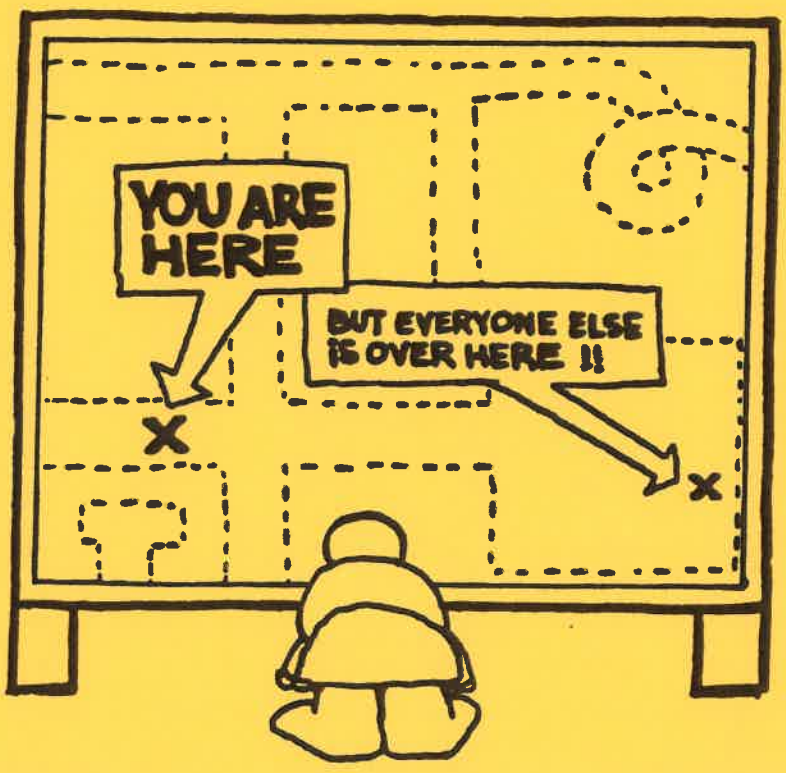
Working With Fractions



Level II: Answer Key

Reducing & Renaming Fractions

PROBLEM SET #1

① $\frac{6}{12} = \frac{1}{2}$

② $\frac{8}{10} = \frac{4}{5}$

③ $\frac{15}{25} = \frac{3}{5}$

④ $\frac{14}{21} = \frac{2}{3}$

⑤ $\frac{12}{30} = \frac{2}{5}$

⑥ $\frac{6}{24} = \frac{1}{4}$

⑦ $\frac{4}{14} = \frac{2}{7}$

⑧ $\frac{9}{15} = \frac{3}{5}$

⑨ $\frac{12}{27} = \frac{4}{9}$

⑩ $\frac{10}{18} = \frac{5}{9}$

⑪ $\frac{12}{36} = \frac{1}{3}$

⑫ $\frac{21}{28} = \frac{3}{4}$

⑬ $\frac{9}{21} = \frac{3}{7}$

⑭ $\frac{30}{35} = \frac{6}{7}$

⑮ $\frac{22}{55} = \frac{2}{5}$

⑯ $2\frac{1}{4} = \frac{9}{4}$

⑰ $1\frac{2}{7} = \frac{9}{7}$

⑱ $3\frac{2}{3} = \frac{11}{3}$

⑲ $4\frac{5}{8} = \frac{37}{8}$

⑳ $2\frac{3}{5} = \frac{13}{5}$

㉑ $6\frac{3}{4} = \frac{27}{4}$

㉒ $1\frac{6}{7} = \frac{13}{7}$

㉓ $3\frac{1}{2} = \frac{7}{2}$

㉔ $4\frac{1}{6} = \frac{25}{6}$

㉕ $2\frac{4}{5} = \frac{14}{5}$

㉖ $1\frac{9}{10} = \frac{19}{10}$

㉗ $5\frac{2}{9} = \frac{47}{9}$

㉘ $\frac{7}{5} = 1\frac{2}{5}$

㉙ $\frac{8}{3} = 2\frac{2}{3}$

㉚ $\frac{9}{2} = 4\frac{1}{2}$

㉛ $\frac{9}{6} = 1\frac{1}{2}$

㉜ $\frac{12}{10} = 1\frac{1}{5}$

㉝ $\frac{14}{8} = 1\frac{3}{4}$

㉞ $\frac{15}{12} = 1\frac{1}{4}$

㉟ $\frac{20}{8} = 2\frac{1}{2}$

㊱ $\frac{28}{22} = 1\frac{3}{11}$

㊲ $\frac{18}{9} = 2$

㊳ $\frac{21}{6} = 3\frac{1}{2}$

㊴ $\frac{24}{20} = 1\frac{1}{5}$

Comparing Fractions & Equivalent Fractions

PROBLEM SET #2

① $\frac{2}{3}^{8} < \frac{3}{4}^{9}$

② $\frac{5}{7}^{45} < \frac{7}{9}^{49}$

③ $\overset{16}{\frac{2}{5}} > \overset{15}{\frac{3}{8}}$

④ $\overset{21}{\frac{3}{11}} < \overset{22}{\frac{2}{7}}$

⑤ $\overset{28}{\frac{4}{9}} > \overset{27}{\frac{3}{7}}$

⑥ $1\frac{2}{3} \quad \frac{7}{4}$

$\overset{20}{\frac{5}{3}} < \overset{21}{\frac{7}{4}}$

⑦ $2\frac{1}{3} \quad \frac{5}{2}$

$\overset{14}{\frac{7}{3}} < \overset{15}{\frac{5}{2}}$

⑧ $\frac{9}{5} \quad 1\frac{3}{4}$

$\overset{36}{\frac{9}{5}} > \overset{35}{\frac{7}{4}}$

⑨ $\frac{9}{4} \quad 2\frac{2}{5}$

$\overset{45}{\frac{9}{4}} < \overset{48}{\frac{12}{5}}$

⑩ $3\frac{3}{4} \quad \frac{11}{3}$

$\overset{45}{\frac{15}{4}} > \overset{44}{\frac{11}{3}}$

⑪ $\overset{42}{\frac{3}{7}} = \overset{42}{\frac{n}{14}}$

$42 \div 7 = 6$

$n = 6$

⑫ $\overset{30}{\frac{2}{n}} = \overset{30}{\frac{6}{15}}$

$30 \div 6 = 5$

$n = 5$

⑬ $\overset{60}{\frac{3}{n}} = \overset{60}{\frac{12}{20}}$

$60 \div 12 = 5$

$n = 5$

⑭ $\overset{72}{\frac{6}{8}} = \overset{72}{\frac{9}{n}}$

$72 \div 6 = 12$

$n = 12$

⑮ $\overset{18}{\frac{2}{6}} = \overset{18}{\frac{3}{n}}$

$18 \div 2 = 9$

$n = 9$

⑯ $\overset{72}{\frac{6}{n}} = \overset{72}{\frac{8}{12}}$

$72 \div 8 = 9$

$n = 9$

⑰ $\overset{120}{\frac{12}{n}} = \overset{120}{\frac{8}{10}}$

$120 \div 8 = 15$

$n = 15$

⑱ $\overset{60}{\frac{10}{15}} = \overset{60}{\frac{4}{n}}$

$60 \div 10 = 6$

$n = 6$

⑲ $\overset{21}{\frac{7}{21}} = \overset{21}{\frac{1}{n}}$

$21 \div 7 = 3$

$n = 3$

⑳ $\overset{24}{\frac{2}{8}} = \overset{24}{\frac{n}{12}}$

$24 \div 8 = 3$

$n = 3$

㉑ $\frac{12}{28} = \frac{3}{7}$

㉒ $\frac{20}{25} = \frac{4}{5}$

㉓ $\frac{9}{21} = \frac{3}{7}$

㉔ $3\frac{1}{2} = \frac{7}{2}$

㉕ $2\frac{1}{5} = \frac{11}{5}$

㉖ $3\frac{5}{9} = \frac{32}{9}$

㉗ $\frac{16}{6} = 2\frac{2}{3}$

㉘ $\frac{21}{7} = 3$

㉙ $\frac{14}{10} = 1\frac{2}{5}$

Adding & Subtracting Fractions

PROBLEM SET #3

① $\frac{2}{5} \times \frac{4}{4} \quad \frac{8}{20}$

$+ \frac{1}{4} \times \frac{5}{5} + \frac{5}{20}$

$\frac{13}{20}$

② $\frac{5}{6} \times \frac{2}{2} \quad \frac{10}{12}$

$+ \frac{3}{4} \times \frac{3}{3} + \frac{9}{12}$

$\frac{19}{12} = 1\frac{7}{12}$

③ $\frac{5}{7} \times \frac{3}{3} \quad \frac{15}{21}$

$+ \frac{1}{3} \times \frac{7}{7} + \frac{7}{21}$

$\frac{22}{21} = 1\frac{1}{21}$

④ $\frac{7}{8} \times \frac{1}{1} \quad \frac{7}{8}$

$+ \frac{3}{4} \times \frac{2}{2} + \frac{6}{8}$

$\frac{13}{8} = 1\frac{5}{8}$

⑤ $\frac{1}{2}\times\frac{7}{7}=\frac{7}{14}$

$+\frac{3}{7}\times\frac{2}{2}=+\frac{6}{14}$

$\frac{13}{14}$

⑥ $\frac{5}{9}\times\frac{2}{2}=\frac{10}{18}$

$+\frac{5}{6}\times\frac{3}{3}=+\frac{15}{18}$

$\frac{25}{18}=1\frac{7}{18}$

⑦ $\frac{5}{12}\times\frac{2}{2}=\frac{10}{24}$

$+\frac{7}{8}\times\frac{3}{3}=+\frac{21}{24}$

$\frac{31}{24}=1\frac{7}{24}$

⑧ $\frac{4}{5}\times\frac{3}{3}=\frac{12}{15}$

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

$\frac{22}{15}=1\frac{7}{15}$

⑨ $\frac{3}{7}\times\frac{3}{3}=\frac{9}{21}$

$+\frac{2}{3}\times\frac{7}{7}=+\frac{14}{21}$

