RATIONAL NUMBERS

SYNOPSIS - 1

1. A Rational number can be expressed in $\frac{p}{q}$ form where p and q are integers, $q \neq 0$.

   Eg : i) $\frac{3}{4}$ is a rational number ii) $\frac{4}{0}$ is not a rational number

   iii) $\frac{0}{6}$ is a rational number

2. The quotient of two integers need not be always an integer.

   a) $\frac{8}{4} = 2$; b) $\frac{-9}{3} = -3$ quotients in (a) and (b) are integers.

   c) $\frac{5}{6}$ quotient is not an integer but a rational number.

3. A positive rational number is always greater than a negative rational number.

   i.e., $+\frac{3}{4} > -\frac{2}{3}$.

4. Zero is greater than each of the negative rational number and less than each one of the positive rational number.

   $-\frac{2}{5} < 0; \frac{3}{7} > 0$

5. If the denominators of two rational numbers are the same, the fraction with the smaller numerator is less than the other.

   Compare $\frac{4}{7}, \frac{6}{7}$. Denominators being equal and 4 < 6.

   $\therefore \frac{4}{7} < \frac{6}{7}$

6. If the denominators of two fractions are not the same, we should change them into fractions having the same denominators.

   Compare $\frac{3}{5}, \frac{4}{7}$.

   $\frac{3}{5} = \frac{3}{5} \times \frac{7}{7} = \frac{21}{35}$; $\frac{4}{7} = \frac{4}{7} \times \frac{5}{5} = \frac{20}{35}$

   $\therefore \frac{21}{35} > \frac{20}{35}$

7. On a number line, the number to the left of zero are smaller than zero and to the right are greater than zero.
8. The above points shows the need to include the set of all integers while studying properties of rational numbers.
9. To compare the rational number, we use two ways
   1) Number line
   2) Arithmetical process because rational numbers have an order relation.

WORK SHEET - 1

SINGLE ANSWER TYPE

1. Write 500m as fraction of a kilometer
   1) 1/3 2) 1/2 3) 1/4 4) 1/5
2. State which of the following are true
   1) $\frac{5}{8} = \frac{25}{40}$ 2) $\frac{6}{7} = \frac{12}{27}$ 3) $\frac{-2}{7} = \frac{4}{14}$ 4) $\frac{-8}{7} = \frac{-72}{56}$
3. Which of the following rational numbers are positive ?
   1) $\frac{-6}{17}$ 2) $\frac{5}{8}$ 3) $\frac{-50}{-59}$ 4) Both 1 & 2
4. Which of the following is true.
   1) every fraction is a rational number
   2) All integers are rational numbers
   3) The quotient of two integers is always a rational number
   4) All of the these
5. Express –5/19 as a rational number with numerator as –30
   1) $\frac{-30}{38}$ 2) $\frac{-30}{57}$ 3) $\frac{-30}{114}$ 4) $\frac{-30}{76}$
6. Express $\frac{12}{-7}$ as a rational number with denominator as -63
   1) $\frac{48}{-63}$ 2) $\frac{60}{-63}$ 3) $\frac{96}{-63}$ 4) $\frac{108}{-63}$
7. Express $\frac{-40}{56}$ as a rational number with numerator= –5
   1) $\frac{-5}{8}$ 2) $\frac{-5}{7}$ 3) $\frac{-5}{18}$ 4) $\frac{-5}{6}$
8. Express $\frac{84}{-147}$ as a rational number with denominator = –7
   1) $\frac{4}{-7}$ 2) $\frac{12}{-21}$ 3) $\frac{14}{-7}$ 4) $\frac{3}{-7}$
9. If 72 ares is expressed as a fraction of 24 hectares then the fraction is
   1) 3/10 2) 3/100 3) 3/1000 4) 3/10000
10. If $\frac{3' x}{2' y} = \frac{48}{72}$, then $\frac{x}{y}$ in its lowest terms is
    1) 3/9 2) 2/9 3) 4/9 4) 5/9

11. A perison's monthly salary is Rs 19,200. If he spends Rs 2,500 on rent, Rs.3,800 on food, Rs.4,000 on travelling and Rs4,100 on medicines, then the fraction of savings is
    1) 1/3 2) 2/3 3) 1/4 4) 1/5
12. If 3rd multiple of 4 is divided by 8th multiple of 2, then its equivalent fraction is
    1) 72/96 2) 72/48 3) 72/120 4) 72/36

MULTI ANSWER TYPE

13. Which of the following rational number is positive, if p, q, m $\in$ Q+
    1) $\frac{p \times m}{q \times m}$ 2) $\frac{p + m}{q + m}$ 3) $\frac{p - m}{q - m}$ 4) $\frac{p \div m}{q \div m}$
14. Which of the following rational number is positive
    1) $\frac{13}{19}$ 2) $\frac{-39}{58}$ 3) $\frac{-28}{-41}$ 4) $\frac{6}{-31}$

REASONING ANSWER TYPE

15. *Statement I* : $\frac{347}{-79}$ is a rational number

    Statement II: Rational numbers are in the form of $\frac{a}{b}$, where a, b are integers and $b \neq 0$
    1. Both Statements are true, Statement II is the correct explanation of Statement I.
    2. Both Statements are true, Statement II is not correct explanation of Statement I.
    3. Statement I is true, Statement II is false.
    4. Statement I is false, Statement II is true.

