MATHS

BOOKS - MODERN PUBLICATION

NUMBER SYSTEMS

Example

1. Represent $\dfrac{3}{5}$ and $-\dfrac{3}{5}$ on the number line.

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2. Find five rational number between 2 and -2.

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3. Find nine rational numbers between 0 and 0.1.

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4. Insert 100 rationals numbers between $-\dfrac{5}{13}$ and $\dfrac{8}{13}$.

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5. Express $\dfrac{9}{8}$ in the decimal form, by Long division.

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6. Express $-\dfrac{17}{8}$ in the decimal form, by Long division.

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7. Without actual division, find which of the following rational numbers are terminating decimal fractions:

$$\frac{5}{64}$$

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8. Without actual division, find which of the following rational numbers are terminating decimal fractions:

$$\frac{13}{24}$$

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9. Without actual division, find which of the following rational numbers are terminating decimal fractions:

$$\frac{23}{80}$$

10. Find the decimal representation of $\frac{2}{3}$

11. Find the decimal representation of $-\frac{2}{15}$.

12. Find the decimal representation of $\frac{33}{26}$

13. Express the following in the form $\frac{p}{q}$:

0.35

14. Express the following in the form $\frac{p}{q}$:

0.675

15. Express the following in the form $\frac{p}{q}$:

0.0028

16. Express the following in the form

$$\frac{p}{q}:$$

2.15

17. Express the following in the form

$$\frac{p}{q}:$$

25.6875

18. Express the following as a fraction in simplest form

$0.\bar{5}$

19. Express the following as a fraction in simplest form

1. $\overline{4}$

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20. Express the following as a fraction in simplest form:

$0.\overline{36}$

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21. Express the following as a fraction in simplest form:

$0.\overline{583}$

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22. Express the following as a fraction in simplest form:

$0.\overline{54}$

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23. Express the following as a fraction in simplest form:

$0.\overline{347}$

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24. Express the following mixed recurring decimals in the form

$\dfrac{p}{q}$

$3.\overline{45}$

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25. Express the following mixed recurring decimals in the form

$$\frac{p}{q}$$

13. $\overline{821}$

26. Prove that $\sqrt{2}$ is not a rational number.

27. Are the

square roots of all positive irrational? If no, give examples.

28. Are the

cube roots of all positive irrational? If no, give examples.

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29. Write three numbers whose decimal expansions are non-

terminating non-recurring.

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30. Insert a rational and an irrational number between 3 and 4.

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31. Find two irrational numbers between 2 and 2.5

32. Find two irrational numbers between 0.12 and 0.13.

33. Find three different irrational numbers between the rational numbers $\dfrac{5}{7}$ and $\dfrac{9}{11}$.

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

35. Examine whether the following are rational or irrational

$$\left(\sqrt{5} + 3\right)^2$$

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36. Examine whether the following are rational or irrational

$$\left(3 + \sqrt{5}\right)\left(3 - \sqrt{5}\right)$$

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37. Examine whether the following are rational or irrational

$$\frac{9}{3\sqrt{3}}$$

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38. Locate $\sqrt{2}$ on the number line.

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39. Repersent $\sqrt{4.5}$ on the number line.

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40. Visualise 2.665 on the number line,using successive magnification.

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41. Visualise 3.765 on the number line, using successive magnification.

42. Rationalise the denominator of the following

$$\dfrac{2}{3\sqrt{3}}$$

43. Rationalise the denominator of the following

$$\dfrac{2\sqrt{5}}{\sqrt{11}}$$

44. Find the value to three places of decimals of the following, it is given that:

$$\sqrt{2} = 1.414, \sqrt{5} = 2.236 \text{ and } \sqrt{10} = 3.162$$

$$\frac{\sqrt{2} + 1}{\sqrt{5}}$$

45. Find the value to three places of decimals of the following, it is given that:

$$\sqrt{2} = 1.414, \sqrt{5} = 2.236 \text{ and } \sqrt{10} = 3.162$$

$$\frac{\sqrt{10} - \sqrt{5}}{\sqrt{2}}$$

46. Rationalise the denominator of the following:

$$\frac{1}{3 + \sqrt{2}}$$

47. Rationalise the denominator of the following:

$$\frac{1}{8 + 5\sqrt{2}}$$

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48. Rationalise the denominator of the following:

$$\frac{6}{\sqrt{5} + \sqrt{2}}$$

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49. Rationalise the denominator of the following

$$\frac{\sqrt{3} + \sqrt{2}}{\sqrt{3} - \sqrt{2}}$$

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50. Rationalise the denominator of the following

$$\frac{2\sqrt{3} - \sqrt{5}}{2\sqrt{2} + 3\sqrt{3}}$$

51. If a and b are rational numbes $\dfrac{2 + \sqrt{3}}{2 - \sqrt{3}} = a + b\sqrt{3}$ find the

values of a and b.

52. If both a and b are rational number, find the values of a and

b in the following

$$\frac{\sqrt{5} + \sqrt{3}}{\sqrt{5} - \sqrt{3}} = a + b\sqrt{15}$$

53. If both a and b are rational number, find the values of a and b in the following

$$\frac{\sqrt{2} + \sqrt{3}}{3\sqrt{2} - 2\sqrt{3}} = a - b\sqrt{6}$$

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54. If $x = 3 + \sqrt{8}$, find the value of $x^2 + \dfrac{1}{x^2}$.

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55. Simplify:

$$\frac{\sqrt{3} + \sqrt{2}}{\sqrt{3} - \sqrt{2}} + \frac{\sqrt{3} - \sqrt{2}}{\sqrt{3} + \sqrt{2}}$$

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56. Prove that:

$$\frac{1}{1+\sqrt{2}} + \frac{1}{\sqrt{2}+\sqrt{3}} + \frac{1}{\sqrt{3}+\sqrt{4}} + \frac{1}{\sqrt{4}+\sqrt{5}}$$

57. If $x = \dfrac{1}{2-\sqrt{3}}$ find the value of $x^3 - 2x^2 - 7x + 5.$

58. Evaluate:

$$\frac{15}{\sqrt{10}+\sqrt{20}+\sqrt{40}-\sqrt{5}-\sqrt{80}}$$ it is given that $\sqrt{5} = 2.236$

and $\sqrt{10} = 3.162$

59. Simplify the following

$$5^{\frac{3}{4}} \times 5^{\frac{1}{4}}$$

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60. Simplify the following

$$\frac{3^{\frac{1}{3}}}{3^{\frac{1}{6}}}$$

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61. Simplify the following

$$3^{\frac{2}{3}} \times 5^{\frac{2}{3}}$$

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62. Simplify the following

$$(49)^{\frac{1}{2}}$$

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63. Simplify the following

$$27^{\frac{2}{3}}$$

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64. Simplify the following

$$64^{\frac{1}{3}}$$

▶ **Watch Video Solution**

65. Simplify the following:

$$\frac{1}{3\sqrt{4^{-5}}}$$

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66. Simplify the following:

$$(25)^{-\frac{1}{3}} \times 3\sqrt{16}$$

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67. Simplify the following:

$$\left(\frac{256}{81}\right)^{\frac{5}{4}}$$

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68. Simplify the following:

$$\sqrt{a^{-2}b^3}$$

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69. Simplify the following:

$$4\sqrt{3\sqrt{a^2}}$$

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70. Simplify

$$\frac{16 \times 2^{n+1} - 4 \times 2^n}{16 \times 2^{n+2} - 2 \times 2^{n+2}}$$

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71. Simplify

$$\left(\frac{81}{16}\right)^{-\frac{3}{4}} \times \left[\left(\frac{25}{9}\right)^{-\frac{3}{2}} + \left(\frac{5}{2}\right)^{3}\right]$$

72. If $5^{x-3}.3^{2x-8} = 225$, find x

73. If x,y,z are positive real numbers, prove that:

$$\sqrt{x^{-1}y}. \sqrt{y^{-1}z}. \sqrt{z^{-1}x} = 1$$

74. Let $\dfrac{2+\sqrt{3}}{2-\sqrt{3}} + \dfrac{2-\sqrt{3}}{2+\sqrt{3}} + \dfrac{\sqrt{3}-1}{\sqrt{3}+1} = 1 + m\sqrt{3}$, find rational numbers l and m.

