Class VII Chapter-3
RATIONAL NUMBERS

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Rational numbers

- Any number that can be expressed in the form of p/q where p and q are integers and q is not equal to 0 is called a rational number.
- The set of rational numbers is denoted by Q.
- Every natural number is a rational number.
- E.g 4=4/1
- Every whole number is a rational number.
- Eg 0= 0/1

Rational numbers

- Every integer is a rational number
- Eg: -5 =-5/1
- Every fraction is a rational number
- Eg : 4/13
- Positive rational number: if both numerator and denominator are positive or both are negative.
- Eg: -5/-7 or 5/7

Rational numbers

- **Negative rational numbers**
- In this either numerator or denominator is negative
- Eg: -7/9 or 7/-9
- We can represent rational numbers on the number line.

Assignment -1

- Solve ex 3.1 OF WOW MATHEMATICS CLASS VII in your register.
- NOTE: KINDLY DOWNLOAD THE BOOK.

Rational number in standard form

- A rational number is said to be in **standard form** if q>0 and p and q are co- prime means they have no common factor except 1.
- Eg: -15/45 in standard form is -1/3
- 32/-60 in standard form is -8/15
- Note: minus sign is always in the numerator in standard form.

Assignment -2

- 1. Convert into standard form;
- -3/33
- 40/-25
- 17/-56
- 51/26

Equivalent rational numbers

- If any two rational numbers can be reduced to the same standard form, then they are equivalent rational numbers.
- Fr eg: -10/11 and -30/33 are equivalent rational numbers.
- -10/11 has no common factor except one.
- -30/33 = -3 x 10/ 3 x 11 =-10/11 also has no common factor except one after reducing.

TRY NOW

- Write two equivalent rational numbers of
- 1. -60/66
- 2. 14/56
- 3. 4/5

Absolute value of a rational number

- Absolute value of a rational number is it's numerical value regardless of sign.
- Fr eg :absolute value of -7/13 is 7/13
- Symbol of absolute value is | |.
- | 7/8 | = 7/8
- | -7/8 |= 7/8

RATIONAL NUMBERS BETWEEN TWO RATIONAL NUMBERS

- NOTE: There are infinite rational numbers between two given rational numbers.
- To insert rational numbers between two given rational numbers.
- Make the denominators same.
- Second: multiply with(n+1) where n is the number of rational numbers to be inserted.

example

- Insert **six** rational numbers between ½ and 5/8.
- ½ =1 x4/2 x4= 4/8
- 4 x 7/8x7= 28/56
- 5 x 7 / 8 x 7 = 35/ 56 (note:we have taken number 7 as we have to insert 6 rational numbers, so we multiply with (n+1)
- (28/56,***29/56,30/56,31/56,32/56,33/56,***
- ***34/56***,35/56)

Assignment -3

- Insert six rational numbers between 5/7 and 4/3.
- Find absolute value of:
- |3/6 | =
- |-9/24| =
- |-7/45 | =

Comparing and ordering of rational numbers

- We can compare rational numbers by making their denominators same and then we can arrange them in ascending or descending order.
- Note: if minus sign is in the denominator, take it in the numerator, and then solve as usual.

Assignment-4

- Compare the two given rational numbers:
- -11/20 and 5/-14
- Arrange the rational numbers in ascending order:
- 7/11, 8/-6 ,-6/8 ,27/25
- Find x : 15/x = -5/4
- (Hint: cross multiply)

OPERATION ON RATIONAL NUMBERS

- Addition : we add rational numbers by making the denominator same.
- Subtraction : we follow the same rule for subtraction.
- Additive inverse: every rational number has it's additive inverse. eg: additive inverse of 5/9is -5/9.

worksheet

- Add :2/3 and -4/5
- Ans -2/15
- Subtract 7/9 from 5/9.
- Hint:5/9-7/9 Ans -2/9
- What is additive inverse of -9/24?

MULTIPLICATION AND RECIPROCAL

- To multiply rational numbers,we multiply numerator with numerator and denominator with denominator.
- Eg: 3/7 x -5/9 = -3 x 5/ 7 x 9 = -15/63
- **Reciprocal**: reciprocal of a rational number is found by interchanging numerator and denominator.
- Fr eg: reciprocal of 7/8 is 8/7

WORKSHEET

- Multiply:
- 56/7 x 9/23
- 4/5 x 17/8
- Find reciprocal of :
- 45/-23
- -78/57
- 3/4

DIVISION

- To divide a given rational number by another non zero rational number, we convert divide sign into multiply and reciprocate the right hand side number.
- Fr eg:2/3 ÷ 4/5
- Solution:
- 2/3 **x 5/4** = 10/12 =5/6

Word problem

- Product of two rational numbers is 18/35.If one of them is -2/5,find the other?
- Solution:
- a x b =c
- -2/5 x b = 18/35
- b = 18/35 ÷ -2/5
- b = 18/35 x 5/-2 =90/-70 =-9/7

Try me

- Product of two rational numbers is 27/56.If one of the rational number is -3/7,find the other?

  Ans: -9/8
- Krati finished 1/3 of her assignment on the first day and ¼ of the assignment on the second day. What part of the assignment is yet to be finished?
- Hint: add 1/3 and ¼,then subtract the result from 1.