16. *Statement I* : $\frac{p}{q}$ is a rational number if p and q integer where $q \neq 0$

    Statement II: $\frac{m}{n}$ is a fraction if m and n are whole numbers where $n \neq 0$
    1. Both Statements are true, Statement II is the correct explanation of Statement I.
    2. Both Statements are true, Statement II is not correct explanation of Statement I.
    3. Statement I is true, Statement II is false.
    4. Statement I is false, Statement II is true.

COMPREHENSION TYPE

A rational number $\frac{p}{q}$ is positive if both p and q are either positive or negative.

A rational number $\frac{p}{q}$ is negative, if any one of p and q are negative. Two rational number $\frac{a}{b}$ and $\frac{c}{d}$ are equal if ad= bc

17. $\frac{5' (-6)' (-9)}{(-3)' 9' 4}$ is _____rational number

1) Positive 2) negetive 3) Both 1& 2 4) None

18. $\frac{2^{10} - 3^{10}}{5^{10} - 6^{10}}$ is _____rational number

1) Positive 2) negetive 3) Both 1& 2 4) None

19. Express $\frac{23}{29}$ as a negative rational number with numerator as 69.

1) $\frac{69}{-29}$ 2) $\frac{-69}{87}$ 3) $\frac{69}{-87}$ 4) $\frac{-69}{-87}$

MATRIX MATCHING TYPE

20.

Column-I	Column-II
a) $\frac{3' 17}{17' 7} =$	1) $\frac{7}{17}$
b) $\frac{(-17)' 19}{(-17)' 3} =$	2) $\frac{3}{7}$
c) $\frac{19' 7}{17' 19}$	3) $\frac{7}{3}$
d) $\frac{(-17)' 19}{(-19)' 7}$	4) $\frac{19}{3}$
	5) 17/7

21.

Column-I	Column-II
a) $\frac{315' 219}{817' 927}$	1) Positive rational number
b) $\frac{(-619)' 1013}{719' (-1215)}$	2) Rational number
c) $\frac{1015' 706' 111}{222' 353' 1015}$	3) Fraction
d) $\frac{1915' (-9376)}{(-516)' (-5555)}$	4) Negative rational number
	5) Unity

INTEGER ANSWER TYPE

22. The quotient of 16^{th} multiple of 2 with 2^{nd} multiple of 4 is _____

23. $\frac{9' 18' 14' R}{3' 5' 6' (-7)} = \frac{(-18)' 6' 3' 21}{7(-15)' 2' 3}$ then R = _____

SYNOPSIS - 2

1. A Rational number can be expressed in $\frac{p}{q}$ form where p and q are integers, $q \neq 0$.

   Eg : i) $\frac{3}{4}$ is a rational number ii) $\frac{4}{0}$ is not a rational number

   iii) $\frac{0}{6}$ is a rational number

2. The quotient of two integers need not be always an integer.

   a) $\frac{8}{4} = 2$; b) $\frac{-9}{3} = -3$ quotients in (a) and (b) are integers.

   c) $\frac{5}{6}$ quotient is not an integer but a rational number.

3. A positive rational number is always greater than a negative rational number.

   i.e., $+\frac{3}{4} > -\frac{2}{3}$.

4. Zero is greater than each of the negative rational number and less than each one of the positive rational number.

   $-\frac{2}{5} < 0; \frac{3}{7} > 0$

5. If the denominators of two rational numbers are the same, the fraction with the smaller numerator is less than the other.

   Compare $\frac{4}{7}, \frac{6}{7}$. Denominators being equal and 4 < 6.

   $\therefore \frac{4}{7} < \frac{6}{7}$

6. If the denominators of two fractions are not the same, we should change them into fractions having the same denominators.

   Compare $\frac{3}{5}, \frac{4}{7}$.

   $\frac{3}{5} = \frac{3}{5} \times \frac{7}{7} = \frac{21}{35}$; $\frac{4}{7} = \frac{4}{7} \times \frac{5}{5} = \frac{20}{35}$

   $\therefore \frac{21}{35} > \frac{20}{35}$

WORK SHEET - 2

SINGLE ANSWER TYPE

1. Compare $\frac{9}{15}$ and $\frac{11}{6}$

   1) $\frac{9}{15} > \frac{11}{6}$ 2) $\frac{9}{15} < \frac{11}{6}$ 3) $\frac{9}{15} = \frac{11}{6}$ 4)None

2. Compare $\frac{3}{-14}$ and $\frac{5}{21}$

   1) $\frac{3}{-14} < \frac{5}{21}$ 2) $\frac{3}{-14} > \frac{5}{21}$ 3) $\frac{3}{-14} = \frac{5}{21}$ 4) Both 1& 3

3. $-\frac{1}{2} \square \frac{-3}{5}$ which of the symbols '=', ' < or >' should replace the blank box ?

