RD SHARMA

Solutions

Class 7 Maths

Chapter 5

Ex 5.1

Q1. Add the following rational numbers:

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

We have,

$\frac{-5}{7} + \frac{3}{7}$

$= \frac{-5+3}{7}$

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

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

We have,

$\frac{-15}{4} + \frac{7}{4}$

$= \frac{-15+7}{4}$

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

$= -2$

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

We have,

$\frac{-8}{11} + \frac{-4}{11}$

$= \frac{-8-4}{11}$

$= \frac{-12}{11}$

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

We have,

$\frac{6}{13} + \frac{-9}{13}$ $\frac{6}{13} - \frac{9}{13}$

$= \frac{6-9}{13}$

$= \frac{-3}{13}$

Q2. Add the following rational numbers:

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

If $\frac{p}{q}$ and $\frac{r}{s}$ are two rational numbers such that q and s do not have a common factor

$\frac{p}{q} + \frac{r}{s} = \frac{p \times s + r \times q}{q \times s}$

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

(ii) $\frac{-3}{1}$ and $\frac{3}{5}$

If $\frac{p}{q}$ and $\frac{r}{s}$ are two rational numbers such that q and s do not have a common factor

$\frac{p}{q} + \frac{r}{s} = \frac{p \times s + r \times q}{q \times s}$

$$\frac{3}{1} + \frac{3}{5} = \frac{5 \times (-3) + (3) \times 1}{5}$$
$$= \frac{-15+3}{5}$$
$$= \frac{-12}{5}$$

(iii) $\frac{-3}{1}$ and $\frac{3}{5}$

LCM of 27 and 18 is 54

$$\frac{-7}{27} = \frac{-7\times2}{27\times2} = \frac{-14}{54}$$
$$\frac{11}{18} = \frac{11\times3}{18\times3} = \frac{33}{54}$$
$$\frac{-7}{27} + \frac{11}{18} = \frac{-14}{54} + \frac{33}{54}$$
$$= \frac{33-14}{54}$$
$$= \frac{19}{54}$$

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

LCM of 4 and 8 is 4

$$\frac{31}{-4} = \frac{31\times2}{-4\times2} = \frac{62}{-8}$$
$$\frac{31}{-4} + \frac{-5}{8} = \frac{62}{-8} + \frac{-5}{8}$$
$$= \frac{-62-5}{8}$$
$$= \frac{-67}{8}$$

Q3. Simplify

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

$\frac{8}{9} - \frac{11}{6}$

LCM of 9 and 6 is 18

$$\frac{8}{9} = \frac{8\times2}{9\times2} = \frac{16}{18}$$
$$\frac{11}{6} = \frac{11\times3}{6\times3} = \frac{33}{18}$$
$$\frac{8}{9} + \frac{-11}{6} = \frac{16}{18} - \frac{33}{18}$$
$$= \frac{16-33}{18}$$
$$= \frac{-17}{18}$$

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

LCM of 16 and 24 is 48

$$\frac{-5}{16} = \frac{-5\times3}{16\times3} = \frac{-15}{48}$$
$$\frac{7}{24} = \frac{7\times2}{24\times2} = \frac{14}{48}$$
$$\frac{-5}{16} + \frac{7}{24} = \frac{-15}{48} + \frac{14}{48}$$
$$= \frac{14-15}{48}$$
$$= \frac{-1}{48}$$

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

$\frac{-1}{12} - \frac{2}{15}$

LCM of 12 and 15 is 60

$$\frac{-1}{12} = \frac{-1\times5}{12\times5} = \frac{-5}{60}$$
$$\frac{-2}{15} = \frac{-2\times4}{15\times4} = \frac{-8}{60}$$
$$\frac{-1}{12} - \frac{2}{15} = \frac{-5}{60} + \frac{-8}{60}$$
$$= \frac{-5-8}{60}$$
$$= \frac{-13}{60}$$

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

LCM of 19 and 57 is 57

$$\frac{-8}{19} = \frac{-8\times3}{19\times3} = \frac{-24}{57}$$
$$\frac{-8}{19} + \frac{-4}{57} = \frac{-24}{57} + \frac{-4}{57}$$
$$= \frac{-24-4}{57}$$
$$= \frac{-28}{57}$$

Q4. Add and express the sum as a mixed fraction:

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

LCM of 5 and 10 is 10

$$\frac{-12}{5} = \frac{-12\times2}{5\times2} = \frac{-24}{10}$$
$$\frac{-12}{5} + \frac{43}{10} = \frac{-24}{10} + \frac{43}{10}$$
$$= \frac{-24+43}{10}$$
$$= \frac{19}{10}$$
$$= 1\frac{9}{10}$$

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

LCM of 7 and 4 is 28

$$\frac{24}{7} = \frac{24\times4}{7\times4} = \frac{96}{28}$$
$$\frac{-11}{4} = \frac{-11\times7}{4\times7} = \frac{-77}{28}$$
$$\frac{24}{7} + \frac{-11}{4} = \frac{96}{28} + \frac{-77}{28}$$
$$= \frac{96}{28} - \frac{77}{28}$$
$$= \frac{96-77}{28}$$
$$= \frac{19}{28}$$

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

LCM of 6 and 8 is 24

$$\frac{-31}{6} = \frac{-31\times4}{6\times4} = \frac{-124}{24}$$
$$\frac{-27}{8} = \frac{-27\times3}{8\times3} = \frac{-81}{24}$$
$$\frac{-31}{6} + \frac{-27}{8} = \frac{-124}{24} + \frac{-81}{24}$$
$$= \frac{-124}{24} - \frac{81}{24}$$
$$= \frac{-124-81}{24}$$
$$= \frac{-205}{24}$$
$$= -8\frac{13}{24}$$