MATHS

BOOKS - RD SHARMA MATHS (ENGLISH)

MENSURATION-III (SURFACE AREA AND VOLUME OF A RIGHT CIRCULAR CYLINDER)

Others

1. Find the curved surface area and total surface area of a right circular cylinder whose height is 15cm and the radius of the base is 7cm. $\left(Take\ \pi = \frac{22}{7}\right)$

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2. The diameter of the base of a right circular cylinder is 42cm and its height is 10cm. Find the area of the curved surfaces and total surface area.

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3. Find the height of a cylinder whose radius is 7 cm and the total surface area is 968

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4. A closed cylindrical tank of radius 1.5m and height 3m is made from a sheet of metal. How much sheet of metal is required?

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5. 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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6. 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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7. 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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8. 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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9. The radius of the base of a cylindrical water-drum open at the top at the top is 35 cm and height 1.3m. Find the inner surface area of the water-drum.

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10. In a temple there are 25 cylindrical pillars. The radius of each pillar is 28cm and height 4m. Find the total cost of painting the curved surface area of pillars at the rate of Rs. $8 \, per \, m^2$

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11. A road roller takes 750 complete revolutions to more once over to level a road.

Find the area of the road if the diameter of a road under roller is 91 cm and length is 1.25 m

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12. 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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13. 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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14. 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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15. The lateral surface area of a hollow cylinder is $4224\ cm^2$. It is cut along its height and formed a rectangular sheet of width $33\ cm$. Find the perimeter of rectangular sheet?

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16. A company packages its milk powder in cylindrical container whose base has a diameter of 14 cm and height 20 cm. Company places a label around the surface of the

container (as shown in the figure). If the label is placed 2 cm from top and bottom, What is the area of label.

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17. Find the curved surface area and total surface area of a cylinder, the diameter of whose base is 7cm and height is 60cm.

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18. The curved surface area of a cylindrical rod is $132\,cm^2$. Find its length if the radius is 0.35cm.

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19. The area of the base of a right circular cylinder is $616\,cm^2$ and its height is 2.5cm. Find the curved surface area of the cylinder.

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20. The circumference of the base of a cylinder is 88cm and its height is 15cm. Find its curved surface area and total surface area.

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21. A rectangular strip $25cm\ x\ 7cm$ is rotated about the longer side. Find the total surface area of the solid thus generated.

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22. 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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23. The radii of two cylinders are in the ratio $3:5$ and their heights are in the ratio $2:3$. What is the ratio of their curved surface areas?

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24. 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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25. 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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26. The height of a right circular cylinder is 10.5cm. If three times the sum of the areas of its two circular faces is twice the area of the curved surface area. Find the radius of its base.

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27. Find the cost of plastering the inner surface of a well at Rs. $9.50 \, per \, m^2$, if it is

21m deep and diameter of its top is 6m.

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28. A cylindrical vessel open at the top has diameter 20cm and height 14cm. Find the cost of tin-plating it on the inside at the rate of 50 paise per hundred square centimetre.

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29. The inner diameter of a circular well is 3.5m. It is 10m deep. Find the cost of plastering its inner curved surface at Rs. 4 per square metre.

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30. The diameter of a roller is 84 cm and its length is 120 cm. It takes 500 completerevolutions to move once over to

level a playground. Find the area of the playgroundin m^2.

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31. 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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32. 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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33. 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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34. Find the ratio between the total surface area of a cylinder to its curved surface area, given that its height and radius are 7.5 cm and 3.5 cm.

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35. 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 $1000 cm^2$.

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36. Find the volume of a right circular cylinder, if the radius (r) of its base and height (h) are 7cm and 15cm respectively.

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37. The area of the base of a right circular cylinder is $154\ cm^2$ and its height is 15cm. Find the volume of the cylinder.

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38. 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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39. The radii of two right circular cylinder are in the ratio 2:3 and their heights are in the ratio 5:4. Calculate the ratio of their curved surface areas and also the ratio of their volumes.

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40. Two cylinder cans have bases of the same size. The diameter of each is 14cm. One of the canes is 10cm high and the other is 20cm high. Find the ratio of their volumes.

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41. 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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42. A rectangular paper of width 14 cm is rolled along its width and a cylinder of radius

20 cm is formed. Find the volume of the cylinder (Fig 11.45)? (Take

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43. 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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44. 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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45. 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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46. 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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47. The thickness of a metallic tube is 1cm and the inner diameter of the tube is 12cm. Find the mass of 1m long tube, if the density of the metal be $7.8\ gm/cm^3$

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48. 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 1 c.c. of iron weight 8 gm.

