , and 8 cm respectively

Using hero's formula

S = $\frac{4+6+8}{2}$

→ Area = $\left(\sqrt{[s(s-a)}(s-b)(s-c)\right]$

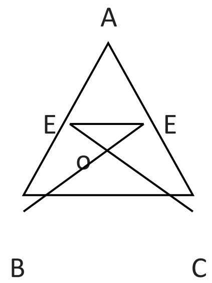
$= \sqrt{[9 \times 5 \times 3 \times 1]}$

$= 3\sqrt{15}\ cm^2$

303. (b) Ratio of area = (Ratio of radius)^2

$=(\frac{a}{\sqrt{3}}:\frac{a}{2\sqrt{3}})^2$ = 4 : 1

304. (a)



As D and E are mid-points

→ DE || BC

→ Δ ODE – ΔBOC

and also $\frac{DE}{BC} = \frac{1}{2}$

(as D and E are mid-points)

→ $\frac{ar\Delta ODE}{ar\Delta OBC} = \left(\frac{1}{2}\right)^2 = \frac{1}{4}$

As D and E are mid-points

→ DE || BC

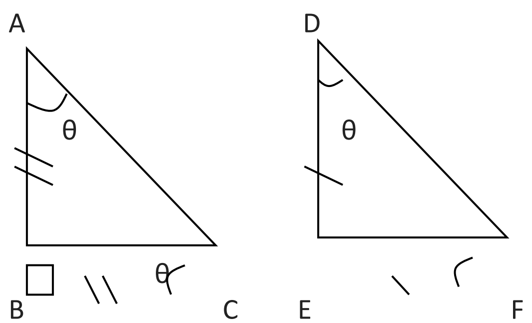
→ Δ ODE - ΔBOC

and also $\frac{DE}{BC} = \frac{1}{2}$

(as D and E are mid-points)

→ $\frac{ar\Delta ODE}{ar\Delta OBC}$ = $(\frac{1}{2})$ = ¼

305.



The given angle is same let verticle angle = θ

(Thus,Δ ABC and ΔDEF are isoceleus triangles)

→ When two angles are equal then third angle is also equal

Thus, ΔABC – ΔDEF

ΔABC is similaer to Δ DEF

Thus, $\frac{Area\ of\ \Delta\ ABC}{Area\ of\ \Delta DEF} = \frac{side\ of\ \Delta ABC}{side\ of\ \Delta DEF}$

→ $\frac{\sqrt{1}}{\sqrt{4}} = \frac{side\ of\ \Delta ABC}{side\ of\ \Delta DEF}$

$\frac{Area\ of\ \Delta\ ABC}{Area\ of\ \Delta DEF} = \frac{1}{2}$

306. (a)

Let the sies be 3x, .3x, and 4x

→ Area = $\frac{4x^2}{4}\ \sqrt{4(3x^2)} - (4x^2)$

= $4x^2$ √($36x^2$ - $16x^2$)

= $4x^2$√$20x^2$

= $8x^3$√5 = 8√5

= x^3 = 1

x = 1

Thus, 3rd side = 3 × 1 = 3 units

307. (c) 3,4 and from treplet

Let the sides be 3x, 4x = 72

→ $6x^2$ = 72

→ x^2 = 12

→ x = 2√3

Thus, Smallest side = 3 × 2√3 = 6√3

308. (b)

Let the sides be 3x, 4x and 5x

→ area = $\frac{1}{2} \times 3x \times 4x = 72$

→ $6x^2$ = 72

x^2= 12

X = 2√3

→ Perimeter of equilateral Δ

= 12 × 2√3 = 24 √ 3 units

Side of Δ = $\frac{24\sqrt{3}}{3}$ = 8√3 units

Area of Δ = $\frac{\sqrt{3}}{4}$ × (8√3)^2

= $\frac{\sqrt{3}}{4} \times 64 \times 3 = 48\sqrt{3}\ units$

309. (d) Let the parallel sides be 2x and 3x

→ Area = $\frac{1}{2} \times (2x + 3x\ ) \times 12 = 480$

5x = 80

x = 16

→ Longer parallel side = 16 1 3 = 48 cm

310. (a)

Let the side of square = a

Thus, Side of equilateral Δ = √2 a

Required ratio = $\frac{\sqrt{\frac{3}{4}}(\sqrt{2}a)^2}{a^2}$

= $\sqrt{\frac{3}{4}}$ ×2 = √3 : 2

311. (b) Ratio of area = (Ratio of side)^2

$\frac{ar\Delta ABC}{ar\Delta DEF} = \left(\frac{10}{8}\right)^2$ = 25 : 16

312. (a) $\frac{\pi {r_1}^2}{\pi 2^2} = \frac{4}{7}$

$\frac{{r_1}^2}{{r_2}^2} = \frac{4}{7}$

$\frac{r_1}{r_2} = \sqrt{\frac{4}{7}} = \frac{2}{\sqrt{7}}$

= 2 : √7

313. (c)

$\frac{\pi(5)^2 - \pi(3)^2}{\pi\,(5)^2} = \frac{(5)^2 - (3)^2}{(5)^2}$

$= \frac{16}{15}$

→ 16 : 25

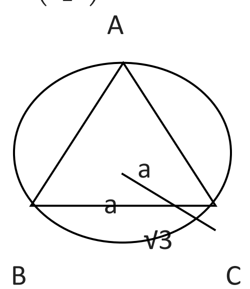
314. (a) Let side of square = a

radius of smaller circle = $\frac{a}{2}$

Radius of larger circle = $\frac{\sqrt{2a}}{2}$

ratio = $\frac{\pi\left(\frac{a}{2}\right)^2}{\pi\left(\frac{2\sqrt{a}}{2}\right)^2} = \frac{\frac{a^2}{2}}{\frac{a^2}{4}} = \frac{1}{2}$

315. (c)



Circum radius = $\frac{Side}{\sqrt{3}} = \frac{a}{\sqrt{3}}$

Equilateral Δ

Requird ratio = $\frac{\frac{\sqrt{3}}{4}a^2}{\pi\left(\frac{a}{\sqrt{3}}\right)^2} = \frac{3\sqrt{3}}{4\pi}$

= 3√3 : 4π

316. (d) 2(l + b) = 4a (a = side of square)

2(2 + 1) = 4a

2 × 3 = 4a

a = $\frac{3}{2}$

Required ratio = $\frac{l \times b}{a^3} = \frac{1\times 2}{\left(\frac{3}{2}\right)^2} = \frac{2\times 4}{9} = \frac{8}{9}$

= 8 : 9

317. (c) 2(l + b) = 3a

Thus, (a = side of equilateral traingle)

Let (b = a)

→ 2(l + a) = 3a

2 (l + a) = 3a

2l + 2a = 3a

2l = a

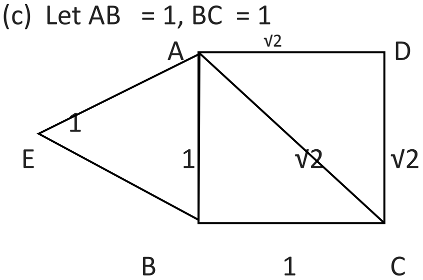
Required ratiio = $\frac{l+b}{\frac{\sqrt{3}}{4}a^2} = \frac{\frac{a}{2}\times a}{\frac{\sqrt{3}}{4}a^2} = \frac{a^2}{2} \times \frac{4}{\sqrt{3a^2}}$

$\frac{2}{\sqrt{3}}$ = 2 : √3

318. (b) Required ratio = $\frac{\pi r^2}{r^2} = \frac{\pi}{1}$

$= \pi : 1$

319. (c) Let AB = 1, BC = 1

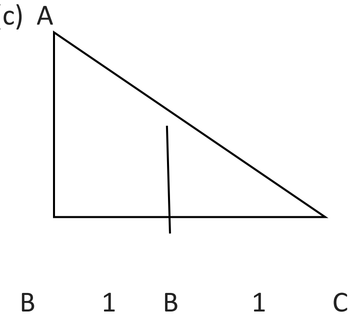


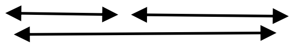
Thus, AC = $\sqrt{1^2 + 1^2} = \sqrt{2}\ (using\ pythagoras)$

$\frac{ar(\Delta ABE)}{ar(\Delta ACD)} = \frac{\frac{\sqrt{3}}{4}(1)^2}{\frac{\sqrt{3}}{4}(\sqrt{2})^2} = \frac{1}{2} = 1:2$

320. (b) $\frac{ar(\Delta ABC)}{ar(\Delta DEF)} = \left(\frac{AB}{DE}\right)^2 = \left(\frac{10}{8}\right)^2 = \frac{25}{16}$

321. (c) A





2

AB || AB
Thus, A' and B' are the mid-point By mid point theorem
Thus, ΔA'B'C - ΔABC
Let BB' = B'C = 1
Thus, BC = 2 (B is the mid point of BC)

$\frac{ar(\Delta ABC)}{ar(\Delta ABC)} = (\frac{B'C}{BC})^2 = (\frac{1}{2})^2 = \frac{1}{4}$

ar(AA'B'B) = ar(ABC) – ar(A'B'C)

$\frac{ar(AA\prime B\prime B)}{ar(ABC)}$ = 3/4 = 3 : 4

322. (d) Ratio of sides $= \frac{1}{4} : \frac{1}{6} : \frac{1}{8}$

$= \frac{1}{4} \times 24 : \frac{1}{6} \times 24 : \frac{1}{8} \times 24 = 6 : 4 : 3$

Thus, Take LCM = 24
ATQ perimeter = 91
6 + 4 + 3 = 91

13 unit $= \frac{91}{13}$ =7

Diff. between long and shor side = 6 – 3 = 3 unit
→ 3 unit = 7 × 3 = 21 cm

323. (c) By using result,
$R_1\theta_1 = R_2\theta_2$

$\frac{R_1}{R_2} = \frac{\theta_1}{\theta_2} = \frac{75°}{60°} \frac{5}{4} = 5 : 4$

324. (c) In Δ OBC,
H and G are the midpoints of OB and OC
Thus, HG = ½ BC
Similarly, FG = ½ CD and EF = ½ AD,
HE = ½ AB
On adding,
HE + HG + FG + EF

$= \frac{1}{2} (AB + BC + CD + AD)$

Perimeter of EFGH.

$= ½ \times Perimeter\ of\ ABCD$

$\frac{Perimeter\ of\ EFGH}{Perimeter\ of\ ABCD} = \frac{1}{2}$

325. (c) Old circumfference = 4π
2πr = 4π

r $= \frac{4\pi}{2\pi}$ = 2 cm

Old area = $\pi(2)^2 = 4\pi\ cm^2$
New circumference = 8 π
2πR = 8 π

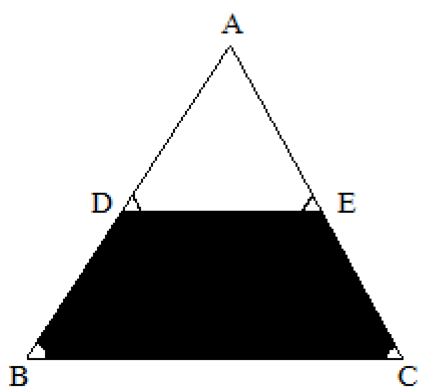
R $= \frac{8\pi}{2\pi}$ = 4cm

New area = 16 π cm^2
Option (c) is the answer
(Thus, area is quadruples)

326. (c) Length 4 → 5
Breadth 5 → 4
Area 20 → 20
Area remains unchanged.

327. (d)
According to question,
Circumference of a circle = Area of circle
$2\pi r = \pi r^2$
r = 2
Thus, Diameter of circle = 2r
= 2 × 2 = 4

328. (c)



Dand E are the mid points of sides AB and AC
Thus, DE||BC
(By mid Point theorem)
Δ ADE - Δ ABC

$\{\angle ADE = \angle ABC$
$\angle AED = \angle ACB\}$

$\frac{ar(ADE)}{ar(ABC)} = \left(\frac{DE}{BC}\right)^2 = \left(\frac{1}{2}\right)^2 = \frac{1}{4}$

Thus, $\frac{ar(AECB)}{ar(ABC)} = \frac{3}{4}$

Percentage of ar(DECB)
= ¾ × 100 = 75%

329. (b) Increment in breadth = 10%

$\frac{10}{100} = \frac{1}{10}$ (1 = Increment, 10→ Breadth)

	Length	Breadth	Area
Original	10	10	100
New	9	11	99 -1

% change $= -\frac{1}{100}$ = 1%

Alternate:

using x = 10% (Breadth),

y = - 10% (length)

are x + y $\frac{xy}{100}$

= 10 – 10 + $\frac{10\times(-10)}{100}$

= - 1%

330. (c) Use x +y + $\frac{xy}{100}$

20 + 20 + $\frac{20\times20}{100}$ =44%

331. (d) If circumference of circle is reduced by 50% then radius is reduced by 50%.

50% $= \frac{1}{2}$ (1 → Decrement, 2→ Original)

	Radius	Area
Original	2	4
New	1	1 - 3

(π is constant)

Reduction in area = = $\frac{3}{4}\times 100 = 75\%$

332. (d) Increase in area

= 25 + 25 + $\frac{25+25}{100}$

use formula (x + y + $\frac{xy}{100}$) = 50 + 6.25

= 56.25%

333. (a) Increase in area

= 50 + 50 + $\frac{50+50}{100}$ = 100 + 25 = 125%

334. (b) Using x + y + $\frac{xy}{100}$

= 20 – 20 + $\frac{20\times(-20)}{100}$

= - 4%

(decrease by 4%)

335. (b) Increase in area

= 50% + 50% + $\frac{50\times50}{100}$

= 100 + 25 = 125%

336. (c) Increase in altitude = 10%

$\frac{1}{10}$ (1 → Increament, 10 → Original)

Altitude	Base
10	11
-1 Area of no change	
11	10

Decrease in base

$= \frac{1}{11}\times 100 = 9\frac{1}{11}\%$

337. (d) Increase in circumference = Increase in radius

= 50% = ½ (1 → Increment, 2 → Original)

Radius	Area
2	4
	+ 5
3	9

$\frac{5}{4}\times 100 = 125\%$

338. (b) Use of x + y + $\frac{xy}{100}$

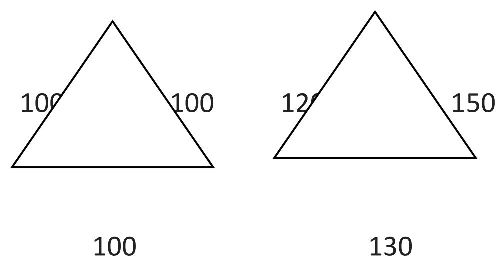
Percentage change

= 12 + 15 + $\frac{12\times15}{100}$

=27+ $\frac{9}{5}$

= 144/5

339. (b)



Perimeter of equilateral triangle

= 100 + 100 + 100 = 300

= 120 + 150 + 130 = 400

% = Increase = $\frac{100}{300}\times 100$

= $33\frac{1}{3}\%$

340. (b) Length 5 → 3

Breadth 5 →3

Area 25→9

% decrease = $\frac{25-9}{25}\times 100 = 64\%$

341. (A) Length 5 8

Breadth 8 5

Area 40 → 40

→ % Decrease $\frac{8-5}{8}$ × 100

= $37\frac{1}{2}\%$

342. (b) Length 5 → 6

Breadth 4 → 5

Area 20 → 30

% increase = $\frac{30-20}{20}$ ×100 =50%

343. (c) Side 10 → 11

Area 100 → 121

% increase = $\frac{121-100}{100}$ ×100 =21%

344. (b) Length 20 → 21

Breadth 10 → 9

Area 200 → 189

% Decrease = $\frac{200-189}{200}$ × 100 = 5.5%

345. (d) Radius 100 → 101

Area 10000 π → 10201 π

% increase = $\frac{201}{10000}$ × 100 = 2.01%

346. (c) Let the breadth = x cm

→ Length = (x + 10) cm

According to the question,

x (x + 20) = (x + 10)(x + 5)

→ $x^2 + 20x = x^2 + 15x + 50$

→ 5x = 50

→ x = 10

→ Area = 10 (10 + 20) = 300 m^2

347. (c) Length 20 → 21

Breadth 50 → 49

Area 1000 → 1029

% error = $\frac{1029-1000}{1000}$ × 100 = 2.9%

348. (d) Length 10 → 13

Breadth 10 → 12

Area 100 → 156

% increase in area

= $\frac{156-100}{100}$ ×100 =56%

349. (d) 40% = $\frac{4}{10} = \frac{2}{5}$

Side	Surface area
5	$(5)^2$ = 25
40%	24
7	$(7)^2$ = 49

% = Increase = $\frac{24}{25} \times 100 = 96\%$

Alternative:

Percentage increase in surface are

= 40 + 40 + $\frac{40\times 40}{100}$%

= 80 + 16 = 96%

% effect using x + y + xy/100

350. (a) Percentage increase in area

$= \left(8 + 8 + \frac{8\times 8}{100}\right)$

= 16 + 0.64 = 16.64%

351. (a) Side of square is increased by 30%

= $\frac{30}{100} = \frac{3}{10}$

Initial +3 Final

10 13

\- 3

Other side will have to be decreased by

→ $\frac{3}{10} \times 100 = 23\frac{1}{3}\%$

352. (c) Percentage increase in area

= 100 + 100 + $\frac{100\times100}{100}$

= 300%

Alternate :

L	B	Area
1	1	1
		+ 3
2	2	4

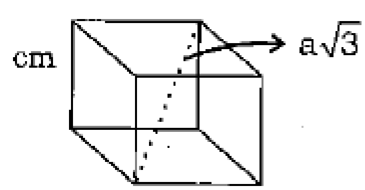
Percentage increase = $\frac{3}{1}$×100 =300%

353. (d) x + y + $\frac{xy}{100}$

= 10 – 10 + $\frac{10\times(-10)}{100}$ = - 1%

(Negative sign shows decrease)

354. (a) Let the side of cube = a



Diagonal of cube $= a\sqrt{3}$ cm

$a\sqrt{3} = \sqrt{12}$

on squaring, $a^2(3) = 12$

$a^2 = 4$

a = 2 cm

Volume of cube $= a^3 = 2^3 = 8$ cm

355. (c) Number of cubes $= \frac{15^3}{3^3} = 125$

356. (c) Side of the cube $= \frac{Diagonal}{\sqrt{3}}$

$= \frac{4\sqrt{3}}{\sqrt{3}}$

Volue of the cube $(side)^3$

$= (4)^3 = 4 \times 4 \times 4 = 64\ cm^3$

357. Let l = 9x, h = 3x, b=x

$l \times b \times h = 216 \times 1000$

(1 litre $= 1000\ cm^2$)

$9x \times 3x \times x = 216000$

$27x^3 = 216000$

$x^3 = 8000$

x = 20

l = 180 cm = 18 cm

358. Volume of cuboid

= 2 × volume of cube

$l \times b \times h = 2 \times (side)^3$

$\frac{9\times 8\ 1\ 6}{2} = (side)^3$

side $= \sqrt[3]{(6 \times 6 \times 6)} = 6$ cm

Total surface area of cube= $6\ (side)^2 = 6\ (6)^2 = 6 \times 36 = 216\ cm^2$

359. (d) Length of largest bomboo $= \sqrt{[(5)^2 + (4)^2 + (3)^2}$

$= \sqrt{(25 + 16 + 9)}$

$= = \sqrt{50} = 5\sqrt{2}m$

360. (a) The external dimensions of the box are = 1

1 = 20 cm, b = 12 cm, h = 10 cm

External volume of the box $= 20 \times 12 \times 10 = 2400\ cm^2$

Thickness of the wood = 1 cm

Internal length = 20 – 2 = 18 cm

Internal breadth = 12 – 2 = 10 cm

Internal height = 10 – 2 = 8 cm

Internal volume of the box $= 18 \times 10 \times 8 = 1440\ cm^3$

Volue of wood = (2400 - 1440) cm^2

$= 960\ cm^2$

361. (c) The number of cubes will be least if each cube will be of maximum edge

∴ Maximum possible length

= HCF of 6, 9, 12 = 3

Volume of cube $= 3 \times 3 \times 3\ cm^3$

Number of cubes

$\frac{(6\times 9\times 12)}{3\times 3\times 3} = 24$

362. (b) Volume of the cistern = (330 – 10) × (260 – 10) × (110 - x) = 8000 × 1000

(where x = thickness of bottom)

x = 110 – 100 = 10 cm

363. (a) Let the length, breadth and height be l, b, h respectively.

