TEXT BOOK EXERCISE 1.2

Q. 1. Subtract :

(*i*) $\frac{2}{5}$ from $\frac{4}{5}$ (*ii*) $\frac{-3}{7}$ from $\frac{4}{7}$ (*v*) $\frac{-7}{10}$ from $\frac{-8}{15}$ (*vi*) $\frac{6}{11}$ from $\frac{5}{6}$

(*iii*) $\frac{-5}{8}$ from $\frac{3}{4}$ (*iv*) $\frac{-8}{21}$ from $\frac{5}{14}$ (*vii*) $\frac{-3}{4}$ from $\frac{-5}{12}$ (*viii*) $\frac{13}{10}$ from $\frac{-8}{25}$

Solution.

(*i*) $\frac{4}{5}-\frac{2}{5}=\frac{4-2}{5}=\frac{2}{5}$ **Ans.**

(*ii*) $\frac{4}{7}-\left(\frac{-3}{7}\right)=\frac{4+3}{7}=\frac{7}{7}=1$ **Ans.**

(*iii*) $\frac{3}{4}-\left(\frac{-5}{8}\right)=\frac{3\times2-(-5)\times1}{8}$

$=\frac{6+5}{8}=\frac{11}{8}$ **Ans.**

(*iv*) $\frac{5}{14}-\left(\frac{-8}{21}\right)=\frac{5\times3-(-8)\times2}{42}$

$=\frac{15+16}{42}=\frac{31}{42}$ **Ans.**

(*v*) $\frac{-8}{15}-\left(\frac{-7}{10}\right)=\frac{-8}{15}+\frac{7}{10}=\frac{-8\times2+7\times3}{30}$

$=\frac{-16+21}{30}=\frac{5}{30}=\frac{1}{6}$ **Ans.**

$\begin{array}{c|l} 7 & 14, 21 \\ \hline & 2, 3 \end{array}$ L.C.M. of 14 and 21

$= 7 \times 2 \times 3 = 42$

$\begin{array}{c|l} 5 & 15, 10 \\ \hline & 3, 2 \end{array}$

L.C.M. of 15 and 10 = $5 \times 3 \times 2 = 30$

(vi) $\frac{5}{6}-\frac{6}{11}=\frac{5\times11-6\times6}{6\times11}$

$=\frac{55-36}{66}=\frac{19}{66}$ **Ans.**

(vii) $-\frac{5}{12}-\left(\frac{-3}{4}\right)=\frac{-5\times1-(-3)\times3}{12}$

$=\frac{-5+9}{12}=\frac{4}{12}=\frac{1}{3}$ **Ans.**

(viii) $-\frac{8}{25}-\frac{13}{10}=\frac{-8\times2-13\times5}{50}$

$=\frac{-16-65}{50}=\frac{-81}{50}$ **Ans.**

Q. 2. Verify that $x-y\neq y-x$ when :

(i) $x=\frac{-5}{12}, y=\frac{-3}{8}$

(ii) $x=\frac{7}{15}, y=\frac{-3}{10}$

(iii) $x=\frac{-15}{16}, y=\frac{7}{12}$

(iv) $x=\frac{-3}{4}, y=\frac{-5}{6}$

Solution. (i) We have : $x=\frac{-5}{12}$, $y=\frac{-3}{8}$

L.H.S. $=x-y=\frac{-5}{12}-\left(\frac{-3}{8}\right)$

$=\frac{-5\times2-(-3)\times3}{24}=\frac{-10+9}{24}$

$=\frac{-1}{24}$

R.H.S. $=y-x=\frac{-3}{8}-\left(\frac{-5}{12}\right)$

$=\frac{-3\times3-(-5)(2)}{24}$

$=\frac{-9+10}{24}=\frac{1}{24}$

$\therefore$ L.H.S. $\neq$ R.H.S.

Thus, $x-y\neq y-x$

(ii) We have : $x=\frac{7}{15}$, $y=-\frac{3}{10}$

L.H.S. $=x-y=\frac{7}{15}-\left(\frac{-3}{10}\right)$

$=\frac{7\times2-(-3)\times3}{30}=\frac{14+9}{30}$

$=\frac{23}{30}$

R.H.S. $=y-x=\frac{-3}{10}-\frac{7}{15}$

$=\frac{-3\times3-7\times2}{30}=\frac{-9-14}{30}$

$=\frac{-23}{30}$

$\therefore$ L.H.S. $\neq$ R.H.S.

Thus, $x-y\neq y-x$.

