

EXERCISE 14(C)

Question 1.

Add the following fractions :

(i) $1\frac{3}{4}$ and $\frac{3}{8}$

(ii) $\frac{2}{5}$, $2\frac{3}{15}$ and $\frac{7}{10}$

(iii) $1\frac{7}{8}$, $1\frac{1}{2}$ and $1\frac{3}{4}$

(iv) $3\frac{3}{4}$, $2\frac{1}{6}$ and $1\frac{5}{8}$

(v) $2\frac{8}{9}$, $\frac{11}{18}$ and $3\frac{5}{6}$

(vi) $3\frac{1}{8}$, $5\frac{5}{12}$ and $\frac{5}{16}$

Solution:

(i) $1\frac{3}{4}$ and $\frac{3}{8}$

$$= \frac{7}{4} + \frac{3}{8}$$

$$= \frac{7 \times 2}{4 \times 2} + \frac{3}{8}$$

(LCM of 4, 8 = 8)

$$= \frac{14}{8} + \frac{3}{8} = \frac{14+3}{8} = \frac{17}{8} = 2\frac{1}{8}$$

(ii) $\frac{2}{5}$, $2\frac{3}{15}$ and $\frac{7}{10}$

$$= \frac{2}{5} + \frac{33}{15} + \frac{7}{10}$$

$$= \frac{2 \times 6}{5 \times 6} + \frac{33 \times 2}{15 \times 2} + \frac{7 \times 3}{10 \times 3}$$

(LCM of 5, 15 and 10 = 30)

$$= \frac{12}{30} + \frac{66}{30} + \frac{21}{30}$$

$$= \frac{12+66+21}{30} = \frac{99}{30} = \frac{99 \div 3}{30 \div 3}$$

$$= \frac{33}{10} = 3\frac{3}{10}$$

$$\begin{aligned}
 \text{(iii)} \quad & 1\frac{7}{8} + 1\frac{1}{2} + 1\frac{3}{4} \\
 &= \frac{1 \times 8 + 7}{8} + \frac{1 \times 2 + 1}{2} + \frac{1 \times 4 + 3}{4} \\
 &= \frac{15}{8} + \frac{3}{2} + \frac{7}{4} = \frac{15 \times 1}{8 \times 1} + \frac{3 \times 4}{2 \times 4} + \frac{7 \times 2}{4 \times 2} \\
 &= \frac{15}{8} + \frac{12}{8} + \frac{14}{8} = \frac{15 + 12 + 14}{8} \\
 &\quad \text{(L.C.M. 8, 2 and 4 is 8)} \\
 &= \frac{41}{8} = 5\frac{1}{8}
 \end{aligned}$$

$$\text{(iv)} \quad 3\frac{3}{4} + 2\frac{1}{6} + 1\frac{5}{8}$$

$$\begin{aligned}
 &= \frac{3 \times 4 + 3}{4} + \frac{2 \times 6 + 1}{6} + \frac{1 \times 8 + 5}{8} \\
 &= \frac{15}{4} + \frac{13}{6} + \frac{13}{8} \quad \text{(L.C.M. 4, 6 and 8 is 24)} \\
 &= \frac{15 \times 6}{4 \times 6} + \frac{13 \times 4}{6 \times 4} + \frac{13 \times 3}{8 \times 3} \\
 &= \frac{90}{24} + \frac{52}{24} + \frac{39}{24} = \frac{181}{24} = 7\frac{13}{24}
 \end{aligned}$$

$$\text{(v)} \quad 2\frac{8}{9}, \frac{11}{18} \text{ and } 3\frac{5}{6}$$

$$\begin{aligned}
 &= \frac{26}{9} + \frac{11}{18} + \frac{23}{6} = \frac{26 \times 2}{9 \times 2} + \frac{11}{18} + \frac{23 \times 3}{6 \times 3} \\
 &\quad \text{(LCM of 9, 18 and 6 = 18)}
 \end{aligned}$$

$$= \frac{52}{18} + \frac{11}{18} + \frac{69}{18}$$

$$= \frac{52 + 11 + 69}{18} = \frac{132}{18} = \frac{132 \div 6}{18 \div 6}$$

$$= \frac{22}{3} = 7\frac{1}{3}$$

$$\begin{aligned}
 \text{(vi)} \quad & 3\frac{1}{8} + 5\frac{5}{12} + \frac{5}{16} \\
 &= \frac{3 \times 8 + 1}{8} + \frac{5 \times 12 + 5}{12} + \frac{5}{16} \\
 &= \frac{25}{8} + \frac{65}{12} + \frac{5}{16} \\
 & \text{(L.C.M. 8, 12 and 16 is 48)} \\
 &= \frac{25 \times 6}{8 \times 6} + \frac{65 \times 4}{12 \times 4} + \frac{5 \times 3}{16 \times 3} \\
 &= \frac{150}{48} + \frac{260}{48} + \frac{15}{48} \\
 &= \frac{150 + 260 + 15}{48} \\
 &= \frac{425}{48} = 8\frac{41}{48}
 \end{aligned}$$

Question 2.

