MATHS

BOOKS - VGS BRILLIANT MATHS (TELUGU ENGLISH)

REAL NUMBERS

EXAMPLE

1. Show that every postitive even integer is of the form $2q$, and that every positive odd integer is of the form $2q+1$, where q is some integer.

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2. Show that any positive odd integer is of the form $4q+1$ or $4q+3$, where q is some integer.

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3. Consider the number 4^n where n is a natural number. Check whether there is any value of n which 4^n ends with the digit zero?

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4. Find the HCF and LCM of 12 and 18 by the prime factorization method.

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5. Using the above theorems, without actual division, state whether decimal form of the following rational numbers are terminating or non-terminating, repeating decimals. (i) $\frac{16}{125}$

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6. Using the above theorems, without actual division, state whether decimal form of the following rational numbers are terminating or non-terminating, repeating decimals. (ii) $\frac{25}{32}$

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7. Using the above theorems, without actual division, state whether decimal form of the following rational numbers are terminating or non-terminating, repeating decimals. (iii) $\frac{100}{81}$

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8. Using the above theorems, without actual division, state whether decimal form of the following rational numbers are terminating or non-terminating, repeating decimals. (iv) $\frac{41}{75}$

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9. Write the decimal expansion of the following rational numbers without actual division. (i) $\frac{35}{50}$

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10. Write the decimal expansion of the following rational numbers without actual division. (ii) $\frac{21}{25}$

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11. Write the decimal expansion of the following rational numbers without actual division. (iii) $\frac{7}{8}$

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12. Show that $\sqrt{2}$ is irrational.

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13. Show that $5-\sqrt{3}$ is irrational.

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14. Show that $3\sqrt{2}$ is irrational.

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15. Prove that $\sqrt{2}+\sqrt{3}$ is irrational.

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16. Expand $\log\frac{343}{125}$.

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17. Write $2\log 3+3\log 5-5\log 2$ as a single logarithm.

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18. Solve $3^{x} = 5^{x-2}$.

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19. Find x if $2\log 5 + \frac{1}{2}\log 9 - \log 3 = \log x$.

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20. Find q and r for the following pairs of positive integers a and b, satisfying a = bq + r.

$a = 13, b = 3$

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21. Find q and r for the following pairs of positive integers a and b, satisfying a = bq + r.

$a = 80, b = 8$

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22. Find q and r for the following pairs of positive integers a and b, satisfying a = bq + r: a = 125, b = 5Find q and r for the following pairs of positive integers a and b, satisfying a = bq + r: a = 132, b = 11

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23. Find the HCF of the following by using Euclid division lemma. (i) 50 and 70

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24. Find the HCF of the following by using Euclid division lemma. (ii) 96 and 72

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25. Find the HCF of the following by using Euclid division lemma. (iii) 300 and 550

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26. Find the HCF of the following by using Euclid division lemna 1860 and 2015

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27. Find q and r for the following pairs of positive integers a and b, satisfying a = bq + r: a = 125, b = 5Find q and r for the following pairs of positive integers a and b, satisfying a = bq + r: a = 132, b = 11

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28. Can you find the HCF of 1.2 and 0.12? Justify your answer.

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29. Show that every positive even integer is of the form 2q, and that every positive odd integer is of the form 2q + 1, where q is some integer.

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30. Show that any positive odd integer is of the form $4q + 1$ or $4q + 3$, where q is some integer.

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31. Use Euclid's division algorithm to find the HCF of (i) 900 and 270

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32. Use Euclid's division algorithm to find the HCF of (ii) 196 and 38220

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33. Use Euclid's division algorithm to find the HCF of (iii) 1651 and 2032

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34. Use division algorithm to show that any positive odd integer is of the form 6q + 1, or 6q + 3 or 6q + 5, where q is some integer

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35. Use Euclid's division lemma to show that the square of any positive integer is of the form $3p, 3p + 1.$

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36. Use division algorithm to show that the cube of any positive integer is of the form 9 m, 9m + 1 or 9m + 8.

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37. Show that one and only one out of n, n + 2 or n + 4 is divisible by 3, where n is any positive integer

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38. If $r = 0$, then what is the relationship between a,b and q in $a = bq + r$ of Euclid division lemma?

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39. Express 2310 as a product of prime factors. Also see how your friends have factorized the number. Have they done it same as you? Verify your final product with your friend's result. Try this for 3 or 4 more numbers. What do you conclude?

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40. Find the HCF and LCM of the following given pairs of numbers by prime facrtorization. (i) 120,90

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41. Find the HCF and LCM of the following given pairs of numbers by prime facrtorization. (ii) 50,60

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42. Find the HCF and LCM of the following given pairs of numbers by prime facrtorization. (iii) 37,49

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43. Show that $3^n \times 4^m$ cannot end with the digit 0 or 5 for any natural numbers 'n' and 'm'.

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44. Consider the number 4^n where n is a natural number. Check whether there is any value of n which 4^n ends with the digit zero?

Watch Video Solution

45. Find the HCF and LCM of 12 and 18 by the prime factorization method.

Watch Video Solution

46. Express each of the following numbers as a product of its prime factors. (i) 140

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47. Express each of the following numbers as a product of its prime factors. (ii) 156

Watch Video Solution

48. Express each of the following numbers as a product of its prime factors. (iii) 3825

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49. Express each of the following numbers as a product of its prime factors. (iv) 5005

Watch Video Solution

50. Express each of the following numbers as a product of its prime factors. (v) 7429

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51. Find the L.C.M. and H.C.F of the following integers by the prime factorization method. (i) 12, 15 and 21

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52. Find the L.C.M. and H.C.F of the following integers by the prime factorization method. (ii) 17, 23 and 29

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53. Find the L.C.M. and H.C.F of the following integers by the prime factorization method. (iii) 8,9 and 25

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54. Find the L.C.M. and H.C.F of the following integers by the prime factorization method. (iv) 72 and 108

Watch Video Solution

55. Find the L.C.M. and H.C.F of the following integers by the prime factorization method. (v) 306 and 657

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56. Check whether 6^n can end with the digit '0' for any natural numbers n.

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57. Explain why $7 \times 11 \times 13 + 13$ and $7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 + 5$ are composite nubmers.

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58. How will you show that $(17 \times 11 \times 2) + (17 \times 11 \times 5)$ is a composite numbers ? Explain.

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59. What is the last digit of 6^{100} ?

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60. Write the following terminating decimals in the form of $p/q, q \neq 0$ and p, q are co-primes (i) 15.265

What can you conclude about the denominators through this process ?

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61. Write the following terminating decimals in the form of $\frac{p}{q}, q \neq 0$ and p,q are co primes

0.1255

Write the denominators in $2^n 5^m$ form

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62. Write the following terminating decimals in the form of $\frac{p}{q}, \neq 0$ and p,q are co primes

0.4

Write the denominators in $2^n 5^m$ form

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63. Write the following terminating decimals in the form of $\frac{p}{q}, \neq 0$ and p,q are co primes

23.34

Write the denominators in $2^n 5^m$ form

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64. Write the following terminating decimals in the form of $p/q, q \neq 0$ and p, q are co-primes (v) 1215.8

What can you conclude about the denominators through this process ?

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65. Write the following rational numbers in the form of $p/q,$ where q is of the form $2^n 5^m$ where n, m are non-negative integers and then write the numbers in their decimal form. (i) $\frac{3}{4}$

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66. Write the denominator of the following rational numbers in 2^n5^m form where n and m are non-negative integers and then write them in their decimal form: $\frac{7}{25}$

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67. Write the denominator of the following rational numbers in 2^n5^m form where n and m are non-negative integers and then write them in their decimal form: $\frac{51}{64}$

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68. Write the denominator of the following rational numbers in 2^n5^m form where n and m are non-negative integers and then write them in their decimal form: $\frac{14}{25}$

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69. Write the denominator of the following rational numbers in $2^n 5^m$ form where n and m are non-negative integers and then write them in their decimal form: $\frac{80}{100}$

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70. Write the folllowing rational numbers as decimal form and find out the block of repeating digits in the quotient. (i) $\frac{1}{3}$

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71. Write the folllowing rational numbers as decimal form and find out the block of repeating digits in the quotient. (ii) $\frac{2}{7}$

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72. Write the folllowing rational numbers as decimal form and find out the block of repeating digits in the quotient. (iii) $\frac{5}{11}$

Watch Video Solution

73. Write the folllowing rational numbers as decimal form and find out the block of repeating digits in the quotient. (iv) $\frac{10}{13}$

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74. Using the above theorems, without actual division, state whether decimal form of the following rational numbers are terminating or non-terminating, repeating decimals. (i) $\frac{16}{125}$

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Watch Video Solution

80. Write the decimal expansion of the following rational numbers without actual division. (iii) $\frac{7}{8}$

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81. Write the following rational numbers in their decimal form and also state which are terminating and which have non-terminating repeating decimals. (i) $\frac{3}{8}$

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82. Write the following rational numbers in their decimal form and also state which are terminating and which have non-terminating repeating decimals. (ii) $\frac{229}{400}$

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83. Write the following rational numbers in their decimal form and also state which are terminating and which are non-terminating, repeating decimal.

$4\frac{1}{5}$

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84. Write the following rational numbers in their decimal form and also state which are terminating and which have non-terminating repeating

decimals. (iv) $\frac{2}{11}$

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85. Write the following rational numbers in their decimal form and also state which are terminating and which have non-terminating repeating decimals. (v) $\frac{8}{125}$

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86. Without performing division, state whether the following rational numbers will have a terminating decimal form or a non-terminating, repeating decimal form. (i) $\frac{13}{3125}$

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87. Without performing division, state whether the following rational numbers will have a terminating decimal form or a non-terminating,

repeating decimal form. (ii) $\frac{11}{12}$

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88. Without performing division, state whether the following rational numbers will have a terminating decimal form or a non-terminating, repeating decimal form. (iii) $\frac{64}{455}$

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89. Without performing division, state whether the following rational numbers will have a terminating decimal form or a non-terminating, repeating decimal form. (iv) $\frac{15}{1600}$

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90. Without performing division, state whether the following rational numbers will have a terminating decimal form or a non-terminating,

repeating decimal form. (v) $\frac{29}{343}$

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91. Without performing division, state whether the following rational numbers will have a terminating decimal form or a non-terminating, repeating decimal form. (vi) $\frac{23}{2^3 \times 5^2}$

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92. Without performing division, state whether the following rational numbers will have a terminating decimal form or a non-terminating, repeating decimal form. (vii) $\frac{129}{2^2 . 5^7 . 7^5}$

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93. Without performing division, state whether the following rational numbers will have a terminating decimal form or a non-terminating,

repeating decimal form. (viii) $\frac{9}{15}$

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94. Without performing division, state whether the following rational numbers will have a terminating decimal form or a non-terminating, repeating decimal form. (ix) $\frac{36}{100}$

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95. Without performing division, state whether the following rational numbers will have a terminating decimal form or a non-terminating, repeating decimal form. (x) $\frac{77}{210}$

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96. Write the following rationals in decimal form using

$\frac{13}{25}$

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97. Write the following rationals in decimal form using Theorem 1.4 (ii) $\frac{15}{16}$

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98. Write the following rationals in decimal form using Theorem 1.4 (iii) $\frac{23}{2^3 . 5^2}$

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99. Write the following rationals in decimal form using Theorem 1.4 (iv) $\frac{7218}{3^2 . 5^2}$

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100. Write the following rationals in decimal form using Theorem 1.4 (v) $\frac{143}{110}$

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101. Express the following decimals in the form of $\frac{p}{q}$, and write the prime factors of q. What do you observe? 43.123

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102. Express the following decimals in the form of $\frac{p}{q}$, and write the prime factors of q. What do you observe? 0.120112001120001 ....

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103. Express the following decimals in the form of $\frac{p}{q}$, and write the prime factors of q. What do you observe? 43.123

Watch Video Solution

104. Express the following decimals in the form of $\frac{p}{q}$, and write the prime factors of q. What do you observe?

$0.\overline{63}$

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105. Verify the theorem proved above for p= 2, p = 5 and for a^2 = 1, 4, 9, 25, 36, 49, 64 and 81.

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EXERCISE 1.1

1. Use Euclid's division algorithm to find the HCF of (i) 900 and 270

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2. Use Euclid's division algorithm to find the HCF of (ii) 196 and 38220

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3. Use Euclid's division algorithm to find the HCF of (iii) 1651 and 2032

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4. Use Euclid division lemma to show that any positive odd integer is of the form $6q + 1 \text{ or } 6q + 5$, where q is some integers.

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5. Use Euclid's division lemma to show that the square of any positive integer is of the form $3p, 3p + 1$.

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6. Use Euclids division lemma to show that the cube of positive integer is of the form $9m, 9m+1 \text{ or } 9m+8.$

(OR)

Show that the cube of any positive integer is of form $9m \text{ or } 9m+1 \text{ or } 9m+8$, where m is an integer.

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7. Show that one and only one out of $n, n+2 \text{ or } n+4$ is diviseble by 3, where n is any positive integer.

