MATHS

BOOKS - RD SHARMA MATHS (ENGLISH)

PLAYING WITH NUMBERS

Others

1. Write the factors of each of the following numbers:

(i) 24

(ii) 64

(iii) 144

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2. Write first five multiples of 17

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3. The product of two numbers is 48. Their sum is 19. What are the number?

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4. Find two numbers whose difference is 2 and product is 24.

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5. Without actually dividing, show that 13 is a factor of 130013.

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6. Define:

(1) factor

(2) multiple

Give four examples of each.

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7. Write first five multiples of each of the following numbers:

(i) 25

(ii) 76

(iii) 125

(iv) 729

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8. Which of the following numbers have as their factor 15

(i) 15625

(ii) 123015

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9. Which of the following numbers are divisible by 21?

(i) 21063

(ii) 20163

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10. Without actual division show that 11 is a factor of each of the following numbers:

(i) 1111

(ii) 11011

(iii) 110011

(iv) 1100011

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11. Without actual division show that each of the following numbers is divisible by 5:

(i) 55

(ii) 555

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12. Is there any natural number having no factor at all?

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13. Find numbers between 1 and 100 having exactly three factors.

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14. Sort out even and odd numbers:

(i)42

(ii)89

(iii)144

(iv)321

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15. Find the common factors of 56 and 120.

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16. Find the common factors of 4, 8 and 12.

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17. A number is divisible by both 5 and 12. By which other number will that number be always divisible?

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18. A number is divisible by both 5 and 12. By which other number will that number be always divisible?

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19. Find the common factors of:

(i)15 and 25

(ii) 35 and 50

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20. Find the common factors of:

(i) 5, 15 and 25

(ii) 2, 6 and 8

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21. Find first three common multiples of 6 and 8.

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22. Find first two common multiples of 12 and 18.

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23. A number is divisible by both 5 and 12. By which other number will that number be always divisible?

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24. A number is divisible by 24. By what other numbers will that number be divisible?

25. Which of the following numbers are prime numbers:

(i) 179

(ii) 117

(iii) 139

26. What are prime numbers? List all primes between 1 and 30.

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27. Write all prime numbers between:

(i) 70 and 90

(ii) 40 and 85

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28. What is the smallest prime number? Is it an even number?

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29. What is the smallest odd prime? Is every odd number a prime number? If not, give an example of an odd number which is not prime.

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30. What are composite numbers? Can a composite number be odd? If yes, write the smallest odd composite number.

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31. What are the twin-primes? Write all pairs of twin prime between 1 and 100

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32. What are co-primes? Give examples of five pairs of co-primes. Are co-primes always prime? If no, illustrate your answer by an example.

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33. Which of the following pairs are always co-primes?

(i) two prime numbers

(ii) one prime and one composite number

(iii) two composite numbers

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34. Express each of the following as a sum of two or more primes:

(i) 13

(ii) 130

(iii) 180

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35. Express each of the following numbers as the sum of two odd primes:

(i) 36

(ii) 42

(iii) 84

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36. Express each of the following numbers as the sum of twin primes:

(i) 36

(ii) 84

(iii) 120

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37. Find the possible missing twins for the following numbers so that they become twin primes:

(i) 29

(ii) 89

(iii) 101

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38. A list consists of the following pairs of numbers: $51, 53$; $55, 57$; $59, 61$; $63, 65$; $67, 69$; $71, 73$

Categorize them as pairs of:

(i) co-primes

(ii) primes

(iii) composites

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39. For a number, greater than 10, to be prime what may be the possible digit in the unit's place?

40. Write seven consecutive composite numbers less than 100 so that there is no prime number between them.

41. State true (T) or false (F): The sum of primes cannot be a prime. The product of primes cannot be a prime. An even number is composite. Two consecutive numbers cannot be both primes. Odd numbers cannot be composite. Odd numbers cannot be written as sum of primes. A number and its successor are always co-primes.

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42. Fill in the blanks in the following: A number having only two factors is called a ..... A number having more than two factors is called a ..... 1 is neither ..... nor ..... The smallest prime number is ..... . The smallest composite number is ..... .

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43. Factorize 234 into prime factors.

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44. Determine prime factorization of 9000.

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45. Determine prime factorization of 20570.

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46. Write the smallest 5-digit number and express it as a product of primes.

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47. Find the smallest number having four different prime factors.