$\frac{23}{21}=1\frac{2}{21}$

⑩ $\frac{3}{5}\times\frac{2}{2}=\frac{6}{10}$

$+\frac{9}{10}\times\frac{1}{1}=+\frac{9}{10}$

$\frac{15}{10}=1\frac{1}{2}$

⑪ $\frac{5}{8}\times\frac{1}{1}=\frac{5}{8}$

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

$\frac{3}{8}$

⑫ $\frac{2}{3}\times\frac{5}{5}=\frac{10}{15}$

$-\frac{1}{5}\times\frac{3}{3}=-\frac{3}{15}$

$\frac{7}{15}$

⑬ $\frac{7}{8}\times\frac{3}{3}=\frac{21}{24}$

$-\frac{5}{6}\times\frac{4}{4}=-\frac{20}{24}$

$\frac{1}{24}$

⑭ $\frac{3}{4}\times\frac{3}{3}=\frac{9}{12}$

$-\frac{1}{3}\times\frac{4}{4}=-\frac{4}{12}$

$\frac{5}{12}$

⑮ $\frac{2}{5}\times\frac{7}{7}=\frac{14}{35}$

$-\frac{1}{7}\times\frac{5}{5}=-\frac{5}{35}$

$\frac{9}{35}$

⑯ $\frac{5}{6}\times\frac{2}{2}=\frac{10}{12}$

$-\frac{7}{12}\times\frac{1}{1}=-\frac{7}{12}$

$\frac{3}{12}=\frac{1}{4}$

⑰ $\frac{1}{4}\times\frac{3}{3}=\frac{3}{12}$

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

$\frac{1}{12}$

⑱ $\frac{5}{7}\times\frac{3}{3}=\frac{15}{21}$

$-\frac{1}{3}\times\frac{7}{7}=-\frac{7}{21}$

$\frac{8}{21}$

⑲ $\frac{7}{10}\times\frac{2}{2}=\frac{14}{20}$

$-\frac{1}{4}\times\frac{5}{5}=-\frac{5}{20}$

$\frac{9}{20}$

⑳ $\frac{5}{8}\times\frac{1}{1}=\frac{5}{8}$

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

$\frac{1}{8}$

㉑ $\frac{8}{28}=\frac{2}{7}$

㉒ $\frac{16}{24}=\frac{2}{3}$

㉓ $\frac{25}{30}=\frac{5}{6}$

㉔ $2\frac{1}{6}=\frac{13}{6}$

㉕ $4\frac{2}{3}=\frac{14}{3}$

㉖ $\frac{15}{10}=1\frac{1}{2}$

㉗ $\frac{18}{15}=1\frac{1}{5}$

㉘ $\frac{3}{7}\overset{27}{<}\frac{4}{9}\overset{28}{}$

㉙ $1\frac{1}{2}\ \ \frac{5}{3}$

$\frac{3}{2}\overset{9}{<}\frac{5}{3}\overset{10}{}$

(30) $2\frac{3}{4}$ $\frac{13}{5}$

$^{55}\frac{11}{4} > \frac{13}{5}{}^{52}$

(31) $\frac{8}{10}{}^{40} = \frac{n}{5}{}^{40}$

$40 \div 10 = 4$

$n = 4$

(32) $\frac{6}{10}{}^{90} = \frac{9}{n}{}^{90}$

$90 \div 6 = 15$

$n = 15$

(33) $\frac{2}{n}{}^{36} = \frac{3}{18}{}^{36}$

$36 \div 3 = 12$

$n = 12$

Adding & Subtracting Mixed Numerals

PROBLEM SET #4

① $2\frac{2}{3} \times 4$ $2\frac{8}{12}$

$+4\frac{3}{4} \times 3$ $+4\frac{9}{12}$

$6\frac{17}{12} = 7\frac{5}{12}$

② $1\frac{5}{6} \times 1$ $1\frac{5}{6}$

$+5\frac{1}{3} \times 2$ $+5\frac{2}{6}$

$6\frac{7}{6} = 7\frac{1}{6}$

③ $4\frac{7}{10} \times 3$ $4\frac{21}{30}$

$+2\frac{2}{15} \times 2$ $+2\frac{4}{30}$

$6\frac{25}{30} = 6\frac{5}{6}$

④ $3\frac{3}{5} \times 6$ $3\frac{18}{30}$

$+2\frac{5}{6} \times 5$ $+2\frac{25}{30}$

$5\frac{43}{30} = 6\frac{13}{30}$

⑤ $4\frac{3}{8} \times 1$ $4\frac{3}{8}$

$+2\frac{3}{4} \times 2$ $+2\frac{6}{8}$

$6\frac{9}{8} = 7\frac{1}{8}$

⑥ $1\frac{5}{6} \times 4$ $1\frac{20}{24}$

$+6\frac{3}{8} \times 3$ $+6\frac{9}{24}$

$7\frac{29}{24} = 8\frac{5}{24}$

⑦ $4\frac{1}{3} \times 7$ $4\frac{7}{21}$

$+2\frac{6}{7} \times 3$ $+2\frac{18}{21}$

$6\frac{25}{21} = 7\frac{4}{21}$

⑧ $6\frac{1}{4} \times 3$ $6\frac{3}{12}$

$+2\frac{5}{6} \times 2$ $+2\frac{10}{12}$

$8\frac{13}{12} = 9\frac{1}{12}$

⑨ $3\frac{7}{8} \times 3$ $3\frac{21}{24}$

$+5\frac{1}{6} \times 4$ $+5\frac{4}{24}$

$8\frac{25}{24} = 9\frac{1}{24}$

⑩ $4\frac{5}{6} \times 5$ $4\frac{25}{30}$

$+2\frac{3}{10} \times 3$ $+2\frac{9}{30}$

$6\frac{34}{30} = 7\frac{2}{15}$

⑪ $4\frac{2}{5}\times\frac{4}{4}$ $4\frac{8}{20}$

$-1\frac{1}{4}\times\frac{5}{5}$ $-1\frac{5}{20}$

$3\frac{3}{20}$

⑫ $8\frac{6}{7}\times\frac{5}{5}$ $8\frac{30}{35}$

$-2\frac{1}{5}\times\frac{7}{7}$ $-2\frac{7}{35}$

$6\frac{23}{35}$

⑬ $6\frac{2}{3}$

-3

$3\frac{2}{3}$

⑭ $4\frac{5}{8}\times\frac{3}{3}$ $4\frac{15}{24}$

$-2\frac{1}{6}\times\frac{4}{4}$ $-2\frac{4}{24}$

$2\frac{11}{24}$

⑮ $6\frac{3}{4}\times\frac{2}{2}$ $6\frac{6}{8}$

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

$2\frac{3}{8}$

⑯ $7\frac{9}{10}\times\frac{2}{2}$ $7\frac{18}{20}$

$-3\frac{3}{4}\times\frac{5}{5}$ $-3\frac{15}{20}$

$4\frac{3}{20}$

⑰ $5\frac{4}{5}$

-3

$2\frac{4}{5}$

⑱ $4\frac{5}{6}\times\frac{1}{1}$ $4\frac{5}{6}$

$-3\frac{2}{3}\times\frac{2}{2}$ $-3\frac{4}{6}$

$1\frac{1}{6}$

⑲ $7\frac{1}{3}\times\frac{4}{4}$ $7\frac{4}{12}$

$-3\frac{1}{4}\times\frac{3}{3}$ $-3\frac{3}{12}$

$4\frac{1}{12}$

⑳ $8\frac{2}{5}\times\frac{9}{9}$ $8\frac{18}{45}$

$-2\frac{2}{9}\times\frac{5}{5}$ $-2\frac{10}{45}$

$6\frac{8}{45}$

㉑ $\frac{12}{27}=\frac{4}{9}$

㉒ $\frac{25}{30}=\frac{5}{6}$

㉓ $4\frac{3}{7}=\frac{31}{7}$

㉔ $5\frac{1}{2}=\frac{11}{2}$

㉕ $\frac{21}{15}=1\frac{2}{5}$

OPPORTUNITY KNOCKED AT MY DOOR ONCE....
...SLIPPED ON MY WELCOME MAT, AND SUED ME FOR $75,000.