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EXERCISE 1.1(DO THIS)

1. Find q and r for the following pairs of positive integers a and b, satisfying $a = bq + r$. (i) $a = 13, b = 3$

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2. Find q and r for the following pairs of positive integers a and b, satisfying $a = bq + r$. (ii) $a = 80, b = 8$

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3. Find q and r for the following pairs of positive integers a and b, satisfying $a = bq + r$. (iii) $a = 125, b = 5$

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4. Find q and r for the following pairs of positive integers a and b, satisfying $a = bq + r$. (iv) $a = 132, b = 11$

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5. Find the HCF of the following by using Euclid division lemma. (i) 50 and 70

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6. Find the HCF of the following by using Euclid division lemma. (ii) 96 and 72

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7. Find the HCF of the following by using Euclid division lemma. (iii) 300 and 550

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8. Find the HCF of the following by using Euclid division lemma. (iv) 1860 and 2015

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EXERCISE 1.1(THINK & DISCUSS)

1. Can you find the HCF of 1.2 and 0.12? Justify your answer.

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EXERCISE 1.2

1. Express each of the following numbers as a product of its prime factors. (i) 140

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2. Express each of the following numbers as a product of its prime factors. (ii) 156

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3. Express each of the following numbers as a product of its prime factors. (iii) 3825

Watch Video Solution

4. Express each of the following numbers as a product of its prime factors. (iv) 5005

Watch Video Solution

5. Express each of the following numbers as a product of its prime factors. (v) 7429

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6. Find the L.C.M. and H.C.F of the following integers by the prime factorization method. (i) 12, 15 and 21

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7. Find the L.C.M. and H.C.F of the following integers by the prime factorization method. (ii) 17, 23 and 29

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8. Find the L.C.M. and H.C.F of the following integers by the prime factorization method. (iii) 8,9 and 25

Watch Video Solution

9. Find the L.C.M. and H.C.F of the following integers by the prime factorization method. (iv) 72 and 108

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10. Find the L.C.M. and H.C.F of the following integers by the prime factorization method. (v) 306 and 657

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11. Check whether 6^n can end with the digit '0' for any natural numbers n.

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12. Explain why $7 \times 11 \times 13 + 13$ and $7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 + 5$ are composite nubmers.

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13. How will you show that $(17 \times 11 \times 2) + (17 \times 11 \times 5)$ is a composite numbers ? Explain.

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14. What is the last digit of 6^{100} ?

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EXERCISE 1.2(THINK & DISCUSS)

1. If $r = 0$, then what is the relationship between a,b and q in $a = bq + r$ of Euclid division lemma?

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EXERCISE 1.2(DO THIS)

1. Express 2310 as a product of prime factors. Also see how your friends have factorized the number. Have they done it as you ? Verify your final product with your friend's result. Try this for 3 or 4 more numbers. What do you conclude?

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2. Find the HCF and LCM of the following given pairs of numbers by prime facrtorization. (i) 120,90

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3. Find the HCF and LCM of the following given pairs of numbers by prime facrtorization. (ii) 50,60

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4. Find the HCF and LCM of the following given pairs of numbers by prime facrtorization. (iii) 37,49

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EXERCISE 1.2(TRY THIS)

1. Show that $3^n \times 4^m$ cannot end with the digit 0 or 5 for any natural numbers 'n' and 'm'.

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EXERCISE 1.3

1. Write the following rational numbers in their decimal form and also state which are terminating and which have non-terminating repeating decimals. (i) $\frac{3}{8}$

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2. Write the following rational numbers in their decimal form and also state which are terminating and which have non-terminating repeating decimals. (ii) $\frac{229}{400}$

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3. Write the following rational numbers in their decimal form and also state which are terminating and which have non-terminating repeating decimals. (iii) $\frac{1}{5}$

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4. Write the following rational numbers in their decimal form and also state which are terminating and which have non-terminating repeating decimals. (iv) $\frac{2}{11}$

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5. Write the following rational numbers in their decimal form and also state which are terminating and which have non-terminating repeating decimals. (v) $\frac{8}{125}$

Watch Video Solution

6. Without performing division, state whether the following rational numbers will have a terminating decimal form or a non-terminating, repeating decimal form. (i) $\frac{13}{3125}$

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7. Without performing division, state whether the following rational numbers will have a terminating decimal form or a non-terminating, repeating decimal form. (ii) $\frac{11}{12}$

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8. Without performing division, state whether the following rational numbers will have a terminating decimal form or a non-terminating, repeating decimal form. (iii) $\frac{64}{455}$

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9. Without performing division, state whether the following rational numbers will have a terminating decimal form or a non-terminating, repeating decimal form. (iv) $\frac{15}{1600}$

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10. Without performing division, state whether the following rational numbers will have a terminating decimal form or a non-terminating, repeating decimal form. (v) $\frac{29}{343}$

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11. Without performing division, state whether the following rational numbers will have a terminating decimal form or a non-terminating, repeating decimal form. (vi) $\frac{23}{2^3 \times 5^2}$

Watch Video Solution

12. Without performing division, state whether the following rational numbers will have a terminating decimal form or a non-terminating, repeating decimal form. (vii) $\frac{129}{2^2 . 5^7 . 7^5}$

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13. Without performing division, state whether the following rational numbers will have a terminating decimal form or a non-terminating, repeating decimal form. (viii) $\frac{9}{15}$

Watch Video Solution

14. Without performing division, state whether the following rational numbers will have a terminating decimal form or a non-terminating, repeating decimal form. (ix) $\frac{36}{100}$

Watch Video Solution

15. Without performing division, state whether the following rational numbers will have a terminating decimal form or a non-terminating, repeating decimal form. (x) $\frac{77}{210}$

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16. Write the following rationals in decimal form using Theorem 1.4 (ii) $\frac{15}{16}$

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17. Write the following rationals in decimal form using Theorem 1.4 (ii) $\frac{15}{16}$

Watch Video Solution

18. Write the following rationals in decimal form using Theorem 1.4 (iii) $\frac{23}{2^3 . 5^2}$

Watch Video Solution

19. Write the following rationals in decimal form using Theorem 1.4 (iv) $\frac{7218}{3^2 . 5^2}$

Watch Video Solution

20. Write the following rationals in decimal form using Theorem 1.4 (v) $\frac{143}{110}$

Watch Video Solution

21. The decimal form of some real numbers are given below. In each case, decide whether the number is rational or not. If it is rational, and expressed in form p/q, what can you say about the prime factors of q?

(iii) 43.123456789

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22. The decimal form of some real numbers are given below. In each case, decide whether the number is rational or not. If it is rational, and expressed in form p/q, what can you say about the prime factors of q? (ii) $0.120120012000120000.............$

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23. The decimal form of some real numbers are given below. In each case, decide whether the number is rational or not. If it is rational, and expressed in form p/q, what can you say about the prime factors of q?

(iii) 43.123456789

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EXERCISE 1.3(DO THIS)

1. Write the following terminating decimals in the form of $p/q, q \neq 0$ and p, q are co-primes (i) 15.265

What can you conclude about the denominators through this process ?

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2. Write the following terminating decimals in the form of $p/q, q \neq 0$ and p, q are co-primes (ii) 0.1255

What can you conclude about the denominators through this process ?

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3. Write the following terminating decimals in the form of $p/q, q \neq 0$ and p, q are co-primes (iii) 0.4

What can you conclude about the denominators through this process ?

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4. Write the following terminating decimals in the form of $p/q, q \neq 0$ and p, q are co-primes (iv) 23.34

What can you conclude about the denominators through this process ?

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5. Write the following terminating decimals in the form of $p/q, q \neq 0$ and p, q are co-primes (v) 1215.8

What can you conclude about the denominators through this process ?

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6. Write the following rational numbers in the form of p/q, where q is of the form 2^n5^m where n, m are non-negative integers and then write the numbers in their decimal form. (i) $\frac{3}{4}$

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7. Write the following rational numbers in the form of p/q, where q is of the form 2^n5^m where n, m are non-negative integers and then write the numbers in their decimal form. (ii) $\frac{7}{25}$

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8. Write the following rational numbers in the form of p/q, where q is of the form 2^n5^m where n, m are non-negative integers and then write the numbers in their decimal form. (iii) $\frac{51}{64}$

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9. Write the following rational numbers in the form of p/q, where q is of the form $2^n 5^m$ where n, m are non-negative integers and then write the numbers in their decimal form. (iv) $\frac{14}{25}$

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10. Write the following rational numbers in the form of p/q, where q is of the form $2^n 5^m$ where n, m are non-negative integers and then write the numbers in their decimal form. (v) $\frac{80}{100}$

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11. Write the folllowing rational numbers as decimal form and find out the block of repeating digits in the quotient. (i) $\frac{1}{3}$

Watch Video Solution

12. Write the folllowing rational numbers as decimal form and find out the block of repeating digits in the quotient. (ii) $\frac{2}{7}$

Watch Video Solution

13. Write the folllowing rational numbers as decimal form and find out the block of repeating digits in the quotient. (iii) $\frac{5}{11}$

Watch Video Solution

14. Write the folllowing rational numbers as decimal form and find out the block of repeating digits in the quotient. (iv) $\frac{10}{13}$

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EXERCISE 1.4

1. Prove that the following are irrational. (i) $\frac{1}{\sqrt{2}}$

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2. Prove that the following are irrational. (ii) $\sqrt{3}+\sqrt{5}$

Watch Video Solution

3. Prove that the following are irrational. (iii) $6+\sqrt{2}$

Watch Video Solution

4. Prove that the following are irrational. (iv) $\sqrt{5}$

Watch Video Solution

5. Prove that the following are irrational. (v) $3+2\sqrt{5}$

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6. Prove that $\sqrt{p}+\sqrt{q}$ is an irrational, where p,q are primes.

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EXERCISE 1.4(DO THIS)

1. Verify the statement proved above for $p=2, p=5$ and for $a^2=1, 4, 9, 25, 36, 49, 64 \text{ and } 81.$

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EXERCISE 1.5

1. Determine the values of the following. (i) $\log_{25} 5$

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2. Determine the values of the following. (ii) $\log_{81} 3$

Watch Video Solution

3. Determine the values of the following. (iii) $\log_2\left(\frac{1}{16}\right)$

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4. Determine the values of the following. (iv) $\log_7 1$

Watch Video Solution

5. Determine the values of the following. (v) $\log_x \sqrt{x}$

Watch Video Solution

6. Determine the values of the following. (vi) $\log_2 512$

Watch Video Solution

7. Determine the values of the following. (vii) $\log_{10} 0.01$

Watch Video Solution

8. Determine the values of the following. (viii) $\log_{\frac{2}{3}}\left(\frac{8}{27}\right)$

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9. Determine the values of the following. (ix) $2^{2+\log_2 3}$

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10. Write the following expression as log N and find their values. (i) $\log 2 + \log 5$

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11. Write the following expression as log N and find their values. (ii) $\log_2 16 - \log_2 2$

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12. Write the following expression as log N and find their values. (iii) $3 \log_{64} 4$

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13. Write the following expression as log N and find their values. (iv) $2 \log 3 - 3 \log 2$

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14. Write the following expression as log N and find their values. (v) $\log 10 + 2\log 3 - \log 2$

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15. Evaluate each of the following in terms of x and y, if it is given $x = \log_2 3$ and $y = \log_2 5$. (i) $\log_2 15$

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16. Evaluate each of the following in terms of x and y, if it is given $x = \log_2 3$ and $y = \log_2 5$. (ii) $\log_2 7.5$

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17. Evaluate each of the following in terms of x and y, if it is given $x = \log_2 3$ and $y = \log_2 5$. (iii) $\log_2 60$

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18. Evaluate each of the following in terms of x and y, if it is given $x = \log_2 3$ and $y = \log_2 5$. (iv) $\log_2 6750$

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19. Expand the following. (i) $\log 1000$

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20. Expand the following. (ii) $\log\left[\frac{128}{625}\right]$

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21. Expand the following. (iii) $\log x^2 y^3 z^4$

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22. Expand the following. (iv) $\log \frac{p^2 q^3}{r}$

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23. Expand the following. (v) $\log \sqrt{\frac{x^3}{y^2}}$

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24. If $x^2 + y^2 = 25xy$. then prove that $2\log(x + y) = 3\log 3 + \log x + \log y$.

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25. If $\log\left(\frac{x+y}{3}\right)=\frac{1}{2}(\log x+\log y)$, then find the values of $\frac{x}{y}+\frac{y}{x}$.

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26. If $(2.3)^x=(0.23)^y=1000$ then find the value of $\frac{1}{x}-\frac{1}{y}$.

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27. If $2^{x+1}=3^{1-x}$ then find the value of x.

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28. Is (i) log 2 is rational or irrational ? Justify your answer.

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29. Is (ii) log 100 is rational or irrational ? Justify your answer.

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EXERCISE 1.5(THINK & DISCUSS)

1. Write the nature of y.a and x in $y = a^x$. Can you determine the value of x for a given y ? Justify your answer.

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2. You know that $2^1 = 2, 4^1 = 4, 8^1 = 8$ and $10^1 = 10$. What do you notice about the values of $\log_2 2, \log_4 4, \log_8 8$ and $\log_{10} 10$? What can you generalise from this?

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3. Does $\log_{10} 0$ exist?

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4. We know that, If $7 = 2^x$ then $x = \log_2 7$. Then what is the value of $2^{\log_2 7}$? Justify your answer. Generalise the above by taking some more examples for $a^{\log_a N}$.

