1ère STI2S - Corrigé de la feuille d'exercices n°1

Calcul fractionnaire

Exercice 1.

$A = \frac{25}{35} = \frac{5\times5}{7\times5} = \boxed{\frac{5}{7}}$ $\quad B = \frac{78}{38} = \frac{39\times2}{19\times2} = \boxed{\frac{39}{19}}$

$C = \frac{85}{45} = \frac{17\times5}{9\times5} = \boxed{\frac{17}{9}}$ $\quad D = \frac{28}{42} = \frac{2\times2\times7}{3\times2\times7} = \boxed{\frac{2}{3}}$

$E = \frac{64}{56} = \frac{8\times8}{7\times8} = \boxed{\frac{8}{7}}$ $\quad F = \frac{24}{32} = \frac{6\times4}{8\times4} = \frac{3\times2}{4\times2} = \boxed{\frac{3}{4}}$

$G = \frac{28}{63} = \frac{4\times7}{9\times7} = \boxed{\frac{4}{9}}$ $\quad H = \frac{35}{21} = \frac{5\times7}{3\times7} = \boxed{\frac{5}{3}}$

$I = \frac{36}{45} = \frac{4\times9}{5\times9} = \boxed{\frac{4}{5}}$ $\quad J = \frac{105}{36} = \frac{7\times5\times5}{4\times3\times3} = \boxed{\frac{35}{12}}$

On remarque que 105 est divisible par 5 et par 3 puisque $1+0+5=6$

$K = \frac{168}{288} = \frac{42\times4}{72\times4} = \frac{6\times7}{8\times9} = \frac{3\times2\times7}{2\times4\times3\times3} = \boxed{\frac{7}{12}}$

168 et 288 sont divisibles par 4 car ils se terminent par un chiffre pair (6 ou 8) suivi de 8.

Pour une divisibilité par 4 : chiffre pair $\rightarrow$ 0, 4 ou 8 ; chiffre impair $\rightarrow$ 2 ou 6

$L = \frac{360}{792} = \frac{90\times4}{198\times4} = \frac{45\times2}{99\times2} = \frac{5\times9}{11\times9} = \boxed{\frac{5}{11}}$

$M = \frac{440}{520} = \frac{4\times11\times10}{4\times13\times10} = \boxed{\frac{11}{13}}$

$N = \frac{840}{1080} = \frac{21\times4\times10}{27\times4\times10} = \frac{3\times7}{3\times9} = \boxed{\frac{7}{9}}$

$O = \frac{3192}{1512} = \frac{798\times4}{378\times4} = \frac{399\times2}{189\times2} = \frac{133\times3}{63\times3} = \frac{19\times7}{9\times7} = \boxed{\frac{19}{9}}$

Exercice 2.

a) $\frac{11}{4} = \frac{11\times2}{4\times2} = \boxed{\frac{22}{8}}$ $\quad \boxed{\frac{23}{8}}$ $\quad$ b) $\frac{49}{42}$ $\quad \frac{8}{7} = \frac{8\times6}{7\times6} = \boxed{\frac{48}{42}}$

c) $\frac{17}{4} = \frac{17\times3}{4\times3} = \boxed{\frac{51}{12}}$ $\quad \frac{16}{3} = \frac{16\times4}{3\times4} = \boxed{\frac{64}{12}}$ $\quad$ d) $8 = \frac{8}{1} = \frac{8\times7}{1\times7} = \boxed{\frac{56}{7}}$ $\quad \boxed{\frac{53}{7}}$

e) $20 = \frac{20}{1} = \frac{20\times7}{1\times7} = \frac{140}{7}$ $\quad \frac{147}{7}$ sauf que ... $\frac{147}{7} = 21$! donc 20 et 21 car $147 = 21\times7$

f) $\boxed{\frac{93}{5}}$ et $17 = \frac{17}{1} = \frac{17\times5}{1\times5} = \boxed{\frac{85}{5}}$

g) $18 = 2\times9 = 2\times3\times3$ $\quad$ PGCD(18;24) $= 2\times3 = 6$

$24 = 4\times6 = 2\times2\times2\times3$ $\quad$ PPCM(18;24) $= 6\times2\times2\times3 = 72$

