RD Sharma Solutions

Class 7

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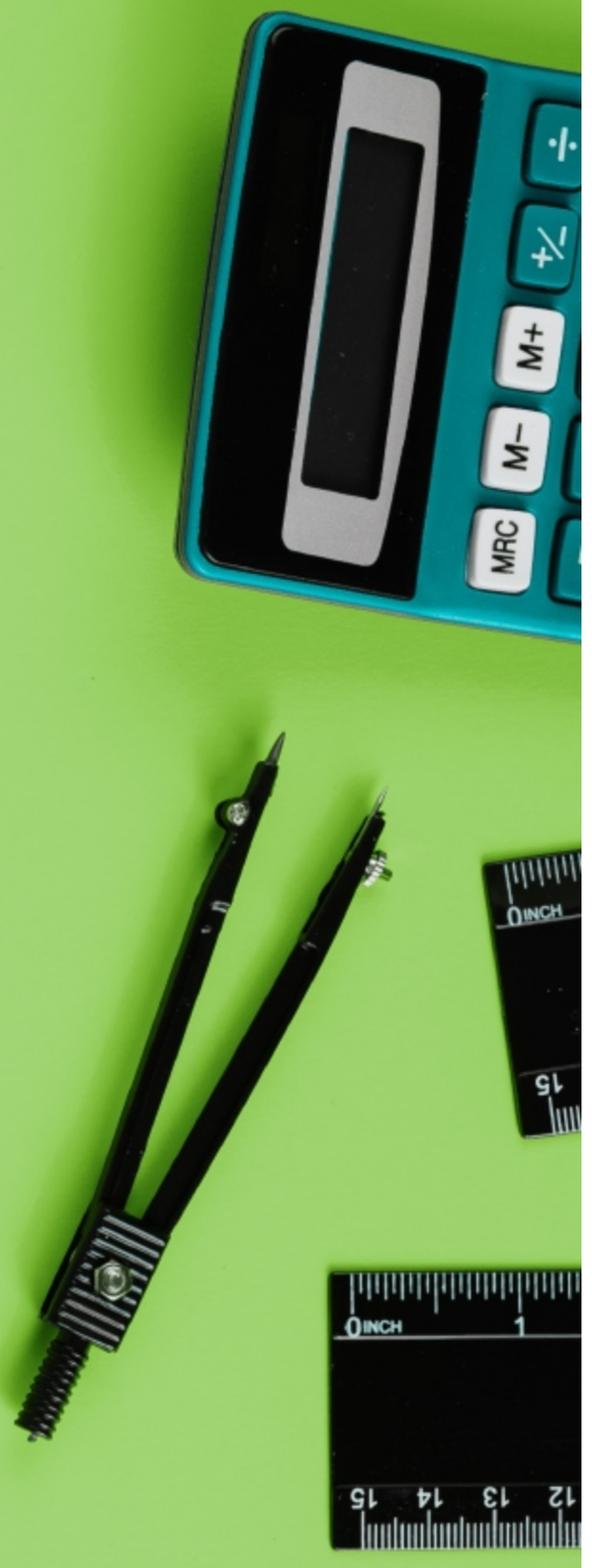

Exercise 5.2

Q.1 Subtract the first rational number from the second in each of the following:

(i) $\frac{3}{8}, \frac{5}{8}$ (ii) $\frac{-7}{9}, \frac{4}{9}$ (iii) $\frac{-2}{11}, \frac{-9}{11}$ (iv) $\frac{11}{13}, \frac{-4}{13}$

Solution: (i) $\frac{5}{8} - \frac{3}{8} = \frac{5-3}{8} = \frac{2}{8} = \frac{1}{4}$

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

(iii) $\frac{-9}{11} - \left(\frac{-2}{11}\right) = \frac{-9}{11} + \frac{2}{11} = \frac{-9+2}{11} = \frac{-7}{11}$

(iv) $\frac{-4}{13} - \frac{11}{13} = \frac{-4-11}{13} = \frac{-15}{13}$

Q.2 Evaluate each of the following:

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

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

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

here LCM $(3,5) = 15$

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

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

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

(iii) $\frac{4}{7} - \frac{-5}{-7} = \frac{4}{7} - \frac{5}{7} = \frac{4-5}{7} = \frac{-1}{7}$

(iv) $-2 - \frac{5}{9} = \frac{(-2\times9)-(5\times1)}{9} = \frac{-18-5}{9} = -\frac{23}{9}$

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

Solution: We are given that,

sum of two numbers $= \frac{5}{9}$

one number $= \frac{1}{3}$

$\therefore$ second number $= \frac{5}{9} - \frac{1}{3} = \frac{5-1\times3}{9} = \frac{5-3}{9} = \frac{2}{9}$

Q.4 The sum of two numbers is $-\frac{1}{3}$. If one of the numbers is $-\frac{12}{3}$. find the other.

Solution: $\because$ Sum of two numbers $= -\frac{1}{3}$

one number $= -\frac{12}{3}$

$\therefore$ second number $= -\frac{1}{3} - \left(-\frac{12}{3}\right) = -\frac{1}{3} + \frac{12}{3}$

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

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

Solution: $\because$ sum of two numbers $= -\frac{4}{3}$

one number $= -5$

$\therefore$ other number $= -\frac{4}{3} - (-5)$

$= -\frac{4}{3} + 5 = \frac{-4+(5\times3)}{3}$

$= \frac{-4+15}{3} = \frac{11}{3}$

Q.6 The sum of two rational numbers is -8. If one of the numbers is $-\frac{15}{7}$. find the other.