75. Simplify:

$$\dfrac{2^{\frac{1}{2}} \times 3^{\frac{1}{3}} \times 4^{\frac{1}{4}}}{10^{-\frac{2}{3}} \times 5^{\frac{3}{5}}} \div \dfrac{3^{\frac{4}{3}} \times 5^{-\frac{7}{5}}}{4^{-\frac{3}{5}} \times 6}$$

76. If $p = \dfrac{\sqrt{5}-\sqrt{3}}{\sqrt{5}+\sqrt{3}}, q = \dfrac{\sqrt{5}+\sqrt{3}}{\sqrt{5}-\sqrt{3}}$, find the value of $\dfrac{p^2 - pq + q^2}{p^2 + pq + q^2}$

77. If $\dfrac{\sqrt{p+2q}+\sqrt{p-2q}}{\sqrt{p+2q}-\sqrt{p-2q}}$, then show that $qx^2 - px + q = 0$

78. Two classmates Salma and Anil simplified two different expression during the revision hour and explained to each other their simplifacitons, Salma explained simplification of $\dfrac{\sqrt{2}}{\sqrt{5}+\sqrt{3}}$ and Anil explained simplification of $\sqrt{28}+\sqrt{98}+\sqrt{147}$. write both the simplification. what value does it depict?

79. Ashwin went to a shopkeeper who was Mathematcis graduate asked him that "Uncle I want chocolates to distribute

among my friends for my birthday but I have no money to pay for it."Shopkeeper says "I giving you two numbers $x = \dfrac{1}{3 - 2\sqrt{2}}$ and $y = \dfrac{1}{3 + 2\sqrt{2}}$. find the values of thier sum, prodcut sum of thier square and sum of thier cubes. then I will give you one of these resulting values as number of chocolates at free of cost:

Find all the four values.

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80. Ashwin went to a shopkeeper who was Mathematcis graduate asked him that "Uncle I want chocolates to distribute among my friends for my birthday but I have no money to pay for it."Shopkeeper says "I giving you two numbers $x = \dfrac{1}{3 - 2\sqrt{2}}$ and $y = \dfrac{1}{3 + 2\sqrt{2}}$. find the values of thier sum, prodcut sum of thier square and sum of thier cubes. then I will

give you one of these resulting values as number of chocolates at free of cost:

Find all the four values.

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81. Is zero a rational number ? Can you write in the form $\frac{p}{q}$ where p and q are integers and $q \neq 0$?

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82. Find six ratinal numbers between 3 and 4.

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83. Find seven rational numbers between $\frac{3}{5}$ and $\frac{4}{5}$.

84. State whether the following statements are true or false. Give reasons for your answers:- Every natural number is a whole number.

85. State whether the following statements are true or false. Give reasons for your answers:- Every integer is a whole number.

86. State whether the following statements are true. or false. Give reasons for your answers.

Every rational number is a whole number.

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87. State whether the following statements are true or false. Give reasons for your answe.

Every irrational number is a real number.

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88. Are the following statement true and false ? Justify your answer. Every point on the number line is of the form $\sqrt{m}$, where m is a natural number.

89. State whether the following statements are true or false.

Give reasons for your answe.

Every real number is an irrational number.

90. Are the square root of all positive integers irrational ? If no, give an example of the square root of a number that is a rational numebr.

91. Show how $\sqrt{5}$ can be represented on the number line.

92. Write the following in decimal form and say what kind of decimal expansion each has : $\dfrac{36}{100}$.

93. Write the following in decimal form and say what kind of decimal expansion each has : $\dfrac{1}{11}$

94. Write the following in decimal form and say what kind of decimal expansion each has : $4\dfrac{1}{8}$

95. Write the following in decimal form and say what kind of decimal expansion each has : $\dfrac{3}{13}$.

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96. Write the following in decimal form and say what kind of decimal expansion each has : $\dfrac{2}{11}$.

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97. Write the following in decimal form and say what kind of decimal expansion each has : $\dfrac{329}{400}$

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98. You know that $\dfrac{1}{7} = 0.\overline{142857}$. Can you predict what the decimal expansions of $\dfrac{2}{7} x \dfrac{3}{7}, \dfrac{4}{7}, \dfrac{5}{7}, \dfrac{6}{7}$ are without actually doing the long division? If so how?

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99. Express the following in the form $\dfrac{p}{q}$, where p and q are integers and $q \neq 0 :- 0.\overline{6}$

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100. Express the following in the form $\dfrac{p}{q}$, where p and q are integers and $q \neq 0 :- 0.4\overline{7}$

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101. Express the following in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$:- $0.\overline{001}$

102. Express 0.99999....... in the form $\frac{P}{q}$. Are you surprised by your answer ? Discuss why the answer makes sense with your teacher and classmates.

103. What is the maximum number of digits in the repeating block of digits in the quotient while computing $\frac{1}{17}$? Perform the division to check your answer.

104. Look at several examples of rational numbers in the form $\frac{P}{q}$ $(q \neq 0)$, where p and q are integers with no common factors other than 1 and having terminating decimal representations (expansions). Can you guess what property q must satisfy ?

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105. Write three numbers whose decimal expansions are non-terminating non-recurring.

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106. Find three different irrational numbers between the rational numbers $\frac{5}{7}$ and $\frac{9}{11}$.

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107. Classify the following number as rational or irrational :

$$\sqrt{23}$$

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108. Classify the following numbers as rational or irrational :

$$\sqrt{225}.$$

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109. Classify the following number as rational or irrational :

0.3796

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110. Classify the following number as rational or irrational :

7.478478...

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111. Classify the following numbers as rational irrational

1.101001000100001

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112. Visualise 3.765 on the number line, using successive magnification.

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113. Visualise $4.\overline{26}$ on the number line, up to 4 decimal places.

114. Classify the following numbers as rational or irrational :

$2 - \sqrt{5}$

115. Classify the following numbers as rational or irrational :

$\left(3 + \sqrt{23}\right) - \sqrt{23}.$

116. Classify the following number as rational or irrational:

$$\frac{2\sqrt{7}}{7\sqrt{7}}$$

117. Classify the following numbers as rational or irrational :

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

118. Classify the following numbers as rational or irrational : 2π.

119. Simplify each of the following expressions:

$$\left(3 + \sqrt{3}\right)\left(2 + \sqrt{2}\right)$$

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120. Simplify each of the following expressions:

$$\left(3 + \sqrt{3}\right)\left(3 - \sqrt{3}\right)$$

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121. Simplify each of the following expressions: $\left(\sqrt{5} + \sqrt{2}\right)^2$

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122. Simplify each of the following expressions: $\left(\sqrt{5} - \sqrt{2}\right)\left(\sqrt{5} + \sqrt{2}\right)$

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123. Recall, π is defined as the ratio of the circumference (say c) of a circle to its diameter(say d). That is, $\pi = \dfrac{c}{d}$. This seems to contradict the fact that π is irrational. How will you resolve this contradiction?

