



MATHS

BOOKS - RD SHARMA MATHS (ENGLISH)

CUBES AND CUBE ROOTS



1. Is 256 a perfect cube?

2. Is 216 a perfect cube? What is that number

whose cube is 216?

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3. Is 27000 a perfect cube ? What is the

number whose cube is 27000?

4. What is the smallest number by which 392 must be multiplied so that the product is a perfect cube?



5. What is the smallest number by which 3087

must be divided so that the quotient is a

perfect cube ?



6. Prove that if a number is doubled, then its cube is eight times the cube of the given number.



7. Evaluate the following : (I)
$$\left\{ \left(24^2 + 7^2 \right)^{\frac{1}{2}} \right\}^3$$

(ii) $\left\{ \sqrt{15^2 + 8^2} \right\}^3$

8. Find the volume of a cube whose surface area is 150 m^2 . Watch Video Solution

9. Find the cube of 24^3 by using column method.



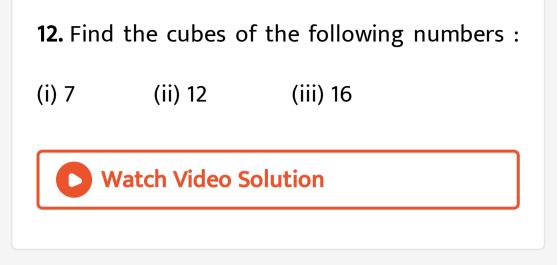
10. Using column method find the cubes of thefollowing natural numbers. (I) 42 (ii)45 (iii) 87

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11. Using column method find the cubes of the

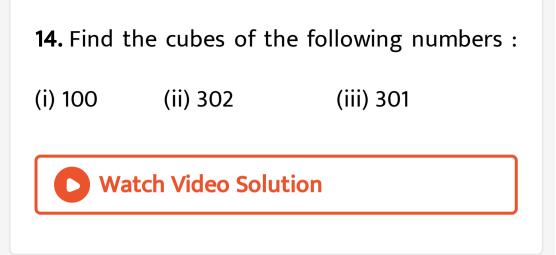
following numbers: (1) 98 (2) 99

(3) 85



13. Find the cubes of the following numbers :

(i) 21 (ii) 40 (iii) 55



15. Write the cubes of all natural numbers between 1 and 10 and verify the following statements : Cubes of all odd natural numbers are odd. Cubes of all even natural numbers are even.



16. Observe the following pattern : $1^3 = 1$ $1^3 + 2^3 = (1+2)^2$ $1^3 + 2^3 + 3^3 = (1+2+3)^2$ Write the next three rows and calculate the value of $1^3 + 2^3 + 3^3 + + 9^3 + 10^3$ by the above pattern.

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17. Write the cubes of 5 natural number which are multiples of 3 and verity the followings:

The cube of a natural number which is a

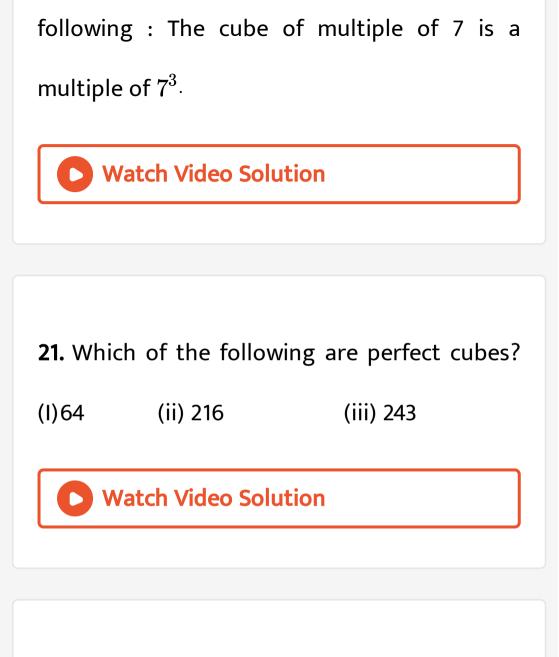
multiple of 3 is a multiple of 27'