(iii) We have : $x=\frac{-15}{16}$, $y=\frac{7}{12}$

L.H.S. $=x-y=\frac{-15}{16}-\frac{7}{12}=\frac{-15\times3-7\times4}{48}=\frac{-45-28}{48}=\frac{-73}{48}$

R.H.S. $=y-x=\frac{7}{12}-\left(\frac{-15}{16}\right)=\frac{7\times4-(-15)\times3}{48}$

$=\frac{28+45}{48}=\frac{73}{48}$

$\therefore$ L.H.S. $\neq$ R.H.S.

Thus, $x-y\neq y-x$

2	16, 12
2	8, 6
	4, 3

L.C.M. of 16 and 12
$= 2\times2\times4\times3=48$

(*iv*) We have : $x = \frac{-3}{4}$, $y = \frac{-5}{6}$

$$\text{L.H.S.} = x - y = \frac{-3}{4} - \left(\frac{-5}{6}\right)$$

$$= \frac{-3\times3-(-5)\times2}{12}$$

$$= \frac{-9+10}{12} = \frac{1}{12}$$

$$\text{R.H.S.} = y - x = \frac{-5}{6} - \left(\frac{-3}{4}\right)$$

$$= \frac{-5\times2-(-3)(3)}{12}$$

$$= \frac{-10+9}{12} = \frac{-1}{12}$$

$\therefore$ L.H.S. $\neq$ R.H.S.

Thus, $x - y \neq y - x$

Q. 3. Verify that $(x-y)-z \neq x-(y-z)$ when :

(*i*) $x = \frac{-7}{12}, y = \frac{-3}{4}, z = \frac{2}{3}$

(*ii*) $x = \frac{3}{8}, y = \frac{-2}{5}, z = \frac{-7}{10}$

(*iii*) $x = \frac{-1}{2}, y = \frac{-5}{4}, z = \frac{3}{8}$

Solution. (*i*) L.H.S.$= (x - y) - z$

$$= \left[\left(\frac{-7}{12}\right) - \left(\frac{-3}{4}\right)\right] - \frac{2}{3}$$

$$= \left[\frac{(-7\times1)-(-3)\times3}{12}\right] - \frac{2}{3}$$

$$= \frac{-7+9}{12} - \frac{2}{3}$$

$$= \frac{2}{12} - \frac{2}{3} = \frac{2\times1-2\times4}{12}$$

$$= \frac{2-8}{12} = \frac{-6}{12} = \frac{-1}{2}$$

$$\text{R.H.S.} = x - (y - z)$$

$$= \left[\frac{-7}{12}\right] - \left[\left(\frac{-3}{4}\right) - \frac{2}{3}\right]$$

$$= \left[\frac{-7}{12}\right] - \left[\frac{(-3\times3)-2\times4}{4\times3}\right]$$

$$= \left[\frac{-7}{12}\right] - \left[\frac{(-9-8)}{12}\right]$$

$$= \left(\frac{-7}{12}\right) - \left(\frac{-17}{12}\right) = \frac{-7+17}{12}$$

$$= \frac{10}{12} = \frac{5}{6}$$

$\therefore$ L.H.S. $\neq$ R.H.S.

Thus, $(x - y) - z \neq x - (y - z)$

(*ii*) L.H.S. $= (x - y) - z$

$$= \left[\frac{3}{8} - \left(\frac{-2}{5}\right)\right] - \left(\frac{-7}{10}\right)$$

$$= \left(\frac{3\times5-(-2)\times8}{8\times5}\right) - \left(\frac{-7}{10}\right)$$

$$= \left(\frac{15+16}{40}\right) - \left(\frac{-7}{10}\right)$$

$$= \frac{31}{40} + \frac{7}{10} = \frac{31\times1+7\times4}{40}$$

$$= \frac{31+28}{40} = \frac{59}{40}$$

$$\text{R.H.S.} = x - (y - z)$$

$$= \frac{3}{8} - \left[\left(\frac{-2}{5}\right) - \left(\frac{-7}{10}\right)\right]$$

$$= \frac{3}{8} - \left[\frac{(-2)\times2-(-7)\times1}{10}\right]$$

$$= \frac{3}{8} - \left(\frac{-4+7}{10}\right) = \frac{3}{8} - \left(\frac{3}{10}\right)$$

$$= \frac{3\times5-3\times4}{40} = \frac{15-12}{40}$$

$$= \frac{3}{40}$$

$\therefore$ L.H.S. $\neq$ R.H.S.