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124. Represent $\sqrt{9.3}$ on the number line.

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125. Rationalise the denominator of the following: $\dfrac{1}{\sqrt{7}}$

> ▶ Watch Video Solution

126. Rationalise the denominator of the following: $\dfrac{1}{\sqrt{7} - \sqrt{6}}$

> ▶ Watch Video Solution

127. Rationalise the denominator of the following: $\dfrac{1}{\sqrt{5} + \sqrt{2}}$

> ▶ Watch Video Solution

128. Rationalise the denominator of the following: $\dfrac{1}{\sqrt{7} - 2}$

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129. Find : $64^{\frac{1}{2}}$.

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130. Find : $32^{\frac{1}{5}}$.

▶ Watch Video Solution

131. Find : $125^{-\frac{1}{3}}$.

▶ Watch Video Solution

132. Find : $9^{\frac{3}{2}}$.

▶ Watch Video Solution

133. Find : $32^{\frac{2}{5}}$.

▶ Watch Video Solution

134. Find : $16^{\frac{3}{4}}$.

▶ Watch Video Solution

135. Find : $125^{-\frac{1}{3}}$.

▶ Watch Video Solution

136. Simplify : $2^{\frac{2}{3}} \cdot 2^{\frac{1}{5}}$

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137. Simplify : $\left(\dfrac{1}{3^3}\right)^7$

138. Simplify : $\dfrac{11^{\frac{1}{2}}}{11^{\frac{1}{4}}}$

139. Simplify : $7^{\frac{1}{2}} \cdot 8^{\frac{1}{2}}$

140. If x and y be rational and irrational numbes respectively. Is x+y necessarily an irrational number? Given an example in support of your answer.

141. Let x be rational and y be irrationa? Is xy necessarily irrationa? Justify yoru answer by an example.

142. State true or false

$\sqrt{2}$ is a rational number.

143. State whether the following statement is true or false? Justify your answer. There are infinitely many integers between any two integers.

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144. Number of rational numbers between 15 and 18 is.

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145. There are numbers which cannot be written in the form $\frac{p}{q}, q \neq 0, p, q$ both are integers.

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146. The square of an irrational number is always rational.

147. $\dfrac{\sqrt{12}}{\sqrt{3}}$ is not a rational number as $\sqrt{12}$ and $\sqrt{3}$ are not integers.

148. $\dfrac{\sqrt{15}}{\sqrt{3}}$ is written is the form $\dfrac{p}{q}, q \neq 0$ and it is a rational number.

149. Classify the following numbers as rational or irrational with justification:

$$\sqrt{196}$$

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150. Classify the following numbers as rational or irrational with justification:

$$3\sqrt{18}$$

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151. Classify the following numbers as rational or irrational with justification:

$$\sqrt{\frac{9}{27}}$$

152. Classify the following numbers as rational or irrational with justification:

$$\frac{\sqrt{28}}{\sqrt{75}}$$

153. Classify the following numbers as rational or irrational with justification:

0.5918

154. Classify the following numbers as rational or irrational with justification:

$$-\sqrt{0.4}$$

155. Classify the following numbers as rational or irrational with justification:

$$\frac{\sqrt{12}}{\sqrt{75}}$$

156. Classify the following numbers as rational or irrational with justification:

$$\left(1+\sqrt{5}\right)-\left(4+\sqrt{5}\right)$$

157. Classify the following numbers as rational or irrational with justification:

10.124124

158. Classify the following numbers as rational or irrational with justification:

1.010010001

159. Find which of the variables x,y,z and u represent rational numbers and which irrational numbers:

$$x^2 = 5$$

160. Find which of the variables x,y,z and u represent rational numbers and which irrational numbers:

$$y^2 = 9$$

161. Find which of the variables x,y,z and u represent rational numbers and which irrational numbers:

$$z^2 = 0.04$$

162. Find which of the variables x,y,z and u represent rational numbers and which irrational numbers:

$$u^2 = \frac{17}{4}$$

163. Find three rational number between:

-1 and -2

164. Find three rational number between:

0.1 and 0.11

165. Find three rational number between:

$\dfrac{5}{7}$ and $\dfrac{6}{7}$

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166. Find three rational number between:

$\dfrac{1}{4}$ and $\dfrac{1}{5}$

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167. Insert a rational number and an irrational number between

the following:

2 and 3

168. Insert a rational number and an irrational number between the following:

0 and 0.1

169. Insert a rational number and an irrational number between the following:

$\dfrac{1}{3}$ and $\dfrac{1}{2}$

170. Insert a rational number and an irrational number between the following:

$-\dfrac{2}{5}$ and $\dfrac{1}{2}$

171. Insert a rational number and an irrational number between the following:

0.15 and 0.16

172. Insert a rational number and an irrational number between the following:

$\sqrt{2}$ and $\sqrt{3}$

173. Insert a rational number and an irrational number between the following:

2.357 and 3.121

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174. Insert a rational number and an irrational number between the following:

0.0001 and 0.001

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175. Insert a rational number and an irrational number between the following:

2.357 and 3.121

176. Insert a rational number and an irrational number between the following:

3.623623 and 0.484848

177. Insert a rational number and an irrational number between the following:

6.375289 and 6.375738

178. Represent the following numbers on the number line

$7, 7.2, -\dfrac{3}{2}, -\dfrac{12}{5}$

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179. Repesent $\sqrt{5}$, $\sqrt{10}$ and $\sqrt{17}$ on the number line.

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180. Represent geometrically the following numbers on the number line

$\sqrt{4.5}$

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181. Represent geometrically the following numbers on the number line

$\sqrt{5.6}$

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182. Represent geometrically the following numbers on the number line

$\sqrt{8.1}$

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183. Represent geometrically the following numbers on the number line

$$\sqrt{2.3}$$

184. Express the following in the form $\dfrac{p}{q}$, where p and q are integers and $q \neq 0$.

0.2

185. Express the following in the form $\dfrac{p}{q}$, where p and q are integers and $q \neq 0$.

0.888..........

186. Express the following in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$.

$5.\bar{2}$

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187. Express the following in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0. \, 0.\overline{001}.$

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188. Express the following in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$.

0.2555...

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189. Express the following in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$.

$0.1\overline{34}$

190. Express the following in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$.

0.00323232..........

191. Express the following in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$.

0.404040.........

