ICSE Class 8 Maths Selina Solutions Chapter 1: Rational numbers are covered in ICSE Class 8 Maths Chapter 1 on properties of rational numbers, representation of rational numbers, word problems, and more. Students should first completely read the chapter and practice the formulas in a subject like maths.

Following that, they ought to attempt to respond to the queries presented in the Seline textbook. When they've finished solving, students should assess their work by contrasting it with the Rational Numbers Solution from ICSE Selina Class 8 Maths Chapter 1.

ICSE Class 8 Maths Selina Solutions Chapter 1 Overview

Chapter 1 of the ICSE Class 8 Maths Selina Solutions focuses on rational numbers. It introduces students to the concept of rational numbers, which are numbers that can be expressed as a fraction.

The chapter covers various topics such as understanding rational numbers, identifying their properties, operations like addition, subtraction, multiplication, and division of rational numbers, and simplification of fractions. It also introduces the concept of decimal representation of rational numbers and their equivalence.

ICSE Class 8 Maths Selina Solutions Chapter 1

Here we have provided ICSE Class 8 Maths Selina Solutions Chapter 1 for the ease of students so that they can prepare better for their upcoming exams -

Question 1.

Add, each pair of rational numbers, given below, and show that their addition (sum) is also a rational number.

(i)

$\frac{-5}{8}$ and $\frac{3}{8}$

Solution:

$\frac{-5}{8}$ and $\frac{3}{8}$

Adding addition sign in between,

$= \frac{-5}{8} + \frac{3}{8}$

($\because$ Denominators are same, LCM=8)

$= \frac{-5}{8} + \frac{3}{8} = \frac{-5+3}{8}$

$= \frac{-2}{8} = \frac{-1}{4}$

(Cancelling numerator and denominator by 2)

Which is a rational number.

(ii)

$\frac{-8}{13}$ and $\frac{-4}{13}$

Solution:

$\frac{-8}{13}$ and $\frac{-4}{13}$

Adding addition sign in between

$= \frac{-8}{13} + \left(\frac{-4}{13}\right)$

(∵ Denominators are same, LCM=13)

$\frac{-8}{13} + \left(\frac{-4}{13}\right) = \frac{-8-4}{13} = \frac{-12}{13}$

Which is a rational number.

(iii)

$\frac{6}{11}$ and $\frac{-9}{11}$

Solution:

$\frac{6}{11}$ and $\frac{-9}{11}$

Adding addition sign in between

$= \frac{6}{11} + \left(\frac{-9}{11}\right) = \frac{6}{11} + \left(\frac{-9}{11}\right)$

(∵ Denominators are same, ∴LCM=11)

$= \frac{6-9}{11} = \frac{-3}{11}$

Which is a rational number.

(iv)

$\frac{5}{-26}$ and $\frac{8}{39}$

Solution:

$\frac{5}{-26}$ and $\frac{8}{39}$

Adding addition sign in between

$= \frac{5}{-26} + \frac{8}{39}$

Taking L.C.M.

∴LCM of 26 and 39 = 2 × 3 × 13 = 78

$\frac{5}{-26} + \frac{8}{39} = \frac{-5\times3}{26\times3} + \frac{8\times2}{39\times2}$

$= \frac{-15+16}{78}$

$= \frac{1}{78}$

Which is a rational number.

Question 2. Evaluate:

(i) 59+−76

Solution:

$\frac{5}{9} + \frac{-7}{6}$

59+−76

Taking L.C.M.
2 9,6
3 9,3
3 3,1
1,1
∴LCM of 9 and 6=2×3×3=18

(ii)

$4+\frac{3}{-5}$

Solution:

$4+\frac{3}{-5}$

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

$=\frac{4}{1}-\frac{3}{5}$

Taking L.C.M.

LCM of 1 and 5=5

$4+\frac{3}{-5}=\frac{4\times5}{1\times5}-\frac{3\times1}{5\times1}$

$=\frac{20-3}{5}=\frac{17}{5}=3\frac{2}{5}$

(Displaying the answer in mixed fraction)

(iii)

$\frac{1}{-15} + \frac{5}{-12}$

Solution:

$\frac{1}{-15} + \frac{5}{-12}$

$= \frac{-1}{15} + \left(\frac{-5}{12}\right)$

$= \frac{-1}{15} - \frac{5}{12}$

Taking L.C.M.

