MATHS

BOOKS - RD SHARMA MATHS (HINGLISH)

SURFACE AREA AND VOLUME OF A RIGHT CIRCULAR CYLINDER

Others

1. The height of a right circular cylinder is 10.5. Three times the sum of the areas of its two circular faces is twice the area of the curved surface. Find the volume of the cylinder.

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2. A well with 14m diameter is dug 8m deep. The earth taken out of it has been evenly spread all around it to a width of 21m to form

as embankment. Find the height of the embankment.

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3. The cost of painting the total outside surface of a closed cylindrical oil tank at 60 paise per sq. dm is Rs. 237.60. The height of the tank is 6 times the radius of the base of the tank. Find its volume correct to two decimal places.

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4. A lead pencil consists of a cylinder of wood with a solid cylinder of graphite filled in the interior. The diameter of the pencil is 7 mm and the diameter of the graphite is 1 mm. If the length of the pencil is 14 cm, find the volume of the wood and that of the graphite.

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5. Find the weight of a lead pipe 3.5m long, if the external diameter of the pipe is 2.4cm and

the thickness of the lead is 2mm and 1 cubic cm of lead weighs 11gm.

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6. It costs Rs. 2200 to paint the inner curved surface of a cylindrical vessel 10m dep. If the cost of painting is at the rate of Rs. 20 per m^2, find: radius of the base Capacity of the vessel?

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7. The cost of painting the total outside surface of a closed cylindrical oil tank at 50 paise per square decimetre is $Rs.\,198$. The height of the tank is 6 times the radius of the base of the tank. Find the volume corrected to 2 decimal places.

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8. The ratio between the radius of the base and the height of a cylinder is $2:3.$, find the

total surface area of the cylinder, it its volume is $1617\ cm^3$.

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9. At a Ramzan Mela, a stall keeper in one of the food stalls has large cylindrical vessel of base radius 15cm filled up to a height of 32cm with orange juice. The juce is filled in small cylindrical glasses of radius 3cm upto a height of 8cm, and sold for Rs. 3 each. How much

money does the stall keeper receive by selling the juice completely?

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10. A solid cylinder has total surface area of 462 square cm. Its curved surface area is one-third of its total surface area. Find the volume of the cylinder. (Take $\pi = 22/7$)

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11. A metal pipe is 77cm long. The inner diameter of a cross section is 4cm, the outer diameter being 4.4 cm. Find its inner curved surface area. outer curved surface area. total surface area.

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12. A rectangular sheet of paper $44cm \times 18cm$ is rolled along its length and a cylinder is formed. Find the radius of the cylinder.

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13. The diameter of a garden roller is 1.4m and it is 2m long. How much area will it cover in 5 revolutions? (Use $\pi = \frac{22}{7}$)

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14. The diameter of a roller 120cm long is 84cm. If it take 500 complete revolutions to level a playground, determine the cost of

levelling it at the rate of 30 paise per square metre.

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15. A metal pipe is 77cm long. The inner diameter of a cross section is 4cm, the outer diameter being 4.4 cm. Find its inner curved surface area. outer curved surface area. total surface area.

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16. In Fig. 13.12, you see the frame of a lampshade. It is to be covered with a decorative cloth. The frame has a base diameter of 20 cm and height of 30 cm. A margin of 2.5 cm is to be given for folding it over the top and bottom of the frame. Find how much cloth is required for covering the lampshade

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17. The total surface area of a hollow cylinder which is open from both sides is 4620 sq. cm area of base ring is $115.5 sq.\ cm$ and height $7cm$. Find the thickness of the cylinder.

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18. A cylindrical vessel, without lid, has to be tin-coated on its both sides. If the radius of the base is 70cm and its height is 1.4 m,

calculate the cost of tin-coating at the rate of Rs. 3.50 per $1000cm^2$.

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19. The students of a Vidyalaya were asked to participate in a competition for making and decorating pen holders in the shape of a cylinder with a base, using cardboard. Each pen holder was to be of radius 3cm and height 10.5 cm. The Vidyalaya was to supply the competitors with cardboard. If there were 35

competitors, how much cardboard was required to be bought for the competition?

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20. A cylindrical tube, open at both ends, is made of metal. The internal diameter of the tube is 10.4cm and its length is 25cm. The thickness of the metal is 8mm everywhere. Calculate the volume of the metal

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21. Water flows out through a circular pipe whose internal diameter is 2cm, at the rate of 6 metres per second into a cylindrical tank. The radius of whose base is 60cm. Find the rise in the level of water in 30 minutes?

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22. A well with 10m inside diameter is dug 8.4m deep. Earth taken out of it is spread all around it to a width of 7.5m to form an

embankment. Find the height of the embankment.

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23. The sum of the radius of the base and height of a solid cylinder is 37m. If the total surface area of the solid cylinder is $1628cm^2$. Find the volume of the cylinder.

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24. The thickness of a hollow wooden cylinder is $2cm$. It is $35cm$ long and its inner radius is $12cm$.

Find the volume of the wood required to make the cylinder, assuming it is open at either end.

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25. The circumference of the base of a cylinder is 132 cm and its height 25cm. Find the volume of the cylinder.

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26. From a right circular cylinder with height $10cm$ and radius of base $6cm$, a right circular cone of the same height and base is removed. Find the volume of the remaining solid.

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27. Twenty cylindrical pillars of the Parliament House are to be cleaned. If the diameter of each pillar is 0.50m and height is 4m. What

will be the cost of cleaning them at the rate of Rs. 2.50 per square metre?

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28. Into a circular drum of radius $4.2m$ and height $3.5m$, how many full bags of wheat can be emptied if the space required for wheat in each bag is 2.1 cubic m. (Take $\pi = 22/7$)

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29. A solid cylinder has total surface area of 462 square cm. Its curved surface area is one-third of its total surface area. Find the volume of the cylinder. (Take $\pi = 22/7$)

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30. If the radius of the base of a right circular cylinder is halved, keeping the height same, what is the ratio of the volume of the reduce cylinder to that of the original.

