



MATHS

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SYSTEM OF NUMERATION

Example

1. Express the following numbers in Roman numerals

329



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2. Express the following numbers in Roman numerals

853



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3. Express the following numbers in Roman numerals

3624





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4. Express the following numbers in Roman numerals

7002



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5. Express the following numbers in Indo Arabian System.

MXL



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6. Express the following numbers in Indo Arabian System.

$\overline{L}DXLVII$



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7. Express the following numbers in Indo Arabian System.

CXCV.



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8. Convert the number 970 of decimal system in to a system, where the numeration is based on five. In other word convert the number 970 of decimal system into the quinary system of numeration.



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9. Convert the following number into decimal system

$$(2313)_{four}$$



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10. Convert the following number into decimal system

$$(2134)_{five}$$



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11. $(245)_x$ is a number in a numeral system whose radix is x . If its decimal conversion is 101 then find x .



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12. $(21)_x$ and $(25)_{x+2}$ are two numbers in two numeral system whose bases are x and $x + 2$. If their decimal conversion are y and $2y - 1$ respectively, find x and y .



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13. Convert the number 15251 of decimal system into the numerals of Duodenary system (base 12).



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14. Convert the radix fraction $(.3122)_{four}$ in the numerals of decimal system.



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15. Express the decimal fraction $.312$ as radix fraction in the numerals of radix 5.



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16. Express $\frac{50}{81}$ as a radix fraction of base 3.



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17. Convert the number 5324.625 into the system of numbers of radix 4.



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18. Express 121 in binary system of numerals.



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19. Converts $(101001)_{two}$ into decimal system.

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20. Find the sum $1010111 + 10100$

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21. Find the sum $101011 + 110011$

 [Watch Video Solution](#)

22. Find the sum $10110 + 1010 + 111011$



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23. Subtract 1100011 from 10110100



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24. Evaluate by complement method

$$(1010111) - (101010)_{two}$$





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25. Find the product of 1101×101 .



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26. Find the division of the following

$$111001 \div 1001$$



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27. Find the division of the following

$$10101011 \div 1101$$



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28. Express the following decimal system number in numeral of binary system.

5.



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29. Express the following decimal system number in numeral of binary system.

9.



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30. Express the following decimal system number in numeral of binary system.

12



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31. Express the following decimal system number in numeral of binary system.

18



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32. Express the following decimal system number in numeral of binary system.

26



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33. Express the following decimal system number in numeral of binary system.

29



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34. Express the following decimal system number in numeral of binary system.

32



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35. Express the following decimal system number in numeral of binary system.

44



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36. Express the following decimal system number in numeral of binary system.

50



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37. Express the following decimal system number in numeral of binary system.

111



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38. Express the following decimal system number in numeral of binary system.

173



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39. Express the following decimal system number in numeral of binary system.

196



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40. Express the following decimal system number in numeral of binary system.

236



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41. Express the following decimal system number in numeral of binary system.

255



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42. Express the following decimal system number in numeral of binary system.

298



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43. Express the following decimal system number in numeral of binary system.

331



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44. Express the following decimal system number in numeral of binary system.

382



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45. Express the following decimal system number in numeral of binary system.

515



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46. Express the following decimal system number in numeral of binary system.

1120



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47. Express the following decimal system number in numeral of binary system.

1520



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48. Express the following binary system number in numeral of decimal system.

100



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49. Express the following binary system number in numeral of decimal system.

101



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50. Express the following binary system number in numeral of decimal system.

110



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51. Express the following binary system number in numeral of decimal system.

111



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52. Express the following binary system number in numeral of decimal system.

1000



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53. Express the following binary system number in numeral of decimal system.

1001



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54. Express the following binary system number in numeral of decimal system.

1010



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55. Express the following binary system number in numeral of decimal system.

1011



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56. Express the following binary system number in numeral of decimal system.

1110



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57. Express the following binary system number in numeral of decimal system.

1111



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58. Express the following binary system number in numeral of decimal system.

10001



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59. Express the following binary system number in numeral of decimal system.

11001



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60. Express the following binary system number in numeral of decimal system.

100101



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61. Express the following binary system number in numeral of decimal system.

11100



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62. Express the following binary system number in numeral of decimal system.

10011



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63. Express the following binary system number in numeral of decimal system.

100101



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64. Express the following binary system number in numeral of decimal system.

110110



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65. Express the following binary system number in numeral of decimal system.

100001



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66. Express the following binary system number in numeral of decimal system.

10001001



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67. Express the following binary system number in numeral of decimal system.