2 15,2

2 15,6

3 15,3

5 5,1

1,1

∴LCM of 15 and 12=2×2×3×5=60

$= \frac{-1\times4}{15\times4} - \frac{5\times5}{12\times5}$

LCM of 15 and 12 = 60

(v)

$\frac{-8}{9} + \frac{-5}{12}$

Solution:

$\frac{-8}{9} + \frac{-5}{12}$

Taking L.C.M.

2 9,12

2 9,6

3 9,3

3 3,1

1,1

$\therefore$ LCM of 9, 12=2×2×3×3=36

$\frac{-8}{9} + \frac{-5}{12} = \frac{-8\times4}{9\times4} - \frac{5\times3}{12\times3}$

$= \frac{-32-15}{36}$

$= \frac{-47}{36}$

(vi)

$0 + \frac{-2}{7}$

Solution:

$0 + \frac{-2}{7}$

LCM of 0 and 7=7

By cross multiplying

$0 + \frac{-2}{7} = \frac{0\times7}{1\times7} - \frac{2\times1}{7\times1}$

$= \frac{0-2}{7} = \frac{-2}{7}$

(vii)

$\frac{5}{-11} + 0$

Solution:

$\frac{5}{-11} + 0$

LCM of 0 and 11=11

By cross multiplying

$\frac{5}{-11} + 0 = \frac{-5\times1}{11\times1} + \frac{0\times11}{1\times11}$

$= \frac{-5+0}{11} = \frac{-5}{11}$

(viii)

$2 + \frac{-3}{5}$

Solution:

$= \frac{2}{1} - \frac{3}{5}$

LCM of 1 and 5=5

$= \frac{2\times5}{1\times5} - \frac{3\times1}{5\times1}$

$= \frac{10-3}{5} = \frac{7}{5} = 1\frac{2}{5}$

(ix)

$\frac{4}{-9} + 1$

Solution:

$\frac{4}{-9} + 1$

LCM of 9 and 1=9

$\frac{-4}{9} + \frac{1}{1} = \frac{-4\times1}{9\times1} + \frac{1\times9}{1\times9}$

$= \frac{-4+9}{9} = \frac{5}{9}$

Question 3. Evaluate:

(i)

$\frac{3}{7} + \frac{-4}{9} + \frac{-11}{7} + \frac{7}{9}$

Solution:

$= \left(\frac{3}{7} + \frac{-11}{7}\right) + \left(\frac{-4}{9} + \frac{7}{9}\right)$

$= \frac{3-11}{7} + \frac{-4+7}{9}$

$= \frac{-8}{7} + \frac{3}{9}$

$= \frac{-8}{7} + \frac{1}{3}$

Taking LCM of 7 and 3

3 7,3

7 7,7

1,1

∴LCM of 3 and 7 = 3×7 = 21

$\frac{-8}{7} + \frac{1}{3} = \frac{-8\times3}{7\times3} + \frac{1\times7}{3\times7}$

$= \frac{-24+7}{21} = \frac{-17}{21}$

(ii)

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

Solution:

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

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

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

Taking LCM,

3 3,5

5 1,5

1,1

∴LCM of 3 and 5 = 3×5 = 15

$\frac{3}{3} + \left(\frac{-2}{5}\right) = \frac{3\times5}{3\times5} + \frac{-2\times3}{5\times3}$

$= \frac{15-6}{15} = \frac{9}{15} = \frac{3}{5}$

(iii)

$\frac{4}{7}+0+\frac{-8}{9}+\frac{-13}{7}+\frac{17}{9}$

Solution:

$=\frac{4}{7}+\frac{-8}{9}+\frac{-13}{7}+\frac{17}{9}$

$=\left[\frac{4}{7}+\left(\frac{-13}{7}\right)\right]+\left(\frac{-8}{9}+\frac{17}{9}\right)$

$=\left[\frac{4}{7}-\frac{13}{7}\right]+\left[\frac{-8}{9}+\frac{17}{9}\right]$

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

$=\frac{-9\times1}{7\times1}+\frac{1\times7}{1\times7}(\because LCM of 1 and 7=7)$

$=\frac{-9}{7}+\frac{7}{7}=\frac{-2}{7}$

(iv)

$\frac{3}{8}+\frac{-5}{12}+\frac{3}{7}+\frac{3}{12}+\frac{-5}{8}+\frac{-2}{7}$

Solution:

$=\left(\frac{3}{8}-\frac{5}{8}\right)+\left(\frac{-5}{12}+\frac{3}{12}\right)+\left(\frac{3}{7}-\frac{2}{7}\right)$

$=\frac{-2}{8}-\frac{2}{12}+\frac{1}{7}$

$=\frac{-1}{4}-\frac{1}{6}+\frac{1}{7}$

2 4,6,7

2 2,3,7

3 1,3,7

7 1,1,7

1,1,1

∴LCM of 4, 6 and 7 = 2×2×3×7 = 84

$\frac{-1}{4}-\frac{1}{6}+\frac{1}{7}=\frac{-1\times21}{4\times21}-\frac{1\times14}{6\times14}+\frac{1\times12}{7\times12}$

$=\frac{-21-14+12}{84}$

$=\frac{-35+12}{84}=\frac{-23}{84}$

Question 4.
For each pair of rational numbers, verify the commutative property of the addition of rational numbers:

(i)

$\frac{-8}{7}$ and $\frac{5}{14}$

Solution:

To prove:

$\frac{-8}{7} + \frac{5}{14} = \frac{5}{14} + \frac{-8}{7}$

LHS =

$\frac{-8}{7} + \frac{5}{14}$

Taking LCM of 7 and 14

2 7,14

7 7,7

1,1

∴LCM of 2 and 7=14

$\frac{-8}{7} + \frac{5}{14} = \frac{-8\times2}{7\times2} + \frac{5\times1}{14\times1}$

$= \frac{-16+5}{14} = \frac{-11}{14}$

R H S=

$\frac{5}{14} + \frac{-8}{7}$

$= \frac{5\times1}{14\times1} + \left(\frac{-8\times2}{7\times2}\right)$
(∵LCM of 2 and 7=14)

$= \frac{5-16}{14} = \frac{-11}{14}$
∴ RHS = LHS

i.e.

$\frac{-8}{7} + \frac{5}{14} = \frac{5}{14} + \frac{-8}{7}$

Hence, the commutative property for the addition of rational numbers is verified.

(ii)

$\frac{5}{9}$ and $\frac{5}{-12}$

Solution:

To prove:

$\frac{5}{9} + \frac{5}{-12} = \frac{5}{-12} + \frac{5}{9}$

LHS =

$\frac{5}{9} + \frac{5}{-12}$
LCM of 9 and 12=2×2×3×3=36

LHS =

$\frac{5\times4}{9\times4} - \frac{5\times3}{12\times3}$

$= \frac{20-15}{36} = \frac{5}{36}$

RHS =

$\frac{5}{-12} + \frac{5}{9}$

$= \frac{5\times3}{-12\times3} + \frac{5\times4}{9\times4}$
(∵LCM of 9 and 12 = 36)

$= \frac{-15+20}{36} = \frac{5}{36}$
∴ RHS = LHS

i.e.

$\frac{5}{9} + \frac{5}{-12} = \frac{5}{-12} + \frac{5}{9}$

Hence, the commutative property for the addition of rational numbers is verified.

(iii)

$\frac{-4}{5}$ and $\frac{-13}{-15}$

Solution:

To prove:

$\frac{-4}{5} + \frac{-13}{-15} = \frac{-13}{-15} + \left(\frac{-4}{5}\right)$

LHS =

$\frac{-4}{5} + \frac{13}{15}$

Taking LCM

5 5,15

3 1,3

1,1

∴LCM of 5 and 15=5×3=15

LHS

$= \frac{-4\times3}{5\times3} + \frac{13\times1}{15\times1}$

$= \frac{-12+13}{15} = \frac{1}{15}$

RHS

$= \frac{13}{15} + \frac{-4}{5}$

$= \frac{13\times1}{15\times1} + \frac{-4\times3}{5\times3}$

(∵LCM of 5 and 15 = 15)

$= \frac{13-12}{15} = \frac{1}{15}$

∴ RHS = LHS

i.e.

$\frac{-4}{5} + \frac{-13}{-15} = \frac{-13}{-15} + \frac{-4}{5}$

Hence, the commutative property for the addition of rational numbers is verified.

Question 5.