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EXERCISE 1.5(DO THIS)

1. Write the powers to which the bases to be raised in the following. (i) $64 = 2^x$

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2. Write the powers to which the bases to be raised in the following. (ii) $100 = 5^b$

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3. Write the powers to which the bases to be raised in the following. (iii)

$$\frac{1}{81} = 3^c$$

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4. Write the powers to which the bases to be raised in the following. (iv)

$$100 = 10$$

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5. Write the powers to which the bases to be raised in the following. (v)

$$\frac{1}{256} = 4^a$$

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6. Express the logarithms of the following into sum of the logarithms. (i)

$$35 \times 46$$

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7. Express the logarithms of the following into sum of the logarithms. (ii) 235×437

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8. Express the logarithms of the following into sum of the logarithms. (iii) 2437×3568

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9. Express the logarithms of the following into difference of the logarithms. (i) $\frac{23}{34}$

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10. Express the logarithms of the following into difference of the logarithms. (ii) $\frac{373}{275}$

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11. Express the logarithms of the following into difference of the logarithms. (iii) $\frac{4525}{3734}$

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12. Express the logarithms of the following into difference of the logarithms. (iv) $\frac{5055}{3303}$

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13. By using the formula $\log_a x^n = n \log_a x$, convert the following. (i) $\log_2 7^{25}$

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14. By using the formula $\log_a x^n = n \log_a x$, convert the following. (ii) $\log_5 8^{50}$

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15. By using the formula $\log_a x^n = n \log_a x$, convert the following. (iii) $\log 5^{23}$

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EXERCISE 1.5(TRY THIS)

1. By using the formula $\log_a x^n = n \log_a x$, convert the following. (iv) $\log 1024$

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2. Write the following relation in expontial form and find the values of respective variables. (i) $\log_2 32 = x$

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3. Write the following relation in expontial form and find the values of respective variables. (iI) $\log_5 625 = y$

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4. Write the following relation in expontial form and find the values of respective variables. (iii) $\log_{10} 10000 = z$

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5. Write the following relation in expontial form and find the values of respective variables. (iv) $\log_7 \frac{1}{343} = -a$

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6. The value of $\log_2 32 = \ldots\ldots\ldots\ldots$

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7. (ii) Find the values of $\log_c \sqrt{c}$.

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8. $\log_{10} 0.001 = \ldots\ldots\ldots\ldots$

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9. (iv) Find the value of $\log_{\frac{2}{3}} \frac{8}{27}$.

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OPTIONAL EXERCISE

1. Can the number 6^n, n being a natural number, end with the digit 5 ? Give reason.

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2. Is $7 \times 5 \times 3 \times 2 + 3$ a composite number ? Justify your answer.

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3. Prove that $\left(2\sqrt{3} + \sqrt{5}\right)$ is an irrational number. Also check whether $\left(2\sqrt{3} + \sqrt{5}\right)\left(2\sqrt{3} - \sqrt{5}\right)$ is rational or irrational.

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4. If $x^2 + y^2 = 6xy$, prove that $2\log(x + y) = \log x + \log y + 3\log 2$

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5. Find the number of digit in 4^{2013}, if $\log_{10} 2 = 0.3010$.

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OBSERVATION MATERIAL TO SOLVE VARIOUS QUESTIONS GIVEN IN THE PUBLIC EXAMINATION (1 MARKS QUESTIONS)

1. Find the HCF of 60 and 100 by using Euclids division lemma.

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2. Insert 4 rational numbers between $\frac{3}{4}$ and 1 without using $\frac{a+b}{2}$ formula.

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3. If the prime factorization of a natural number (n) is $2^2 \times 3^2 \times 5^2 \times 7$. How many consecutive zeroes will it have at the end of it? Justify your answer.

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4. Find the value of $\log_5 125$.

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5. Write any two irrational numbers lying between 3 and 4.

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6. Find the value of $\log_{\sqrt{2}} 256$.

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7. Find the HCF and LCM of 90, 144 by prime factorisation method.

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8. Is $\log_3 81$ rational or irrational ? Justify your answer.

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9. Expand $\log_{10} 385$.

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10. Find the value of $\log_5 \sqrt{625}$.

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OBSERVATION MATERIAL TO SOLVE VARIOUS QUESTIONS GIVEN IN THE PUBLIC EXAMINATION (2 MARKS QUESTIONS)

1. If $x^2 + y^2 = 7xy,$ then prove that $\log\left(\frac{x+y}{3}\right) = \frac{1}{2}(\log x + \log y).$

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2. Write any three numbers of two digit its. Find the LCM and HCF for the above numbers by the Prime Factorization method.

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3. Give an example for each of the following:

(i) The product of two irrational numbers is a rational number.

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4. Give an example for each of the following:

(ii) The product of two irrational numbers is an irrational number.

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5. State with reasons which of the following are rational numbers and which are irrantional numbers. (i) $\sqrt{225} \times \sqrt{4}$

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6. State with reasons which of the following are rational numbers and which are irrantional numbers. (ii) $6\sqrt{50} + 8\sqrt{125}$

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7. Expand $\log\left(\frac{1125}{32}\right)$.

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8. (i) Express the numbers 6825 and 3825 as a product of its prime factors.

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9. (i) express the number 6825 and 3825 is a product of its prime factors (ii) Find the H. C. F and L. C. m of the above numbers (iii) Justify your answer.

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10. (i) express the number 6825 and 3825 is a product of its prime factors (ii) Find the H. C. F and L. C. m of the above numbers (iii) Justify your answer.

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11. If $x^2 + y^2 = 7xy$ then show that $2\log(x+y) = \log x + \log y + 2\log 3.$

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12. Express 2016 and as product of prime factors.

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13. Write any two digit numbers. Find their L.C.M. and G.C.D. by prime factorization method.

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14. Prove that $2+\sqrt{3}$ is irrational.

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15. Show that $\log\frac{162}{343}+2\log\frac{7}{9}-\log\frac{1}{7}=\log 2$

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16. Find the HCF of 1260 and 1440 by using Euclid's division lemma.

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OBSERVATION MATERIAL TO SOLVE VARIOUS QUESTIONS GIVEN IN THE PUBLIC EXAMINATION (4 MARKS QUESTIONS)

1. Prove that $\sqrt{5}+\sqrt{7}$ is irrational.

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2. Show that $\sqrt{3}$ is irrational.

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3. Use Euclid's division lemma to show that the cube of any positive integer is of the form 7m or $7m+1 \text{ or } 7m+6.$

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4. Prove that $\sqrt{2} - 3\sqrt{5}$ is a irrational number.

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5. Use Euclid's division lemma, to show that the cube of any positive integer is of the form $3p \text{ or } 3p + 1 \text{ or } 3p + 2$ for any integer 'p'.

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6. Prove that $\sqrt{3} - \sqrt{5}$ is an irrational number.

Watch Video Solution

7. Use Euclid's division lemma to show that the square of any positive integer is of the form $5n \text{ or } 5n + 1 \text{ or } 5n + 4,$ where n is a whole number.

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8. If $x^2 + y^2 = 27xy$, then show that $\log\left(\frac{x-y}{5}\right) = \frac{1}{2}[\log x + \log y]$.

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9. Find the HCF of the 36 and 64

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10. Show that $2 + 5\sqrt{3}$ is irrational.

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CREATIVE QUESTIONS FOR CCE MODEL EXAMINATION(Fundamental Theorem of Arithmetic:)

1. Support the Fundamental theorem of Arithmetic by considering some examples.

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2. Write 210 as product of prime factors.

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3. Is the units digit in the value of 6^n where 'n' is a natural number is zero? Justify your answer.

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4. If the HCF of 306 and 657 is 9 then find their LCM.

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5. Find the HCF of 45,75 from Euclid's division lemma.

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6. How do you say $7 \times 11 \times 13 + 13$ and $7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 + 5$ are composite numbers? Explain it.

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CREATIVE QUESTIONS FOR CCE MODEL EXAMINATION(Logarithms :)

1. Express the following in log forms. (i) $2^5 = 32$

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2. Express the following in log forms. (ii) $3^3 = 27$

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3. Express the following in log forms. (iii) $5^3 = 125$

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4. Calculate the value of $\log_2 512$.

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5. Calculate the value of $\log_{10} 0.01$.

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6. Express $\log_5 125 = 3$ in its exponential form.

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7. Prove that $\log_a xy = \log_a x + \log_a y$.

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8. $[H^+]$ ion concentration in a soap used by Sankar is 9.2×10^{-22}. Then find its pH using logarithm.

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CREATIVE QUESTIONS FOR CCE MODEL EXAMINATION(Irrational Numbers :)

1. Choose the irrational numbers from the following given $\sqrt{2}, \sqrt{3}, \sqrt{8}, \sqrt{4}, \sqrt{16}$

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2. Define the irrational numbers. Give examples.

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3. Write the differences between rational and irrational numbers.

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4. Plot $\sqrt{2}, \sqrt{3}, \sqrt{5}$ on number line.

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5. Find the value of $\sqrt{2}$ upto 4 decimals.

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6. Where do we use irrational numbers in our day to day life?

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7. Establish the relation between diagonal and side of a square.

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8. Is π a rational or irrational ? Give reasons.

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OBSERVATION BITS TO SOLVE VARIOUS BITS GIVEN IN THE PUBLIC EXAMINATION(MCQs)

1. The rational number in between $\frac{1}{2}$ and $\sqrt{1}$ is.........

A. $\frac{9}{4}$

B. $\frac{3}{4}$

C. $\frac{5}{4}$

D. $\frac{7}{4}$

Answer: B

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2. Set of Rational and irrational numbers are called.......

A. Real numbers

B. Natural numbers

C. Whole numbers

D. Integers

Answer: A

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3. log form of $3^5 = 243$ is...........

A. $\log_3 243 = 5$

B. $\log_5 243 = 3$

C. $\log_{243} 3 = 5$

D. $\log_{243} 5 = 5$

Answer: A

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4. The symbol of "implies" is.......

A. $\Leftrightarrow$

B. $\Rightarrow$

C. $\forall$

D. $\exists$

Answer: B

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5. The prime factorisation of 729 is..........

A. 3^6

B. 3^5

C. 3^4

D. 3^8

Answer: A

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6. If 'x' and 'y' are two prime numbers then their HCF is.............

A. 0

B. 1

C. xy

D. $x+y$

Answer: B

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7. Calculate the value of $\log_{10} 0.01$.

A. -1

B. 1

C. -2

D. 2

Answer: C

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8. The number of odd numbers in between '0' and 100 is.................

A. 100

B. 51

C. 49

D. 50

Answer: D

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9. The exponential form of $\log_4 8 = x$ is

A. $x^2 = 8$

B. $x^4 = 8$

C. $4^x = 8$

D. $8^x = 4$

Answer: C

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10. The valiue of $\frac{36}{2^3 \times 5^3}$ in decimal form is.........

A. 0.036

B. 0.36

C. 0.0036

D. 3.6

Answer: A

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11. LCM of two numbers is 108 and their HCF is 9 and one of them is 54, So the second one is.........

A. 9

B. 18

C. 6

D. 12

Answer: B

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12. $\frac{3}{8}$ is...............

A. non-terminating decimal

B. terminating decimal

C. non-terminating, repeating decimal

D. none

Answer: B

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13. If $a\sqrt{c} = \sqrt{ac}$, then............(a,c are positive integers)

A. $a = 1$

B. $a = c$

C. $c = 1$

D. $a = -1$

Answer: A

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14. $9 - 0.\bar{9} = \ldots\ldots\ldots\ldots$

A. $8.\bar{1}$

B. 8.1

C. 8

D. $0.\bar{1}$

Answer: C

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15. A rational number that equals to $2.\bar{6}$ is..........

A. $\frac{7}{3}$

B. $\frac{8}{3}$

C. $\frac{16}{7}$

D. $\frac{17}{7}$

Answer: B

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16. The value of $\log_{25} 5 = \ldots\ldots\ldots.$

A. $\frac{1}{2}$

B. 2

C. 5

D. 25

Answer: A

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17. The fundamental theorem of arithmetic is applicable to..........

A. 4

B. 3

C. 2

D. 1

Answer: A::B::C

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18. The last digit of 6^{50} is.............

A. 1

B. 6

C. 2

D. 3

Answer: B

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19. Which of the following is terminaling decimal?

A. $\frac{10}{81}$

B. $\frac{41}{75}$

C. $\frac{8}{125}$

D. $\frac{3}{14}$

Answer: C

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20. The value of $\log_2 32 = \ldots\ldots\ldots\ldots$

A. 2

B. 32

C. $\frac{1}{5}$

D. 5

Answer: D

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21. Which of the following is not irrational?

A. $\sqrt{2}$

B. $\sqrt{3}$

C. $\sqrt{4}$

D. $\sqrt{5}$

Answer: C

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22. $\log_{10} 0.001 = \ldots\ldots\ldots\ldots$

A. 2

B. 3

C. -2

D. -3

Answer: D

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23. The number of prime factors of 36 is

A. 4

B. 3

C. 2

D. 1

Answer: C

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24. The exponential form of $\log_{10} 0.001 = -3$ is.............

A. $(0.001)^{10} = -3$

B. $(-3)^{10} = 0.001$

C. $10^3 = -0.001$

D. $10^{-3} = 0.001$

Answer: D

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25. Which of the following is true for an irrational number?

(i) Which can be written in the form of $\frac{p}{q}$, where $p, q \in Z, q \neq 0.$

(ii) Which cannot be written in the form of $\frac{p}{q}$, where $p, q \in Z, q \neq 0.$

(iii) Non-terminating repeating decimals.

(iv) Non-terminating, non repeating decimals.

A. $(i), (iii)$

B. $(ii), (iv)$

C. (i) only

D. (iii) only

Answer: B

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26. Which of the following is not a rational number?

A. $\log_{10} 3$

B. $5.\overline{23}$

C. 123.123

D. $\frac{10}{19}$

Answer: A

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27. LCM of 24 and 36 is..........

A. 24

B. 36

C. 72

D. 864

Answer: C

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28. The logarithmic form of $a^b = c$ is..........

A. $\log_a c = b$

B. $\log_b c = a$

C. $\log_a b = c$

D. $\log_b a = c$

Answer: A

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29. If $3\log(x+3) = \log 27,$ then the value of x is.................

A. 0

B. 1

C. 6

D. 24

Answer: A

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30. Which one of the following rational numbers has terminating decimal expression?

A. $\frac{11}{7000}$

B. $\frac{91}{21000}$

C. $\frac{343}{2^3 \times 5^3 \times 7^3}$

D. $\frac{21}{9000}$

Answer: C

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31. If P_1 and P_2 are two odd prime numbers, such that $P_1 > P_2$, then $P_1^2 - P_2^2$ is............

A. an even number

B. an odd number

C. a prime number

D. an odd prime number

Answer: A

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32. In the rational form of a terminating decimal number prime factor of the denominator is..................