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192. Show that $0.142857142857 = \dfrac{1}{7}$

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193. Simplify the following

$$\sqrt{45} - 3\sqrt{20} + 4\sqrt{5}$$

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194. Simplify the following

$$\dfrac{\sqrt{24}}{8} + \dfrac{\sqrt{54}}{9}$$

195. Simplify the following

$$4\sqrt{12} \times 7\sqrt{6}$$

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196. Simplify the following

$$4\sqrt{28} \div 3\sqrt{7}$$

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197. Simplify the following

$$3\sqrt{3} + 2\sqrt{27} + \frac{7}{\sqrt{3}}$$

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198. Simplify the following

$$\left(\sqrt{3} - \sqrt{2}\right)^2$$

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199. Simplify the following

$$5\sqrt{81} - 8\sqrt{216} + 153\sqrt{32} + \sqrt{225}$$

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200. Simplify the following

$$\frac{3}{\sqrt{8}} + \frac{1}{\sqrt{2}}$$

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201. Simplify the following

$$\frac{2\sqrt{3}}{3} - \frac{\sqrt{3}}{6}$$

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202. Rationalise the denominator of the following

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

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203. Rationalise the denominator of the following

$$\frac{\sqrt{40}}{\sqrt{3}}$$

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204. Rationalise the denominator of the following

$$\frac{3 + \sqrt{2}}{4\sqrt{2}}$$

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205. Rationalise the denominator of the following

$$\frac{2 + \sqrt{3}}{2 - \sqrt{3}}$$

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206. Rationalise the denominator of the following

$$\frac{16}{\sqrt{41} - 5}$$

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207. Rationalise the denominator of the following

$$\frac{\sqrt{6}}{\sqrt{2} + \sqrt{3}}$$

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208. Rationalise the denominator of the following

$$\frac{\sqrt{3} + \sqrt{2}}{\sqrt{3} - \sqrt{2}}$$

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209. Rationalise the denominator of the following

$$\frac{3\sqrt{5} + \sqrt{3}}{\sqrt{5} - \sqrt{3}}$$

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210. Rationalise the denominator of the following

$$\frac{4\sqrt{3} + 5\sqrt{2}}{\sqrt{48} + \sqrt{18}}$$

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211. Find the values of a and b in each of the following

$$\frac{5 + 2\sqrt{3}}{7 + 4\sqrt{3}} = a - b\sqrt{3}$$

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212. Find the values of a and b in each of the following

$$\frac{4 + 3\sqrt{5}}{4 - 3\sqrt{5}} = a + b\sqrt{5}$$

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213. If both a and b are rational number, find the values of a and b in the following

$$\frac{\sqrt{2} + \sqrt{3}}{3\sqrt{2} - 2\sqrt{3}} = a - b\sqrt{6}$$

214. Find the values of a and b in each of the following

$$\frac{7 + \sqrt{5}}{7 - \sqrt{5}} - \frac{7 - \sqrt{5}}{7 + \sqrt{5}} = a + \frac{7\sqrt{5}b}{11}$$

215. If $a = 2 + \sqrt{3}$ then find the value of $a - \frac{1}{a}$

216. Rationalise the denominator in each of the following and hence evaluate by taking $\sqrt{2} = 1.414$, $\sqrt{3} = 1.732$ and $\sqrt{5} = 2.236$ upto three places of decimal : $\dfrac{1}{\sqrt{3} + \sqrt{2}}$

217. Simplify:

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

218. Simplify:

$$\left(\dfrac{3}{4}\right)^4 \left(\dfrac{8}{5}\right)^{-12} \left(\dfrac{32}{5}\right)^6$$

219. Simplify:

$$\left(-\frac{1}{27}\right)^{-\frac{2}{3}}$$

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220. Simplify:

$$\left[\left((625)^{-\frac{1}{2}}\right)^{4}\right]^{2}$$

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221. Simplify:

$$\frac{9^{\frac{1}{3}} \times 27^{-\frac{1}{2}}}{3^{\frac{1}{6}} \times 3^{-\frac{2}{3}}}$$

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222. Simplify:

$$64^{-\frac{1}{3}}\left[64^{\frac{1}{3}} - 64^{\frac{2}{3}}\right]$$

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223. Simplify:

$$\frac{8^{\frac{1}{3}} \times 16^{\frac{1}{3}}}{32^{-\frac{1}{3}}}$$

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224. Express $0.6 + 0.\bar{7} + 0.\overline{47}$ in the form $\dfrac{p}{q}$, where p and q are integers and $q \neq 0$.

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225. Simplify:

$$\frac{7\sqrt{3}}{\sqrt{10}+\sqrt{3}} - \frac{2\sqrt{5}}{\sqrt{6}+\sqrt{5}} - \frac{3\sqrt{2}}{\sqrt{15}+3\sqrt{2}}$$

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226. If $\sqrt{2} = 1.414$, $\sqrt{3} = 1.732$ find the value of

$$\frac{4}{3\sqrt{3}+2\sqrt{2}} + \frac{3}{3\sqrt{3}+2\sqrt{2}}$$

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227. If $a = \dfrac{3+\sqrt{5}}{2}$ then find the value of $a^2 + \dfrac{1}{a^2}$

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228. Simplify:

$$\frac{\sqrt{3} + \sqrt{2}}{\sqrt{3} - \sqrt{2}} + \frac{\sqrt{3} - \sqrt{2}}{\sqrt{3} + \sqrt{2}}$$

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229. Simplify

$$(256)^{4^{-\frac{3}{2}}}$$

▶ **Watch Video Solution**

230. Find the value of $\dfrac{4}{(216)^{\frac{2}{3}}} + \dfrac{1}{(256)^{\frac{3}{4}}} + \dfrac{2}{(243)^{-\frac{2}{5}}}$

▶ **Watch Video Solution**

Exercise

1. Represent each of the following rational numbers on the number line

3

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2. Represent each of the following rational numbers on the number line

5

▶ **Watch Video Solution**

3. Represent each of the following rational numbers on the number line

-3

4. Represent each of the following rational numbers on the number line

-7

5. Find a rational number between

-2 and 6.

6. Find a rational number between

$\dfrac{1}{4}$ and $\dfrac{1}{3}$

7. Find a rational number between

$\dfrac{1}{4}$ and $\dfrac{1}{3}$

8. Find a rational number between

$-\dfrac{3}{4}$ and $-\dfrac{2}{5}$

9. Find a rational number between

0.75 and 1.2

10. Find three rational numbers between -2 and 5

11. Find three rational numbers between $\dfrac{1}{5}$ and $\dfrac{1}{4}$

12. Represent each of the following rational numbers on the number line

$\dfrac{3}{7}$

13. Represent each of the following rational numbers on the number line

$$\frac{7}{3}$$

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14. Represent each of the following rational numbers on the number line

1.5

▶ **Watch Video Solution**

15. Represent each of the following rational numbers on the number line

$$\frac{25}{6}$$

16. Find five rational numbers between $\dfrac{2}{5}$ and $\dfrac{3}{4}$

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17. Find six rational numbers between 3 and 4.

