MATHS

BOOKS - ASHOK PUBLICATION ASSAM

Rational Numbers

Example

1. The co-ordinate of the two points A and B on the number line are 6 & 14 respectively. If co-

ordinate of the C on the line is 10, then show tha C is equidistant from A and B.

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2. The co-ordinate of the two points A and B on the number line are 6 & 14 respectively. If co-ordinate of the C on the line is 10, then show tha C is equidistant from A and B.

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3. Determine the distances between the points

:

2,6

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4. Determine the distances between the points

:

-2, +1

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5. Determine the distances between the points

:

$$-\frac{1}{2}, \quad -\frac{1}{4}$$

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6. Determine the distances between the points

:

-2, -7

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7. Determine the distances between the points

:

$0, \sqrt{2}$

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8. Determine the distances between the points

:

$0, -\sqrt{2}$.

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9. x is a real number,

If $x < y$, on which side of x does y lie?

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10. x is a real number,

If $x < y$ and $y < 0$ what will be the positions of x and y?

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11. Using appropriate properties find.

$$-\frac{2}{3}\times\frac{3}{5}+\frac{5}{2}-\frac{3}{5}\times\frac{1}{6}$$

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12. Using appropriate properties find.

$$\frac{2}{5}\times\left(-\frac{3}{7}\right)-\frac{1}{6}\times\frac{3}{2}+\frac{1}{14}\times\frac{2}{5}$$

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13. Write the additive inverse of the following

$$\frac{2}{8}$$

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14. Write the additive, inverse of the following.

$$\frac{-5}{9}$$

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15. Write the additive, inverse of each of the following.

$$\frac{-6}{-5}$$

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16. Write the additive, inverse of the following.

$$\frac{2}{-9}$$

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17. Write the additive inverse of the following.

$$\frac{19}{-6}$$

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18. Verify that $-(-x) = x$ for

$$x = \frac{11}{15}$$

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19. Verify that $-(-x) = x$ for $x = \frac{13}{17}$

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20. Find the multiplicative inverse of the following.

-13

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21. Find the multiplicative inverse of the following.

$$\frac{-13}{19}$$

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22. Find the multiplicative inverse of the following.

$$\frac{1}{5}$$

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23. Find the multiplicative inverse of the following.

$$\frac{-5}{-8} \times \frac{-3}{7}$$

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24. Find the multiplicative inverse of the following.

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

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25. Find the multiplicative inverse of the following.

-1

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26. Name the property under multiplication used in each of the following.

$$\frac{-4}{5} \times 1 = 1 \times \frac{-4}{5} = -\frac{4}{5}$$

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27. Name the property under multiplication used in each of the following.

$$\frac{-13}{17} \times \frac{-2}{7} = \frac{-2}{7} \times \frac{-13}{17}$$

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28. Name the property under multiplication used in each of the following.

$$\frac{-19}{29} \times \frac{29}{-19} = 1$$

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29. Multiply $\frac{6}{13}$ by the reciprocal of $\frac{-7}{16}$.

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30. Tell what property allows you to compute.

$\frac{1}{3} \times \left(6 \times \frac{4}{3}\right)$ as $\left(\frac{1}{3} \times 6\right) \times \frac{4}{3}$

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31. Is $\frac{8}{9}$ the multiplicative inverse of $-1\frac{1}{8}$?

Why or why not?

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32. Is 0.3 the multplicative inverse of `3(1)/(3)? Why or why not?

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33. Write the rational number that does not a have a reciprocal

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34. Write the rational number that are equal to their reciprocals

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35. Write the rational number that is equal to its negative

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36. Fill in the blanks.

Zero has ---- reciprocal.

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37. Fill in the blanks.

The number ---- and ---- aretheir own reciprocals.

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38. Fill in the blanks.

The reciprocal of -5 is ----

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39. Fill in the blanks.

Reciprocal of $\frac{1}{x}$ where x is 0 is ------

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40. Fill in the blanks.

The product of two rational numbers is always

a ----------

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41. Fill in the blanks.

The reciprocal of a positive rational number is

-----.

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42. Write five rational numbers greater than -2

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43. Find ten rational numbers between $\frac{3}{5}$ and $\frac{3}{4}$

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44. Fill in the blanks in the following table.

Numbers	Closed under			
	Addition	Subtraction	Multiplication	Division
Rational numbers	Yes	Yes	.....	No
Integers	....	Yes	.....	No
Whole numbers	....	.....	Yes	.....
Natural numbers	....	No	.....	.....

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45. Complete the following table.

Numbers	Associative for			
	Addition	Subtraction	Multiplication	Division
Rational numbers	.....	.....	.....	No
Integers	....	.....	Yes	.....
Whole numbers	Yes	.....	.....	.....
Natural numbers	....	No	.....	.....

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46. Complete the following table.

Numbers	Associative for			
	Addition	Subtraction	Multiplication	Division
Rational numbers	.....	.....	.....	No
Integers	....	.....	Yes	.....
Whole numbers	Yes	.....	.....	.....
Natural numbers	....	No	.....	.....