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31. A cylindrical road roller made of iron is 1m wide. Its inner diameter is 54cm and thickness of the iron sheet rolled into the road roller is 9cm. Find the weight of the roller if 1c.c. of iron weights8 gm.

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32. The diameter of a cone is 14cm and its slant height is 9cm. Find the area of its curved

surface.

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33. The difference between outside and inside surface of a cylindrical metallic pipe 14cm long is $44cm^2$. If the pipe is made of 99cu centimetres of metal, find the outer and inner radii of the pipe.

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34. The radius of a cone is 3cm and vertical height is 4cm. Find the area of the curved surface.

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35. The volume of metallic cylindrical pipe is $748cm^3$. Its length is $14cm$ and its external radius is 9cm. Find its thickness.

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36. The radius and slant height of a cone are in the ratio of 4:7. If its curved surface area is $792cm^2$, find its radius. $\left(Use\pi = \frac{22}{7}\right)$

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37. The circumference of the base of a 10m high conical tent is 44 metres. Calculate the length of canvas used in making the tent if width of canvas is 2m. $\left(Use\pi = \frac{22}{7}\right)$

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38. How many metres of cloth 5m wide will be required to make a conical tent, the radius of whose base is 7m and whose height is 24m? $\left(Take\pi = \frac{22}{7}\right)$

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39. The lateral surface of a cylinder is equal to the curved surface of a come. If the radius be the same, find the ratio of the height of the cylinder and slant height of the cone.

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40. The radius and height of a cone are in the ratio 4:3. The area of the base is $154cm^2$. Find the area of the curved surface. l

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41. A corn cob (see Fig. 13.17), shaped somewhat like a cone, has the radius of its broadest end as 2.1 cm and length (height) as 20 cm. If each $1cm^2$ of the surface of the cob

carries an average of four grains, find how many grains you would find on the entire cob?

given radius r $= 2.1cm$

height h $= 20cm$

so l $= \left(r^2 + h^2\right)^{\frac{1}{2}}$

$= 20.1cm$(approx)

so curved surface area

$= \pi \times 2.1 \times 20.1 = 132.66cm^2$

so total no of grains $= 132.66cm^2 \times 4 = 530$

grains(approx)

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42. A tent is of the shape of a right circular cylinder upt a height of 3 metres and then becomes a right circular cone with a maximum height of 13.5 metres above the ground. Calculate the cost of paintingthe inner side of the tent at the rate of Rs. 2 per square metre, if the radius of the base is 14 metres.

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43. Monica has a piece of Canvas whose area is $551m^2$. She uses it to have conical tent mode,

with a base radius of 7m. Assuming that all the stitching margins and wastage incurred while cutting, amounts to approximately $1m^2$. Find the volume of the tent that can be made with it.

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44. If the radius of the base of a cone is halved, keeping the height same, what is the ratio of the volume of the reduced cone to that of the original.

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45. The base radii of two right circular cones of the same height are in the ratio 5:5. Find the ratio of their volumes.

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46. A right triangle ABC with its sides 5 cm, 12cm and 13cm is revolved about the side 12cm. Find the volume of the solid so formed. If the triangle ABC is revolved about side 5cm,

then find the volume of the solid so obtained. Find also the ratio of the volumes of the two solids obtained.

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47. A conical tent is to accommodate 11 persons. Each persons must have 4 sq. metres of the space on the ground and 20 cubic metrs of air to breath. Find the height of the cone.

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48. A semi-circular sheet of metal of diameter 28cm is bent into an open conical cup. Find the depth and capacity of cup.

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49. Two cones have their heights in the ratio 1:3 and the radii of their bases in the ratio 3:1. Find the ratio of their volumes.

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50. A cylinder is within the cube touching all the vertical faces. A cone is inside the cylinder. If heights are some with the same base, find the ratio of their volumes.

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51. A conical tent is 10m high and the radius of its base is 24m. Find the slant height of the tent. If the cost of $1m^2$ convas is Rs. 70, find

the cost of the canvas required to make the tent.

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52. Curved surface area of a cone is $308\ cm^2$ and its slant height is 14cm. Find the radius of the base and total surface area of the cone.

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53. There are two cones. The curved surface area of one is twice that of the other. The slant height of the later is twice that of the former. Find the ratio of their radii.

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54. Find the ratio of the surface areas of two cones if their diameters of the bases are equal and slant heights are in the ratio of 4:3.

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55. Find the ratio of the surface areas of two cones if their diameters of the bases are equal and slant heights are in the ratio of 4:3.

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56. A bus stop is barricaded from the remaining part of the road, by using 50 hollow cones made of recycled card-board. Each cone has a base diameter of 40cm and height 1m. If the outer side of each of the cones is to be

painted and the cost of painting is Rs. 12 per m^2 , what will be the cost of painting all these cones $\left(Use\pi = 3.14 and \sqrt{1.04} = 1.02\right)$

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57. A heap of wheat is in the form of a cone whose diameter is 10.5 m and height is 3 m. Find its volume. The heap is to be covered by canvas to protect it from rain. Find the area of the canvas required

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58. A tent is in the form of a right circular cylinder surmounted by a cone. The diameter of cylinder is 24m. The height of the cylindrical portion is 11m while the vertex of the cone is 16m above the ground. Find the area of the canvas required for the tent.

59. The area of the base of a right circular cone is $314cm^2$ and its height is 15cm. Find the

volume of the cone.

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60. A cylinder and a cone have equal radii of their bases and equal heights. If their curved surface areas are in the ratio 8:5, show that the radius of each is to the height of each as 3:4.