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48. In which of the following expressions, prime factorization has been done?

(i) $24 = 2 \times 3 \times 4$

(ii) $56 = 1 \times 7 \times 2 \times 2 \times 2$

(iii) $70 = 2 \times 5 \times 7$

(iv) $54 = 2 \times 3 \times 9$

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49. Determine prime factorization of each of the following numbers:

(i) 216

(ii) 420

(iii) 468

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50. Determine prime factorization of each of the following numbers:

(i) 216

(ii) 420

(iii) 468

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51. Write the smallest 5-digit number and express it as a product of primes.

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52. Write the largest 4-digit number and give its prime factorization.

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53. Find the prime factors of 1729. Arrange the factors in ascending order, and find the relation between two consecutive prime factors.

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54. Which factors are not included in the prime factorization of a composite number?

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55. Here are two different factor trees for 60. Write the missing numbers: (Figure)

Figure (ii) Figure

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56. Test the divisibility of the following numbers by 2.

(i)8652

(ii)70981

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57. Test the divisibility of the following numbers by 3:

(i)726

(ii)2856

(iii)41938

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58. Test the divisibility of the following numbers by 5:

(i)2070

(ii) 68257

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59. Test the divisibility of the following numbers by 6:

(i) 639210

(ii) 83512

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60. Test the divisibility of the following numbers by 4:

(i) 4896

(ii) 82159

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61. Test the divisibility of the following numbers by 8:

(i)345096

(ii) 215284

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62. Test the divisibility of the following numbers by 9:

(i)83745

(ii)123644

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63. Test the divisibility of the following numbers by 11:

(i) 9020814

(ii) 3178965

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64. Test the divisibility of the following numbers by 2:

(i)8652

(ii) 70981

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65. Test the divisibility of the following numbers by 3:

(i) 70335

(ii) 607439

(iii) 9082746

Watch Video Solution

66. Test the divisibility of the following numbers by 6:

(i) 639210

(ii) 83512

Watch Video Solution

67. Test the divisibility of the following numbers by 4:

(i) 786532

(ii) 1020531

(iii) 9801523

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68. Test the divisibility of the following numbers by 8:

(i)345096

(ii)215284

Watch Video Solution

69. Test the divisibility of the following numbers by 9:

(i)187245

(ii)3478

(iii)547218

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70. Test the divisibility of the following numbers by 11:

(i) 9020814

(ii) 3178965

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71. In each of the following numbers, replace * by the smallest number to make it divisibly by 3:

(i) 75 * 5

(ii) 35 * 64

(iii) 18 * 71

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72. In each of the following numbers, replace * by the smallest number to make it divisibly by 9:

(i) 67 * 19

(ii) 66784 *

(iii) 538 * 8

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73. In each of the following numbers, replace * by the smallest number to make it divisibly by 11:

(i) 86 * 72

(ii) 467 * 91

(iii) 9 * 8071

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74. Given an example of a number which is divisible by (i) 2 but not by 4 (ii) 3 but

not by 6 (iii) 4 but not by 8 (iv) both 4 and 8 but not by 32

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75. Which of the following statements are true? If a number is divisible by 3, it must be divisible by 9. If a number is divisible by 9, it must be divisible by 3. If a number is divisible by 4, it must be divisible by 8. If a number is divisible by 8, it must be divisible by 4. If a number is divisible by 18, if it is divisible by

both 3 and 6. If a number is divisible by both 9 and 10, it must be divisible by 90. If a number exactly divides the sum of two numbers, it must exactly divide the numbers separately. If a number divides three numbers exactly, it must divide their sum exactly. If two numbers are co-prime, at least one of them must be a prime number. The sum of two consecutive odd numbers is always divisible by 4.

76. Find the H.C.F. of 144 and 192 by prime factorization method.

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77. Find the H.C.F. of 1260 and 2376 by prime factorization method.

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78. Find the HCF and LCM of 144, 180 and 192 by prime factorisation method.

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79. Find the H.C.F. of the following numbers using prime factorization method: 144, 198

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80. Find the H.C.F. of the following numbers using prime factorization method: 225, 450

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81. Find the H.C.F. of the following numbers using prime factorization method: 150, 140, 210

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82. What is the HCF of two consecutive (a) numbers? (b) even numbers? (c) odd numbers?