▶ **Watch Video Solution**

18. Insert 16 rational numbers between 2.1 and 2.2

▶ **Watch Video Solution**

19. Without actual division, find which of the following rationals are terminating decimals

$$\frac{5}{12}$$

▶ Watch Video Solution

20. Without actual division, find which of the following rationals are terminating decimals

$$\frac{21}{80}$$

▶ Watch Video Solution

21. Without actual division, find which of the following rationals are terminating decimals

$$\frac{16}{35}$$

22. Without actual division, find which of the following rationals

are terminating decimals

$$\frac{17}{25}$$

23. Express the following rationals numbers as decimals

$$\frac{5}{8}$$

24. Express the following rationals numbers as decimals

$$\frac{7}{25}$$

25. Express the following rationals numbers as decimals

$$\frac{9}{16}$$

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26. Express the following rationals numbers as decimals

$$\frac{327}{507}$$

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27. Express the following rational numbers as decimals

$$\frac{8}{3}$$

▶ **Watch Video Solution**

28. Express the following rational numbers as decimals

$$\frac{16}{45}$$

29. Express the following rational numbers as decimals

$$\frac{1}{7}$$

30. Express the following rational numbers as decimals

$$\frac{22}{7}$$

31. Express the following in the form $\frac{p}{q}$:

0.61

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32. Express the following in the form $\frac{p}{q}$:

0.675

▶ Watch Video Solution

33. Express the following in the form $\frac{p}{q}$:

0.0028

▶ Watch Video Solution

34. Express the following in the form $\dfrac{p}{q}$:

0.35

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35. Express the following in the form $\dfrac{p}{q}$:

9.90

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36. Express the following in the form $\dfrac{p}{q}$:

1.0001

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37. Express the following in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$. $0.\bar{6}$.

38. Express the following in the form $\frac{p}{q}$:

$0.\bar{8}$

39. Express the following in the form $\frac{p}{q}$:

$2.\bar{5}$

40. Express the following in the form $\frac{p}{q}$:

$0.\overline{37}$

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41. Express the following in the form $\frac{p}{q}$:

$0.\overline{51}$

▶ Watch Video Solution

42. Express the following in the form $\frac{p}{q}$:

$2.\overline{5}$

▶ Watch Video Solution

43. Express the following in the form $\dfrac{p}{q}$:

$0.\overline{37}$

▶ Watch Video Solution

44. Express the following in the form $\dfrac{p}{q}$:

$0.\overline{51}$

▶ Watch Video Solution

45. Express the following in the form $\dfrac{p}{q}$:

$0.\overline{631}$

▶ Watch Video Solution

46. Express the following in the form $\frac{p}{q}$:

$0.\overline{53}$

▶ **Watch Video Solution**

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47. Express the following in the form $\frac{p}{q}$:

$0.\overline{547}$

▶ **Watch Video Solution**

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48. Express the following in the form $\frac{p}{q}$:

$0.\overline{457}$

▶ **Watch Video Solution**

49. Express the following in the form $\frac{p}{q}$:

$3.\overline{54}$

▶ Watch Video Solution

50. Express the following in the form $\frac{p}{q}$:

$4.54\overline{7}$

▶ Watch Video Solution

51. Express the following in the form $\frac{p}{q}$:

$15.\overline{831}$

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52. Define an irrational number. How does it differ from rational numbers.

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53. Examine, whether the following numbers are rational or irrational:

$\sqrt{5}$

▶ Watch Video Solution

54. Examine, whether the following numbers are rational or irrational:

$\sqrt{9}$

▶ Watch Video Solution

55. Examine, whether the following numbers are rational or irrational:

$\sqrt{45}$

56. Examine, whether the following numbers are rational or irrational:

$\left(5 - \sqrt{2}\right)\left(5 + \sqrt{2}\right)$

57. Examine, whether the following numbers are rational or irrational:

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

58. Examine, whether the following numbers are rational or irrational:

$$\sqrt{6} - 2$$

59. Examine, whether the following numbers are rational or irrational:

$$\sqrt{\dfrac{9}{27}}$$

60. Examine, whether the following numbers are rational or irrational:

$$- \sqrt{81}$$

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61. Classify the following numbers as rational or irrational :

$$\sqrt{225}.$$

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62. Examine, whether the following numbers are rational or irrational:

2.131331333

▶ Watch Video Solution

63. Examine, whether the following numbers are rational or irrational:

4.2576

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64. Examine, whether the following numbers are rational or irrational:

5.040040004

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65. Examine, whether the following numbers are rational or irrational:

2.346464646

66. In the following equation which variables represent rational numbers and which irrational numbers:

$$x^2 = 3$$

67. In the following equation which variables represent rational numbers and which irrational numbers:

$$y^2 = 16$$

68. In the following equation which variables represent rational numbers and which irrational numbers:

$$z^2 = 0.09$$

69. In the following equation which variables represent rational numbers and which irrational numbers:

$$u^2 = \frac{15}{4}$$

70. Prove that $\sqrt{3} + \sqrt{7}$ is an irrational number.

71. Prove that $\sqrt{3}$ is an irratinal number.

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72. Prove that $\sqrt{n}$, n being not a perfect square, is not a rational number.

▶ **Watch Video Solution**

73. Prove that $\sqrt{3} + \sqrt{7}$ is an irrational number.

▶ **Watch Video Solution**

74. Find out the irrational number between 0.2101 and 0.222..= $0.\bar{2}$

75. Find two irational numbers between

0.1 and 0.2

76. Find two irational numbers between

$\sqrt{2}$ and $\sqrt{3}$

77. Find a rational number and an irratinal number between:

a=0.101001000100001...........and b=0.10001000100001

78. Find two rational numbers between:

a=2.232332333133332 and b=0.2525525555255557

▶ **Watch Video Solution**

79. Add:

$\left(\sqrt{3} + 2\sqrt{2}\right)$ and $\left(2\sqrt{3} - 5\sqrt{2}\right)$

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80. Add:

$\left(3\sqrt{3} - \sqrt{2} + \sqrt{5}\right)$ and $\left(2\sqrt{2} + 5\sqrt{3} - 7\sqrt{5}\right)$

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81. Multiply

$3\sqrt{7}$ by $2\sqrt{7}$

▶ **Watch Video Solution**

82. Multiply

$3\sqrt{28}$ by $2\sqrt{7}$

▶ **Watch Video Solution**

83. Divide:

$16\sqrt{6}$ by $4\sqrt{2}$

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84. Divide:

$18\sqrt{21}$ by $6\sqrt{7}$

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85. Simplify:

$\left(5 + \sqrt{3}\right)\left(5 - \sqrt{3}\right)$

▶ Watch Video Solution

86. Simplify:

$\left(\sqrt{5} + \sqrt{2}\right)\left(\sqrt{2} - \sqrt{3}\right)$

▶ Watch Video Solution

87. evaluate:

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

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88. Represent $\sqrt{5}$, $\sqrt{6}$ and $\sqrt{7}$ on the number line.

> ▶ **Watch Video Solution**

89. Represent $\sqrt{3.5}$, $\sqrt{4.3}$ and $\sqrt{8.47}$ on the number line.

> ▶ **Watch Video Solution**

90. Visualise 2.564 on the number line, using successive magnifications.

91. Visualise $5.2\overline{6}$ on the number line, upto 4 places of decimal.

92. Rationalise the denominator of the following: $\dfrac{1}{\sqrt{7}}$

93. Rationalise the denominator of each of the following

$$\dfrac{1}{\sqrt{12}}$$

94. Rationalise the denominator of each of the following

$$\frac{3}{2\sqrt{5}}$$

95. Rationalise the denominator of each of the following

$$\frac{1}{\sqrt{5} - 2}$$

96. Rationalise the denominator of each of the following

$$\frac{16}{\sqrt{41} - 5}$$

97. Rationalise the denominator of each of the following

$$\frac{1}{2\sqrt{5} - \sqrt{3}}$$

98. Rationalise the denominator of each of the following

$$\frac{3 - 2\sqrt{2}}{3 + 2\sqrt{2}}$$

99. Rationalise the denominator of each of the following

$$\frac{5 + 2\sqrt{3}}{7 + 4\sqrt{3}}$$

100. Rationalise the denominator of each of the following

$$\frac{2\sqrt{3} - \sqrt{5}}{2\sqrt{2} + 3\sqrt{5}}$$

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101. Find the values of a and b in each of the following

