



MATHS

BOOKS - RD SHARMA MATHS (ENGLISH)

NUMBER SYSTEM

Others

1. Represent $\sqrt{6}$, $\sqrt{7}$, $\sqrt{8}$ on the number line.



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2. Represent $\sqrt{3.\bar{5}}$, $\sqrt{9.\bar{4}}$, $\sqrt{10.\bar{5}}$ on the real number line.



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3. Find the decimal expansions of $10/3$, $7/8$ and $1/7$.



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4. What can the maximum number of digits be in the repeating block of digits in the decimal expansion of $1/7$? Perform the division of check your answer.



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5. Write the following in decimal form and say what kind of decimal expansion each has : (i) $36/100$ (ii) $1/11$ (iii) $3/11$ (iv) $2/11$ (v) $329/400$



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6. Find the decimal representation of $\frac{-16}{45}$.



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7. Express each of the following decimals in the form $\frac{p}{q}$: (i) 0.1 (ii) 0.2 (iii) 0.3 (iv) 0.4 (v) 0.5 (vi) 0.6



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8. Express each of the following decimals in the form $\frac{p}{q}$: (i) $0.\overline{35}$ (ii) $0.\overline{585}$



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9. Find the decimal representation of $\frac{22}{7}$.



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10. Express each of the following decimal numbers in the form $\frac{p}{q}$: 15.75 (ii) 8.0025 (iii)

-25.6875



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11. Visualise $2.6\bar{6}5$ on the number line, using successive magnification.



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12. Visualize the representation of $5.3\bar{7}$ on the number line upto 5 decimal places, that is, up to 5.37777 .



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13. Show that $1.272727 = 1.27$ can be expressed in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$.



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14. Express 0.99999 in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$.



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



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16. Find two irrational numbers between 2 and 2.5.



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17. Express $\frac{7}{8}$ in the decimal form by long division method.



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18. Find five rational numbers between $\frac{3}{5}$ and $\frac{4}{5}$.



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19. Express $\frac{2157}{625}$ in the decimal form.



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20. Convert $\frac{35}{16}$ into decimal form by long division method.



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21. Find the rational number between

$$-\frac{2}{3} \text{ and } \frac{1}{4}.$$



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22. Insert 10 rational numbers between

$$-\frac{3}{13} \text{ and } \frac{9}{13}.$$



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23. Find 10 rational numbers between $\frac{-3}{11}$ and $\frac{8}{11}$ by mean method.



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24. Express each of the following mixed recurring decimals in the form $\frac{p}{q}$. (i) $4.3\bar{2}$ (ii)

15. $7\bar{12}$



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25. If $\frac{1}{7} = 0.142857$, write the decimal expression of $\frac{2}{7}, \frac{3}{7}, \frac{4}{7}, \frac{5}{7}$ and $\frac{6}{7}$ without actually doing the long division.



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26. Convert the following decimal number in the form $\frac{p}{q}$. 5. $\bar{2}$ (ii) 23. $\overline{43}$



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27. Express 0. $\overline{001}$ as a fraction in the simplest form.



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28. Find the decimal representation of $\frac{8}{3}$.





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29. Express $-\frac{17}{8}$ in decimal form by long division method.



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30. Prove that \sqrt{n} is not a rational number. if n is not a perfect square.



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31. Show that $0.2353535\dots = 0.2\overline{35}$ can be expressed in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$.



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32. Represent $\frac{5}{3}$ and $-\frac{5}{3}$ on the number line



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33. Represent $\frac{5}{3}$ and $-\frac{8}{5}$ on the number line



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34. Find a rational number between 2 and 6.



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35. Find a rational number between

$$-\frac{2}{3} \text{ and } \frac{1}{4}$$



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36. Find three rational numbers between -2 and 5



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37. Insert 10 rational numbers between $-\frac{3}{11}$ and $\frac{13}{11}$



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38. Insert 10 rational numbers between

$$\frac{-3}{13} \text{ and } \frac{9}{13}$$



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39. Is zero a rational number? Can you write it

in the form $\frac{p}{q}$, where p and q are integers

and $q \neq 0$?



