RD SHARMA

Solutions

Class 7 Maths

Chapter 5

Ex 5.2

Q1. Subtract the first rational number from the second in each of the following:

(i) $\frac{3}{8}, \frac{5}{8}$

$$\frac{5}{8} - \frac{3}{8} = \frac{5-3}{8}$$
$$= \frac{2}{8}$$

(ii) $\frac{-7}{9}, \frac{4}{9}$

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

(iii) $\frac{-2}{11}, \frac{-9}{11}$

$$\frac{-2}{11} + \frac{-9}{11} = \frac{-9}{11} + \frac{2}{11}$$
$$= \frac{-9+2}{11}$$
$$= \frac{-7}{11}$$

(iv) $\frac{11}{13}, \frac{-4}{13}$

$$\frac{-4}{13} - \frac{11}{13} = \frac{-4-11}{13}$$
$$= \frac{-15}{13}$$

Q2. Evaluate each of the following:

(i) $\frac{2}{3} - \frac{3}{5}$

LCM of 3 and 5 is 15

$$\frac{2}{3} = \frac{2\times5}{3\times5} = \frac{10}{15}$$
$$\frac{3}{5} = \frac{3\times3}{5\times3} = \frac{9}{15}$$
$$\frac{2}{3} - \frac{3}{5} = \frac{10}{15} - \frac{9}{15}$$
$$= \frac{1}{15}$$

(ii) $-\frac{4}{7} - \frac{2}{-3}$

LCM of 3 and 7 is 21

$$\frac{-4}{7} = \frac{-4\times3}{7\times3} = \frac{-12}{21}$$
$$\frac{2}{-3} = \frac{2\times7}{-3\times7} = \frac{14}{21}$$
$$\frac{-4}{7} - \frac{2}{-3} = \frac{-12}{21} - \frac{-14}{21}$$
$$= \frac{14}{21} - \frac{12}{21}$$
$$= \frac{14-12}{21}$$
$$= \frac{2}{21}$$

(iii) $\frac{4}{7} - \frac{-5}{-7}$

$$\frac{4}{7} - \frac{-5}{-7}$$
$$\frac{4}{7} - \frac{5}{7} = \frac{4-5}{7}$$
$$= \frac{-1}{7}$$

(iv) $-2 - \frac{5}{9}$

$$\frac{2}{1} - \frac{-5}{-9}$$
$$= \frac{-2\times9-5\times1}{9\times1}$$
$$= \frac{-18-5}{9}$$
$$= \frac{-23}{9}$$

Q3. The sum of the two numbers is $\frac{5}{9}$. If one of the numbers is $\frac{1}{3}$, find the other.

Required number=

$$\frac{5}{9} - \frac{1}{3}$$

LCM of 3 and 9 is 9

$\frac{1}{3} = \frac{1\times3}{3\times3} = \frac{3}{9}$

Therefore required number= $\frac{5}{9} - \frac{3}{9}$

$= \frac{2}{9}$

Q4. The sum of two numbers is $\frac{-1}{3}$. If one of the numbers is $\frac{-12}{3}$, find the other.

Let the required number be x

$$\frac{-12}{3} + x = \frac{-1}{3}$$
$$x = \frac{-1}{3} - \frac{-12}{3}$$
$$x = \frac{-1+12}{3}$$
$$x = \frac{11}{3}$$

The required number is $\frac{11}{3}$

Q5. The sum of two numbers is $\frac{-4}{3}$. If one of the numbers is -5, find the other.

Let the required number be x

$$-5 + x = \frac{-4}{3}$$
$$x = \frac{-4}{3} + 5$$
$$x = \frac{-4}{3} + \frac{5\times3}{1\times3}$$
$$x = \frac{-4}{3} + \frac{15}{3}$$
$$x = \frac{-4+15}{3}$$
$$x = \frac{11}{3}$$

The required number is $\frac{11}{3}$

Q6. The sum of two rational numbers is -8. If one of the numbers is $\frac{-15}{7}$, find the other.

Let the required number be x

$$\frac{-15}{7} + x = -8$$
$$x = -8 - \frac{-15}{7}$$
$$x = -8 + \frac{15}{7}$$
$$x = \frac{8\times7}{1\times7} + \frac{15}{7}$$
$$x = \frac{15-56}{7}$$
$$x = \frac{-41}{7}$$

The required number is $\frac{-41}{7}$

Q7. What should be added to $\frac{-7}{8}$ so as to get $\frac{5}{9}$?

