

RD SHARMA

Solutions

Class 8 Maths

Chapter 1

Ex 1.3

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

(v) $\frac{1}{4}, \frac{-3}{8}$

(vi) $\frac{-2}{3}, \frac{5}{6}$

(vii) $\frac{-6}{7}, \frac{-13}{14}$

(viii) $\frac{-8}{33}, \frac{-7}{22}$

Solution:

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

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

$$= \frac{5-3}{8} = \frac{2}{8} = \frac{1}{4}$$

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

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

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

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

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

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

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

(v) $\frac{1}{4}, \frac{-3}{8}$

$$= \frac{-3}{8} - \frac{1}{4}$$

$$= \frac{-3}{8} - \frac{1 \times 2}{4 \times 2}$$

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

(vi) $\frac{-2}{3}, \frac{5}{6}$

$$= \frac{5}{6} - \frac{-2}{3}$$

$$= \frac{5}{6} - \frac{-2 \times 2}{3 \times 2}$$

$$= \frac{5}{6} - \frac{-4}{6} = \frac{5+4}{6} = \frac{9}{6} = \frac{3}{2}$$

(vii) $\frac{-6}{7}, \frac{-13}{14}$

$$\begin{aligned}
&= \frac{-13}{14} - \frac{-6}{7} \\
&= \frac{-13}{14} - \frac{-6 \times 2}{7 \times 2} \\
&= \frac{-13}{14} - \frac{-12}{14} = \frac{-13+12}{14} = \frac{-1}{14}
\end{aligned}$$

$$\begin{aligned}
\text{(viii)} \quad &\frac{-8}{33} - \frac{-7}{22} \\
&= \frac{-7}{22} - \frac{-8}{33} \\
&= \frac{-7 \times 3}{22 \times 3} - \frac{-8 \times 2}{33 \times 2} \\
&= \frac{-21}{66} - \frac{-16}{66} = \frac{-21+16}{66} = \frac{-5}{66}
\end{aligned}$$

Q-2. Evaluate each of the following:

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

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

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

$$\text{(iv)} \quad \frac{-2}{1} - \frac{5}{9}$$

$$\text{(v)} \quad \frac{-3}{-8} - \frac{-2}{7}$$

$$\text{(vi)} \quad \frac{-4}{13} - \frac{-5}{26}$$

$$\text{(vii)} \quad \frac{-5}{14} - \frac{-2}{7}$$

$$\text{(viii)} \quad \frac{13}{15} - \frac{12}{25}$$

$$\text{(ix)} \quad \frac{-6}{13} - \frac{-7}{13}$$

$$\text{(x)} \quad \frac{7}{24} - \frac{19}{36}$$

$$\text{(xi)} \quad \frac{5}{63} - \frac{-8}{21}$$

Solution:

$$\begin{aligned}
\text{(i)} \quad &\frac{2}{3} - \frac{3}{5} \\
&= \frac{2 \times 5}{3 \times 5} - \frac{3 \times 3}{5 \times 3} \\
&= \frac{10}{15} - \frac{9}{15} \\
&= \frac{10-9}{15} = \frac{1}{15}
\end{aligned}$$

$$\begin{aligned}
\text{(ii)} \quad &\frac{-4}{7} - \frac{2}{-3} \\
&= \frac{-4 \times 3}{7 \times 3} - \frac{-2 \times 7}{3 \times 7} \\
&= \frac{-12}{21} - \frac{-14}{21} \\
&= \frac{-12+14}{21} = \frac{2}{21}
\end{aligned}$$

$$\begin{aligned}
\text{(iii)} \quad &\frac{4}{7} - \frac{-5}{-7} \\
&= \frac{4}{7} - \frac{5}{7} \\
&= \frac{4-5}{7} = \frac{-1}{7}
\end{aligned}$$

$$\begin{aligned}
 \text{(iv)} \quad & \frac{-2}{1} - \frac{5}{9} \\
 &= \frac{-2 \times 9}{1 \times 9} - \frac{5}{9} \\
 &= \frac{-18}{9} - \frac{5}{9} \\
 &= \frac{-18-5}{9} = \frac{-23}{9}
 \end{aligned}$$

$$\begin{aligned}
 \text{(v)} \quad & \frac{-3}{-8} - \frac{-2}{7} \\
 &= \frac{3 \times 7}{8 \times 7} - \frac{-2 \times 8}{7 \times 8} \\
 &= \frac{21}{56} - \frac{-16}{56} \\
 &= \frac{21+16}{56} = \frac{37}{56}
 \end{aligned}$$

$$\begin{aligned}
 \text{(vi)} \quad & \frac{-4}{13} - \frac{-5}{26} \\
 &= \frac{-4 \times 2}{13 \times 2} - \frac{-5}{26} \\
 &= \frac{-8}{26} - \frac{-5}{26} \\
 &= \frac{-8+5}{26} = \frac{-3}{26}
 \end{aligned}$$