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83. H.C.F. of co-prime numbers 4 and 15 was found as follows: $4 = 2 \cdot 2 \, and \, 15 = 3 \cdot 5$ Since there is no common prime factor. So, H.C.F. of 4 and 15 is 0. Is the answer correct? If not, what is the correct H.C.F.?

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84. Using Euclid's algorithm find the H.C.F. of 513 and 783

85. Euclid algorithm to find the H.C.F of 408 and 1032.

86. Determine the H.C.F. of 216 and 1176

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87. Find the H.C.F. of 144, 180 and 192.

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88. Find the H.C.F. of 624 and 936

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89. Find the H.C.F. of 513 and 783

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90. Find the H.C.F. of 624, 936 and 264

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91. Determine the H.C.F of the following numbers by using Euclid's algorithm (i) 300, 450 (ii) 399, 437 (iii) 1045, 1520

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92. Show that the following pairs are co-prime:

(i) 59, 97 (ii) 875, 1859 (iii) 288, 1375

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93. What is the HCF of two consecutive (a) numbers? (b) even numbers? (c) odd numbers?

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94. Write true (T) or false (F) for each of the following statements: The H.C.F. of two distinct prime numbers is 1. The H.C.F. of two co-prime number is 1 The H.C.F. of an even and an odd numbers is 1. The H.C.F. of two consecutive even number is 2. The H.C.F. of two consecutive odd number is 2

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95. Find the largest number that divides 2053 and 967 and leaves a remainder of 5 and 7 respectively.

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96. Find the largest number that will divide 398, 436 and 542 leaving remainders 7, 11 and 15 respectively.

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97. Two tankers contain 850 litres and 680 litres of petrol respectively. Find the maximum capacity of a container which can measure the petrol of either tanker in exact number of times.

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98. In a seminar. the number of participants in Hindi, English and Mathematics are 60,84 and 108 respectively. Find the minimum number of rooms required if, in each room the same

number of participants are to be seated and all of them being in the same subject.

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99. Three sets of English, Hindi and Mathematics books have to be stacked in such a way that all the books are stored topic wise and the height of each stack is the same. The number of English books is 96, the number of Hindi books is 240 and the number of Mathematics books is 336. Assuming that the

books are of the same thickness, determine the number of stacks of English, Hindi and Mathematics books.

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100. Reduce $\frac{289}{391}$ to the lowest terms.

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101. Find the largest number which divides 615 and 963 leaving remainder 6 in each case.

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102. Find the greatest number which divides 285 and 1249 leaving remainders 9 and 7 respectively.

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103. What is the largest number that divides 626, 3127 and 15628 and leaves remainders of 1,2 and 3 respectively?

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104. The length, breadth and height of a room are 825 cm, 675 cm and 450 cm respectively. Find the longest tape which can measure the three dimensions of the room exactly.

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105. A rectangular hall is 18 m 72 cm long and 13 m 20 cm broad. It can be paved with square

tiles of the same size.Find the least possible number of such tiles.

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106. The greatest possible length which can be used to measure exactly the lengths 7 m, 3 m 85 cm, 12 m 95 cm is (a) 15 cm (b) 25 cm (c) 35 cm (d) 42 cm

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107. 105 goats, 140 donkeys and 175 cows have to be taken across a river. There is only one boat which will have to make many trips in order to do so. The lazy boatman has his own conditions for transporting them. He insists that he will take the same number of animals in every trip and they have to be of the same kind. He will naturally like to take the largest possible number each time. Can you tell how many animals went in each trip?

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108. Two brands of chocolates are available in packs of 24 and 15 respectively. If I need to buy an equal number of chocolates of both kinds, what is the least number of boxes of each kind I would need to buy?

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109. During a sale, colour pencils were being sold in packs of 24 each and crayons in packs of 32 each. If you want full packs of both and

the same number of pencils and crayons, how many of each would you need to buy?

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110. Reduce each of the following fractions to the lowest terms: $\frac{161}{207}$ (ii) $\frac{296}{481}$

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111. A merchant has 120 litres of oil of one kind, 180 litres of another kind and 240 litres of

third kind. He wants to sell the oil by filling the three kinds of oil in tins of equal capacity. What should be the greatest capacity of such a tin?

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112. Find the L.C.M. of 40, 36, and 126 by prime factorization method.

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113. Find the L.C.M. of 84, 90 and 120 by prime factorization method.