→ lb = x

bh = y

lh = z

→ $l^2b^2h^2 = xyz$

→ $v^2 = xyz$

364. (d) The diameter of sphere = side of cube = 7 cm

Radius (r) $= \frac{7}{2}$ cm

Volume of sphere $= \frac{4}{3}\pi r^3$

$= \frac{4}{3} \times \frac{22}{7} \times \frac{7}{2} \times \frac{7}{2} \times \frac{7}{2} = 179.67\ cm^3$

365. (b) Length of rod $= \sqrt{(10^2 + 10^2 + 5^2)}$

$= \sqrt{225}$

= 15 cm

366. (a) Volume of the box $= l \times b \times h$

$= (40 - 8) \times (15 - 8) \times 4$

$= 32 \times 7 \times 4$

$= 896\ cm^3$

367. (d) Let the three sides of the cuboid be l, b and h

→ lb = bh = hl = 12

$l^2 b^2 h^2 = 12 \times 12 \times 12 = 1728$

→ $lbh = \sqrt{1728} = 12\sqrt{12}$

$= 24\sqrt{3}\ cm^3$

368. dimension's of room

Length(l) = 12 cm

Breadth(b) = 9 cm

Height (h) = 8 cm

Thus, diagonal of cuboid $= \sqrt{(l^2 + b^2 + h^2)}$

Thus, Length of longest rod

→ Length of diagonal of cuboid

→ $\sqrt{[(12)^2 + (9)^2 + (8)^2]}$

→ $\sqrt{144 + 81 + 64} = \sqrt{289} = 17$ cm

369. (b) Area of floor → $3 \times 4 = 12\ m^2$

height = 3 m

∴ Area of walls of room

→ (Perimeter of floor) × height of room

→ 2(l + b) × h

l = length = 4 cm

b = breadth = 3 cm

h = height = 3 cm

∴ Area of walls → 2 (4 + 3) × 3 = 42 m^2

Area of painted part = 42 m^2 + 12 m^2 = 54 m^2

370. (a) Let length = l, breadth= b

Height = h

Given that

(l + b + h) = 12 cm

= total surface area of box

= 2 (lb + bh + hl)

$(12)^2 = l^2 + b^2 + h^2 + 94$

$144 – 94 = l^2 + b^2 + h^2$

→ $50 = l^2 + b^2 + h^2$

Diagonal of box = $\sqrt{(l^2 + b^2 + h^2)}$

∴ Length of longest rod that can be put iniside the box

$\sqrt{(l^2 + b^2 + h^2)} = 5\sqrt{2}$ cm

371. (c) Let breadth = b m

Thus, Length of room = 2b m

(1 = 2b)

height = 11m

Area of four walls of room

→ 660 m^2 (given)

2(l + b) × h = 660

2 (2b + b) × 11 = 660

3b × 22 = 660

b = 10

Thus, breadth = 10 m

Length =20 m

area of floor = l × b

length × breadth

20 × 10 = 220 m^2

372. (d) Side of cube (a) $= \frac{8\sqrt{3}}{\sqrt{3}} = 8$ cm

→ Total surface area = $6(a)^2 = 6 \times 8^2$

= 384 cm^2

373. (c) Length of pencil = $\sqrt{(a^2 + b^2 + c^2)}$

$= \sqrt{(8^2 + 6^2 + 2^2)} = \sqrt{(64 + 36 + 4)}$

$= \sqrt{104} = 2\sqrt{26}$ cm

374. (b) Edge of box = $\sqrt[3]{(3.375)}$ = 1.5 M

375. (b) Whole surface area of cuboid = 2(Whole surface area of cube)

- 2 × Area of one face

(∴ two facesa of the two cibes area not visible)

→ Required area = $12^a - 2a^2 = 10a^2$

= 10×6^2 = 360 cm^2

376. (b) Let the increase in level = x m

→$(1000 \times 1000 \times \frac{2}{100}) \times ½ = 100 \times 10 \times x$

→ x = 10 m

377. (d) Sides of parallelopiped area in ratio = 2 : 4 : 8

Let length = 2 units

Height = 8 units

Let the side of cube = a unit

According to question,

Volume of cube = volume of parallelopiped

$a^3 = 2 \times 4 \times 8$

$a^3 = 64$

$a = \sqrt[3]{64}$ = 4 units

$$\frac{Suface\ area\ of\ parallelopiped}{Surface\ area\ of\ cube} = \frac{2(lb + bh + hl)}{6a^2}$$

$$\frac{2(8+32+16)}{6(4)^2} = \frac{7}{6} = 7:6$$

378. (c) Let length = 1 cm

Breadth = 2 cm, Height = h cm

2(lb + bh + hl) = 22

2 + 3h = 11

3h = 9

h = 3 cm

$\sqrt{(1^2 + 2^2 + 3^2)} = \sqrt{(1 + 4 + 9)} = \sqrt{14}$ cm

379. (d $\sqrt{(l^2 + b^2 + h^2)} = 15$

$(l^2 + b^2 + h^2) = 225$ ...... (i)

∴ l + b + h = 24

(l + b + h) = 576

→ 225 + 2(lb + bh + hl) = 576

= 351 cm^2

380. (c) Total surface area of cube = $6(side)^2$

$6(side)^2 = 96$

$(side)^2 = \frac{96}{6} = 16$

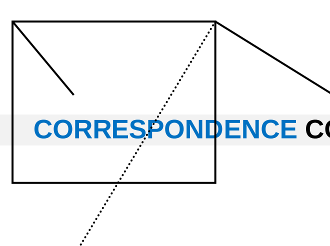
side = $\sqrt{16}$ = 4 cm

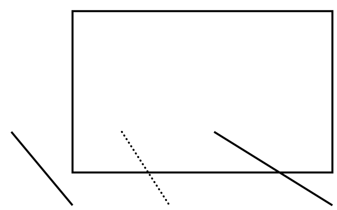
Volume of the cube = $(side)^3$

= $(4)^3$

= 64 cm^2

381. (b)





Diagonal = 35√3

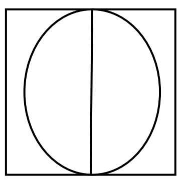
∴ The length of largest rod = Diagonal = side √3

side = 35

Side √3 = 35√3

side = $\frac{35\sqrt{3}}{\sqrt{3}}$ =35

side of cube = 35



Diameter of the sphere = side of the cube

2 × radius = side

radius = $\frac{35}{2}\ cm$

Surface area of the sphere

= 4 π r^2

= 4 × $\frac{22}{7} \times \frac{35}{2} \times \frac{35}{2}$ =3850m^2

382. (d) Volume of air in room = 204 m^3

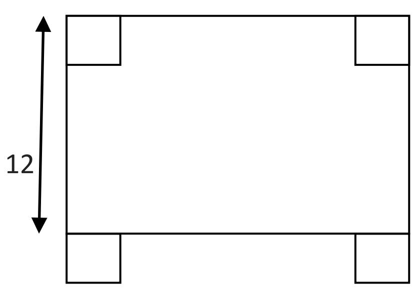
(area of floor) ×height = 204

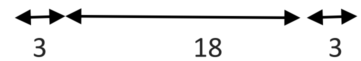
Thus, Volume = area of base × height

(area of floor) × 6 = 204

Area of floor = $\frac{204}{6}$ = 34 cm^2

383. (b)





The box will be of cuboid shape

Length of the box, l = 24 – (2 × 3) = 24 – 6 = 18 cm

Breadth of the box, b = 18 – (2 ×3) = 18 - 6 = 12 cm

Height of the box, h = 3 cm

Surface area of the box = 2 (l + b) × h + l × b

= 2 (18 + 12) × 3 + 18 × 12

= 2 × 30 × 3 + 18 × 12

= 180 + 216 = 396 cm^2

384. (a) Volume of all three cube = $4^3 + 5^3 + 6^3$

= 64 + 125 + 216 cm^3

= 405 cm^2

Now,, 62 cm^2 is

Thus, Volume of new cube = 405 – 62

= 343

(side of new cube) = 343

side of new cube - ^{3}√343 = 7

Total surface area of new cube = 6 × $(side)^2$

= 6 × $(7)^2$

= 6 × 49

= 294 cm^2

385. (b) Area of cubical floor = 48

$Side^2$ = 48

side = √48 = 4√3

Diagonal of cube = side √3

= 4√3 × 53 = 12 cm

Length of longest rod = 12 m

386. (a)

Let side of new cube = a

According to question,

$a^3 = 6^3 + 8^3 + 1^3$ =

216 + 512 + 1

= 729

a = $\sqrt[3]{729}$ = 9

then surface area = $6(a)^2$

6 × 9^2 = 6 × 81 = 486 cm^2

387. (b) Volume = 20m^3 = 20 × $(100)^3$ cm^3

Volume of one brick = (25 × 12.5 × 8) cm^3

∴ Required number of bricks

$\frac{20\times100\times100\times100}{25\times12.5\times8}$ =8000

388. (a) The toal surface area of cube

= 150 cm^2

6 $(side)^2$ = 150 cm^2

$(side)^2$ = $\frac{150}{6}$ = 25

side = √25 = 5 cm

∴ Volume of cube = $(\text{side})^3$

= $(5)^3$ = 125 cm^3

389. (b) Ratio of length : breadth = 5 : 3

Total surface area of parallelopiped = 558 cm^2

2 (lb + bh + hl) = 558 cm^2

2 (5x × 3x + 3x × 6 + 6 × 5x) = 558

2 ($15x^2$ + 18x + 30x) = 558

$15x^2$ + 48x = 279

$15x^2$ + 48x – 279 = 0

On Solving,

∴ Length = 5 × 3 = 15 cm = $\frac{15}{10}$

= 1.5 cm

Alternatively:

Take help from the options

Covert alloptions m cm, 90, 15, 100, 150

then divide all by 5(because we have to find length)

18, 3 , 20, 30. Put all these values one by one.

390. (c) l + b + h = 24 cm

Length of diagonal = 15 cm

$\sqrt{(l^2 + b^2 + h^2)}$ = = 15

$(l^2 + b^2 + h^2)$ = = 225 cm

$(l + b + h)^2$ - 2(lb + bh + hl) = 225

$(24)^2$ - 2(lb + bh + hl) = 225

576 – 225 = 2(lb + bh + hl)

Thus, Total surface area = 351 cm^2

391. (c) Let length = 3x, breadth = 4x

Height = 6x

3x × 4x × 6x = 576

x^3 = $\frac{576}{3\times4\times6}$ =8

x = $\sqrt[3]{8}$ = 2cm

Thus, Length = 3 × 2 = 6 cm

breadth = 4 × 2 = 8 cm,

height = 6 × 2 = 12 cm

Total surface area = 2 (lb + bh + hl)

= 2 (6 × 8 + 8 × 12 + 12 × 6)

= 2 (48 + 96 + 72)

= 2 × 216 = 432 cm^2

392. (d) We know that

A parallelopiped has vertices (v)= 8

edge (e) = 12

face (f) = 6

Put into equation (v- e + f)

→ 8 – 12 + 6 → 2

393. (b) According to the question,

1 dm = $\frac{1}{10}$ m

Let depth of the hole = d

Thus, 48m m × 31.5 × $\frac{6.5}{10}$ m

= 27 × 18.2 × d

d = 2m

394. (c)

2.1m × 1.5 m × h = 630 lt

$\frac{21}{10}\, m \times \frac{15}{10} m \times h = \frac{630}{1000}\, m^3$

[∴1 m^3 = 100 lt

1000 cm^3 = 1 lt]

h = $\frac{1}{5}$ m = 0.20 meter

395. (d)

Number of cubes = $\frac{8\times4\times2}{2\times2\times2}$ =8

396. (a) When we change shape of a solid figure, volume remains constant

∴ Volume of hemisphere = volume of cone

$\frac{2}{3}\pi R^3 = \frac{1}{3}\pi R^3 h$

Thus, 2 R = h

397. (d)

According to the question,

Let the radius of sphere = r cm

4 π $(r + 2)^2 – 4\pi r^2$ = 352

In such type of questions take help from the options to save your valuable time

4π{$(r + 2)^2$ - r^2} = 352

4π{r^2 + 4 + 4r – r^2} = 352

π (1 + r) = $\frac{352}{16}$ = 22

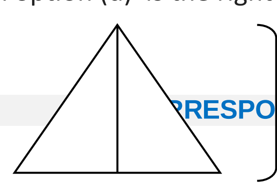
Take = r = 6

$\frac{22}{7} \times (1 + 6) = \frac{22}{7} \times 7$

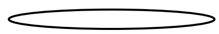
= 22

Then option (d) is the right answer.

398. (d)



H = 60 cm



R = 32 cm

We have to find the slant height

Take ratio of H and R

= $\cancel{60}$: $\cancel{32}$

15 : 8

L = √[$(15)^2$ + 8^2 = 17

= 17 × 4 = 68 cm

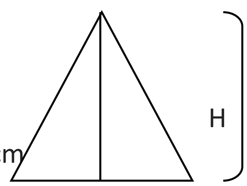
Cost of painting = Surface area of cone × 35

= π r L × 35

$\frac{22}{7} \times \frac{32\times68}{10000}$ × 35

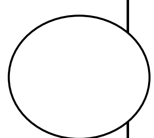
= Rs. 23.94 (approx)

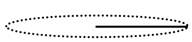
399.



r = 2 cm

H = 10 cm





[Spherical balls]

R = 20 cm

[Solid Cone]

Let the spherical balls made

= 'x'

According to question,

Volume of cone = x × volume of sphere

$\frac{1}{3}\pi R^2$ H = x × $\frac{4}{3}\pi r^3$

$(20)^2$ × 10 = x × 4 × $(2)^3$

x = 125

400. (d) Radius of tank , r = $\frac{35}{2}$ cm

Let initial height = H

Final height = h

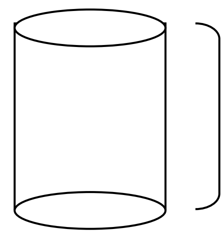
According to question,

$\pi\left(\frac{35}{2}\right)^2 \times H - \pi\left(\frac{35}{2}\right)^2 h = 11000\ cm^3$

H - h = $\frac{11000\times2\times2\times7}{35\times35\times22} = \frac{80}{7}$

= $11\frac{3}{7}$ cm

401. (d)



h = 40 cm

∴ Circumference of its base = 66 cm

2 π r = 66

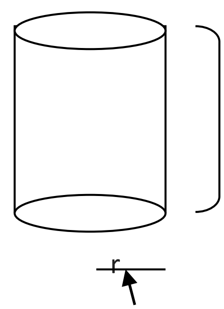
r = $\frac{66}{2\pi} = \frac{66\times7}{2\times22} = \frac{21}{2}\ cm$

Thus, Volume = $\pi r^2 h$

$\frac{22}{7}\times\frac{21}{2}\times\frac{21}{2}\times 40$

= 13860 cm^3

402. (a)



h

r

r

According to question,

2πr = 6π

r = 3π

height of cylinder = diameter

= 2 ×r = 2 × 3 = 6 cm

Volume of water = πr^2 h

= $(3)^2$ × 6 = 54π cm^3

403. Volume of the cone = $\frac{1}{3}\pi(15)^2 \times 108\ cm^3$

Volume of the cylinder = $\pi \times r^2 \times 9\ cm^3$

According to the question,

$\pi \times r^2 \times 9 = \frac{1}{3}\pi \times 15 \times 15 \times 108$

$r^2 = \frac{5\times15\times108}{9} = 900$

r = √900 = 30

404. (d) Volume of new sold sphere

$= \frac{4}{3}\pi\left(\frac{6}{2}\right)^3 + \frac{4}{3}\pi\left(\frac{8}{2}\right)^3 + \frac{4}{3}\pi\left(\frac{10}{2}\right)^3$

$= \frac{48}{3}\pi r^3 = \frac{4}{3}[(3)^3 + (4)^3 + (5)^3]$

$r^3 = 216$, r = 6 cm

∴ Diameter of the new sphere = 2 × 6 = 12 cm

405. (d) Let the radius of new ball

= R cm

Then, $\frac{4}{3}\pi R^3 = \frac{4}{3}\pi(3^3 + 4^3 + 5^3)$

$R^3 = 27 + 64 + 125 = 216$

$R = \sqrt[3]{(6 \times 6 \times 6)} = 6$ cm

406. (d) Volume of the new sphere

$= \frac{4}{3}\pi[r_1^3 + r_2^3 + r_3^3]$

$\frac{4}{3}\pi R^3$

$\frac{4}{3}\pi[r_1^3 + r_2^3 + r_3^3]$

$R^3 = r_1^3 + r_2^3 + r_3^3$

$R^3 = 1^3 + 6^3 + 8^3$

= 1 + 216 + 512 = 729

R = 729 = 9 cm

407. (b) 1 = 2.5 km

Area of base = 1.54 km^2

$\pi r^2 = 1.54$

$r^2 = \frac{1.54\times7}{22}$

$r = \frac{\sqrt{(1.54\times7)}}{22} = 0.7$ km

We know that, $l^2 = r^2 + h^2$

$h^2 = \sqrt{(l^2 - r^2)}$

$= \sqrt{(2.5^2 - 0.7^2)}$

= √5.76 = 2.4 km

408. (c) Radius = $\frac{diameter}{2} = \frac{19.2}{2} = 9.6$ m

height = 2.8

$l^2 = r^2 + h^2$

$= 9.6^2\ 2.8^2 = 92.16 + 7.84 = 100$

1 = √100 = 10 m

Area of the canvas = πrl

$= \frac{22}{7} \times 9.6 \times 10 = 301.7$

409. (c) External radius R = 4 cm

Internal Radius = 3 cm

Volume of iron used $= \pi R^2 h - \pi r^2 h$

$= \pi h(R^2 + r^2)$

= π h (R + r) (R - r)

$= \frac{22}{7} \times 20 \times (4+3) \times (4-3)$

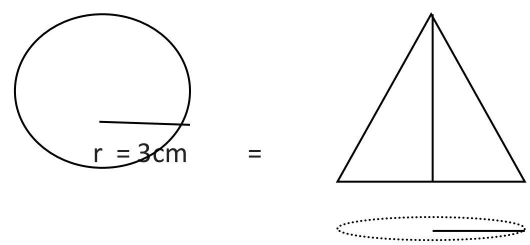
$= \frac{22}{7} \times 20 \times 7 \times 1 = 400\ cm$

410. (c) Volume of Sphere = Volume of displaced water

$\frac{4}{3}\pi \times 2 \times 2 \times 2 = \pi \times 4 \times 4 \times h$

$h = \frac{2}{3}\ cm$

411. (d)



R = 6 cm

Volume of cone = Volume of sphere

$\frac{1}{3}\pi R^2 h = \frac{4}{3}\pi r^3$

$\frac{1}{3}\pi \times 6 \times 6 \times h = \frac{4}{3}\pi \times 3 \times 3 \times 3$

h = 3

412. (b) Volume of a cone $= \frac{1}{3}\pi r^2 h$

$\frac{1}{3}\pi r^2(24) = 1232\ cm^3$

$r^2 = \frac{1232 \times 3 \times 7}{24\times22}$

$r^2 = 7 \times 7$

r = 7 × 7 = 7 cm

$l = \sqrt{r^2 + h^2} = \sqrt{(7^2 + 24^2)} = \sqrt{625} = 25$

Curved surface area = πrl

$= \frac{22}{7} \times 7 \times 25 = 550\ cm^2$

413. (d)

Volume of a sphere

$= \frac{88}{21} \times (14)^3$

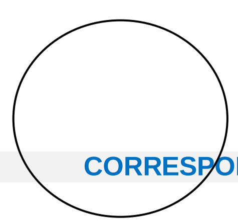
$= \frac{4}{3} \times \frac{22}{7} \times (14)^3 \left\{\frac{4}{3}\pi r^3\right\}$

Radius = 14

Curved surface area of sphere = $4\pi(\text{radius})^2$

$= 4 \times \frac{22}{7} \times 14 \times 14 = 2464\ cm^2$

414. (b)



r

Surface area of sphere $= 64\pi$

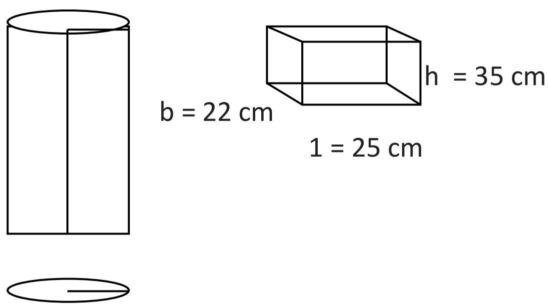
$4\pi(\text{Radius})^2 = 64\pi$

$(\text{radius})^2 = \frac{64}{4} = 16$

Radius $= \sqrt{16} = 4$ cm

Diameter $= 8$ cm

415. (a) 1 dm = 10 cm



$\frac{350}{2}\ cm$

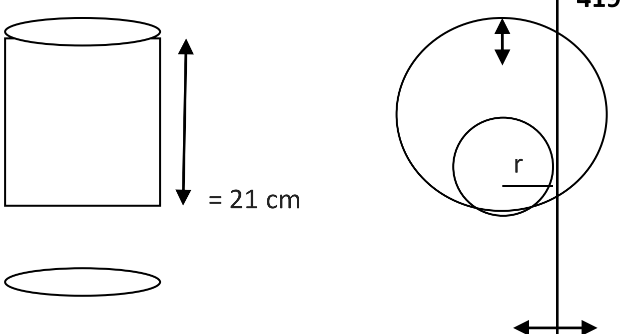
x × volume of 1 tin = volume of cylinder