$$\frac{\sqrt{3} + 1}{\sqrt{3} - 1} = a + b\sqrt{3}$$

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102. Find the value of a and b in each of the following :

$$\frac{3 + \sqrt{2}}{3 - \sqrt{2}} = a + b\sqrt{2}.$$

▶ Watch Video Solution

103. Find the values of a and b in each of the following

$$\frac{4 + 3\sqrt{5}}{4 - 3\sqrt{5}} = a + b\sqrt{5}$$

> ▶ Watch Video Solution

104. Find the values of a and b in each of the following

$$\frac{5 + 2\sqrt{3}}{7 + 4\sqrt{3}} = a - b\sqrt{3}$$

> ▶ Watch Video Solution

105. Simplify the following

$$\frac{\sqrt{5} - 1}{\sqrt{5} + 1} + \sqrt{5} + 1 \cdot \frac{)}{\sqrt{5} - 1}$$

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106. Simplify the following

$$\frac{7 + 3\sqrt{5}}{3 + \sqrt{5}} - \frac{7 - 3\sqrt{5}}{3 - \sqrt{5}}$$

▶ Watch Video Solution

107. Simplify the following

$$\frac{1}{2 + \sqrt{3}} + \frac{2}{\sqrt{5} - \sqrt{3}} + \frac{1}{2 - \sqrt{5}}$$

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108. If $x = 4 - \sqrt{15}$ find the value of $x + \dfrac{1}{x}$

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109. If $x = 3 + \sqrt{8}$, find the value of $x + \dfrac{1}{x}$.

110. Find the value of $\dfrac{6}{\sqrt{5} - \sqrt{3}}$ is given that $\sqrt{3} = 1.732$ and $\sqrt{5} = 2.236$.

111. If $x = \dfrac{\sqrt{3} + 1}{2}$ find the value of $4x^3 + 2x^2 - 8x + 7$

112. Prove that:
$$\frac{1}{3 - \sqrt{8}} - \frac{1}{\sqrt{8} - \sqrt{7}} + \frac{1}{\sqrt{7} - \sqrt{6}} - \frac{1}{\sqrt{6} - \sqrt{5}} + \frac{1}{\sqrt{5} - 2} = 5$$

113. Simplify the following

$$\left(3^{\frac{1}{2}} \times 3^{\frac{1}{3}}\right)$$

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114. Simplify the following

$$\frac{8^{\frac{1}{2}}}{8^{\frac{2}{3}}}$$

▶ Watch Video Solution

115. Simplify the following

$$6^{1/2} \times 7^{1/2}$$

▶ Watch Video Solution

116. Simplify the following

$$(49)^{\frac{1}{2}}$$

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117. Simplify the following

$$32^{2/5}$$

▶ **Watch Video Solution**

118. Simplify the following

$$81^{-1/4}$$

▶ **Watch Video Solution**

119. Simplify the following

$$2^{5/8} \times 3^{5/8}$$

▶ Watch Video Solution

120. Simplify the following

$$3^{1/4} \times 5^{1/4}$$

▶ Watch Video Solution

121. Simplify the following

$$\left(16^{-\frac{1}{5}}\right)^{\frac{5}{2}}$$

▶ Watch Video Solution

122. Simplify the following

$(0.001)^{\frac{1}{3}}$

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123. Simplify the following

$\left(\dfrac{\sqrt{2}}{5}\right)^{8} \div \left(\dfrac{\sqrt{2}}{5}\right)^{13}$

▶ **Watch Video Solution**

124. Evaluate

$\dfrac{(25)^{3/2} \times (243)^{3/5}}{(16)^{5/4} \times (8)^{4/3}}$

▶ **Watch Video Solution**

125. Prove that:

$$\sqrt{\frac{1}{4}} + (0.01)^{-\frac{1}{2}} - (27)^{\frac{2}{3}} = \frac{3}{2}$$

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126. prove: $\dfrac{2^n + 2^{n-1}}{2^{n+1} - 2^n} = \dfrac{3}{2}$

> ▶ **Watch Video Solution**

127. Prove that:

$$9^{3/2} - 3 \times 5^0 - \left(\frac{1}{81}\right)^{-\frac{1}{2}} = 15$$

> ▶ **Watch Video Solution**

128. Evaluate

$$\frac{(0.6)^0 - (0.1)^{-1}}{\left(\frac{3}{8}\right)^{-1}\left(\frac{3}{2}\right)^3 + \left(\frac{-1}{3}\right)^{-1}}$$

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129. Prove that:

$$\frac{a^{-1}}{a^{-1} + b^{-1}} + \frac{a^{-1}}{a^{-1} - b^{-1}} = \frac{2b^2}{b^2 - a^2}$$

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130. Find the value of x in the following

$$\left(2^3\right)^4 = \left(2^2\right)^x$$

▶ Watch Video Solution

131. Find the value of x in the following

$$5^{x-2} \times 3^{2x-3} = 135$$

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132. Find the value of x in the following

$$2^{x-7} \times 5^{x-4} = 1250$$

▶ **Watch Video Solution**

133. Find the value of x in the following

$$27^x = \frac{9}{3^x}$$

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134. If $\dfrac{9^n \times 3^2 \times (3^n) - 27^n}{3^{3m} \times 2^3} = \dfrac{1}{27}$, prove that m-n=1.

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135. Find a rational number between $-\dfrac{2}{3}$ and $\dfrac{1}{4}$

▶ Watch Video Solution

136. Express $\dfrac{7}{8}$ in decimal form.

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137. Express $0.\overline{4}$ in the form $\dfrac{p}{q}$.

▶ Watch Video Solution

138. Explain, how irrational number differ from rational number.

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139. Give an example of two irrational numbers whose difference is a rational number.

▶ **Watch Video Solution**

140. Simplify

$$\left(x^{-\frac{2}{3}}y^{-\frac{1}{2}}\right)^2$$

▶ **Watch Video Solution**

141. Simplify:

$$\left(\frac{x^{-4}}{y^{-10}} \right)^{\frac{5}{4}}$$

▶ **Watch Video Solution**

142. If $27^x = \dfrac{9}{3^x}$, find x.

▶ **Watch Video Solution**

143. Find the value of x in the following

$$2^{x-7} \times 5^{x-4} = 1250$$

▶ **Watch Video Solution**

144. Write the value of $(4 + \sqrt{3})(4 - \sqrt{3})$

145. If $x = \sqrt{3} - 1$, what is the value of $\dfrac{1}{x}$

146. If $x = 3 + 2\sqrt{2}$ find the value of $\sqrt{x} - \dfrac{1}{\sqrt{x}}$

147. Simplify: $\dfrac{1}{(27)^{-\frac{1}{3}}} + \dfrac{1}{(625)^{-\frac{1}{4}}}$

148. Rationalise: $\dfrac{5\sqrt{3} - 4\sqrt{2}}{4\sqrt{3} + 3\sqrt{2}}$

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149. Write the difference of an irrational and a rational number.

