MATHS

BOOKS - NAND LAL PUBLICATION

RATIONAL NUMBERS

Try These

1. 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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2. Complete the following table

Numbers	Commutative for			
	Addition	Subtraction	Multiplication	Division
Rational numbers	Yes	.....	.....	.....
Integer	.....	No	.....	.....
Whole numbers	.....	.....	Yes	.....
Natural numbers	.....	.....	.....	No

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3. 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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4. Find the using distributivity

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

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5. Find the using distributivity

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

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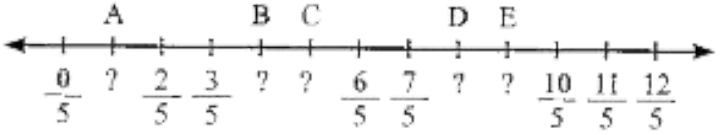
6. Write the rational number for each point labelled with a letter.



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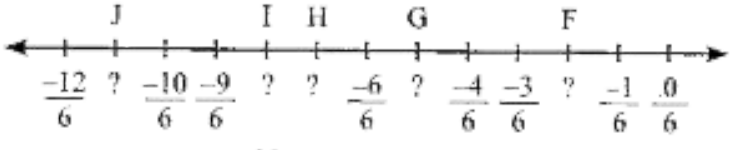
7. Write the rational number for each point labelled with a letter.



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Exercise 1 1

1. 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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2. Using appropriate properties find :

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

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

$$= \frac{2}{5} \times \left(\frac{-3}{7} + \frac{1}{14} \right) - \frac{1}{4}$$

$$= \frac{2}{5} \times \left(\frac{-6+1}{14} \right) - \frac{1}{4}$$

$$= \frac{\cancel{2}}{\cancel{5}} \times \frac{-\cancel{5}}{\cancel{14}} - \frac{1}{4}$$

$$= \frac{-1}{7} - \frac{1}{4}$$

$$\frac{-4-7}{28}$$

$$= \frac{-11}{28}$$

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3. Write the additive inverse of each of the following :

2/8

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4. Write the additive inverse of each of the following :

-5/9

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5. Write the additive inverse of each of the following . $\frac{-6}{-5}$

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6. Write the additive inverse of each of the following . $\frac{2}{-9}$

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7. Write the additive inverse of each of the following :

19/-6

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8. Verify that $-(-x) = x$ for $x = \frac{11}{5}$

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9. Verify that -(-x) =x for .

$x = \frac{-13}{17}$

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10. Find the multiplicative inverse of the :

-13

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11. Find the multiplicative inverse of the :

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

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12. Find the multiplicative inverse of the :

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

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13. Find the multiplicative inverse of the :

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

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14. Find the multiplicative inverse of the :

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

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15. Find the multiplicative inverse of the :

-1

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16. 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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17. Name the property under multiplication used in each of the

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

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

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

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

Why or why not?

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21. Is 0.3 the multiplicative inverse of $3\frac{1}{3}$? Why or why not?

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22. The rational number that does not have a reciprocal.

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23. The rational numbers that are equal to their reciprocals.

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24. The rational number that is equal to its negative.

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Exercise 1 1 Fill In The Blanks

1. Fill in the blanks : Zero has _____ reciprocal.

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2. Fill in the blanks : The numbers _____ and _____ are their own reciprocals

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3. Fill in the blanks : The reciprocal of – 5 is _____.

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4. Fill in the blanks : Reciprocal of $\frac{1}{x}$, where $x \neq 0$ is _____.

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5. Fill in the blanks : The product of two rational numbers is always a _____.

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6. Fill in the blanks : The reciprocal of a positive rational number is _____.

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Exercise 1 2

1. Represent these numbers on the number line. $\frac{7}{4}$

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2. Represent these numbers on the number line. $\frac{-5}{6}$

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3. Represent $\frac{-2}{11}, \frac{-5}{11}, \frac{-9}{11}$ on the number line.

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4. Write five rational numbers which are smaller than 2.

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5. Find ten rational numbers between $\frac{-2}{5}$ and $\frac{1}{2}$.

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6. Find five rational numbers between $\frac{2}{3}$ and $\frac{4}{5}$

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7. Find five rational numbers between $\frac{-3}{2}$ and $\frac{5}{3}$

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8. Find five rational numbers between $\frac{1}{4}$ and $\frac{1}{2}$

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9. Write five rational numbers greater than -2.

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

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Additional Questions For Practice Objective Type Questions

1. Fill in the blanks :

Rational number ..... Is called the

multiplicative identity .

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2. Fill in the blanks :

Multiplicative inverse of a rational number is its ..... .

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3. Fill in the blanks :

Between two rational numbers there exist

..... Rational numbers.

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4. Fill in the blanks :

The rational number $\frac{1}{2}$ lies between ..... And ..... On the number line .

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5. Fill in the blanks :

Product of rational number and its reciprocal

is .... .

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6. Fill in the blanks :

For a rational number to be positive numerator and denominator must have ..... .

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7. Fill in the blanks :

If x and y are two rational numbers then a

rational number between them is ..... .

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8. $-|-x| = -x$ for all rational number.

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9. Every rational number is an integer.

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10. Rational number are closed under the operation division.

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11. Multiplicative inverse of $\frac{7}{5}$ is - $\frac{-5}{7}$

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12. Reciprocal of a rational number is called its multiplicative inverse.

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13. All rational numbers can not be represented on a number line.

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14. $-\frac{1}{3}$ lies to the right of zero on the number line.