18. Write the cubes of 5 natural number which are of form $3n + 1(e\dot{g}, 4, 7, 10)$ and verify the following : The cube of a natural number of the form 3n + 1 is a natural number of the same form i.e. when divided by 3 it leaves the remainder 1 **19.** Write the cubes of 5 natural numbers of the form 3n + 2(ie.5, 8, 11,) and verify the following : The cube of a natural number of the form 3n + 2 is a natural number of the same form i.e. when it is dividend by 3 the remainder is 2

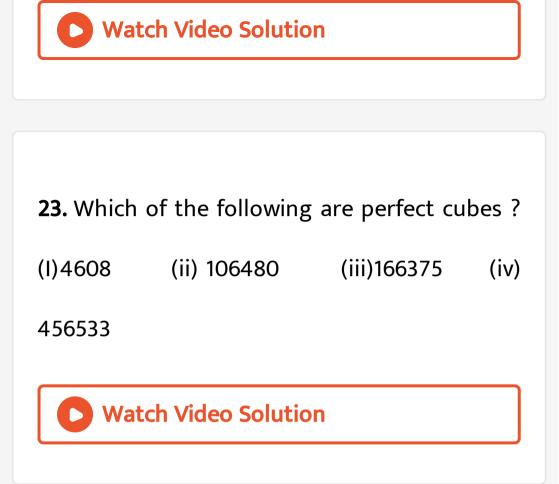
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20. Write the cubes of 5 natural numbers of which are multiples of 7 and verify the



22. Which of the following are perfect cubes?

(I)1000 (ii) 1728 (iii) 3087



24. Which of the following are cubes of even natural numbers? 216, 512, 729, 1000, 3375, 13824

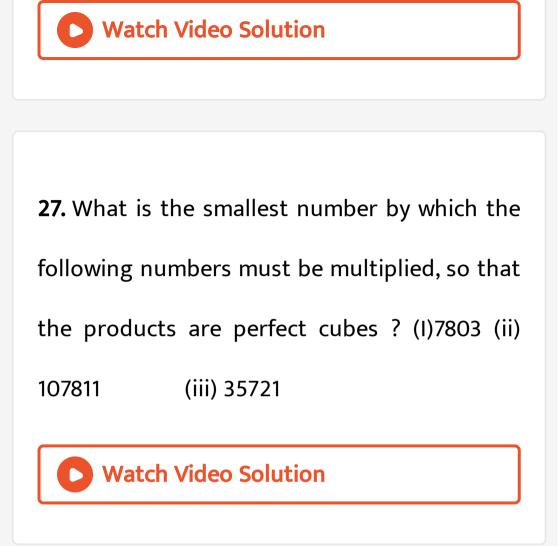




25. Which of the following are cubes of odd natural numbers? 125, 343,1728, 4096, 32768, 6859

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26. What is the smallest number by which the following numbers must be multiplied, so that the products are perfect cubes ? (I)675 (ii) 1323 (iii) 2560



28. By which smallest number must the following numbers be divided so that the



8640 (iii) 1600 (iv) 8788



29. By which smallest numbers must the following numbers be divided so that the quotient is a perfect cube? (I)7803 (ii) 107811 (iii) 35721 (iv) 243000

30. Prove that if a number is tripled then its

cube is 27 times the cube of the given number.



31. What happens to the cube of a number if the number multiplied by (I)3? (ii) 4

? (iii) 5 ?

32. Find the volume of a cube, one face of which has an area of 64 m^2 .

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33. Find the volume of cube whose surface area is 384 m^2 .