A. only 2

B. only 5

C. 2 or 5 only

D. Any prime

Answer: C

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33. $\log_{10} 2 + \log_{10} 5$ value $= \ldots\ldots\ldots\ldots\ldots$

A. 1

B. 2

C. 5

D. 10

Answer: A

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34. If $\log_3 729 = x$ then the value of x is

A. 9

B. 243

C. 81

D. 6

Answer: D

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35. The number of digit in the fractional part of the decimal form of $\frac{7}{40}$ is

A. 1

B. 2

C. 3

D. 4

Answer: C

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CREATIVE BITS FOR CCE MODEL EXAMINATION(MCQs)

1. If $\log 2 = 0.30103$, then $\log 32 = \ldots.$

A. 4.81648

B. 1.50515

C. 9.63296

D. 9.0309

Answer: B

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2. If $\log_{10} 0.00001 - x$, then $x = \ldots\ldots$

A. 4

B. -4

C. 5

D. -5

Answer: D

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3. If $\log_a a^{x^2+5x+8} = 2$, then $x = \ldots\ldots\ldots$

A. 2 or 3

B. 5 or 7

C. $-2 \text{ or } -3$

D. $8 \text{ or } -2$

Answer: A

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4. $\log_3 x^2 = 2$ then $x = \ldots\ldots$

A. 2

B. -2

C. 3

D. -3

Answer: C

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5. $\log_9 \sqrt{3\sqrt{3\sqrt{3}}} =$

A. $\frac{7}{8}$

B. $\frac{7}{16}$

C. $\frac{1}{16}$

D. $\frac{1}{8}$

Answer: B

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6. $\log_8 128 =$

A. $7/3$

B. 16

C. 2048

D. 136

Answer: A

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7. Which of the following is an irrational number?

A. $\sqrt{12 \times 3}$

B. $\sqrt{32 \times 2}$

C. $\sqrt{35 + 14}$

D. $\sqrt{25 + 16}$

Answer: D

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8. The prime facrorization of 144 is

A. $4^2 \times 3^2$

B. 16×9

C. 12×12

D. $2^4 \times 3^2$

Answer: D

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9. L.C.M of the numbers $2^7 \times 3^4 \times 7 \text{ and } 2^3 \times 3^4 \times 11$ is

A. $2^3 \times 3^4$

B. $2^7 \times 3^4$

C. $2^7 \times 3^4 \times 7 \times 11$

D. $2^3 \times 3^4 \times 7 \times 11$

Answer: C

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10. The H.C.F of the number $3^7 \times 5^3 \times 2^4$ and $3^2 \times 7^4 \times 2^8$ is

A. $2^4 \times 3^2$

B. $2^8 \times 3^7 \times 5^3 \times 7^4$

C. $2^8 \times 3^7$

D. $2 \times 3 \times 5 \times 7$

Answer: A

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11. The decimal expansion of 0.225 in its rational form is

A. 225

B. $\dfrac{225}{10^4}$

C. $\dfrac{225}{10^4}$

D. $\dfrac{9}{40}$

Answer: D

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12. Which of the following is a rational number?

A. $\sqrt{3}$

B. $\sqrt{5}$

C. $\sqrt{7}$

D. $\sqrt{9}$

Answer: D

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13. What is the L.C.M of greatest 2 digit number and the greatest 3 digit number?

A. 99×999

B. 999

C. $99 \times 9 \times 111$

D. $9 \times 11 \times 111$

Answer: D

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14. What is the H.C.F of n and $n+1$ where n is a natural number?

A. n

B. $n+1$

C. $n/2$

D. 1

Answer: D

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15. What is the L.C.M of least prime and the least composite number?

A. least prime $\times$ least composite

B. 2

C. least composite

D. 6

Answer: C

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16. The product of L.C.M and H.C.F of the least prime and least composite number is

A. 4

B. 6

C. 8

D. 16

Answer: C

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17. $n^2 - 1$ is divisible by 8, if n is

A. an odd number

B. an even number

C. prime number

D. integer

Answer: A

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18. If x and y are any two co-prime, then their L.C.M. is

A. $x + y$

B. $x \,.\, y$

C. x / y

D. $x - y$

Answer: B

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19. If x and y are any two relative prime numbers, then their H.C.f is

A. $x \cdot y$

B. x

C. y

D. 1

Answer: D

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20. If m and n are co-primes, then H.C.F of m^2 and n^2 is

A. m

B. n^2

C. m^2

D. 1

Answer: D

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21. If n is a natural number, then which of the following expression ends in zero?

A. $(3 \times 2)^n$

B. $(5 \times 7)^n$

C. $(9 \times 3)^n$

D. $(2 \times 5)^n$

Answer: D

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22. The number of prime factors of 72 is

A. 12

B. 2

C. 3

D. 5

Answer: D

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23. How many prime factors are there in the prime factorization of 240?

A. 20

B. 5

C. 3

D. 6

Answer: D

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24. After how many places the decimal expansion of $23/125$ terminates?

A. 125

B. 4

C. 8

D. 3

Answer: D

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25. After how many digits will the decimal expansion of $11/32$ terminates?

A. 5

B. 4

C. 3

D. Never

Answer: A

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26. Find the HCF 48 and 56

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27. The decimal expansion of $\frac{9}{17}$ is

A. terminating

B. non-terminating & non-repeating

C. non-terminating & repeating

D. none

Answer: B

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28. The decimal expansion of $\frac{27}{14}$ is

A. $1.\overline{9285714}$

B. $1.9\overline{285714}$

C. 1.9285714

D. $0.19\overline{285714}$

Answer: B

Watch Video Solution

29. $5.6789\overline{1}$ is a...... number.

A. prime

B. composite

C. irrational

D. rational

Answer: D

Watch Video Solution

30. $0.12 \quad 112 \quad 1112 \quad 11112.\ldots\ldots$ is .... Number

A. prime

B. composite

C. irrational

D. Rational

Answer: C

Watch Video Solution

31. $\sqrt{2}-2$ is .... Number.

A. Natural

B. rational

C. whole

D. an irrational

Answer: D

Watch Video Solution

32. $3 \times 5 \times 7 \times 11 + 35$ is .... Number.

A. composite

B. natural

C. negative

D. none

Answer: A

Watch Video Solution

33. The decimal expansion of $\frac{209}{80}$ terminates after...... places.

A. 5

B. 6

C. 4

D. 9

Answer: C

Watch Video Solution

34. $7 \times 11 \times 17 + 34$ is divisible by.........

A. $7 \text{ or } 10$

B. $7 \text{ or } 19$

C. $17 \text{ or } 79$

D. $8 \text{ or } 231$

Answer: C

Watch Video Solution

35. $\frac{73}{625}$ has......... decimal expansion.

A. non-terminating

B. Terminating

C. Non-terminating, repeating

D. none

Answer: B

Watch Video Solution

36. The number of prime factors of 1024 is.......

A. 12

B. 1

C. 7

D. 10

Answer: B

Watch Video Solution

37. The decimal expansion of $\frac{101}{99}$ is.......

A. $1.\overline{02}$

B. $1.\overline{07}$

C. $1.\overline{39}$

D. $4.\overline{14}$

Answer: A

Watch Video Solution

38. The period of the decimal expansion of $\frac{19}{21}$ is........

A. 917461

B. 904761

C. 940761

D. None

Answer: B

Watch Video Solution

39. If a rational number p/q has a terminating decimal, then the prime factorisation of q is of the form..........

A. 3^m5^n

B. 3^m

C. $3^m5^n3^p$

D. 2^m5^n

Answer: D

Watch Video Solution

40. The prime factorisation of 20677 is..............

A. $13 \times 29 \times 71$

B. $23 \times 29 \times 31$

C. $19 \times 23 \times 17$

D. None

Answer: B

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41. The LCM of 208 and 209 is..........

A. 208×109

B. 19×218

C. 104×20

D. 208×209

Answer: D

Watch Video Solution

42. The HCF of 1001 and 1002 is.......

A. 1

B. 7

C. 9

D. 11

Answer: A

Watch Video Solution

43. If $P_1, P_2, P_3, \ldots\ldots, P_n$ are co-primes then their LCM is........

A. $P_3P_5P_7$

B. $P_6P_7\ldots. P_n$

C. $P_1P_2\ldots. P_n$

D. $P_2P_4\ldots.. P_n$

Answer: C

Watch Video Solution

44. Find the HCF of 64 and 72

Watch Video Solution

45. The decimal expansion of $\frac{7}{16}$ without actual division is.......

A. 0.4375

B. 4.375

C. 43.75

D. 0.0004375

Answer: A

Watch Video Solution

46. $0.3030030003...$ is an .... Number.

A. natural

B. irrational

C. rational

D. none

Answer: B

Watch Video Solution

47. $743.211111.........$ is......... number.

A. whole

B. irrational

C. rational

D. none

Answer: C

Watch Video Solution

48. The logarithmic form of $12^2 = 144$ is.............

A. $\log_{144} 12 = 2$

B. $\log_{12} 144 = 2$

C. $\log_{12} 14 = 2$

D. $\log_7 14 = 2$

Answer: B

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49. $\log\frac{125}{16} = \ldots\ldots\ldots$

A. $3\log 5 - \log 4$

B. $\log 5 - \log 3$

C. $3\log 5 - \log 2$

D. $3\log 5 - 4\log 2$

Answer: D

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50. $\log\frac{x^2y^3z^4}{w^5}$ in the expanded form is............

A. $2\log x + 3\log y + 4\log z - 5\log w$

B. $\log x + \log y + 4\log z - 5\log w$

C. $2\log x - 3\log y - 4\log z - 5\log w$

D. None

Answer: A

Watch Video Solution

51. Logarithmic form of $19^2 = 361$ is.......

A. $\log_{361} 19 = 2$

B. $\log_{19} 361 = 2$

C. $\log_{19} 36 = 1$

D. None

Answer: B

Watch Video Solution

52. $\log 81 \times 25 = \ldots\ldots\ldots.$

A. $\log 3 + \log 5$

B. $3 \log 3 + 5 \log 5$

C. $\log 3 + \log 5 \log 5$

D. $4 \log 3 + 2 \log 5$

Answer: D

Watch Video Solution

53. $\frac{12}{125}$ is.........decimal.

A. terminating

B. non-terminating

C. non-terminating repeating

D. none

Answer: A

Watch Video Solution

54. $\frac{27}{82}$ is... decimal.

A. non-terminating repeating

B. terminating

C. non-terminating

D. none

Answer: C

Watch Video Solution

55. $\sqrt{5}+\sqrt{7}$ is........ Number.

A. natural

B. whole

C. integer

D. an irrational

Answer: D

Watch Video Solution

56. The expansion of $\frac{87}{625}$ terminating after..... Places.

A. 6

B. 4

C. 14

D. 9

Answer: B

Watch Video Solution

57. The expansion of $\frac{123}{125}$ terminates after.........places.

A. 9

B. 7

C. 3

D. none

Answer: C

Watch Video Solution

58. The decimal form of $\frac{80}{81}$ repeats after........places.

A. 16

B. 12

C. 7

D. none

Answer: D

Watch Video Solution

59. $\frac{70}{71}$ is a..........decimal.

A. terminating

B. non-terminating

C. non-terminating-repeating

D. none

Answer: C

Watch Video Solution

60. $\frac{123}{125}$ is a.........decimal.

A. terminating

B. non-terminating

C. non-terminating-repeating

D. none

Answer: A

Watch Video Solution

61. 14.381 may certain the denominator when expressed in p/q form is..........

A. $8^3 \times 6^3$

B. $12^3 \times 4^3$

C. $2^3 \times 5^3$

D. $7^3 \times 8^3$

Answer: C

Watch Video Solution

62. $5\sqrt{5}+6\sqrt{5}-2\sqrt{5}=\ldots\ldots\ldots$

A. $6\sqrt{5}$

B. $7\sqrt{5}$

C. $2\sqrt{5}$

D. $9\sqrt{5}$

Answer: D

Watch Video Solution

63. $9\sqrt{2}\times\sqrt{2}=\ldots\ldots\ldots\ldots$

A. 16

B. 18

C. 19

D. 20

Answer: B

Watch Video Solution

64. $\log_{10} 10 = \ldots\ldots\ldots.$

A. 0

B. -1

C. 1

D. 7

Answer: C

Watch Video Solution

65. $\log_a \frac{1}{a} = \ldots\ldots.$

A. 4

B. 3

C. -1

D. 12

Answer: C

Watch Video Solution

66. $\log_b a . \log_a b = \ldots\ldots\ldots\ldots$

A. 7

B. 3

C. 4

D. 1

Answer: D

Watch Video Solution

67. $\log_1 1 = \dots\dots\dots$

A. 1

B. -1

C. 0

D. not defined

Answer: D

Watch Video Solution

68. $\log_{0.1} 0.01 = \dots\dots\dots\dots\dots\dots$

A. 8

B. 6

C. 9

D. none

Answer: D

Watch Video Solution

69. $\log 2 + \log 5 = \dots\dots\dots\dots$

A. 1

B. 2

C. 9

D. 12

Answer: A

Watch Video Solution

70. $16 \times 64 = 4^k$ then $k = \dots\dots\dots\dots$

A. 9

B. 12

C. 5

D. 19

Answer: C

Watch Video Solution

71. $a + b = b + a$ is called........property.

A. Associative

B. Identity

C. Inverse

D. Commutative

Answer: D

Watch Video Solution

72. $\log_5 125 = \ldots\ldots\ldots.$

A. 5

B. 3

C. 15

D. 12

Answer: B

Watch Video Solution

73. Exponential form of $\log_4 64 = 3$ is.........

A. $4^3 = 64$

B. $3^4 = 64$

C. $4^2 = 81$

D. none

Answer: A

Watch Video Solution

74. $\log 15 = \ldots\ldots\ldots$

A. $\log 5 + \log 10$

B. $\log 3 + \log 12$

C. $\log 5 + \log 3$

D. all the above

Answer: C

Watch Video Solution

75. $\dfrac{1}{\sqrt{2}}$ is......number.