$\rightarrow x \times (25 \times 22 \times 35) = \frac{22}{7} \times \frac{350}{2} \times \frac{350}{2} \times 240$

x = 1200

416. (a) r =

4 – 1 = 3 cm



R = 4 cm

Volume of hollow iron pipe

$= \pi\{R^2 - r^2\} \times h$

$= \pi\ \{4^2 - 3^2\} \times 21$

$= \frac{22}{7} \times 7 \times 21 = 22 \times 21$

$= 462\ cm^2$

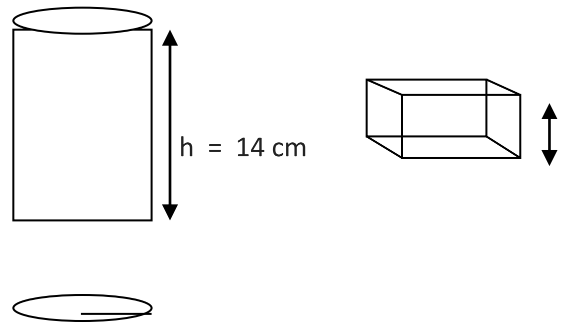
Now $1\ cm^3 = 8g$

$462\ cm^3 = 8 \times 462$ g

= 3696 g

= 3.696 kg

417. (b)



Volume of the cylinder = volume of cube

$\pi r^2 h = (\text{side})^3$

$\frac{22}{7} \times r^2 \times 14 = 11 \times 11 \times 11$

$r3 = \frac{11\times11\times11}{22\times2}$

$= \frac{121}{4}$

$r = \frac{11}{2}$ cm $= 5.5$ cm

418. (b) Let the radius = r

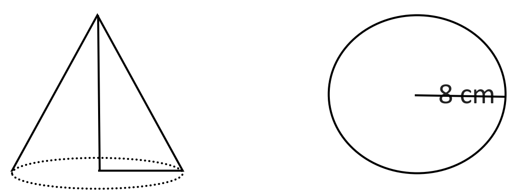
$\pi r^2 h = 9\pi h$

$r^2 = 9$

$r = \sqrt{9} = 3$ m

diameter = 3 × 2 = 6 m

419. (a)



8 cm

volume of cone = value of sphere

$\frac{1}{3}\pi(8)^2 \times h = \frac{4}{3}\pi\ (8)^3$

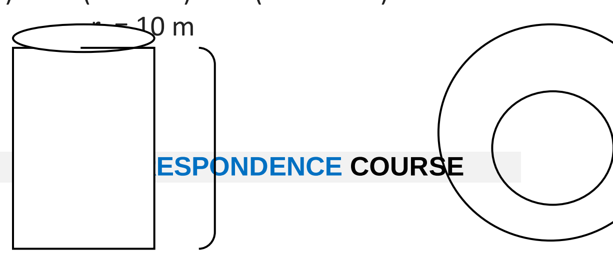
$8 \times 8 \times h = 4 \times 8 \times 8 \times 8$

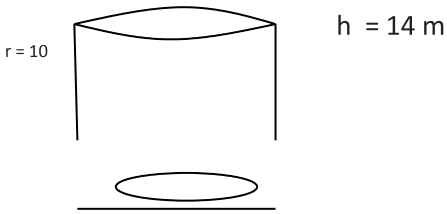
h = 32

slant height = (l)

$\sqrt{(r^2 + h^2)} = \sqrt{(8^2 + 32^2)} = \sqrt{(64 + 1024)} = 8\sqrt{17}$

420. (c) r = 10 m





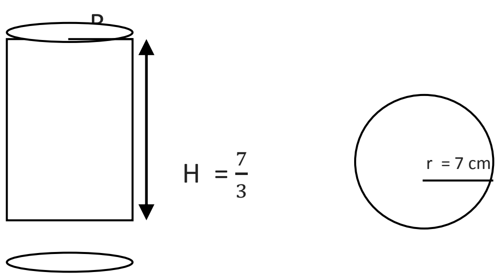
R = 15

Volume of well = volume of embankment

$\pi(10)^2 \times 14 = \pi(15^2 - 10^2) \times H$

$H = \frac{100\times14}{125} = 11.2$ m

421. (b)



Volume of sphere = volume of cylinder

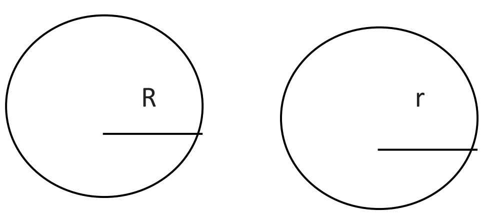
$\frac{4}{3}\pi(7)^3 = \pi(R)^2 \times \frac{7}{3}$

$R^2 = 4 \times 7 \times 7 = 2 \times 2 \times 7 \times 7$

$R = \sqrt{(2 \times 2 \times 7 \times 7)} = 2 \times 7 = 14$ cm

Diameter of base of cylinder = 2R = 2 × 14 = 28 cm

422. (b)



ATQ R + r = 10

$(R + r)^2 = 100$

$R^2 + r^2 + 2Rr = 100$

$R^2 + r^2 + 100 + 2Rr$ ...... (i)

$\frac{4}{3}\pi R^3 + \frac{4}{3}\pi r^3 = 880$

$\frac{4}{3}\pi(R^3 + r^3) = 880$

$R^3 + r^3 = \frac{880\times3}{\pi\times4} = \frac{88\times3\times7}{22\times4}$

$10 \times (100 - 3Rr + Rr) = 210$

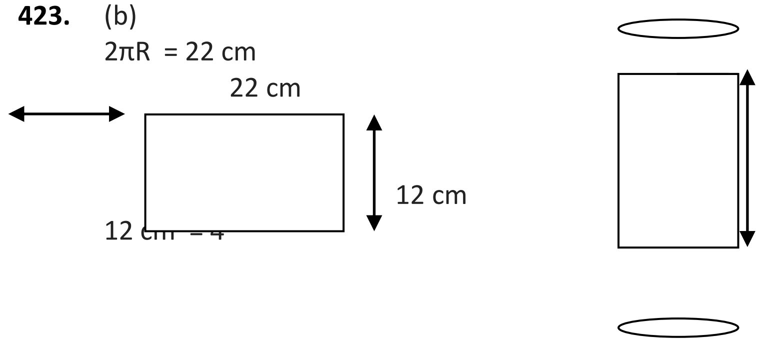
$100 - 3Rr = 21$

$3Rr = 100 - 21 = 79$

$Rr = \frac{79}{3} = 26\frac{1}{3}$

423. (b)

$2\pi R = 22$ cm



Thus, Cylinder is folded along the length of rectangle

$\therefore 2\pi R = 22$

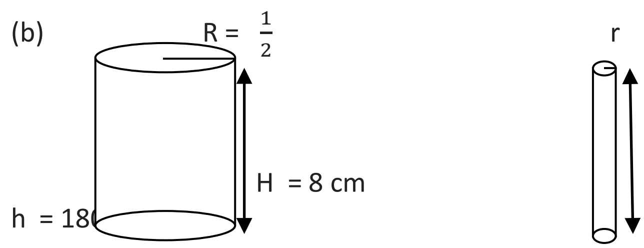
$R = \frac{22}{2\pi} = \frac{22\times7}{2\times22} = \frac{7}{2}\ cm$

Volume of the cylinder = $\pi R^2 H$

$\frac{22}{7} \times \frac{7}{2} \times \frac{7}{2} \times 12$

$= 22 \times 7 \times 3 = 462\ cm^3$

424. (b)



(Rod)

wire

Volume of wire = Volume of Rod

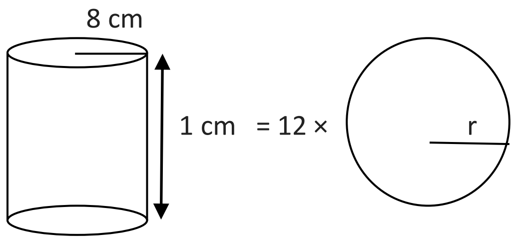
$\pi r^2 h = \pi R^2 h$

$= \frac{1}{4} \times 8 = 2$

$r^2 = \frac{2}{1800} = \frac{1}{900}$

$r = \sqrt{\frac{1}{900}} = \frac{1}{30}$

425. (b)



Volume of cylinder = 12 × volume of sphere

$\pi (8)^2 \times 2 = 12 \times \frac{4}{3}\pi r^3$

$r^3 = \frac{8\times8\times2\times3}{12\times4}$

$r = \sqrt{2\times2\times2} = 2$ cm

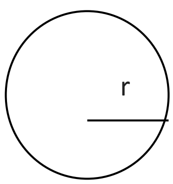
r = 2 cm

d = 4 cm

426. (c) $2\pi r - 2\pi r = 5$

$(R - r) = \frac{5}{2\pi}$

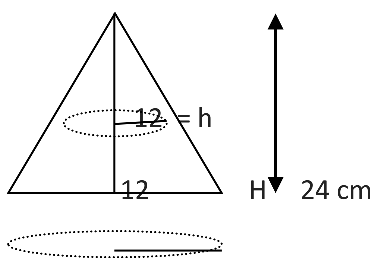
427. (c)



$\frac{3}{4}\pi r^3 = 4\pi r^2$

Radius (r) = 3 units

428. (b)



R = 7 cm

Volume of bigger cone

$= \frac{1}{3}\times\pi(7)^2 \times 24$

$= \frac{1}{3}\times\frac{22}{7}\times 7\times 7\times 24$

$= 22 \times 7 \times 8 = 1232\ cm^3$

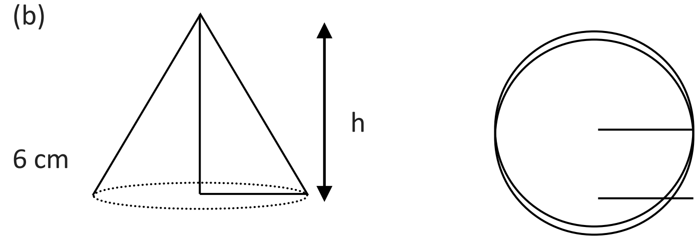
$\frac{Volume\ of\ smaller\ cone}{Volume\ of\ bigger\ cone} = \frac{h^3}{(H)^3}$

$\frac{Volume\ of\ smaller\ cone}{1232} = \frac{12^3}{24^3}$

Volume of smaller cone = 154 cm^2

Thus, When the cone is cut in between then the ratio of volume of smaller cone to the bigger one is always equal to the ratio of the cubes of their heights.

429. (b)



3 cm

$n = \frac{Volume\ of\ sphere}{(Volume\ of\ cone)}$

$\frac{\frac{4}{3}\pi(6)^3}{\frac{1}{3}\pi(3)^2\times 4} = 24$

430. (c) Height of cylinder = Breadth of tin foil

→ Circumference of the base of cylinder

= Length of the foil = 22 cm

→ $2\pi r = 22$

$r = \frac{22\times7}{22\times2} = \frac{7}{2}$ cm

Volume $= \pi r^2 h = \frac{22}{7}\times\frac{7}{2}\times\frac{7}{2}\times 16 = 616\ cm^3$

431. (d) $\pi r^2 = 770$

→ $r^2 = \frac{770\times7}{22}$

→ $r = 7\sqrt{5}$ cm

and $\pi rl = 814$

→ $l = \frac{814\times7}{22\times7\sqrt{5}} = \frac{37}{5}$

$l^2 = h^2 + r^2$

$\frac{37\times37}{5} = h^2 + r^2$

$= \frac{37\times37}{5} = h^2 + 245$

→ $h^2 \frac{1369}{5} - 245 = \frac{144}{5}$

→ $h^2 = \frac{12}{\sqrt{5}}$

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

$\frac{1}{3}\times\frac{22}{7}\times 7\sqrt{5}\times 7\sqrt{5}\times 12/\sqrt{5}$

$= 616\sqrt{5}\ cm^2$

432. In this case the breadth becomes the circumference of the cylinder

→ $2\pi r = 44$

→ $r = \frac{44\times7}{22\times2} = 7$ cm

New volume = $\pi r^2 h$

$\frac{22}{7}\times 7\times 7\times 100$

= 1540 cm^3

433. (b) $\pi r^2 H = \frac{1}{3}\pi r^{2h}$

→ $H = \frac{1}{3}h$

→ h = 3H = 3 × 6 = 18 cm

434. (c) $3\pi r^2 = 1848$

$r^2 = \frac{1848\times7}{3\times22} = 196$

→ r = 14 cm

According to the Question,

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

→ 2r = h

→ h = 2 × 14 = 28 cm

435. (b) The length of the paper becomes the circumference of the base of cylinder when it is rolled along its length

→ $2\pi r = 12$

→ $r = \frac{12}{2\pi} = \frac{6}{\pi}$ cm

436. (b) Volume of tunnel = $\pi \times r^2 \times H$

$= \frac{22}{7}\times\frac{4}{2}\times\frac{4}{2}\times 56 = 704\ m^3$

Volume of ditch

= 48 × 16.5 × 4

= 3168 m^3

Required part = $\frac{704}{3168} = \frac{2}{9}$

437. According to the question,

$\pi\, 4(r^2 - r^2) = 748$

$R^2 - r^2 = \frac{748\times7}{22\times14}$

$= 9^2 - r^2 = 17$

→ $r^2 = 81 - 17 = 64$

→ r = 8

→ Tickness = 9 – 8 = 1 cm

438. (b) $2\times\left(\frac{4}{3}\times\pi\times r^3\right) = \pi R^2 h$

→ $2\times\frac{4}{3}\times\pi\times 27 = \pi\times 36\times h$

$h = \frac{27\times4\times2}{36\times3}$

→ $\frac{8\times27}{3\times36} = 2\ cm$

439. (d) Ratio of height = $\sqrt[3]{}$(Ratio of volume)

→ $\frac{h}{H} = \frac{1}{3}$

3 units = → 30

2 units → 20

→ The cut is made 20 cm above the base

440. (b) $3\pi r^2 = 108\pi$

→ $r^2 = 36$

→ r = 6 cm

Volume $= \frac{2}{3}\pi r^3 = \frac{2}{3}\times 216\times\pi$

= 144 π

441. Radius = 3 decimeters = 30 cm

Height of circular sheet = 1 mm = .1 cm

→ $\frac{4}{3}\pi\times(30)^3 = \pi r^2\frac{1}{10}$

→ $r^2 = \sqrt{10000\times9\times4}$

→ r = 600 cm = 6 meters

442. (b) Let no. of seconds rquired to fill the tank = x

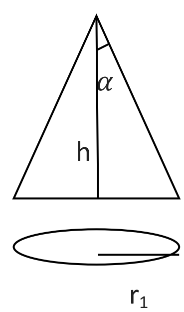
→ $(\pi r^2 h)\times x = 3\times5\times1.54$

→ $x = \frac{3\times5\times1.54\times7\times100\times100}{22\times7\times7\times5}$

= 300 seconds

→ Time requried = 5 minutes

443. (c)



$\frac{r}{h} = \tan\alpha$

→ $r = h\tan\alpha$

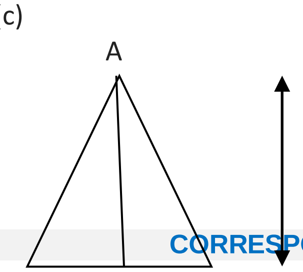
and $\frac{l}{h} = \sec\alpha$

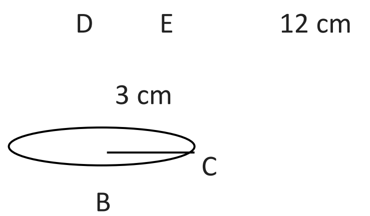
→ $l = h\sec\alpha$

→ $S = \pi\times\tan\alpha\times h\sec\alpha$

→ $\pi h^2(\tan\alpha\times\sec\alpha)$

444. (c)





As DE || BC, Δ ADE - Δ ABC

$$\frac{AD}{AB} = \frac{DE}{BC}$$

$\rightarrow \frac{12-3}{12} = \frac{9\times6}{12} = DE$

$\rightarrow$ DE = 4.5 cm

445. Height ofcylinder = Diameter of sphere

$\rightarrow \frac{S_1}{S_2} = \frac{4\pi r^2}{2\pi r\times h} = \frac{2r^2}{2r^2} = \frac{1}{1}$

$\rightarrow S_1 = S_2 \ (h = 2r)$

446. (d) $\frac{\pi r^2}{\frac{4}{3}r^3\pi}$ = 1

$\frac{h}{r} = \frac{4}{3}$

$\frac{h}{\frac{d}{2}} = \frac{4}{3}$

$h = \frac{4d}{6}$, 3h = 2d

447. (a)

Volume of water pumped out in one hour

$= \frac{22}{7} \times \frac{7}{2} \times \frac{7}{2} \times 12\times3600$

= 1663200 cm^3

= 1663.2 ltr.

448. (d) 2 π rh = 1056

r $= \frac{1056\times7}{2\times22\times16} = \frac{21}{2}$

Volume = π r^2h $= \frac{22}{7} \times \frac{21}{2} \times \frac{21}{2} \times 16$

= 5544 cm^3

449. (b) π r^2 H $= \frac{1}{3}\pi r^2$ h

H $= \frac{r^2h}{r^2\times3} = \frac{h}{3}$

$\rightarrow$ h = 3H = 3 × 7

= 3 × 7

= 21 cm

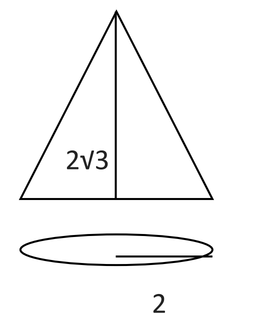
450. (b) π × r^2 × H $= \frac{4}{3}$ π r^3

$= \frac{1}{10} \times \frac{1}{10} \times 36 \times 100 = \frac{4}{3}\pi r^3$

r^3 = 27

r = 3 cm

451. (b)



Slant height $= \sqrt{(2\sqrt{3})^2 + 2^2}$

$= \sqrt{12+4} = 4\ cm$

452. (b) Volume of vessel = Volume of roof

π × r^2 × h = 22 × 20 × x

(Where is rain in cm)

$\rightarrow = \frac{22}{7} \times \frac{100\times100\times350}{22\times20\times100\times100} = x$

$\rightarrow$ x = 2.5 cm

453. (a)

Volume of remaining solid

$= \frac{2}{3}$ π r^2h

$\frac{2}{3} \times \frac{22}{7} \times 36 \times 10 = 240\,\pi$ cm^3

454. (c) Let the height be H3$\rightarrow \frac{1}{3}\pi {r_1}^2 H + \frac{1}{3}\pi {r_2}^2 = \frac{4}{3}\pi R^3$

$\rightarrow$ H $= \frac{4r^3}{r^2{}_1 + r^2{}_2}$

455. (c) Let height and diameter be 3x and 2x

$\rightarrow \frac{1}{3}\pi x^3$ × 3x = 1078

$\rightarrow x^3 = \frac{1078\times7}{22}$ =49×7

$\rightarrow$ x = 7

$\rightarrow$ Height = 7 × 3 = 21 cm

456. (c) Radius of cylinder r = 10 cm

height of cylinder h = 2 cm

Volume of cylinder = πr^2h

radius of cone $\rightarrow$ radius of cylinder = 10 cm

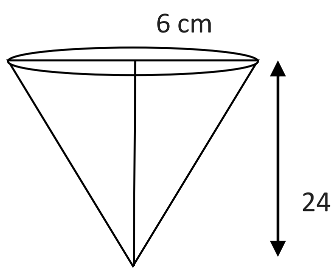
Let height of cone = h_1

Thus, Volume of cone $= \frac{1}{3}\pi r^2 h_1$

∴ Volume of shaded portion

→ 4400 cm^3 (given)
(after removing cone)
→ $\pi r^2 h - \frac{1}{3}\pi r^2 h_1 = 4400$
$\pi r^2 \left(h - \frac{h^1}{3}\right) = 14$
$21 - 14 = \frac{h^1}{3}$
$h_1 = 21$

457. (a)



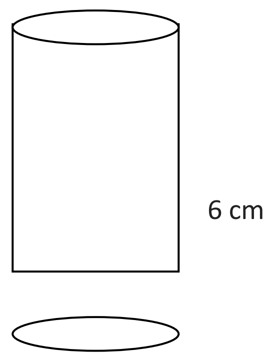
radius of cone = 6 cm
height of cone = 24 cm
∴ Volume of cone $\frac{1}{3}\pi\ (6)^2 \times 24\ cm^3$
Cone is converted to sphere
Let radius of sphere = r
∴ Volume of sphere → $\frac{4}{3}\pi r^3$
Volume of sphere = Volume of cone
∴ $\frac{4}{3}\pi r^3$
→ $\frac{1}{3} \times \pi \times 6 \times 6 \times 24$
→ r^3 → $\frac{1}{3} \times \frac{6 \times 6 \times 24}{4} \times 3$
→ $r^3 = 3 \times 3 \times 24$
$= 3 \times 3 \times 3 \times 8$
$r^3 = (3)^3 \times (2)^3$
$r = 3 \times 2 = 6$ cm

∴ Radius of sphere = 6 cm

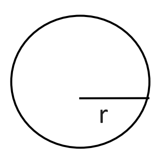
458. Total surface area of cylinder
→ 462 (given)
→ $(2\pi rh + 2\pi r^2) = 462\ cm^2$
$2\pi r^2 = 154 \times 2 = 308$
$\pi r^2 = 154$
$r^2 = \frac{154}{22} \times 7 = 49$
r = 7 cm

459. (a) Diameter of cylinder = 7 cm
radius = $\frac{7}{2}$ cm, height = 16 cm
Thus, Lateral or curved surface area
→ $2\pi rh$
→ r = radius
h = height
Thus, $2 \times \frac{22}{7} \times \frac{7}{2} \times 16$ → 352 cm^2

460.