34. Evaluate the following : (I) $\left\{ \left(5^2 + 12^2\right)^{\frac{1}{2}} \right\}^3$

(ii)
$$\left\{ \left(6^2 + 8^2 \right)^{\frac{1}{2}} \right\}^3$$

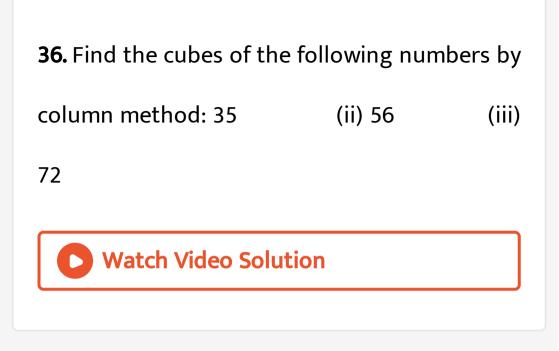
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35. Write the unite digit of the cube of each of

the following

numbers:

31,109,388,833,4276,5922,77774



37. Which of the following numbers are not

perfect cubes ? (I)64 (ii) 216 (iii)

243 (iv) 1728

38. By taking three different values of n verify the truth of the following statements: If n is even, then n^3 is also even. if n is odd, then n^3 is also odd. If n leaven remainder 1 when divided by 3, then n^3 also leaves 1 as remainder when divided by 3. If a natural number n is of the form $3p + 2 then n^3$ also a number of the same type.



39. Write true (T) or false (F) for the following statements: 392 is a perfect cube. 8640 is not a perfect cube. No cube can end with exactly two zeros. There is no perfect cube which ends in 4. For an integer a, a^3 is always greater than a^2 . If a and b are integers such that $a^2 > b^2, then \, a^3 > b^3$. If a divides b , then a^3 divides b^3 . If a^2 ends in 9, then a^3 ends in 7 If a^2 ends in 5, then a^3 ends in 25. If a^2 ends in an even number of zeros, then ends in and odd number zeros.

40. Show that 1331 is a perfect cube. What is

the number whose cube is 1331?

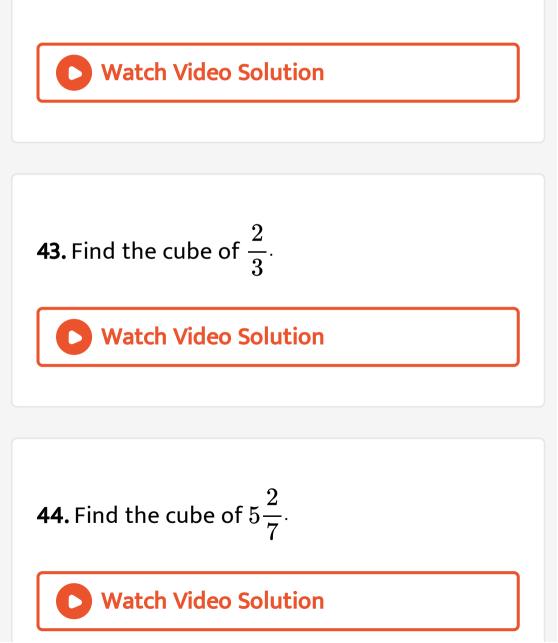


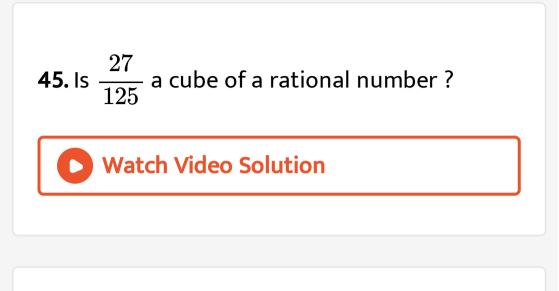
41. Which of the following numbers are cubes

of negative integers? 1728 (ii) -3888

42. Show that 17576 is a perfect cube. also, find

the number whose cube is -17576.





