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Changing your Tomorrow

RATIONAL NUMBERS

PERIOD 4

SUBJECT : MATHEMATICS
CHAPTER NUMBER: 1
CHAPTER NAME : RATIONAL NUMBERS

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Learning outcome

- Students will be able to understand subtraction of rational numbers.
- Students will be able to understand and apply properties of subtraction.
- Students will be able to understand and solve real-world problems using subtraction of fractions

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Previous Knowledge

1. For each set of rational numbers, given below, verify the associative property of
addition of rational numbers: −1,5/6 and −2/3
2. verify commutative property of addition of rational numbers: -2 and 3/-5

Properties of subtraction of Rational Numbers

Closure property of subtraction :

The difference between any two rational numbers is always a rational number.

Hence Q is closed under subtraction.

If a/b and c/d are any two rational numbers, then (a/b) - (c/d) is also a rational number.

Example :

5/9 - 2/9 = 3/9 = 1/3 is a rational number

Commutative property of subtraction

Subtraction of two rational numbers is not commutative.

If a/b and c/d are any two rational numbers,

then (a/b) - (c/d) ≠ (c/d) - (a/b)

Example :

5/9 - 2/9 = 3/9 = 1/3

Therefore, Commutative property is not true for subtraction.

Associative property of subtraction:

Subtraction of rational numbers is not associative.

If a/b, c/d and e/f are any three rational numbers,
then a/b - (c/d - e/f) ≠ (a/b - c/d) - e/f
2/9 - (4/9 - 1/9) = 2/9 - 3/9 = -1/9
(2/9 - 4/9) - 1/9 = -2/9 - 1/9 = -3/9
Hence, 2/9 - (4/9 - 1/9) ≠ (2/9 - 4/9) - 1/9
Therefore, Associative property is not true for subtraction.

Identity property of subtraction

For a rational number a/b,

a/b – 0 = a/b, but 0 –a/b ≠ a/b

3 + 0 = 3

-4/5 + 0 = -4/5

Hence, 0 + a = a + 0 = a, where a can be rational number or natural number or whole number of integer.

So, subtraction has no identity.

Inverse property of subtraction

Inverse for subtraction does not exist.

Exercise- 1(B)

1.(v) $-5/18 - -2/9$

LCM of 9 and 18=2×3×3=18

$-5/18--2/9=-5\times1/18\times1-(-2\times2)/9\times2$

$= -5+4/18$

$= -1/18$

(vi) $5/21--13/42$

LCM of 21, 42=2×3×7=42

$=5\times2/21\times2-(-13\times1)/42\times1$

$=10+13/42=23/42$

2. (v) Subtracting −5/8 from −13/16

LCM of 8 and 16=16

$-13/16-(-5/8)=-13\times1/16\times1+5\times2/8\times2$

$=-13+10/16=-3/16$

Home assignment

Exercise 1(B) - 5 to 10

1. 1/6 **of the class students are above average,** 1/4 **are average and rests are below average. If there are 48 students in all, how many students are below average in the class?**
2. . **One fruit salad recipe requires** 1/2 **cup of sugar. Another recipe for the same fruit salad requires 2 tablespoons of sugar. If 1 tablespoon is 1 equivalent to** 1/16 **cup, how much more sugar does the first recipe require?**

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THANKING YOU

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