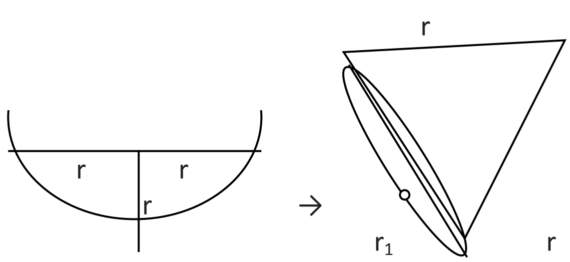


Height of cylinder h = 6 meters
Let radius of cyliner = r meter ∴ curved surface area = $2\pi rh$
area of end face = πr^2
→ Total area of two end faces



→ $2\pi r^2$
given that $3 \times 2\pi r^2 = 12 \times 2\pi rh$
3r = 2h
r = 4 cm
∴ radius of base = 4 cm

461. (b)



Folded Cone

Radius of semi-circular sheet

= r → $\frac{28}{2}$

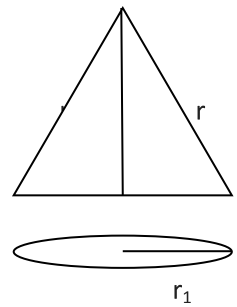
r = 14 cm

Circumference of sheet = πr

= 14 π cm

Sheet is folded to form a cone

Let radius of cone = r_1



∴ The circumference of base of cone

→ Circumference of sheet

$2 \pi r_1 = 14 \pi$

$r_1 = 7$ cm

∴ radius of cone = 7 cm

Slant height = radius of semi-circular sheet

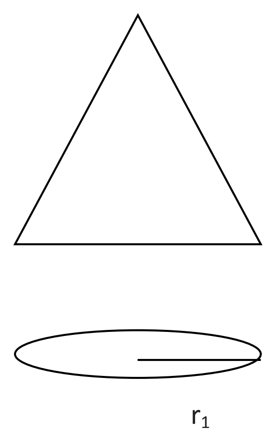
r = 14 cm

∴ Height = $\sqrt{(14)^2 - (7)^2}$ =

$= \sqrt{147}$ = 12 cm (approx)

462.

(b)



→ Circumference of sectors

$\frac{\pi r}{2}$

→ Circumference of base of cone of radius = r_1 = 2 π r_1

$$\frac{\pi r}{2} = 2 \pi r_1$$

$r_1 = \frac{r}{4}$

∴ Radius of cone $= \frac{r}{2}$

curved surface area of cone $= \pi r_1 l$

l = slant height

l = r

∴ surface area of cone → $\pi \times \frac{r}{4} \times r$ → $\frac{\pi r^2}{4}$

463. (d) radius of cone = r = 16 meter (given)

Let slant height = 1 meter

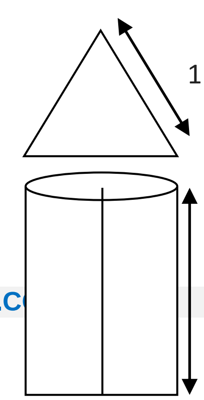
curved surface area = π rl

$= 427\frac{3}{7}$ m^2 (given)

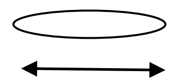
$\frac{22}{7} \times 16 \times l = \frac{2992}{7}$

$= \frac{2992}{22 \times 16}$ =8.5 meter

464.



h = 3m



Thus, radius of cone $= \frac{105}{2}$ m

slant height of cone = 263 m

→ curved surface area of cone

= (πrl)

$\frac{22}{7} \times \frac{105}{2} \times 63$

= 10395 m^2

→ radius of cylinder $= \frac{105}{2}$ m

height = 3 m(given)

∴ Curved surface are of cylinder = 2 π rh

$= 2 \times \frac{22}{7} \times \frac{105}{2} \times 3 = 990$ m^2

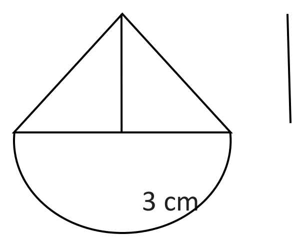
Thus, Total curved area of structure

→ curved area of structure

→ curved area of cone + curved area of cylinder = 10395 + 390

= 11385 m^2

465.



Surface area of hemisphere $= 3\pi r^2 = 2 \times \frac{22}{7} \times 9 =$ 56.57 cm^2

Height of cone = 4 cm

radius = 3 cm

Thus, slant height $= \sqrt{16+9} = 5\ cm$

Thus, surface area of cone = π rl

$\frac{22}{7} \times 3 \times 5$ → 47.14 cm^2

Thus, Total surface area of the toy

area of cone + area of hemisphere

→ 47.14 + 56.57 → 103.71 cm^2

466. (d) Let radius of iron rod = r

∴ Height = 8r

$\therefore$ volume of iron rod = r

$= \pi \times (r)^2 \times 8r \rightarrow 8\pi r^3$

$\rightarrow$ radius of spherical ball

$= \frac{r}{2}$

Volume of sphnerical ball

$\frac{4}{3}\pi \times \left(\frac{r}{2}\right)^3$

Let n balls area cast

$\therefore\ n \times \frac{4}{3} \times \pi \left(\frac{r^3}{8}\right) = 8\pi r^3$

$\rightarrow \frac{n}{6} \rightarrow 8 \rightarrow n = 48$

467. (c) Let the radius of base of second cylinder = R

$\rightarrow 2(\pi r^2 h) = \pi R^2 h$

$\rightarrow 2r^2 = R^2$

$\rightarrow R = r\sqrt{2}$

468. (c) Volume of remaining solid

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

$= \frac{2}{3} \times \frac{22}{7} \times 5 \times 5 \times 12$

$= 628.57\ cm^2$

469. (a) Let the requried increase

= x cm

$\rightarrow \pi(10+x)^2 \times 4 = \pi \times 10^2 \times (4+x)$

$100 + x^2 + 20x = 25(4+x)$

$x^2 + 20x + 100 = 100 + 25x$

$x^2 - 5x = 0$

$x - 5 = 0$

$x = 5$

$\therefore$ Required increase =5 cm

470. (b) Let the sold volume

$\pi r^2 h$

$\rightarrow$ New volume $= \pi(2r)^2 h = 4\pi r^2 h$

$\rightarrow$ New volume is four times the old volume

471. (b) Let the height of cone be 'h' cm

$\frac{1}{3}\pi r^2 h = \frac{4}{3}\pi r^3$

$a^2 h = 4a^2$

$h = 4a$

472. (c)

Radius of base $= \frac{33}{2\pi} = \frac{33 \times 7}{2 \times 22}$

$= \frac{21}{4}$ cm

Thus, Volume of cone $= \frac{1}{3}\pi \times r^2 \times h$

$= \frac{1}{3} \times \frac{22}{7} \times \frac{21}{4} \times \frac{21}{4} \times 16$

$= 462\ cm^3$

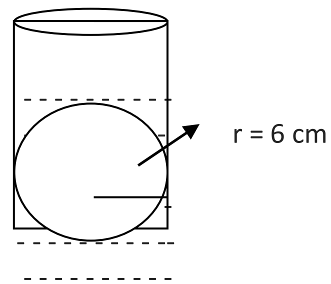
473. (a) Let the radius of small spheres be = r cm

$\rightarrow (\frac{4}{3}\pi r^3) \times 8 = \frac{4}{3}\pi \times (3)^3$

$\rightarrow 8r^3 = 3^3$

$r = \frac{3}{2} = 1.5$ cm

474. (b)



Let the increase in height = h cm

$\rightarrow \pi R^2 h = \frac{4}{3}\pi r^3$

$(12)^2 \times h = \frac{4}{3} \times 6^3$

$h = \frac{4}{3} \times \frac{216}{144} = 2$ cm

475. (c) Height of the cone = 10.2 – 4.2

= 6 cm

$\rightarrow$ Volume of the toy $= \frac{1}{3}\pi r^2 h + \frac{4}{3}\pi r^3$

$\rightarrow \frac{1}{3}\pi r^3 (h + 4r)$

$= \frac{1}{3} \times \frac{22}{7} \times (4.2)^2 (4 \times 4.2 + 6)$

$= \frac{1}{3} \times \frac{22}{7} \times (4.2)^2 \times 22.8$

$= 421\ cm^{3-}$ (opp.)

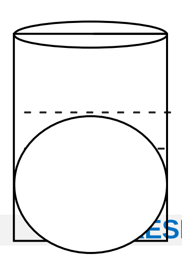
476. (c) Volume of water = Volume of cylinder - Volume of cone

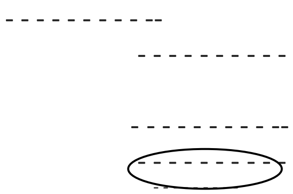
$= \frac{2}{3}\pi r^2 h$

$= 2\left(\frac{1}{3}\pi r^2 h\right)$

$\rightarrow 2 \times 27\pi = 54\pi\ cm^2$

477. (c)





Height of water after ball is immersed = 3.5 × 2 = 7 cm

→ Volume of water = $\pi r^2 h - \frac{4}{3}\pi r^3$

$= \pi r^2\left(h - \frac{4}{3}r\right)$

$= \frac{22}{7} \times 3.5 \times 3.5 \left(7 - \frac{4}{3} \times 3.5\right)$

$= 11 \times 3.5\left(\frac{7}{3}\right) = \frac{269.5}{3}$ cm^3

Volume of water before ball was imersed

$= \pi (3.5)^2 \times h = \frac{369.5}{3}$

$= h = \frac{369.5 \times r}{3 \times 3.5 \times 3.5 \times 22}$

$= \frac{7}{3}$ cm

478. (b)

Let the height of cone = h cm

→ $\frac{1}{3}\pi r^2 h = \frac{4}{3}\pi r^3$

h = 4r

h = 4a (Thus, r = a cm)

479. (c) Let height and radius be = 7x and 5x respectively

→ $\pi r^2 h = 550$

$\pi (5x)^2 \times 7x = 550$

$\frac{22}{7} \times 25x^2 \times 7x = 550$

$x^3 = 1$

x = 1

Thus, height = 7 cm

radius = 5 cm

→ Curved surface are = 2 π rh

$= 2 \times \frac{22}{7} \times 5 \times 7 = 220$ cm^2

480. (c) Let the height of the cylinder be 'h' cm and the radius be r cm

→ $\pi r^2 = b$

→ $r = \sqrt{\frac{b}{\pi}}$

2 π rh = a

$2\pi\sqrt{\frac{b}{x}} \times h = a$

$h = \frac{a}{2\sqrt{\pi b}}$ cm

481. (a) $\frac{2}{3}\pi r^3 = 19404$

$r^3 = \frac{19404 \times 7 \times 3}{22 \times 2}$

→ r = 21 cm

→ Total surface area = $3\pi r^3$

$= 3 \times \frac{22}{7} \times 21 \times 21 = 4158$ cm^2

482. (c) Curved surface area = $2\pi r^2$

$2 \times \frac{22}{7} \times 11 \times 11 = 760.57$ cm^2

483. (a) Slant height of the cone

(l) $= \sqrt{6^2 + 8^2} = 10\ cm$

→ Requried ratio = $\frac{2\pi rh}{\pi rl} = \frac{2h}{1}$

$= \frac{2 \times 8}{10}$

= 8 : 5

484. (c) The volume of cone having same height & diameter as that of a cylinder

$= \frac{1}{3} \times$volume of cylinder

No. of cones requried = 3

485. (a) Let the no. of small balls = x

→ $\frac{4}{3}\pi \times (10)^3 = x \times \frac{4}{3} \times \pi \times \left(\frac{1}{2}\right)^3$

→ $1000 = x \times \frac{1}{8}$

→ x = 8000

486. (a)

Let the no. of balls = x

→ $44 \times 44 \times 44 = x \times \frac{4}{3} \times \pi\left(\frac{4}{3}\right)^3$

→ $\frac{44 \times 44 \times 44 \times 7 \times 3}{22 \times 4 \times 8} = x$

→ x = 2541

487. (d) Let the no. of cones = x

→ $\pi\, 3^2 \times 5 = x \times \frac{1}{3} \times \pi \times \left(\frac{1}{10}\right)^2 \times 1$

→ x = 9 × 5 × 3 × 100 = 13500

488. (c) Slant height of cone = $\sqrt{8^2 + 6^2} = 10$ cm

Slant height of cone = Radius of sector = 10 cm

489. (a)

Volume of sphere

$= \frac{3}{4}\pi r^3 = \frac{4}{3} \times \pi \times (9)^3$

$= 972\,\pi$ cm^3

Volume of cone = $\frac{1}{3}\pi r^2 h = \frac{1}{3}\pi \times (9)^3$

→ 972 π cm^3

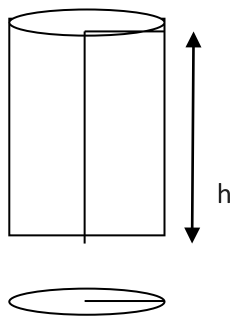
Volume of cone $\frac{1}{3}\pi r^2 h = \frac{1}{3}\pi\, 9^2 \times 9$

= 729 π cm^3

→ % of wasted wood %

$= \frac{(972-729)\pi}{972} \times 100 = 25\%$

490. (d)



2 πr = a,

r $= \frac{a}{2\pi}$

Volume of cylinder = V

$\pi r^2 h = V$

$\pi \left(\frac{a}{2\pi}\right)^2 \times h = V$

$\pi \frac{a^2}{4\pi^2} \times h = V$

$h = \frac{V \times 4\pi}{a^2} = \frac{4\pi v}{a^2}$

491. (d) Radius of sphere = $\frac{12}{2} = 6\,cm$

Let the height of the cylinder = h

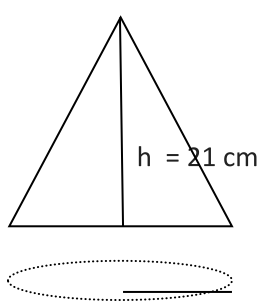
ATQ

Volume and radius are same

$\pi (6)^2 \times h = \frac{4}{3}\pi (6)^3$

$h = \frac{4 \times 6}{3} = 8$ cm

492. (b)



Perimeter of base = 8 cm

2 π r = 8

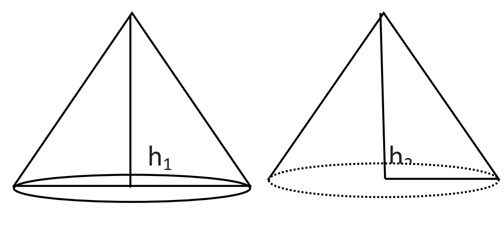
r $= \frac{4}{\pi}$

h = 21 cm

Volume of cone

$= \frac{1}{3} \times \pi \times \frac{4}{\pi} \times \frac{4}{\pi} \times 2 = \frac{112}{\pi}$ cm^2

493. (c)



$\frac{V_1}{V_2} = \frac{\frac{1}{3}\pi r_1{}^2 h_1}{\frac{1}{3}\pi r_2{}^2 h_2} = \frac{r_1{}^2 h_1}{r_2{}^2 h_2} = \frac{4}{1}$

$\left(\frac{r_1}{r_2}\right) \times \left(\frac{h_1}{h_2}\right) = \frac{4}{1}$

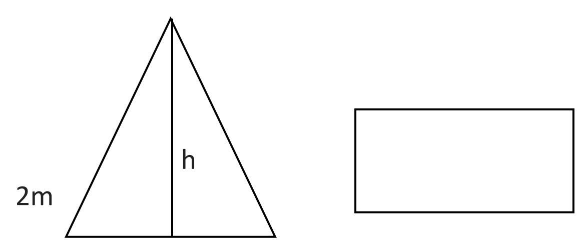
Thus, $\frac{2r_1}{2r_2} = \frac{5}{4}$ $Thus, \frac{r_1}{r_2} = \frac{5}{4}$

$\left(\frac{5}{4}\right)^2 \times \frac{h_1}{h_2} = \frac{4}{1}$

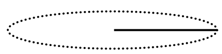
$\frac{25}{16} \times \frac{h_1}{h_2} = \frac{1}{4}$

$\frac{h_1}{h_2} = \frac{64}{25}$

494. (d)



radius will be become slant height l



$\pi r^2 = 154$

$r^2 = \frac{154 \times 7}{22} = 49$

$r = \sqrt{49}$ 7 m

also volume = 1232

$\frac{1}{3}\pi r^2 \times h = 1232$

$h = \frac{1232}{\pi r^2} = \frac{1232 \times 3}{154} = 8$

= 8 m

Area of canvas required

$\rightarrow \pi rl$

$= \pi r\sqrt{(r^2 + h^2)}$

$\frac{22}{7} \times 7 \times \sqrt{(24^2 + 7^2)}$

$= \frac{22}{7} \times 7 \times 25 = 550 \text{ m}^2$

Length (l) $= \frac{550}{2} = 275$ m

495. (b) Ratio of the volume of cones

$\frac{V_1}{V_2} = \frac{\frac{1}{3}\pi {r_1}^2 h}{\frac{1}{3}\pi {r_2}^2 h} = \left(\frac{r_1}{r_2}\right)^2 = \left(\frac{3}{4}\right)^2 = \frac{9}{16}$

= 9 : 16

496. (c) Ratio of surface area of sphere

$\frac{4\pi {r_1}^2}{4\pi {r_2}^2} = \frac{4}{9}$

$\left(\frac{r_1}{r_2}\right) = \frac{4}{9}$

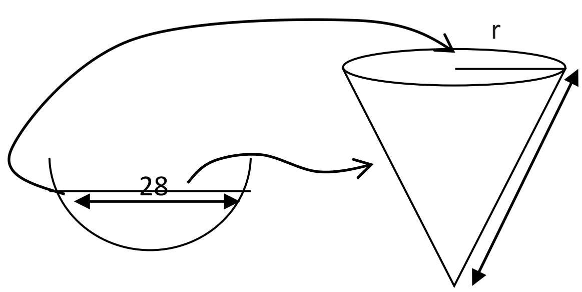
$\frac{r_1}{r_2} = \frac{2}{3}$

Ratio of their volume

$\frac{\frac{4}{3}\pi {r_1}^3}{\frac{4}{3}\pi {r_2}^3} \left(\frac{r_1}{r_2}\right)^3 = \left(\frac{2}{3}\right)^3 = \frac{8}{27}$

= 8 : 27

497.