Let the required number be x

$$\frac{-7}{8} + x = \frac{5}{9}$$
$$x = \frac{5}{9} - \frac{-7}{8}$$
$$x = \frac{5\times8}{9\times8} - \frac{-7\times9}{8\times9}$$
$$x = \frac{40}{72} - \frac{-63}{72}$$
$$x = \frac{40+63}{72}$$
$$x = \frac{103}{72}$$

The required number is $\frac{103}{72}$

Q8. What number should be added to $\frac{-5}{11}$ so as to get $\frac{26}{33}$?

Let the required number be x

$$\frac{-5}{11} + x = \frac{26}{33}$$
$$x = \frac{26}{33} - \frac{-5}{11}$$
$$x = \frac{26}{33} - \frac{-5\times3}{11\times3}$$
$$x = \frac{26}{33} - \frac{-15}{33}$$
$$x = \frac{26+15}{33}$$
$$x = \frac{41}{33}$$

The required number is $\frac{41}{33}$

Q9. What number should be added to $\frac{-5}{7}$ to get $\frac{-2}{3}$?

Let the required number be x

$$\frac{-5}{7} + x = \frac{-2}{3}$$
$$x = \frac{-2}{3} - \frac{-5}{7}$$
$$x = \frac{-2\times7}{3\times7} - \frac{-5\times3}{7\times3}$$
$$x = \frac{-14}{21} - \frac{-15}{21}$$
$$x = \frac{-14+15}{21}$$
$$x = \frac{1}{21}$$

The required number is $\frac{1}{21}$

Q10. What number should be subtracted from $\frac{-5}{3}$ to get $\frac{5}{6}$?

Let the required number be x

$$\frac{-5}{3} - x = \frac{5}{6}$$
$$-x = \frac{5}{6} - \frac{-5}{3}$$
$$-x = \frac{5}{6} - \frac{-5\times2}{3\times2}$$
$$-x = \frac{5}{6} - \frac{-10}{6}$$
$$-x = \frac{5+10}{6}$$
$$-x = \frac{15}{6}$$
$$x = -\frac{15}{6}$$

The required number is $\frac{15}{6}$

Q11. What number should be subtracted from $\frac{3}{7}$ to get $\frac{5}{4}$?

Let the required number be x

$$\frac{3}{7} - x = \frac{5}{4}$$
$$-x = \frac{5}{4} - \frac{3}{7}$$
$$-x = \frac{5\times7}{4\times7} - \frac{3\times4}{7\times4}$$
$$-x = \frac{35}{28} - \frac{12}{28}$$
$$-x = \frac{35-12}{28}$$
$$-x = \frac{23}{28}$$
$$x = -\frac{23}{28}$$

The required number is $\frac{23}{28}$

Q12. What should be added to $(\frac{2}{3} + \frac{3}{5})$ ***to get*** $\frac{-2}{15}$***?***

Let the required number be x

$$(\frac{2}{3} + \frac{3}{5}) + x = \frac{-2}{15}$$
$$(\frac{2\times5}{3\times5} + \frac{3\times3}{5\times3}) + x = \frac{-2}{15}$$
$$(\frac{10}{15} + \frac{9}{15}) + x = \frac{-2}{15}$$
$$\frac{19}{15} + x = \frac{-2}{15}$$
$$x = \frac{-2}{15} - \frac{19}{15}$$
$$x = \frac{-2-19}{15}$$
$$x = \frac{-21}{15}$$
$$x = \frac{-7}{5}$$

The required number is $\frac{-7}{5}$

Q13. What should be added to $(\frac{1}{2} + \frac{1}{3} + \frac{1}{5})$ ***to get 3?***

Let the required number be x

$$(\frac{1}{2} + \frac{1}{3} + \frac{1}{5}) + x = 3$$
$$(\frac{1\times15}{2\times15} + \frac{1\times10}{3\times10} + \frac{1\times6}{5\times6}) + x = 3$$
$$(\frac{15+10+6}{30}) + x = 3$$
$$\frac{31}{30} + x = 3$$
$$x = 3 - \frac{31}{30}$$
$$x = \frac{3\times30}{1\times30} - \frac{31}{30}$$
$$x = \frac{90}{30} - \frac{31}{30}$$
$$x = \frac{59}{30}$$

The required number is $\frac{59}{30}$

Q14. What should be subtracted from $(\frac{3}{4} - \frac{2}{3})$ ***to get*** $\frac{-1}{6}$