   1) = 2) < 3) > 4) Both 1& 2

4. Arrange in order from least to greatest $\frac{1}{3}, \frac{3}{7}, \frac{2}{5}$

   1) $\frac{1}{3}, \frac{3}{7}, \frac{2}{5}$ 2) $\frac{1}{3}, \frac{2}{5}, \frac{3}{7}$ 3) $\frac{2}{5}, \frac{3}{7}, \frac{1}{3}$ 4) $\frac{3}{7}, \frac{2}{5}, \frac{1}{3}$

5. Arrange in desecding order $\frac{-9}{6}, \frac{-4}{3}, \frac{-17}{12}$

   1) $\frac{-4}{3}, \frac{-17}{12}, \frac{-9}{6}$ 2) $\frac{-17}{12}, \frac{-9}{6}, \frac{-4}{3}$ 3) $\frac{-9}{6}, \frac{-17}{12}, \frac{-4}{3}$ 4) $\frac{-4}{3}, \frac{-9}{6}, \frac{-17}{12}$

6. If $\frac{2}{3}, \frac{3}{4}, \frac{1}{3}, \frac{5}{6}$ are rational numbers, then their ascending order is

   1) $\frac{1}{3}, \frac{3}{4}, \frac{2}{3}, \frac{5}{6}$ 2) $\frac{1}{3}, \frac{2}{3}, \frac{3}{4}, \frac{5}{6}$ 3) $\frac{1}{3}, \frac{3}{4}, \frac{2}{3}, \frac{5}{7}$ 4) $\frac{1}{3}, \frac{5}{6}, \frac{3}{4}, \frac{2}{3}$

7. Arrange $\frac{3}{-15}, \frac{-7}{10}, \frac{6}{5}, \frac{12}{7}$ in descending order

   1) $\frac{6}{5}, \frac{-7}{10}, \frac{3}{-5}, \frac{12}{7}$ 2) $\frac{12}{7}, \frac{6}{5}, \frac{3}{-5}, \frac{-7}{10}$ 3) $\frac{12}{7}, \frac{6}{5}, \frac{-7}{10}, \frac{3}{-5}$ 4) $\frac{-7}{10}, \frac{3}{-5}, \frac{6}{5}, \frac{12}{7}$

8. Arrange $\frac{3}{-5}, \frac{-7}{10}, \frac{8}{-10}, \frac{-17}{15}$ in ascending order

   1) $\frac{-17}{15}, \frac{8}{-10}, \frac{-7}{10}, \frac{3}{-5}$ 2) $\frac{-7}{10}, \frac{3}{-5}, \frac{8}{-10}, \frac{-17}{15}$

   3) $\frac{-17}{15}, \frac{3}{-5}, \frac{-7}{10}, \frac{8}{-10}$ 4) $\frac{8}{-10}, \frac{-7}{10}, \frac{3}{-5}, \frac{-17}{15}$

9. Compare $\frac{-11}{1111}$ and $\frac{1}{-103}$

1) $\frac{-11}{1111} > \frac{1}{-103}$ 2) $\frac{-11}{1111} < \frac{1}{-103}$ 3) $\frac{-11}{1111} = \frac{1}{-103}$ 4)None

10. Compare $\frac{85}{105}$ and $\frac{90}{108}$

1) $\frac{85}{105} = \frac{90}{108}$ 2) $\frac{85}{105} > \frac{90}{108}$ 3) $\frac{85}{105} < \frac{90}{108}$ 4) Both 1& 2

MULTI ANSWER TYPE

11. Which of the following is true ?

1) $11 > \frac{15}{7}$ 2) $\frac{7}{8} > \frac{15}{7}$ 3) $\frac{17}{19} > \frac{5}{11}$ 4) $\frac{15}{7} > 11$

12. If a, b,c,d are rational number represented by $\frac{-3}{4}, \frac{-5}{6}, \frac{-3}{10}, \frac{5}{8}$ then which of the following is true ?

1) a > b 2) b < d 3) c > a 4) c > b

REASONING ANSWER TYPE

13. *Statement I* : $\frac{-5}{7} > \frac{-6}{7}$

Statement II: In two rational numbers , if the denominators are same , then the rational number which is having greatest number in numenator is grater.

1. Both Statements are true, Statement II is the correct explanation of Statement I.
2. Both Statements are true, Statement II is not correct explanation of Statement I.
3. Statement I is true, Statement II is false.
4. Statement I is false, Statement II is true.

14. *Statement I* : $\frac{4}{7} < \frac{3}{5}$

Statement II: If the denominators of two rational numbers are not same, we should change them into rational numbers having same denominator and then compare.

1. Both Statements are true, Statement II is the correct explanation of Statement I.
2. Both Statements are true, Statement II is not correct explanation of Statement I.
3. Statement I is true, Statement II is false.
4. Statement I is false, Statement II is true.