46. Show that $\frac{-216}{42875}$ is the cube of a rational number. Also find the rational number.



47. Find the cube of rational number 3.1.



48. Show that 0.001728 is the cube of a rational number.

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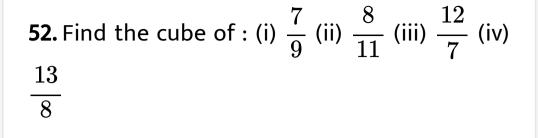
49. Find the cubes of : -11 (ii) -12 (iii) -21

50. Which of the following numbers are cubes of negative integers (i) -64 (ii) -1056 (iii) -2197 (iv) - 2744 (v) 42875



51. Show that the following integers are cubes of negative integers. Also find the integer whose cube is the given integer. -5832 (ii) -2744000



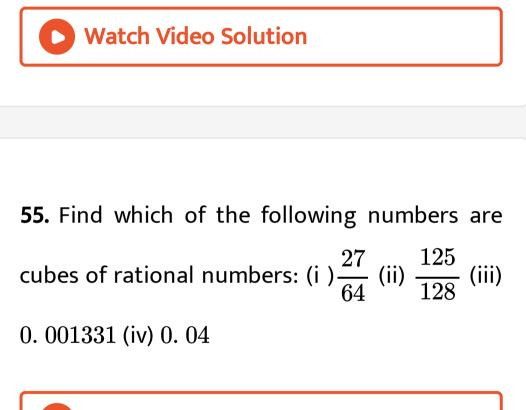




53. Find the cube of : (i) $2\frac{2}{5}$ (ii) $3\frac{1}{4}$ (iii) 0. 3 (iv)

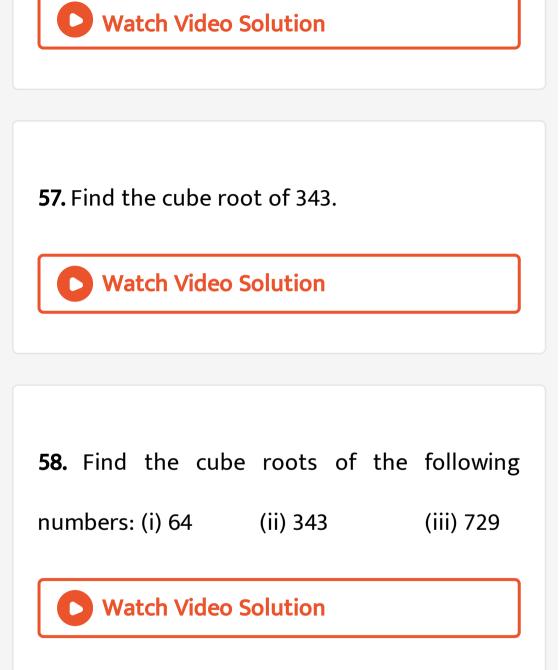
1.5

54. Find the cube of : (i) 0. 08 (ii) 2. 1



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56. Find the cube root of 216



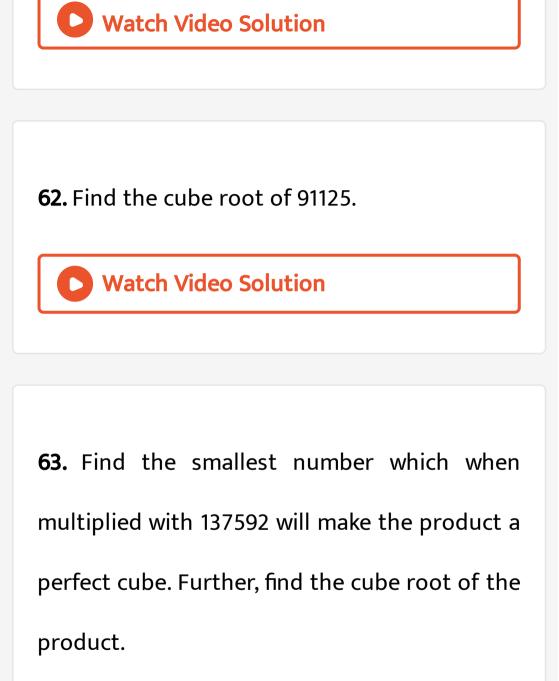
59. Find the cube roots of the following numbers; (a)2197 (b) 389017 (c) 91125
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60. Find the cube root of given number (i)