11100101



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68. Express the following binary system number in numeral of decimal system.

1111111



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69. Express the following binary system number in numeral of decimal system.

11111100



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70. Express the following binary system number in numeral of decimal system.

100100100



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71. Express the following binary system number in numeral of decimal system.

101000111



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72. Express the following binary system number in numeral of decimal system.

110011111



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73. Evaluate the following sum (The base two in each case)

$$101 + 11$$



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74. Evaluate the following sum (The base two in each case)

$$101 + 101$$



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75. Evaluate the following sum (The base two in each case)

$$110 + 101$$



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76. Evaluate the following sum (The base two in each case)

$$111 \div 111$$



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77. Evaluate the following sum (The base two in each case)

$$1101 + 111$$



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78. Evaluate the following sum (The base two in each case)

$$1011 + 1010$$



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79. Evaluate the following sum (The base two in each case)

$$1100 + 1110$$



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80. Evaluate the following sum (The base two in each case)

$$10101 + 1101$$



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81. Evaluate the following sum (The base two in each case)

$$10110 \div 1011$$



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82. Evaluate the following sum (The base two in each case)

$$11100 \div 111$$



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83. Evaluate the following sum (The base two in each case)

$$10001 + 1000$$



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84. Evaluate the following sum (The base two in each case)

$$11101 + 10111$$



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85. Evaluate the following sum (The base two in each case)

$$111111 + 11110$$



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86. Evaluate the following sum (The base two in each case)

$$111111 + 101010$$



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87. Evaluate the following sum (The base two in each case)

$$1011001 + 1110111$$



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88. Evaluate the following sum (The base two in each case)

$$110 \div 110 + 11$$



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89. Evaluate the following sum (The base two in each case)

$$1110 + 101 + 1010$$



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90. Evaluate the following sum (The base two in each case)

$$1010 + 1101 + 101$$



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91. Evaluate the following sum (The base two in each case)

$$10101+1001+10110$$



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92. Evaluate the following sum (The base two in each case)

$$1110 + 101 + 1001 + 110$$



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93. Evaluate the following sum (The base two in each case)

$$10010 + 1010 + 11010 + 10101$$



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94. Evaluate the following sum (The base two in each case)

$$11011 \div 1001 + 100 + 10101$$



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95. Evaluate the following sum (The base two in each case)

$$101010 + 10101 + 110101 + 101011$$



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96. Evaluate the following subtractions (base in each case is two)

$$11 - 1$$



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97. Evaluate the following subtractions (base in each case is two)

$$11 - 10$$



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98. Evaluate the following subtractions (base in each case is two)

$$110 - 100$$



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99. Evaluate the following subtractions (base in each case is two)

$$110 - 101$$



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100. Evaluate the following subtractions (base in each case is two)

$$1100 - 101$$



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101. Evaluate the following subtractions (base in each case is two)

$$111 - 101$$



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102. Evaluate the following subtractions (base in each case is two)

$$1110 - 1010$$



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103. Evaluate the following subtractions (base in each case is two)

$$1000 - 101$$



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104. Evaluate the following subtractions (base in each case is two)

$$111010 - 10100$$



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105. Evaluate the following subtractions (base in each case is two)

$$11001101 - 110101$$



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106. Evaluate the following subtractions (base in each case is two)

$$10101 - 1010$$



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107. Evaluate the following subtractions (base in each case is two)

$$101101 - 1011$$



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108. Evaluate the following subtractions (base in each case is two)

$$11001101 - 1110000$$



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109. Evaluate the following subtractions (base in each case is two)

$$11110101 - 1101110$$



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110. Evaluate the following subtractions (base in each case is two)

$$101100110 - 10011011$$



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111. Evaluate the following subtractions (base in each case is two)

$$110111010 - 101111$$



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112. Evaluate the following subtractions (base in each case is two)

$$11101011101 - 1111111110$$



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113. Evaluate the following subtractions (base in each case is two)

$$110010101 - 1011110$$



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114. Simplify (the base is two in each case)

$$110 - 1000 + 11$$



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115. Simplify (the base is two in each case)

$$1010 - 1111 + 111$$



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116. Simplify (the base is two in each case)

$$1100 - 10000 + 1000$$



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117. Simplify (the base is two in each case)

$$1011 - 1101 + 111$$



Watch Video Solution

118. Simplify (the base is two in each case)

$$10000 - 10100 + 1000$$



Watch Video Solution

119. Simplify (the base is two in each case)

$$1110 - 10101 + 1100$$



Watch Video Solution

120. Simplify (the base is two in each case)

$$1010 + 110 - 101 - 111$$



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121. Simplify (the base is two in each case)

$$1000 + 1011 - 100 - 1001$$



Watch Video Solution

122. Simplify (the base is two in each case)

$$1101 + 1010 + 11$$



Watch Video Solution

123. Simplify (the base is two in each case)

$$110 + 1110 - 1000 - 1111$$



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124. Evaluate the following (the base is two in each case) 101×111