COMPREHENSION TYPE

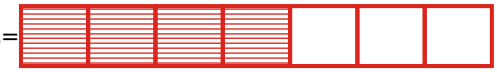
Writeup-1:

If $P=\frac{5}{6}; Q=\frac{1}{6}; R=\frac{7}{6}$ and $S=\frac{3}{6}$ then

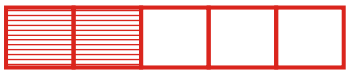
15. Greateast rational number is
    1) P 2)Q 3)R 4) S
16. Smallest rational number in
    1) P 2)Q 3) R 4) S
17. Descending order for P,Q,R and S is
    1) R, P, Q, S 2) P, R, Q, S 3) P, S, Q, R 4) R, P, S, Q

Writeup-2:

A= 

B= 

C= 

D= 

18. From the given pictorial representation which of the following is correct?
    1) $A=\frac{5}{6}, B=\frac{4}{7}, C=\frac{3}{8}, D=\frac{2}{5}$
    2) $A=\frac{6}{5}, B=\frac{7}{4}, C=\frac{8}{3}, D=\frac{5}{2}$
    3) $A=\frac{5}{6}, B=\frac{7}{4}, C=\frac{3}{8}, D=\frac{2}{5}$
    4) $A=\frac{5}{6}, B=\frac{4}{7}, C=\frac{8}{3}, D=\frac{2}{5}$
19. The false statement of the following is
    1) A>B 2) B>C 3) C>A 4) D>C
20. The Ascending order for A, B, C and D is
    1) A, B, C, D 2) D, C, B, A 3) C, D, B, A 4) C, B, A, D

MATRIX MATCHING TYPE

21.

Column-I	Column-II
a) $\frac{-1}{14}, \frac{-3}{28}, \frac{-5}{28}$	1) Are in ascending order
b) $\frac{1}{3}, \frac{2}{5}, \frac{1}{2}$	2) Are in desecnding order
c) $\frac{5}{6}, \frac{3}{4}, \frac{1}{2}$	3) Are compared by > sign
d) $\frac{2}{3}, \frac{3}{5}, \frac{5}{9}$	4) Are compared by < sign
	5) Can not be compared

22.

Column-I	Column-II
a) $\frac{3}{8},\frac{9}{14},\frac{19}{28}$	1) are in ascending order
b) $\frac{11}{12},\frac{13}{16},\frac{17}{24}$	2) are in descending order
c) $\frac{11}{14},\frac{7}{10},\frac{3}{7}$	3) are compared by > sign
d) $\frac{7}{12},\frac{17}{24},\frac{11}{15}$	4) are compared by < sign
	5) Can not be compared

INTEGER ANSWER TYPE

23. The greater rational number among 0 and $\frac{-7}{9}$ is _____

24. If given $\frac{2}{7} > \frac{1}{5}$, then the least number that replaces denominators of both the given numbers is _____

SYNOPSIS - 3

	Property	Addition	Multiplication
1.	*Closure property*		
	If a, b are rational numbers	a + b	a × b are also rational numbers.
2.	*Commutative property*		
	If a, b are rational numbers	a + b = b + a	a × b = b × a
3.	*Associative property*		
	If a, b, c are rational numbers	(a + b) + c = a +(b + c)	(a × b) × c = a × (b × c)
4.	*Identity property*		
	If 'a' is a rational number	a + 0 = 0 + a = a	a × 1 = 1 × a = a
5.	*Inverse property*		
	If 'a' is a rational number	a+(–a) = (–a) + a = 0	$a \times \frac{1}{a} = \frac{1}{a} \times a = 1$
6.	*Distributive property*		
	If a, b, c are 3 rational numbers	a × (b + c) = ab + ac	

7. 0 is called Additive identity

8. 1 is called Multiplicative identity, $\frac{1}{a}$ is called Multiplicative inverse of a.

9. $\frac{a}{b} \times 0 = 0$.

10. Multiplicative inverse of zero does not exist.

WORK SHEET - 3

SINGLE ANSWER TYPE

1. Add $\frac{5}{8}$ and $\frac{-11}{12}$

   1) $\frac{-5}{24}$ 2) $\frac{-3}{8}$ 3) $\frac{-7}{12}$ 4) $\frac{-7}{24}$

2. $-\frac{1}{2}+\frac{2}{3}+\frac{4}{5}=$

   1) $\frac{28}{30}$ 2) $\frac{-7}{30}$ 3) $\frac{29}{30}$ 4) $\frac{-29}{30}$

3. Subtract $\frac{-4}{9}$ from $\frac{-7}{8}$

   1) $\frac{-18}{72}$ 2) $\frac{-9}{60}$ 3) $\frac{18}{72}$ 4) $\frac{31}{72}$

4. If $a=\frac{56}{1000}$, $b=\frac{28}{100}$, $c=\frac{16}{10}$ then $a+c+b$ is

   1) $\frac{1936}{100}$ 2) $\frac{1936}{1000}$ 3) $\frac{1936}{10000}$ 4) $\frac{1936}{10}$

5. Simplify $\frac{4}{7}+0-\frac{8}{9}-\frac{13}{7}+\frac{17}{21}$

   1) $\frac{-86}{63}$ 2) $\frac{-108}{63}$ 3) $\frac{-116}{63}$ 4) $\frac{-96}{63}$