Solution: $\because$ sum of two rational number $= -8$

one number $= -\frac{15}{7}$

$\therefore$ other number $= -8 - \left(-\frac{15}{7}\right)$

$= -8 + \frac{15}{7}$

$= \frac{(-8\times7)+15}{7}$

$= \frac{-56+15}{7} = \frac{-41}{7}$

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

Solution: No. should be added $= \frac{5}{9} - \left(\frac{-7}{8}\right)$

$$= \frac{5}{9} + \frac{7}{8} = \frac{5\times8 + 7\times9}{72}$$

$$= \frac{40+63}{72} = \frac{103}{72}$$

Q.8 What number should be added to $\frac{-5}{11}$ so as to get $\frac{26}{33}$?

Solution: required number $= \frac{26}{33} - \left(\frac{-5}{11}\right) = \frac{26}{33} + \frac{5}{11}$

$$= \frac{(26\times1) + (5\times3)}{33} = \frac{26+15}{33}$$

$$= \frac{41}{33}.$$

Q.9 What number should be added to $\frac{-5}{7}$ to get $-\frac{2}{3}$?

Solution: required number $= -\frac{2}{3} - \left(\frac{-5}{7}\right) = \frac{-2}{3} + \frac{5}{7}$

$$= \frac{(-2\times7) + (5\times3)}{21}$$

$$= \frac{-14+15}{21} = \frac{1}{21}$$

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Q.10 What number should be subtracted from $-\frac{5}{3}$ to get $\frac{5}{6}$?

Solution: required number $= -\frac{5}{3} - \frac{5}{6} = \frac{(-5\times2)-(5\times1)}{6}$

$= \frac{-10-5}{6} = \frac{-15}{6} = \frac{-5}{2}$

Q.11 What number should be subtracted from $\frac{3}{7}$ to get $\frac{5}{4}$?

Solution: required number $= \frac{3}{7} - \frac{5}{4} = \frac{(3\times4)-(5\times7)}{28}$

$= \frac{12-35}{28} = \frac{-23}{28}$

Q.12 What should be added to $\left(\frac{2}{3}+\frac{3}{5}\right)$ to get $-\frac{2}{15}$?

Solution: $\because \frac{2}{3}+\frac{3}{5} = \frac{2\times5+3\times3}{15} = \frac{10+9}{15} = \frac{19}{15}$

$\therefore$ number should be added to $\frac{19}{15}$ to get $-\frac{2}{15}$

$= -\frac{2}{15} - \frac{19}{15} = \frac{-2-19}{15}$

$= -\frac{\cancel{21}\,7}{\cancel{15}\,5}$

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

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Q.13 What should be added to $\left(\frac{1}{2}+\frac{1}{3}+\frac{1}{5}\right)$ to get 3.

Solution $\because \frac{1}{2}+\frac{1}{3}+\frac{1}{5} = \frac{1\times15+1\times10+1\times6}{30}$

$= \frac{15+10+6}{30} = \frac{31}{30}$

$\therefore$ required number $= 3-\frac{31}{30} = \frac{3\times30-31}{30}$

$= \frac{90-31}{30} = \frac{59}{30}$.

Q.14 What should be subtracted from $\left(\frac{3}{4}-\frac{2}{3}\right)$ to get $-\frac{1}{6}$?

Solution: $\because \frac{(3\times3)-(2\times4)}{12} = \frac{9-8}{12} = \frac{1}{12}$

required number $= \frac{1}{12}-\left(\frac{-1}{6}\right) = \frac{1}{12}+\frac{1}{6}$

$= \frac{1+1\times2}{12} = \frac{1+2}{12}$

$= \frac{3}{12} = \frac{1}{4}$

Q.15 Simplify:

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

(iii) $\frac{5}{4}-\frac{7}{6}-\frac{-2}{3}$ (iv) $-\frac{2}{5}-\frac{-3}{10}-\frac{-4}{7}$

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

$$= \frac{(-3\times2)+5-7}{4} = \frac{-6+5-7}{4} = \frac{-8}{4} = -2$$

(ii) $\frac{5}{3}-\frac{7}{6}+\frac{-2}{3} = \frac{(5\times2)-(7\times1)-(2\times2)}{6}$

$$= \frac{10-7-4}{6} = \frac{10-11}{6} = \frac{-1}{6}$$

(iii) $\frac{5}{4}-\frac{7}{6}-\frac{-2}{3} = \frac{5}{4}-\frac{7}{6}+\frac{2}{3} = \frac{(5\times3)-(7\times2)+(2\times4)}{12}$

$$= \frac{15-14+8}{12} = \frac{1+8}{12} = \frac{9}{12} = \frac{3}{4}$$

(iv) $\frac{-2}{5}-\frac{-3}{10}-\frac{-4}{7} = \frac{(-2\times14)+(3\times7)+(4\times10)}{70}$

$$= \frac{-28+21+40}{70} = \frac{33}{70}$$

Q.16 Fill in the blanks

(i) $-\frac{4}{13}-\frac{-3}{26} = \ldots\ldots$ (ii) $\frac{-9}{14}+\ldots\ldots = -1$

(iii) $-\frac{7}{9}+\ldots\ldots = 3$ (iv) $\ldots\ldots+\frac{15}{23} = 4$

Solution: (i) $-\frac{4}{13}-\frac{-3}{26}$

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

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

let $-\frac{9}{14} + x = -1$

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

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

$\Rightarrow x = 3 + \frac{7}{9}$

$\Rightarrow x = \frac{3\times 9+7}{9} = \frac{27+7}{9} = \frac{34}{9}$

(iv) $\text{----} + \frac{15}{23} = 4$

let $x + \frac{15}{23} = 4$

$x = 4 - \frac{15}{23}$

$= \frac{(4\times 23)-15}{23} = \frac{92-15}{23} = \frac{77}{23}$

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