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125. Evaluate the following (the base in two in each case) 111×111



Watch Video Solution

126. Evaluate the following (the base in two in each case) 1001×101



Watch Video Solution

127. Evaluate the following (the base in two in each case) 111×110



Watch Video Solution

128. Evaluate the following (the base in two in each case) 1010×101



Watch Video Solution

129. Evaluate the following (the base in two in each case) 110×111



Watch Video Solution

130. Evaluate the following (the base in two in each case) 1101×1000



Watch Video Solution

131. Evaluate the following (the base in two in each case) 1110×110



Watch Video Solution

132. Evaluate the following (the base in two in each case) 1100×1100



Watch Video Solution

133. Evaluate the following (the base in two in each case) 1101×1011



Watch Video Solution

134. Evaluate the following (the base in two in each case) 1111×1100



Watch Video Solution

135. Evaluate the following (the base in two in each case) 10000×1101



Watch Video Solution

136. Evaluate the following (the base in two in each case) 1010×10001



Watch Video Solution

137. Evaluate the following (the base in two in each case) 110110×110011



Watch Video Solution

138. Evaluate the following (the base in two in each case) 110010×11011



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139. Evaluate the following (the base in two in each case) $1110 \div 101$



Watch Video Solution

140. Evaluate the following (the base in two in each case) $1100 \div 11$



Watch Video Solution

141. Evaluate the following (the base in two in each case) $1111 \div 100$



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142. Evaluate the following (the base in two in each case) $10101 \div 110$



Watch Video Solution

143. Evaluate the following (the base in two in each case) $100001 \div 111$



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144. Evaluate the following (the base in two in each case) $101111 \div 110$



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145. Evaluate the following (the base in two in each case) $11011 \div 1100$



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146. Evaluate the following (the base in two in each case) $111101 \div 1110$



Watch Video Solution

147. Evaluate the following (the base in two in each case) $1001000 \div 1010$



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148. Evaluate the following (the base in two in each case) $1010100 \div 1111$



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149. Evaluate the following (the base in two in each case) $1111100001 \div 1011001$



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150. Evaluate the following (the base in two in each case) $100110101001 \div 101000$



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151. Simplify, (the base is two in each cases)

$$(111 + 101) \times 11$$



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152. Simplify, (the base is two in each cases)

$$(110 + 11) \times 101$$



Watch Video Solution

153. Simplify, (the base is two in each cases)

$$(1011 - 110) \times 101$$



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154. Simplify, (the base is two in each cases)

$$(1001 + 111) \div 100$$



Watch Video Solution

155. Simplify, (the base is two in each cases)

$$(1100 + 1001) \div 111$$



Watch Video Solution

156. Simplify, (the base is two in each cases)

$$(11101 - 100) \div 101$$



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157. Simplify, (the base is two in each cases)

$$(11111 - 1001) \div 100$$



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Exercise

1. Name the following numerals in Indian place value system as well as in International Place value system.

7525625



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2. Name the following numerals in Indian place value system as well as in International Place value system.

825329010



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3. Name the following numerals in Indian place value system as well as in International Place

value system.

90050061020



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4. Name the following numerals in Indian place value system as well as in International Place value system.

72050263013



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5. Name the following numerals in Indian place value system as well as in International Place value system.

523541312123



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6. Express the following number numerically
Eighty lakh seventy thousand twenty five



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7. Express the following number numerically

Seventh Crore Three Lakh two Thousand and

Five.



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8. Express the following number numerically

Forty two Arab Three crore seven lakh Three

Thousand four hundred two.



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9. Express the following number numerically

Fifty one Kharab two Arabsixty one crore

Thirty two lakh twenty one thousand sixty

nine.



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10. Express the following number numerically

Three hundred forty million, seven hundred

thirty two thousand eight hundred twenty

one.



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11. Express the following number numerically

Fifty one billion twenty one million thirty two thousand sixty.



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12. Express the following number numerically

Seven trillion one hundred forty billion six million two hundred thirty two thousand seventy two.



