3/9/21

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2. Subtract

a. $\frac{8}{15} - \frac{4}{9}$

Ans: LCM = 45

$= \frac{3 \times 8 \cancel{=} 4 \times 5}{45} = \frac{24 - 20}{45} = \frac{4}{45}$

b. $\frac{11}{13} \quad \frac{5}{7}$

Ans: LCM = 91

$= \frac{7 \times 11 \cancel{=} 13 \times 5}{91} = \frac{77 - 65}{91} = \frac{12}{91}$

c. $\frac{13}{17} - \frac{7}{10}$

Ans: LCM = 170

$= \frac{10 \times 13 - 17 \times 7}{170} = \frac{130 - 119}{170} = \frac{11}{170}$

d) $\frac{15}{19} - \frac{9}{13}$

Ans: LCM = 247

$= \frac{13 \times 15 - 19 \times 9}{247} = \frac{195 - 171}{247} = \frac{24}{247}$

e. $\frac{7}{9} - \frac{4}{15}$

Ans: LCM = 45

$= \frac{5 \times 7 + 3 \times 4}{45} = \frac{35 - 12}{45} = \frac{23}{45}$

f) $\frac{16}{27} - \frac{7}{18}$

Ans: LCM = 54

$= \frac{2 \times 16 - 3 \times 7}{54} = \frac{32 - 21}{54} = \frac{11}{54}$

g) $13\frac{7}{9} - 8\frac{5}{12}$

Ans: $\frac{224}{9} - \frac{101}{12}$

LCM = 36

$= \frac{4 \times 224 - 3 \times 101}{36} = \frac{896 - 303}{36} = \frac{593}{36}$

