

RD Sharma
Solutions

Class 7

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Chapter - 5
Operations on Rational numbers

Exercise 5.1

Q.1 Add the following rational numbers:

(i) $-\frac{5}{7}$ and $\frac{3}{7}$

(ii) $-\frac{15}{4}$ and $\frac{7}{4}$

(iii) $-\frac{8}{11}$ and $-\frac{4}{11}$

(iv) $\frac{6}{13}$ and $-\frac{9}{13}$

Solution: (i) $-\frac{5}{7} + \frac{3}{7} = \frac{-5+3}{7} = -\frac{2}{7}$

(ii) $-\frac{15}{4} + \frac{7}{4} = \frac{-15+7}{4} = -\frac{8}{4} = -\frac{2}{1}$

(iii) $-\frac{8}{11} + (-\frac{4}{11}) = \frac{-8-4}{11} = -\frac{12}{11}$

(iv) $\frac{6}{13} + (-\frac{9}{13}) = \frac{6-9}{13} = -\frac{3}{13}$

Q.2 Add the following rational numbers:

(i) $\frac{3}{4}$ and $-\frac{3}{5}$

(ii) -3 and $\frac{3}{5}$

(iii) $-\frac{7}{27}$ and $\frac{11}{18}$

(iv) $\frac{31}{-4}$ and $-\frac{5}{8}$

Solution: (i) $\frac{3}{4}$ and $-\frac{3}{5} = \frac{3}{4} + \frac{(-3)}{5}$

$\therefore \text{LCM}(4, 5) = 20$

$$\Rightarrow \frac{(3 \times 5) + (-3 \times 4)}{20} = \frac{15 - 12}{20} = \frac{3}{20}$$

(ii) $-3 + \frac{3}{5} = \frac{(-3 \times 5) + 3}{5} = \frac{-15 + 3}{5} = -\frac{12}{5}$

(iii) $-\frac{7}{27} + \frac{11}{18}$

$\therefore \text{LCM}(27, 18) = 54$

$$= \frac{(-7 \times 2) + (11 \times 3)}{54} = \frac{-14 + 33}{54} = \frac{19}{54}$$

(iv) $\frac{31}{-4} + -\frac{5}{8} = -\frac{31}{4} + -\frac{5}{8}$

$\therefore \text{LCM}(4, 8) = 8$

$$\Rightarrow \frac{(-31 \times 2) + (-5 \times 1)}{8} = \frac{-62 - 5}{8} = -\frac{67}{8}$$

Q 3 Simplify

(i) $\frac{8}{8} + -\frac{11}{6}$

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

(iii) $\frac{1}{-12} + \frac{2}{-15}$

(iv) $-\frac{8}{19} + -\frac{4}{57}$

(3)

Solution (i) $\frac{8}{9} + \frac{-11}{6}$

$$\therefore \text{LCM}(9, 6) = 18$$

$$\therefore \frac{(8 \times 2) + (-11 \times 3)}{18} = \frac{16 - 33}{18} = \frac{-17}{18}$$

$$\begin{aligned} \text{(ii)} \quad \frac{-5}{16} + \frac{7}{24} &= \frac{(-5 \times 3) + (7 \times 2)}{48} \quad (\because \text{LCM}(16, 24) = 48) \\ &= \frac{-15 + 14}{48} = \frac{-1}{48} \end{aligned}$$

$$\begin{aligned} \text{(iii)} \quad \frac{1}{-12} + \frac{2}{-15} &= \frac{-1}{12} - \frac{2}{15} \\ &= \frac{(-1 \times 5) + (-2 \times 4)}{60} \quad (\because \text{LCM}(12, 15) = 60) \\ &= \frac{-5 - 8}{60} = \frac{-13}{60} \end{aligned}$$

$$\begin{aligned} \text{(iv)} \quad \frac{-8}{19} + \frac{-4}{57} \\ \therefore \text{LCM}(19, 57) = 57 \end{aligned}$$

$$= \frac{(-8 \times 3) + (-4 \times 1)}{57} = \frac{-24 - 4}{57} = \frac{-28}{57}$$

Q.4 Add and express the sum as a mixed fraction

$$\text{(i)} \quad \frac{-12}{5} + \frac{43}{10}$$

$$\text{(ii)} \quad \frac{24}{7} + \frac{-11}{4}$$

$$\text{(iii)} \quad \frac{-31}{6} + \frac{-27}{8}$$

(4)

Solution: (i) $-\frac{12}{5} + \frac{43}{10}$

$$\text{LCM}(5, 10) = 10$$

$$= \frac{(-12 \times 2) + (43 \times 1)}{10} = \frac{-24 + 43}{10} = \frac{19}{10} = 1 \frac{9}{10}$$

$$(ii) \quad \frac{24}{7} + \frac{-11}{4} = \frac{(24 \times 4) + (-11 \times 7)}{28} = \frac{96 - 77}{28} = \frac{19}{28}$$

$$(iii) \quad -\frac{31}{6} + -\frac{27}{8} = \frac{(-31 \times 4) + (-27 \times 3)}{24} = \frac{-124 - 81}{24} = -\frac{205}{24} = -8 \frac{13}{24}$$

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