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13. Name the number of Eighty lakh seventy thousand twenty five to Fifty one Kharab two Arab sixty one crore Thirty two lakh twenty one thousand sixty nine in international system.



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14. Name the number of Forty two Billion Thirty Million seven hundred three thousand four hundred two and Fifty one billion twenty

one million thirty two thousand sixty in Indian system.



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15. Write the place values of the digits within small squares of the following numbers in Indian place value system and in international place value system.

2[7]42975



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16. Write the place values of the digits within small squares of the following numbers in Indian place value system and in international place value system.

[2]43[3]56012



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17. Write the place values of the digits within small squares of the following numbers in Indian place value system and in international

place value system.

[67]52431014



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18. Write the place values of the digits within small squares of the following numbers in Indian place value system and in international place value system.

[67]52431014



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19. Express the following number in Roman numerals system

85



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20. Express the following number in Roman numerals system

99



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21. Express the following number in Roman numerals system

459



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22. Express the following number in Roman numerals system

999



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23. Express the following number in Roman numerals system

1249



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24. Express the following number in Roman numerals system

3464



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25. Express the following number in Roman numerals system

6261



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26. Express the following numbers in Roman numerals system

10,499



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27. Express the following number in Roman numerals system

6478



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28. Express the following number in Roman numerals system

9601



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29. Express the following number in common numeral system

CIX



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30. Express the following number in common numeral system

XLIX



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31. Express the following number in common numeral system

CCCXCIX



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32. Express the following number in common numeral system

DCLXI



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33. Express the following number in common numeral system

MCV



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34. Express the following number in common numeral system

MMCCCXC



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35. Express the following number in common numeral system

$\overline{C}DLC$



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36. Express the following number in common numeral system

$\overline{V}DLIX$



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37. Express the following number in common numeral system

CLXV



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38. Express the following number in common numeral system

XIIDII



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39. Evaluate the following in Roman numerals.

$$XXX + XL$$



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40. Evaluate the following in Roman numerals.

$$CL + XV$$



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41. Evaluate the following in Roman numerals.

$$XC + L + V$$



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42. Evaluate the following in Roman numerals.

$$C + XC - LXX$$



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43. Evaluate the following in Roman numerals.

$$D + CD + DC$$



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44. Evaluate the following in Roman numerals.

$$LX + XL - XX$$



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45. Evaluate the following in Roman numerals.

$$XX + XXX + XC - XV$$



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46. Find the correct answer giving proper reason

$$ICX = 109 = CIX$$



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47. Find the correct answer giving proper reason

$$IC = 199 = CXCIX$$



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48. Find the correct answer giving proper reason

$$VIX = 5 + 10 - 1 = 14 = XIV$$



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49. Find the correct answer giving proper reason

$$XD = 490 = CDXC$$



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50. Find the correct answer giving proper reason

$$LM = 1000 - 50 = 950 = CML$$



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51. Find the correct answer giving proper reason

$$VL = 50 - 5 = 45 = XLV.$$



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52. Express the following numbers of common system of numeration into a system of numeration of (a) base three (b) base five (c) base seven and (d) base eight

25



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53. Express the following numbers of common system of numeration into a system of numeration of (a) base three (b) base five (c)

base seven and (d) base eight

32



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54. Express the following numbers of common system of numeration into a system of numeration of (a) base three (b) base five (c) base seven and (d) base eight

64



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55. Express the following numbers of common system of numeration into a system of numeration of (a) base three (b) base five (c) base seven and (d) base eight

76



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56. Express the following numbers of common system of numeration into a system of numeration of (a) base three (b) base five (c)

base seven and (d) base eight

104



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57. Express the following numbers of common system of numeration into a system of numeration of (a) base three (b) base five (c) base seven and (d) base eight

50



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58. Express the following numbers of common system of numeration into a system of numeration of (a) base three (b) base five (c) base seven and (d) base eight

1562



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59. Express the following numbers of common system of numeration into a system of numeration of (a) base three (b) base five (c)

base seven and (d) base eight

629



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60. Express the following numbers of common system of numeration into a system of numeration of (a) base three (b) base five (c) base seven and (d) base eight

749



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61. Express the following numbers of common system of numeration into a system of numeration of (a) base three (b) base five (c) base seven and (d) base eight

1042



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62. Express the following numbers of common system of numeration into a system of numeration of (a) base three (b) base five (c)

base seven and (d) base eight

1268



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63. Express the following numbers of common system of numeration into a system of numeration of (a) base three (b) base five (c) base seven and (d) base eight

1042



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64. Express the following number of common number system to a number system of (a) base three (b) base five

2578



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65. Express the following numbers of common system of numeration into a system of numeration (a) base eleven (b) base twelve

9190



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66. Express the following numbers of common system of numeration into a system of numeration (a) base eleven (b) base twelve

11731



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67. Determine the decimal conversion of the following numbers of different numeration

system.