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61. A cone of height 24cm has a curved surface area $550cm^2$. Find its volume. $\left(Take\pi = \frac{22}{7}\right)$

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62. A conical tent is to accommodate 11 persons. Each persons must have 4 sq. metres of the space on the ground and 20 cubic metrs of air to breath. Find the height of the cone.

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63. 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. Find its height.

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64. A conical vessel whose internal radius is 5 cm and height 24cm is full of water. The water is emptied into a cylindrical vessel with

internal radius 10cms. Find the height to which the water rises.

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65. The volume of a cone is $18480cm^3$. If the height of the cone is 40cm. Find the radius of its base.

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66. The base radii of two right circular cones of the same height are in the ratio 5:5. Find the ratio of their volumes.

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67. From a right circular cylinder with height 10cm and radius of base 6cm, a right circular cone of the same height and base is removed. Find the volume of the remaining solid.

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68. If h, c, V are respectively the height, the curved surface and the volume of a cone, prove that $3\pi V h^3 - C^2 h^2 + 9V^2 = 0$.

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69. A right triangle ABC with its sides 5 cm, 12cm and 13cm is revolved about the side 12cm. Find the volume of the solid so formed. If the triangle ABC is revolved about side 5cm, then find the volume of the solid so obtained.

Find also the ratio of the volumes of the two solids obtained.

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70. A cone of a radius 5 cm is filled with water. If the water poured in a cylinder of radius 10cm, the height of the water rises 2 cm, find the height of the cone.

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71. The curved surface area of a right circular cylinder of height $14\,cm\ is\ 88\,cm^2$. Find the diameter of the base of the cylinder.

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72. The ratio between the curved surface area and the total surface area of a right circular cylinder is 1:2. Find the ratio between the height and radius of the cylinder.

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73. Savitri had to make a model of a cylindrical Kaleidoscope for her science project. She wanted to use chart paper to make the curved surface of the Kaleidoscope. What should be the area of chart paper required by her, if she wanted to make a Kaleidoscope of length 25 cm with a 3.5 cm radius?

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74. An iron pipe 20 cm long has exterior diameter equal to 25cm. If the thickness of the pipe is 1cm, find the whole surface of the pipe.

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75. The radii of two right circular cylinders are in the ratio 2:3 and their heights are in the ratio 5:4. Calculate the ratio of their curved surface areas.

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76. A rectangular sheat of paper $44cm\ x\ 18cm$ is rolled along its length and a cylinder is formed. Find the radius of the cylinder.

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77. The diameter of a garden roller is 1.4m and it is 2m long. How much area will it cover in 5 revolutions? $\left(Use\ \pi = \frac{22}{7}\right)$

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78. The diameter of a roller 120cm long is 84cm. If it takes 500 complete revolutions to level a playground, determine the cost of levelling it at the rate of 30 paise per square metre.

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79. A metal pipe is 77cm long. The inner diameter of a cross section is 4cm, the outer diameter being 4.4 cm. Find its inner curved

surface area outer curved surface area (iii) total surface area

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80. In Fig. 13.12, you see the frame of a lampshade. It is to be covered with a decorative cloth. The frame has a base diameter of 20 cm and height of 30 cm. A margin of 2.5 cm is to be given for folding it over the top and bottom of the frame. Find

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81. Curved surface area of a right circular cylinder is $4.4\,m^2$. If the radius of the base of the cylinder is 0.7m, find its height.

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82. In a hot water heating system, there is a cylindrical pipe of length 28m and diameter 5cm. Find the total radiating surface in the system.

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83. A cylindrical pillar is 50cm in diameter and 3.5m in height. Find the cost of painting the curved surface of the pillar at the rate of Rs. 12. 50 $per\ m^2$.

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84. It is required to make a closed cylindrical tank of height 1m and base diameter 140cm

from a metal sheet. How many square metres of the sheet are required for the same?

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85. A solid cylinder has total surface area of 462 square cm. Its curved surface area is one-third of its total surface area. Find the volume of the cylinder. (Take $\pi = 22/7$)

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86. The total surface area of a hollow cylinder which is open from both sides is 4620 sq. cm area of base ring is 115.5 sq. cm and height 7 cm. Find the thickness of the cylinder.

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87. A cylindrical vessel, without lid, has to be tin-coated on its both sides. If the radius of the base is 70cm and its height is 1.4m,

calculate the cost of tin-coating at the rate of Rs. 3.50 per $1000\ cm^2$

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88. The inner diameter of a circular well is 3.5m. It is 10m deep find: inner curved surface area. the cost of plastering this curved surface at the rate of Rs. $40\ per\ m^2$.

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89. Find the lateral curved surface area of a cylindrical petrol storage tank that is 4.2 m in diameter and 4.5 m high. How much steel was actually used, if $\frac{1}{12}$ of steel actually used was wasted in making the closed tank?

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90. The students of a Vidyalaya were asked to participate in a competition for making and decorating pen holders in the shape of a

cylinder with a base, using cardboard. Each pen holder was to be of radius 3cm and height 10.5cm. The Vidyalaya was to supply the competitors with cardboard. If there were 35 competitors, how much cardboard was required to be bought for the competition?

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91. The diameter of a roller 120cm long is 84cm. If it take 500 complete revolutions to level a playground, determine the cost of

levelling it at the rate of 30 paise per square metre.

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92. Twenth cylindrical pillars of the Parliament House are to be cleaned. If the diameter of each pillar is 0.50 cm and height is 4m. What will be the cost of cleaning them at the rate of Rs. 2.50 per square metre?

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93. Curved surface area of a right circular cylinder is $4.\ 4m^2$. If the radius of the base of the cylinder is 0.7 m, find its height.

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94. The area of the base of a right circular cylinder is $616cm^2$ and its height is $25cm$. Find the volume of the cylinder.