$\frac{5}{18} = \frac{5\times4}{18\times4} = \boxed{\frac{20}{72}}$ $\quad \frac{13}{24} = \frac{13\times3}{24\times3} = \boxed{\frac{39}{72}}$

h) $20 = 2\times2\times5$ $\quad 35 = 5\times7$ $\quad \frac{19}{20} = \frac{19\times7}{20\times7} = \boxed{\frac{133}{140}}$ $\quad \frac{33}{35} = \frac{33\times4}{35\times4} = \boxed{\frac{132}{140}}$

i) $1 = \frac{1}{1} = \frac{1\times100}{1\times100} = \boxed{\frac{100}{100}}$ $\quad \frac{3}{10} = \frac{3\times10}{10\times10} = \boxed{\frac{30}{100}}$ $\quad \boxed{\frac{7}{100}}$

j) $140 = 14\times10$ $\quad 42 = 14\times3$ $\quad \frac{11}{140} = \frac{11\times3}{140\times3} = \boxed{\frac{33}{420}}$ $\quad \frac{23}{42} = \frac{23\times10}{42\times10} = \boxed{\frac{230}{420}}$

k) $6 = 2\times3$ $\quad 9 = 3\times3$ $\quad$ PPCM(6;9) $= 3\times2\times3 = 18$

$4 = \frac{4}{1} = \frac{4\times18}{1\times18} = \boxed{\frac{72}{18}}$ $\quad \frac{13}{6} = \frac{13\times3}{6\times3} = \boxed{\frac{39}{18}}$ $\quad \frac{5}{9} = \frac{5\times2}{9\times2} = \boxed{\frac{10}{18}}$

l) $15 = 3\times5$, $20 = 2\times2\times5$, $12 = 2\times2\times3$ (voir exemple 6 vidéo)

On doit réduire au $2\times2\times3\times5 = 60$

$\frac{7}{15} = \frac{7\times4}{15\times4} = \boxed{\frac{28}{60}}$ $\quad \frac{9}{20} = \frac{9\times3}{20\times3} = \boxed{\frac{27}{60}}$ $\quad \frac{5}{12} = \frac{5\times5}{12\times5} = \boxed{\frac{25}{60}}$

m) $1 = \frac{1}{1} = \frac{1\times18}{1\times18} = \boxed{\frac{18}{18}}$ $\quad \frac{1}{2} = \frac{1\times9}{2\times9} = \boxed{\frac{9}{18}}$ $\quad \frac{1}{3} = \frac{1\times6}{3\times6} = \boxed{\frac{6}{18}}$ $\quad \frac{5}{9} = \frac{5\times2}{9\times2} = \boxed{\frac{10}{18}}$

n) $15 = 3\times5$, $25 = 5\times5$, $20 = 4\times5$ $\quad 3 = \frac{3}{1} = \frac{3\times300}{1\times300} = \boxed{\frac{900}{300}}$ $\quad \frac{7}{15} = \frac{7\times5\times4}{15\times5\times4} = \boxed{\frac{140}{300}}$ $\quad \frac{9}{25} = \frac{9\times3\times4}{25\times3\times4} = \boxed{\frac{108}{300}}$

PPCM(15;20;25) $= 5\times3\times5\times4 = 300$ $\quad \frac{13}{20} = \frac{13\times3\times5}{20\times3\times5} = \boxed{\frac{195}{300}}$

