

Date-16-04-2021

Class-XII

Subject-Maths

1. Properties of Addition of Rational numbers.

(i) Closure Property: $(\frac{a}{b} + \frac{c}{d})$

(ii) Commutative Property: $\frac{a}{b} + \frac{c}{d} = \frac{c}{d} + \frac{a}{b}$

(iii) Associative Property: $\frac{a}{b} + (\frac{c}{d} + \frac{e}{f}) = (\frac{a}{b} + \frac{c}{d}) + \frac{e}{f}$

2. Properties of Subtraction of Rational numbers.

(i) Closure Property: $\frac{a}{b} - \frac{c}{d}$

(ii) Subtraction Property of Zero: $\frac{a}{b} - 0 = \frac{a}{b}$

Exercise 1.2

Section-B

1. (ii) $\frac{5}{-14}, -\frac{3}{14}$ and $-\frac{8}{14}$

Sol: we have.

$$\frac{-5}{14} + (\frac{-3}{14}) + (\frac{-8}{14}) = \frac{-5 \times 1 + (-3) \times 1 + (-8) \times 1}{14}$$

$$= \frac{-5-3-8}{14} = \frac{-16}{14} = -\frac{8}{7}$$

(iii) $-5, -\frac{6}{8}$ and $\frac{13}{12}$

Sol: we have, $-\frac{5}{1} + (\frac{-6}{8}) + \frac{13}{12}$

L.C.M of 1, 8 and 12 = $2 \times 2 \times 2 \times 3 = 24$

$$-\frac{5}{1} + (\frac{-6}{8}) + \frac{13}{12} = \frac{-5 \times 24 + (-6) \times 3 + 13 \times 2}{24}$$

$$= \frac{-120 - 18 + 26}{24}$$

$$= \frac{-138 + 26}{24} = \frac{-112}{24} = -\frac{14}{3}$$

2. (ii) Subtract $\frac{7}{8}$ from the sum of $\frac{5}{16}$ and $\frac{-7}{24}$

Sol: we have, Sum of $\frac{5}{16}$ and $\frac{-7}{24}$

LCM of 16 and 24 = 48

$$\frac{5}{16} + \frac{(-7)}{24} = \frac{5}{16} - \frac{7}{24}$$

$$= \frac{5 \times 3 - 7 \times 2}{48}$$

$$= \frac{15 - 14}{48}$$

$$= \frac{1}{48}$$

Subtract $\frac{7}{8}$ from $\frac{1}{48}$

LCM of 8 and 48 = 48

$$\frac{1}{48} - \frac{7}{8} = \frac{1 \times 1 - 7 \times 6}{48}$$

$$= \frac{1 - 42}{48}$$

$$= -\frac{41}{48}$$

3(a) we have,

The sum of two rational numbers = $\frac{31}{24}$.
one number = $\frac{7}{8}$

other number = $\frac{31}{24} - \frac{7}{8}$
LCM of 24 and 8 = 24

$$\frac{31}{24} - \frac{7}{8} = \frac{31 \times 1 - 7 \times 3}{24}$$

$$= \frac{31 - 21}{24} = \frac{10}{24} = \frac{5}{12}$$

$$\begin{array}{r} 2 \overline{) 16, 24} \\ \underline{8, 12} \\ 2 \overline{) 4, 6} \\ \underline{2, 3} \\ 3 \overline{) 1, 3} \\ \underline{1, 1} \end{array}$$

$2 \times 2 \times 2 \times 3 = 48$

$$\begin{array}{r} 2 \overline{) 8, 48} \\ \underline{4, 24} \\ 2 \overline{) 2, 12} \\ \underline{1, 6} \end{array}$$

$2 \times 2 \times 2 \times 6 = 48$

3. (b) let x number should be added.

$$-1 + x = \frac{7}{9}$$

$$x = \frac{7}{9} + 1$$

$$x = \frac{7 \times 1 + 1 \times 9}{9}$$

$$x = \frac{7+9}{9}$$

$$x = \frac{16}{9}$$

Therefore, required number = $\frac{16}{9}$

4. (a) let x should be subtracted

$$\frac{4}{9} - x = \frac{5}{72}$$

$$\frac{4}{9} - \frac{5}{72} = x$$

$$\text{or } x = \frac{4}{9} - \frac{5}{72}$$

LCM of 9 and 72 = 72

$$x = \frac{4}{9} - \frac{5}{72}$$

$$x = \frac{4 \times 8 - 5 \times 1}{72}$$

$$x = \frac{32 - 5}{72}$$

$$x = \frac{27}{72} = \frac{3}{8}$$

$$x = \frac{3}{8}$$

Therefore, the required number = $\frac{3}{8}$

$$\begin{array}{r} 2 \overline{) 1, 8, 12} \\ \underline{1, 4, 6} \\ 2 \overline{) 1, 2, 3} \\ \underline{1, 1, 1} \end{array}$$

$$\begin{array}{r} 2 \overline{) 24, 8} \\ \underline{12, 4} \\ 2 \overline{) 6, 2} \\ \underline{3, 1} \end{array}$$

$2 \times 2 \times 2 \times 3 \times 1 = 24$