In this question just cut the semi-circular paper and told it to form cone

Circumference of cone

$= \frac{2 \times \pi \times (14)}{2}$

$\therefore \frac{2\pi}{2}$ $circumference\ of\ semi\ circlar$

$2\pi r = \pi \times 14$

r = 7 cm

slant height, (l) of cone = radius of semicircular plate

l = 14 cm

$h^2 = l^2 - r^2$

$14^2 - 7^2$

= 196 – 49

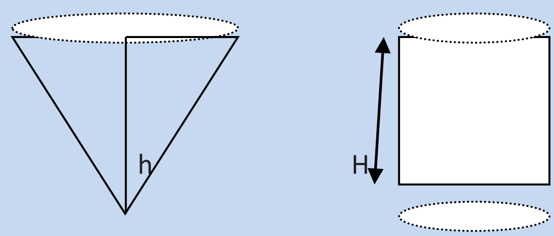
= 147

$h = \sqrt{147} = 4\sqrt{3}$

Volume of cone $= \frac{1}{2} \times \frac{22}{7} \times 7 \times 7 \times 7\sqrt{3}$

$= 622.36 \text{ cm}^3$

498. (d)



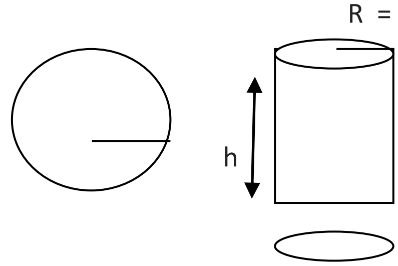
Volume of water in conical flask $= \frac{1}{3}\pi r^2 h$

If the height of water level in cylindrical flask = H units

Thus, $\pi m^2 H = \frac{1}{3}\pi r^2 h$

$H = \frac{1}{3} \times \frac{\pi r^2 h}{\pi m^2 h^2} = \frac{hr^2}{3m^2}$

499. (d) R = 7 cm



Volume of the solid sphere

$= \frac{4}{3}\pi\ r^3$

$= \frac{4}{3}\ \pi \times 7 \times 7 \times 7\ \ cm^3$

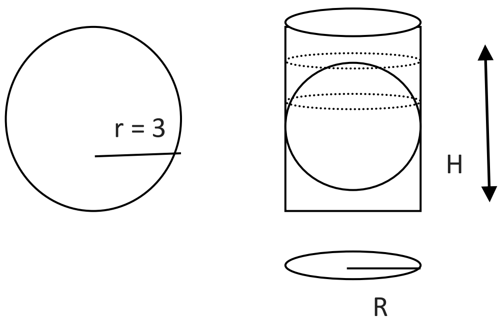
Let the length of wire = h cm

$\pi\ R^{2h} = \frac{4}{3}\ \pi\ \times 7 \times 7 \times 7$

$7 \times 7 \times h = \frac{4}{3}\ \times 7 \times 7 \times 7$

$h = \frac{28}{3}$ cm

500. (b)



Volume of sphere = $= \frac{4}{3}\pi\ r^3$

$= \frac{4}{3}\pi \times 3 \times 3 \times 3 = 36\ \pi\ \ cm^3$

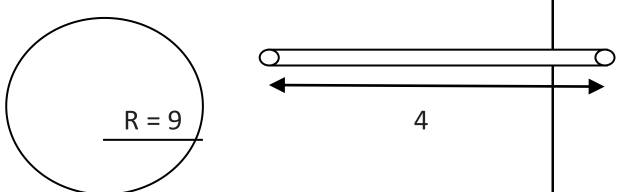
If the water level rises by H cm

$\pi\ R^2\ H = 36\ \pi$

$6 \times 6 \times\ h = 36$

$h = 1$

501. (b)



Volume of sphere $= \frac{4}{3}\ \pi\ \ R^3$

$= 972\ \pi\ cm^3$

Let the length of wire = h cm

$\pi\ (0.2)^2\ \times h = 972\ \pi$

$h = \frac{972}{0.2 \times 0.2} = 24300$ cm

= 243 meters

502. (a) Volume of sphere = Volume of rectangular block

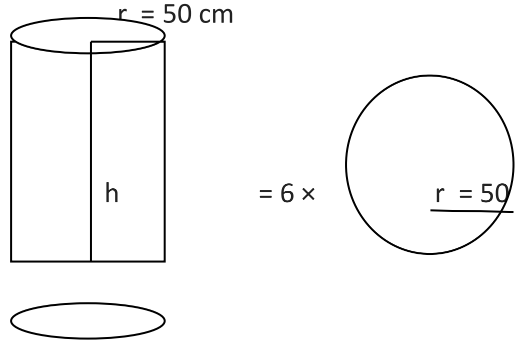
$\frac{4}{3}\pi\ (\text{radius})^3$ = Length × Breadth × height

$\frac{4}{3}\pi\ (\text{radius})^3 = 21 \times 77 \times 24$

$(\text{radius})^3 = \sqrt[3]{(7 \times 7 \times 7 \times 3 \times 3 \times 3)}$

radius = 7 × 3 = 21 cm

503. (d)



Volume of cylinder

= 6 × volume of a sphere

$\pi\ 50^2 h = 6 \times \frac{4}{3}\pi\ 50^3$

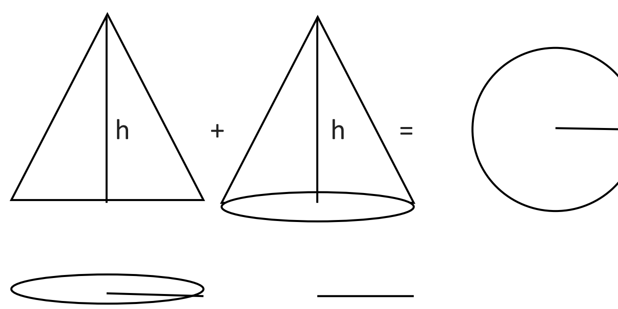
$h = 6 \times \frac{4}{3} \times 50$

= 400 cm

= 4 m

504. (b)

5 cm



Volume of both the cones will be equal to the volume of sphere

$\frac{1}{3}\pi 3^2\ h + \frac{1}{3}\pi 4^2 h = \frac{4}{3}\pi 5^3$

$\frac{1}{3} h\ 3^2 + 4^2 = \frac{4}{3} \times 5 \times 5 \times 5$

$\frac{1}{3} \times h \times 25 = \frac{4}{3} \times 5 \times 5 \times 5$

$h = \frac{20}{3} \times 3 = 20$ cm

505. (a) Volume of cone $= \frac{1}{3}\pi r^2 h$

Now, $r_1 = 2r, h_1$

= 2h

Thus, Volume of second cone

$= \frac{1}{3}\pi\, r_1{}^2 h_1$

$= \frac{1}{3}\pi\, 2r^2\, 2h = \frac{1}{3}\pi\, r^2\, h \times 8$

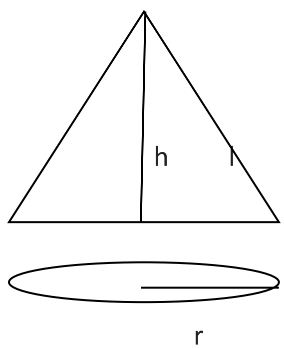
= 8 times of the previous volume

Alternate:

In the formula of volume of cone, there is power 2 on radius and power 1 on height

$\therefore\ (2)^2 \times 2 = 8$ times

506. (d)



$C = \pi rl$

$C^2 = \pi r^2 r^2 l^2$

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

$V^3 = \frac{1}{9}\pi^2 r^4 h^2$

$3\pi vh^3 - c^2h^2 + 9v$

$3\pi \times \frac{1}{3}\pi r^2 h \qquad h^3 - \pi^2 r^2 l^2 h^2 + 9 \times \frac{1}{9}\pi^2 r^4 h^2$

$= \pi^2 r^2 h^4 - \pi^2 r^2 h^2 (r^2 + h^2) + \pi^2 r^4 h^2$

$= \pi^2 r^2 h^4 - \pi^2 r^4 h^2 - \pi^2 r^2 h^4 + \pi^2 r^4 h^2 = 0$

507. (a) Volume of rectangular block $= 11 \times 10 \times 5$

$= 550\ m^3$

$= 550000\ dm^3$ (1 m = 10 dm)

Volume of a sphere

$\frac{4}{3}\pi \times \frac{5}{2} \times \frac{5}{2} \times \frac{5}{2}\ dm^3$

$= \frac{500}{8}\ dm^3$

ATQ $n \times \frac{500}{8} = 550000$

$n = \frac{(550000 \times 8)}{500} = 8800$

508. (a) Required number of spheres

$\frac{Volume\ of\ metallic\ cone}{volume\ of\ a\ sphere}$

$= \frac{\frac{1}{3}\pi \times 30 \times 30 \times 45}{\frac{4}{3}\pi \times 5 \times 5 \times 5} = 81$

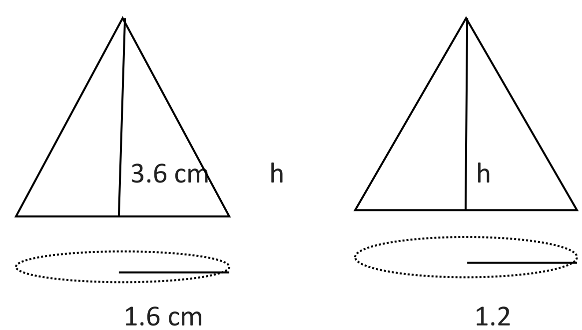
509. (d) $\frac{Volume\ of\ sphere}{Volume\ of\ cone}$

$= \frac{\frac{1}{3}\pi (10.5)^3}{\frac{4}{3}\pi \times (3.5)^2 \times 3}$

$= \frac{4 \times 10.5 \times 10.5 \times 10.5}{3.5 \times 3.5 \times 3}$

= 126

510. (c)



cm

According to question,

$\frac{1}{3} \times \pi \times 1.6 \times 1.6 \times 3.6$

$\rightarrow \frac{1}{3} \times \pi \times 1.2 \times 1.2 \times h$

$h = \frac{1.6 \times 1.6 \times 3.6}{1.2 \times 1.2} = \frac{16 \times 16 \times 36}{12 \times 12 \times 10}$

$= \frac{64}{10}$ 6.4 cm

511. (a)

$\frac{S^3}{V^3} = \frac{(4\pi r^2)^3}{\left(\frac{4}{3}\pi r^3\right)^2} = \frac{4^3 \times \pi^3 \times r^6}{4^2 \times \pi^2 \times r^6} \times 3^2$

$= 4 \times \pi \times 9 = \frac{36\pi}{1} = 36\pi$ units

512. (d) Radius of sphere $= \frac{1}{20}$ cm

Volume of a sphere $= \frac{4}{3}\pi \times \frac{1}{20} \times \frac{1}{20} \times \frac{1}{20}$

Let the radius of cone = R

height = 2R

According to the question

$= \frac{1}{3}\pi \times R \times R \times 2R$

$\frac{4}{3}\pi \times \frac{1}{20} \times \frac{1}{20} \times \frac{1}{20} \times 32000$

$R^3 = \frac{40\times40\times40}{20\times20\times20}$

$R = \frac{40}{20} = 2$

Height of glass = 2R × 2 × 2 = 4 cm

513. Volume of earth taken out = 40 × 30 × 12 = 14400 m^3

Area of rectangular field = 1000 × 30 = 30000 m^2

Area of region of tank = 40 × 30 = 1200 m^2

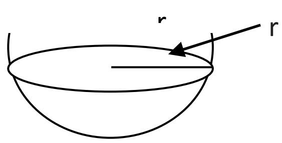
Remaining area = 30000 – 1200 = 28800 m^2

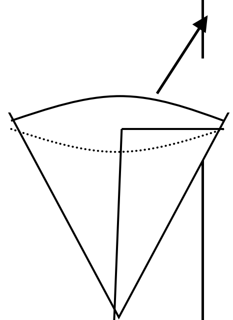
Increase in height = $\frac{14400}{28800}$

= 0.5 m

514. (a)

R = 6 cm





H = 12 cm

According to question,

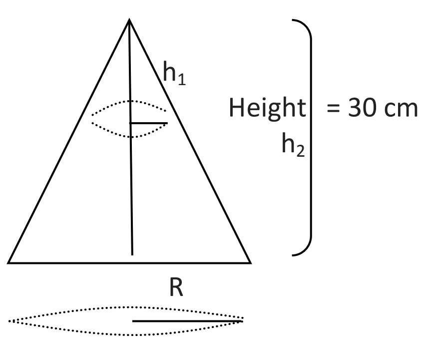
$8 \times \frac{2}{3}\pi r^3 = \frac{1}{3}\pi (6)^2 \times 12$

$r^3 = \frac{6\times6\times12}{8\times12}$

= 3 × 3 × 3

r = $\sqrt[3]{(3 \times 3 \times 3)}$ = 3 cm

515.



We are given that:

$\frac{Volume\ of\ small\ cone}{Volume\ of\ big\ cone} = \frac{1}{27}$

$\left(\frac{h_1}{h_2}\right)^3 = \frac{1}{27}$

$\frac{h_1}{h_2} = \frac{1}{3}$

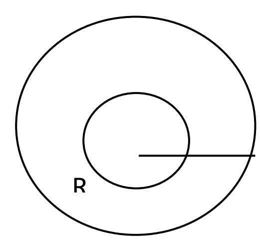
But, h_2 = 30

∴ 3 = 30 cm

1 = 10 cm→ h_1 = 10

height from base = 30 – 10 = 20 cm

516. (d)



Volume of lead = $\frac{4}{3}\pi r^3$

Volume of Gold = $\frac{4}{3}\pi r^3 - \frac{4}{3}\pi r^3$

According to question,

$\frac{4}{3}\pi R^3 - \frac{4}{3}\pi r^3 = \frac{4}{3}\pi r^3$

$\frac{4}{3}\pi R^3 = \frac{8}{3}\pi r^3$

$r^3 = 2 r^3$

$R^3 = 2(2)^3$

$R = \sqrt[3]{2} \times 2 = 1.259 \times 2$

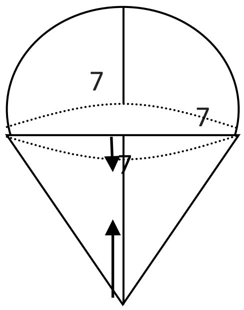
$= 2.518$

Thus, Thickness = R – r

= 2.518 – 2

= 0.518 cm

517. (a)



In the question,

Radius of hemisphere = Radius of cone = height of cone = 7 cm

$\therefore$ height of hemisphere = radius of hemisphere

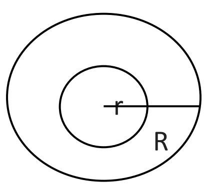
Volume of ice cream

= Volume of hemisphere part + volume of conical part

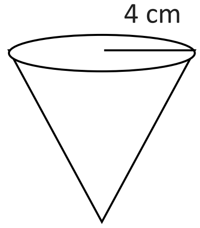
$= \frac{2}{3} \times \frac{22}{7} \times (7)^3 + \frac{1}{3} \times \frac{22}{7} \times 7^3$

$= \frac{22}{7} \times 7^3 = 22 \times 7^2 = 1078\ \text{cm}^3$

518.



4 cm



Volume of material of hollow sphere = Volume of cone

$\frac{4}{3}\pi(5^2 - 3^2) = \frac{1}{3}\pi(4)^2\ 1\ h$

$98 = 4h$

$h = \frac{98}{4} = 24.5$ cm

519. (d) Radius of the base of conical shape = r cm

$\therefore$ Radius of base of cylinder $= \frac{R}{3} cm$

Volume of water = Volume of cone

$= \frac{1}{3}\pi r^2 h = \frac{1}{3}\pi r^2 \times 24$

$= 8\pi r^2\ \text{cm}^3$

Volume of cylinder = volume of water

$\pi\left(\frac{r}{3}\right)^2 \times H = 8\pi r^2$

$H = 9 \times 8 = 72$ cm

520. (b) Volume of metallic sphere = volume of cone

$= \frac{4}{3} \times \pi\ 3 \times 3 \times 3$

$= \frac{1}{3}\pi R^2 h$

$\frac{4}{3}\pi \times 3 \times 3 \times 3$

$\frac{1}{3} \times \pi \times 6 \times 6 \times h$

$h = \frac{108}{6 \times 6} = 3$ cm

521. (d)

Number of bottle

$= \frac{Volume\ of\ hemispherical\ bowl}{Volume\ of\ cylindrical\ bottle}$

$= \frac{\frac{2}{3} \times \pi \times 15 \times 15 \times 15}{\pi \times \frac{5}{2} \times \frac{5}{2} \times 6} = 60$

522. (a) Volume of cone V_1

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

$= \frac{\pi}{3} r^3$ ($\therefore$ h = r)

Volume of sphere $V^2 = \frac{4}{3}\pi r^3$

Volume of cylinder V^3

$= \pi r^2 h = \pi r^3$

$\therefore V_1 : V_2 : R^3 = \frac{1}{3} : \frac{4}{3} : 1$

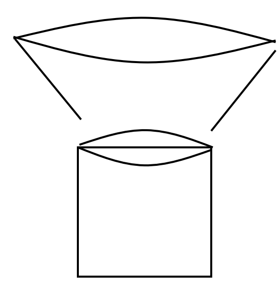
= 1 : 4 : 3

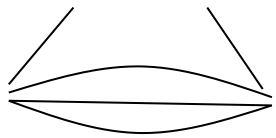
$V^1 = \frac{V_2}{4} = \ = \frac{V_3}{3}$

523. $4\pi (\text{Side})^2 = 346.5$

$(\text{Side})^2 = \frac{346.5 \times 7}{4 \times 22} = 5.25$ cm

524. (b)





Height of kaleidoscope = 25 cm
Radius of kaledoscope = 35 cm
Paper used = curved surface area of cylinder = 2 $\times \frac{22}{7} \times 35 \times 25$
= 2 × 22 × 5 × 25
= 5500 cm^2

525. (b) According to the question,
→ Volume of sphere = surfacea area of sphere
→ $\frac{4}{3}\pi r^3 = 4\pi r^2$ → $\frac{r}{3} = 1$ → r = 3 units
→ then diameter of sphere will be = 2r
= 2 × 3 = 6 units

526. (b) Let the height of cone h meter
→ Total area of ground will be requried = 5 × 16 m^2 = 80 m^2
→ Total volume of air is needed = 100 × 5 m^3 = 500 m^3
According to the question,
Volume of cone = 500 m^3
→ $\frac{1}{3}$ area if ground height = 500
→ $\frac{1}{3} \times \pi r^2 \times h = 500$
= Height = $\frac{(500\times3)}{80}$
→ height of cone = 18.75 meters

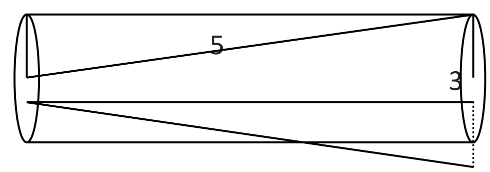
527. (d)
Volume of cone = Lateral Surface Area
$\frac{1}{3}\pi r^2 h = \pi rl$ [$l = \sqrt{h^2 + r^2}$]
$\frac{rh}{3} = \sqrt{h^2 + r^2}$
Squaring both sides
$\frac{1}{9} = \frac{h^2 + r^2}{r^2h^2}$
$\frac{1}{9} = \frac{h^2}{r^2h^2} = \frac{r^2}{r^2h^2}$
$\frac{1}{9} = \frac{1}{r^2} + \frac{1}{h^2}$

528. (c) Diagonal of cube will be equal to diameter of sphere
$\sqrt{3}a = 2 \times r$
$\sqrt{3}a = 2 \times 6\sqrt{3}$
a = 12
Surface area = $6a^2$ = 6 × 12 × 12 → 864 cm^2

529. (c) Let hemisphere radius be = R
& Sphere radius be = r
ATQ,
$2R^3 = 16 r^3$
$\frac{R^3}{r^3} = \frac{8}{1}$
$\frac{R}{r} = \frac{2}{1}$
So option, 'C' is answer

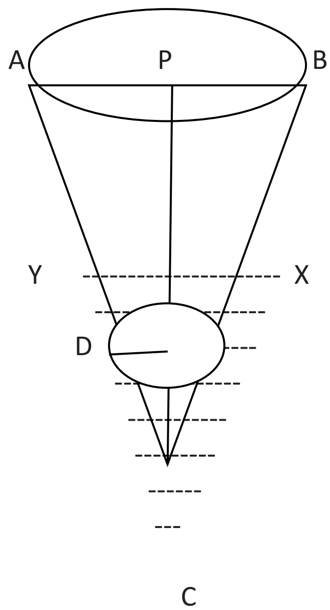
530. (d) Let part filled be =x
ATQ,
x × (48 m × 16.5 m × 4m) = $\pi (2)^2 \times 56$
x = $\frac{22\times4\times56}{7\times48\ 16.5\times4}$
x = $\frac{2}{9}$ Ans.