Thus, $(x - y) - z \neq x - (y - z)$

(iii) L.H.S. $= (x - y) - z$

$$= \left[\left(\frac{-1}{2}\right) - \left(-\frac{5}{4}\right)\right] - \frac{3}{8}$$

$$= \left[\frac{(-1)\times(2) - (-5)\times 1}{4}\right] - \frac{3}{8}$$

$$= \left(\frac{-2+5}{4}\right) - \frac{3}{8} = \frac{3}{4} - \frac{3}{8}$$

$$= \frac{3\times 2 - 3\times 1}{8} = \frac{6-3}{8} = \frac{3}{8}$$

R.H.S. $= x - (y - z)$

$$= \frac{-1}{2} - \left[\left(\frac{-5}{4}\right) - \frac{3}{8}\right]$$

$$= -\frac{1}{2} - \left[\frac{(-5)\times 2 - 3\times 1}{8}\right]$$

$$= \frac{-1}{2} - \left(\frac{-10-3}{8}\right)$$

$$= -\frac{1}{2} - \left(\frac{-13}{8}\right)$$

$$= \frac{-1\times 4 - (-13)\times 1}{8}$$

$$= \frac{-4+13}{8} = \frac{9}{8}$$

$\therefore$ L.H.S. $\neq$ R.H.S.

Thus, $(x - y) - z \neq x - (y - z)$

Q. 4. Solve the following :

(i) $\frac{3}{4} + \frac{5}{6} - \frac{7}{8}$ **(ii)** $\frac{-11}{2} + \frac{7}{6} - \frac{5}{8}$ **(iii)** $\frac{-4}{5} - \left(\frac{-7}{10}\right) + \left(\frac{-8}{15}\right)$

(iv) $\frac{-2}{5} - \left[\frac{-3}{10} - \left(\frac{-4}{15}\right)\right]$ **(v)** $\frac{3}{8} - \left(\frac{-2}{9}\right) + \left(\frac{5}{-36}\right)$

Solution. (i) $\frac{3}{4} + \frac{5}{6} - \frac{7}{8} = \frac{3\times 6 + 5\times 4 - 7\times 3}{24}$

$$= \frac{18 + 20 - 21}{24} = \frac{17}{24}$$ **Ans.**

2	4, 6, 8
2	2, 3, 4
	1, 3, 2

L.C.M. of 4, 6 and 8
$= 2 \times 2 \times 3 \times 2 = 24$

(ii) $\frac{-11}{2} + \frac{7}{6} - \frac{5}{8} = \frac{-11\times 12 + 7\times 4 - 5\times 3}{24}$

$$= \frac{-132 + 28 - 15}{24}$$

$$= \frac{-147 + 28}{24} = \frac{-119}{24}$$ **Ans.**

2	2, 6, 8
	1, 3, 4

L.C.M. of 2, 6 and 8
$= 2 \times 3 \times 4 = 24$

(iii) $-\frac{4}{5} - \left(\frac{-7}{10}\right) + \left(\frac{-8}{15}\right) = \frac{-4\times 6 - (-7)\times 3 + (-8)\times 2}{30}$

$$= \frac{-24 - (-21) + (-16)}{30}$$

$$= \frac{-24 + 21 - 16}{30} = \frac{-19}{30}$$ **Ans.**

5	5, 10, 15
	1, 2, 3

L.C.M. of 5, 10 and 15
$= 5 \times 2 \times 3 = 30$

(iv) $\frac{-2}{5}-\left[\frac{-3}{10}-\left(\frac{-4}{15}\right)\right]$

$= \frac{-2}{5}-\left[\frac{-3}{10}+\frac{4}{15}\right]$

$= \frac{-2}{5}-\left[\frac{-3\times3+4\times2}{30}\right]$

$= -\frac{2}{5}-\left(\frac{-9+8}{30}\right) = \frac{-2}{5}-\left(\frac{-1}{30}\right)$

$= \frac{-2\times6-(-1)\times1}{30} = \frac{-12+1}{30}$

$= \frac{-11}{30}$ **Ans.**

(v) $\frac{3}{8}-\left(\frac{-2}{9}\right)+\left(\frac{5}{-36}\right)$

$= \frac{3}{8}-\left(\frac{-2}{9}\right)+\left(\frac{-5}{36}\right)$

$= \left(\frac{3\times9-(-2)\times8}{72}\right)+\left(\frac{-5}{36}\right)$

$= \frac{27-(-16)}{72}+\left(\frac{-5}{36}\right)$

$= \frac{27+16}{72}+\left(\frac{-5}{36}\right) = \frac{43}{72}+\left(\frac{-5}{36}\right)$

$= \frac{43+(-5\times2)}{72} = \frac{43-10}{72} = \frac{33}{72}$ **Ans.**