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

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50. A circular well of radius 3.5m is dug 20m deep and the earth so dug is spread on a rectangular plot of length 14m and breadth 11m. Find Height:

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51. 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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52. A glass cylinder with diameter 20 cm has water to a height of 9 cm. A metal cube of 8

cm edge is immersed in it completely. Calculate the height by which water will rise in the cylinder. $(Take\ \pi = 3.142)$

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53. 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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54. 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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55. The rain water that falls on a roof of area $6160\,m^2$ is collected in a cylindrical tank of diameter 14m and height 10m and thus the tank is completely filled. Find the height of rain water on the roof.

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56. 2.2 cubic dm of brass is to be drawn into a cylindrical wire 0.50 cm in diameter. Find the length of the wire.

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57. A solid iron rectangular block of dimensions 4.4 m , 2.6 m and 1 m is cast into a hollow cylindrical pipe of internal radius 30 cm and thickness 5 cm.Find the length of the pipe.

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58. 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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59. A hollow cylindrical pipe is 21 dm long. Its outer and inner diameters are 10 cm and 6 cm

respectively. Find the volume of the copper used in making the pipe.

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60. 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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61. 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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62. 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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63. A barrel of a fountain pen, cylindrical in shape, is 7 cm long and 5mm in diameter. A full barrel of ink in the pen will be used up when writing 310 words on the average, if a bottle of ink contains one-fifth of a litre then find out the number of words that can be formed.

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64. 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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65. A led pencil consists of a cylinder of wood with a solid cylinder of graphite filled into it. The diameter of pencil is 7mm, the diameter of graphite is 1 mm and the length of the pencil is 10cm. Calculate the weight of the whole

pencil, if the specific gravity of the wood is $0.7\frac{gm}{(cm)^3}$ and that of graphite is $2.1\frac{gm}{(cm)^3}$

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66. Find the volume of a cylinder whose (i) $r = 3.5cm,\ h = 40cm$ (ii) $r = 2.8cm,\ h = 15m$

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67. Find the volume of a cylinder, if the diameter (d) of its base and its altitude (h) are: $d = 21cm,\ h = 10cm$ (ii) $d = 7m,\ h = 25m$

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68. 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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69. The circumference of the base of a cylinder is 88cm and its height is 15cm. Find the volume of the cylinder.

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

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71. Find the (i) curved surface area (ii) total surface area and (iii) volume of a right circular cylinder whose height is 15cm and the radius of the base is 7cm.

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72. The diameter of the base of a right circular cylinder is 42cm and its height is 10cm. Find the volume of the cylinder.

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73. Find the volume of a cylinder, the diameter of whose base is 7cm and height being 60cm. Also, find the capacity of the cylinder in litres.

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74. A rectangular strip $25cm\ x\ 7cm$ is rotated about the longer side. Find the total surface area of the solid thus generated.

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75. 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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76. The volume and the curved surface area of a cylinder are $1650\ cm^3 and\ 660\ cm^2$

respectively. Find the radius and height of the cylinder.

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77. 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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78. 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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79. 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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80. 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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81. 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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82. Two circular cylinders of equal volumes have their heights in the ratio 1:2. Find the ratio of their radii.

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83. Two right circular cylinders of equal volumes have their heights in the ratio $1:2$. What is the ratio of their radii?

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84. 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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85. How many cubic metres of earth must be dug-out to sink a well 21m deep and 6m diameter?

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86. 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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87. A 20 m deep well with diameter 7 m is dug and the earth from digging is evenly spread

out to form a platform 22 m by 14 m. Find the height of the platform.

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88. 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 an embankment. Find the height of the embankment.

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89. 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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90. A rectangular sheet of paper $30cm\ \times\ 18cm$ 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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91. The rain which falls on a roof 18m long and 16.5m wide is allowed to be stored in a cylindrical tank 8m in diameter. If it rains 10cm on a day, what is the rise of water level in the tank due to it?

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92. A piece of ductile metal is in the form of a cylinder of diameter 1cm and length 11 cm. It is drawn out into a wire of diameter 1mm. What will be the length of the wire so formed?

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93. 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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94. 2.2 cubic dm of brass is to be drawn into a cylindrical wire 0.25 cm in diameter. Find the length of the wire.

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95. 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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96. 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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97. 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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98. 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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99. 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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100. A rectangular sheet of paper $30cm \times 18cm$ 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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101. 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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102. 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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103. 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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104. 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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105. 2.2 cubic dm of brass is to be drawn into a cylindrical wire 0.25 cm in diameter. Find the length of the wire.

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106. 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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107. 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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108. What length of a solid cylinder 2 cm in diameter must be taken to recast into a hollow cylinder of length 16 cm, external diameter 20 cm and thickness 2.5 mm?

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109. In the middle of a rectangular field measuring $30m \times 20m$, a well of 7 m diameter and 10 m depth is dug. The earth so removed is evenly spread over the remaining

part of the field. Find the height through which the level of the field is raised.

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