46656 (ii) 175616 (iii) 571787

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61. Find the cube root of 621





64. Divide the number 26244 by the smallest number so that the quotient is a perfect cube. Also fine the cube root of the quotient.



65. Three numbers are to one another 2 : 3 : 4 :

The sum of their cubes is 33957. Find the numbers.



66. Find the cube roots of the following numbers by successive subtraction of numbers: 1, 7, 19, 37, 61, 91, 127, 169, 217, 271, 331, 397,... (i) 64 (ii) 512 (iii) 1728

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67. Using the method of successive subtraction (numbers: 1, 7, 19, 37, 61, 91, 127, 169, 217, 271, 331, 397,...) examine whether or

not the following numbers are perfect cubes:

130 (ii) 345 (iii) 792 (iv) 1331



68. using the method of successive subtraction examine whether or not the following numbers are perfect cube
(i) 130 (ii) 345 (iii) 792 (iv) 1331
Find the smallest number that must be subtracted from those of the numbers in above question which are not perfect cubes,

to make them perfect cubes. What are the

corresponding cube roots?



69. Find the cube root of each of the following

natural numbers: 343

(ii) 2744

(iii) 4913



70. Find the cube root of each of the following

natural numbers: 1728 (ii) 35937

(iii) 17576



71. Find the cube root of each of the following

natural numbers: 134217728 (ii)

48228544 (iii) 74088000

72. Find the cube root of each of the following

natural numbers: 157464 (ii) 1157625

(iii) 33698267

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73. Find the smallest number which when multiplied with 3600 will make the product a perfect cube. Further, find the cube root of the product.



74. Multiply 210125 by the smallest number so

that the product is a perfect cube. Also find

out the cube root of the product.



75. What is the smallest number by which 8192 must be divided so that quotient is a perfect cube? Also find the cube root of the quotient so obtained.



76. Three numbers are in the ratio 1:2:3: The

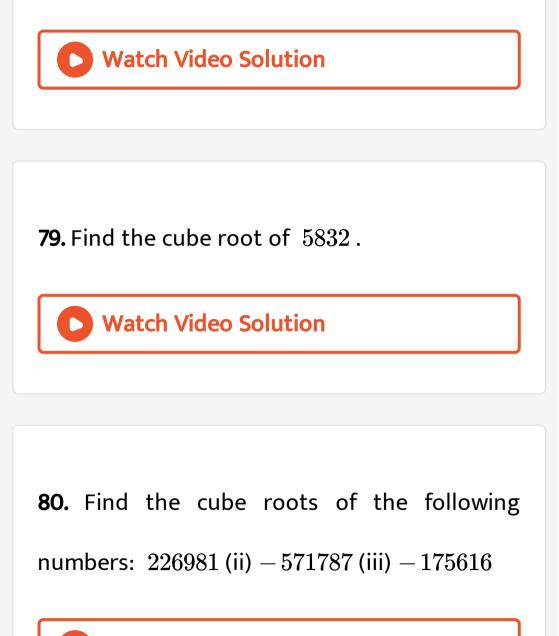
sum of their cubes is 98784. Find the numbers.

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77. The volume of cube is $9261000\ m^3$. Find the

side of the cube.

