

$$2. a) \frac{8}{15} - \frac{4}{9}$$

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

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

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

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

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

$$d. \quad \frac{15}{19} - \frac{9}{13}$$

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

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

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

$$f. \quad \frac{6}{27} - \frac{7}{18}$$

$$\frac{6 \times 2 - 7 \times 3}{54} = \frac{12 - 21}{54} = \frac{-9}{54} = \frac{-1}{6}$$

$$g. \quad 13\frac{7}{9} - 8\frac{5}{12} = \frac{124}{9} - \frac{101}{12}$$

$$\frac{124 \times 4 - 101 \times 3}{36} = \frac{496 - 303}{36} = \frac{193}{36}$$

$$3. a) \frac{7}{12} + \frac{9}{12} - \frac{5}{12}$$

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

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

$$= \frac{9 \times 4 + 7 \times 5 - 3 \times 8}{40} = \frac{36 + 35 - 24}{40} = \frac{71 - 24}{40} = \frac{47}{40}$$

$$\frac{47}{40} = 1 \frac{7}{40}$$

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

$$= \frac{5}{12} + 7 - \frac{2}{3} - \frac{1}{2} = \frac{5 + 7 \times 12 - 2 \times 4 - 1 \times 6}{12}$$

$$= \frac{5 + 84 - 8 - 6}{12}$$

$$= \frac{89 - 14}{12} = \frac{75}{12} = 6 \frac{3}{12}$$

$$4. \text{ a) } 6 \frac{3}{17} - 4 = \frac{105}{17} - \frac{4}{1}$$

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

$$\text{ii) } 30 \frac{3}{4} - 25 = \frac{150}{4} - \frac{25}{1}$$


$$\frac{123 \times 1 - 25 \times 4}{4} = \frac{123 - 100}{4} = \frac{23}{4}$$

$$\text{j) } 20 \frac{7}{12} - 15 = \frac{247}{12} - \frac{15}{1}$$

$$\frac{247 \times 1 - 15 \times 12}{12} = \frac{247 - 180}{12} = \frac{67}{12}$$

$$\text{b) } 12 \frac{7}{8} - 11 \frac{1}{2} = \frac{103}{8} - \frac{23}{2}$$

$$\frac{103 \times 1 - 23 \times 4}{8} = \frac{103 - 92}{8} = \frac{11}{8}$$


$$8) \quad 100 \frac{1}{4} - 99 = \frac{401}{4} - \frac{99}{1}$$

$$\frac{401 \times 1 - 99 \times 4}{4} = \frac{401 - 396}{4} = \frac{5}{4}$$

$$3.8) \quad \frac{1}{2} + \frac{3}{4} - \frac{5}{8} - \frac{1}{16}$$

$$\frac{1 \times 8 + 3 \times 4 - 5 \times 2 - 1 \times 1}{16} = \frac{8 + 12 - 10 - 1}{16} = \frac{9}{16}$$

$$e) \quad 8 \frac{3}{4} + 7 \frac{1}{2} - 3 \frac{1}{4} - 2 \frac{1}{2} = \frac{35}{4} + \frac{15}{2} - \frac{13}{4} - \frac{5}{2}$$

$$\frac{35 \times 1 + 15 \times 2 + 13 \times 1 - 5 \times 2}{4} = \frac{35 + 30 - 13 - 10}{4}$$

$$\frac{35 - 13 + 30 - 10}{4} = \frac{42}{4}$$

$$f) \quad 10 \frac{5}{6} - 7 \frac{2}{3} + 8 \frac{1}{3} - 5 \frac{1}{2} = \frac{65}{6} - \frac{23}{3} + \frac{25}{3} - \frac{11}{2}$$

$$\frac{65 \times 1 - 23 \times 2 + 25 \times 2 - 11 \times 3}{6} = \frac{65 + 50 - 46 + 33}{6}$$

$$\frac{115 - 79}{6} = \frac{36}{6}$$

9)  $5\frac{5}{12} - 6 + 8 - 5\frac{3}{5} = \frac{65}{12} - \frac{6}{1} + \frac{8}{1} - \frac{28}{5}$

$$\frac{65 \times 5 - 6 \times 60 + 8 \times 60 - 28 \times 12}{60} = \frac{325 + 480 - 360 + 336}{60}$$

$$= \frac{805 - 696 + 709}{60} = \frac{818}{60}$$

8)  $10\frac{1}{4} + 6\frac{3}{8} - 15 + 7\frac{1}{2} = \frac{41}{4} + \frac{51}{8} + \frac{15}{1} + \frac{3}{2}$

$$\frac{41 \times 2 + 51 \times 1 + 15 \times 8 + 3 \times 4}{8} = \frac{82 + 51 + 120 + 12}{8} = \frac{265}{8}$$

ii

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

$$\frac{25 \times 10 - 41 \times 5 + 78 \times 2 - 5 \times 10}{10} = \frac{250 + 156 - 205 + 50}{10}$$

$$= \frac{406 - 255}{10} = \frac{151}{10}$$

$$j) \frac{9}{14} - \frac{9}{7} + \frac{31}{7} - \frac{23}{21}$$

$$\frac{9 \times 3 - 9 \times 6 + 31 \times 6 - 23 \times 2}{42} = \frac{27 - 54 + 186 - 46}{42}$$

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