㉖ $\frac{28}{21}=1\frac{1}{3}$

㉗ $2\frac{1}{3}$ $\frac{5}{2}$

$\frac{14}{3}<\frac{15}{2}$

㉘ $\frac{4}{n}=\frac{36}{9}$

$36\div6=6$

$n=6$

Subtracting Fractions With Borrowing

PROBLEM SET #5

① $6\frac{2}{5}\times\frac{3}{3}$ $5\ 6\frac{21}{15}$

$-2\frac{2}{3}\times\frac{5}{5}$ $-2\frac{10}{15}$

$3\frac{11}{15}$

② $8\frac{1}{4}\times\frac{3}{3}$ $7\ 8\frac{15}{12}$

$-3\frac{5}{6}\times\frac{2}{2}$ $-3\frac{10}{12}$

$4\frac{5}{12}$

③ 5 $4\ 5\frac{7}{7}$

$-2\frac{5}{7}$ $-2\frac{5}{7}$

$2\frac{2}{7}$

④ $7\frac{3}{8}\times\frac{1}{1}$ $6\ 7\frac{11}{8}$

$-2\frac{3}{4}\times\frac{2}{2}$ $-2\frac{6}{8}$

$4\frac{5}{8}$

⑤ $5\frac{1}{3}\times\frac{4}{4}$ $5\frac{4}{12}$
$-1\frac{1}{4}\times\frac{3}{3}$ $-1\frac{3}{12}$
$4\frac{1}{12}$

⑥ 8 $7\,\cancel{8}\,\frac{5}{5}$
$-3\frac{3}{5}$ $-3\frac{3}{5}$
$4\frac{2}{5}$

⑦ $6\frac{1}{2}\times\frac{3}{3}$ $5\,\cancel{6}\,\overset{9}{\frac{3}{6}}$
$-2\frac{2}{3}\times\frac{2}{2}$ $-2\frac{4}{6}$
$3\frac{5}{6}$

⑧ $9\frac{7}{10}\times\frac{2}{2}$ $9\frac{14}{20}$
$-5\frac{1}{4}\times\frac{5}{5}$ $-5\frac{5}{20}$
$4\frac{9}{20}$

⑨ $8\frac{3}{4}\times\frac{3}{3}$ $7\,\cancel{8}\,\overset{21}{\frac{9}{12}}$
$-1\frac{5}{6}\times\frac{2}{2}$ $-1\frac{10}{12}$
$6\frac{11}{12}$

⑩ $9\frac{1}{4}\times\frac{3}{3}$ $8\,\cancel{9}\,\overset{15}{\frac{3}{12}}$
$-2\frac{1}{3}\times\frac{4}{4}$ $-2\frac{4}{12}$
$6\frac{11}{12}$

⑪ $7\frac{2}{7}\times\frac{3}{3}$ $6\,\cancel{7}\,\overset{27}{\frac{6}{21}}$
$-1\frac{2}{3}\times\frac{7}{7}$ $-1\frac{14}{21}$
$5\frac{13}{21}$

⑫ $6\frac{3}{4}\times\frac{2}{2}$ $5\,\cancel{6}\,\overset{14}{\frac{8}{8}}$
$-2\frac{7}{8}\times\frac{1}{1}$ $-2\frac{7}{8}$
$3\frac{7}{8}$

⑬ 6 $5\,\cancel{6}\,\frac{9}{9}$
$-1\frac{7}{9}$ $-1\frac{7}{9}$
$4\frac{2}{9}$

⑭ $4\frac{3}{8}\times\frac{3}{3}$ $3\,\cancel{4}\,\overset{33}{\frac{9}{24}}$
$-2\frac{2}{3}\times\frac{8}{8}$ $-2\frac{16}{24}$
$1\frac{17}{24}$

⑮ $9\frac{3}{5}\times\frac{4}{4}$ $8\,\cancel{9}\,\overset{32}{\frac{12}{20}}$
$-2\frac{3}{4}\times\frac{5}{5}$ $-2\frac{15}{20}$
$6\frac{17}{20}$

⑯ $6\frac{1}{3}\times\frac{2}{2}$ $5\,\cancel{6}\,\overset{8}{\frac{2}{6}}$
$-1\frac{5}{6}\times\frac{1}{1}$ $-1\frac{5}{6}$
$4\frac{3}{6}=4\frac{1}{2}$

⑰ $4\frac{3}{8}\times\frac{3}{3}$ $4\frac{9}{24}$
$+2\frac{2}{3}\times\frac{8}{8}$ $+2\frac{16}{24}$
$6\frac{25}{24}=7\frac{1}{24}$

⑱ $6\frac{1}{4}\times\frac{2}{2}$ $6\frac{2}{8}$
$+3\frac{7}{8}\times\frac{1}{1}$ $+3\frac{7}{8}$
$9\frac{9}{8}=10\frac{1}{8}$

⑲ $2\frac{1}{3}\times\frac{5}{5}$ $2\frac{5}{15}$
$+6\frac{4}{5}\times\frac{3}{3}$ $+6\frac{12}{15}$
$8\frac{17}{15}=9\frac{2}{15}$

⑳ $1\frac{1}{2}\times\frac{9}{9}$ $1\frac{9}{18}$
$+5\frac{5}{9}\times\frac{2}{2}$ $+5\frac{10}{18}$
$6\frac{19}{18}=7\frac{1}{18}$

㉑ $\frac{20}{24}=\frac{5}{6}$ ㉒ $\frac{18}{27}=\frac{2}{3}$

㉓ $4\frac{1}{4}=\frac{17}{4}$ ㉔ $2\frac{5}{6}=\frac{17}{6}$

㉕ $\frac{26}{8}=3\frac{1}{4}$ ㉖ $\frac{30}{12}=2\frac{1}{2}$

㉗ $\overset{80}{\frac{5}{11}}>\overset{77}{\frac{7}{16}}$

㉘ $1\frac{5}{7}$ $\frac{9}{5}$
$\overset{60}{\frac{12}{7}}<\overset{63}{\frac{9}{5}}$

㉙ $\frac{\overset{60}{4}}{n}=\frac{\overset{60}{5}}{15}$ $60\div5=12$
$n=12$

㉚ $\frac{\overset{60}{4}}{6}=\frac{n^{60}}{15}$ $60\div6=10$
$n=10$

Multiplying Fractions

PROBLEM SET #6

① $\frac{2}{5} \times \frac{1}{3} = \frac{2}{15}$

② $\frac{3}{4} \times \frac{3}{5} = \frac{9}{20}$

③ $\frac{1}{5} \times \frac{2}{7} = \frac{2}{35}$

④ $\frac{5}{6} \times \frac{1}{2} = \frac{5}{12}$

⑤ $\frac{3}{4} \times \frac{2}{5} = \frac{6}{20} = \frac{3}{10}$

⑥ $\frac{2}{3} \times \frac{5}{6} = \frac{10}{18} = \frac{5}{9}$

⑦ $\frac{1}{10} \times \frac{2}{5} = \frac{2}{50} = \frac{1}{25}$

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

⑨ $\frac{5}{8} \times 8 = \frac{40}{8} = 5$

⑩ $\frac{2}{7} \times \frac{5}{8} = \frac{10}{56} = \frac{5}{28}$

⑪ $\frac{3}{4} \times \frac{5}{6} = \frac{15}{24} = \frac{5}{8}$

⑫ $\frac{2}{9} \times \frac{3}{5} = \frac{6}{45} = \frac{2}{15}$

⑬ $\frac{1}{4} \times \frac{1}{3} = \frac{1}{12}$

⑭ $\frac{3}{8} \times 4 = \frac{12}{8} = 1\frac{1}{2}$

⑮ $\frac{2}{3} \times 5 = \frac{10}{3} = 3\frac{1}{3}$

⑯ $\frac{3}{5} \times \frac{5}{6} = \frac{15}{30} = \frac{1}{2}$

⑰ $\frac{1}{9} \times \frac{3}{4} = \frac{3}{36} = \frac{1}{12}$

⑱ $\frac{9}{10} \times \frac{2}{3} = \frac{18}{30} = \frac{3}{5}$

⑲ $\frac{1}{8} \times \frac{4}{5} = \frac{4}{40} = \frac{1}{10}$

⑳ $\frac{3}{7} \times \frac{7}{9} = \frac{21}{63} = \frac{1}{3}$

㉑ $\frac{18}{21} = \frac{6}{7}$

㉒ $3\frac{2}{5} = \frac{17}{5}$

㉓ $\frac{24}{9} = 2\frac{2}{3}$

㉔ $\frac{8}{12}^{72} = \frac{6}{9}^{72}$

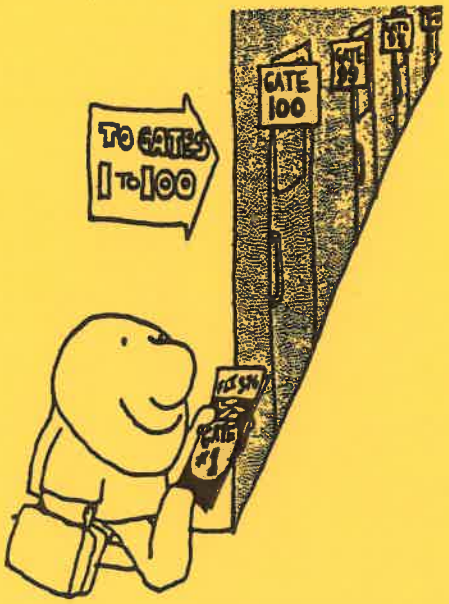
㉕ $\frac{6}{10}^{90} = \frac{9}{n}^{90}$ $\quad 90 \div 6 = 15$ $\quad n = 15$

㉖ $\frac{3}{4} \times 5 \;\; \frac{15}{20}$
$+\frac{3}{5} \times 4 \;\; +\frac{12}{20}$
$\frac{27}{20} = 1\frac{7}{20}$

㉗ $2\frac{1}{3} \times 4 \;\; 2\frac{4}{12}$
$+1\frac{3}{4} \times 3 \;\; +1\frac{9}{12}$
$3\frac{13}{12} = 4\frac{1}{12}$