Let the required number be x

$(\frac{3}{4} - \frac{2}{3}) - x = \frac{-1}{6}$

$(\frac{3\times3}{4\times3} - \frac{2\times4}{3\times4}) - x = \frac{-1}{6}$

$(\frac{9}{12} - \frac{8}{12}) - x = \frac{-1}{6}$

$\frac{1}{12} - x = \frac{-1}{6}$

$-x = \frac{-1}{6} - \frac{1}{12}$

$-x = \frac{-1\times2}{6\times2} - \frac{1}{12}$

$-x = \frac{-2}{12} - \frac{1}{12}$

$-x = \frac{-2-1}{12}$

$-x = \frac{-3}{12}$

$x = \frac{3}{12}$

$x = \frac{1}{4}$

The required number is $\frac{1}{4}$

Q15. Simplify:

(i) $(\frac{-3}{2} + \frac{5}{4} - \frac{7}{4})$

$(\frac{-3}{2} + \frac{5}{4} - \frac{7}{4})$

$= (\frac{-3\times2}{2\times2} + \frac{5}{4} - \frac{7}{4})$

$= (\frac{-6}{4} + \frac{5}{4} - \frac{7}{4})$

$= (\frac{-6+5-7}{4})$

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

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

$= -2$

(ii) $(\frac{5}{3} - \frac{7}{6} + \frac{-2}{3})$

$(\frac{5}{3} - \frac{7}{6} + \frac{-2}{3})$

$= (\frac{5\times2}{3\times2} - \frac{7}{6} + \frac{-2\times2}{3\times2})$

$= (\frac{10}{6} - \frac{7}{6} + \frac{-4}{6})$

$= (\frac{10-7-4}{6})$

$= (\frac{10-11}{6})$

$= (\frac{-1}{6})$

(iii) $(\frac{5}{4} - \frac{7}{6} - \frac{-2}{3})$

$(\frac{5}{4} - \frac{7}{6} - \frac{-2}{3})$

$= (\frac{5\times3}{4\times3} - \frac{7\times2}{6\times2} - \frac{-2\times4}{3\times4})$

$= (\frac{15}{12} - \frac{14}{12} - \frac{-8}{12})$

$= (\frac{15-14+8}{12})$

$= (\frac{9}{12})$

$= (\frac{3}{4})$

(iv) $(\frac{-2}{5} - \frac{-3}{10} - \frac{-4}{7})$

$$\left(\frac{-2}{5}-\frac{-3}{10}-\frac{-4}{7}\right)$$

$$\left(\frac{-2\times14}{5\times14}-\frac{-3\times7}{10\times7}-\frac{-4\times10}{7\times10}\right)$$

$$\left(\frac{-28}{70}-\frac{-21}{70}-\frac{-40}{70}\right)$$

$$\left(\frac{-28+21+40}{70}\right)$$

$$\left(\frac{33}{70}\right)$$

Q16. Fill in the blanks:

(i) $\frac{-4}{13}-\frac{-3}{26}=\ldots.$

$$\frac{-4}{13}-\frac{-3}{26}=\frac{-4\times2}{13\times2}-\frac{-3}{26}$$
$$=\frac{-8+3}{26}$$
$$=\frac{-5}{26}$$

$\frac{-4}{13}-\frac{-3}{26}=\frac{-5}{26}$

(ii) $\frac{-9}{14}+\ldots.=-1$

$$\frac{-9}{14}+x=-1$$
$$x=-1-\left(\frac{-9}{14}\right)$$
$$x=-\frac{1\times14}{1\times14}-\left(\frac{-9}{14}\right)$$
$$x=-\frac{14}{14}-\left(\frac{-9}{14}\right)$$
$$x=\frac{-14+9}{14}$$
$$x=\frac{-5}{14}$$

$\frac{-9}{14}+\frac{-5}{14}=-1$

(iii) $\frac{-7}{9}+\ldots.=3$

$$\frac{-7}{9}+x=3$$
$$x=3-\frac{-7}{9}$$
$$x=\frac{3\times9}{1\times9}-\frac{-7}{9}$$
$$x=\frac{27}{9}-\frac{-7}{9}$$
$$x=\frac{27+7}{9}$$
$$x=\frac{34}{9}$$

$\frac{-7}{9}+\frac{34}{9}=3$

(iv) $\ldots.+\frac{15}{23}=4$

$$x+\frac{15}{23}=4$$
$$x=4-\frac{15}{23}$$
$$x=\frac{4\times23}{1\times23}-\frac{15}{23}$$
$$x=\frac{92}{23}-\frac{15}{23}$$
$$x=\frac{92-15}{23}$$
$$x=\frac{77}{23}$$

$\frac{77}{23}+\frac{15}{23}=4$