78. Find the cube root of 1728 .



81. Find the cube root each of the following :

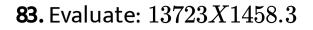
 $216\ x\ 1728$ (ii) $-125\ x(\ -3375)$

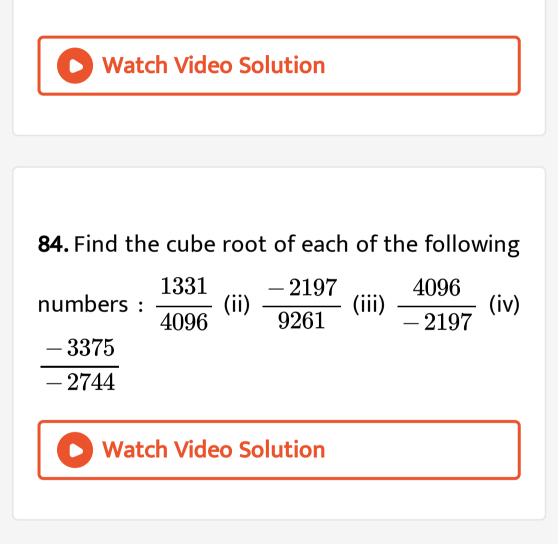


82. Find the cube root of each of the following

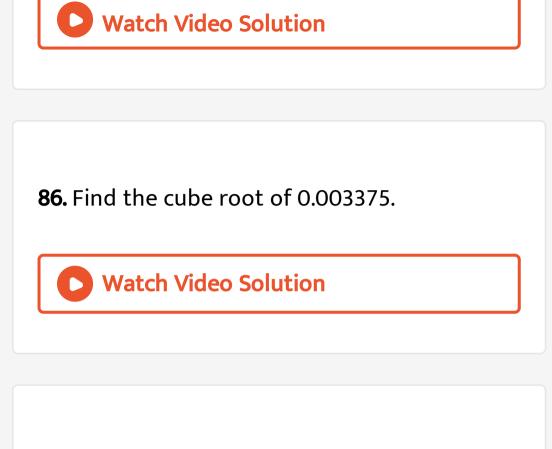
numbers: $140 \ x \ 2450$ (ii) $-2300 \ x \ 5290$







85. Find the cube root 1.331.



87. The volume of a cubical box is 32.768 cubic

metres. Find the length of a side of the box.



88. Find the cube roots of each of the following integers: -125 (ii) -5832 (iii) -2744000 (iv)-753571 (v) 32768

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89. Show that:
$$(i)27^{\frac{1}{3}}X \, 64^{\frac{1}{3}} = (27X64)^{\frac{1}{3}}$$

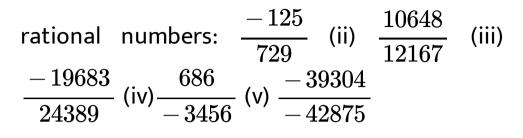
 $(ii)(64X \, 729)^{\frac{1}{3}} = 64^{\frac{1}{3}}X \, 729^{\frac{1}{3}}$
 $(iii)(-125X \, 216)^{\frac{1}{3}} = -125^{\frac{1}{3}}X \, 216^{\frac{1}{3}}$
 $(iv)(-125X - 1000)^{\frac{1}{3}} = -125^{\frac{1}{3}}X - 1000^{\frac{1}{3}}$

90. Find the cube root of each of the following numbers: (i)8 x 125 (ii) -(1728)x216 (iii) -(27) x 2744 (iv) -(729)x(-15625)

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91. Evaluate: (i)
$$\sqrt[3]{4^3 \times 6^3}$$
 (ii)
 $\sqrt[3]{8 \times 17 \times 17 \times 17}$ (iii) $\sqrt[3]{700 \times 2 \times 49 \times 5}$
(iv) $125\sqrt[3]{a^3} - \sqrt[3]{125a^6}$

92. Find the cube root of each of the following





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93. Find the cube root of each of the following

rational numbers: 0.001728 (ii)