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Exercice 3

$A = \frac{7}{2} - \frac{3}{4}$

$A = \frac{7 \times 2}{2 \times 2} - \frac{3}{4}$

$A = \frac{14}{4} - \frac{3}{4}$

$\boxed{A = \frac{11}{4}}$

$B = \frac{4}{3} - \frac{11}{12}$

$B = \frac{4 \times 4}{3 \times 4} - \frac{11}{12}$

$B = \frac{16}{12} - \frac{11}{12}$

$\boxed{B = \frac{5}{12}}$

$C = \frac{7}{8} - \frac{4}{5}$

$C = \frac{7 \times 5}{8 \times 5} - \frac{4 \times 8}{5 \times 8}$

$C = \frac{35}{40} - \frac{32}{40}$

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

$D = 3 + \frac{6}{7}$

$D = \frac{3 \times 7}{1 \times 7} + \frac{6}{7}$

$D = \frac{21}{7} + \frac{6}{7}$

$\boxed{D = \frac{27}{7}}$

$E = \frac{57}{45} - \frac{9}{15}$

$E = \frac{57}{45} - \frac{9 \times 3}{15 \times 3}$

$E = \frac{57}{45} - \frac{27}{45}$

$E = \frac{30}{45}$

$E = \frac{2 \times 15}{3 \times 15}$

$\boxed{E = \frac{2}{3}}$

ou

$E = \frac{19 \times 3}{15 \times 3} - \frac{9}{15}$

$E = \frac{19}{15} - \frac{9}{15}$

$E = \frac{10}{15}$

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

$\boxed{E = \frac{2}{3}}$

$F = 1 - \frac{7}{8}$

$F = \frac{1 \times 8}{1 \times 8} - \frac{7}{8}$

$F = \frac{8}{8} - \frac{7}{8}$

$\boxed{F = \frac{1}{8}}$

$G = -3 + \frac{17}{12}$

$G = -\frac{3 \times 12}{1 \times 12} + \frac{17}{12}$

$G = -\frac{36}{12} + \frac{17}{12}$

$\boxed{G = -\frac{19}{12}}$

$H = 2 + \frac{1}{7} - \frac{12}{21}$

$H = \frac{2 \times 21}{1 \times 21} + \frac{1 \times 3}{7 \times 3} - \frac{12}{21}$

$H = \frac{42}{21} + \frac{3}{21} - \frac{12}{21}$

$H = \frac{33}{21}$ $\quad H = \frac{3 \times 11}{3 \times 7}$ $\quad \boxed{H = \frac{11}{7}}$

ou

$H = \frac{2 \times 7}{1 \times 7} + \frac{1}{7} - \frac{4 \times 3}{7 \times 3}$

$H = \frac{14}{7} + \frac{1}{7} - \frac{4}{7}$

$\boxed{H = \frac{11}{7}}$

$I = \frac{7}{10} - \frac{9}{15}$

$I = \frac{7}{10} - \frac{3 \times 3}{3 \times 5}$

$I = \frac{7}{10} - \frac{3 \times 2}{5 \times 2}$

$I = \frac{7}{10} - \frac{6}{10}$

$\boxed{I = \frac{1}{10}}$

$J = \frac{8}{28} + \frac{9}{21}$

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

$J = \frac{2}{7} + \frac{3}{7}$

$\boxed{J = \frac{5}{7}}$

$K = \frac{19}{20} - \frac{23}{45}$

$K = \frac{19 \times 9}{20 \times 9} - \frac{23 \times 4}{45 \times 4}$

$K = \frac{171}{180} - \frac{92}{180}$

$\boxed{K = \frac{79}{180}}$

$20 = 4 \times 5$

$45 = 9 \times 5$

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Calcul fractionnaire.

Suite de l'exercice 3 :

$$L = 1 + \frac{1}{3} + \frac{3}{4} - \frac{5}{2}$$

$$L = \frac{1\times12}{1\times12} + \frac{1\times4}{3\times4} + \frac{3\times3}{4\times3} - \frac{5\times6}{2\times6}$$

$$L = \frac{12}{12} + \frac{4}{12} + \frac{9}{12} - \frac{30}{12}$$

$$\boxed{L = -\frac{5}{12}}$$

$$M = \frac{27}{20} + \frac{25}{18}$$

$$M = \frac{27\times9}{20\times9} + \frac{25\times10}{18\times10}$$

$$M = \frac{243}{180} + \frac{250}{180}$$

$$\boxed{M = \frac{493}{180}}$$

$20 = 2\times2\times5$

$18 = 2\times3\times3$

PPCM(20;18) $= 2\times10\times9 = 180$

$$N = 4 + \frac{6}{50} - \frac{2}{75} + \frac{3}{125}$$

$50 = 2\times25 = 2\times5\times5$

$75 = 3\times25 = 3\times5\times5$

$125 = 5\times25 = 5\times5\times5$

PPCM(50;75;125) $= 25\times2\times3\times5 = 750$

$$N = \frac{4\times750}{1\times750} + \frac{6\times3\times5}{50\times3\times5} - \frac{2\times10}{75\times10} + \frac{3\times2\times3}{125\times2\times3}$$