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47. Find using distributive Law:

$$\left\{\frac{7}{5}\right) \times \left(\frac{-3}{12}\right)\right\} + \left\{\frac{7}{5} \times \frac{5}{12}\right\}$$

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48. Find using distributive Law:

$$\left\{\frac{9}{16} \times \frac{4}{12}\right\} + \left\{\frac{9}{16} \times \frac{1-3}{9}\right\}$$

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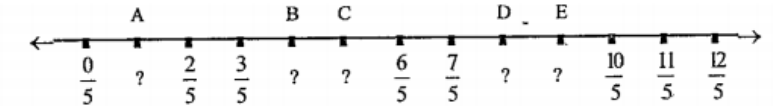
49. Write the rational number for each point labelled with a letter.



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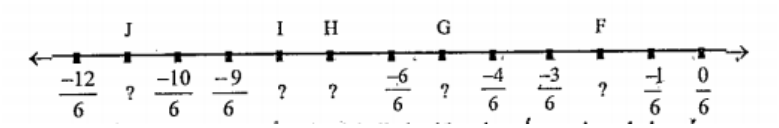
50. Write the rational number for each point labelled with a letter.



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51. According to which properties the following results are true:

$(-4) \times 5 = 5 \times (-4)$

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52. According to which properties the following results are true:

$3(4+5) = 3 \times 4 + 3 \times 5$

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53. According to which properties the following results are true:

$(5+4)+7 = 5+(4+7)$

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54. According to which properties the following results are true:

$(-8) \times 0 = 0$

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55. According to which properties the following results are true:

$1 \times (-7) = -7$

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56. Is the set of integers closed under the operation of substraction? Give examples

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57. Is the set of integers closed under the operation of substraction? Give examples

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58. Is the set of integers closed under the operation of Multiplication? Give examples

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59. Is the set of integers closed under the operation of Division? Give examples

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60. Simplify :

$8 \times (-4) \times (-2)$

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61. Simplify :

$(8+4) \div (-2)$

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62. Simplify :

$\left(\frac{-3 \times -4}{3} - 5\right)(-60)$

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63. Simplify :

$$\frac{-1 \times 4 \times -6}{-24}$$

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64. Simplify :

$$(-3)^2 \times (-2)^3$$

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65. Simplify :

$$\frac{(-4)^2 \times (-3)}{2 \times (-6-2)}$$

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66. Simplify :

$$\frac{8 \times (-4) \times (-2)^2}{(-16) \times (-8)}$$

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67. Show that:

'0' is a rational number.

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68. Show that:

Every natural number is a rational number.

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69. Show that:

Every integer is a rational number.

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70. Which rational number has no multiplicative inverse?

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71. Can a rational number be its own additive inverse?

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72. Can a rational number be its own multiplicative inverse?

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73. Express the following rational numbers in recurring decimals

$\frac{3}{7}$

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74. Expression the following rational numbers in recurring decimals

$\frac{9}{16}$

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75. Express the following rational numbers in recurring decimals

$$\frac{29}{80}$$

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76. Express the following rational numbers in recurring decimals

$$\frac{16}{27}$$

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77. Show that the following resurring decimals are rational numbers?

$3.\overline{50}$

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78. Show that the following resurring decimals are rational numbers?

$0.\bar{5}$

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79. Show that the following resurring decimals are rational numbers?

$2.\overline{6}$

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80. Show that the following resurring decimals are rational numbers?

$0.\overline{63}$

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81. Show that the following resurring decimals are rational numbers?

17. $\overline{18}$

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82. Show that the following resurring decimals are rational numbers?

65. $\overline{81}$

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83. Show that the following resurring decimals are rational numbers?

$0.\overline{635}$

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84. Show that the following resurring decimals are rational numbers?

$1.\overline{93}$

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85. Show that $0.\bar{9} = 1$

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86. Find if the following real number is rational or irrational:

$5\frac{1}{3}$

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87. Find if the following real number is rational or irrational:

0

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88. Find if the following real number is rational or irrational:

$-\frac{1}{4}$

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89. Find if the following real number is rational or irrational:

$-\sqrt{2}$

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90. Find if the following real number is rational or irrational:

$2-\sqrt{2}$

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91. Find if the following real number is rational or irrational:

$0.\overline{62}$

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92. Find if the following real number is rational or irrational:

$\frac{\pi}{2}$

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93. Find if the following real number is rational or irrational:

$3.\overline{124}$

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94. Find if the following real number is rational or irrational:

$1.010010001\ldots\ldots$

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95. Find if the following real number is rational or irrational:

$$-\frac{\pi}{4}$$

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96. Is the set of natural numbers N closed under the operation subtraction? Is the set of integers also closed under this operation?

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97. Is there any additive inverse element of a natural number? What about this, in the case integers?

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98. Whether every rational number (except 0) has a multiplicative inverse? Is is true in the case of an integers (except 0)?

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99. Which element in the set of rational numbers is called multiplicative identity?