A. rational

B. an irrational

C. a prime number

D. whole

Answer: B

Watch Video Solution

76. $Q \cup Q^C = \ldots\ldots\ldots\ldots\ldots\ldots$

A. P

B. C

C. R

D. none

Answer: C

Watch Video Solution

77. .... is called the additive identity.

A. 0

B. 1

C. 2

D. none

Answer: A

Watch Video Solution

78. $\sqrt{2} = 1.414$ then $3\sqrt{2} = \dots\dots\dots$

A. 2.42

B. 13.42

C. 42.42

D. 4.242

Answer: D

Watch Video Solution

79. $\frac{23}{2^3 . 5^2} = \ldots\ldots\ldots\ldots$

A. 11.5

B. 0.115

C. 1.15

D. 115.1

Answer: B

Watch Video Solution

80. $0.9375 = \ldots\ldots\ldots\ldots$

A. $\frac{15}{16}$

B. $\frac{5}{16}$

C. $\frac{16}{15}$

D. $\frac{18}{1199}$

Answer: A

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81. $4\frac{1}{5} = \ldots\ldots\ldots\ldots\ldots$

A. 4.12

B. 4.2

C. 0.42

D. 4.02

Answer: B

Watch Video Solution

82. $\frac{5}{11} = \ldots\ldots\ldots\ldots$

A. $0.\overline{43}$

B. $0.\overline{44}$

C. $0.\overline{31}$

D. $0.\overline{45}$

Answer: D

Watch Video Solution

83. LCM of 12, 15 and 21 is.........

A. 420

B. 440

C. 820

D. 110

Answer: A

Watch Video Solution

84. $0.4 = \ldots\ldots\ldots\ldots.$

A. $\frac{2}{5}$

B. $\frac{5}{2}$

C. $\frac{1}{9}$

D. None

Answer: A

Watch Video Solution

85. $\sqrt{\frac{4}{9}} = \ldots\ldots\ldots\ldots.$

A. $\frac{3}{2}$

B. $\frac{2}{3}$

C. $\frac{\sqrt{2}}{3}$

D. $\frac{2}{\sqrt{3}}$

Answer: B

Watch Video Solution

86. HCF of 12, 18 is.............

A. 12

B. 9

C. 2

D. 6

Answer: D

Watch Video Solution

87. $2^2 \times 5 \times 7 = \ldots\ldots\ldots$

A. 240

B. 144

C. 140

D. 909

Answer: C

Watch Video Solution

88. $\log_a 1 = \ldots\ldots\ldots\ldots\ldots a > 0$

A. a^2

B. 2

C. 1

D. 0

Answer: D

Watch Video Solution

89. $\log_{2015} 2015 = \ldots\ldots\ldots\ldots$

A. 15

B. 1

C. 5

D. 0

Answer: B

Watch Video Solution

90. Multiplicative inverse of $3\frac{1}{3}$ is......

A. $3\frac{1}{3}$

B. $\frac{3}{13}$

C. $\frac{3}{10}$

D. $\frac{3}{14}$

Answer: C

Watch Video Solution

91. $(ab)c = a(bc)$ is called...... property.

A. Associative

B. Inverse

C. identity

D. None

Answer: A

Watch Video Solution

92. $\frac{41}{75} = \ldots\ldots\ldots$

A. $\frac{41}{3 \times 5^2}$

B. $\frac{41}{3^2 \times g^2}$

C. $\frac{1}{3 \times 5^2}$

D. None

Answer: A

Watch Video Solution

93. $\log 64 - \log 4 = \ldots\ldots\ldots.$

A. 4

B. 7

C. 1

D. None

Answer: D

Watch Video Solution

94. LCM of 306 and 657 is........

A. 22338

B. 23238

C. 11128

D. None

Answer: A

Watch Video Solution

95. $\frac{1167}{50} = \ldots\ldots\ldots\ldots$

A. 1.675

B. 23.34

C. 81.45

D. None

Answer: B

Watch Video Solution

96. 6^n can not end with..........

A. 6

B. 0

C. 8

D. None

Answer: B

Watch Video Solution

97. $\sqrt{2025} = \ldots\ldots\ldots$

A. 405

B. 54

C. 45

D. 55

Answer: C

Watch Video Solution

98. $5^3 = \ldots\ldots\ldots$

A. 1325

B. 1125

C. 125

D. 1859

Answer: C

Watch Video Solution

99. $\frac{3}{8} = \dots\dots\dots\dots$

A. 0.375

B. 3.75

C. 8.175

D. None

Answer: A

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100. $\sqrt{5} = \dots\dots\dots$

A. 1.414

B. 2.236

C. 1.73

D. 2.998

Answer: B

Watch Video Solution

101. $\log_2 16 = \dots\dots\dots\dots$

A. 2

B. 8

C. 4

D. 12

Answer: C

Watch Video Solution

102. $2 \log 3 + 3 \log 5 - 5 \log 2 = \ldots \ldots ..$

A. $\log \frac{1125}{32}$

B. $\log \frac{125}{23}$

C. $\log \frac{1025}{16}$

D. None

Answer: A

Watch Video Solution

103. $\log_2 1024 = \ldots \ldots \ldots$

A. 16

B. 20

C. 19

D. 10

Answer: D

Watch Video Solution

104. $\log_{18} 324 = \ldots\ldots\ldots$

A. 2

B. 16

C. 19

D. 12

Answer: A

Watch Video Solution

105. $\log_3 \frac{1}{27} = \ldots\ldots\ldots$

A. 3

B. 6

C. -3

D. -7

Answer: C

Watch Video Solution

106. $\log_6 1 = \dots\dots$

A. 12

B. 19

C. 7

D. 0

Answer: D

Watch Video Solution

107. $128 \div 32 = \ldots\ldots\ldots\ldots$

A. 9

B. 6

C. 4

D. None

Answer: C

Watch Video Solution

108. $\log_{10} 10000 = \ldots\ldots\ldots\ldots\ldots$

A. 4

B. 3

C. 2

D. None

Answer: A

Watch Video Solution

109. $\log_{27} 9 = \dots\dots\dots\dots$

A. $\frac{3}{2}$

B. $\frac{2}{3}$

C. 1

D. $\frac{1}{2}$

Answer: B

Watch Video Solution

110. $\log_7 \sqrt{49} = \dots\dots\dots\dots$

A. 1

B. 10

C. 11

D. 12

Answer: A

Watch Video Solution

111. Expand form of log 1000 is

A. $3\log 2 + 3\log 5$

B. $2\log 2 + \log 5$

C. $\log 2 - \log 5$

D. None

Answer: A

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112. $\frac{3}{2}(\log x)-(\log y)-\ldots\ldots.$

A. $\log\frac{\sqrt{x^3}}{y^2}$

B. $\log\sqrt{\frac{x^3}{y^2}}$

C. $\log\frac{x^3}{y^2}$

D. None

Answer: B

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113. $\frac{13}{4}=\ldots\ldots\ldots$

A. 3.1251

B. 1.15

C. 3.25

D. None

Answer: C

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114. $\left(\sqrt{7}+\sqrt{5}\right)\left(\sqrt{7}-\sqrt{5}\right) = \ldots\ldots\ldots\ldots\ldots$

A. 12

B. 10

C. 9

D. 2

Answer: D

Watch Video Solution

115. $2\sqrt{3}+7\sqrt{3}+\sqrt{3} = \ldots\ldots\ldots\ldots\ldots\ldots$

A. $110\sqrt{3}$

B. $7\sqrt{3}$

C. $9\sqrt{3}$

D. $10\sqrt{3}$

Answer: D

Watch Video Solution

116. $\log_2 512 = \ldots\ldots\ldots$

A. 9

B. 10

C. 3

D. 12

Answer: A

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117. Logarithmic form of $a^x = b$ is..........

A. $\log_b x = a$

B. $\log_x b = a$

C. $\log_b a = x$

D. $\log_a b = x$

Answer: D

Watch Video Solution

118. $10^4 = \dots\dots\dots\dots$

A. 10009

B. 10090

C. 10000

D. None

Answer: C

Watch Video Solution

119. .... has no multiplication inverse.

A. $\frac{9}{7}$

B. $\frac{2}{3}$

C. $\frac{9}{14}$

D. 0

Answer: D

Watch Video Solution

120. $|-203| = \dots\dots\dots\dots$

A. 101

B. -203

C. 302

D. 203

Answer: D

Watch Video Solution

121. $\log_3 \frac{1}{9} = \ldots\ldots.$

A. 6

B. 4

C. 2

D. None

Answer: D

Watch Video Solution

122. HCF of 1 and 143=..........`

A. 1

B. 43

C. 34

D. 10

Answer: A

Watch Video Solution

123. $a(b+c) = \ldots\ldots\ldots\ldots\ldots\ldots$

A. $ab + c$

B. $bc + d$

C. $ab + ac$

D. $a + bc$

Answer: C

Watch Video Solution

124. $a + (- a) = (- a) + a$ is called...............

A. Inverse

B. Identity

C. Commutative

D. None

Answer: A

Watch Video Solution

125. $\log_{32} \frac{1}{4} = \ldots\ldots\ldots$

A. $\frac{1}{4}$

B. $\frac{1}{2}$

C. $\frac{-5}{2}$

D. $\frac{-2}{5}$

Answer: D

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126. $\log_{10} 100 = \dots\dots\dots\dots\dots$

A. 2

B. 6

C. 0.1

D. None

Answer: A

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127. $\sqrt{12544} = \ldots\ldots\ldots\ldots\ldots$

A. 161

B. 122

C. 112

D. 113

Answer: C

Watch Video Solution

128. $\sqrt{a} \times \sqrt{b} = \ldots\ldots\ldots\ldots\ldots$

A. ab

B. $b\sqrt{a}$

C. $a\sqrt{b}$

D. $\sqrt{ab}$

Answer: D

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129. Which of the following is a correct one?

A. $N \subset Z \subset W$

B. $N \subset W \subset Z$

C. $R \subset N \subset W$

D. All of the above

Answer: B

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130. $\log_x \frac{a}{b} = \ldots\ldots\ldots\ldots\ldots\ldots$

A. $\log_x a - \log_x b$

B. $\log_x a + \log_x b$

C. $\log_x ab$

D. None

Answer: A

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131. If $2^x = y$ and $\log_2 y = 3$ then $(x - y)^2$.............

A. 25

B. 3

C. 8

D. Not sure

Answer: A

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REAL NUMBERS (MULTIPLE CHOICE QUESTION)

1. $\frac{9}{15}$ =..............

A. Terminating decimal

B. Non-terminating and recurring

C. Non-terminating and non-recurring

D. None of the above

Answer: A

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2. $\frac{7}{8}$ =..............

A. 0.375

B. 0.875

C. 0.0375

D. 0.0875

Answer: B

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3. The number $17 \times 11 \times 2 + 17 \times 11 \times 5$ is...............

A. Prime

B. Composite

C. Both prime and composite

D. Neither prime nor composite

Answer: B

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4. $(256)^{0.16} \times (256)^{0.09}$=.........

A. 1

B. 2

C. 4

D. 8

Answer: C

Watch Video Solution

5. The H.C.F of 72 and 108 is............

A. 9

B. 36

C. 216

D. 22338

Answer: B

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6. IF $(a^m)^n = a^{m^n}$ then the value of 'm' in terms of 'n' is...............

A. $n^{\frac{1}{n-1}}$

B. n

C. m^n

D. None

Answer: A

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7. $\dfrac{\left(p+\frac{1}{q}\right)^p \cdot \left(p-\frac{1}{q}\right)^q}{\left(q+\frac{1}{p}\right)^p \cdot \left(q-\frac{1}{p}\right)^q} = \left(\frac{p}{q}\right)^x$ then x=

A. p-q

B. p+q

C. $\dfrac{p^2}{q^2}$

D. None

Answer: B

Watch Video Solution

8. IF $a^{\frac{1}{x}} = b^{\frac{1}{y}} = c^{\frac{1}{z}}$ and abc=1 then x+y+z=..............

A. 0

B. -1

C. 1

D. 2

Answer: A

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9. If $a = x + \sqrt{x^2 + 1}$, then what is x equal to?

A. $\frac{1}{2}\left(a+\frac{1}{a}\right)$

B. $\frac{1}{2}\left(a-a^{-1}\right)$

C. $\frac{1}{2}\left(a^2+\frac{1}{a^2}\right)$

D. $\frac{1}{2}(a)$

Answer: B

View Text Solution

10. IF $2^x = 4^y = 8^z$ and xyz=288 then $\frac{1}{2x}+\frac{1}{4y}+\frac{1}{8z}$=..............

A. $\frac{96}{11}$

B. $\frac{11}{96}$

C. $\frac{1}{9}$

D. $\frac{6}{11}$

Answer: B

Watch Video Solution

11. IF $x=\frac{a-b}{a+b}, y=\frac{b-c}{b+c}, z=\frac{c-a}{c+a}$ then $\frac{(1+x)(1+y)(1+z)}{(1-x)(1-y)(1-z)}$ =............

A. -1

B. 0

C. 1

D. $\frac{a+b+c}{a-b-c}$

Answer: C

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12. IF $a=5^{1/3}+5^{-1/3}$ and $b=5^{1/3}-5^{-1/3}$ then $\frac{a^3-3a}{b^3+3b}$=........