531. (a) According to the question,



Whole surface of remaining solid = $\pi rl + 2\pi rh + \pi r^2$
Hence $l = \sqrt{h^2 + r^2}$
$l = \sqrt{4^2 + 3^2}$
l = 5
Thus, π r [l + 2h + r]
$= \frac{22}{7} \times 3\,[5 + 2 \times 4 + 3]$
$= \frac{22}{7} \times 3 \times 16 = 48\pi$

532. (a)



Δ ABC = equilateral Δ

$\therefore \angle ACB = 60°$

$\angle BCP = 30°$

$\Delta CDO, \angle LDO = 90°$ (Angle b/w radius and tangent is 90)

OD = 1P = 1 cm

OC = 2P = 2(1) = 2 cm

then, CZ = OC + OZ

= 2 + 1 = 3 cm

Δ CZY $\angle$ CZY = 90 °

CZ = √3P = 3 cm

YZ = 1P = √3 cm

Now, In cone XYC

r = ZY = 3 cm

h = CZ = 3 cm

Vol. cone = $\frac{1}{3}\pi r^2 h = \frac{1}{3}\pi (\sqrt{3})^2$ (3)

= 3π cm^2

Vol. of sphere = $\frac{4}{3}\pi r_s^3$

($\therefore$ r_s = 1 cm)

$= \frac{4}{3}\pi$ cm^3

Vol. of water that can immerse the ball

= $(3\pi - \frac{4\pi}{3})$ cm^3

533. (b) According to the question,

Radius of the frop of water = $\frac{1}{20}$ cm

$\therefore$ Volume of drop of water = $\frac{4}{3} \times \frac{1}{20\times20\times20} \times \pi$

Volume of 32000 drops

$\frac{4}{3} \times \frac{\pi}{8000} \times 32000 = \frac{16}{3}\pi$

Thus, Volume of cone = $\frac{16\pi}{3}$

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

2r = h

$\frac{16\pi}{3} = \frac{1}{3}\pi \times \frac{h^2}{4} \times h$

$16 \times 4 = h^3$

h = 4 cm

534. (b)

Here h = 4c

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

$= \frac{4\pi \times \pi r^2 h}{4\pi}$

(Miltiply 4 π both in Numerator & denominator)

$\frac{(2\pi r)^2 \times (4c)}{4\pi}$

(Multiply 4π both in Numberator & denominator)

$\frac{(2\pi r)^2 \times (4c)}{4\pi} = \frac{c^3}{\pi}$

535. (a) According to the question,

Volume of sphere = $\frac{4}{3}\pi r^3$

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

$\frac{4}{3} r = h = \frac{4}{3} \times 3 = 4$ cm

C.S.A of cylinder = 2 π rh

$= 2 \times \frac{22}{7} \times 3 \times 4$

$= \frac{44\times12}{7} = \frac{528}{7} = 75\frac{3}{7}$ cm^2

536. According to question,

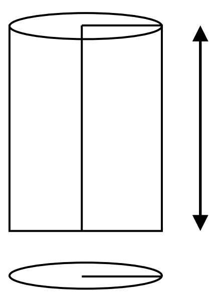
R = 6 cm

→ The capacity of the hemispherical bowl

$= \frac{2}{3}\pi r^3 = \frac{2}{3} \times \frac{22}{7} \times 6^3$

= 452.57 cm^3

537. (d)



According to the question,

→ r = 7 cm

→ h = 20 cm

→ Total surface Area of cylinder = curved surface Area + 2 × area of base

$2\pi rh + 2\pi r^2$

$= 2\pi r\,(r + h)$

$$= 2 \times \frac{22}{7} \times 7(7 + 20)$$

= 44 × 27

→ TSA of cylinder = 1188 cm^2

538. (d) According to question,

Given,

→ Radius of cylinder

= r

→ CSA of cylinder = $4\pi r h$

→ As we know

→ Curved surface area of cylinder

$= 2\pi R H$

$4\pi r h = 2\pi \times r \times$ Height

→ Height = 2h = units

539. (a) According to the question,

Radius = 3.5 cm

→ In the question it is given that A hemi-sherical bowl is to be painted insided as well as outside

Total area that is to be painted = Inside area of bowl + outside area of bowl

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

$= 4\pi r^2$

$= 4 \times \frac{22}{7} \times \frac{7}{2} \times \frac{7}{2}$ cm^2

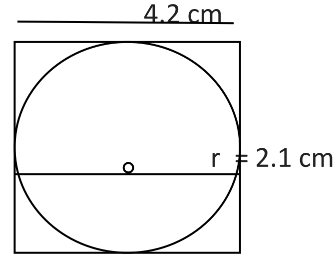
→ Painting Rate = 10 cm^2 in 5 Rs.

1 cm^2 will be painted $= \frac{5}{10}$ = Rs. $\frac{1}{2}$

So total cost will be painted in

$= 4 \times \frac{22}{7} \times \frac{7}{2} \times \frac{7}{2} \times \frac{1}{2}$ = Rs. 77

540. (b)



r = 2.1 dm

h = 4.2 dm

(for max)

Volume of cone $= \frac{1}{3}\pi r^2 h$

$= \frac{1}{3} \times \frac{22}{7} \times 2.1 \times 2.1 \times 4.2$

= 19.404 dm^3

541. (d) Let the initial radius = r

According to the question,

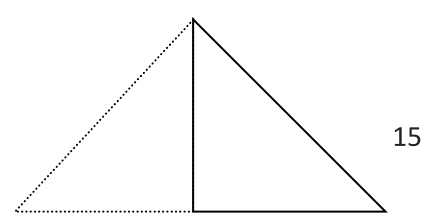
$4\pi(r + 2)^2 - 4\pi r^2 = 352$

$r^2 + 4 + 4r - r^2 = \frac{352 \times 7}{22 \times 4}$

4r + 4 = 28

r = 6

542. (a)



12 12

Volume × $\frac{1}{3}\pi r^2h$

→ $\frac{1}{3}\pi$ 12 × 12 × 9

→ 144 × 3π → 432 π

543. (c) According to the question,

Volume of cone

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

Height = 7 cm

Radius = $\frac{7}{2}$

Thus, Volume of cone

$= \frac{1}{3} \times \frac{22}{7} \times \frac{7}{2} \times \frac{7}{2} \times 7 = 89.8\ cm^3$

544. (c) Radius of 1st. solid metallic spheres = R = 6 cm

Radius of 2nd. solid metallic spheres = r = 1 cm

Internal Radius of hollow spheres= x

External Radius of hollow sphere = x + 1

So, $\frac{4}{3}\pi (R^3 + r^3) = \frac{4}{3}\pi [(x + 1)^3 - x^3]$

$216 + 1 = x^3 + 1 + 3x (x + 1) - x^3$

$216 = 3x (x + 1)$

$72 = x^2 + x$

→ $x^2 + x - 72$

= 0

After solving,

x = 8 cm

So, the external radius of the hollow sphere

= x + 1 = 8 + 1 = 9 cm

545. (a) Let the time taken to fill the tank = x hrs

→ $(\pi r^2 h) \times x = 50 \times 44 \times \frac{7}{100}$

→ $x = \frac{50\times44\times7\times7\times100\times100}{22\times7\times7\times100\times5000}$

= 2 hrs

546. (b) → The area of ground

→ 15000 m^2

1 hectare = 10000 m^2

→ Level of rainfall

→ height of rainfall

= height of water level

= 5 cm = $\frac{5}{100}$ m

Thus, Volume of collected water

→ $15000 \times \frac{5}{100} = 750\ m^2$

547. (b) Let the no. of hours be 'x'

$x (\pi R^2H)= \pi r^2h$

→ $3000 \times \pi \times \frac{10}{100} \times \frac{10}{100} \times x$

$= \pi \times \frac{10}{2} \times \frac{10}{2} \times 2$

→ $\frac{6}{10} \times x = 1$

$x = \frac{10}{6}$

= 1 hours 10 minutes

548. (a) Diameter = 5 mm = 0.5 cm

radius = 0.25 cm

Volume of water flowing from the pipe in 1 minute

$= \pi \times 0.25 \times 0.25 \times 1000\ m^3$

Volume of conical vessel $= \frac{1}{3}\pi \times 15 \times 15 \times 24\ cm^3$

Thus, Time = $\frac{\frac{1}{3}\times\pi\ 15\times15\times24}{\pi\times0.25\times0.25\times1000}$

$= 28\frac{4}{5}$

= 28 minutes 48 seconds

549. (d) r = 12 m, h = 9 m

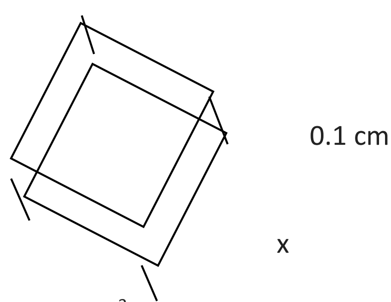
$l = \sqrt{r^2 + h^2}$

$= \sqrt{12^2 + 9^2} = 15$ m

Cost of canvas = curved surface area = × cost of 1 m^2

Rs. 67824

550. (d)



8.4 gm = 1 cm^3

4725 gm = $\frac{4725}{8.4}$ cm^3

Volume = x × x × 0.1

$\frac{4725}{8.4}$ cm^3
x^2 × 0.1
x = 75 cm

551. (d) According to the question
diameter = 84 cm
radius = 42 cm = 0.42 m
Height = 120 cm = 1.2 cm
Thus, Circumference of cylinder = 2 π r h

$$\frac{2 \times 22 \times 0.42 \times 1.2 \times 1.5 \times 500}{7}$$

= Rs. 2376

552. (a) Since the volume of the two cylinders is same

$$\therefore \frac{\pi r_1^2 h_1}{\pi r_2^2 h_2} = 1$$

$$\left(\frac{r_1}{r_2}\right)^2 = \frac{h_1}{h_2} = \frac{2}{1}$$

$$\frac{r_1}{r_2} = \sqrt{\frac{2}{1}}$$

$$= \frac{\sqrt{2}}{1}$$

Thus, Ratio of their ratio
= √2 : 1

553. (a) We are given that volume of two cube are in the ratio= 27 : 1

$$\left(\frac{3}{1}\right)^3 = \frac{27}{1}$$

$$\frac{a^1}{a^2} = \sqrt[3]{\frac{27}{1}}$$

$$= \frac{3}{1}$$

3 : 1

554. (a)
Ratio of edges of cuboid = 1 : 2 : 3
Let, l = x , b = 2x, h = 3x
Surface area = 88 cm^2
2 (lb + bh + hl) = 88
2 ($2x^2 + 6x^2 + 3x^2$) = 88
$11x^2$ = 44
x^2 = 4
x = 2
Thus, l = 2 cm, b = 4 cm,
h = 6 cm

Thus, Volume = l b h
= 2 × 4 × 6
= 48 cm^3

555. (a) $\frac{V_1}{V_2} = \frac{8}{27}$

$$= \frac{\frac{4}{3}\pi (r_1)^3}{\frac{4}{3}\pi (r_2)^3} = \frac{8}{27}$$

$$\left(\frac{r_1}{r_2}\right)^3 = \frac{2}{3}$$

Ratio of surface area

$$\frac{4\pi r_1^2}{4\pi r_2^2}$$

$$\left(\frac{r_1}{r_2}\right)^2 = \left(\frac{2}{3}\right)^2 = \frac{\left(\frac{2}{3}\right)^2}{9}$$

556. (d) 2 πr h = 264 .... (i)
π r^2h = 924 .... (ii)

On diving $= \frac{2\pi rh}{2\pi r^2 h} = \frac{264}{924}$

r $\frac{924 \times 2}{264}$ = 7 cm

Diameter = 2r = 2 × 7 = 14 cm
putting, r = 7 in (i)
2π r h = 264

h = $\frac{264 \times 7}{2 \times 22 \times 7}$ = 6 cm

Required ratio = $\frac{2r}{h} = \frac{14}{6}$

= $\frac{7}{3}$

557. (b) $\frac{\frac{1}{3}\pi r_1 h_1}{\frac{1}{3}\pi r_2 h_2} = \frac{2}{3}$

$$\frac{1 \times h_1}{2^2 \times h_2} = \frac{2}{3}$$

$$\frac{h_1}{h_2} = \frac{8}{3}$$

558. (c) $\frac{(a_1)^3}{(a_2)^3} = \frac{27}{64}$

$$\left(\frac{a_1}{a_2}\right) = \frac{3}{4}$$

Ratio of their total surface area

$$= \frac{6a_1^2}{6a_2^2} = \left(\frac{a_1}{a_2}\right)^2$$

$$= \left(\frac{3}{4}\right)^2 = \frac{9}{16}$$

= 9 : 16

559. (b) Radius of both hemisphere and cone = R

Also heightof hemisphere is equal to its Radius = R

∴ Height of both hemisphere and cone = R

Now, In cone

Slant height, l = $\sqrt{R^2 + R^2}$

= √2R

$\frac{C.S.A\ of\ hemishphere}{C.S.A\ of\ cone}$

$\frac{2\pi r^2}{\pi R \times \sqrt{2}R} = \frac{\sqrt{2}}{1}$

= √2 : 1

560. (c) Let height of cone = h

radius of cone = r

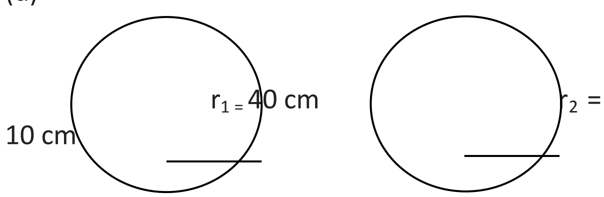
Volume of cone = $\frac{1}{3}\pi r^2 h$

Now height is doubled

Volume of new cone = $\frac{1}{3}\pi r^2 (2h) = \frac{2}{3}\pi r^2 h$

Required ratio = 1 : 2

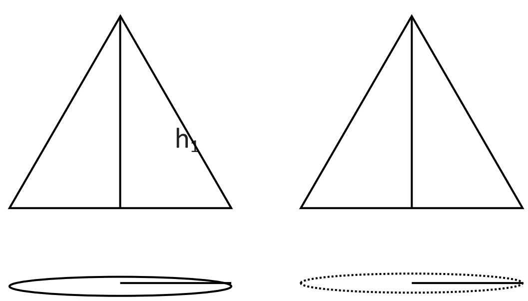
561. (d)



$\frac{Surface\ area\ of\ A}{Surface\ area\ of\ B} = \frac{4\pi r_1^2}{4\pi r_2^2} = \left(\frac{r_1}{r_2}\right)$

$\left(\frac{40}{10}\right)^2 = \frac{16}{1} \rightarrow$ 16 : 1

562. (d)



$R_2 = 2r$

$h_2 = h_1$

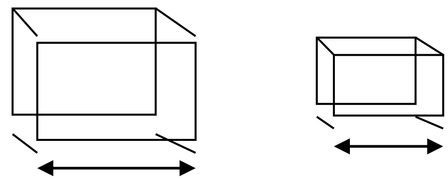
$\frac{Volume\ of\ new\ cone}{Volume\ of\ old\ cone}$

$\frac{\frac{1}{3}\pi r_2^2 \times h_2}{\frac{1}{3}\pi r_1^2}$

$\frac{(2r_1)^2 h_1}{r_1^2 \times h_1} = \frac{4}{1}$

→ 4 : 1

563. (d)



Ratio of total surface area

$= \frac{6(1)^2}{6(5)^2} = \frac{1}{25}$

→ 1 : 25

564. (b) Let r1 = $\frac{21}{2}$ cm

$r_2 = \frac{17.5}{2}$ cm

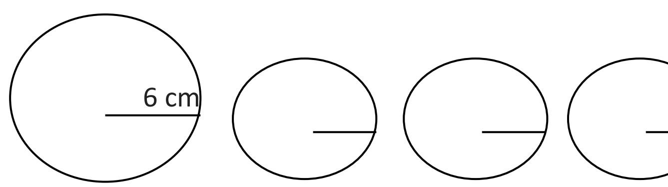
Required ratio =

$\frac{4\pi r_1^2}{4\pi r_2^2} = \frac{r_1^2}{r_2^2}$

$= \frac{21 \times 21}{17.5 \times 17.5} = \frac{36}{25}$

= 36 : 25

565.



$\frac{4}{3}\pi\{(3x)^3 + (4x)^3 + (5x)^3\} = \frac{4}{3}\pi (6)^3$

x^3 (27 + 64 + 125) = 216

x^3 - × 216 = 216

$x^3 = \frac{216}{216} = 1$

x = $\sqrt[3]{1}$ = 1

Radius of smallest sphere = 3x = 3 × 1 = 3 cm

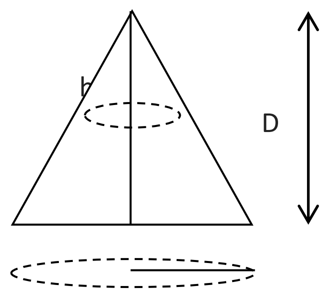
$x^3 \times 216 = 216$

$x^3 = \frac{216}{216} = 1$

$x = \sqrt[3]{1} = 1$

Radius of smallest sphere = 3x = 3 × 1 = 3 cm

566. (d)



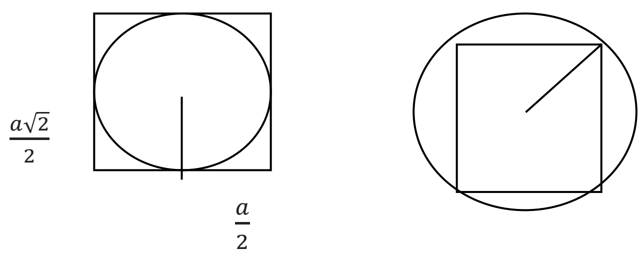
$2 = h_2$

$$\frac{\text{Ratio of smaller cone}}{\text{ratio of larger cone}} = \frac{h_1{}^3}{h_2^3} = \frac{1^3}{2^3} + = \frac{1}{8}$$

Area of part (ABCD) (i.e. frustrum) = 8 – 1

Required ratio = 1 : 7

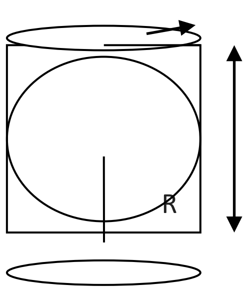
567. (a)



$$\frac{\text{Area of incircle}}{\text{Area of circum circle}} = \frac{\pi\left(\frac{a}{2}\right)^2}{\pi\left(\frac{a\sqrt{2}}{2}\right)^2} = \frac{1}{2}$$

→ 1 : 2

568. (b)



H = 2R

(Height of cylinder = 2 × R)

$$\frac{\text{Surface area of sphere}}{\text{C.S.A of cylinder}} = \frac{4\pi R^2}{2\pi\, R\times H}$$

$$= \frac{4\pi\, R^2}{2\pi R\,(2R)}$$

$$\frac{4\pi r^2}{4\pi R^2} = \frac{1}{1} = 1 : 1$$

569. Ratio of Volume = (ratio of radius)^3

$$\left(\frac{3}{2}\right)^2 = \frac{27}{8}$$

570. (a) $\frac{4}{3}\pi r^3 = \pi r^2 h$

H = $\frac{4}{3}$ r

R = $\frac{3}{4}h$

2r (diameter) $\frac{3}{4} \times 2h = \frac{3}{2}$ h

$$\frac{\text{Diameter}}{\text{Height}} = \frac{3}{2}$$

571. (a) In this case height of cylinder and cone is equal to the radius od hemisphere

H= r

Ratio of volumes

$\frac{1}{3}\pi r^2 \times r$: $\frac{2}{3}\pi r^3$: $\pi r^2 \times r$

1 : 2: 3

572. (A) Ratio of curved surface area = ratio of product of height and radius

➔ required ratio = $\frac{3\times2}{5\times3} = \frac{2}{5}$

573. Ratio of surface area = (Ratio of radius)^2

$$= \left(\frac{1}{4}\right)^2 = \frac{1}{16}$$

574. $\frac{\pi R^2 H}{\pi r^2 h} = \frac{3}{1}$

$$\frac{3\times3\times H}{2\times2\times h} = \frac{3}{1}$$

$$\frac{H}{h} = \frac{4}{3}$$

$$\frac{x}{1} = \frac{4}{3}$$

X = $\frac{4}{3}$

575. (c) $\frac{4}{3}\pi R^3 = 64 \times \frac{4}{3}\pi r^3$

$$\frac{\frac{4}{3}\pi R^3}{\frac{4}{3}\pi r^3} = 64$$

$\left(\frac{8}{r}\right)^3 = (4)^3$

➔ r = 2 cm

Ratio of area

= (Ratio of radius)^2

= $(8 : 2)^2$

= 16 : 1

576. (a) $\frac{\pi R^2 H}{\pi {R^2}_2 h}$ =1

$\frac{3^2 \times H}{2^2 \times h}$ =1

➔ $\frac{H}{h} = \frac{4}{9}$

577. (a) Let the radius and slant height be 4x and 7x

➔ y = 1 cm

x = 2 cm

➔ Radius = 4×2 = 8 cm

578. (d) Height of cylinder = Diameter of sphere

➔ $2\pi rh = 4\pi r^2$

➔ $4\pi r^2 = 4\pi r^2$ (h = 2r)

➔ Required ratio = 1 : 1

579. (a) $\frac{V_1}{V_2} = \frac{r^2 h}{R^2 H} = \frac{3^2 \times 4}{4^2 \times 4} = \frac{3}{4}$

580. (d) Ratio of volume of bigger cone and smaller cones

= (Ration of altitude)^3

= $(1 : 2 : 3)^3$

Ratio of parts = 1 : 8 – 1 : 27 – 8

= 1 : 7 : 19

581. (c) Let radii of cylinder and sphere be r

Volume of cylinder of height (h)

= $\pi r^2 h$

Total surface area of cylinder

= $2\pi rh + 2\pi r^2$

Total surface area of sphere

= $4\pi r^2$

given that

$4\pi r^2 = 2\pi rh + 2\pi r^2$

= $4\pi r^2$

= $2\pi rh$ (h+r)

➔ 2r = h+r

r = h

radius of sphere or cylinder's equal to height of cylinder

Ratio of volume of cylinder and sphere

= $\pi r^2 \times r : \frac{4}{3}\pi r^3$ = 3 : 4

582. (c) $\frac{4}{3}\pi R^3 = \pi r^2 H$

$\frac{4}{3}R^3 = r^2 H$

$\frac{R^2}{r^2} = \frac{3}{4}$ (H = R)