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95. The circumference of the base of a cylinder is 132 cm and its height 25 cm. Find the volume of the cylinder.

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96. The thickness of a hollow wooden cylinder is 2cm. It is 35cm long and its inner radius is 12cm. Find the volume of the wood required to make the cylinder, assuming it is open at either end.

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97. The diameter of a metallic ball is 4.2 cm. What is the mass of the ball, if the density of the metal is $8.9\ g\ per\ cm^3$?

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98. A cylindrical road roller made of iron is 1m wide. Its inner diameter is 54cm and thickness of the iron sheet rolled into the road roller is 9cm. Find the weight of the roller if 1c.c. of iron weights8 gm.

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99. The circumference of the base of a cylindrical vessel is 132 cm and its height is 25cm. How many litres of water can it hold?

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100. The volume of a solid cylinder is $448\ \pi cm^3$ and height 7cm. Find its lateral surface area and total surface area.

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101. If the radius of the base of a right circular cylinder is halved, keeping the height same, what is the ratio of the volume of the reduce cylinder to that of the original.

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102. The radius and height of a cylinder are in the ratio 5 : 7 and its volume if $550\ cm^3$. Find its radius. $\left(Use\ \pi = \frac{22}{7}\right)$

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103. A solid cylinder has total surface area of 462 square cm. Its curved surface area is one-third of its total surface area. Find the volume of the cylinder. $\left(Take\ \pi = \frac{22}{7}\right)$

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104. Into a circular drum of radius 4.2 m and height 3.5m, how many full bags of wheat can

be emptied if the space required for wheat in each bag is 2.1 cubic m. $(Take\ \pi = 3.14)$

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105. How many cubic metres of earth must be dug out to sink a well 22.5m deep and of diameter 7m? Also, find the cost of plastering the inner curved surface at Rs. 3 per square metre.

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106. The volume of metallic cylindrical pipe is $748\ cm^3$. Its length is 14cm and its external radius is 9cm. Find its thickness.

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107. A hollow cylindrical pipe is 21 dm long. It outer and inner diameters are 10cm and 6cm respectively. Find the volume of the copper used in making the pipe.

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108. The difference between outside and inside surfaces of a cylindrical metallic pipe 14cm long is $44\,cm^2$. If the pipe is made 99 cu centimetres of metal, find the outer and inner radii of the pipe.

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109. Find the weight of a lead pipe 3.5m long, if the external diameter of the pipe is 2.4cm and

the thickness of the lead is 2mm and 1 cubic cm of lead weighs 11 gm.

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110. A well with 10m inside diameter is dug 14m deep. Earth taken out of it is spread all around to a width of 5m to form an embankment. Find the height of embankment.

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111. It costs Rs. 2200 to paint the inner curved surface of a cylindrical vessel 10m deep. If the cost of painting is at the rate of $Rs.20\,per\,m^2$, find: radius of the base inner curved surface area of the vessel capacity of the vessel

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112. The cost of painting the total outside surface of a closed cylindrical oil tank at 60

paise per sq. dm is Rs. 237.60. The height of the tank is 6 times the radius of the base of the tank. Find its volume correct to two decimal places.

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113. At a Ramzan Mela, a stall keeper in one of the food stalls has large cylindrical vessel of base radius 15cm filled up to a height of 32cm with orange juice. The juice is filled in small cylindrical glasses of radius 3cm upto a height

of 8cm, and sold for Rs. 3 each. How much money does the stall keeper receive by selling the juice completely?

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114. A soft drink is available in two packs - (i) a tin can with a rectangular base of length 5cm and width 4cm, having a height of 15cm and (ii) a plastic cylinder with circular base of diameter 7cm and height 10cm. Which

container has greater capacity and by how much?

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115. The pillars of a temple are cylindrically shaped. If each pillar has a circular base of radius 20cm and height 10m. How much concrete mixture would be required to build 14 such pillars?

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116. The inner diameter of a cylindrical wooden pipe is 24cm and its outer diameter is 28cm. The length of the pipe is 35cm. Find the mass of the pipe, if $1\ cm^3$ of wood has a mass of 0.6 gm.

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117. If the lateral surface of a cylinder is $94.2\ cm^2$ and its heights is 5cm, find: $[Use\ \pi = 3.14]$ radius of its base (ii) volume of the cylinder

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118. The capacity of a closed cylindrical vessel of height 1m is 15.4 litres. How many square metres of metal sheet would be needed to make it?

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119. A patient in a hospital is given soup daily in a cylindrical bowl of diameter 7cm. If the

bowl is filled with soup to a height of 4cm, how much soup the hospital has to prepare daily to serve 250 patients?

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120. A hollow garden roller, 63cm wide with a girth of 440 cm, is made of 4 cm thick iron. Find the volume of the iron.

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121. A solid cylinder has a total surface area of $231\ cm^2$. Its curved surface area is $\frac{2}{3}$ of the total surface area. Find the volume of the cylinder.

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122. The cost of painting the total outside surface of closed cylindrical oil tank at 50 paise per square decimetre is Rs. 198. The heights of the tank is 6 times the radius of the

base of the tank. Find the volume corrected to 2 decimal places.

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123. The radii of two cylinders are in the ratio 2:3 and their heights are in the ratio 5:3. Calculate the ratio of their volumes and the ratio of theri curved surfaces.

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124. The ration between the curved surface area and the total surface area of a right circular cylinder is 1:2. Find the volume of the cylinder, if its total surface area is $616\ cm^2$.

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125. The curved surface area of a cylinder is $1320\ cm^2$ and its base had diameter 21cm. Find the height and the volume of the cylinder.

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126. The ratio between the radius of the bawse and the height of a cylinder is 2:3, find the total surface area of the cylinder, it its volume is $1617\ cm^3$

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127. A rectangular sheet of paper, $44cm\ x\ 20cm,$ is rolled along its length of form a cylinder. Find the volume of the cylinder so formed.