㉘ $5\frac{2}{5} \times 3 \;\; 4\frac{21}{15}$
$-2\frac{2}{3} \times 5 \;\; -2\frac{10}{15}$
$2\frac{11}{15}$

㉙ $6\frac{1}{4} \times 3 \;\; 5\frac{15}{12}$
$-1\frac{5}{6} \times 2 \;\; -1\frac{10}{12}$
$4\frac{5}{12}$



Multiplying Fractions With Cross Reducing

PROBLEM SET #7

① $\frac{\cancel{15}^{1}}{6} \times \frac{7}{\cancel{10}_{2}} = \frac{7}{12}$

② $\frac{\cancel{12}^{1}}{13} \times \frac{5}{\cancel{24}_{2}} = \frac{5}{26}$

③ $\frac{\cancel{17}^{1}}{\cancel{25}_{5}} \times \frac{\cancel{10}^{2}}{\cancel{21}_{3}} = \frac{2}{15}$

④ $\frac{\cancel{26}^{2}}{\cancel{17}_{1}} \times \frac{\cancel{14}^{2}}{\cancel{15}_{5}} = \frac{4}{5}$

⑤ $\frac{\cancel{28}^{2}}{\cancel{12}_{3}} \times \frac{4}{5} = \frac{8}{15}$

⑥ $\frac{4}{7} \times \frac{\cancel{12}^{4}}{\cancel{15}_{5}} = \frac{16}{35}$

⑦ $\frac{\cancel{48}^{3}}{\cancel{9}} \times \frac{\cancel{13}^{1}}{\cancel{10}_{5}} = \frac{4}{15}$

⑧ $\frac{\cancel{39}^{3}}{\cancel{10}_{5}} \times \frac{\cancel{24}^{2}}{\cancel{15}_{5}} = \frac{6}{25}$

⑨ $\cancel{6}^{3} \times \frac{3}{\cancel{24}_{2}} = \frac{9}{2} = 4\frac{1}{2}$

⑩ $\frac{3}{\cancel{8}_{2}} \times \cancel{12} = \frac{9}{2} = 4\frac{1}{2}$

⑪ $\frac{\cancel{12}^{2}}{\cancel{13}_{1}} \times \frac{\cancel{13}^{1}}{\cancel{18}_{3}} = \frac{2}{3}$

⑫ $\frac{\cancel{16}^{2}}{\cancel{21}_{3}} \times \frac{\cancel{7}^{1}}{\cancel{24}_{3}} = \frac{2}{9}$

⑬ $\frac{2}{\cancel{5}_{1}} \times \cancel{10}^{2} = 4$

⑭ $\cancel{14}^{2} \times \frac{4}{\cancel{7}_{1}} = 8$

⑮ $\frac{\cancel{9}^{1}}{\cancel{11}_{1}} \times \frac{\cancel{22}^{2}}{\cancel{27}_{3}} = \frac{2}{3}$

⑯ $\frac{\cancel{18}^{2}}{\cancel{39}_{3}} \times \frac{\cancel{12}^{4}}{\cancel{24}_{3}} = \frac{4}{9}$

⑰ $\frac{\cancel{12}^{2}}{\cancel{55}_{5}} \times \frac{\cancel{11}^{1}}{\cancel{18}_{3}} = \frac{2}{15}$

⑱ $\frac{\cancel{14}^{2}}{\cancel{15}_{3}} \times \frac{\cancel{10}^{2}}{\cancel{21}_{3}} = \frac{4}{9}$

⑲ $\frac{\cancel{28}^{2}}{\cancel{15}_{3}} \times \frac{\cancel{15}^{1}}{\cancel{12}_{3}} = \frac{2}{9}$

⑳ $\frac{\cancel{39}^{3}}{\cancel{18}_{9}} \times \frac{\cancel{4}^{2}}{\cancel{8}_{2}}$

$\frac{\cancel{15}^{1}}{\cancel{39}_{3}} \times \frac{\cancel{12}^{1}}{\cancel{12}_{1}} = \frac{1}{3}$

㉑ $\frac{21}{35} = \frac{3}{5}$

㉒ $4\frac{2}{3} = \frac{14}{3}$

㉓ $\frac{26}{14} = 1\frac{6}{7}$

㉔ $2\frac{2}{5} \quad \frac{7}{3}$

$\overset{36}{\frac{12}{5}} > \overset{35}{\frac{7}{3}}$

㉕ $\overset{60}{\frac{4}{10}} = \overset{60}{\frac{n}{15}}$

$60 \div 10 = 6$

$n = 6$

㉖ $1\frac{3}{8}{}^{\times 1}_{\times 1} \quad 1\frac{3}{8}$

$+2\frac{3}{4}{}^{\times 2}_{\times 2} \quad +2\frac{6}{8}$

$3\frac{9}{8} = 4\frac{1}{8}$

㉗ $4\frac{1}{3}{}^{\times 7}_{\times 7} \quad 4\frac{7}{21}$

$+3\frac{5}{7}{}^{\times 3}_{\times 3} \quad +3\frac{15}{21}$

$7\frac{22}{21} = 8\frac{1}{21}$

㉘ $9 \quad {}^{8}\cancel{9}\frac{5}{5}$

$-2\frac{4}{5} \quad -2\frac{4}{5}$

$6\frac{1}{5}$

㉙ $6\frac{3}{8}{}^{\times 3}_{\times 3} \quad {}^{5}6\frac{\cancel{9}^{33}}{24}$

$-2\frac{5}{6}{}^{\times 4}_{\times 4} \quad -2\frac{20}{24}$

$3\frac{13}{24}$

(30) $4\frac{1}{2} = 4\frac{7}{14} = 3\frac{21}{14}$; $-1\frac{6}{7} = -1\frac{12}{14}$; $2\frac{9}{14}$

(31) $8\frac{2}{3} = 8\frac{10}{15} = 7\frac{25}{15}$; $-4\frac{4}{5} = -4\frac{12}{15}$; $3\frac{13}{15}$

Multiplying Fractions & Mixed Numerals

PROBLEM SET #8

(1) $1\frac{3}{5} \times 1\frac{1}{4}$; $\frac{8}{5} \times \frac{5}{4} = 2$

(2) $4\frac{1}{2} \times 1\frac{7}{9}$; $\frac{9}{2} \times \frac{16}{9} = 8$

(3) $\frac{3}{4} \times 2\frac{2}{3}$; $\frac{3}{4} \times \frac{8}{3} = 2$

(4) $4\frac{2}{3} \times 1\frac{2}{7}$; $\frac{14}{3} \times \frac{9}{7} = 6$

(5) $2\frac{1}{2} \times \frac{3}{10}$; $\frac{5}{2} \times \frac{3}{10} = \frac{3}{4}$

(6) $\frac{8}{21} \times 1\frac{3}{4}$; $\frac{8}{21} \times \frac{7}{4} = \frac{2}{3}$

(7) $\frac{12}{15} \times 1\frac{2}{5}$; $\frac{12}{15} \times \frac{7}{5} = \frac{28}{25} = 1\frac{3}{25}$

(8) $1\frac{1}{3} \times \frac{10}{15}$; $\frac{4}{3} \times \frac{10}{15} = \frac{8}{9}$

(9) $1\frac{1}{4} \times 6$; $\frac{5}{4} \times 6 = \frac{15}{2} = 7\frac{1}{2}$

(10) $8 \times 1\frac{1}{6}$; $8 \times \frac{7}{6} = \frac{28}{3} = 9\frac{1}{3}$

(11) $1\frac{3}{7} \times \frac{14}{15}$; $\frac{10}{7} \times \frac{14}{15} = \frac{4}{3} = 1\frac{1}{3}$

(12) $1\frac{7}{9} \times \frac{3}{20}$; $\frac{16}{9} \times \frac{3}{20} = \frac{4}{15}$

(13) $12 \times 1\frac{1}{8}$; $12 \times \frac{9}{8} = \frac{27}{2} = 13\frac{1}{2}$

(14) $1\frac{1}{6} \times 8$; $\frac{7}{6} \times 8 = \frac{28}{3} = 9\frac{1}{3}$

(15) $1\frac{2}{5} \times \frac{10}{11}$; $\frac{7}{5} \times \frac{10}{11} = \frac{14}{11} = 1\frac{3}{11}$

(16) $\frac{15}{16} \times 2\frac{2}{3}$; $\frac{15}{16} \times \frac{8}{3} = \frac{5}{2} = 2\frac{1}{2}$

(17) $\frac{7}{21} \times 2\frac{1}{2}$; $\frac{7}{21} \times \frac{5}{2} = \frac{5}{6}$

(18) $1\frac{2}{3} \times \frac{10}{16}$; $\frac{5}{3} \times \frac{10}{16} = \frac{25}{24} = 1\frac{1}{24}$

(19) $1\frac{5}{6} \times \frac{9}{11}$; $\frac{11}{6} \times \frac{9}{11} = \frac{3}{2} = 1\frac{1}{2}$

(20) $1\frac{7}{8} \times 2\frac{2}{5}$; $\frac{15}{8} \times \frac{12}{5} = \frac{9}{2} = 4\frac{1}{2}$

(21) $\frac{18}{24} = \frac{3}{4}$

(22) $6\frac{2}{5} = \frac{32}{5}$

(23) $\frac{28}{16} = 1\frac{3}{4}$

Dividing Fractions

PROBLEM SET #9

① $\frac{5}{6} \div \frac{2}{3}$

$\frac{5}{2\cancel{6}} \times \frac{\cancel{3}^{1}}{2} = \frac{5}{4} = 1\frac{1}{4}$