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100. Use the symbols <, =, > appropriately in place of "?"

`4 ? 3'

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101. Use the symbols <, =, > appropriately in place of "?"

$3?4$

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102. Use the symbols <, =, > appropriately in place of "?"

$-3?\ -1$

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103. Use the symbols <, =, > appropriately in place of "?"

$-2?0$

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104. Use the symbols <, =, > appropriately in place of "?"

$-9+1?(-2)\times 4$

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105. Use the symbols <, =, > appropriately in place of "?"

$$-\frac{1}{2}\,?\,-\frac{1}{3}$$

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106. Use the symbols <, =, > appropriately in place of "?"

$$-2(5+1)\,?\,(-4)\times 3$$

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107. Use the symbols <, =, > appropriately in place of "?"

$-3 ? 0$

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108. Show that

3 + 4 + 5 = 5 + 4 + 3

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109. Show that

$a + b + c = b + c + a$

Watch Video Solution

110. Show that

$a + b + c = c + a + b$

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111. Show that

$7 \times 5 \times 2 = 5 \times 2 \times 7$

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112. What is the additive inverse of the following real number?

3

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113. What is the additive inverse of the following real number?

3/4

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114. What is the additive inverse of the following real number?

0

 Watch Video Solution

115. What is the additive inverse of the following real number?

$\sqrt{2}$

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116. What is the additive inverse of the following real number?

$-\sqrt{3}$

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117. What is the additive inverse of the following real number?

$-\pi$

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118. What is the additive inverse of each of the following real numbers?

-3.15

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119. What is the additive inverse of each of the following real numbers?

$\sqrt{2}+1$

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120. Find the multiplicative inverse elements of the following real numbers:

1/2

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121. Find the multiplicative inverse elements of the following real numbers:

-4

Watch Video Solution

122. Find the multiplicative inverse elements of the following real numbers:

0

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123. Find the multiplicative inverse elements of the following real numbers:

$\sqrt{2}$

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124. Find the multiplicative inverse elements of the following real numbers:

$1 + \pi$

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125. Find the multiplicative inverse elements of the following real numbers:

12.34

126. Find the multiplicative inverse elements of the following real numbers:

$.00013$

127. In the set of real numbers,

does subtraction satisfy the commutative law?

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128. In the set of real numbers.

does subtraction satisfy the associative law?

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129. In the set of real numbers.

is there an identify with respect to subtraction?

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130. In the set of real numbers.

is there an identify with respect to multiplication?

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131. Are the following relations true? If not, illustrate with examples.

$a(b + c) = ab + ac$

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132. Are the following relations true? If not, illustrate with examples.

$a + (b \times c) = (a + b) \times (a + c)$

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133. Are the following relations true? If not, illustrate with examples.

$(a - b) + b = a$

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134. Are the following relations true? If not, illustrate with examples.

$a \div (b + c) = (a \div b) \times (a \div c)$

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135. Carry out the operation of addition using additive inverse:

$79 + \ -47$

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136. Carry out the operation of addition using additive inverse:

$-19 + 13$

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137. Carry out the operation of addition using additive inverse:

$434 + \ -234$

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138. Carry out the operation of addition using additive inverse:

$99 + \ -999$

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139. Is the set A = {-2, -4, -6, -8,.....} closed, under addition

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140. Is the set A = {-2, -4, -6, -8,.....} closed, under subtraction

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141. Is the set A = {-2, -4, -6, -8,.....} closed, under multiplication? Given at least three

example in each case.

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142. Examine which of the following are rationals and which are not:

$$\frac{\sqrt{80}}{11}$$

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143. Examine which of the following are rationals and which are not:

$\frac{\sqrt{8}}{8}$

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144. Examine which of the following are rationals and which are not:

$-\frac{17}{19}$

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145. Examine which of the following are rationals and which are not:

$$\frac{\sqrt{12}}{\sqrt{36}}$$

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146. Examine which of the following are rationals and which are not:

$$\frac{1.01}{11}$$

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147. Examine if the following are rationals or not:

$$\frac{\sqrt{4}}{\sqrt{36}}$$

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148. Examine which of the following are rationals and which are not:

1.3

Watch Video Solution

149. Examine which of the following are rationals and which are not:

$7.77\ldots\ldots$

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150. Examine which of the following are rationals and which are not:

$1.141\ldots\ldots\ldots$

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151. Examine which of the following are rationals and which are not:

0.142857

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152. Find the product using the property or properties mentioned in braket against each of the following :

$17\frac{7}{9} \times 9$ (distributive property).

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153. Find the product using the property or properties mentioned in braket against each of the following :

$101\frac{11}{37} \times 37$ (distributive & commutative properties).

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154. Find the product using the property or properties mentioned in bracket against each of the following :

$\left(1+\frac{4}{7}\right) \times \frac{1}{11} \times 7$ (distributive and associative properties)

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155. Is $\frac{K}{0} = \alpha$ a rational or irrational?

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156. Is π a rational or irrational? Justify your answer.

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