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128. The curved surface area of a cylindrical pillar is $264\ m^2$ and its volume is $924\ m^3$. Find the diameter and the height of the pillar.

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129. Two circular cylinders of equal volumes have their heights in the ratio 1:2. Find the ratio of their radii.

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130. The height of a right circular cylinder is 10.5 m. Three times the sum of the area of its two circular faces is twice the area of the curved surface. Find the volume of the cylinder.

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131. How many cubic metres of earth must be dogout to sink a well 21m deep and 6m

diameter? Find the cost of plastering the inner surface of the well of Rs. $9.50 \, per \, m^2$.

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132. The trunk of a tree is cylindrical and its circumference is 176cm. If the length of the trunk is 3m. Find the volume of the timber that can be obtained from the trunk.

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133. A well with 14m diameter is dug 8m deep. The earth taken out of it has been evenly spread all around it to a width of 21m to form as embankment. Find the height of the embankment.

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134. The difference between inside and outside surfaces of a cylindrical tube 14cm long is

88sq. cm. If the volume of the tube is 176 cubic cm, find the inner and outer radii of the tube.

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135. Water flows out through a circular pipe whose internal diameter is 2cm, at the rate of 6 metres per second into a cylindrical tank. The water is collected in a cylindrical vessel radius of whose base is 60cm. Find the rise in the level of water in 30 minutes?

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136. A cylindrical container with diameter of base 56cm contains sufficient water to submerge a rectangular solid of iron with dimensions $32cm\ x\ 22cm\ x\ 14cm.$ Find the rise in the level of the water when the solid is completely submerged.

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137. A cylindrical tube, open at both ends, is made of metal. The internal diameter of the

tube is 10.4 cm and its length is 25cm. The thickness of the metal is 8mm everywhere. Calculate the volume of the metal.

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138. From a tap of inner radius 0.75cm, water flows at the rate of 7m per second. Find the volume in litres of water delivered by the pipe in one hour.

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139. A cylindrical water tank of diameter 1.4m and height 2.1m is being fed by a pipe of diameter 3.5cm through which water flows at the rate of 2 metre per second. In how much time the tank will be filled?

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140. A rectangular sheet of paper $30cm \ x \ 18cm$ can be transformed into the curved surface of a right circular cylinder in two ways i.e., either by rolling the paper along

its length or by rolling it along its breadth. Find the ratio of the volumes of the two cylinders thus formed.

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141. How many litres of water flow out of a pipe having an area of cross-section of $5\ cm^2$ in one minute, if the speed of water in the pipe is $30\ cm/sec$?

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142. The sum of the radius of the base and height of a solid cylinder is 37m. If the total surface area of the solid cylinder is $1628\ cm^2$. Find the volume of the cylinder.

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143. Find the cost of sinking a tubewell 280m deep, having diameter 3m at the rate of Rs. 3.60 per cubic metre. Find also the cost of cementing its inner curved surface at Rs. 2.50 per square metre.

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144. Find the length of 13.2 kg of copper wire of diameter 4mm, when 1 cubic cm of copper weights 8.4 gm.

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145. A well with 10m inside diameter is dug 8.4m deep. Earth taken out of it is spread all around it to a width of 7.5m to form an

embankment. Find the height of the embankment.

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146. Write the number of surfaces of right circular cylinder

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147. Write the ratio of total surface area to the surface area of a cylinder of radius r and

height h

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148. The ratio between the radius of the base of height of a cylinder is 2:3. If its volume is $1617\,cm^3$, find the total surface area of the cylinder.

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149. If the radii of two cylinders are in the ratio 2:3 and their heights are in the ratio 5:3, then find the ratio of their volumes.

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150. In a cylinder, if radius is doubled and height is halved, curved surface area will be (a) halved (b) doubled (c) same (d) four times

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151. Two cylindrical jars have their diameters in the ratio 3:1, but height 1:3. Then the ratio of their volumes is 1:4 (b) 1:3 (c) 3:1 (d) 2:5

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152. The number of surfaces in right cylinder is

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153. Vertical cross-section of a right circular cylinder is always a (a) square (b) rectangle (c) rhombus (d) trapezium

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154. If r is the radius and h is height of the cylinder the volume will be (a) $\frac{1}{3}\pi^2 h$ (b) $\pi r^2 h$ (c) $2\pi r\left(h+r\right)$ (d) $2\pi r h$ the radius of the cylinder $=r$

height is $=h$

the volume is $= \pi r^2 h$

so the ans is (b)

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155. The number of surfaces of a hollow cylindrical object is (a) 1 (b) 2

(c) 3 (d) 4

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156. If the radius of a cylinder is doubled and the height remains same, the volume will be

(a) doubled (b) halved (c) same

(d) four times

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157. If the height of a cylinder is doubled and radius remains the same, then volume will be

(a) doubled

(b) halved

(c) same

(d) four times

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158. In a cylinder, if radius is halved and height is doubled, the volume will be same (b) doubled (d) halved (d) four times

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159. If the height of a cylinder is doubled, by what number must the radius of the base be multiplied so that the resulting cylinder has the same volume as the original cylinder? (a) 4 (b) $\frac{1}{\sqrt{2}}$ (c) 2 (d) $\frac{1}{2}$

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160. The volume of a cylinder of radius r is $\frac{1}{4}$ of the volume of a rectangular box with a square base of side length x. If the cylinder

and the box have equal heights, what is r in terms of x? (a) $\frac{x^2}{2\pi}$ (b) $\frac{x}{2\sqrt{\pi}}$ (c) $\frac{\sqrt{2x}}{\pi}$ (d) $\frac{\pi}{2\sqrt{x}}$