② $\frac{7}{8} \div \frac{1}{4}$

$\frac{7}{\cancel{8}_{2}} \times \frac{\cancel{4}^{1}}{1} = \frac{7}{2} = 3\frac{1}{2}$

③ $\frac{3}{7} \div \frac{5}{7}$

$\frac{\cancel{3}}{\cancel{7}_{1}} \times \frac{\cancel{7}^{1}}{5} = \frac{3}{5}$

④ $\frac{8}{9} \div \frac{5}{6}$

$\frac{8}{\cancel{9}_{3}} \times \frac{\cancel{6}^{2}}{5} = \frac{16}{15} = 1\frac{1}{15}$

⑤ $\frac{5}{12} \div \frac{10}{11}$

$\frac{\cancel{5}^{1}}{\cancel{12}_{2}} \times \frac{11}{\cancel{10}_{2}} = \frac{11}{24}$

⑥ $\frac{4}{9} \div \frac{1}{6}$

$\frac{4}{\cancel{9}_{3}} \times \frac{\cancel{6}^{2}}{1} = \frac{8}{3} = 2\frac{2}{3}$

⑦ $\frac{9}{10} \div \frac{3}{5}$

$\frac{\cancel{9}^{3}}{\cancel{10}_{2}} \times \frac{\cancel{5}^{1}}{\cancel{3}_{1}} = \frac{3}{2} = 1\frac{1}{2}$

⑧ $\frac{5}{12} \div \frac{5}{9}$

$\frac{\cancel{5}^{1}}{\cancel{12}_{4}} \times \frac{\cancel{9}^{3}}{\cancel{5}_{1}} = \frac{3}{4}$

⑨ $\frac{4}{7} \div 8$

$\frac{\cancel{4}^{1}}{7} \times \frac{1}{\cancel{8}_{2}} = \frac{1}{14}$

⑩ $\frac{5}{6} \div 10$

$\frac{\cancel{5}^{1}}{6} \times \frac{1}{\cancel{10}_{2}} = \frac{1}{12}$

⑪ $\frac{7}{9} \div \frac{2}{3}$

$\frac{7}{\cancel{9}_{3}} \times \frac{\cancel{3}^{1}}{2} = \frac{7}{6} = 1\frac{1}{6}$

⑫ $\frac{7}{12} \div \frac{7}{8}$

$\frac{\cancel{7}^{1}}{\cancel{12}_{3}} \times \frac{\cancel{8}^{2}}{\cancel{7}_{1}} = \frac{2}{3}$

⑬ $\frac{5}{8} \div \frac{3}{4}$

$\frac{5}{\cancel{8}_{2}} \times \frac{\cancel{4}^{1}}{3} = \frac{5}{6}$

⑭ $\frac{2}{5} \div \frac{8}{9}$

$\frac{\cancel{2}^{1}}{\cancel{5}_{1}} \times \frac{\cancel{9}^{3}}{\cancel{8}_{4}} = \frac{3}{4}$

⑮ $\frac{8}{9} \div 4$

$\frac{\cancel{8}^{2}}{9} \times \frac{1}{\cancel{4}_{1}} = \frac{2}{9}$

⑯ $\frac{3}{8} \div 6$

$\frac{\cancel{3}^{1}}{8} \times \frac{1}{\cancel{6}_{2}} = \frac{1}{16}$

㉔ $2\frac{2}{3} \quad \frac{5}{2}$

$^{16}\frac{8}{3} > \frac{5}{2}^{15}$

㉕ $\frac{^{36}n}{6} = \frac{6}{4}^{36}$

$36 \div 4 = 9$

$n = 9$

㉖ $2\frac{1}{4}\,{}^{\times 3}_{\times 3} \quad 2\frac{3}{12}$

$+5\frac{5}{6}\,{}^{\times 2}_{\times 2} \quad +5\frac{10}{12}$

$7\frac{13}{12} = 8\frac{1}{12}$

㉗ $3\frac{7}{8}\,{}^{\times 3}_{\times 3} \quad 3\frac{21}{24}$

$+4\frac{1}{6}\,{}^{\times 4}_{\times 4} \quad +4\frac{4}{24}$

$7\frac{25}{24} = 8\frac{1}{24}$

㉘ $7\frac{2}{3}\,{}^{\times 5}_{\times 5} \quad {}^{6}7\frac{10}{15}{}^{25}$

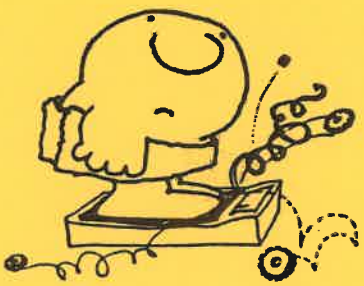
$-4\frac{4}{5}\,{}^{\times 3}_{\times 3} \quad -4\frac{12}{15}$

$2\frac{13}{15}$

㉙ $8\frac{2}{5}\,{}^{\times 4}_{\times 4} \quad {}^{7}8\frac{8}{20}{}^{28}$

$-1\frac{3}{4}\,{}^{\times 5}_{\times 5} \quad -1\frac{15}{20}$

$6\frac{13}{20}$



⑰ $\frac{5}{6} \div \frac{10}{21}$

$\frac{1}{2}\frac{5}{6} \times \frac{7}{2}\frac{21}{10} = \frac{7}{4} = 1\frac{3}{4}$

⑱ $\frac{14}{15} \div \frac{7}{10}$

$\frac{2}{3}\frac{14}{15} \times \frac{2}{1}\frac{10}{7} = \frac{4}{3} = 1\frac{1}{3}$

⑲ $\frac{3}{4} \div \frac{9}{10}$

$\frac{1}{2}\frac{8}{4} \times \frac{5}{3}\frac{10}{9} = \frac{5}{6}$

⑳ $\frac{3}{7} \div \frac{9}{14}$

$\frac{1}{1}\frac{3}{7} \times \frac{2}{3}\frac{14}{9} = \frac{2}{3}$

㉑ $\frac{21}{28} = \frac{3}{4}$

㉒ $4\frac{5}{6} = \frac{29}{6}$

㉓ $\frac{18}{8} = 2\frac{1}{4}$

㉔ $\frac{7}{3} \quad 2\frac{1}{4}$

$\overset{28}{\frac{7}{3}} > \frac{9}{4}\overset{27}{}$

㉕ $\frac{\overset{40}{n}}{4} = \frac{10}{5}\overset{40}{}$

$40 \div 5 = 8$

$n = 8$

㉖ $2\frac{1}{4}\overset{\times 3}{\times 3} \quad 2\frac{3}{12}$

$+3\frac{2}{3}\overset{\times 4}{\times 4} \quad +3\frac{8}{12}$

$5\frac{11}{12}$

㉗ $6\frac{5}{8}\overset{\times 3}{\times 3} \quad 6\frac{15}{24}$

$+2\frac{5}{6}\overset{\times 4}{\times 4} \quad +2\frac{20}{24}$

$8\frac{35}{24} = 9\frac{11}{24}$

㉘ $9 \quad 8\frac{7}{7}$

$-3\frac{4}{7} \quad -3\frac{4}{7}$

$5\frac{3}{7}$

㉙ $5\frac{2}{5}\overset{\times 4}{\times 4} \quad \overset{4}{5}\frac{\overset{28}{8}}{20}$

$-2\frac{3}{4}\overset{\times 5}{\times 5} \quad -2\frac{15}{20}$

$2\frac{13}{20}$

㉚ $1\frac{1}{5} \times 1\frac{7}{8}$

$\frac{3}{1}\frac{6}{5} \times \frac{3}{4}\frac{15}{8} = \frac{9}{4} = 2\frac{1}{4}$

㉛ $2\frac{1}{3} \times \frac{9}{14}$

$\frac{1}{1}\frac{7}{3} \times \frac{3}{2}\frac{9}{14} = \frac{3}{2} = 1\frac{1}{2}$

Dividing Fractions & Mixed Numerals

PROBLEM SET #10

① $1\frac{3}{5} \div 2\frac{2}{5}$

$\frac{8}{5} \div \frac{12}{5}$

$\frac{2}{1}\frac{8}{5} \times \frac{1}{3}\frac{5}{12} = \frac{2}{3}$

② $3\frac{3}{4} \div 1\frac{1}{14}$

$\frac{15}{4} \div \frac{15}{14}$

$\frac{1}{2}\frac{15}{4} \times \frac{7}{1}\frac{14}{15} = \frac{7}{2} = 3\frac{1}{2}$

③ $4\frac{1}{2} \div 7\frac{1}{2}$

$\frac{9}{2} \div \frac{15}{2}$

$\frac{3}{1}\frac{9}{2} \times \frac{1}{5}\frac{2}{15} = \frac{3}{5}$

④ $1\frac{3}{4} \div 2\frac{1}{10}$

$\frac{7}{4} \div \frac{21}{10}$

$\frac{1}{2}\frac{7}{4} \times \frac{5}{3}\frac{10}{21} = \frac{5}{6}$

⑤ $8 \div 1\frac{1}{3}$

$8 \div \frac{4}{3}$

$\frac{2}{1}\frac{8}{} \times \frac{3}{1}\frac{}{4} = 6$

⑥ $6 \div 1\frac{4}{5}$

$6 \div \frac{9}{5}$

$\frac{2}{1}\frac{6}{} \times \frac{5}{3}\frac{}{9} = \frac{10}{3} = 3\frac{1}{3}$