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15. Which of the following will be true if x = $-\frac{5}{9}$ and y = $\frac{2}{9}$

A. $x > y$

B. x=y

C. $x < y$

D. none of these

Answer:

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16. $\frac{-9}{-11}$ is a

A. the rational number

B. $+ve$ rational number

C. neither negative nor positive rational number

D. none of these

Answer:

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17. Multiplicative inverse of 0 is

A. 0

B. 1

C. Does not exist

D. none of these

Answer:

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18. If a=1 , b = 7 then multiplicative inverse of ab is

A. 7

B. $1/7$

C. 1

D. none of these

Answer:

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19. Which of the rational number is less than $\frac{5}{2}$

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

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

c. $\frac{5}{12}$

d. none

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

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

C. $\frac{5}{12}$

D. none of these

Answer:

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20. The value of $\frac{2}{5} - \frac{-3}{5} - \frac{-1}{2} + \frac{-1}{2}$ is

A. -1

B. 1

C. $\frac{1}{10}$

D. none of these

Answer:

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21. The value of $\frac{-7}{0}$ is

A. 0

B. -7

C. Not Defined

D. none of these

Answer:

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Additional Questions For Practice Short Answer Type Questions

1. Find property under addition in each of the :

$$\frac{3}{2} + 0 = 0 + \frac{3}{2}$$

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2. Find property under addition in each of the :

$$-\frac{5}{4} + \frac{2}{3} = \frac{2}{3} + \left(\frac{-5}{4}\right)$$

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3. Find property under addition in each of the :

$$\frac{1}{2}+\left(\frac{1}{3}+\frac{3}{4}\right)=\left(\frac{1}{2}+\frac{1}{3}\right)+\frac{3}{4}$$

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4. Find the sum of the additive inverse of $\frac{3}{-2}$ and the negative of $\frac{5}{4}$.

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5. Which positive number is its own reciprocal ?

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6. Which negative number is its own reciprocal ?

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7. Find the number whose reciprocal is $\frac{-7}{13}$

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8. Find the sum of additive inverse and multiplicative inverse of 3 .

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9. Multiply $\frac{-7}{10}$ by its multiplicative inverse.

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10. The additive inverse of x is same as the multiplicative inverse of $\frac{7}{11}$. Find the value of x.

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Additional Questions For Practice Long Answer Type Questions

1. Find the difference between the greatest and least of the given rational numbers $\frac{2}{3}, \frac{-5}{2}, \frac{7}{6}, \frac{-1}{3}, \frac{3}{10}$.

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2. Show that division of rational number is not associative.

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3. Verify closure property and commutative property for addition if $x = \frac{2}{9} y = \frac{1}{3}$

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Additional Questions For Practice Hots High Order Thinking Skill

1. Perimeter of square is 2 m more than $\frac{2}{3}$ the perimeter of rectangle . If perimeter of square is 10 m . Find the dimension of the rectangle if breadth is $\frac{1}{5}$ the length .

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Sample Paper For Practice Correct The Following Statements

1. $\left|\frac{-5}{7}\right|$ lies to the left of zero on the number line

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2. Additive inverse of $\frac{-5}{-8}$ is $\frac{5}{8}$

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3. Find three rational number lying between 5 and -2 is

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4. The product of zero and any rational number is 1.

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Sample Paper For Practice Fill In The Blank Spaces

1. The rational number that is equal to its negative.

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2. Fill in the blanks :

Product of rational number and its reciprocal is .... .

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3. Rational number _____ is the additive identity for rational numbers .

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4. Multiplicative inverse of _____ does not exist

.

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Sample Paper For Practice Answer The Multiple Choice Questions

1. $\frac{-5}{0}$ is a

A. $+ve$ rational number

B. $-ve$ rational number

C. neither $+ve$ or nor $-ve$ rational number

D.

Answer:

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2. If -1 is obtained on doubling a rational number then the rational number is

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

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

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

D.

Answer:

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3. Addition is commutative for

A. Rational number

B. Integers

C. both

D.

Answer:

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4. The value of $\left\{\frac{2}{5}-\left(\frac{-3}{5}\right)\right\} \times\left\{-\frac{1}{2} \div\left(-\frac{1}{2}\right)\right\}$ is

A. -1

B. 1

C. $\frac{1}{10}$

D.

Answer:

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Sample Paper For Practice Match The Following

1. (a) a+b=c - Commutative property for multiplication

(b) a+(b+c) = (a+b) +c - Distributive

property of multiplication over addition

(c) $a \times b = b \times a$ - Associative property for addition

(d) $a \times (b + c) = a \times b + a \times c$ - Closure property for addition

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2. Write all rational number whose absolute value is $\frac{3}{7}$

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3. Find if $33\frac{1}{3}$ is the multiplicative inverse of 0.03.

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4. Add $-\frac{1}{2}$ and its multiplicative inverse

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5. Multiply $\frac{3}{-7}$ and its additive inverse

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6. Write 4 rational number smaller than -3 .

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7. Using mean method find a rational number between $-\frac{3}{2}$ and $\frac{2}{3}$

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8. Why 0 has no reciprocal ? Justify the statement .

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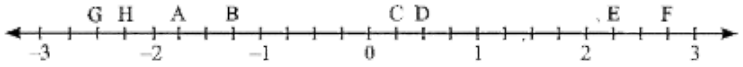
9. Write rational number represented by the points marked on the number line.



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10. Show that subtraction of rational number is not commutative.

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11. Verify associative property of multiplication for $\frac{2}{3}, \frac{-1}{6}, \frac{4}{3}$

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12. Insert 6 rational numbers between x and |x| when $x = -\frac{2}{3}$

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