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161. The height h of cylinder equals the circumference of the cylinder. In terms of h, what is the volume of the cylinder? $\frac{h^3}{4\pi}$ (b) $\frac{h^2}{2\pi}$ (c) $\frac{h^3}{2}$ (d) πh^3

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162. A cylinder with radius r and height h is closed on the top and bottom. Which of the following expressions represents the total surface area of this cylinder? (a) $2\pi r\left(r+h\right)$ (b) $\pi r\left(r+2h\right)$ (c) $\pi r\left(2r+h\right)$ (d) $2\pi r^2+h$

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163. The height of sand in a cylindrical-shaped can drops 3 inches when 1 cubic foot of sand is

poured out. What is the diameter, in inches, of the cylinder? (a) $\frac{24}{\sqrt{\pi}}$ (b) $\frac{48}{\sqrt{\pi}}$ (c) $\frac{32}{\sqrt{\pi}}$ (d) $\frac{24}{\pi}$

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164. If the diameter of the base of a closed right circular cylinder be equal to its height h, then its whole surface area is

(a) $2\pi h^2$

(b) $\frac{3}{2}\pi h^2$

(c) $\frac{4}{3}\pi h^2$

(d) πh^2

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165. A right circular cylindrical tunnel of diameter 2m and length 40m is to be constructed from a sheet of iron. The area of the iron sheet required in m^2, is (a) 40π (b) 80π (c) 160π (d) 200π

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166. Two sheet sheets each of length a_1 and breadth a_2 are used to prepare the surfaces of

two right circular cylinders - one having volume v_1 and height a_2 and other having volume v_2 and height a_1. Then, (a) $v_1 = v_2$ (b) $a_1 v_1 = a_2 v_2$ (c) $a_2 v_1 = a_1 v_2$ (d) $\frac{v_1}{a_1} = \frac{v_2}{a_2}$

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167. Two circular cylinder of equal volume have their heights in the ratio 1:2. Ratio of their radii is $1 : \sqrt{2}$ (b) $\sqrt{2} : 1$ (c) $1 : 2$ (d) $1 : 4$

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168. The radius of a wire is decreased to one-third. If volume remains the same, the length will become 3 times (b) 6 times (c) 9 times (d) 27 times

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169. The altitude of a circular cylinder is increased six times and the base area is decreased one-ninth of its value. The factor by which the lateral surface of the cylinder increases, is $\frac{2}{3}$ (b) $\frac{1}{2}$ (c) $\frac{3}{2}$ (d) 2

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170. The diameter of a cone is 14cm and its slant height is 9cm. Find the area of its curved surface.

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171. Find the total surface area of a cone, if its slant height is 9m and the radius of its base is 12m.

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172. The radius of a cone is 3cm and vertical height is 4cm. Find the area of the curved surface.

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173. The radius and slant height of a cone are in the ratio of 4:7. If its curved surface area is $792\ cm^2$, find the radius. $\left(Use\ \pi = \frac{22}{7}\right)$

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174. The circumference of the base of a 10m high conical tent is 44 metres. Calculate the length of canvas used in making the tent if width of canvas is 2m. $\left(Use\pi = \frac{22}{7}\right)$

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175. How many metres of cloth 5m wide will be required to make a conical tent, the radius of

whose base is 7m and whose height is 24m?

$\left(Take\pi = \frac{22}{7}\right)$

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176. The lateral surface of a cylinder is equal to the curved surface of a come. If the radius be the same, find the ratio of the height of the cylinder and slant height of the cone.

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177. The radius and height of a cone are in the ratio 4:3. The area of the base is $154cm^2$. Find the area of the curved surface.

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178. A corn cob (see in figure), shaped somewhat like a cone, has the radius of its broadest end as 2.1 cm and length as 20cm. If each $1\ cm^2$ of the surface of the cob carries an

average of four grains, find how many grains you would find on the entire cob?

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179. A tent is of the shape of a right circular cylinder upt a height of 3 metres and then becomes a right circular cone with a maximum height of 13.5 metres above the ground. Calculate the cost of paintingthe inner side of the tent at the rate of Rs. 2 per square metre, if the radius of the base is 14 metres.

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180. Find the curved surface area of a cone, if its slant height is 60cm and the radius of its base is 21cm.

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181. The radius of a cone is 5cm and vertical height is 12cm. Find the area of the curved surface.

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182. The radius of a cone 7cm and area of curved surface is $176\,cm^2$. Find the slant height.

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183. The height of a cone is 21cm. Find the area of the base if the slant height is 28cm.

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184. Find the total surface area of a right circular cone with radius 6cm and height 8cm.

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185. Find the curved surface area of a cone with base radius 5.25cm and slant height 10cm.

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186. Find the total surface area of a cone, if its slant height is 21 m and diameter of its base is 24 m.

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187. The area of the curved surface of a cone is $60\pi\ cm^2$. If the slant height of the cone be 8cm, find the radius of the base.

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188. The radius and slant height of a cone are in the ratio of 4:7. If its curved surface area is $792cm^2$, find its radius. $\left(Use\pi = \frac{22}{7}\right)$

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189. A joker's cap is in the form of a right circular cone of base radius 7 cm and height 24 cm. Find the area of the sheet required to make 10 such caps.

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190. Find the ratio of the surface areas of two cones if their diameters of the bases are equal and slant heights are in the ratio of 4:3.

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191. There are two cones. The curved surface area of one is twice that of the other. The slant height of the later is twice that of the former. Find the ratio of their radii.

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192. The diameters of two cones are equal. If their slant heights are in the ratio 5:4, find the ratio of theri curved surfaces.

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193. Curved surface area of a cone is $308\ cm^2$ and its slant height is 14cm. Find the radius of the base and total surface area of the cone.

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194. The slant height and base diameter of a conical tomb are 25m and 14m respectively. Find the cost of white-washing its curved surface at the rate of Rs. 210 per $100\ m^2$

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195. A conical tent is 10m high and the radius of its base is 24m. Find the slant height of the tent. If the cost of $1m^2$ convas is Rs. 70, find

the cost of the canvas required to make the tent.