R : r = √3 : √4 = √3 : 2

583. (b) $\frac{a^3}{\frac{4}{3}\pi r^3} = \frac{363}{49}$

$\frac{a^3}{r^3} = \frac{363 \times 22 \times 4}{49 \times 7 \times 3}$

$\frac{a^3}{r^3} = \left(\frac{22}{7}\right)^3$

$\frac{a}{r} = \frac{22}{7}$

584. (a) cone ➔ radius : height

4 : 3

Let 4x : 3x

Curved surface area of cone

➔ πrl

r = radius

l = slant height

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

= $\sqrt{(4x)^2 + (3x)^2}$ = 5x

curved surface area

➔ π × 4x × 5x

➔ $20\pi x^2$

total surface area ➔ $\pi rl + \pi r^2$

➔ πr (l+r)

➔ π × 4x (5x + 4x)

➔ π × 4x × 9x

➔ $36\pi r^2$

Curved area : total area

$20\pi x^2$: $36\pi x^2$

5 : 9

585. (b) Let radius of sphere =

radius of cylinder = r

let height of cylinder = r

given that volume of sphere

= volume of cylinder

= $\frac{4}{3}\pi r^3 = \pi r^2 h$

➔ $\frac{4}{3}r = h$

curved surface area

cylinder : sphere

$2 \times \pi \times r \times \frac{4r}{3}$: $4\pi r^2$

➔ $\frac{8}{3}$: 4

2 : 3

586. (c) radius of cone = radius of cylinder

height of cone = height of cylinder = h

$\frac{\text{curved surface area of cylinder}}{\text{curved surface area of cone}}$

$= \frac{2\pi rh}{\pi rl}$

$= \frac{2\pi rh}{\pi rl} = \frac{8}{5}$

➔ $\frac{h}{l} = \frac{4}{5}$

➔ $\frac{h^2}{l^2} = \frac{16}{25}$

➔ $l^2 = 25\ \sqrt{(h)^2 + (r)^2}$

➔ $h^2 = 16$

$\sqrt{(h)^2 + (r)^2} = 25$

$\sqrt{(16)^2 + (r)^2} = 25$

r = 3

radius : height

3 : 4

587. (b) Let the sides of the rectangular box he

x, 2x, 3x

➔ $2(2x^2+6x^2+3x^2) = 88$

➔ $11x^2 = 44$

$x^2 = 4$

x = 2

➔ Sides are 2, 4, 6 cm

Volume = 2×4×6 = 48 cm^3

588. (b) Ratio of volume =

$\frac{\pi(\sqrt{3})^2 \times \sqrt{2}}{\frac{1}{3}\pi(\sqrt{2})^2 \times \sqrt{3}} = \frac{3\sqrt{3}}{\sqrt{3}}$

$= 3\sqrt{3} : \sqrt{2}$

589. (a) Ratio of volume = $\frac{(3)^2 \times 1}{(5)^2 \times 3}$

= 3 : 25

590. (d) Let the radius of sphere and hemisphere be = R and r

➔ $\frac{4}{3}\pi R^3 = \frac{2}{3}\pi r^3$

$2R^3 = r^3$

$\frac{R^3}{r^3} = \frac{1}{2}$

➔ R : r = 1 : $\sqrt[3]{2}$

591. (a) Ratio of radius of earth and moon

= 4 : 1

➔ Ratio of volume = $4^3 : 1^3$

= 64 : 1

592. (b) Let the radius of cylinder and sphere be = r cm

➔ height of cylinder = 2r cm

➔ A = $\pi r^2 \times 2r = 2\pi r^3$

B = $\frac{4}{3}\pi r^3$

➔ $\frac{A}{B} = \frac{2\pi r^3}{\frac{4}{3}\pi r^3}$ = 3 : 2

593. (b) Ratio of volume = $\frac{\pi(\sqrt{3})^2 \times \sqrt{2}}{\frac{1}{3}\pi(\sqrt{2})^2 \times \sqrt{3}}$

$= 3\sqrt{3} : \sqrt{2}$

594. (c) Side of cube $= \frac{6\sqrt{3}}{\sqrt{3}}$ = 6 cm

Required rate $= \frac{6 \times 6^2}{6^3}$ = 1 : 1

595. (d) Let the radius of hemisphere and sphere be 'r' and 'R'

➔ $\frac{4}{3}\pi R^3 = \frac{2}{3}\pi r^3$

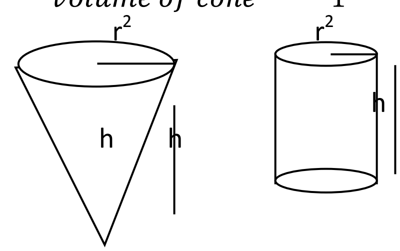
$\frac{R^3}{r^3} = \frac{1}{2}$

$\frac{R}{r} = \frac{1}{\sqrt[3]{2}}$

➔ Ratio of curved surface area

$= \frac{4\pi R^2}{2\pi r^2} = \frac{2R^2}{r^2} = \frac{2 \times 1}{(\sqrt[3]{2})^2}$

596. (b) $\frac{volume\ of\ cylinder}{volume\ of\ cone} = \frac{3}{1}$

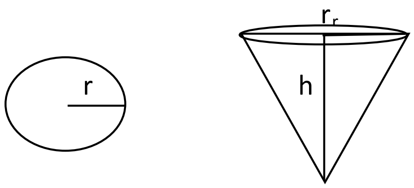


$$\frac{\pi r_1^2 h}{\frac{1}{3}\pi r_2^2 h} = \frac{3}{1}$$

➔ $r_1 = r_2$

Diameter of cylinder = Diameter of cone

597. (d)



volume remains same

volume of sphere

= volume of cone

$$\frac{4}{3}\pi r^3 = \frac{1}{3} \times \pi \times r^2 \times h$$

4r = h

$\frac{h}{r} = \frac{4}{1}$ = 4 : 1

598. (c)

Let the side of first cube = a_1

and the side of second cube = a_2

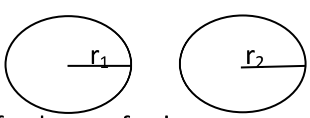
$$\frac{a_1{}^3}{a_2{}^3} = \frac{27}{64}$$

$$\frac{a_1}{a_2} = 3\sqrt{\frac{27}{64}} = \frac{3}{4}$$

Ratio of their surface area

$= \frac{6a_1{}^2}{6a_2{}^2} = \frac{a_1{}^2}{a_2{}^2} = \frac{3^2}{4^2} = \frac{9}{16}$ = 9 : 16

599. (a)



Ratio of volume of sphere

x ratio of weight per 1 cc. of material of each

= Ratio of weight of two sphere

$$\frac{\frac{4}{3}\pi r_1{}^3}{\frac{4}{3}\pi r_2{}^3} \times \frac{289}{64} = \frac{8}{17}$$

$$\frac{r_1{}^3}{r_2{}^3}\frac{8\times 64}{17\times 289} = \frac{8\times 8\times 8}{17\times 17\times 17}$$

$$\frac{r_1}{r_2} = \frac{8}{17}$$

➔ **8 : 17**

600. (a)

volume of rectangular block

= 11×10×5 = 550 m^3

= 550000 dm^3 (1 m = 10 dm)

Volume of a sphere

$= \frac{4}{3}\pi \times \frac{5}{2} \times \frac{5}{2} \times \frac{5}{2}$ dm^3

$\frac{500}{8}$ dm^3

A.T.Q n × $\frac{500}{8}$ =550000

n = $\frac{550000\times 80}{500}$ = **8800**

601. (a) $\frac{R_1}{R_2} = \frac{1}{2}$

$$\frac{V_1}{V_2} = \frac{2}{3}$$

$$\frac{\frac{1}{3}\pi R_1^2 H_1}{\frac{1}{3}\pi R_2^2 H_2} = \frac{2}{3}$$

$$\left(\frac{R_1}{R_2}\right)^2 \times \left(\frac{H_1}{H_2}\right) = \frac{2}{3}$$

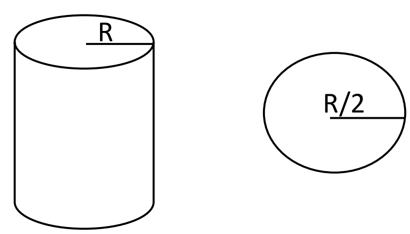
$$\left(\frac{1}{2}\right) \times \frac{H_1}{H_2} = \frac{2}{3}$$

$$\frac{1}{4} \times \frac{H_1}{H_2} = \frac{2}{3}$$

$$\frac{H_1}{H_2} = \frac{2}{3} \times \frac{4}{1}$$

$= \frac{8}{3}$ ➔ 8 : 3

602. (d)



Let the Radius of cylinder = R

➔ Therefore, Radius of sphere = $\frac{R}{2}$

Volume of right circular cylinder = $\pi r^2 H$

volume of sphere

$= \frac{4}{3}\pi \left(\frac{R}{2}\right)^3 = \frac{4}{3}\pi\frac{R^3}{8}$

$= \frac{\pi R^3}{6}$

According to question,
volume of cylinder = Volume of sphere

$\pi r^2 H = \frac{\pi R^3}{6}$

$\frac{\pi R^2 H \times 6}{\pi R^3} = 1$

$\frac{H}{R} = \frac{1}{6}$ ➔ 1 : 6

603. (d)
Radius of longer sphere = R units

Its volume = $\frac{4}{3}\pi R^3$

Now cones are formed with base radius and height same as the radius of larger sphere

volume of smaller cone = $\frac{1}{3}\pi R^3$

and one of the cone is converted into smaller sphere

Therefore, volume of smaller sphere = $\frac{1}{3}\pi R^3$

$\frac{4}{3}\pi r^3 = \frac{1}{3}\pi R^3$

$\frac{r^3}{R^3} = \frac{1}{4}$

$\frac{r}{R} = \frac{1}{\sqrt[3]{4}}$

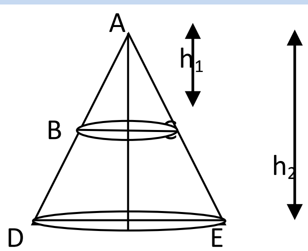
$\frac{\text{Surface area of smaller sphere}}{\text{Surface area of larger sphere}} =$

$\frac{4\pi r^2}{4\pi R^2} \frac{r^2}{R^2}$

$\frac{(1)^2}{\left((4)^{\frac{1}{3}}\right)^2} = \frac{(1)^2}{\left((2)^{\frac{2}{3}}\right)^2} = \frac{1}{2^{\frac{4}{3}}}$

➔ 1 : $2^{\frac{4}{3}}$

604. (c)



$\frac{\text{Volume of Cone ABC}}{\text{Volume of Cone BCED}} = \frac{1}{1}$

= BC = ED (Volume are equal)

$\frac{Volume\ of\ Cone\ ABC}{Volume\ of\ Cone\ ADE} = \frac{1}{1+1}$

= $\frac{1}{2}$

= If a cone is cut in any parts parallel to its base then the ratio of volume of smaller cone to the volume of larger cone is equal to the ratio of the cubes of the corresponding heights/radii/slant a height(it is proved by similarity)

$\left(\frac{height\ of\ cone\ (h_1)}{height\ of\ cone\ (h_2)}\right)^3 = \frac{1}{2}$

$\frac{h_1}{h_2} = \frac{1}{\sqrt[3]{2}}$ = h_1 : $h_2 - h_1$ = 1 : $\sqrt[3]{2} - 1$

1 : $(\sqrt[3]{2} - 1)$

605. (d)
Let side of square be = x
Area of square = x^2
Side of new formed square
= x + 50% of x
= 1.5 x
Area of new formed square
= $(1.5x)^2$
= $2.25x^2$
Ratio of the area (new square) : area of (original square)
= $2.25x^2$: x^2
9 : 4
Quicker approach
Let side of square = 100%
$(100\% + 50\%)^2$
9 : 4

606. (a)

volume of cone = $\frac{1}{3}\pi r^2 h$

= $\frac{1}{3} \times \frac{22}{7} \times 1^2 \times 7 = \frac{22}{3}$ cm^3

Volume of cubical block = 10×5×2 cm^3 = 100 cm^3

Wastage of wood

$= \left(100 - \frac{22}{3}\right)$ cm^3

= $\left(\frac{300-22}{3}\right) = \frac{278}{3}$ cm^3

% wastage = $\frac{\frac{278}{3}}{100}$ ×100=278/3

= **$92\frac{2}{3}$%**

607. (c) Decrease in radius = 50%

$= \frac{1}{2}$

increase in height = 50%

$= \frac{1}{2}\frac{\rightarrow \text{Increment}}{\rightarrow \text{original}}$

	Radius	Height	Volume
original	2	2	$(2)^2\times(2) = 8$
	↓ 50% decrease	↓ 50% Increase	↓ 5
New	1	3	$(1)^2\times(3) = 3$

Reduction in volume

$= \frac{5}{8} \times 100 = \mathbf{62\frac{1}{2}}\%$

608. (a)

Increase in radius = 100%

$= \frac{1}{1}$

	Radius	Height	Volume
original	1	1	$(1)^2\times(1) = 1$
	↓	↓	↓ 7
New	2	2	$(2)^2\times(2) = 8$

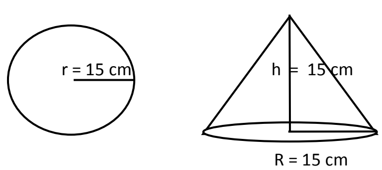
% increase $= \frac{7}{1} \times 100$ = **700%**

609. (d) 20% $= \frac{1}{5}\frac{\rightarrow}{\rightarrow}\frac{\text{Increment}}{\text{original}}$

Radius	light	volume	
5	5	$(5)^2 5 = 125$	
			91
6	6	$(6)^2(6) = 216$	

$= \frac{91}{125}$ ×100= 72.8%

610. (d)



Volume of cone

$= \frac{1}{3} \times \pi(15)^2 \times 15 = \frac{1}{3}\pi(15)^3$

Volume of sphere

$= \frac{4}{3}\pi(15)^3$

Percentage wanted

$= \frac{\textit{volume of cone}}{\textit{volume of sphere}} \times 100$

$= \frac{\frac{1}{3}\times\pi\times(15)^3}{\frac{4}{3}\times\pi\times(15)^3} \times 100$

$= \frac{1}{4} \times 100$

= 25%

611. (d) Height 1 → 3

Radius 2 → 1

Volume 4 → 3

% decrease $= \frac{4-3}{4} \times 100 = 25\%$

612. (d)

height = 100% Radius = 100%

$\frac{1}{1}\frac{\rightarrow \text{Increment}}{\rightarrow \text{Origianl}}$ $\frac{1}{1}\frac{\rightarrow \text{Increment}}{\rightarrow \text{Origianl}}$

	height	Radius	volume
original	1	1	$(1)^2 1 = 1$ ($\frac{1}{3}\pi$ is
New	2	2	$(2)^2(2) = 8$ constant)

= eight times that of original

613. (b) use x + y+ $\frac{xy}{100}$

percentage change in area

$= 15 - 10 + \frac{15\times(-10)}{100}$

= 5 – 1.5 = 3.5 %

(3.5% increase)

Remember : When change in area is asked in the question, then use this formula To save your valuable time.

614. (d)

Let old radius = r

➔ volume $= \frac{4}{3}\pi r^3$

New radius = 2r

➔ New volume $= \frac{4}{3}\pi(2r)^3$

$= \frac{4}{3}\pi \times 8r^3$

➔ volume becomes eight times.

615. (b) Radius 2 → 1

Height 5 → 8

Volume 20 → 8

➔ volume decreases

% decrease = $\frac{20-8}{20} \times 100 = 60\%$

616. (d) Length 1 → 2

Breadth 2 → 6

Height 3 → 9

Volume 6 → 108

➔ New volume = 18 times the original volume

➔ Increase in volume

= 18 – 1 = 17 times

617. (c) Radius 10 → 11

Height 10 → 11

Volume 1000 → 1331

➔ % Increase = $\frac{1331-1000}{1000} \times 100$

= 33.1%

618. (a)

% change in height = %

change in volume = 100%

619. (a)

Volume of coffee

$= \frac{2}{3}\pi r^3 = \frac{2}{3} \times \frac{22}{7} \times (4)^3$

$= \frac{128}{3}\pi$ cm^3

Volume of cone $= \frac{1}{3}\pi r^2 h$

$= \frac{1}{3}\pi (8)^2 \times 16$

$= \frac{1024}{3}\pi$

Required percentage

$= \frac{\frac{1024}{3} - \frac{128}{3}}{\frac{1024}{3}} \times 100$

= 87.5%

620. (a)

Decrease in these radius

= (decrease in base area)$^{1/2}$ $= \left(\frac{1}{9}\right)^{\frac{1}{2}}$

$= \frac{1}{3}$

Let initial radius and height be 3r and h

New radius and height are r and 6h

Old lateral surface area

= 2 × π × 3r × h

= 6 πrh

New lateral surface area

= 2 × π × r × 6h

= 12 πrh

Required factor $= \frac{12\pi rh}{6\pi rh} = 2$

621. (c)

Let the original radius be 'r'

➔ Area = $4\pi r^2$

New area = $4\pi(2r^2) = 16\pi r^2$

➔ New area is 4 times the old area

622. (d)

Edge is increased by 50%

$= \frac{50}{100}$

$= \frac{1}{2} \frac{\rightarrow}{\rightarrow} \frac{\text{increase}}{\text{original}}$

Let original edge = 2

Increased edge = 3

edge	surface area	
2	4	5[6 is constant]
3	9	

% increase = $\frac{5}{4} \times 100 = 125\%$

623. Let the initial radius = 1 unit

New radius = 2 unit (radius is doubled)

Radius :	Volume
$\frac{1}{2}$	$(1)^3$
	$(2)^3$

$\left(\frac{4}{3}\pi \text{ is constant}\right)$

1	1	7

2 8

Percentage increase = $\frac{7}{1}$ ×100

= 700 %

624. (a) Quicker approach

↑ in A = a + b + $\frac{ab}{100}$

Here a = b = 5%

↑ in A = $\left(5+5+\frac{5\times5}{100}\right)\%$

= 10.25 %

625. (a)

Volume of tetrahedron

= $\frac{a^3}{6\sqrt{2}} = \frac{12^3}{6\sqrt{2}}$

= $\frac{1728}{6\sqrt{2}}$ = $144\sqrt{2}$ cm^3

626. (a)

volume of bucket = $\frac{1}{3}\pi h(R^2+r^2+Rr)$

= $\frac{1}{3} \times \frac{22}{7} \times 45(28^2+7^2+28\times7)$

= $\frac{22}{7}\times15\times1029$ = 48510 cm^3

627. (c)

Side of regular hexagon = 2a cm

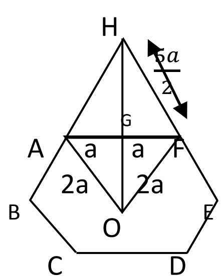
area of hexagon

= $6\times\frac{\sqrt{3}}{4}\times(2a)^2$

➔ $6\sqrt{3}a^2$ cm^2

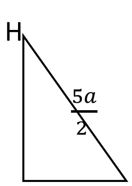
slant edge of pyramid

➔ $\frac{5a}{2}$ cm



slant edge ➔ $\frac{5a}{2}$

(Given)



G a F

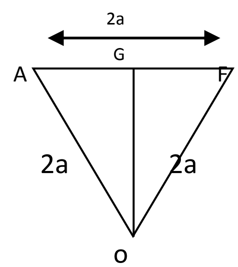
➔ HF = $\frac{5a}{2}$ (slant height)

➔ HG = slant height(1)

➔ GF = base

slant height ➔ $\sqrt{\left(\frac{5a^2}{2}\right) - (a)^2}$

= $\sqrt{\frac{25a^2}{4} - a^2} = \frac{\sqrt{21a}}{2}$



AOF is equilateral triangle of side 2a (AOF)

Altitude GO = $\frac{\sqrt{3}}{2}$×2a

= $\sqrt{3}$ a

Slant height ➔ $\frac{\sqrt{21}}{2}$ a

altitude = $\sqrt{3}$ a

height of the pyramid = h

➔ $\sqrt{\left(\frac{\sqrt{21a}}{2}\right)^2 - \left(\sqrt{3a}\right)^2}$

= $\sqrt{\frac{21}{4}a^2 - 3a^2} = \sqrt{\frac{9a^2}{4}}$

= $\frac{3}{2}$ a

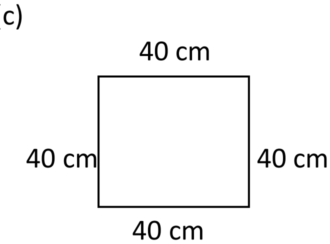
Volume of pyramid

= $\frac{1}{3}$ area of base × height

= $\frac{1}{3} \times 6\sqrt{3a^2} \times \frac{3}{2}a$

= $3\sqrt{3}a^3$ cm^3

628. (c)



➔ area of base = 40×40

$= 1600 \text{ cm}^2$

Let height of pyramid = h

Volume $= \frac{1}{3} \times h \times$ area of base

$= \frac{1}{3} \times h \times 1600$

➔ 8000 (given)