A. $\frac{13}{12}$

B. $\frac{12}{13}$

C. 0

D. 1

Answer: A

Watch Video Solution

13. IF $a^x = b^y = c^z, b^2 = ac$ then $\frac{1}{x} + \frac{1}{z}$ =

A. 2y

B. $\frac{2}{y}$

C. $2y^2$

D. $\frac{y}{2}$

Answer: B

Watch Video Solution

14. IF $(1.234)^{a} = (0.1234)^{b} = 10^{c}$ then $\frac{1}{a} - \frac{1}{c}$=............

A. b

B. b^{2}

C. $-b$

D. $\frac{1}{b}$

Answer: D

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15. IF $x = \sqrt[3]{\sqrt{2}+1} - \sqrt[3]{\sqrt{2}-1}$ then $x^{3} + 3x$=............

A. 1

B. 2

C. 3

D. 4

Answer: B

Watch Video Solution

16. IF a+b+c=0 then

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

A. 3

B. 3^{-1}

C. 3^2

D. -3

Answer: B

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17. IF log 6789=2.8318, then the number of digits in $(678.9)^{100}$ is

A. 183

B. 283

C. 184

D. 284

Answer: D

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18. IF $\log_3 x + \log_9 x + \log_{27} x + \log_{729} x = 4$ then x=..............

A. 3

B. 9

C. 27

D. 2

Answer: B

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19. IF $f(a) = \log\left(\frac{2+a}{2-a}\right)$ then

$\frac{1}{2}f\left(\frac{8a}{4+a^2}\right)$ =..............

A. f(a)

B. 2.f(a)

C. $\frac{1}{2}f(a)$

D. None

Answer: A

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20.

$\log_{10}\tan 1^\circ + \log_{10}\tan 2^\circ + \log_{10}\tan 3^\circ + \ldots\ldots + \log_{10}\tan 89^\circ = \ldots\ldots\ldots$

A. 2

B. 0

C. -1

D. 1

Answer: B

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21. $\log_8 128 =$

A. $\frac{7}{3}$

B. $\frac{3}{7}$

C. $\frac{2}{7}$

D. $\frac{1}{3}$

Answer: A

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22. IF $4a^2 + 9b^2 = 37ab$ then log(2a+3b)=..........

A. $\frac{1}{2}(\log a + \log b) + \log 7$

B. log a+log b

C. log 37ab

D. $\log\left(\frac{a}{b}\right)$

Answer: A

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EXERCISE

1. Show that $\sqrt{2}$ is irrational.

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2. Show that $5 - \sqrt{3}$ is irrational.

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3. Show that $3\sqrt{2}$ is irrational.

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4. Prove that $\sqrt{2} + \sqrt{3}$ is irrational.

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5. Prove that the following are irrational. (i) $\frac{1}{\sqrt{2}}$

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6. Prove that the following are irrational. (ii) $\sqrt{3} + \sqrt{5}$

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7. Prove that the following are irrational. (iii) $6+\sqrt{2}$

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8. Prove that the following are irrational. (iv) $\sqrt{5}$

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9. Prove that the following are irrational. (v) $3+2\sqrt{5}$

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10. Prove that $\sqrt{p}+\sqrt{q}$ is an irrational, where p,q are primes.

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11. Evaluate

2^1

Watch Video Solution

12. Evaluate

$(4.73)^0$

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13. Evaluate

0^3

Watch Video Solution

14. Evaluate

$(-1)^4$

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15. Evaluate

$(0.25)^{-1}$

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16. Evaluate

$\left(\frac{5}{4}\right)^2$

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17. Evaluate

$\left(1\frac{1}{4}\right)^2$

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18. Express 10, 100, 1000, 10000, 100000 is exponential form.

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19. Express in simplest exponential form: 16×54

Watch Video Solution

20. Express in simplest exponential form: 25×125

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21. Express in simplest exponential form: $128 \div 32$

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22. Write the following in logarithmic form.

$7 = 2^x$

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23. Write the following in logarithmic form.

$10 = 5^b$

Watch Video Solution

24. Write the following in logarithmic form.

$$\frac{1}{81} = 3^c$$

Watch Video Solution

25. Write the following in logarithmic form.

$100 = 10^z$

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26. Write the following in logarithmic form.

$$\frac{1}{257} = 4^a$$

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27. Write the following in exponential form.

$$\log_{10} 100 = 2$$

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28. Write the following in exponential form.

$$\log_5 25 = 2$$

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29. Write the following in exponential form.

$\log_2 2 = 1$

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30. Write the following in exponential form: $x = \log_2 9$

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31. $\log_2 32$ విలువ =

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32. Solve the following

$\log_5 625 = y$

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33. $\log_{10} 10000 = \ldots\ldots\ldots\ldots\ldots$

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34. Does $\log_2 0$ exist ? Give reason .

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35. Prove: $\log_b b = 1$

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36. Prove: $\log_b 1 = 0$

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37. Prove: $\log_b b^x = x$

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38. Prove: If $\log_x 16 = 2$, then $x^2 = 16 \Rightarrow x = \pm 4$, Is it correct or not?

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39. We know that $\log_{10} 100000 = 5$ Show that you get the same answer by writing $100000 = 1000 \times 100$ and then using product rule. Verify the answer.

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40. Express the logarithms of the following into sum of the logarithms. (i) 35×46

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41. Express the logarithms of the following into sum of the logarithms.

(ii) 235×437

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42. Express the logarithms of the following into sum of the logarithms.

(iii) 2437×3568

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43. Theorem : (Quotient Rule) Let a, x and y be positive real numbers where $a \neq 1$. Then $\frac{\log_k x}{y} = \log_a x - \log_a y$

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44. Express the logarithms of the following into difference of the logarithms. (i) $\frac{23}{34}$

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45. Express the logarithms of the following into difference of the logarithms. (ii) $\frac{373}{275}$

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46. Express the logarithems of the following into difference of the logarithem

$4525 \div 3734$

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47. Express the logarithms of the following into difference of the logarithms. (iv) $\frac{5055}{3303}$

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48. We know that $(a^m)^n = a^{mn}$ Let $a^m = x$, then $m = \log_a xx^n = a^{mn}$, then $\log_a x^n = mn = n \log_a x$ (why?)

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49. We have $\log_2 32 = 5$. Show that we get the same result by writing $32 = 2^5$ and then using power rules. Verify the answer.

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50. Using $\log_a x^n = n \log_a x$, expand the following :$\log_2^7 \hat{} 25$.

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51. Note : $\log x = \log_{10} x$: $\log_{27}^{25}$

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52. Note : $\log x = \log_{10} x$: $\log_{58}^{50}$

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53. Note : $\log x = \log_{10} x$: $\log 5^{23}$

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54. Note : $\log x = \log_{10} x$: $\log 1024$

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55. Find the value of $\log_2^{32}$

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56. (ii) Find the values of $\log_c \sqrt{c}$.

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Watch Video Solution

57. $\log_{10} 0.001$=

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58. (iv) Find the value of $\log_{\frac{2}{3}} \frac{8}{27}$.

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59. We know that, If $7 = 2^x$ then $x = \log_2 7$. Then what is the value of $2^{\log_2 7}$? Justify your answer. Generalise the above by taking some more examples for $a^{\log_a N}$.

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60. Expand log $\frac{343}{125}$

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61. Write $2\log 3 + 3\log 5 - 5\log 2$ as a single logarithm.

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62. Solve $3^x = 5^{x-2}$.

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63. Find x if $2\log 5 + \frac{1}{2}\log 9 - \log 3 = \log x$.

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64. Determine the values of the following. (i) $\log_{25} 5$

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65. Determine the values of the following. (ii) $\log_{81} 3$

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66. Determine the values of the following. (iii) $\log_2\left(\frac{1}{16}\right)$

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67. $\log_7 1$=

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68. Determine the values of the following. (v) $\log_x \sqrt{x}$

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69. Determine the values of the following. (vi) $\log_2 512$

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70. $\log_{10} 0.01$ =

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71. Determine the values of the following. (viii) $\log_{\frac{2}{3}}\left(\frac{8}{27}\right)$

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72. Determine the values of the following. (ix) $2^{2+\log_2 3}$

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73. Write the following expression as log N and find their values. (i) $\log 2 + \log 5$

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74. Write the following expression as log N and find their values. (ii)

$\log_2 16 - \log_2 2$

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75. Write the following expression as log N and find their values. (iii)

$3 \log_{64} 4$

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76. Write the following expression as log N and find their values. (iv)

$2 \log 3 - 3 \log 2$

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77. log 10 +2 log 3 - log 2 =

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78. Evaluate each of the following in terms of x and y, if it is given $x = \log_2 3$ and $y = \log_2 5$. (i) $\log_2 15$

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79. Evaluate each of the following in terms of x and y, if it is given $x = \log_2 3$ and $y = \log_2 5$. (ii) $\log_2 7.5$

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80. Evaluate each of the following in terms of x and y, if it is given $x = \log_2 3$ and $y = \log_2 5$. (iv) $\log_2 6750$

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81. Evaluate each of the following in terms of x and y, if it is given $x = \log_2 3$ and $y = \log_2 5$. (iv) $\log_2 6750$

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82. Expand the following. (i) $\log 1000$

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83. Expand the following. (ii) $\log\left[\frac{128}{625}\right]$

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84. Expand the following. (iii) $\log x^2 y^3 z^4$

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85. Expand the following.

$$\log\left(\frac{p^2q^3}{r^4}\right)$$

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86. Expand the following. (v) $\log\sqrt{\frac{x^3}{y^2}}$

Watch Video Solution

87. If $x^2+y^2=25xy.$ then prove that $2\log(x+y)=3\log 3+\log x+\log y.$

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88. If $\log\left(\frac{x+y}{3}\right)=\frac{1}{2}(\log x+\log y)$, then find the values of $\frac{x}{y}+\frac{y}{x}$.

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89. If $(2.3)^{x} = (0.23)^{y} = 1000$ then find the value of $\frac{1}{x} - \frac{1}{y}$.

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90. If $2^{x+1} = 3^{1-x}$ then find the value of x.

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91. Is (i) log 2 is rational or irrational ? Justify your answer.

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92. Is (ii) log 100 is rational or irrational ? Justify your answer.

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93. Can the number 6^n, n being a natural number, end with the digit 5 ? Give reason.

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94. Is $7 \times 5 \times 3 \times 2 + 3$ a composite number ? Justify your answer.

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95. Prove that $(2\sqrt{3} + \sqrt{5})$ is an irrational number. Also check whether $(2\sqrt{3} + \sqrt{5})(2\sqrt{3} - \sqrt{5})$ is rational or irrational.

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96. If $x^2 + y^2 = 6xy$, prove that 2 log (x + y) = logx + logy + 3 log 2

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97. Find the number of digit in 4^{2013}, if $\log_{10} 2 = 0.3010$.

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98. Insert 4 rational numbers between $\frac{3}{4}$ and 1 without using $\frac{a+b}{2}$ formula.

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99. If the prime factorization of a natural number (n) is $2^2 \times 3^2 \times 5^2 \times 7$. How many consecutive zeroes will it have at the end of it? Justify your answer.

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100. Find the value of $\log_5 125$.

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101. Write any two irrational numbers lying between 3 and 4.

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102. Find the value of $\log_{\sqrt{2}} 256$.

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103. Find the HCF and LCM of 90, 144 by prime factorisation method.

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104. Is $\log_3 81$ rational or irrational ? Justify your answer.

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105. Expand $\log_{10} 385$.

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106. Find the HCF of 64 and 72

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107. Find the value of $\log_{\sqrt{2}} 128$.

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108. Ramu says, "If $\log_{10} x = 0$, value of $x = 0$". Do you agree with him ?

Give reason.

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109. Write any three numbers of two digit its. Find the LCM and HCF for the above numbers by the Prime Factorization method.

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110. Give an example for each of the following:

(i) The product of two irrational numbers is a rational number.

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111. Give an example for each of the following:

(i) The product of two irrational numbers is a rational number.

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112. State with reasons which of the following are rational numbers and which are irrantional numbers. (i) $\sqrt{225} \times \sqrt{4}$

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113. State with reasons which of the following are rational numbers and which are irrantional numbers. (ii) $6\sqrt{50}+8\sqrt{125}$

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114. Expand $\log\left(\frac{1125}{32}\right)$.

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115. (i) Express the numbers 6825 and 3825 as a product of its prime factors.

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116. Find the HCF and LCM of the following given pairs of numbers by prime facrtorization. (ii) 50,60

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117. If $x^2 + y^2 = 7xy$ then show that $2\log(x+y) = \log x + \log y + 2\log 3.$

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118. Express 2016 and as product of prime factors.

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119. Write any two digit numbers. Find their L.C.M. and G.C.D. by prime factorization method.

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120. Prove that $2+\sqrt{3}$ is irrational.

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121. Show that $\log\frac{162}{343}+2\log\frac{7}{9}-\log\frac{1}{7}=\log 2$

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122. Lalitha says that HCF and LCM of the numbers 80 and 60 are 20 and 120 respectively. Do you agree with her ? Justify.

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123. If $x^2+y^2=10xy$, prove that $2\log(x+y)=\log x+\log y+2\log 2+\log 3.$

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124. Use Euclid's division lemma to show that the cube of any positive integer is of the form 7m or $7m + 1$ or $7m + 6$.

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125. Prove that $\sqrt{2} - 3\sqrt{5}$ is a irrational number.

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126. Use Euclid's division lemma, to show that the cube of any positive integer is of the form $3p$ or $3p + 1$ or $3p + 2$ for any integer 'p'.

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127. Prove that $\sqrt{3} - \sqrt{5}$ is an irrational number.

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128. Use Euclid's division lemma to show that the square of any positive integer is of the form $5n$ or $5n+1$ or $5n+4$, where n is a whole number.

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129. Use Euclid's division lemma to show that the square of any positive integer is of the form $5n$ or $5n+1$ or $5n+4$, where n is a whole number.

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130. If $x^2+y^2=27xy$, then show that $\log\left(\frac{x-y}{5}\right)=\frac{1}{2}[\log x+\log y]$.