6. The sum of two rational numbers is -8, If one of the rational numbers is ▢ find the other.

   1) $\frac{-50}{9}$ 2) $\frac{-60}{9}$ 3) $\frac{-55}{9}$ 4) $\frac{-65}{9}$

7. What should be added to $\frac{-7}{12}$ so as to get $\frac{9}{16}$?

   1) $\frac{65}{48}$ 2) $\frac{-55}{48}$ 3) $\frac{45}{48}$ 4) $\frac{55}{48}$

8. What should be added to ▢ $\frac{-8}{15}$?

   1) $\frac{-101}{60}$ 2) $\frac{-100}{60}$ 3) $\frac{-110}{60}$ 4) $\frac{-120}{60}$

9. If 3-times of $\frac{5}{8}$ is added to 4 times $\frac{5}{6}$ then the result is

1) $5\frac{6}{24}$ 2) $\frac{125}{24}$ 3) $\frac{120}{20}$ 4) $\frac{125}{20}$

10. If $P = \frac{7}{8} + \left(\frac{-9}{2}\right)$, $Q = \frac{2}{3} + \frac{3}{4}$ where $(P + Q) + R = 0$, then the value of R is

1) 1 2) $\frac{-53}{24}$ 3) $\frac{53}{24}$ 4)0

11. If $A = \frac{-2}{15}$, $B = \frac{3}{5}$, $C = \frac{-15}{16}$ and $D = \frac{3}{4}$ are rational numbers then the value of $(B - A) + (D - C)$ is

1) 581/240 2) 591/240 3) 571/280 4) 581/240

MULTI ANSWER TYPE

12. If a= 3567, b= 10, c=100, d=1000 and e=10000 then $\frac{a}{b} + \frac{a}{c} + \frac{a}{d} + \frac{a}{e}$ is less than

1) 3.962937 2) 3962.937 3) 39.62937 4)39629.37

13. If a =1000, b = 5, c= 25, d = 125, then $\frac{a}{b} + \frac{a}{c} + \frac{a}{d}$ is

1) 0.248 2) 248 3) less than 250 4) less than 24.8

REASONING ANSWER TYPE

14. *Statement I* : $\left(\frac{-5}{8}\right) + \left(\frac{2}{5}\right) + \frac{12}{3} = \frac{-5}{8} + \left(\frac{2}{5} + \frac{12}{3}\right)$

Statement II: If a, b, and c are any three rational numbers then $(a + b) + c = a + (b + c)$

1. Both Statements are true, Statement II is the correct explanation of Statement I.
2. Both Statements are true, Statement II is not correct explanation of Statement I.
3. Statement I is true, Statement II is false.
4. Statement I is false, Statement II is true.

15. *Statement I* : $\left(\frac{-5}{7}\right) - \left(\frac{9}{14}\right) \quad \left(\frac{-13}{21}\right) \quad \frac{-5}{7} - \left(\frac{9}{14} - \left(\frac{-13}{21}\right)\right)$

Statement II: The subtraction of rational numbers is associative for any three rational numbers x,y, and z

1. Both Statements are true, Statement II is the correct explanation of Statement I.
2. Both Statements are true, Statement II is not correct explanation of Statement I.
3. Statement I is true, Statement II is false.
4. Statement I is false, Statement II is true.

COMPREHENSION TYPE

If $A = \frac{5}{6} - \left(\frac{1}{2} + \frac{1}{3}\right)$; $B = 1\frac{3}{4} - \left(\frac{1}{2} + \frac{1}{4}\right)$ then

16. Find A
    1)0 2)2 3) 1 4)3
17. Find B
    1) 0 2) 2 3) 1 4) 3
18. Find B–A
    1) 1 2) 3 3) 4 4)6

MATRIX MATCHING TYPE

19.

Column-I	Column-II
a) If a, b, are rational numbers then a+b is a rational number	1) Associative
b) If a, b are two rational numbers then a + b = b + a	2) Additive indentity
c) If x,y and z are three rational numbers then $(x + y) + z = x + (y + z)$	3) Additive inverse
d) If a is any rational number, then a+0 = 0 + a = a, where 0 is called	4) Closure 5) Commutative

20.

Column-I	Column-II
a) Additive inverse of $\frac{-15}{-11}$	1) $\frac{-8}{9}$
b) Additive identity of $\frac{-8}{9}$	2) $\frac{15}{11}$
c) If $x = \frac{-8}{9}$ then $-(-x) =$	3) $-\frac{45}{25}$
d) If $x = \frac{-3}{4}$ and $y = \frac{-6}{7}$ then $(x + y)$	4) 0 5) $\frac{-15}{11}$

INTEGER ANSWER TYPE

21. _____is called the additive identity for the addition of rational numbers

22. If you add additive inverse of $\frac{-10}{34}$ to additive inverse $\frac{-131}{17}$, then the value obtained is _____

SYNOPSIS - 4

Multiplication of rational numbers = $\frac{\text{product of their numerators}}{\text{product of their denominators}}$

e.g : $\frac{3}{7}\times\frac{9}{11}=\frac{3\times 9}{7\times 11}=\frac{27}{77}$

Division of rational numbers:

In order to divide a fraction by another fraction we multiply the dividend by the reciprocal of the divisor.