$(233)_{eight}$.



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68. Determine the decimal conversion of the following numbers of different numeration system.

$(125)_{seven}$.



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69. Determine the decimal conversion of the following numbers of different numeration system.

$$(341)_{\text{five}}$$



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70. Determine the decimal conversion of the following numbers of different numeration system.

$$(101112)_{\text{three}}$$





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71. Determine the decimal conversion of the following numbers of different numeration system.

$$(1100100)_{two}$$



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72. Determine the decimal conversion of the following numbers of different numeration

system.

$(1100110)_{two}$.



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73. Determine the decimal conversion of the following numbers of different numeration system.

$(6150)_{seven}$



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74. Determine the decimal conversion of the following numbers of different numeration system.

$$(6244)_{\text{eight}}$$



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75. Determine the decimal conversion of the following numbers of different numeration system.

$$(1636)_{\text{eight}}$$





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76. Determine the decimal conversion of the following numbers of different numeration system.

$$(31001)_{\text{five}}$$



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77. Determine the decimal conversion of the following numbers of different numeration

system.

$(3112)_{four}$.



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78. Determine the decimal conversion of the following numbers of different numeration system.

$(21130)_{four}$.



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79. r is the decimal of a system of numeration.

Determine r , when

The decimal conversion of $(121)_r$ is 16



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80. r is the decimal of a system of numeration.

Determine r , when

The decimal conversion of $(123)_r$ is 38.



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81. r is the decimal of a system of numeration.

Determine r , when

The decimal conversion of $(124)_r$ is 52.



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82. r is the decimal of a system of numeration.

Determine r , when

The decimal conversion of $(144)_r$ is 100.



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83. 2 and 3 are numerals of both the numeral systems whose base are x and $x + 1$. If the decimal conversion of $(32)_x$ is y and that of $(23)_{x+1}$ is $y - 1$, determine x and y .



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84. x is numeral of two numeral systems whose basis are p and $p + 2$. A is a two digit number consists x alone. If the decimal conversion of $(A)_p$ is 10 and that of $(A)_{p+2}$ is 14, then determine x and p .



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85. 1 and 2 are the numerals of both numeral system whose basis are x and $2x + 1$. If decimal conversion of $(21)_x$ is y , then show that the decimal conversion of $(21)_{2x+1}$ is $2y + 1$.



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86. 2 and 3 are the numerals of both the numeral systems whose basis are x and $x + 1$.

If the decimal conversion of $(23)_x$ is A then show that the decimal conversion of $(23)_{x+1}$ is $A + 2$.



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87. Express the following decimal and vulgar fraction in the numeral systems whose bases are indicated.

.3872 to the base five.



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88. Express the following decimal and vulgar fraction in the numeral systems whose bases are indicated.

.5625 to the base six.



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89. Express the following decimal fraction in the numeral systems whose bases are indicated.

.46875 to the base eight.



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90. Express the following decimal and vulgar fraction in the numeral systems whose bases are indicated.

$\frac{11}{15}$ to the base three.



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91. Express the following decimal and vulgar fraction in the numeral systems whose bases

are indicated.

$\frac{11}{15}$ to the base three.



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92. Express the following decimal and vulgar fraction in the numeral systems whose bases are indicated.

$\frac{3}{7}$ to the base three.



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93. Express the following decimal and vulgar fraction in the numeral systems whose bases are indicated.

$$\frac{32}{35} \text{ to the base seven.}$$



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94. Express the following radix fractions whose bases are indicated into the decimal system.

$$(.05343)_{six}.$$



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95. Express the following radix fractions whose bases are indicated into the decimal system.

$$(.05343)_{six}.$$



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96. Express the following numbers in the numeral system whose bases are indicated.

213.3104 to the base five.



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97. Express the following numbers in the numeral system whose bases are indicated.

6233.21875 to the base eight.



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98. Express the following numbers in the numeral system whose bases are indicated.

$1073\frac{13}{16}$ to the base six.



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99. Express the following numbers in the numeral system whose bases are indicated.

$981\frac{32}{125}$ to the base five.



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100. Express the following numbers into the decimal system.

$(434.3213)_{six}$.



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101. Express the following numbers into the decimal system.

$$(716.16)_{\text{eight}}$$



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