For each set of rational numbers, given below, verify the associative property of the addition of rational numbers:

(i)

$\frac{1}{2}, \frac{2}{3}$ and $-\frac{1}{6}$

Solution:

To prove:

$$\frac{1}{2}+\left(\frac{2}{3}+\frac{-1}{6}\right)=\left(\frac{1}{2}+\frac{2}{3}\right)+\frac{-1}{6}$$

LHS

$$=\frac{1}{2}+\left(\frac{2}{3}+\frac{-1}{6}\right)$$

Taking LCM

2 3,6

3 3,3

1,1

∴LCM of 3 and 6=6

LHS

$= \frac{1}{2} + \left(\frac{2\times2}{3\times2} + \frac{-1\times1}{6\times1}\right)$

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

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

$= \frac{1}{2} + \left(\frac{3}{6}\right)$

$= \frac{1\times3}{2\times3} + \frac{3\times1}{6\times1}$

(∵LCM of 2 and 6=3)

$= \frac{3+3}{6} = \frac{6}{6} = 1$

RHS

$= \left(\frac{1}{2} + \frac{2}{3}\right) + \frac{-1}{6}$

Taking LCM

2 2,3

3 1,3

1,1

∴ LCM of 2 and 3=6

RHS

$= \left(\frac{1\times3}{2\times3} + \frac{2\times2}{3\times2}\right) + \frac{-1}{6}$

$= \frac{3+4}{6} + \frac{-1}{6}$

$= \frac{7-1}{6} = \frac{6}{6} = 1$

∴RHS = LHS

i.e.

$\frac{1}{2} + \left(\frac{2}{3} + \frac{-1}{6}\right) = \left(\frac{1}{2} + \frac{2}{3}\right) + \frac{-1}{6}$

Hence, the associative property for the addition of rational numbers is verified.

(ii)

$\frac{-2}{5}, \frac{4}{15}$ and $\frac{-7}{10}$

Solution:

To prove:

$\frac{-2}{5} + \left(\frac{4}{15} + \frac{-7}{10}\right) = \left(\frac{-2}{5} + \frac{4}{15}\right) + \frac{-7}{10}$

LHS

$= \frac{-2}{5} + \left(\frac{4}{15} + \frac{-7}{10}\right)$

Taking LCM

2 15,10

3 15,5

5 5,5

1,1

∴LCM of

$15 \text{ and } 10 = 2 \times 3 \times 5 = 30$

LHS

$= \frac{-2}{5} + \left(\frac{4\times2}{15\times2} + \frac{-7\times3}{10\times3}\right)$

$= \frac{-2}{5} + \left(\frac{8-21}{30}\right)$

$= \frac{-2}{5} - \frac{13}{30} = \frac{-2\times6}{5\times6} - \frac{13\times1}{30\times1}$

(∵LCM of 5 and 30=30)

$= \frac{-12-13}{30} = \frac{-25}{30} = \frac{-5}{6}$

RHS

$= \left(\frac{-2}{5} + \frac{4}{15}\right) + \frac{-7}{10}$

Taking LCM

3 5,15

5 5,5

1,1

∴LCM of 5 and 15=3×5=15

RHS

Benefits of ICSE Class 8 Maths Selina Solutions Chapter 1

Studying Chapter 1 on rational numbers from the ICSE Class 8 Maths Selina Solutions offers several benefits to students. Checkout these benefits for your preparation journey -

Concept Clarity: The chapter provides a clear explanation of what rational numbers are and how they differ from other types of numbers, such as integers or irrational numbers. This clarity helps students develop a strong conceptual foundation.

Problem-Solving Skills: By practicing problems related to addition, subtraction, multiplication, and division of rational numbers, students enhance their problem-solving abilities. These skills are crucial not only for mathematics but also for other subjects and real-life situations.

Logical Thinking: Working with rational numbers requires logical thinking and an understanding of mathematical operations. This chapter encourages students to think critically and logically when solving problems involving fractions and decimals.

Preparation for Higher Classes: Understanding rational numbers lays a solid groundwork for more advanced mathematical concepts in future grades. It helps in comprehending algebraic expressions, equations, and more complex operations involving fractions and decimals.

Real-World Applications: Rational numbers are used in various real-life scenarios, such as calculating proportions, measurements, and financial transactions. Mastering this chapter equips students with practical mathematical skills applicable to everyday situations.

Enhanced Confidence: Successfully mastering the concepts and problems in Chapter 1 builds confidence in students, making them feel more comfortable and capable of tackling mathematical challenges.