e.g : $12\div\frac{3}{4}=12\times\frac{4}{3}=16$

$\frac{15}{7}\div 5=\frac{15}{7}\times\frac{1}{5}=\frac{3}{7}$

$\frac{2}{3}\div\frac{7}{12}=\frac{2}{3}\times\frac{12}{7}=\frac{24}{21}=\frac{8}{7}$

WORK SHEET - 4

SINGLE ANSWER TYPE

1. Multiply $\frac{-2}{11}$ by $\frac{-33}{18}$

   1) 1/2 2) 1/3 3) 1/4 4) 1/6

2. Simplify $\frac{-39}{3}, \frac{19}{5}, \frac{-45}{38}$

   1) $\frac{117}{2}$ 2) $\frac{-117}{2}$ 3) $\frac{127}{2}$ 4) $\frac{-127}{2}$

3. Divide $\frac{15}{38}$ by $\frac{-3}{19}$

   1) $\frac{-2}{5}$ 2) $\frac{-5}{2}$ 3) $\frac{2}{5}$ 4) $\frac{5}{2}$

4. Simplify $\left(\frac{25}{8}\right), \left(\frac{2}{5}\right)\div\left(\frac{3}{5}\right), \frac{-10}{9}$

   1) 20/11 2) 13/12 3) 23/12 4) 11/21

5. Name of property of multiplication of $\frac{5}{23}, \frac{-6}{29}=\frac{-6}{29}, \frac{5}{23}$

   1) Closure 2) Associative 3) Commutative 4) Distribute

6. The product of two rational numbers is $\frac{-35}{18}$. If one of the mumbers is $\frac{5}{12}$, find the other number

   1) $\frac{-3}{14}$ 2) $\frac{-7}{12}$ 3) $\frac{-3}{14}$ 4) $\frac{-14}{3}$

7. The cost of $5\frac{1}{3}$ meters of cloth is Rs. $85\frac{1}{3}$. Find the cost of cloth per meter

1) Rs. 15 2) Rs.20 3) Rs.25 4) Rs.16

8. If $\frac{29}{10}+\left(\frac{367}{100}+\frac{468}{1000}\right)=a+(b+c)$ then $a\cdot(b+c)$ is

1) $\frac{120002}{100000}$ 2) $\frac{120002}{10000}$ 3) $\frac{12002}{1000000}$ 4) $\frac{12002}{1000}$

9. If $a=3^{108}$ and b, c are multiplicative and additive indentities in the set of rational numbers respectively, then $a\cdot(b+c)$ is

1) 108 2) 0 3) 1 4) 3^{108}

10. $\left(15,\ \frac{5}{3}+\frac{16}{15},\ 4\frac{45}{139}\right)$ is added to 47. Then the value obtained is

1) 100 2) 101 3) 102 4) 50

11. p is multiplicative inverse of $\frac{3}{4},\ \frac{5}{9}$ and Q is additive identity of $\frac{3}{4}$. If P+Q is multiplied by its multiplicative identity, then the value of obtained is

1) $2\frac{1}{5}$ 2) $2\frac{3}{5}$ 3) $2\frac{2}{5}$ 4) $2\frac{4}{5}$

MULTI ANSWER TYPE

12. If $a=1\frac{3}{4}$ and $b=1\frac{2}{3}$ then the false statement is

1) $\frac{a}{b}=\frac{b}{a}$ 2) $a\div b\neq b\div a$ 3) $a\cdot b=b\cdot a$ 4) $a\div b=ab$

13. If $a=\frac{5}{6}, b=\frac{3}{4}$ and $c=\frac{2}{3}$, then ab+ac is equal to

1) $1\frac{13}{72}$ 2) $\frac{170}{144}$ 3) $\frac{255}{216}$ 4) $\frac{150}{57}$

REASONING ANSWER TYPE

14. *Statement I* : $\left(\frac{-4}{5},\ \frac{3}{7}\right)\div\frac{-8}{11}=\frac{-4}{5},\left(\frac{3}{7},\ \frac{-8}{11}\right)$

Statement II: If a, b and c are three rational numbers, then $(a\cdot b)\cdot c=a\cdot(b\cdot c)$

1. Both Statements are true, Statement II is the correct explanation of Statement I.
2. Both Statements are true, Statement II is not correct explanation of Statement I.
3. Statement I is true, Statement II is false.
4. Statement I is false, Statement II is true.

15 *Statement I* : The value of $\frac{4}{5} \times \left(\frac{3}{4} + \frac{5}{6}\right) = \frac{1}{15}$

Statement II: If x, y and z are three rational numbers then $x \times (y + z) = (x \times y) + (x \times z)$

1. Both Statements are true, Statement II is the correct explanation of Statement I.
2. Both Statements are true, Statement II is not correct explanation of Statement I.
3. Statement I is true, Statement II is false.
4. Statement I is false, Statement II is true.

COMPREHENSION TYPE

If x is an element of whole numbers which is not present in set of natural numbers and $y = \frac{3}{4} + \left(\frac{5}{6} \div \right)$ then

16. Find the value of x

1) 2 2) 1 3) 0 4) 10

17. Find the value of y

1) $\frac{-1}{10}$ 2) $\frac{-1}{24}$ 3) $\frac{-1}{28}$ 4) $\frac{-1}{12}$

18. Find the value of $(x - y) + (x, y)$

1) 2y 2) -y 3) $\frac{-1}{y}$ 4) y

MATRIX MATCHING TYPE

19.