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114. Determine the L.C.M. of 624 and 936 by division method.

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115. Find the L.C.M. of 112, 140 and 168 by division method.

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116. Find the L.C.M. of 75, 250, 225 and 525 by division method.

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117. Determine the L.C.M. of the numbers given below: 48, 60

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118. Determine the L.C.M. of the numbers given below: 28, 36, 45, 60

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119. Determine the lowest natural number which when divided by 16, 28, 40, 77 leaves remainder 8 in each case.

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120. The students in a class can be divided into groups of 2, 3, 5 and 6. What is the least number of children this class can have.

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121. Determine the two numbers nearest to 10000 which are exactly divisible by each of $2, 3, 4, 5, 6$ and 7

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122. Klik has a camera that takes film that allows 24 exposures, whereas Snapp has a camara that takes film that allows 36 exposure. Both of them want to be able to take the same number of photographs and complete their rolls of film. How many rolls should each buy?

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123. A boy saves Rs. 4.65 daily. Find the least number of days in which he will be able to save an exact number of rupees.

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124. Find the greatest number of 6 digits exactly divisible by 24, 15 and 36.

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125. Four bells toll at intervals of 4, 7, 12 and 84 seconds. The bells toll together at 5 O'clock. When will they again toll together? How many times will they do it in 28 minutes?

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126. What is the smallest number which when divided by 24, 36 and 54 gives a remainder of 5 each time?

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127. What is the smallest number that both 33 and 39 divide leaving remainders of 5?

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128. Find the least number that is divisible by all the numbers between 1 and 10 (both inclusive).

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129. What is the smallest number that, when divided by 35, 56 and 91 leaves remainders of 7 in each case?

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130. In a school there are two sections - section A and section B of Class VI. There are 32 students in section A and 36 in section B. Determine the minimum number of books required for their class library so that they can

be distributed equally among students of section A or section B.

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131. In a morning walk three persons step off together. Their steps measure 80cm, 85cm and 90cm respectively. What is the minimum distance each should walk so that he can cover the distance in complete steps?

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132. Determine the number nearest to 110000 but greater than 100000 which is exactly divisible by each of 8, 15 and 21.

133. A school bus picking up children in a colony of flats stops at every sixth block of flats. Another school bus starting from the same place stops at every eighth blocks of flats. Which is the first bus stop at which both of them will stop?

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134. Telegraph poles occur at equal distances of 220 along a road and heaps of stones are put at equal distances of 300m along the same road. The first heap is at the foot of the first pole. How far from it along the road is the next heap which lies at the foot of a pole?

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135. Find the smallest number which leaves remainder 8 and 12 when divided by 28 and 32 respectively.

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136. Find the H.C.F. and L.C.M. of 1152 and 1664.

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137. Given that the H.C.F. of two numbers is 16 and their product is 6400, determine their L.C.M.

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138. The H.C.F. and L.C.M. of two numbers are 13 and 1989 respectively. If one of the numbers is 117, determine the other.

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139. Can two numbers have 18 as their HCF and 380 as their LCM? Give reason.

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140. For each of the following pairs of numbers, verify the property: product of the number = Product of their H.C.F. and L.C.M. (i) 25, 65 (ii) 117, 221

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141. Find the H.C.F. and L.C.M. of the following pairs of numbers: (i) 117, 221 (ii) 234, 572 (iii) 145, 232 (iv) 861, 1353

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142. The L.C.M. and H.C.F. of two numbers are 180 and 6 respectively. If one of the numbers is 30, find the other number.

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143. The H.C.F. of two numbers is 16 and their product is 3072. Find their L.C.M.

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144. the H.C.F. of two numbers is 145, their L.C.M. is 2175. If one number is 725, find the other.

Watch Video Solution

145. Can two numbers have 18 as their HCF and 380 as their LCM? Give reason.

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146. Which of the following numbers is a perfect number?

(a) 16

(b) 8

(c) 24

(d) 28

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147. Which of the following are not twin-primes?

(a) 3, 5

(b) 5, 7

(c) 11, 13

(d) 17, 23

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148. Which of the following are co-primes?

(a) 8, 10

(b) 9, 10

(c) 6, 8

(d) 15, 18

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149. Which of the following is a prime number

(a) 263

(b) 361

(c) 323

(d) 324

150. The number of primes between 90 and 100 is

(a) 0

(b) 1

(c) 2

(d) 3

151. Which of the following numbers is a perfect number?

(a) 16

(b) 8

(c) 24

(d) 28

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152. Which of the following is a prime number?