⑦ $2\frac{2}{5} \div 1\frac{1}{8}$

$\frac{12}{5} \div \frac{9}{8}$

$\frac{4}{1}\frac{12}{5} \times \frac{8}{3}\frac{8}{9} = \frac{32}{15} = 2\frac{2}{15}$

⑧ $4\frac{2}{3} \div 1\frac{1}{7}$

$\frac{14}{3} \div \frac{8}{7}$

$\frac{7}{1}\frac{14}{3} \times \frac{7}{4}\frac{7}{8} = \frac{49}{12} = 4\frac{1}{12}$

⑨ $3\frac{3}{4} \div 10$

$\overset{3}{\cancel{15}}{}^{}_{4} \times \frac{1}{\cancel{10}_{2}} = \frac{3}{8}$

⑩ $1\frac{5}{7} \div 8$

$\overset{3}{\cancel{12}}{}^{}_{7} \times \frac{1}{\cancel{8}_{2}} = \frac{3}{14}$

⑪ $1\frac{4}{5} \div 2\frac{2}{5}$

$\frac{9}{5} \div \frac{12}{5}$

$\frac{\overset{3}{\cancel{9}}}{\cancel{5}_{1}} \times \frac{\overset{1}{\cancel{15}}}{\cancel{12}_{4}} = \frac{3}{4}$

⑫ $1\frac{5}{7} \div 1\frac{1}{14}$

$\frac{12}{7} \div \frac{15}{14}$

$\frac{\overset{4}{\cancel{12}}}{\cancel{7}_{1}} \times \frac{\overset{2}{\cancel{14}}}{\cancel{15}_{5}} = \frac{8}{5} = 1\frac{3}{5}$

⑬ $5\frac{1}{3} \div 1\frac{5}{7}$

$\frac{16}{3} \div \frac{12}{7}$

$\frac{\overset{4}{\cancel{16}}}{3} \times \frac{7}{\cancel{12}_{3}} = \frac{28}{9} = 3\frac{1}{9}$

⑭ $2\frac{2}{3} \div 1\frac{5}{9}$

$\frac{8}{3} \div \frac{14}{9}$

$\frac{\overset{4}{\cancel{8}}}{\cancel{3}_{1}} \times \frac{\overset{3}{\cancel{9}}}{\cancel{14}_{7}} = \frac{12}{7} = 1\frac{5}{7}$

⑮ $6 \div 1\frac{3}{5}$

$6 \div \frac{8}{5}$

$\overset{3}{\cancel{6}} \times \frac{5}{\cancel{8}_{4}} = \frac{15}{4} = 3\frac{3}{4}$

⑯ $9 \div 1\frac{5}{7}$

$9 \div \frac{12}{7}$

$\overset{3}{9} \times \frac{7}{\cancel{12}_{4}} = \frac{21}{4} = 5\frac{1}{4}$

⑰ $1\frac{3}{11} \div \frac{21}{22}$

$\frac{\overset{2}{\cancel{14}}}{\cancel{11}_{1}} \times \frac{\overset{2}{\cancel{22}}}{\cancel{21}_{3}} = \frac{4}{3} = 1\frac{1}{3}$

⑱ $2\frac{2}{5} \div \frac{9}{10}$

$\frac{\overset{4}{\cancel{12}}}{\cancel{5}_{1}} \times \frac{\overset{2}{\cancel{10}}}{\cancel{9}_{3}} = \frac{8}{3} = 2\frac{2}{3}$

⑲ $4\frac{2}{3} \div 7$

$\frac{\overset{2}{\cancel{14}}}{3} \times \frac{1}{\cancel{7}_{1}} = \frac{2}{3}$

⑳ $2\frac{1}{4} \div 6$

$\frac{\overset{3}{9}}{4} \times \frac{1}{\cancel{6}_{2}} = \frac{3}{8}$

㉑ $\frac{15}{45} = \frac{1}{3}$

㉒ $7\frac{1}{6} = \frac{43}{6}$

㉓ $\frac{16}{10} = 1\frac{3}{5}$

㉔ $2\frac{1}{4} \quad \frac{11}{5}$

$\frac{\overset{45}{9}}{4} > \frac{11}{5}^{44}$

㉕ $\frac{12}{5}^{60} = \frac{n}{5}^{60}$

$60 \div 3 = 20$

$n = 20$

㉖ $3\frac{3}{8}\times 1 \quad 3\frac{3}{8}$

$+2\frac{3}{4}\times 2 \quad +2\frac{6}{8}$

$5\frac{9}{8} = 6\frac{1}{8}$

㉗ $5\frac{1}{4}\times 3 \quad 5\frac{3}{12}$

$+5\frac{5}{6}\times 2 \quad +5\frac{10}{12}$

$10\frac{13}{12} = 11\frac{1}{12}$

㉘ $9\frac{2}{3}\times 8 \quad {}^{8}9\frac{\overset{40}{16}}{24}$

$-3\frac{7}{8}\times 3 \quad -3\frac{21}{24}$

$5\frac{19}{24}$

㉙ $8\frac{2}{5}\times 4 \quad {}^{7}8\frac{\overset{28}{8}}{20}$

$-4\frac{3}{4}\times 5 \quad -4\frac{15}{20}$

$3\frac{13}{20}$

㉚ $1\frac{2}{7} \times \frac{14}{15}$

$\frac{\overset{3}{\cancel{9}}}{\cancel{7}_{1}} \times \frac{\overset{2}{\cancel{14}}}{\cancel{15}_{5}} = \frac{6}{5} = 1\frac{1}{5}$

㉛ $1\frac{3}{4} \times 1\frac{5}{7}$

$\frac{\cancel{7}}{\cancel{4}_{1}} \times \frac{\overset{3}{\cancel{12}}}{\cancel{7}_{1}} = 3$

Reviewing Operations With Fractions

PROBLEM SET #11

① $\frac{15}{45} = \frac{1}{3}$

② $\frac{16}{24} = \frac{2}{3}$

③ $3\frac{3}{4} = \frac{15}{4}$

④ $1\frac{4}{5} = \frac{9}{5}$

⑤ $\frac{14}{10} = 1\frac{2}{5}$

⑥ $\frac{8}{6} = 1\frac{1}{3}$

⑦ $3\frac{1}{2} \quad \frac{10}{3}$

$\frac{21}{2} > \frac{10}{3}$ (21, 20)

⑧ $\frac{8}{5} \quad 1\frac{2}{3}$

$\frac{24}{5} < \frac{5}{3}$ (24, 25)

⑨ $\frac{4}{6} = \frac{n}{9}$ (36, 36)

$36 \div 6 = 6$

$n = 6$

⑩ $\frac{6}{n} = \frac{4}{10}$ (60, 60)

$60 \div 4 = 15$

$n = 15$

⑪ $6 \rightarrow \frac{1}{6}$

⑫ $2\frac{1}{5} = \frac{11}{5} \rightarrow \frac{5}{11}$

⑬ $\frac{2}{3} \times 4 \quad \frac{8}{12}$

$+ \frac{3}{4} \times 3 \quad + \frac{9}{12}$

$\frac{17}{12} = 1\frac{5}{12}$

⑭ $2\frac{1}{4} \times 3 \quad 2\frac{3}{12}$

$+ 5\frac{5}{6} \times 2 \quad + 5\frac{10}{12}$

$7\frac{13}{12} = 8\frac{1}{12}$

⑮ $\frac{3}{5} \times 3 \quad \frac{9}{15}$

$- \frac{1}{3} \times 5 \quad - \frac{5}{15}$

$\frac{4}{15}$

⑯ $3\frac{1}{2} \times 3 \quad 3\frac{3}{6}$

$- 1\frac{1}{3} \times 2 \quad - 1\frac{2}{6}$

$2\frac{1}{6}$

⑰ $6 \quad 5\frac{4}{4}$

$- 3\frac{1}{4} \quad - 3\frac{1}{4}$

$2\frac{3}{4}$

⑱ $4\frac{1}{3} \times 5 \quad 4\frac{5}{15}$

$- 1\frac{2}{5} \times 3 \quad - 1\frac{6}{15}$

$4\frac{14}{15}$

⑲ $8\frac{1}{4} \times 1 \quad 8\frac{1}{4}$

$- 3\frac{1}{2} \times 2 \quad - 3\frac{2}{4}$

$4\frac{3}{4}$

⑳ $6\frac{1}{8} \times 3 \quad 6\frac{3}{24}$

$- 1\frac{1}{3} \times 8 \quad - 1\frac{8}{24}$

$4\frac{19}{24}$

㉑ $\frac{14}{25} \times \frac{10}{21} = \frac{4}{15}$ (2, 5, 2, 3)

㉒ $1\frac{2}{3} \times 6$

$\frac{5}{1}\frac{3}{8} \times \frac{6}{2} = 10$

㉓ $1\frac{1}{2} \times \frac{5}{6}$

$\frac{3}{1}\frac{5}{2} \times \frac{5}{2}\frac{6}{6} = \frac{5}{4} = 1\frac{1}{4}$

㉔ $1\frac{1}{3} \times 4\frac{1}{2}$

$\frac{4}{1}\frac{9}{3} \times \frac{9}{3}\frac{12}{12} = 6$

㉕ $\frac{1}{2} \div \frac{3}{4}$

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

㉖ $\frac{2}{3} \div 6$

$\frac{2}{1}\frac{3}{3} \times \frac{1}{3}\frac{6}{6} = \frac{1}{9}$

㉗ $2\frac{1}{2} \div 1\frac{1}{2}$

$\frac{5}{2} \div \frac{3}{2}$

$\frac{5}{1}\frac{2}{2} \times \frac{1}{1}\frac{2}{3} = \frac{5}{3} = 1\frac{2}{3}$