Simplify:

$$(i) \quad 1\frac{11}{12} - \frac{13}{16}$$

$$(ii) \quad 2\frac{3}{4} - 1\frac{5}{6}$$

$$(iii) \quad 2\frac{5}{7} + \frac{3}{14} - \frac{13}{21}$$

$$(iv) \quad 3\frac{5}{6} - \frac{1}{6} - 1\frac{1}{12}$$

$$(v) \quad 6 + \frac{3}{10} - 1\frac{8}{15}$$

$$(vi) \quad 1\frac{3}{4} + 2\frac{5}{7} - 1\frac{3}{14}$$

$$(vii) \quad 4 + 3\frac{1}{8} - 3\frac{1}{6}$$

$$(viii) \quad 6 - 3\frac{1}{2} - 2\frac{1}{5}$$

$$(ix) \quad 1\frac{5}{8} - 2\frac{1}{6} + 3\frac{3}{4}$$

$$(x) \quad 3\frac{1}{2} + 1\frac{2}{3} - 2\frac{1}{4}$$

$$(xi) \quad 4\frac{3}{5} - 2\frac{7}{9} - 1\frac{2}{15} - \frac{2}{45}$$

Myclass24
Your Class. Your Pace.

Solution:

$$\begin{aligned}(i) \quad 1\frac{11}{12} - \frac{13}{16} &= \frac{23}{12} - \frac{13}{16} \\ &= \frac{23 \times 4}{12 \times 4} - \frac{13 \times 3}{16 \times 3} \quad (\text{LCM of 12, 16} = 48) \\ &= \frac{92}{48} - \frac{39}{48} = \frac{92-39}{48} \\ &= \frac{53}{48} = 1\frac{5}{48}\end{aligned}$$

$$\begin{aligned}(ii) \quad 2\frac{3}{4} - 1\frac{5}{6} &= \frac{11}{4} - \frac{11}{6} = \frac{11 \times 6}{4 \times 6} - \frac{11 \times 4}{6 \times 4} \\ &= \frac{66}{24} - \frac{44}{24}\end{aligned}$$

$$= \frac{66-44}{24} = \frac{22}{24} = \frac{11}{12}$$

$$(iii) \quad 2\frac{5}{7} + \frac{3}{14} - \frac{13}{21}$$

$$= \frac{19}{7} + \frac{3}{14} - \frac{13}{21}$$

$$= \frac{19 \times 6}{7 \times 6} + \frac{3 \times 3}{14 \times 3} - \frac{13 \times 2}{21 \times 2}$$

(LCM of 7, 14, 21 = 42)

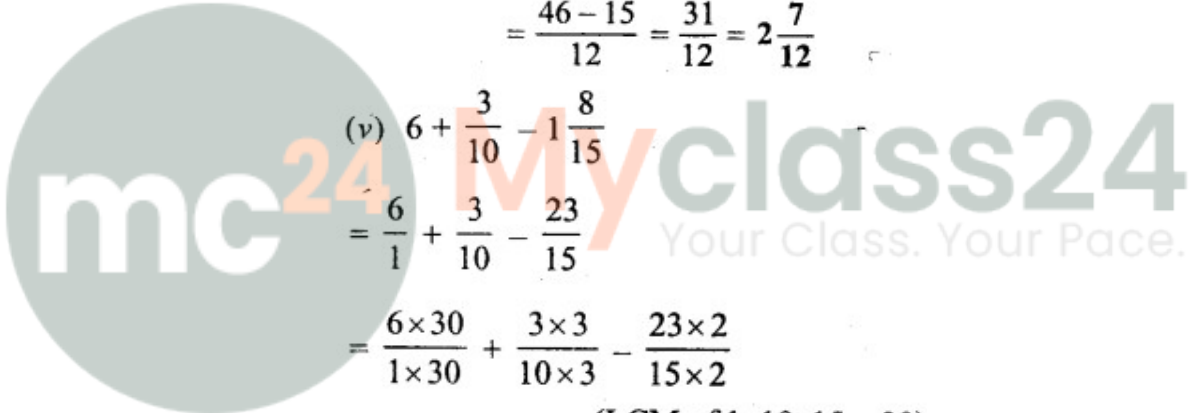
$$= \frac{114}{42} + \frac{9}{42} - \frac{26}{42}$$

$$= \frac{114+9-26}{42} = \frac{123-26}{42}$$

$$= \frac{97}{42} = 2\frac{13}{42}$$

Myclass24
Your Class. Your Pace.