▶ **Watch Video Solution**

150. Find the value of $\left(1^3 + 2^3 + 3^3\right)^{-\frac{3}{2}}$

▶ **Watch Video Solution**

151. If $\left(5^2\right)^7 = 125^x$, find x.

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152. Show that $0.142857142857 = \dfrac{1}{7}$

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153. Rationalise: $\dfrac{3 + \sqrt{2}}{4\sqrt{2}}$

▶ **Watch Video Solution**

154. Find x, where $3 + 2^x = (64)^{\frac{1}{2}} + (27)^{\frac{2}{3}}$

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155. Evaluate: $0.\bar{6} + 0.\bar{3} - 0.\overline{11}$

156. Arrange in descending order:

$$3\sqrt{5},\ 6\sqrt{26},\ 4\sqrt{8},\ \sqrt{2}$$

157. If $\left(\dfrac{a}{b}\right)^{x-1} = \left(\dfrac{b}{a}\right)^{x-5}$, find x.

158. True/false

Every rational numbre is a whole number.

159. True/false

Every whole number is a rational number.

▶ Watch Video Solution

160. True/false

0 is the smallest natural number.

▶ Watch Video Solution

161. True/false

$-\dfrac{5}{8}$ lis on the left on the number line.

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162. True/false

-300000000 cannot be represent on the number line.

163. True/false

$\dfrac{22}{7}$ is a rational yet π is irrational.

164. True/false

π is a rational number.

165. Between 42.1 and 42.3 there are two irrational numbers.

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166. Are the square root of all positive integers irrational ? If no, give an example of the square root of a number that is a rational numebr.

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167. Product of two rational numbers is

▶ **Watch Video Solution**

168. Fill ups

A rational number between two rational number a and b is............

169. Fill ups

π is an..............number.

170. Fill ups

Rationalising factor of $3\sqrt{7} + 5$ is...........

171. Fill ups

Rationalising factor of $\sqrt{7} + \sqrt{3}$ is..............

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172. If $\left(5^2\right)^7 = 125^x$, find x.

▶ **Watch Video Solution**

173. Fill ups

Decimal form of $-\dfrac{16}{45}$ is..............

▶ **Watch Video Solution**

174. Fill ups

If $x + \dfrac{1}{x} = \sqrt{6}$, then the value of $x^2 + \dfrac{1}{x^2}$=...........

▶ Watch Video Solution

175. Fill ups

If n is a natural number other than a perfect square then $\sqrt{n}$ is a(an)............number.

▶ Watch Video Solution

176. Fill ups

There lies...............rational numbers between two given rational number.

▶ Watch Video Solution

177. Fill ups

0. $\overline{27}$ in $\dfrac{p}{q}$ form is..................... .

178. Which of the following statements is true?

A. product of a rational and an irrational number is always

irrational.

B. sum of an integer and a rational number can never be an

integer

C. prodcut of two irrational number is alwaus irrational

D. sum of two irrational number can never be irrational

Answer:

---

179. Which of the following is irrational?

A. $\dfrac{\sqrt{4}}{9}$

B. $\sqrt{81}$

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

D. $\sqrt{7}$

Answer:

180. Which of the following numbers can be represented as non-terminating repeating decimals?

A. $\dfrac{3}{16}$

B. $\dfrac{137}{25}$

C. $\dfrac{39}{24}$

D. $\dfrac{3}{11}$

Answer:

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181. The numbers $1.\overline{27}$ in the form $\dfrac{p}{q}$, where p and q are integers and $q \neq 0$ is

A. $\dfrac{14}{11}$

B. $\dfrac{14}{9}$

C. $\dfrac{14}{15}$

D. $\dfrac{14}{13}$

Answer:

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182. The value of $0.\overline{23} + 0.\overline{22}$ is

A. $0.\overline{45}$

B. $0.\overline{42}$

C. $0.\overline{45}$

D. $0.\overline{43}$

Answer:

183. Which of the following is irrational?

A. 0.321

B. $0.\overline{321}$

C. 0.3232232223

D. $0.\overline{32}$

Answer:

184. The decimal representation of an irrational number is

A. always terminating

B. neither terminating nor repeating

C. either terminating or repeating

D. either terminating or non-repeating.

Answer:

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185. Which of the following is a true statement?

A. π and $\dfrac{22}{7}$ are both rationals

B. π are rational and $\dfrac{22}{7}$ is irrational

C. π and 22/7` are both irrationals.

D. π is a irrational and $\dfrac{22}{7}$ is rational

Answer:

186. $3\sqrt{2} \times 4\sqrt{2} \times 12\sqrt{32} =$

A. 2

B. $4\sqrt{2}$

C. $\sqrt{2}$

D. $2\sqrt{2}$

Answer:

187. On rationalising the denominator of $\dfrac{1}{\sqrt{4} - \sqrt{3}} =$

A. $\left(2 + \sqrt{3}\right)$

B. 1

C. $\left(2 - \sqrt{3}\right)$

D. None of these

Answer:

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188. If x=$\left(7 + 4\sqrt{3}\right)$, then $\left(x + \dfrac{1}{x}\right)$=

A. 48

B. 49

C. 14

D. $8\sqrt{3}$

Answer:

189. If $\sqrt{7} = 2.646$ then $\dfrac{1}{\sqrt{7}} =$

A. 0.375

B. 0.441

C. 0.378

D. none of these

Answer:

190. If $\sqrt{2} = 1.4142$ then $\sqrt{\dfrac{\sqrt{2} - 1}{\sqrt{2} + 1}}$ is equal to :

A. 2.414

B. 0.207

C. 0.621

D. 0.414

Answer:

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191. The simplest form of $0.\overline{32}$ is

A. $\dfrac{16}{45}$

B. $\dfrac{29}{90}$

C. $\dfrac{32}{99}$

D. none of these

Answer:

---

192. An irrational number between 5 and 6 is

A. $\sqrt{5 + 6}$

B. $\dfrac{1}{2}(5 + 6)$

C. $\sqrt{5 \times 6}$

D. none of these

Answer:

---

193. When simplified $\left(x^{-1} + y^{-1}\right)^{-1}$ is equal to

A. xy

B. $\dfrac{xy}{x+y}$

C. x+y

D. $\dfrac{x+y}{xy}$

Answer:

194. If $0 < y < x$, which statement must be true?

A. 1) $\sqrt{x} - \sqrt{y} = \sqrt{x-y}$

B. 2) $x\sqrt{y} = y\sqrt{x}$

C. 3) $\sqrt{x} + \sqrt{x} = \sqrt{2x}$

D. 4) $\sqrt{xy} = \sqrt{x}\sqrt{y}$

Answer:

---

195. If $\dfrac{x}{x^{1.5}} = 8x^{-1}$ and x>0, then x=

a. $2\sqrt{2}$

b. 4

c. 64

d. $\dfrac{\sqrt{2}}{4}$

    A. $2\sqrt{2}$

    B. 4

    C. 64

    D. $\dfrac{\sqrt{2}}{4}$

Answer:

196. $4\sqrt{3\sqrt{2}^2}$ equals

A. $2^{-1/6}$

B. $4\sqrt{6}$

C. $2^{\frac{1}{6}}$

D. 2^6

Answer:

197. Which of the following is not euqal to $\left(\dfrac{100}{9}\right)^{-\frac{3}{2}}$?

A. $\left(\dfrac{9}{100}\right)^{\frac{3}{2}}$

B. $\dfrac{3}{10} \times \dfrac{3}{10} \times \dfrac{3}{10}$

C. $\dfrac{1}{\left(\dfrac{100}{9}\right)^{3/2}}$

D. $\sqrt{\dfrac{100}{9} \times \dfrac{100}{9} \times \dfrac{100}{9}}$

Answer:

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198. If a,b,c are positive real numbers

$\sqrt{a^{-1}b} \times \sqrt{b^{-1}c} \times \sqrt{c^{-1}a}$ is equal to

A. $\sqrt{abc}$

B. 1

C. abc

D. $\dfrac{1}{abc}$

Answer:

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199. If a,b,c are positive real number, then $5\sqrt{3125a^{10}b^5c^{10}}$ is equal to

A. $5a^2bc^2$

B. $5a^3bc^3$

C. $25ab^2c$

D. $125a^2bc^2$

Answer:

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200. The value of $\left[\left\{\left(\dfrac{1}{7^2}\right)^{-2}\right\}^{1/4}\right]$

A. 2

B. 7

C. $-\dfrac{1}{3}$

D. $\dfrac{1}{4}$

Answer:

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201. If $\dfrac{3^{5x} \times 81^2 \times 6561}{3^{2x}} = 3^7$, then x=

A. -3

B. 3

C. $-\dfrac{1}{3}$

D. $\dfrac{1}{4}$

Answer:

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202. Every rational number is:

A. a natural number

B. an integer

C. a real number

D. a whole number

Answer:

203. Fill in the blanks :

Between two rational numbers there exist ……….. Rational numbers.

A. there is not rational number

B. there are exactly one rational number

C. there are infinitely many rational numbers

D. there are only rational numebr and no irrational numbers.

Answer:

204. Decimal repesentation of a rational number cannot be:

A. terminating

B. non-terminating

C. non-terminating repeating

D. non-terminating non-repeating

Answer:

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205. The decimal expansion of the number $\sqrt{2}$ is

A. a finite decimal

B. 1.41421

C. non-terminating recurring

D. non-terminating non-recurring.

Answer:

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206. Which of the following is irrational?

A. $\dfrac{\sqrt{4}}{9}$

B. $\dfrac{\sqrt{12}}{\sqrt{3}}$

C. $\sqrt{7}$

D. $\sqrt{81}$

Answer:

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207. Which of the following is irrational?

A. 0.14

B. $0.14\overline{16}$

C. $0.\overline{1416}$

D. 0.4014001400014..

Answer:

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208. A rational number between $\sqrt{2}$ and $\sqrt{3}$ is

A. $\dfrac{\sqrt{2} + \sqrt{3}}{2}$

B. $\dfrac{\sqrt{2} \times \sqrt{3}}{2}$

C. 1.5

D. 1.8

Answer:

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209. The value of 1.999 in thr form p/q, where p and q are integers and $q \neq 0$ is

A. $\dfrac{19}{10}$

B. $\dfrac{1999}{1000}$

C. 2

D. $\dfrac{1}{9}$

Answer:

210. $2\sqrt{3} + \sqrt{3}$ is equal to

A. $2\sqrt{6}$

B. 6

C. $3\sqrt{3}$

D. $4\sqrt{6}$

Answer:

211. $\sqrt{10} \times \sqrt{15}$ is equal to

A. $6\sqrt{5}$

B. $5\sqrt{6}$

C. $\sqrt{25}$

D. $10\sqrt{5}$

Answer:

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212. The number obtained to rationaslisng the denominator of

$$\frac{1}{\sqrt{7} - 2} \text{ is}$$

A. $\dfrac{\sqrt{7} + 2}{3}$

B. $\left(\sqrt{7} - 2\right)3$

C. $\dfrac{\sqrt{7} + 2}{5}$

D. $\dfrac{\sqrt{7} + 2}{45}$

Answer:

213. $\dfrac{1}{\sqrt{9} - \sqrt{8}}$ is equal to

A. $\dfrac{1}{2}\left(3 - 2\sqrt{2}\right)$

B. $\dfrac{1}{3 + 2\sqrt{2}}$

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

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

Answer:

214. After rationalising the denominator of $\dfrac{7}{3\sqrt{3} - 2\sqrt{2}}$, we get the denominator as

A. 13

B. 19

C. 5

D. 35

Answer:

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215. The value of $\dfrac{\sqrt{32} + \sqrt{48}}{\sqrt{8} + \sqrt{12}}$ is equal to

A. $\sqrt{2}$

B. 2

C. 4

D. 8

Answer:

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216. If $\sqrt{2} = 1.4142$ then $\sqrt{\dfrac{\sqrt{2} - 1}{\sqrt{2} + 1}}$ is equal to :

A. 2.14142

B. 5.8282

C. 0.4142

D. 0.1718

Answer:

217. $4\sqrt{3\sqrt{2}^2}$ equals

A. $2^{-\frac{1}{6}}$

B. 2^{-6}

C. $2^{\frac{1}{6}}$

D. 2^6

Answer:

218. $3\sqrt{2} \times 4\sqrt{2} \times 12\sqrt{32}=$

A. $\sqrt{2}$

B. 2

C. $12\sqrt{2}$

D. $12\sqrt{32}$

Answer:

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219. Value of $4\sqrt{81}^2$ is

A. $1/9$

B. $1/3$

C. 9

D. $1/81$

Answer:

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220. Value of $(256)^{0.16} \times (256)^{0.09}$ is :

A. 4

B. 16

C. 64

D. 256.25

Answer:

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221. Which of the following is equal to x?

A. $x^{12/7} - x^{5/7}$

B. $12\sqrt{x^{4^{\frac{1}{3}}}}$

C. $\left(\sqrt{x^3}\right)^{\frac{2}{3}}$

D. $x^{12/7} \times x^{7/12}$

Answer:

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222. Write two irrational numbers between 2.4713 and 2.4742

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223. Check whether $-\dfrac{\sqrt{63}}{\sqrt{448}}$ is a rational number or an irrational number.

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224. Simplify: $\dfrac{2^{-1} \times 2}{\left(2^2 \times 3^{-4}\right)^{\frac{7}{2}}} \times \dfrac{2^{-2} \times 3^2}{\left(2^3 \times 3^{-5}\right)^{-\frac{5}{2}}}$

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225. Represent 2.7295 on the number line.

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226. Repesent $\sqrt{5}$, $\sqrt{10}$ and $\sqrt{17}$ on the number line.

227. Show that 0.142857142857 = $\dfrac{1}{7}$

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228. Simplify: $4\sqrt{81} - 83\sqrt{216} + 155\sqrt{32} + \sqrt{225}$.

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229. Simplify: $\left(\dfrac{3}{4}\right)^4 \left(\dfrac{8}{5}\right)^{-\frac{3}{2}} \left(\dfrac{32}{5}\right)^6$

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230. If $\sqrt{2} = 1.414, \sqrt{3} = 1.732$ then find the value of

$$\frac{4}{3\sqrt{3} - 2\sqrt{2}} + \frac{3}{3\sqrt{3} + 2\sqrt{2}}$$

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231. Visualise 3.765 on the number line, using successive magnification.

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232. If x=$\dfrac{\sqrt{3} + \sqrt{2}}{\sqrt{3} - \sqrt{2}}$ and $y = \dfrac{\sqrt{3} - \sqrt{2}}{\sqrt{3} + \sqrt{2}}$, then find the value of $x^2 + y^2$

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