Column-I	Column-II
a) If a, b are any two rational numbers then $a \times b$ is also a rational number	1) Commutative
b) If a, b and c are any three rational numbers then $(a \times b) \times c = a \times (b \times c)$	2) Colsure
c) If a,b are any two rational numbers then $a \times b = b \times a$	3) Distributive
d) If a, b and c are any three rational then $a \times (b + c) = (a \times b) + (a \times c)$	4) Associative
	5) Multiplication inverse

20. If A = 15/16, B = 45/8, C = –4/3 then

Column-I	Column-II
a) $(A, B)' C$	1) $\frac{-35}{4}$
b) $(A' B)+ C$	2) $\frac{-2}{9}$
c) $(A+B)' C$	3) $\frac{225}{64}$
d) $(A-B), C$	4) $\frac{1513}{384}$

INTEGER ANSWER TYPE

21. Multiplicaive inverse of a rational number $\frac{-362}{1086}$ is _____

22. If 12 liters of a substance weight 864kg , then the weight of 1 cubic cm of the substance is _____grams

SYNOPSIS - 5

To express one quantity as a fraction of the other. We convert both the quantities in the same units and find the fraction.

If a, b are two rational numbers, then $\frac{1}{2}(a+b)$ is the rational number lying between them.

WORK SHEET - 5

SINGLE ANSWER TYPE

1. Insert a one fraction between 2/3 and 3/4

1) 5/7 2) 2/7 3) 10/12 4) 15/2

2. Insert two fraction between $\frac{3}{5}$ and $\frac{4}{7}$

1) $\frac{10}{12}, \frac{5}{9}$ 2) $\frac{11}{15}, \frac{8}{9}$ 3) $\frac{10}{17}, \frac{7}{12}$ 4) $\frac{18}{10}, \frac{6}{5}$

3. Insert three fractions between $\frac{5}{7}$ and $\frac{11}{2}$

1) $\frac{21}{26}, \frac{16}{19}, \frac{27}{31}$ 2) $\frac{18}{26}, \frac{3}{5}, \frac{12}{11}$ 3) $\frac{6}{5}, \frac{4}{11}, \frac{15}{16}$ 4) $\frac{17}{5}, \frac{11}{6}, \frac{13}{4}$

4. Find four rational numbers between $\frac{1}{6}$ and $\frac{1}{3}$

1) $\frac{1}{2},\frac{1}{4},\frac{13}{16},\frac{4}{11}$ 2) $\frac{1}{4},\frac{7}{24},\frac{5}{16},\frac{31}{96}$ 3) $\frac{3}{11},\frac{4}{17},\frac{5}{19},\frac{3}{17}$ 4) $\frac{1}{8},\frac{7}{12},\frac{6}{17},\frac{31}{96}$

5. A rational number lying between $\frac{-3}{2}$ and $\frac{5}{8}$ is

1) 6/5 2) –7/4 3) 11/10 4) –7/16

6. Find four rational number between -1 and $-\frac{1}{2}$

1) $-2,\frac{-1}{4},\frac{1}{3},\frac{2}{5}$ 2) $\frac{5}{3},\frac{-6}{7},\frac{-11}{6},\frac{-2}{3}$ 3) $\frac{-1}{4},\frac{-2}{7},\frac{-6}{13},\frac{-4}{7}$ 4) $\frac{-3}{4},\frac{-7}{8},\frac{-5}{8},\frac{-9}{16}$

7. Find two rational numbers between -2 and 2

1) $\frac{15}{2},\frac{19}{3}$ 2) 0 and 1 3) -1 and 0 4) Both 1& 2

8. Find the four rational numbers between $\frac{1}{3}$ and $\frac{1}{2}$

1) $\frac{17}{48},\frac{18}{48},\frac{19}{48},\frac{20}{48}$ 2) $\frac{12}{8},\frac{6}{5},\frac{3}{2},\frac{17}{5}$ 3) $\frac{5}{3},\frac{6}{3},\frac{22}{3},\frac{18}{3}$ 4) $\frac{7}{5},\frac{8}{5},\frac{9}{5},\frac{11}{5}$

9. If $\frac{17}{30}$ is a rational number between

1) $\frac{1}{3}$ and $\frac{3}{5}$ 2) $\frac{6}{5}$ and $\frac{4}{5}$ 3) $\frac{11}{3}$ and $\frac{14}{3}$ 4) $\frac{7}{5}$ and $\frac{12}{5}$

10. If $\frac{37}{50}$ is a rational number between $\frac{\mathbf{a}}{25}$ and $\frac{19}{25}$ then the value of **a** is

1) $\frac{2}{3}$ 34 2) $27\frac{2}{3}$ 3) $2\frac{18}{4}$ 4) $3\frac{2}{3}$

MULTI ANSWER TYPE

11. A fraction with 48 as denominator and equivalent to the fraction is

1) 2/3 2) 4/5 3) 5/6 4) 3/7

12. Rational number between $\frac{1}{4}$ and $\frac{1}{2}$ is _____

1) 3/8 2) 5/16 3) 7/16 4) 1/8

REASONING ANSWER TYPE

13. *Statement I* : Rational number between $0, 1/2$ is $1/4$

Statement II: Rational number between a,b is $\frac{a+b}{2}$

1. Both Statements are true, Statement II is the correct explanation of Statement I.
2. Both Statements are true, Statement II is not correct explanation of Statement I.
3. Statement I is true, Statement II is false.
4. Statement I is false, Statement II is true.