$$\begin{aligned}
 \text{(iv)} \quad 3\frac{5}{6} - \frac{1}{6} - 1\frac{1}{12} &= \frac{23}{6} - \frac{1}{6} - \frac{13}{12} \\
 &= \frac{23 \times 2}{6 \times 2} - \frac{1 \times 2}{6 \times 2} - \frac{13}{12} \\
 &= \frac{46}{12} - \frac{2}{12} - \frac{13}{12} = \frac{46 - 2 - 13}{12} \\
 &= \frac{46 - 15}{12} = \frac{31}{12} = 2\frac{7}{12}
 \end{aligned}$$



$$\begin{aligned}
 \text{(v)} \quad 6 + \frac{3}{10} - 1\frac{8}{15} \\
 &= \frac{6}{1} + \frac{3}{10} - \frac{23}{15} \\
 &= \frac{6 \times 30}{1 \times 30} + \frac{3 \times 3}{10 \times 3} - \frac{23 \times 2}{15 \times 2} \\
 &\quad \text{(LCM of 1, 10, 15 = 30)} \\
 &= \frac{180}{30} + \frac{9}{30} - \frac{46}{30} \\
 &= \frac{180 + 9 - 46}{30} = \frac{189 - 46}{30}
 \end{aligned}$$

$$= \frac{143}{30} = 4\frac{23}{30}$$

$$\begin{aligned} \text{(vi)} \quad 1\frac{3}{4} + 2\frac{5}{7} - 1\frac{3}{14} &= \frac{7}{4} + \frac{19}{7} - \frac{17}{14} \\ &= \frac{7 \times 7}{4 \times 7} + \frac{19 \times 4}{7 \times 4} - \frac{17 \times 2}{14 \times 2} \\ &= \frac{49}{28} + \frac{76}{28} - \frac{34}{28} = \frac{49 + 76 - 34}{28} = \frac{91}{28} \\ &= 3\frac{7}{28} = 3\frac{1}{4} \end{aligned}$$

$$\text{(vii)} \quad 4 + 3\frac{1}{8} - 3\frac{1}{6}$$

$$= \frac{4}{1} + \frac{25}{8} - \frac{19}{6}$$

$$= \frac{4 \times 24}{1 \times 24} + \frac{25 \times 3}{8 \times 3} - \frac{19 \times 4}{6 \times 4}$$

(LCM of 8, 6 = 24)

$$\begin{aligned} &= \frac{96}{24} + \frac{75}{24} - \frac{76}{24} \\ &= \frac{96 + 75 - 76}{24} = \frac{95}{24} = 3\frac{23}{24} \end{aligned}$$

$$\text{(viii)} \quad 6 - 3\frac{1}{2} - 2\frac{1}{5}$$

$$= \frac{6}{1} - \frac{7}{2} - \frac{11}{5}$$

$$= \frac{6 \times 10}{1 \times 10} - \frac{7 \times 5}{2 \times 5} - \frac{11 \times 2}{5 \times 2}$$

(LCM of 2, 5 = 10)

$$= \frac{60}{10} - \frac{35}{10} - \frac{22}{10}$$

$$= \frac{60 - 35 - 22}{10} = \frac{60 - 57}{10} = \frac{3}{10}$$

$$\text{(ix)} \quad 1\frac{5}{8} - 2\frac{1}{6} + 3\frac{3}{4} = \frac{13}{8} - \frac{13}{6} + \frac{15}{4}$$

Myclass24
Your Class. Your Pace.

$$= \frac{13 \times 3}{8 \times 3} - \frac{13 \times 4}{6 \times 4} + \frac{15 \times 6}{4 \times 6} = \frac{39}{24} - \frac{52}{24} + \frac{90}{24}$$

$$= \frac{39 - 52 + 90}{24} = \frac{129 - 52}{24} = \frac{77}{24} = 3 \frac{5}{24}$$

$$(x) \quad 3\frac{1}{2} + 1\frac{2}{3} - 2\frac{1}{4} = \frac{7}{2} + \frac{5}{3} - \frac{9}{4}$$

$$= \frac{7 \times 6}{2 \times 6} + \frac{5 \times 4}{3 \times 4} - \frac{9 \times 3}{4 \times 3}$$

$$= \frac{42}{12} + \frac{20}{12} - \frac{27}{12}$$

$$= \frac{42 + 20 - 27}{12}$$

$$= \frac{62 - 27}{12} = \frac{35}{12} = 2 \frac{11}{12}$$

$$(xi) \quad 4\frac{3}{5} - 2\frac{7}{9} - 1\frac{2}{15} - \frac{2}{45}$$

$$= \frac{23}{5} - \frac{25}{9} - \frac{17}{15} - \frac{2}{45}$$

$$= \frac{23 \times 9}{5 \times 9} - \frac{25 \times 5}{9 \times 5} - \frac{17 \times 3}{15 \times 3} - \frac{2 \times 1}{45 \times 1}$$

$$= \frac{207}{45} - \frac{125}{45} - \frac{51}{45} - \frac{2}{45}$$

$$= \frac{207 - 125 - 51 - 2}{45}$$

$$= \frac{207 - 178}{45} = \frac{29}{45}$$

myclass24
Your Class. Your Pace.