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196. A tent is in the form of a right circular cylinder surmounted by a cone. The diameter of cylinder is 24m. The height of the cylindrical portion is 11m while the vertex of the cone is 16m above the ground. Find the area of the canvas required for the tent.

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197. A circus tent is cylindrical to a height of 3 metres and conical above it. If its diameter is 105m and the slant height of the conical portion is 53m, calculate the length of the canvas 5m wide to make the required tent.

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198. The circumference of the base of a 10m high conical tent is 44 metres. Calculate the

length of canvas used in making the tent if width of canvas is 2m. $\left(Use\pi = \frac{22}{7}\right)$

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199. What length of tarpaulin 3m wide will be required to make a conical tent of height 8m and base radius 6m? Assume that the extra length of material will be required for stitching margins and wastage in cutting is approximately 20 cm $(Use\ \pi = 3.14)$

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200. A bus stop is barricaded from the remaining part of the road, by using 50 hollow cones made of recycled card-board. Each cone has a base diameter of 40cm and height 1m. If the outer side of each of the cones is to be painted and the cost of painting is Rs. 12 per m^2 , what will be the cost of painting all these cones $\left(Use\pi = 3.14 and \sqrt{1.04} = 1.02\right)$

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201. A cylinder and a cone have equal radii of their bases and equal heights. If their curved surface areas are in the ratio 8:5, show that the radius of each is to the height of each as 3:4.

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202. Find the volume of a right circular cone 1.02m high, if the radius of its base is 28m.

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203. The area of the base of a right circular cone is $314cm^2$ and its height is 15cm. Find the volume of the cone.

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204. The diameter of a right circular cone is 8cm and its volume is $48\,\pi\,cm^3$. What is its height?

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205. The volume of a cone is $18480cm^3$. If the height of the cone is 40cm. Find the radius of its base.

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206. The base radii of two right circular cones of the same height are in the ratio 3:5. Find the ratio of their volumes.

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207. 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. Find its height.

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208. A conical vessel whose internal radius is 5 cm and height 24cm is full of water. The water is emptied into a cylindrical vessel with internal radius 10cms. Find the height to which the water rises.

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209. A right triangle ABC with its dies 5cm, 12cm and 13cm is revolved about the side 12cm. Find the volume of the solid so formed. If the triangle ABC is revolved about side 5cm, then find the volume of the solid so obtained. Find also the ratio of the volumes of the two solids obtained.

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210. A cone and a cylinder are having the same base. Find the ratio of their heights if their volumes are equal.

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211. A cone of a radius 5cm is filled with water. If the water poured in a cylinder of radius 10cm, the height of the water rises 2cm, find the height of the cone.

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212. A solid cube of side 7cm is melted to make a cone of height 5cm, find the radius of the base of the cone.

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213. From a right circular cylinder with height 10cm and radius of base 6cm, a right circular cone of the same height and base is removed. Find the volume of the remaining solid.

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214. The radius and height of a cone are in the ratio 3:4. If its volume is $301.44\,cm^3$, what is its radius? What is its slant height? $(Take\ \pi = 3.14)$

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215. If h, c, V are respectively the height, the curved surface and the volume of a cone, prove that $3\pi V h^3 - C^2 h^2 + 9V^2 = 0.$

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216. A cone of height 24cm has a curved surface area $550\,cm^2$. Find its volume. $\left(Use\ \pi = \frac{22}{7}\right)$

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217. A conical tent is to accommodate 11 persons. Each persons must have 4 sq. metres of the space on the ground and 20 cubic

metres of air to breath. Find the height of the cone.

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218. A semi-circular sheet of metal of diameter 28cm is bent into an open conical cup. Find the depth and capacity of cup.

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219. A conical tent is 9m high and the radius of its base is 12m. (i) What is the cost of the canvas required to make it, if a square metre canvas costs Rs. 10? (ii) How many persons can be accommodated in the tent, if each person requires 2 square metre on the ground and 15 m^3 of space to breath in? (i) Given,

Height of tent $= 9m$

Base radius $= 12m$

Cost per $m^2 = 10 per m^2$

Now,

Slant height $= \sqrt{(9)^2 + (12)^2}$=sqrt[81+144]

=15$Now, Curved surface area$=pirl=

(22/7)xx12xx15=3960/7=565.7

$Now, Total \cos t =$ 565.7xx10=₹5657

$(ii) area of ground$= pir^2=452.16

$area required by each person is$2 m^2

$so \max i \mu mn \odot of person$= 452.16/2=226

$persons volume of conical tent$=(1/3)pir^2h=

(1/3)pi(12)^2(9)=1356.48 m^3

$volume required by each person$=15 m^3

$\max i \mu mn oof person$=1356.48/15=90` persons

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220. Find the volume of the larges right circular cone that can be cut out of a cube whose edge is 9cm.

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221. A cylinder is within the cube touching all the vertical faces. A cone is inside the cylinder. If their heights are same with the same base, find the ratio of their volumes.

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222. Find the volume of a right circular cone with: (i) radius 6cm, height 7cm. (ii) radius 3.5 cm, height 12cm (iii) height 21cm and slant height 28cm.

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223. Find the capacity in litres of a conical vessel with (i) radius 7 cm, slant height 25 cm (ii) height 12 cm, slant height 13 cm

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224. Two cones have their heights in the ratio 1:3 and the radii of their bases in the ratio 3:1. Find the ratio of their volumes.

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225. The radius and the height of a right circular cone are in the ratio 5:12. If its volume is 314 cubic metre, find the slant height and the radius $(Use\ \pi = 3.14)$

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226. The ratio of volumes of two cones is 4:5 and the ratio of the radii of their bases is 2:3. Find the ratio of their vertical heights.