$$N = \frac{3000}{750} + \frac{90}{750} - \frac{20}{750} + \frac{18}{750}$$

$$N = \frac{3088}{750}$$

$$N = \frac{1544\times2}{375\times2}$$

$$\boxed{N = \frac{1544}{375}}$$

ou $N = 4 + \frac{3}{25} - \frac{2}{75} + \frac{3}{125}$

$$N = \frac{4\times25\times3\times5}{1\times25\times3\times5} + \frac{3\times3\times5}{25\times3\times5} - \frac{2\times5}{75\times5} + \frac{3\times3}{125\times3}$$

$$N = \frac{1500}{375} + \frac{45}{375} - \frac{10}{375} + \frac{9}{375}$$

$$\boxed{N = \frac{1544}{375}}$$

Exercice 4 :

$$A = \frac{3}{7}\times\frac{5}{6}$$

$$A = \frac{3\times5}{7\times2\times3}$$

$$\boxed{A = \frac{5}{14}}$$

$$B = \frac{26}{3}\times\frac{15}{13}$$

$$B = \frac{2\times13\times3\times5}{3\times13\times1}$$

$$\boxed{B = 10}$$

$18 = \frac{18}{1}$ $\quad 18\times\frac{7}{28} = \frac{18\times7}{1\times28}$

$$C = 18\times\frac{7}{28}$$

$$C = \frac{9\times2\times7}{2\times2\times7}$$

$$\boxed{C = \frac{9}{2}}$$

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

$$D = \frac{3\times2\times2\times5\times1}{5\times2\times2\times3\times1}$$

$$\boxed{D = 1}$$

$$E = \frac{15}{28}\times\frac{21}{20}$$

$$E = \frac{3\times5\times3\times7}{4\times7\times4\times5}$$

$$\boxed{E = \frac{9}{16}}$$

$$F = \frac{15}{39}\times\frac{26}{25}\times\frac{28}{42}$$

$$F = \frac{3\times5\times13\times2\times2\times7}{3\times13\times5\times5\times3\times2\times7}$$

$$\boxed{F = \frac{4}{15}}$$

$$G = \frac{54}{81}\times\frac{63}{52}\times\frac{39}{27}$$

$$G = \frac{3\times2\times3\times3\times7\times3\times13}{3\times3\times2\times2\times13\times3\times3\times3}$$

$$\boxed{G = \frac{7}{6}}$$

$$H = \frac{15}{7}\times\frac{14}{55}$$

$$H = \frac{3\times5\times2\times7}{7\times5\times11}$$

$$\boxed{H = \frac{6}{11}}$$

$$I = 18\times\frac{7}{28}$$

$$I = \frac{2\times9\times7}{2\times2\times7}$$

$$\boxed{I = \frac{9}{2}}$$

$$K = \frac{13}{45}\times\frac{18}{26}$$

$$K = \frac{13\times9\times2}{9\times5\times13\times2}$$

$$\boxed{K = \frac{1}{5}}$$

$$J = \frac{121}{38}\times19\times\frac{64}{88}$$

$$J = \frac{11\times11\times19\times8\times2\times4}{19\times2\times8\times11\times1}$$

$$\boxed{J = 44}$$

$$L = \frac{77}{49}\times\frac{35}{121}$$

$$L = \frac{7\times11\times7\times5}{7\times7\times11\times11}$$

$$\boxed{L = \frac{5}{11}}$$

$$M = \frac{54}{81}\times\frac{63}{42}$$

$$M = \frac{3\times6\times3\times7}{3\times3\times6\times7}$$

$$\boxed{M = 1}$$

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Calcul fractionnaire.