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40. Find five rational numbers between 1 and 2



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41. Find six rational numbers between 3 and 4



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42. Find four rational numbers between $\frac{3}{5}$ and $\frac{4}{5}$.



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43. Are the following statements true or false?

Give reasons for your answer? Every whole number is a natural number Every integer is a rational number. Every rational number is an integer. Every natural number is a whole number. Every integer is a whole number Every rational number is a whole number



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44. Express $\frac{7}{8}$ in the decimal form by long division method.



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45. Convert $\frac{35}{16}$ into decimal form by long division method.



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46. Express $\frac{2157}{625}$ in the decimal form.



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47. Express $\frac{-17}{8}$ in decimal form by long division method.



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48. Find the decimal representation of $\frac{8}{3}$.



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49. Express $\frac{2}{11}$ as a decimal fraction.



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50. Find the decimal representation of $\frac{-16}{45}$



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51. Find the decimal expansion of $\frac{1}{7}$



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52. What can the maximum number of digits be in the repeating block of digits in the decimal expansion of $\frac{1}{17}$? Perform the division to check your answer.



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53. Find the decimal representation of $\frac{22}{7}$



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54. Express the following rational numbers as decimals:

(i) $\frac{42}{100}$

(ii) $\frac{327}{500}$

(iii) $\frac{15}{4}$



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55. Express the following rational numbers as decimals: $\frac{2}{3}$



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56. 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. Can you guess what property q must satisfy?



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57. Express each of the following numbers in the form $\frac{p}{q}$

(i) 0.15

(ii) 0.675

(iii) 0.00026



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58. Express each of the following numbers in

the form $\frac{p}{q}$ (i) 15.75 (ii) 8.0025 (iii) -25.6875



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59. Express each of the following decimals in the form $\frac{p}{q}$: (i) 0.1 (ii) 0.2 (iii) 0.3



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60. Express each of following decimals in the form $\frac{p}{q}$ (i) $0.\bar{4}$ (ii) $0.\bar{5}$ (iii) $0.\bar{6}$



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61. Express each of the following decimals in the form $\frac{p}{q}$ (i) 0.35 (ii) 0.585



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62. Show that $1.272727 = 1.\overline{27}$ can be expressed in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$.



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63. Express $0.\overline{001}$ as a fraction in the simplest form.



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64. Convert the following decimal number in the form $\frac{p}{q}$ i) $5.2\bar{}$ (ii) 23.43



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65. If $\frac{1}{7} = 0.142857$, write the decimal expression of $\frac{2}{7}, \frac{3}{7}, \frac{4}{7}, \frac{5}{7}$ and $\frac{6}{7}$ without actually doing the long division.



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66. Express the following decimals in the form $\frac{p}{q}$: (i) 0. 32 (ii) 0. 123 (iii) 0. 00352



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67. Express each of the following mixed recurring decimals in the form $\frac{p}{q}$. (i) 4.32 (ii)

15.712



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68. Show that $0.2353535 \dots = 0.235$ can be expressed in the form $\frac{p}{q}$, where p and q integers and $q \neq 0$.



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



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



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71. Prove that \sqrt{n} is not a rational number. if n is not a perfect square.



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72. Give examples of two irrational numbers the product of which is: a rational number (ii) an irrational number



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73. The product of $\sqrt{2}$ and $\sqrt{3}$ is $\sqrt{6}$, which is an irrational number.



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74. Insert a rational and an irrational number between 2 and 3.



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75. Find two irrational number between *2 and 2.5*



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76. Find two irrational numbers lying between *$\sqrt{2}$ and $\sqrt{3}$*



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77. Find two irrational numbers between 0.12 and 0.13



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78. Find two rational numbers between $0.23233233323332\dots$ and $0.25255255525552\dots$



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79. Find the rational number and also an irrational number between the numbers a and b as given below: $a = 0.101001000100001$
 $b = 0.1001000100001$



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80. Find one irrational number between the number a and b given below:

$$a = 0.1111 = 0.1 \text{ and } b = 0.1101$$



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



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



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83. prove that $\sqrt{3} - \sqrt{2}$ is an irrational number.