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131. Prove that $\sqrt{3}+\sqrt{5}$ is an irrational number.

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132. Show that cube of any positive integer will be in the form of 8m or $8m+1$ or $8m+3$ or $8m+5$ or $8m+7$, where m is a whole number.

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133. Prove that $\sqrt{2}+\sqrt{11}$ is an irrational number.

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134. Show that $\sqrt{5}-\sqrt{3}$ is an irrational number.

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135. Write 210 as product of prime factors.

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136. If the HCF of 306 and 657 is 9 then find their LCM.

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137. Support the Fundamental theorem of Arithmetic by considering some examples.

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138. Is the units digit in the value of 6^n where 'n' is a natural number is zero? Justify your answer.

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139. Explain why $7 \times 11 \times 13 + 13$ and $7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 + 5$ are composite nubmers.

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140. Find the HCF of 45,75 from Euclid's division lemma.

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141. How do you say $7 \times 11 \times 13 + 13$ and $7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 + 5$ are composite numbers? Explain it.

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142. Express the following in log forms. (i) $2^5 = 32$

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143. Express the following in log forms. (ii) $3^3 = 27$

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144. Express the following in log forms. (iii) $5^3 = 125$

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145. Calculate the value of $\log_2 512$.

Watch Video Solution

146. Calculate the value of $\log_{10} 0.01$.

Watch Video Solution

147. Express $\log_5 125 = 3$ in its exponential form.

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148. Prove that $\log_a xy = \log_a x + \log_a y$.

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149. $\left[H^{+}\right]$ ion concentration in a soap used by Sankar is 9.2×10^{-22}. Then find its pH using logarithm.

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150. Choose the irrational numbers from the following given $\sqrt{2}$, $\sqrt{3}$, 5, 5.75, 1.735, ..., sqrt8, sqrt4, sqrt16

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151. Define the irrational numbers. Give examples.

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152. Find the value of $\sqrt{2}$ upto 4 decimals.

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153. Establish the relation between diagonal and side of a square.

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154. Is π a rational or irrational ? Give reasons.

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155. Write the differences between rational and irrational numbers.

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156. Plot $\sqrt{2}, \sqrt{3}, \sqrt{5}$ on number line.

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157. Show that $\sqrt{2}$ is irrational.

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158. Where do we use irrational numbers in our day to day life?

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159. The number of prime factors of 36 is

A. 4

B. 3

C. 2

D. 1

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160. The exponential form of $\log_{10} 0.001 = -3$ is............

A. $(0.001)^{10} = -3$

B. $(-3)^{10} = 0.001$

C. $10^{3} = -0.001$

D. $10^{-3} = 0.001$

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161. Which of the following is true for an irrational number?

(i) Which can be written in the form of $\frac{p}{q}$, where $p, q \in Z, q \neq 0$.

(ii) Which cannot be written in the form of $\frac{p}{q}$, where $p, q \in Z, q \neq 0$.

(iii) Non-terminating repeating decimals.

(iv) Non-terminating, non repeating decimals.

A. (i), (iii)

B. (ii), (iv)

C. (i) only

D. (iii) only

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162. Which of the following is not a rational number?

A. $\log_{10} 3$

B. $5.\overline{23}$

C. 123.123

D. $\frac{10}{19}$

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163. LCM of 24 and 36 is..........

A. 24

B. 36

C. 72

D. 864

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164. The logarithmic form of $a^b = c$ is..........

A. $\log_a c = b$

B. $\log_b c = a$

C. $\log_a b = c$

D. $\log_b a = c$

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165. If $3\log(x+3) = \log 27$, then the value of x is ....

A. 0

B. 1

C. 6

D. 24

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166. Which one of the following rational numbers has terminating decimal expression?

A. $\frac{11}{7000}$

B. $\frac{91}{21000}$

C. $\frac{343}{2^3 \times 5^3 \times 7^3}$

D. $\frac{21}{9000}$

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167. If P_1 and P_2 are two odd prime numbers, such that $P_1 > P_2$, then $P_1^2 - P_2^2$ is............

A. an even number.

B. an odd number.

C. a prime number.

D. an odd prime number.

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168. In the rational form of a terminating decimal number prime factor of the denominator is..................

A. only 2

B. only 5

C. 2 or 5 only

D. Any prime

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169. $\log_{10} 2 + \log_{10} 5$ value $= \ldots\ldots\ldots\ldots\ldots$

A. 1

B. 2

C. 5

D. 10

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170. If $\log_3 729 = x$ then the value of x is

A. 9

B. 243

C. 81

D. 6

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171. The number of digit in the fractional part of the decimal form of $\frac{7}{40}$ is

A. 1

B. 2

C. 3

D. 4

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172. The exponential form of $\log_a \sqrt{x^4} = y$ is

A. $a^y = x^4$

B. $y^a = 4$

C. $a^y = x^2$

D. $x^y = a^2$

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173. The last (unit place) digit of 6^{2019} in its standard form.

A. 6

B. 4

C. 9

D. 19

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174. The decimal expansion of 0.225 in its rational form is

A. 225

B. $\frac{225}{10^2}$

C. $\frac{225}{10^4}$

D. $\frac{9}{40}$

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175. Show that every positive even integer is of the form 2q, and that every positive odd integer is of the form 2q + 1, where q is some integer.

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176. If $\log_{10} 2 = 0.3010$, then $\log_{10} 32$ is

A. 5.301

B. 2.301

C. 1.505

D. 0.301

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177. If $\log 2 = 0.30103$, then $\log 32 = \ldots.$

A. 4.81648

B. 1.50515

C. 9.63296

D. 9.0309

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178. If $\log_{10} 0.00001 - x$, then $x = \ldots\ldots$

A. 4

B. -4

C. 5

D. -5

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179. If $\log_a a^{x^2+5x+8} = 2$, then $x = \ldots\ldots\ldots$

A. 2 or 3

B. 5 or 7

C. -2 or -3

D. 8 or-2

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180. $\log_3 x^2 = 2$ then $x = \ldots\ldots$

A. 2

B. -2

C. 3

D. -3

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181. $\log_9 \sqrt{3\sqrt{3\sqrt{3}}}$ =

A. $\frac{7}{8}$

B. $\frac{7}{16}$

C. $\frac{1}{16}$

D. $\frac{1}{8}$

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182. Determine the value of the following

$\log_8 128$

A. 44262

B. 16

C. 2048

D. 136

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183. Which of the following is an irrational number?

A. $\sqrt{12 \times 3}$

B. $\sqrt{32 \times 2}$

C. $\sqrt{35 + 14}$

D. $\sqrt{25 + 16}$

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184. The prime facrorization of 144 is

A. $4^2 \times 3^2$

B. 16×9

C. 12×12

D. $2^4 \times 3^2$

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185. L.C.M of the numbers $2^7 \times 3^4 \times 7$ and $2^3 \times 3^4 \times 11$ is

A. $2^3 \times 3^4$

B. $2^7 \times 3^4$

C. $2^7 \times 3^4 \times 7 \times 11$

D. $2^3 \times 3^4 \times 7 \times 11$

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186. The H.C.F of the number $3^7 \times 5^3 \times 2^4$ and $3^2 \times 7^4 \times 2^8$ is

A. $2^4 \times 3^2$

B. $2^8 \times 3^7 \times 5^3 \times 7^4$

C. $2^8 \times 3^7$

D. $2 \times 3 \times 5 \times 7$

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187. The decimal expansion of 0.225 in its rational form is

A. 225

B. $\frac{225}{10^4}$

C. $\frac{225}{10^2}$

D. $\frac{9}{40}$

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188. Which of the following is a rational number ?

A. $\sqrt{3}$

B. $\sqrt{5}$

C. $\sqrt{7}$

D. $\sqrt{9}$

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189. What is the L.C.M of greatest 2 digit number and the greatest 3 digit number?

A. 99×99

B. 999

C. $99x9 \times 111$

D. $9 \times 11 \times 111$

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190. What is the H.C.F of $n \text{ and } n+1$ where n is a natural number?

A. n

B. n + 1

C. $n/2$

D. 1

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191. What is the L.C.M of least prime and the least composite number?

A. least prime $\times$ least composite

B. 2

C. least composite.

D. 6

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192. The product of L.C.M and H.C.F of the least prime and least composite number is

A. 4

B. 6

C. 8

D. 16

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193. $n^2 - 1$ is divisible by 8, if n is

A. an odd number

B. an even number

C. prime number

D. integer

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194. If x and y are any two co-prime, then their L.C.M. is

A. $x + y$

B. $x - y$

C. x / y

D. $x - y$

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195. If x and y are any two relative prime numbers, then their H.C.f is

A. x . y

B. x

C. y

D. 1

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196. If m and n are co-primes, then H.C.F of m^2 and n^2 is

A. m

B. n^2

C. m^2

D. 1

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197. If n is a natural number, then which of the following expression ends in zero?

A. $(3 \times 2)^n$

B. $(5 \times 7)^n$

C. $(9 \times 3)^n$

D. $(2 \times 5)^n$

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198. The number of prime factors of 72 is

A. 12

B. 2

C. 3

D. 6

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199. How many prime factors are there in the prime factorization of 240?

A. 20

B. 5

C. 3

D. 6

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200. After how many places the decimal expansion of $23/125$ terminates?

A. 125

B. 4

C. 8

D. 3

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201. After how many digits will the decimal expansion of $11/32$ terminates?

A. 5

B. 4

C. 3

D. Never

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202. p,q are co-primes and $q = 2^n . 5^m$ where m>n , then the decimal expansion of p/q terminates after ....places.

A. m

B. n

C. $m \cdot n$

D. $m + n$

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203. The decimal expansion of $\frac{9}{17}$ is

A. terminating

B. non-terminating & non-repeating

C. non-terminating & repeating

D. none

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204. The decimal expansion of $\frac{27}{14}$ is

A. $1.\overline{9285714}$

B. $1.9\overline{285714}$

C. 1.9285714

D. $0.19\overline{285714}$

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205. $5.6789\overline{1}$ is a...... number.

A. prime

B. composite

C. irrational

D. rational

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206. $0.12 \quad 112 \quad 1112 \quad 11112.\ldots\ldots$ is .... Number

A. irrational

B. rational

C. composite

D. prime

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207. $\sqrt{2}-2$ is .... Number.

A. natural

B. rational

C. whole

D. an irrational

Watch Video Solution

208. $3 \times 5 \times 7 \times 11 + 35$ is .... Number.

A. composite

B. natural

C. negative

D. none

Watch Video Solution

209. The decimal expansion of $\frac{209}{80}$ terminates after...... places.

A. 5

B. 6

C. 4

D. 9

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210. $7 \times 11 \times 17 + 34$ is divisible by.........

A. 7 or 10

B. 7 or 19

C. 17 or 79

D. 8 or 231

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211. $\frac{73}{625}$ has......... decimal expansion.

A. Non-terminal

B. Terminal

C. Non-terminating, repeating

D. None

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212. The number of prime factors of 1024 is.......

A. 12

B. 9

C. 7

D. 1

Watch Video Solution

213. The decimal expansion of $\frac{101}{99}$ is.......

A. $1.\overline{02}$

B. $1.\overline{07}$

C. $1.\overline{39}$

D. $4.\overline{14}$

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214. The period of the decimal expansion of $\frac{19}{21}$ is........

A. 917461

B. 904761

C. 940761

D. None

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215. If a rational number p/q has a terminating decimal, then the prime factorisation of q is of the form..........

A. $3^m 5^n$

B. 3^m

C. $3^m 5^n 3^p$

D. $2^m 5^n$

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216. The prime factorisation of 20677 is...............

A. $13 \times 29 \times 71$

B. $23 \times 29 \times 31$

C. $19 \times 23 \times 17$

D. None

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217. The LCM of 208 and 209 is..........

A. 208×109

B. 19×218

C. 104×20

D. 208×209

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218. The HCF of 1001 and 1002 is.......

A. 1

B. 7

C. 9

D. 11

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219. If $P_1, P_2, P_3, \ldots\ldots, P_n$ are co-primes then their LCM is........

A. $p_3 p_5 p_7$

B. $p_6 p_7 \ldots. p_n$

C. $p_1 p_2 \ldots. p_n$

D. $p_2 p_4 \ldots. p_n$

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220. If $P_1, P_2, P_3, \ldots\ldots, P_n$ are co-primes. In the above problem HCF is ...

A. p_1

B. 9

C. 1

D. 7

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221. The decimal expansion of $\frac{7}{16}$ without actual division is.......

A. 0.4375

B. 4.375

C. 43.75

D. 0.0004375

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222. $0.3030030003...$ is an .... Number.

A. natural

B. irrational

C. rational

D. none

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223. $743.211111.........$ is......... number.

A. whole

B. irrational

C. rational

D. none

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224. The logarithmic form of $12^2 = 144$ is............

A. $\log_{144} 12 = 2$

B. $\log_{12} 144 = 2$

C. $\log_{12} 14 = 2$

D. $\log_7 14 = 2$

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225. $\log \frac{125}{16} = \ldots\ldots\ldots$

A. $3 \log 5 - \log 4$

B. $\log 5 - \log 3$

C. $3 \log 5 - \log 2$

D. $3 \log 5 - 4 \log 2$

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226. $\log \frac{x^2 y^3 z^4}{w^5}$ in the expanded form is............

A. $2 \log x + 3 \log y + 4 \log z - 5 \log w$

B. $\log x + \log y + 4 \log z - 5 \log w$

C. $2 \log x - 3 \log y - 4 \log z - 5 \log w$

D. None

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227. Logarithmic form of $19^2 = 361$ is.......