227. A cylinder and a cone have equal radii of their bases and equal heights. Show that their volumes are in the ratio 3:1.

228. If the radius of the base of a cone is halved, keeping the height same, what is the ratio of the volume of the reduced cone to that of the original.

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229. A heap of wheat is in the form of a cone of diameter 9m and height 3.5m. Find its volume. How much canvas cloth is required to just cover the heap? $(Use\ \pi = 3.14)$

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230. Find the weight of a solid cone whose base is of diameter 14cm and vertical height 51cm, supposing the material of which it is made weighs 10 grams per cubic cm.

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231. A right angled triangle of which the sides containing the right angle are 6.3 cm and

10cm in length, is made to turn round on the longer side. Find the volume of the solid, thus generated. Also, find its curved surface area.

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232. Find the volume of the largest right circular cone that can be fitted in a cube whose edge is 14cm.

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233. The volume of a right circular cone is 9856 cm^3 . If the diameter of the base is 28cm, find: (i) height of the cone (ii) slant height of the cone (iii) curved surface area of the cone.

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234. A conical pit of top diameter 3.5m is 12m deep. What is its capacity in kilolitres?

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235. Monica has a piece of Canvas whose area is $551m^2$. She uses it to have conical tent mode, with a base radius of 7m. Assuming that all the stitching margins and wastage incurred while cutting, amounts to approximately $1m^2$. Find the volume of the tent that can be made with it.

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236. The height of a cone is 15cm. If its volume is $500\pi\ cm^3$, then find the radius of its base.

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237. If the volume of a right circular cone of height 9 cm is $48\pi cm^3$, find the diameter of its base.

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238. If the height and slant height of a cone are 21cm and 28cm respectively. Find its volume.

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239. The height of a conical vessel is 3.5cm. If its capacity is 3.3 litres of milk. Find the diameter of its base.

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240. The radius and slant height of a cone are in the ratio of 4:7. If its curved surface area is $792\ cm^2$, find the radius. $\left(Use\ \pi = \frac{22}{7}\right)$

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241. Find the area of canvas required for a conical tent of height 24m and base radius 7m.

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242. Find the area of metal sheet required in making a closed hollow cone of base radius 7cm and height 24cm.

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243. Find the length of cloth used in making a conical pandal of height 100m and base radius 240m, if the cloth is 100π m wide.

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244. The number of surfaces of a cone has, is

(a) 1 (b) 2 (c) 3 (d) 4

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245. The area of the curved surface of a cone of radius 2r and slant height $\frac{l}{2}$ is a) πrl b) $2\pi rl$ c) $\frac{1}{2}\pi rl$ d) $\pi(r+l)r$

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246. The total surface area of a cone of radius $\frac{r}{2}$ and length $2l$, is a) $2\pi r(l+r)$ b) $\pi r\left(l+\frac{r}{4}\right)$ c) $\pi r(l+r)$ d) $2\pi rl$

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247. A solid cylinder is melted and cast into a cone of same radius. The heights of the cone and cylinder are in the ratio (a) 9:1 (b) 1:9 (c) 3:1 (d) 1:3

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248. The slant height of a cone is increased by 10%. If the radius remains the same, the curved surface area is increased by (a) 10% (b) 12.1% (c) 20% (d) 21%

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249. The height of a solid cone is 12cm and the area of the circular base is $64\pi cm^2$.A plane parallel to the base of the cone cuts through the cone 9cm above the vertex of the cone ,the area of the base of the new cone so formed is a)$9\pi cm^2$ b)$16\pi cm^2$ c)$25\pi cm^2$ d)$36\pi cm^2$

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250. If the radius of the base of a right circular cone is $3r$ and its height is equal to the radius of the base, then its volume is (a) $\frac{1}{3}\pi r^3$ (b) $\frac{2}{3}\pi r^3$ (c)$3\pi r^3$ (d)$9\pi r^3$

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251. If the volumes of two cones are in the ratio 1:4 and their diameters are in the ratio 4:5, then the ratio of their heights, is (a) 1:5 (b) 5:4 (c) 5:16 (d) 25:64

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252. The curved surface area of one cone is twice that of the other while the slant height of the latter is twice that of the former. The ratio of their radii is (a) 2:1 (b) 4:1 (c) 8:1 (d) 1:1

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253. If the height and radius of a cone of volume V are doubled, then the volume of the

cone, is (a) 3 V (b) 4 V (c) 6 V (d) 8 V

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254. The ratio of the volume of a right circular cylinder and a right circular cone of the same base and height, is (a) 1:3 (b) 3:1

(c) 4:3 (d) 3:4

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255. A right circular cylinder and a right circular cone have the same radius and the same volume. The ratio of the height of the cylinder to that of the cone is (a) 3:5 (b) 2:5 (c) 3:1 (d) 1:3

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256. If the base radius and the height of a right circular cone are increased by 20%, then the percentage increase in volume is

approximately. (a) 60 (b) 68 (c) 73

(d) 78

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257. The diameters of two cones are equal. If their slant heights are in the ratio 5:4, find the ratio of theri curved surfaces.

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258. If h, $S\,and\,V$ denote respectively the height, curved surface area and volume of a right circular cone, then $3\pi Vh^3 - S^2h^2 + 9V^2$ is equal to (a) 8 (b)0(c) 4π(d)$32\pi^2$

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259. If a cone is cut into two parts by a horizontal plane passing through the mid-point of its axis, the ratio of the volumes f

upper and lower part is (a) 1:2 (b) 2:1 (c) 1:7 (d) 1:8

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260. If the heights of two cones are in the ratio of 1:4 and the radii of their bases are in the ratio 4:1, then the ratio of their volumes is

(a) 1:2 (b) 2:3 (c) 3:4 (d) 4:1

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