$= 16\frac{17}{36}$

h) $6\frac{3}{17} - \frac{5}{7}4$

Ans: $\frac{105}{17} - \frac{4}{1}$

LCM = 17

$= \frac{1 \times 105 - 17 \times 4}{17} = \frac{105 - 68}{17} = \frac{37}{17}$

$= 2\frac{3}{17}$

2. i $30\frac{3}{4} - 25$

Ans: $\frac{123}{4} - \frac{25}{1}$

LCM = 4

$= \frac{1 \times 123 - 4 \times 25}{4}$

$= \frac{123}{4} - \frac{100}{4}$

$= \frac{\cancel{100}\,23}{4} = 5\frac{3}{4}$

j) $20\frac{7}{12} - 15$

Ans: $\frac{247}{12} - \frac{15}{1}$

LCM = 12

$= \frac{1 \times 247 - 12 \times 15}{12}$

$= \frac{247 - 180}{12}$

$= \frac{67}{12} = 5\frac{7}{12}$

k) $12\frac{7}{8} - 11\frac{1}{2}$

Ans: $\frac{103}{8} - \frac{23}{2}$

LCM = 8

$= \frac{1 \times 103 - 4 \times 23}{8}$

$= \frac{103}{8} - \frac{92}{8}$

$= \frac{11}{8} = 1\frac{3}{8}$

1) $100\frac{1}{4} - 99$

Ans: $\frac{401}{4} - \frac{99}{1}$

LCM = 4

$= \frac{1 \times 401 - 4 \times 99}{4}$

$= \frac{401 - 396}{4}$

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

3. Simplify

a. $\frac{7}{12} + \frac{9}{12} - \frac{5}{12}$

Ans: $= \frac{7 + 9 - 5}{12} = \frac{11}{12}$

b. $\frac{9}{10} - \frac{3}{5} + \frac{7}{8}$

Ans: $\frac{9}{10} + \frac{7}{8} - \frac{3}{5}$

LCM = 40

$= \frac{4 \times 9 + 5 \times 7 - 8 \times 3}{40} = \frac{36 + 35 - 24}{40}$

$= \frac{71 - 24}{40} = \frac{47}{40} = 1\frac{7}{40}$

c. $\frac{5}{12} - \frac{2}{3} - \frac{1}{2} + 7$

Ans: $\frac{5}{12} + \frac{7}{1} - \frac{2}{3} - \frac{1}{2}$

LCM = 12

$= \frac{1\times5 + 12\times7 - 4\times2 - 6\times1}{12} = \frac{5+84-8-6}{12}$

$= \frac{89-8-6}{12} = \frac{81-6}{12} = \frac{75}{12} = 5\frac{15}{12}$

d. $\frac{1}{2} + \frac{3}{4} - \frac{5}{8} - \frac{1}{16}$

Ans: LCM = 16

$= \frac{8\times1 + 4\times3 - 2\times5 - 1\times1}{16} = \frac{8+12-10-1}{16}$

$= \frac{20-10-1}{16} = \frac{10-1}{16} = \frac{9}{16}$

e) $8\frac{3}{4} + 7\frac{1}{2} \div 3\frac{1}{4} - 2\frac{1}{2}$

Ans: $\frac{35}{4} + \frac{15}{2} - \frac{13}{4} - \frac{5}{1}$

LCM = 4

$= \frac{1 \times 35 + 2 \times 15 - 1 \times 13 - 4 \times 5}{4}$

$= \frac{35 + 30 - 13 - 10}{4}$

$= \frac{(35 + 30) - (13 + 10)}{4}$

$= \frac{65 - 23}{4} = \frac{42}{4_2}$

$= \frac{21}{2} = 10\frac{1}{2}$

f) $10\frac{5}{6} - 7\frac{2}{3} + 8\frac{1}{3} - 5\frac{1}{2}$

Ans: $\frac{65}{6} + \frac{25}{3} - \frac{23}{3} - \frac{11}{2}$

LCM = 6

$= \frac{1 \times 65 + 2 \times 25 - 2 \times 23 - 3 \times 11}{6}$

$= \frac{65 + 50 - 46 - 33}{6}$

$= \frac{(65 + 50) - (46 + 33)}{6}$

$= \frac{115 - 79}{6} = 194$

$= \frac{36}{6} = 6$

g) $5\frac{5}{12} - 6 + 8 - 5\frac{3}{5}$

Ans: $\frac{65}{12} + \frac{8}{1} - \frac{6}{1} - \frac{28}{5}$

LCM = 60

$= \frac{5 \times 65 + 60 \times 8 - 60 \times 6 - 12 \times 28}{60}$

$= \frac{325 + 480 - 360 - 336}{60}$

$= \frac{(325 + 480) - (360 + 336)}{60}$

$= \frac{805 - 696}{60} = \frac{109}{60} = 1\frac{49}{60}$

h) $10\frac{1}{4} + 6\frac{3}{8} - \frac{15}{1} + 1\frac{1}{2}$

Ans: $\frac{41}{4} + \frac{51}{8} + \frac{3}{2} - \frac{15}{1}$

LCM = 8

$= \frac{2 \times 41 + 1 \times 51 + 4 \times 3 - 8 \times 15}{8}$

$= \frac{82 + 51 + 12 - 120}{8}$

$= \frac{145 - 120}{8} =$

$= \frac{25}{8} = 3\frac{1}{8}$

i) $25 - 20\frac{1}{2} + 15\frac{3}{5} - 5$

Ans: $\frac{25}{1} + \frac{78}{5} - \frac{41}{2} - \frac{5}{1}$

LCM = 10

$= \frac{10 \times 25 + 2 \times 78 - 5 \times 41 - 10 \times 5}{10}$

$= \frac{250 + 156 - 205 - 50}{10}$

$= \frac{(250 + 156) - (205 + 50)}{10}$

$= 406 - 255$

$= \frac{151}{10} = 15\frac{1}{10}$

j> $\frac{9}{14} - 7\frac{2}{7} + 4\frac{3}{7} - 7\frac{2}{21}$

Ans: $\frac{9}{14} + \frac{31}{7} - \frac{9}{7} - \frac{23}{21}$

LCM = 42

$= \frac{3 \times 9 + 6 \times 31 - 6 \times 9 - 2 \times 23}{42}$

$= \frac{27 + 186 - 54 - 46}{42}$

$= \frac{(27 + 186) - (54 + 46)}{42}$

$= \frac{213 - 100}{42}$

$= \frac{113}{42} = 2\frac{29}{42}$