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84. Examine, whether the following numbers are rational or irrational: (i) $(\sqrt{2} + 2)^2$ (ii) $(5 + \sqrt{5})(5 - \sqrt{5})$ (iii) $\frac{6}{2\sqrt{3}}$



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85. Define an irrational number.



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86. Explain, how irrational numbers differ from rational number?



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

(i) $\sqrt{7}$

(ii) $\sqrt{4}$

(iii) $2 + \sqrt{3}$



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88. Examine, whether the following numbers are rational or irrational: (i) $\sqrt{3} + \sqrt{2}$ (ii) $\sqrt{3} + \sqrt{5}$ (iii) $(\sqrt{2} - 2)^2$



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

(i) $(2 - \sqrt{2})(2 + \sqrt{2})$

(ii) $(\sqrt{2} + \sqrt{3})^2$



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90. Examine, whether the following numbers are rational or irrational: (i) $(\sqrt{5} - 2)$ (ii) $\sqrt{23}$

(iii) $\sqrt{255}$



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91. Examine, whether the following numbers are rational or irrational: (i) 0.3796 (ii) 7.478478..... (iii) 1.101001000100001`



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92. Identify the following as rational or irrational numbers. Give the decimal representation of rational numbers: $\sqrt{4}$ (ii) $3\sqrt{18}$ (iii) $\sqrt{1.44}$



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93. Identify the following as rational or irrational numbers. Give the decimal

representation of rational numbers: (i) $\sqrt{\frac{9}{27}}$

(ii) $-\sqrt{64}$ (iii) $\sqrt{100}$



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94. In the following equations, find which variables x , y , z etc. represent rational or

irrational numbers: (i) $x^2 = 5$ (ii) $y^2 = 9$ (iii)

$$z^2 = 0.04 \quad (iv) u^2 = \frac{17}{4}$$



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95. In the following equations, find which variables x , y , z etc. represent rational or irrational numbers: (i) $v^2 = 3$ (ii) $w^2 = 27$ (iii) $t^2 = 0.4$



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96. Give an example of each, of two irrational numbers whose: (i) difference is a rational number. (ii) difference is an irrational number. (iii) sum is a rational number. (iv) sum is an irrational number. (v) product is a rational number. (vi) product is an irrational number. (vii) quotient is a rational number. (viii) quotient is an irrational number.



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97. Give two rational numbers lying between

$0.232332333233332\dots$

and

$0.212112111211112\dots$



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98. Give two rational numbers lying between

$0.515115111511115\dots$ and $0.5353353335\dots$



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99. Find one irrational number between 0.2101 and 0.2222



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100. Find a rational number and also an irrational number lying between the numbers 0.3030030003..... and 0.3010010001.....



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101. Find two irrational numbers between 0.5 and 0.55



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102. Find two irrational numbers lying between 0.1 *and* 0.12



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



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



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105. Complete the following sentences: (i)

Every point on the number line corresponds to

a ... number which may be either..... or (ii)

The decimal form of an irrational number is

neither nor (iii) The decimal

representation of a rational number is either

..... or (iv) Every real number is either ...

number or..... number.



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106. If the difference between the roots of the equation $x^2 + ax + 1 = 0$ is less than $\sqrt{5}$, then the set of possible values of a is (1) $(-3, 3)$ (2) $(-3, \infty)$ (3) $(3, \infty)$ (4) $(-\infty, -3)$



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107. Represent $\sqrt{3.5}$, $\sqrt{9.4}$, $\sqrt{10.5}$ on the real number line.



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108. Find whether the following statements are true or false.

(i) Every real number is either rational or irrational.

(ii) π is an irrational number.

(iii) Irrational numbers cannot be represented by points on the number line.



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109. Visualise $2.\overline{665}$ on the number line, using successive magnification.



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110. Visualise the representation of $5.3\overline{7}$ on the number line upto 5 decimal places.



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111. Which one of the following is a correct statement?