㉘ $6 \div 1\frac{1}{2}$

$6 \div \frac{3}{2}$

$\frac{2}{1}\frac{6}{1} \times \frac{2}{1}\frac{2}{3} = 4$

㉙ $3\frac{1}{3} \div 7\frac{1}{2}$

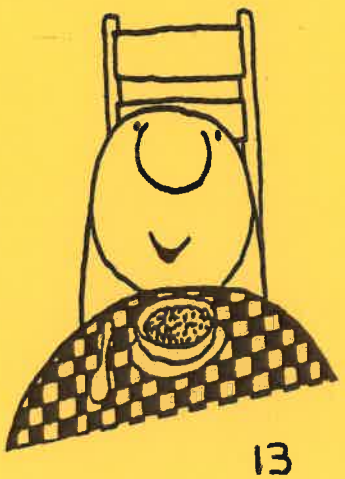
$\frac{10}{3} \div \frac{15}{2}$

$\frac{2}{1}\frac{10}{3} \times \frac{2}{3}\frac{2}{15} = \frac{4}{9}$

㉚ $2\frac{1}{2} \div 3\frac{3}{4}$

$\frac{5}{2} \div \frac{15}{4}$

$\frac{1}{1}\frac{5}{2} \times \frac{2}{3}\frac{4}{15} = \frac{2}{3}$



PROBLEM SET #12

① $\frac{8}{22} = \frac{4}{11}$

② $\frac{20}{25} = \frac{4}{5}$

③ $4\frac{1}{5} = \frac{21}{5}$

④ $2\frac{5}{6} = \frac{17}{6}$

⑤ $\frac{12}{8} = 1\frac{1}{2}$

⑥ $\frac{18}{10} = 1\frac{4}{5}$

⑦ $2\frac{1}{3} \quad \frac{5}{2}$

$\frac{7}{3} < \frac{5}{2}$ (14, 15)

⑧ $\frac{8}{3} \quad 2\frac{3}{4}$

$\frac{8}{3} < \frac{11}{4}$ (32, 33)

⑨ $\frac{4}{12} = \frac{3}{n}$ (36, 36)

$36 \div 4 = 9$

$n = 9$

⑩ $\frac{3}{12} = \frac{n}{8}$ (24, 24)

$24 \div 12 = 2$

$n = 2$

⑪ $8 \rightarrow \frac{1}{8}$

⑫ $3\frac{3}{8} = \frac{27}{8} \rightarrow \frac{8}{27}$

⑬ $\frac{1}{3} \times 4 \quad \frac{4}{12}$

$+\frac{1}{4} \times 3 \quad +\frac{3}{12}$

$\frac{7}{12}$

⑭ $3\frac{2}{5} \times 3 \quad 3\frac{6}{15}$

$+1\frac{2}{3} \times 5 \quad +1\frac{10}{15}$

$4\frac{16}{15} = 5\frac{1}{15}$

⑮ $\frac{5}{6} \times 2 \quad \frac{10}{12}$

$-\frac{3}{4} \times 3 \quad -\frac{9}{12}$

$\frac{1}{12}$

⑯ $4\frac{2}{7} \times 5 \quad 4\frac{10}{35}$

$-1\frac{1}{5} \times 7 \quad -1\frac{7}{35}$

$3\frac{3}{35}$

⑰ $8 \quad 7\frac{5}{5}$

$-2\frac{4}{5} \quad -2\frac{4}{5}$

$5\frac{1}{5}$

⑱ $6\frac{2}{3} \times 2 \quad 5\frac{10}{6}$

$-2\frac{5}{6} \times 1 \quad -2\frac{5}{6}$

$3\frac{5}{6}$

⑲ $7\frac{2}{3} \times 4 \quad 6\frac{20}{12}$

$-1\frac{3}{4} \times 3 \quad -1\frac{9}{12}$

$5\frac{11}{12}$

⑳ $5\frac{1}{6} \times 2 \quad 4\frac{14}{12}$

$-2\frac{1}{4} \times 3 \quad -2\frac{3}{12}$

$2\frac{11}{12}$

㉑ $\frac{12}{15} \times \frac{15}{18} = \frac{2}{9}$ (2, 3, 1, 3)

㉒ $2\frac{1}{4} \times 8$

$\frac{9}{1} \times \frac{28}{4} = 18$ (14)

㉓ $\frac{5}{22} \times 2\frac{3}{4}$

$\frac{5}{2} \times \frac{11}{4} = \frac{5}{8}$ (22, 1)

㉔ $2\frac{1}{3} \times 1\frac{5}{7}$

$\frac{7}{3} \times \frac{12}{7} = 4$ (1, 1)

㉕ $\frac{2}{3} \div \frac{2}{5}$

$\frac{2}{3} \times \frac{5}{2} = \frac{5}{3} = 1\frac{2}{3}$ (1, 1)

㉖ $\frac{4}{5} \div 8$

$\frac{4}{5} \times \frac{1}{8} = \frac{1}{10}$ (1, 2)

(27) $2\frac{1}{3} \div 3\frac{1}{2}$

$\frac{7}{3} \div \frac{7}{2}$

$\frac{1}{3}\frac{7}{3} \times \frac{2}{7_1} = \frac{2}{3}$

(28) $8 \div 1\frac{1}{3}$

$8 \div \frac{4}{3}$

$^{2}8 \times \frac{3}{4_1} = 6$

(29) $2\frac{1}{4} \div 1\frac{1}{2}$

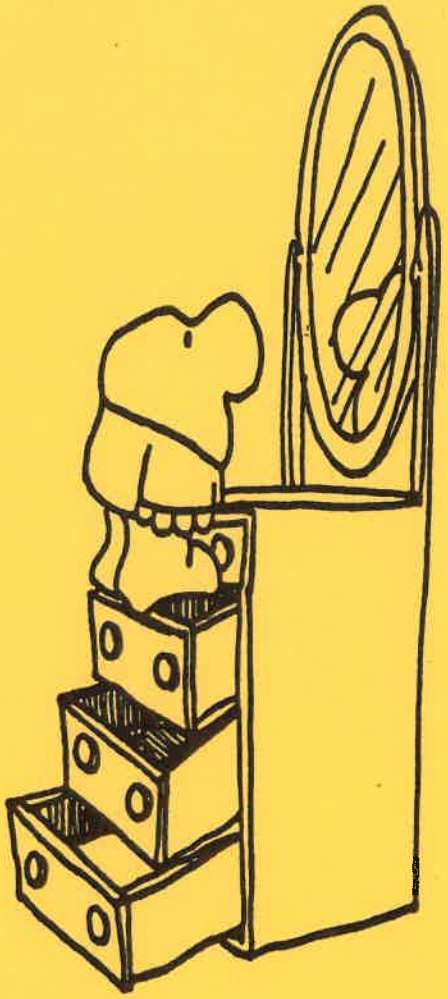
$\frac{9}{4} \div \frac{3}{2}$

$\frac{3}{2}\frac{9}{4} \times \frac{1}{1}\frac{2}{8} = \frac{3}{2} = 1\frac{1}{2}$

(30) $2\frac{2}{5} \div 3\frac{1}{3}$

$\frac{8}{3} \div \frac{10}{3}$

$\frac{4}{1}\frac{8}{3} \times \frac{1}{5}\frac{3}{10} = \frac{4}{5}$



PROBLEM SET #13

(1) $\frac{12}{48} = \frac{1}{4}$

(2) $\frac{14}{35} = \frac{2}{5}$

(3) $2\frac{2}{5} = \frac{8}{3}$

(4) $3\frac{1}{4} = \frac{13}{4}$

(5) $\frac{20}{16} = 1\frac{1}{4}$

(6) $\frac{24}{14} = 1\frac{5}{7}$

(7) $1\frac{3}{4} \quad \frac{5}{3}$

$^{21}\frac{7}{4} > \frac{5}{3}^{20}$

(8) $\frac{7}{3} \quad 2\frac{1}{2}$

$^{14}\frac{7}{3} < \frac{5}{2}^{15}$

(9) $\frac{^{90}n}{15} = \frac{6}{10}^{90}$

$90 \div 10 = 9$

$n = 9$

(10) $\frac{^{36}2}{12} = \frac{3}{n}^{36}$

$36 \div 2 = 18$

$n = 18$

(11) $3 \rightarrow \frac{1}{3}$

(12) $4\frac{1}{2} = \frac{9}{2} \rightarrow \frac{2}{9}$

(13) $\frac{1 \times 4}{2 \times 4} \quad \frac{4}{8}$

$+ \frac{3 \times 1}{8 \times 1} \quad + \frac{3}{8}$

$\frac{7}{8}$

(14) $4\frac{3}{4}\times\frac{7}{7} \quad 4\frac{21}{28}$

$+ 3\frac{2}{7}\times\frac{4}{4} \quad + 3\frac{8}{28}$

$7\frac{29}{28} = 8\frac{1}{28}$

(15) $\frac{2}{3}\times\frac{8}{8} \quad \frac{16}{24}$

$-\frac{1}{8}\times\frac{3}{3} \quad -\frac{3}{24}$

$\frac{13}{24}$

(16) $5\frac{3}{4}\times\frac{3}{3} \quad 5\frac{9}{12}$

$-2\frac{2}{3}\times\frac{4}{4} \quad -2\frac{8}{12}$

$3\frac{1}{12}$

(17) $7 \quad 6\frac{3}{3}$

$-5\frac{2}{3} \quad -5\frac{2}{3}$

$1\frac{1}{3}$

(18) $8\frac{1}{6}\times\frac{2}{2} \quad ^{7}8\frac{^{14}2}{12}$

$-3\frac{1}{4}\times\frac{3}{3} \quad -3\frac{3}{12}$

$4\frac{11}{12}$

(19) $9\frac{3}{8}\times\frac{3}{3} \quad ^{8}9\frac{^{33}9}{24}$

$-4\frac{5}{6}\times\frac{4}{4} \quad -4\frac{20}{24}$

$4\frac{13}{24}$

(20) $4\frac{1}{3}\times\frac{5}{5} \quad ^{3}4\frac{^{20}8}{15}$

$-2\frac{3}{5}\times\frac{3}{3} \quad -2\frac{9}{15}$

$1\frac{11}{15}$

(21) $\frac{^{3}9}{5}\frac{}{20} \times \frac{^{2}10}{5}\frac{}{15} = \frac{6}{25}$