$$\begin{aligned}
 \text{(vii)} \quad & \frac{-5}{14} - \frac{-2}{7} \\
 &= \frac{-5}{14} - \frac{-2 \times 2}{7 \times 2} \\
 &= \frac{-5}{14} - \frac{-4}{14} \\
 &= \frac{-5+4}{14} = \frac{-1}{14}
 \end{aligned}$$

$$\begin{aligned}
 \text{(viii)} \quad & \frac{13}{15} - \frac{12}{25} \\
 &= \frac{13 \times 5}{15 \times 5} - \frac{12 \times 3}{12 \times 3} \\
 &= \frac{65}{75} - \frac{36}{75} \\
 &= \frac{65-36}{75} = \frac{29}{75}
 \end{aligned}$$

$$\begin{aligned}
 \text{(ix)} \quad & \frac{-6}{13} - \frac{-7}{13} \\
 &= \frac{-6+7}{13} = \frac{1}{13}
 \end{aligned}$$

$$\begin{aligned}
 \text{(x)} \quad & \frac{7}{24} - \frac{19}{36} \\
 &= \frac{7 \times 3}{24 \times 3} - \frac{19 \times 2}{36 \times 2} \\
 &= \frac{21}{72} - \frac{38}{72} \\
 &= \frac{21-38}{72} = \frac{-17}{72}
 \end{aligned}$$

$$\begin{aligned}
 \text{(xi)} \quad & \frac{5}{63} - \frac{-8}{21} \\
 &= \frac{5}{63} - \frac{-8 \times 3}{21 \times 3}
 \end{aligned}$$

$$= \frac{5}{63} - \frac{-24}{63}$$

$$= \frac{5+24}{63} = \frac{29}{63}$$

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

Solution:

It is given that:

The sum of the two numbers is $\frac{5}{9}$.

One of the number is $\frac{1}{3}$

Let, the other number be x.

$$\therefore x + \frac{1}{3} = \frac{5}{9} \Rightarrow x = \frac{5}{9} - \frac{1}{3} \Rightarrow x = \frac{5}{9} - \frac{1 \times 3}{3 \times 3} \Rightarrow x = \frac{5-3}{9} \Rightarrow x = \frac{2}{9}$$

Hence, the other number is $\frac{2}{9}$.

Q-4. The sum of the two numbers is $\frac{-1}{3}$. If one of the number is $\frac{-12}{3}$, Find the others.

Solution: It is given that:

The sum of the two numbers is $\frac{-1}{3}$.

One of the number is $\frac{-12}{3}$

Let, the other number be x.

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

Hence, the other number is $\frac{11}{3}$.

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

Solution: It is given that:

The sum of the two numbers is $\frac{-4}{3}$.

One of the number is -5

Let, the other number be x.

$$\therefore x + (-5) = \frac{-4}{3} \Rightarrow x = 5 - \frac{4}{3} \Rightarrow x = \frac{4}{3} - \frac{5 \times 3}{1 \times 3} \Rightarrow x = \frac{-4+15}{3} \Rightarrow x = \frac{11}{3}$$

Hence, the other number is $\frac{11}{3}$.

Q-6. The sum of the two rational numbers is -8. If one of the number is $\frac{-15}{7}$, Find the others.

Solution: It is given that:

The sum of the two numbers is -8.

One of the number is $\frac{-15}{7}$

Let, the other number be x.

$$\therefore x + \frac{-15}{7} = (-8) \Rightarrow x = -8 - \frac{15}{7} \Rightarrow x = \frac{-8 \times 7}{1 \times 7} - \frac{15}{7} \Rightarrow x = \frac{-56+15}{7} \Rightarrow x = \frac{-41}{7}$$

Hence, the other number is $\frac{-41}{7}$.

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

Solution:

It is given that:

The sum of the two numbers is $\frac{5}{9}$

One of the number is $\frac{-7}{8}$

Let, the other number be x.

$$\therefore X + \frac{-7}{8} = \frac{5}{9} \Rightarrow X = \frac{5}{9} - \frac{-7}{8} \Rightarrow X = \frac{5 \times 8}{9 \times 8} - \frac{-7 \times 9}{8 \times 9} \Rightarrow X = \frac{40}{72} - \frac{-63}{72} \Rightarrow X = \frac{40+63}{72} \Rightarrow X = \frac{103}{72}$$

Hence, the other number is $\frac{103}{72}$.

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

Solution:

It is given that:

The sum of the two numbers is $\frac{26}{33}$

One of the number is $\frac{-5}{11}$

Let, the other number be x.

$$\therefore X + \frac{-5}{11} = \frac{26}{33}$$

$$\Rightarrow X = \frac{26}{33} - \frac{-5}{11} \Rightarrow X = \frac{26}{33} - \frac{-5 \times 3}{11 \times 3} \Rightarrow X = \frac{26}{33} - \frac{-15}{33} \Rightarrow X = \frac{26+15}{33} \Rightarrow X = \frac{41}{33}$$

Hence, the other number is $\frac{41}{33}$.