= h = 15 cm

629. (c) area of trapezium

$= \frac{1}{2} \times h\,(AB + CD)$

$= \frac{1}{2} \times 8 \times (8 + 14)$

$= 4 \times 22 = 88 \text{ cm}^2$

= volume of prism

= Height of prism

area of base

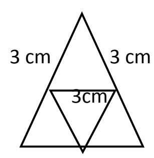
➔ height × 88 = 1056 (given)

➔ height × 88 = $\frac{1056}{88}$

➔ 12 cm

630. Edge of regular tetra hadron = 3 cm

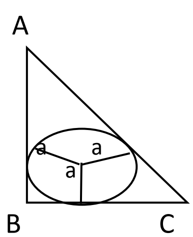
a = 3 cm



Volume ➔ $\frac{\sqrt{2}}{12} a^3 \text{ cm}^3$

➔ $\frac{\sqrt{2}}{12} \times (3)^3 = \frac{9}{4}\sqrt{2} \text{ cm}^3$

631. (d)



r – in radius of in circle of triangle

perimeter = 15 cm (given)

Semi-perimeter (S) = $\frac{15}{2}$

In radius of any triangle

r ➔ $\frac{\Delta}{s}$

r = $\frac{\text{area}}{\text{semi-perimeter}}$

where Δ is the area of triangle

r = 3 cm given

3 ➔ $\frac{\text{area of triangle}}{\frac{15}{2}}$

$3 \times \frac{15}{2}$ = area of triangle

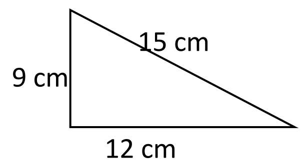
➔ $\frac{45}{2}$ cm = area of triangle

volume of prism ➔ 270 cm^3 (given)

$270 = h \times \frac{45}{2}$

➔ h = 12 cm

632. (b)



9, 12, 15 is a triplet which forms a right Angle triangle.

area of base of prism

➔ $\frac{1}{2} \times 9 \times 12 = 54 \text{ cm}^3$

Perimeter of triangle = 9 + 12 + 15

= 36

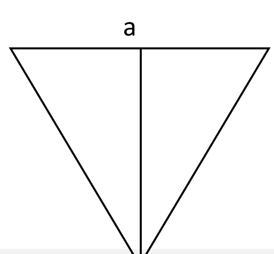
Total surface area of prism = perimeter × height + area of base

➔ height of prism = 5 cm given

total surface area = 36 × 5 + 54

➔ $180 + 54 = 234 \text{ cm}^3$

633. (c)



a a

Let side equilateral triangle b = a

area $= \frac{\sqrt{3}}{4}$ a^2

$= \frac{\sqrt{3}}{4}a^2$ = 173 cm^2

➔ $a^2 = \frac{173}{\sqrt{3}}\times 4$

($\sqrt{3}$ = 1.73)

$a^2 = \frac{173}{1.73} \times 4$

$= \frac{173}{173}\times 4\times 100$

$a^2 = 400$

$a = 20$ cm

Perimeter of base = 20×3 = 60

Volume of prism × 10380 cm^3

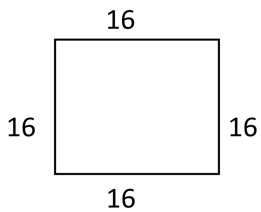
(given)

area of base × height

height = $\frac{10380}{173}$ = 60

LSA = 60×60 = 3600 cm^2

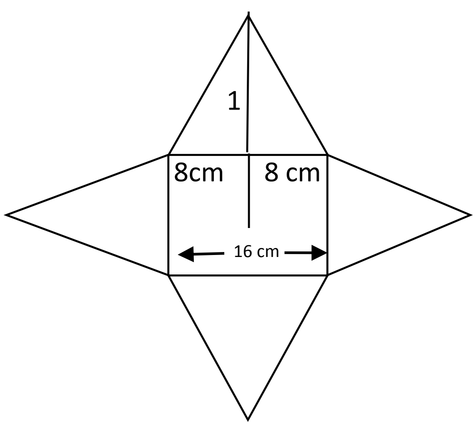
634. (b)

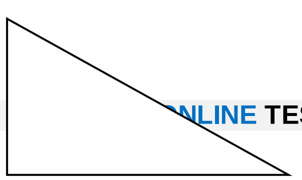


Perimeter of the base = 4×16 = 64 cm

Curved or lateral surface area of pyramid

$= \frac{1}{2}$ × (perimeter of base) × height





1 = 17

b = 8

➔ height of pyramid ➔ 15 cm

➔ base = 8 cm

➔ slant height of pyramid

l $= \sqrt{(15)^2 + (8)^2}$ ➔ 17 cm

➔ curved surface area of pyramid

➔ $\frac{1}{2}$×64×17 ➔ 544 cm^2

635. (c)

Volume of pyramid

$= \frac{1}{3}$× Area of base × height

$= \frac{1}{3}$ ×57×10 = 190 cm^3

636. (c)

Let the side of square base = a cm

➔ $2a^2 + 4a \times h = 608$

➔ 2a + 4a × 15 = 608

➔ $a^2 + 30a = 304$

➔ $a^2 + 38a - 8a - 304 = 0$

➔ a(a + 38) – 8 (a + 38) = 0

➔ a = – 38,8

➔ a = 8 cm

Volume of prism = 8 × 8 × 15 = 960 cm^3

637. (b)

volume of prism $= \frac{\sqrt{3}}{4} a^2 \times h$

$= \frac{\sqrt{3}}{4} \times (8)^2 \times 10$

$= 160\sqrt{3}$ cm^3

638. (b)

Volume of prism

$\frac{1}{2}$×10×12×20 = 1200 cm^3

➔ Weight of prism = 1200×6 = 7200 gm

= 7.2 kg

639. (a) Total slant surface area

$= 4 \times \frac{1}{2} \times 4 \times a = 12$

(Where a is the side of the square base)

➔ a = $\frac{12}{8} = \frac{3}{2}$ cm

➔ area of base = $\frac{9}{4}$ cm^2

Required ratio = $\frac{\frac{12}{9}}{4}$ = 16 : 3

640. (d)

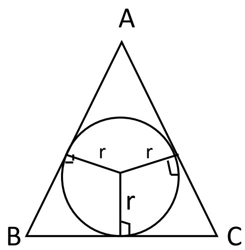
Total surface area of tetrahedron

= $\sqrt{3}\,a^2$

= $\sqrt{3} \times 12^2$

= $144\sqrt{3}$ cm^2

641. (d)



In radius of triangle

= $\frac{\text{area of triangle}}{\text{semi-perimeter}}$

ar (Δ ABC) = Inradius × semi-perimeter

= $4 \times \frac{28}{2}$ = 4×14 = 56 cm

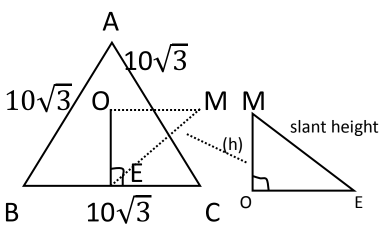
Volume of the prism = 366 cm^3

(area of base)× height = 366 cm^3

56 × height = 366 cm

height = $\frac{366}{56}$ = 6.535 cm

642. (d)



Base is equilateral triangle

In radius of equilateral triangle

= OE = $\frac{\text{side of equilateral } \Delta}{2\sqrt{3}}$

= $\frac{10\sqrt{3}}{2\sqrt{3}}$ = 5 cm

slant length, 1 = $\sqrt{h^2 + OE}$

= $\sqrt{h^2 + 25}$

Total surface area

= $270\sqrt{3}$

$\frac{1}{2}$(perimeter of base × slant height + Base area = $270\sqrt{3}$

$\frac{1}{2}\left\{30 \times \sqrt{3} \times \sqrt{(h^2 + 25}\right\} + \frac{\sqrt{3}}{4}$

$(10\sqrt{3})^2 = 270\sqrt{3}$

$15\sqrt{3}\sqrt{h^2 + 25} + 75\sqrt{3} = 270\sqrt{3}$

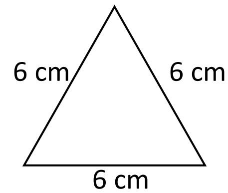
$\sqrt{h^2 + 25} = 13$

$h^2 + 25 = 169$

$h^2 + 169 - 25 = 144$

h = $\sqrt{144}$ = 12

643. (a)



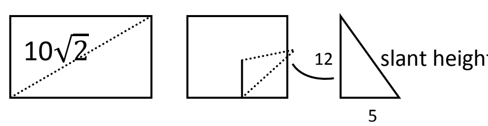
Volume of prism = area of base × height

= $\frac{\sqrt{3}}{4}(6)^2$ × height

$\frac{\sqrt{3}}{4}$× 6 × 6 height = $81\sqrt{3}$

height = $\frac{81\sqrt{3}\times 4}{\sqrt{3}\times 6\times 6}$ = 9 cm

644. (d)



Side of square = $\frac{1}{\sqrt{2}} \times 10\sqrt{2}$ = 10 cm

slant height = $\sqrt{5^2 + 12^2}$ = 13 cm

lateral surface area = $\frac{1}{2}$×perimeter of base × slant height

= $\frac{1}{2}$ × 40 × 13

= 260 cm^2

645. (d)

Total surface area of prism = perimeter of base × height

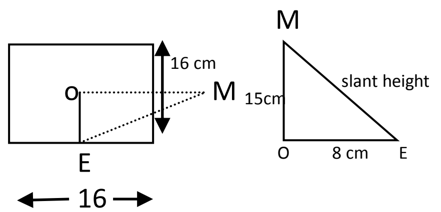
+ 2 × base area

= (3 × 12 × 10) + 2 × $\frac{\sqrt{3}}{4}$× 12^2

= 360 + $72\sqrt{3}$

$= 72(5+\sqrt{3})\ cm^2$

646. (b)



Slant height of pyramid = $\sqrt{8^2 + 15^2} = 17$

(8, 15, 17) is triplet

lateral surface area

$= \frac{1}{2} \times$ perimeter of base × slant height

$= \frac{1}{2} \times 64 \times 17$

$= 32\times17 = 544\ cm^2$

647. (a)

Perimeter of right Δ = (5+12+13) = 30

total surface area = lateral surface area + 2 × area of base

= (perimeter of base × height + 2 × area of base

$= (30 \times \text{height}) + 2 \times \frac{1}{2} \times 5 \times 12$

= (30 × height) + 60

ATQ 30 × height + 60 = 360

30 × height = 360 – 60 = 300

height = **10 cm**

648. (d)

Height of pyramid = 6 cm

Diagonal of square base = $24\sqrt{2}$ m

Side of square = 24 m

Area of square = $(24)^2$

= 576

Volume of the pyramid

$= \frac{1}{3} \times$ area of base × height

$= \frac{1}{3} \times 576 \times 6$

$= 576 \times 2 = 1152\ m^3$

649. (a)

Volume of pyramid

$= \frac{1}{3} \times$ area of base × height

$500 = \frac{1}{3} \times 30 \times \text{height}$

height $= \frac{500\times3}{30} = 50$ m

650. (a)

Lateral surface area of prism = 120

base perimeter × height = 120

L.S.A of prism = (base perimeter × height)

3 × (side) × height = 120

(perimeter of eq. Δ = 3 × side)

side × height $= \frac{120}{3} = 40$ ....(i)

volume of prism $= 40\sqrt{3}$

area of base × height $= 40\sqrt{3}$

$\frac{\sqrt{3}}{4}(\text{side})^2\times\text{height} = 40\sqrt{3}$

$(\text{side})^2 \times \text{height} = \frac{40\sqrt{3}\times4}{\sqrt{3}} = 160$ ....(ii)

Dividing (ii) by (i)

$\frac{(side)^2\times height}{sode\times height} = \frac{160}{40}$

side = 4 cm

651. (c) Volume of tetrahedron

$= \frac{\sqrt{2}}{12}(\text{side})^3 = \frac{\sqrt{2}}{12}(4)^3$

$\Rightarrow \frac{\sqrt{2}\times4\times4\times4}{12} = \frac{16\sqrt{2}}{3}\ cm^3$

652. (a)

Area of the base of prism (a right triangle)

$= \frac{1}{2}\times5\times12 = 30\ cm^2$

Third side of the triangle

$= \sqrt{12^2 + 5^2} = 13$cm

Perimeter of the triangle

= 5+12+13 = 30 cm

Total surface area

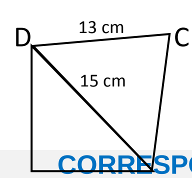
= lateral surface + 2 × (base area)

= (perimeter of base × height + 2 × (base area

= (30×10)+2×30

$= 300+60 = 360\ cm^2$

653. (a)



12 cm 14 cm

A 9 cm B

In Δ ABD,

BD = $\sqrt{AB^2 + AD^2}$ = $\sqrt{9^2 + 12^2}$

= $\sqrt{81 + 14}$ = $\sqrt{225}$ = 15 cm

Area of Δ ABD = $\frac{1}{2}$ × AB × AD

= $\frac{1}{2}$ × 9 × 12 = 54 cm^2

In Δ BCD

semi-perimeter = $\frac{13+14+15}{2}$

= $\frac{42}{2}$ = 21

Area of Δ BCD =

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

= $\sqrt{21(21-13)(21-14)(21-15)}$

= $\sqrt{21 \times 8 \times 7 \times 6}$ = 21×4 = 84 cm^2

area ABCD = 84+54 = 138 cm^2

height of prism =

$\frac{\text{volume}}{\text{Area of base}} = \frac{2070}{138}$ = 15 cm

perimeter of base =

9+14+13+12 = 48 cm

Area of lateral surface = perimeter × height

= 48 × 15 = **720 cm^2**

654. (a) As we know,

volume of Right Prism = Area of the base × Height

➔ 7200 = $\frac{3\sqrt{3}}{2}$ P^2 × $100\sqrt{3}$

➔ 72×2 = 9 P^2

➔ P^2 = 16

➔ P = 4

655. (b)

Half of its lateral edges

➔ Half of its edges

➔ Half of its volume

Then, volume reduced by = 50 %

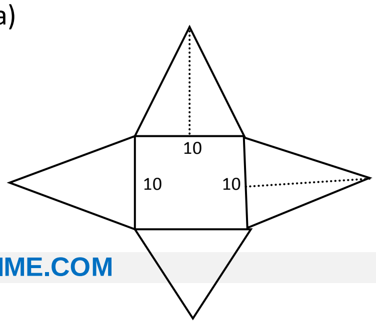
656. (b)

Total surface area

= 4×$\left[\frac{\sqrt{3}}{4} \times 1^2\right]$

= $\sqrt{3}$ cm^2

657. (a)



10

Area of base = 10×10 = 100 cm^2

Area of 4 phase

= ($\frac{1}{2}$ × Base × slant height) × 4

➔ ($\frac{1}{2}$ × 10×13×4

= 65×4 = 260

[slant height = $\sqrt{12^2 + 5^2}$ = $\sqrt{169}$ = 13]

Total Surface area

➔ 260+100

➔ 360 m^2

658. (d)

volume of prism = (area of base × height)

Area of base (i.e. area of triangle)

➔ Area of base

=

➔ Area of base

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

= (By Hero's formula)

So, S = $\frac{13+20+21}{2} = \frac{54}{2}$ = 27

➔ = 27

➔ $\sqrt{27(27-13)(27-20)(27-21)}$

➔ $\sqrt{27 \times 14 \times 7 \times 6}$

➔ $\sqrt{9 \times 3 \times 2 \times 7 \times 7 \times 2 \times 3}$

➔ 9×7×2

Volume of Prism

=(9×7×2)×9 = 1134 cm^3

659. (d)

Let the side of the square = a cm

ATQ

T.S.A = C.S.A + 2 base area

C.S.A = base perimeter × h

T.S.A = base perimeter × h + 2 base area

192 = 4a × 10 + $2a^2$

$2a^2$ + 40a – 192 = 0

a^2 + 20a – 96 = 0

a^2 + 24a – 4a – 96 = 0

a(a+24)–4(a+24) = 0

(a+24)(a–4) = 0

a = 4, (–24)

a = 4 (side can never be in –ve)

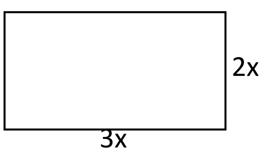
Volume = base area × h

Volume = 16×10
Volume = 160 cm^3

660. (c) According to the question,
V = number of vertices of prism = 6
e = edges of prism = 9
f = faces of the prism = 5
$\frac{v+e-f}{2} = \frac{6+9-5}{2}$
$= \frac{10}{2} = 5$

661. (c)
ATQ
Volume of prism = Area of base × height
= trapezium area × height
$= \frac{1}{2}(10+6)\times5\times8$
= 16×5×4 = 320 cm^3

662. (a)



Base of prism
➔ length : breadth
3x : 2x
Perimeter of base
= 2(3x + 2x) = 10x
area of base
➔ 2x × 3x = 6x^2
height of Prism = 12 cm (given)
total surface area of prism
= Perimeter of base × height + 2 × area of base
288 = 10x × 12 +12 x^2
12x^2 + 120x – 288 = 0
x^2 + 10x – 24 = 0
x = 2
area of base ➔ 6×4
➔ 24 cm^2
volume of prism
➔ 24×12
➔ 288 cm^3

663. (b)
Volume of the part (prism) =
Area of base × height
Area of base (Isosceles Δ)
$= \frac{b}{4}\sqrt{4a^2-b^2}$
$= \frac{6}{4}\sqrt{4(5)^2-(6)^2}$ = 12 cm^2
Volume of prism = 12×8 = 96 cm^3

664. (a) Semi-perimeter of
$\Delta = \frac{7+8+9}{2}$ = 12 cm
Area of Δ = $\sqrt{s(s-a)(s-b)(s-c)}$
$= \sqrt{12(12-7)(12-8)(12-9)}$
$= \sqrt{12\times5\times4\times3}$
$= 12\sqrt{5}$

665. (c) According to the question
Volume of cylinder = πr^{2}h
Volume of Sphere = $\frac{4}{3}$πr^3
The number of spherical balls
$= \frac{\pi r^2 h}{\frac{4}{3}\pi r^3}$
$= \frac{30\times30\times40\times3}{4\times1\times1\times1}$ = 27000

666. (d) According to the question
Volume of the cylinder = πr^{2}h
$\frac{V_1}{V_2} = \frac{\pi {r_1}^2 h_1}{\pi r_2^2 h_2} = \frac{4\times3}{1\times2} = \frac{6}{1}$

667. (d) According to the question
Volume of cylinder = Volume of cone
$$\pi r^2 h_1 = \frac{1}{3}\pi r^2 h_2$$
$\frac{h_1}{h_2} = \frac{1}{3}$

668. (d) According to the question C.S.A of cylinder
= 2 πrh = 2 π${r_1}^2$
C.S.A of sphere = 4 π r_2^2
2 π r_1^2 = 4 π r_2^2
$\frac{r_1}{r_2} = \frac{\sqrt{2}}{1}$
$\frac{\text{Volume of cylinder}}{\text{volume of cone}} = \frac{\pi r_1^2 h}{\frac{4}{3}\pi r_2^3}$
$= \frac{2\sqrt{2}\times3}{4} = \frac{3}{\sqrt{2}}$

669. (a) Total surface area of prism
= perimeter of Base × Height
+ 2 × Base Area
10 = 4a × 2 + 2 × a^2
10 = 8a + 2 a^2

$a^2 + 4a - 5 = 0$
$(a + 5)(a - 1) = 0$
$a = 1, a = -5$
volume of Prism = Area of base × height
$= 1\times1\times2 = 2\ cm^3$

670. (c) Let the radius of wire = 1 cm
Volume of cone = $\frac{1}{3}\pi r^2 h$
$= \frac{1}{3}\pi (1)^2 h = \frac{1}{3}\pi h$
New radius of wire = $\frac{1}{3}$ cm
volume of new cone
$= \frac{1}{3}\pi \left(\frac{1}{3}\right) H$
$\frac{1}{27}\pi H$
volume of old cone = Volume of new cone
$\frac{1}{3}\pi h = \frac{1}{27}\pi H$
H = 9h
Height of new cone is increased by 9 times.

671. (c) Painted Area of Prism
$= 151.20\times5 = 756.00\ m^2$
AC = 15
[By using Pythagoras theorem]
Total surface Area = Perimeter of base × height + 2 × Area of base
$756 = 15+9+12\times h+2\times\frac{1}{2}\times9\times12$
$756 = 36\times h+108$
$36h = 756 - 108$
$h = \frac{648}{36} = 18$ cm

672. (d) Total surface Area
$\frac{1}{2}$×(perimeter of base) × Slant height + Area of base
$= \frac{1}{2}(4\times10)\times13+10\times10$
= 260+100
$= 360\ cm^2$
[Slant height = $\sqrt{\left(\frac{a}{2}\right)^2 + h^2}$
$= \sqrt{5^{2+}12}$
= 13 cm

673. (a) By option (a)
Are Increment $= 20+20+\frac{20\times20}{100}$
= 44%