A. $\log_{361} 19 = 2$

B. $\log_{19} 361 = 2$

C. $\log_{19} 36 = 1$

D. None

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228. $\log 81 \times 25 = \ldots\ldots\ldots.$

A. $\log 3 + \log 5$

B. $3 \log 3 + 5 \log 5$

C. $\log 3 + 5 \log 5$

D. $4 \log 3 + 2 - \log 5$

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229. $\frac{13}{125}$ is .... decimal.

A. terminating

B. non-termihating

C. non-terminating, repeating

D. none

Watch Video Solution

230. $\frac{27}{82}$ is... decimal.

A. non-terminating, repeating

B. terminating

C. non-terminating

D. none

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231. $\sqrt{5}+\sqrt{7}$ is........ Number.

A. natural

B. whole

C. integer

D. an irrational

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232. The expansion of $\frac{87}{625}$ terminating after..... Places.

A. 6

B. 4

C. 14

D. 9

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233. The expansion of $\frac{123}{125}$ terminates after.........places.

A. 9

B. 7

C. 3

D. None

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234. The decimal form of $\frac{80}{81}$ repeats after........places.

A. 16

B. 12

C. 7

D. None

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235. $\frac{70}{71}$ is a..........decimal.

A. terminating

B. non-terminating

C. non-terminating, repeating

D. none

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236. $\frac{123}{125}$ is a.........decimal.

A. terminating

B. non-terminating

C. non-terminating, repeating

D. none

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237. 14.381 may certain the denominator when expressed in p/q form is...........

A. $8^3 \times 6^3$

B. $12^3 \times 4^3$

C. $2^3 \times 5^3$

D. $7^3 \times 8^3$

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238. $5\sqrt{5} + 6\sqrt{5} - 2\sqrt{5} = \dots\dots\dots$

A. $6\sqrt{5}$

B. $7\sqrt{5}$

C. $2\sqrt{5}$

D. $9\sqrt{5}$

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239. $9\sqrt{2} \times \sqrt{2} = \dots\dots\dots\dots$

A. 16

B. 18

C. 19

D. 20

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240. $\log_{10} 10 = \ldots\ldots\ldots\ldots$

A. 0

B. -1

C. 1

D. 7

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241. $\log_a 1$ =

A. 4

B. 3

C. -1

D. 12

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242. $\log_b a . \log_a b = \dots\dots\dots\dots$

A. 7

B. 3

C. 4

D. 1

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243. $\log_1 1 = \dots$

A. 1

B. -1

C. 0

D. not defined

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244. $\log_{10} 0.01$ =

A. 8

B. 6

C. 9

D. None

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245. $\log 2 + \log 5$ = ...

A. 1

B. 2

C. 9

D. 12

Watch Video Solution

246. $16 \times 64 = 4^k$ then $k = \ldots\ldots\ldots\ldots$

A. 9

B. 12

C. 5

D. 19

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247. $a + b = b + a$ is called........property.

A. Associative

B. Identity

C. Inverse

D. Commutative

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248. $\log_5 125 = \ldots\ldots\ldots.$

A. 5

B. 3

C. 15

D. 12

Watch Video Solution

249. Exponential form of $\log_4 64 = 3$ is.........

A. $4^3 = 64$

B. $3^4 = 64$

C. $4^2 = 81$

D. None

Watch Video Solution

250. $\log 15$ = ...

A. $\log 5 + \log 10$

B. $\log 3 + \log 12$

C. $\log 5 + \log 3$

D. all the above

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251. $\frac{1}{\sqrt{2}}$ is .... number.

A. rational

B. an irrational

C. natural

D. whole

Watch Video Solution

252. $Q \cup Q' =$ ....

A. P

B. C

C. R

D. None

Watch Video Solution

253. .... is called the additive identity.

A. 0

B. 1

C. 2

D. None

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254. $\sqrt{2} = 1.414$ then $3\sqrt{2} = \dots\dots\dots$

A. 2.42

B. 13.42

C. 42.42

D. 4.242

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255. $\dfrac{23}{2^3 . 5^2} = \dots\dots\dots\dots$

A. 11.5

B. 0.115

C. 1.15

D. 115.1

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256. 0.9375 = ...

A. $\dfrac{15}{16}$

B. $\dfrac{5}{16}$

C. $\dfrac{16}{15}$

D. $\dfrac{18}{1199}$

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257. $4\frac{1}{5} = \ldots\ldots\ldots\ldots\ldots$

A. 4.12

B. 4.2

C. 0.42

D. 4.02

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258. $\frac{5}{11} = \ldots\ldots\ldots\ldots\ldots$

A. $0.\overline{43}$

B. $0.\overline{44}$

C. $0.\overline{31}$

D. $0.\overline{45}$

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259. LCM of 12, 15 and 21 is.........

A. 420

B. 440

C. 820

D. 110

Watch Video Solution

260. 0.4 = ...

A. $\frac{2}{5}$

B. $\frac{5}{2}$

C. $\frac{1}{9}$

D. None

Watch Video Solution

261. $\sqrt{\frac{4}{9}} = \ldots\ldots\ldots\ldots\ldots$

A. $\frac{3}{2}$

B. $\frac{2}{3}$

C. $\frac{\sqrt{2}}{3}$

D. $\frac{2}{\sqrt{3}}$

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262. HCF of 12, 18 is..............

A. 12

B. 9

C. 2

D. 6

Watch Video Solution

263. $2^2 \times 5 \times 7 = \ldots\ldots\ldots$

A. 240

B. 144

C. 140

D. 909

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264. $\log_a 1$ =

A. a^2

B. 2

C. 1

D. 0

Watch Video Solution

265. $\log_{2015} 2015 = \ldots\ldots\ldots\ldots$

A. 15

B. 1

C. 5

D. 0

Watch Video Solution

266. Multiplicative inverse of $3\frac{1}{3}$ is......

A. $3\frac{1}{3}$

B. $\frac{3}{13}$

C. $\frac{3}{10}$

D. $\frac{3}{14}$

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267. $(ab)c = a(bc)$ is called...... property.

A. Associative

B. Inverse

C. Identity

D. None

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268. $\frac{41}{75} = \ldots\ldots\ldots$

A. $\frac{42}{3 \times 5^2}$

B. $\frac{41}{3^2 \times 5^2}$

C. $\frac{1}{3 \times 5^2}$

D. None

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269. $\log 64 - \log 4$ = ...

A. 4

B. 7

C. 1

D. None

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270. LCM of 306 and 657 is........

A. 22338

B. 23238

C. 11128

D. None

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271. $\frac{1167}{50} = \ldots\ldots\ldots\ldots$

A. 1.675

B. 23.34

C. 81.45

D. None

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272. 6^n can not end with..........

A. 6

B. 0

C. 2

D. None

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273. $\sqrt{2025}$ = ...

A. 405

B. 54

C. 45

D. 55

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274. 5^5 = ...

A. 1325

B. 1125

C. 3125

D. 1859

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275. $\frac{3}{8} = \ldots\ldots\ldots\ldots\ldots$

A. 0.375

B. 3.75

C. 8.175

D. None

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276. $\sqrt{5} = \ldots\ldots\ldots$

A. 1.414

B. 2.236

C. 1.73

D. 2.998

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277. $\log_2 16 = \ldots\ldots\ldots\ldots$

A. 2

B. 8

C. 4

D. 12

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278. $2\log 3 + 3\log 5 - 5\log 2$ = ...

A. $\log\frac{1125}{32}$

B. $\log\frac{125}{23}$

C. $\log\frac{1025}{16}$

D. None

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279. $\log_2 1024 = \ldots\ldots\ldots$

A. 16

B. 20

C. 19

D. 10

Watch Video Solution

280. $\log_{18} 324 = \ldots\ldots\ldots$

A. 2

B. 16

C. 19

D. 12

Watch Video Solution

281. $\log_3 \frac{1}{27} = \ldots\ldots\ldots$

A. 3

B. 6

C. -3

D. -7

Watch Video Solution

282. $\log_6 1 = \ldots\ldots$

A. 12

B. 19

C. 7

D. 0

Watch Video Solution

283. $128 \div 32 = \ldots\ldots\ldots\ldots$

A. 9

B. 6

C. 4

D. None

Watch Video Solution

284. $\log_{10} 10000 = \ldots\ldots\ldots\ldots\ldots$

A. 4

B. 3

C. 2

D. None

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285. $\log_{27} 9$ =

A. $\frac{3}{2}$

B. $\frac{2}{3}$

C. 1

D. $\frac{1}{2}$

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286. $\log_7 7$=

A. 1

B. 10

C. 11

D. 12

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287. Expand form of log 1000 is

A. $3\log 2 + 3\log 5$

B. $2\log 2 + \log 5$

C. $\log 2 - \log 5$

D. None

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288. $\frac{3}{2}(\log x) - (\log y)$ =..........

A. $\log \frac{\sqrt{x^3}}{y^2}$

B. $\log \sqrt{\frac{x^3}{y^2}}$

C. $\log \frac{x^3}{y^2}$

D. None

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289. $\frac{13}{4} = \ldots\ldots\ldots$

A. 3.1251

B. 1.15

C. 3.25

D. None

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290. $\left(\sqrt{7}+\sqrt{5}\right)\left(\sqrt{7}-\sqrt{5}\right) = \dots\dots\dots\dots\dots$

A. 12

B. 10

C. 9

D. 2

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291. $2\sqrt{3}+7\sqrt{3}+\sqrt{3} = \dots\dots\dots\dots\dots\dots$

A. $110\sqrt{3}$

B. $7\sqrt{3}$

C. $9\sqrt{3}$

D. $10\sqrt{3}$

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292. $\log_2 512 = \ldots\ldots\ldots$

A. 9

B. 10

C. 3

D. 12

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293. Logarithmic form of $a^x = b$ is..........

A. $\log_b x = a$

B. $\log_x b = a$

C. $\log_b a = x$

D. $\log_a b = x$

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294. $10^4 = \dots\dots\dots\dots$

A. 10009

B. 10090

C. 10000

D. None

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295. .... has no multiplication inverse.

A. $\frac{9}{7}$

B. $\frac{2}{3}$

C. $\frac{9}{14}$

D. 0

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296. $|-203| = \dots\dots\dots\dots$

A. 101

B. -203

C. 302

D. 203

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297. $\log_3 \frac{1}{9} = \dots\dots\dots$

A. 6

B. 4

C. 2

D. None

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298. HCF of 1 and 143=.........`

A. 1

B. 43

C. 34

D. 10

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299. $a(b+c) = \dots\dots\dots\dots\dots\dots$

A. $ab+c$

B. $bc+d$

C. $ab+ac$

D. $a+bc$

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300. $a+(-a)=(-a)+a$ is called................

A. Inverse

B. Identity

C. Commutative

D. None

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301. $\log_{32}\frac{1}{4} = \dots\dots\dots$

A. $\frac{1}{4}$

B. $\frac{1}{2}$

C. $-\frac{5}{2}$

D. $-\frac{2}{5}$

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302. $\log_{10}100 = \dots\dots\dots\dots\dots$

A. 2

B. 6

C. 0.1

D. None

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303. $\sqrt{12544}$ = ...

A. 161

B. 122

C. 112

D. 113

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304. $\sqrt{a} \times \sqrt{b} = \ldots\ldots\ldots\ldots\ldots$

A. ab

B. $b\sqrt{a}$

C. $a\sqrt{b}$

D. $\sqrt{a}b$

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305. Which of the following is a correct one?

A. $N \subset Z \subset W$

B. $N \subset W \subset Z$

C. $R \subset N \subset W$

D. All the above

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306. $\log_x\left(\frac{a}{b}\right)$=....

A. $\log_x a - \log_x b$

B. $\log_x a + \log_x b$

C. $\log_x ab$

D. None

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307. The rational number in between $\frac{1}{2}$ and $\sqrt{1}$ is.........

A. $\frac{9}{4}$

B. $\frac{3}{4}$

C. $\frac{5}{4}$

D. $\frac{7}{4}$

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308. Set of Rational and irrational numbers are called.......

A. Real numbers

B. Natural numbers

C. Whole numbers

D. Integers

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309. If $2^{x}=y$ and $\log_2 y=3$ then $(x-y)^2$.............

A. 25

B. 3

C. 8

D. not sure

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310. log form of $3^5 = 243$ is...........

A. $\log_3 243 = 5$

B. $\log_5 243 = 3$

C. $\log_{243} 3 = 5$

D. $\log_{243} 5 = 3$

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311. The symbol of "implies" is.......

A. $\Leftrightarrow$

B. $\Rightarrow$

C. $\forall$

D. $\exists$

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312. The prime factorisation of 729 is.........

A. 3^6

B. 3^5

C. 3^4

D. 3^8

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313. If 'x' and 'y' are two prime numbers then their HCF is............

A. 0

B. 1

C. xy

D. x+y

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314. $\log_{10} 0.01$ =

A. -1

B. 1

C. -2

D. 2

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315. The number of odd numbers in between '0' and 100 is.................

A. 100

B. 51

C. 49

D. 50

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316. The exponential form of $\log_4 8 = x$ is

A. $x^8 = 4$

B. $x^4 = 8$

C. $4^x = 8$

D. $8^x = 4$

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317. The valiue of $\frac{36}{2^3 \times 5^3}$ in decimal form is.........

A. 0.03.6

B. 0.36

C. 0.0036

D. 3.6

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318. LCM of two numbers is 108 and their HCF is 9 and one of them is 54, So the second one is.........

A. 9

B. 18

C. 6

D. 12

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319. $\frac{3}{8}$ is................

A. non - terminating decimal

B. terminating decimal

C. non-terminating, repeating decimal

D. none

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320. If $a\sqrt{c} = \sqrt{ac}$, then............(a,c are positive integers)

A. a = 1

B. a = c

C.

D. a = -1

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321. $9 - 0.\bar{9} = \ldots\ldots\ldots\ldots$

A. $8.\bar{1}$

B. 8.1

C.

D. $0.\overline{1}$

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