Decimal expansion of a rational number is terminating

Decimal expansion of a rational number is non-terminating

Decimal expansion of an rational number is non-terminating and recurring

Decimal expansion of an rational number is non-terminating and non-repeating



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112. Which one of the following statement is true?

(i) The sum of two irrational numbers is always an irrational number.

(ii) The sum of two irrational numbers is always a rational number.

(iii) The sum of two irrational numbers may be a rational number or irrational number.

(iv) The sum of two irrational numbers is always an integer.



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113. Which of the following is a correct statement?

(A) Sum of two irrational numbers is always irrational

(B) Sum of a rational and irrational number is always an irrational number

(C) Square of an irrational number is always an irrational number

(D) Sum of two rational numbers can never be an integer



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114. Which of the following statements is true?
product of two irrational numbers is always irrational
Product of a rational and an irrational number is always irrational
Sum of two irrational numbers can never be irrational
Sum of an integer and a rational number can never be an integer



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115. Which of the following is irrational?

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

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

C. $\sqrt{7}$

D. $\sqrt{81}$

Answer: C



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116. Which of the following is irrational?

(a) 0.14

(b) $0.14\overline{16}$

(c) $0.\overline{1416}$

(d) $0.1014001400014\dots$



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117. Which of the following is rational? $\sqrt{3}$ (b)

π (c) $\frac{4}{0}$ (d) $\frac{0}{4}$



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118. The number $0.318564318564318564\dots$ is:

(a) natural number

(b) an integer

(c) rational number

(d) an irrational number

A. (a) natural number

B. (b) an integer

C. (C) rational number

D. (d) an irrational number

Answer: null



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119. If n is a natural number, then \sqrt{n} is:

- A. (a) always a natural number
- B. (b) always an irrational number
- C. (c) always a rational number
- D. (d) sometimes a natural number and sometimes an irrational number

Answer: null



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

A. $\frac{39}{24}$

B. $\frac{3}{16}$

C. $\frac{3}{11}$

D. $\frac{137}{25}$

Answer: C



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121. Every point on a number line is represented as:

- (a) a unique real number
- (b) a natural number
- (c) a rational number
- (d) an irrational number



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122. An irrational number between 2 and 2.5

is $\sqrt{11}$ (b) $\sqrt{5}$ (c) $\sqrt{22.5}$ (d) $\sqrt{12.5}$





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123. Which of the following is irrational?

A. (a) 0. 15

B. (b) 0. 01516

C. (c) 0. 1516

D. (d) 0. 50150015000015...

Answer: null



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124. The number of consecutive zeros in $2^3 \times 3^4 \times 5^4 \times 7$, is

A. 3

B. 2

C. 4

D. 5

Answer: A



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125. The number $1.272727\dots$ in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$, is

A. (a) $\frac{14}{9}$

B. (b) $\frac{14}{11}$

C. (c) $\frac{14}{13}$

D. (d) $\frac{14}{15}$

Answer: null



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126. The number 0.3 in the form $\frac{p}{q}$, where p and q are integers and $q \neq 0$, is

(a) $\frac{33}{100}$

(b) $\frac{3}{10}$

(c) $\frac{1}{3}$

(d) $\frac{3}{100}$



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127. The smallest rational number by which $\frac{1}{3}$ should be multiplied so that its decimal

expansion terminate after one place of decimal, is

A. (a) $\frac{1}{10}$

B. (b) $\frac{3}{10}$

C. (c) 3

D. (d) 30

Answer: null



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128. $0.\overline{32}$ when expressed in the form $\frac{p}{q}$ (p, q are integers $q \neq 0$), is

(a) $\frac{8}{25}$

(b) $\frac{29}{90}$

(c) $\frac{32}{99}$

(d) $\frac{32}{199}$



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129. $23.\overline{43}$ when expressed in the form $\frac{p}{q}$ (p, q are integers $q \neq 0$), is $\frac{2320}{99}$ (b) $\frac{2343}{100}$ (c)

$$\frac{2343}{1999} \quad (d) \quad \frac{2320}{999}$$



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130. The value of $0.23 + 0.22$ is (a) 0.45 (b) 0.43 (c) 0.47 (d) 0.41



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