㉒ $1\frac{1}{2} \times 10$

$\frac{3}{1\cancel{2}} \times \frac{\cancel{10}^{5}}{1} = 15$

㉓ $\frac{9}{14} \times 2\frac{1}{3}$

$\frac{\cancel{9}^{3}}{\cancel{14}_{2}} \times \frac{\cancel{7}^{1}}{\cancel{3}_{1}} = \frac{3}{2} = 1\frac{1}{2}$

㉔ $2\frac{2}{3} \times 1\frac{1}{2}$

$\frac{\cancel{8}^{4}}{\cancel{3}_{1}} \times \frac{\cancel{3}^{1}}{\cancel{2}_{1}} = 4$

㉕ $\frac{4}{5} \div \frac{1}{3}$

$\frac{4}{5} \times \frac{3}{1} = \frac{12}{5} = 2\frac{2}{5}$

㉖ $\frac{3}{4} \div 6$

$\frac{\cancel{3}^{1}}{4} \times \frac{1}{\cancel{6}_{2}} = \frac{1}{8}$

㉗ $1\frac{2}{3} \div 1\frac{3}{7}$

$\frac{5}{3} \div \frac{10}{7}$

$\frac{\cancel{5}^{1}}{3} \times \frac{7}{\cancel{10}_{2}} = \frac{7}{6} = 1\frac{1}{6}$

㉘ $4 \div 1\frac{5}{7}$

$4 \div \frac{12}{7}$

$\frac{1}{\cancel{4}} \times \frac{7}{\cancel{12}_{3}} = \frac{7}{3} = 2\frac{1}{3}$

㉙ $1\frac{1}{4} \div 1\frac{7}{8}$

$\frac{5}{4} \div \frac{15}{8}$

$\frac{\cancel{5}^{1}}{\cancel{4}_{1}} \times \frac{\cancel{28}^{2}}{\cancel{15}_{3}} = \frac{2}{3}$

㉚ $2\frac{1}{4} \div 1\frac{1}{5}$

$\frac{9}{4} \div \frac{6}{5}$

$\frac{\cancel{9}^{3}}{\cancel{4}} \times \frac{5}{\cancel{6}_{2}} = \frac{15}{8} = 1\frac{7}{8}$

Level II Activity Sheet
Answer Key

① $2\frac{2}{5} \div 1\frac{1}{5}$

$\frac{12}{5} \div \frac{6}{5}$

$\frac{2\,12}{1\,5} \times \frac{1\,5}{1\,6} = \frac{2}{1} = 2$

② $1\frac{7}{8} \div 1\frac{1}{4}$

$\frac{15}{8} \div \frac{5}{4}$

$\frac{3\,15}{2\,8} \times \frac{1\,4}{1\,5} = \frac{3}{2} = 1\frac{1}{2}$

③ $3\frac{1}{3} \div 5$

$\frac{2\,10}{3} \times \frac{1}{1\,5} = \frac{2}{3}$

④ $4\frac{1}{2} \div 6$

$\frac{3\,9}{2} \times \frac{1}{2\,6} = \frac{3}{4}$

⑤ $\frac{3}{4} \times 1\frac{1}{9}$

$\frac{1\,3}{2\,4} \times \frac{5\,10}{3\,9} = \frac{5}{6}$

⑥ $\frac{5}{9} \times 2\frac{1}{10}$

$\frac{1\,5}{3\,9} \times \frac{7\,21}{2\,10} = \frac{7}{6} = 1\frac{1}{6}$

⑦ $1\frac{1}{6} \times 1\frac{1}{7}$

$\frac{1\,7}{3\,6} \times \frac{4\,8}{1\,7} = \frac{4}{3} = 1\frac{1}{3}$

⑧ $2\frac{1}{4} \times 1\frac{1}{15}$

$\frac{3\,9}{1\,4} \times \frac{4\,16}{5\,15} = \frac{12}{5} = 2\frac{2}{5}$

⑨ $8\frac{2}{5} \times 3$, $-3\frac{2}{3} \times 5$

$8\frac{6}{15}$ (7, 21) $\quad -3\frac{10}{15}$

$4\frac{11}{15}$

⑩ $7\frac{3}{4} \times 2$, $-4\frac{7}{8} \times 1$

$7\frac{6}{8}$ (6, 14) $\quad -4\frac{7}{8}$

$2\frac{7}{8}$

⑪ $8 \quad -2\frac{3}{7}$

$7\frac{7}{7} \quad -2\frac{3}{7}$

$5\frac{4}{7}$

⑫ $6 \quad -3\frac{4}{5}$

$5\frac{5}{5} \quad -3\frac{4}{5}$

$2\frac{1}{5}$

⑬ $5\frac{3}{8} \times 3 \quad +6\frac{5}{12} \times 2$

$5\frac{9}{24} \quad +6\frac{10}{24}$

$11\frac{19}{24}$

⑭ $9\frac{2}{3} \times 4 \quad +3\frac{3}{4} \times 3$

$9\frac{8}{12} \quad +3\frac{9}{12}$

$12\frac{17}{12} = 13\frac{5}{12}$

⑮ $\frac{16}{20} = \frac{4}{5}$

⑯ $\frac{21}{28} = \frac{3}{4}$

⑰ $2\frac{3}{8} = \frac{19}{8}$

⑱ $5\frac{2}{3} = \frac{17}{3}$

⑲ $\frac{12}{8} = 1\frac{1}{2}$

⑳ $\frac{21}{12} = 1\frac{9}{12} = 1\frac{3}{4}$

㉑ $1\frac{3}{4} \quad \frac{9}{5}$

$35\ \frac{7}{4} < \frac{9}{5}\ 36$

㉒ $2\frac{2}{3} \quad \frac{11}{4}$

$32\ \frac{8}{3} < \frac{11}{4}\ 33$

㉓ $\frac{4}{10}^{60} = \frac{n}{15}^{60}$

$60 \div 10 = 6$

$n = 6$

㉔ $\frac{n}{15}^{60} = \frac{4}{6}^{60}$

$60 \div 6 = 10$

$n = 10$

㉕ $8 \div 1\frac{1}{3}$

$\frac{8}{1} \div \frac{4}{3}$

$\frac{2\,8}{1} \times \frac{3}{1\,4} = \frac{6}{1} = 6$

㉖ $12 \div 1\frac{1}{5}$

$\frac{12}{1} \div \frac{6}{5}$

$\frac{2\,12}{1} \times \frac{5}{1\,6} = \frac{10}{1} = 10$

(27) $1\frac{1}{4} \div 2\frac{1}{2}$

$\frac{5}{4} \div \frac{5}{2}$

$\frac{1}{2}\frac{5}{4} \times \frac{1}{1}\frac{2}{5} = \frac{1}{2}$

(28) $2\frac{2}{3} \div 1\frac{7}{9}$

$\frac{8}{3} \div \frac{16}{9}$

$\frac{1}{1}\frac{8}{3} \times \frac{3}{2}\frac{9}{16} = \frac{3}{2} = 1\frac{1}{2}$

(29) $3\frac{15}{16} \times \frac{24}{25} = \frac{9}{10}$

(30) $1\frac{8}{9} \times 5\frac{15}{16} = \frac{5}{6}$

(31) $2\frac{2}{5} \times 1\frac{7}{8}$

$\frac{3}{1}\frac{12}{5} \times \frac{3}{2}\frac{15}{8} = \frac{9}{2} = 4\frac{1}{2}$

(32) $1\frac{1}{8} \times 3\frac{1}{3}$

$\frac{3}{4}\frac{9}{8} \times \frac{5}{1}\frac{10}{3} = \frac{15}{4} = 3\frac{3}{4}$

(33) $9\frac{1}{4} \times 3 \quad 8\frac{15}{12}$

$-6\frac{5}{6} \times 2 \quad -6\frac{10}{12}$

$2\frac{5}{12}$

(34) $8\frac{2}{3} \times 4 \quad 7\frac{20}{12}$

$-3\frac{3}{4} \times 3 \quad -3\frac{9}{12}$

$4\frac{11}{12}$

(35) $4\frac{2}{9} \times 1 \quad 4\frac{2}{9}$

$+8\frac{2}{3} \times 3 \quad +8\frac{6}{9}$

$12\frac{8}{9}$

(36) $5\frac{5}{12} \times 2 \quad 5\frac{10}{24}$

$+7\frac{3}{8} \times 3 \quad +7\frac{9}{24}$

$12\frac{19}{24}$