14. *Statement I* : 5 is rational number between $\frac{9}{2}$ and $\frac{11}{2}$

Statement II: $a = \frac{5}{2}, b = \frac{7}{2}$ then rational number between a and b is $\frac{4}{11}$

1. Both Statements are true, Statement II is the correct explanation of Statement I.
2. Both Statements are true, Statement II is not correct explanation of Statement I.
3. Statement I is true, Statement II is false.
4. Statement I is false, Statement II is true.

COMPREHENSION TYPE

If $\frac{a}{b}$ and $\frac{c}{d}$ are two fractions, then the fraction $\frac{a+c}{b+d}$ lies between $\frac{a}{b}$ and $\frac{c}{d}$

ie $\frac{a}{b} < \frac{a+c}{b+d} < \frac{c}{d}$

15. Insert a fraction between $\frac{3}{4}$ and $\frac{6}{7}$ is

1) 11/9 2) 7/9 3) 9/11 4)1

16. Insert two fractions in between $\frac{5}{7}$ and $\frac{3}{4}$ is /are

1) $\frac{2}{3}, \frac{5}{6}$ 2) $\frac{8}{11}, \frac{11}{15}$ 3) $\frac{1}{2}, \frac{2}{5}$ 4) $\frac{7}{9}, \frac{8}{9}$

17. Insert three fractions in between $\frac{7}{12}$ and $\frac{9}{11}$ are

1) $\frac{12}{15}, \frac{11}{13}, \frac{17}{19}$ 2) $\frac{4}{9}, \frac{23}{25}, \frac{7}{24}$ 3) $\frac{11}{18}, \frac{5}{12}, \frac{17}{19}$ 4) $\frac{23}{35}, \frac{16}{23}, \frac{25}{34}$

MATRIX MATCHING TYPE

18.

Column-I	Column-II
a) The rational number exactly in between 2 and 3 is ____	1) 1/2
b) The rational number exactly in between 12 and 15 is ___	2) 13/12
c) The rational number is exactly in between 3/5 and 2/5 is__	3) 5/2
d) The rational number exactly in between 2/3 and 3/2 is __	4)27/2

19.

Column-I	Column-II
a) The rational number between $\frac{5}{8}$ and $\frac{11}{12}$ is	1) 17/14
b) The rational number between $\frac{19}{30}$ and $\frac{11}{15}$ is ___	2) 13/18
c) The rational number in between 5/6 and 4/9 is _____	3) 17/24
d) Insert the fraction in between 1/3and 1/2 is	4) 2/5
	5) 7/12

INTEGER ANSWER TYPE

20. If $d = \frac{b - a}{n + 1}$ and a = 2, b = 10, n = 1 then d =_____

21. Number of integer between the rational number $\frac{5}{31}$ and $\frac{31}{5}$ are_____

WORK SHEET – 1 (KEY)				
1) 2	2) 1	3) 2	4) 2	5) 3
6) 4	7) 2	8) 1	9) 1	10) 3
11) 3	12) 1	13) 1,2,4	14) 1,3	15) 1
16) 2	17) 2	18) 1	19) 4	20) A-2 B-4 C-1 D-5
21) A-1,2,3 B-1,2,3 C-1,2,5 D-2,3,4	22) 4	23) -3		

WORK SHEET – 2 (KEY)				
1) 2	2) 1	3) 3	4) 2	5) 3
6) 2	7) 2	8) 1	9) 2	10) 3
11) 1,3	12) 1,2,3,4	13) 1	14) 1	15) 3
16) 2	17) 4	18) 1	19) 3	20) 3
21) A-2,3 B-1,4 C-2,3 D-2,3	22) A-1,4 B-2,3 C-2,3 D-1,4	23) 0	24) 35	

WORK SHEET – 3 (KEY)				
1) 4	2) 3	3) 4	4) 2	5) 1
6) 3	7) 4	8) 1	9) 2	10) 3
11) 1	12) 2,4	13) 2,3	14) 1	15) 3
16) 1	17) 3	18) 1	19) A-4 B-5 C-1 D-3	20) A-5 B-4 C-1 D-3
21) 0	22) 8			

WORK SHEET – 4 (KEY)				
1) 2	2) 1	3) 2	4) 3	5) 3
6) 4	7) 4	8) 2	9) 4	10) 4
11) 3	12) 1,4	13) 1,2,3	14) 1	15) 1
16) 3	17) 4	18) 2	19) A-2 B-4 C-1 D-3	20) A-2 B-4 C-1 D-3
21) -3	22) 72			