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

Solution:

It is given that:

The sum of the two numbers is $\frac{-2}{3}$

One of the number is $\frac{-5}{7}$

Let, the other number be x.

$$\therefore X + \frac{-5}{7} = \frac{-2}{3} \Rightarrow X = \frac{-2}{3} - \frac{-5}{7} \Rightarrow X = \frac{-2 \times 7}{3 \times 7} - \frac{-5 \times 3}{7 \times 3} \Rightarrow X = \frac{-14}{21} - \frac{-15}{21} \Rightarrow X = \frac{-14+15}{21} \Rightarrow X = \frac{1}{21}$$

Hence, the other number is $\frac{1}{21}$.

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

Solution:

It is given that:

The sum of the two numbers is $\frac{5}{6}$

One of the number is $\frac{-5}{3}$

Let, the other number be x.

$$\therefore X + \frac{-5}{3} = \frac{5}{6} \Rightarrow X = \frac{5}{6} - \frac{-5}{3} \Rightarrow X = \frac{5}{6} - \frac{-5 \times 2}{3 \times 2} \Rightarrow X = \frac{5}{6} - \frac{-63}{72} \Rightarrow X = \frac{40+63}{72} \Rightarrow X = \frac{103}{72}$$

Hence, the other number is $\frac{103}{72}$.

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

Solution:

It is given that:

The sum of the two numbers is $\frac{5}{4}$

One of the number is $\frac{3}{7}$

Let, the other number be x.

$$\therefore \frac{3}{7} - x = \frac{5}{4} \Rightarrow x = \frac{3}{7} - \frac{5}{4} \Rightarrow x = \frac{3 \times 4}{7 \times 4} - \frac{5 \times 7}{4 \times 7} \Rightarrow x = \frac{12}{28} - \frac{35}{28} \Rightarrow x = \frac{12-35}{28} \Rightarrow x = \frac{-23}{28}$$

Hence, the other number is $\frac{-23}{28}$.

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

Solution:

It is given that:

The sum of the numbers is $\frac{-2}{15}$

One of the number is $(\frac{2}{3} + \frac{3}{5})$

Let, the other number be x.

$$\therefore \frac{2}{3} + \frac{3}{5} + x = \frac{-2}{15} \Rightarrow x = \frac{-2}{15} - \frac{2}{3} - \frac{3}{5} \Rightarrow x = \frac{-2}{15} - \frac{2 \times 5}{3 \times 5} - \frac{3 \times 3}{5 \times 3} \Rightarrow x = \frac{-2}{15} - \frac{10}{15} - \frac{9}{15} \Rightarrow x = \frac{-2-10-9}{15} \Rightarrow x = \frac{-21}{15} \Rightarrow x = \frac{-7}{5}$$

Hence, the other number is $\frac{-7}{5}$.

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

Solution:

It is given that:

The sum of the numbers is 3

One of the number is $(\frac{1}{2} + \frac{1}{3} + \frac{1}{5})$

Let, the other number be x.

$$\therefore \frac{1}{2} + \frac{1}{3} + \frac{1}{5} + x = 3 \Rightarrow x = 3 - \frac{1}{2} - \frac{1}{3} - \frac{1}{5} \Rightarrow x = \frac{3 \times 30}{1 \times 30} - \frac{1 \times 15}{2 \times 15} - \frac{1 \times 10}{3 \times 10} - \frac{1 \times 6}{5 \times 6} \Rightarrow x = \frac{90}{30} - \frac{15}{30} - \frac{10}{30} - \frac{6}{30} \Rightarrow x = \frac{90-15-10-6}{30} \Rightarrow x = \frac{59}{30}$$

Hence, the other number is $\frac{59}{30}$.

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

Solution:

It is given that:

The numbers is $\frac{-1}{6}$

One of the number is $(\frac{3}{4} - \frac{2}{3})$

Let, the other number be x.

$$\therefore \frac{3}{4} - \frac{2}{3} - x = \frac{-1}{6} \Rightarrow x = \frac{3}{4} - \frac{2}{3} - \frac{-1}{6} \Rightarrow x = \frac{3 \times 3}{4 \times 3} - \frac{2 \times 4}{3 \times 4} - \frac{-1 \times 2}{6 \times 2} \Rightarrow x = \frac{9}{12} - \frac{8}{12} + \frac{2}{12} \Rightarrow x = \frac{2-8+9}{12} \Rightarrow x = \frac{3}{12} \Rightarrow x = \frac{1}{4}$$

Hence, the other number is $\frac{1}{4}$.

Q-15. Fill in the blanks:

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

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

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

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

Solution:

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

Let the required number be x.

$$\frac{-4}{13} - \frac{-3}{26} = x \Rightarrow \frac{-4 \times 2}{13 \times 2} - \frac{-3}{26} = x \Rightarrow \frac{-8}{26} - \frac{-3}{26} = x \Rightarrow x = \frac{-8+3}{26} \Rightarrow x = \frac{-5}{26} \quad \frac{-4}{13} - \frac{-3}{26} = \frac{-5}{26}$$

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

Let, the required number be x.

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

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

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

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

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

Let, the required number be x.

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

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