(a) 203

(b) 139

(c) 115

(d) 161

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153. The total number of even prime numbers is

(a) 0

(b) 1

(c) 2

(d) unlimited

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154. Which one of the following is a prime number?

(a) 161

(b) 221

(c) 373

(d) 437

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155. The least prime number is

(a)1

(b)2

(c)3

(d)5

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156. Which of the following numbers is divisible by 5 or by 10? (i) 3345 (ii) 19870 (iii)678875

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157. Which of the following numbers is divisible by 4?

(a) 8675231 (b) 9843212 (c) 1234567

(d) 543123

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158. Which of the following numbers is divisible by 6? (a) 7908432 (b) 68719402 (c) 45982014

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159. Which of the following numbers is divisible by 8? (a) 87653234 (b) 78956042 (c) 64298602 (d) 98741032

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160. Which of the following numbers is divisible by 9? (a) 9076185 (b) 92106345 (c) 10349576 (d) 95103476

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161. Which of the following numbers is divisible by 11? (a) 111111 (b) 22222222 (c) 3333333 (d) 4444444

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162. If 1*548 is divisible by 3, then * can take the value

(a)0

(b) 2

(c) 7

(d) 8

163. 5 * 2 is a three digit number with * as a missing digit. If the number is divisible by 6, the missing digit is

(a) 2

(b) 3

(c) 6

(d) 7

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164. What least value should be given to * so that the number 6342 * 1 is divisible by 3?

(a) 0

(b) 1

(c) 2

(d) 3

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165. What least value should be given to * so that the number 653 * 47 is divisible by 11?

(a) 1

(b) 2

(c) 6

(d) 9

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166. What least value should be given to * so that the number 653 * 47 is divisible by 11?

(a) 1

(b) 2

(c) 6

(d) 9

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167. What least value should be given to * so that the number 63576 * 2 is divisible by 8?

(a) 1

(b) 2

(c) 3

(d) 4

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168. Which one of the following numbers is exactly divisible by 11?

(a) 235641

(b) 245642

(d) 315624

(d) 415624

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169. If 1 * 548 is divisible by 3, which of the following digits can replace * ?

(a) 0

(b) 2

(c) 7

(d) 9

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170. The sum of the prime numbers between 60 and 75 is (a) 199 (b) 201 (c)

211 (d) 272

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171. The HCF of two consecutive natural numbers is

(a) 0

(b) 1

(c) 2

(d) non-existant

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172. The HCF of two consecutive even number is

(a)1

(b) 2

(c) 0

(d) non-existant

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173. The HCF of an even number and an odd number is

(a)1

(b) 2

(c) 0

(d) non-existant

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174. The HCF of an even number and an odd number is

(a)1

(b) 2

(c) 0

(d) non-existant

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175. The LCM of 24, 36 and 40 is (a) 4 (b) 90 (c) 360 (d) 720

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176. If $x \; and \; y$ are two co-primes, then their LCM is (a) xy (b) $x + y$ (c) $\frac{x}{y}$ (d) 1

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177. If the HCF of two numbers is 16 and their product is 3072, then their LCM is

(a)182

(b) 192

(c) 12

(d) none of these

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178. The least number divisible by 15, 20, 24, 32 and 36 is

(a) 1440

(b) 1660

(c) 2880

(d) None of these

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179. The smallest number which when diminished by 3 is divisible by 11, 28, 36 and 45 is

(a) 1257

(b) 1260

(c) 1263

(d) None of these

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180. Three numbers are in the ratio 1:2:3 and their HCF is 6, the numbers are

(a) 4, 8, 12

(b) 5, 10, 15

(c) 6, 12, 18

(d) 10, 20, 30

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181. The ratio of two numbers is 3:4 and their HCF is 4. Their LCM is

(a) 12

(b) 16

(c) 24

(d) 48

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182. Which of the following numbers is prime?

(a) 23 (b) 51 (c) 38 (d) 26

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183. Which of the following numbers are twin primes?

(a) 3, 5

(b) 5, 11

(c) 3, 11

(d) 13, 17

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184. What smallest digit be written in the blank space of the number .... 6724 so that the number formed is divisible by 3?