0.003375 (iii) 0.001 (iv) 1.331

94. Evaluate each of the following :

$$\sqrt[3]{27} + \sqrt[3]{0.008} + \sqrt[3]{0.064}$$

(ii) $\sqrt[3]{\frac{729}{216}} \times \frac{6}{9}$
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95. Show that : (i) $\frac{(729)^{\frac{1}{3}}}{(1000)^{\frac{1}{3}}} = \left(\frac{729}{1000}\right)^{\frac{1}{3}}$
(ii) $\frac{(-512)^{\frac{1}{3}}}{(343)^{\frac{1}{3}}} = \left(-\frac{512}{343}\right)^{\frac{1}{3}}$
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96. (i) $\sqrt[3]{(125 \times 27)} = 3 \times \dots$ (ii) $\sqrt[3]{(8 \times \dots)} = 8$ (iii) $\sqrt[3]{1728} = 4 \times \dots$ (iv) $\sqrt[3]{480} = \sqrt[3]{3 \times 2 \times \sqrt[3]{\dots}}$ (v) $\sqrt[3]{\dots} = \sqrt[3]{7 \times \sqrt[3]{8}}$

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97. The volume of a cubical box is 474.552 cubic metres. Find the length of each side of the box.

98. Three numbers are to one another 2 : 3 : 4 . The sum of their cubes is 0.334125. Find the numbers.



99. Find the side of a cube whose volume is $\frac{24389}{216} m^{3}$

100. Evaluate: $(i)36^{\frac{1}{3}}X 384^{\frac{1}{3}}$ $(ii)96^{\frac{1}{3}}X 144^{\frac{1}{3}}$ $(ii)100^{\frac{1}{3}}X270^{\frac{1}{3}}$ $(iv)121^{\frac{1}{3}}X 297^{\frac{1}{3}}$

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101. Find the cube roots of the numbers 2460375, 20346417, 210644875, 57066625 using the fact that 2460375 = 3375X72920346417 = 9261X2197210644875 = 42875X491357066625 = 166375X343





102. Find the units digits of the cube root of

the	following	number	rs: (i)
226981		(ii)	13824 (iii)

571787 (iv) 175616

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103. Using cube root tables, find the cube root

of (i) 62 (ii) 620 (iii) 6200

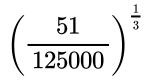
104. Find the cube roo	t of 448.
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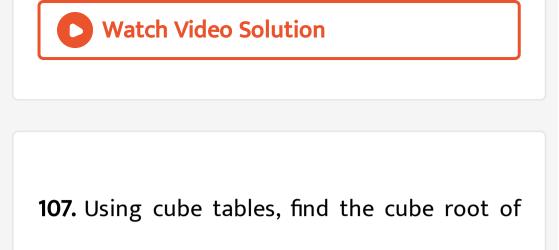


105. Find the cube root of 17064.

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106. Using cube root table, find the value of





85.9.

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108. Using cube root table , find the cube root

953.

109. Using cube root table, find the cube root of 5319.

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110. Using cube root table, find the cube root of 309400.

111. Making use of the cube root table find the cube roots of the following (correct to three decimal places) : (i) 7 (ii)

 70
 (iii) 700

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112. Making use of the cube root table find the cube roots of the following (correct to three decimal places) : 7000 (ii) (ii)





113. Making use of the cube root table find the cube roots of the following (correct to three decimal places) : 7800 (ii)
1346 (iii) 250

114. Making use of the cube root table find the cube roots of the following (correct to three

decimal places) : 5112

(ii) 9800

(iii) 732



115. Making use of the cube root table find the cube roots of the following (correct to three decimal places) : 7342 (ii) 133100

(iii) 37800

116. Making use of the cube root table find the cube roots of the following (correct to three decimal places) : 0.27 (ii) 8.6 (iii)

0.86

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117. Making use of the cube root table find the

cube root of the following (correct to three

decimal places) : 8.65

118. What is the length of the side of a cube whose volume is 275 cm^3 . Make use of the table for the root.