(a) 3

(b) 4

(c) 2

(d) 1

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185. Which of the following numbers is divisible by 6? (a) 1258 (b) 61233 (d) 901352 (d) 1790184

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186. Which of the following numbers is divisible by 11? (a) 7138965 (b) 10000001 (c) 10834 (d) 901154

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187. Which of the following numbers is a perfect number?

(a) 12

(b) 28

(c) 8

(d) 16

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188. Which of the following numbers is not divisible by 4? (a) 78536 (b) 1264 (c) 6421 (d) 7935

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189. The smallest prime just greater than the HCF of 84 and 144 is

(a) 11

(b) 17

(c) 19

(d) 13

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190. Every counting number has an infinite number of (a)factors (b) multiplies prime factors (d) None of these

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191. What least number should be replaced by * so that the number 37610*2 is exactly divisible by 9?

(a) 8

(b) 7

(c) 6

(d) 5

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192. Define a perfect number. Write two perfect numbers.

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193. Make a list of seven consecutive numbers, none of which is prime.

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194. The HCF of two numbers is 23 and their product is 55545. Find their LCM.

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195. Find the smallest 5-digit number which is exactly divisible by 20, 25, 30.

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196. Find the largest number which divides 615 and 963 leaving remainder 6 in each case.

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197. The length, breadth and height of a room are 1050 cm, 750cm and 425cm respectively. Find the length of the longest tape which can measure the three dimensions of the room exactly.

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198. Find the greatest number of four digits which is exactly divisible by each 8, 12, 18 and 30.

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199. Reduce $\frac{289}{391}$ to the lowest terms

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200. Three tankers contain 403 litres, 434 litres and 465 litres of diesel respectively. Find the maximum capacity of a container that can measure the diesel of the three containers exact number of times.

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201. A number which has only two factors is called a .....

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202. The smallest composite number is .....

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203. Two perfect numbers are ..... and .....

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204. The HCF of two consecutive odd numbers is .....

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205. The prime triplet is ...

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206. The greatest five digit number exactly divisible by 9 and 13 is

(a) 99945

(b) 99918

(c) 99964

(d) 99972

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207. From the set $\{2, 3, 4, 5, 6, 7, 8, 9\}$, how many pairs of co-primes can be formed?

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208. If the number 2345a60b is exactly divisible by 3 and 5, then the maximum value of $a + b$ is (a).12 (b) 13 (c) 14 (d) 15

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209. The HCF of 100 and 101 is

(a)10100

(b) 1001

(c) 10101

(d) None of these

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210. The greatest four digit number which when divided by 18 and 12 leaves a remainder of 4 in each case is

(a) 9976

(b) 9940

(c) 9904

(d) 9868

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211. The GCD of two numbers is 17 and their LCM is 765. How many pairs of values can the numbers assume?

(a) 1

(b) 2

(c) 3

(d) 4

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212. The number of factors of 1080 is (a) 32 (b) 28 (c) 24 (d) 36

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213. The HCF of first 100 natural numbers is:

A. 2

B. 100

C. 1

D. None of these

Answer: C

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214. The least number exactly divisible by 36 and 24 is

(a)144

(b) 72

(c) 64

(d) 324

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215. Find the HCF of all natural numbers from 200 to 478

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216. If x is prime, y is a composite number such that $x + y = 240$ and their LCM is 4199. Find $x \; and \; y$.

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217. The LCM of two numbers is 1024 and one of them is a prime number, Find their HCF.

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218. The GCD of two numbers is 4 and their LCM is 400. How many pairs of values can the numbers assume?

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219. Find the greatest number that can divide 101 and 115 leaving remainders 5 and 7 respectively.

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220. Find the least three digit number which when divided by 20, 30, 40 and 50 leaves remainder 10 in each case.

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221. Find the largest number that divides 59 and 54 leaving remainders 3 and 5 respectively.

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222. Can two numbers have 12 as their HCF and 512 as their LCM? Justify your answer.

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223. Write all prime numbers between 50 and 100.

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224. Find the smallest 5-digit number which is exactly divisible by 20, 25, 30.

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225. The least number which when divided by 6, 9, 12 and 19 leaves no remainder is .....

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226. If the product of two numbers is 360 and their HCF is 6, then their LCM is.....

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227. The LCM of two numbers is 26. The possible values of HCF are .....

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228. Two perfect numbers are ..... and .....

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