Exercice 5 :

$A = \frac{8}{7} : \frac{4}{5}$

$A = \frac{8}{7} \times \frac{5}{4}$

$A = \frac{2 \times 4 \times 5}{7 \times 4}$

$\boxed{A = \frac{10}{7}}$

$B = \frac{11}{21} : \frac{5}{14}$

$B = \frac{11}{21} \times \frac{14}{5}$

$B = \frac{11 \times 2 \times 7}{3 \times 7 \times 5}$

$\boxed{B = \frac{22}{15}}$

$C = \frac{12}{13} : 3$

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

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

$\boxed{C = \frac{4}{13}}$

$D = \frac{5}{6} : \frac{5}{3}$

$D = \frac{5}{6} \times \frac{3}{5}$

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

$\boxed{D = \frac{1}{2}}$

$E = \frac{18}{28} : \frac{45}{42}$

$E = \frac{18}{28} \times \frac{42}{45}$

$E = \frac{2 \times 3 \times 2 \times 3 \times 7}{2 \times 2 \times 7 \times 3 \times 5}$

$\boxed{E = \frac{3}{5}}$

$F = \frac{9}{10} : 30$

$F = \frac{9}{10} \times \frac{1}{30}$

$F = \frac{3 \times 3}{10 \times 3 \times 10}$

$\boxed{F = \frac{3}{100}}$

$G = 8 : \frac{3}{4}$

$G = 8 \times \frac{4}{3}$

$\boxed{G = \frac{32}{3}}$

$H = \frac{\frac{8}{5}}{\frac{9}{15}}$

$H = \frac{8}{5} \times \frac{15}{9}$

$H = \frac{8 \times 3 \times 5}{5 \times 3 \times 3}$

$\boxed{H = \frac{8}{3}}$

$I = \frac{\frac{-9}{2}}{3}$

$I = -9 \times \frac{3}{2}$

$\boxed{I = -\frac{27}{2}}$

$J = \frac{\frac{-9}{2}}{3}$

$J = \frac{-9}{2} \times \frac{1}{3}$

$J = -\frac{3 \times 3}{2 \times 3}$

$\boxed{J = -\frac{3}{2}}$

car $\frac{-a}{b} = -\frac{a}{b}$

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

$K = \frac{5}{4} \times \frac{5}{4}$

$\boxed{K = \frac{25}{16}}$

$L = \frac{\frac{15}{6}}{\frac{25}{6}}$

$L = \frac{3 \times 5}{5 \times 5}$

$\boxed{L = \frac{3}{5}}$

$M = \frac{4 \times \frac{5}{6}}{10 \times \frac{7}{3}}$

$M = \frac{\frac{2 \times 2 \times 5}{2 \times 3}}{\frac{5 \times 2 \times 7}{3}}$

$M = \frac{\frac{10}{3}}{\frac{70}{3}}$

$M = \frac{1 \times 10}{7 \times 10}$

$\boxed{M = \frac{1}{7}}$

Exercice 6 :

$A = \frac{7}{5} - \frac{3}{5} \times \frac{4}{21}$ (prioritaire)

$A = \frac{7}{5} - \frac{3 \times 4}{5 \times 3 \times 7}$ (simplification)

Mise au même dénominateur → $A = \frac{7 \times 7}{5 \times 7} - \frac{4}{35}$

ou $\frac{49}{35} - \frac{4}{35}$ → $A = \frac{49 - 4}{35}$

$A = \frac{45}{35}$

simplification → $A = \frac{9 \times 5}{7 \times 5}$

$\boxed{A = \frac{9}{7}}$

$C = \frac{5}{3} - \frac{2}{3} : \frac{5}{6}$ (prioritaire)

$C = \frac{5}{3} - \frac{2}{3} \times \frac{6}{5}$

$C = \frac{5 \times 5}{3 \times 5} - \frac{12}{15}$

$C = \frac{25}{15} - \frac{12}{15}$

$\boxed{C = \frac{13}{15}}$

ici, je n'ai pas simplifié car j'ai anticipé : il allait falloir réduire au $3 \times 5 = 15$ et là au $7 \times 5 = 35$

$B = 4 - 4 : \frac{16}{3}$ (prioritaire)

$B = 4 - 4 \times \frac{3}{16}$

$B = 4 - \frac{4 \times 3}{4 \times 4}$ (simplification)

mise au même dénominateur → $B = \frac{4 \times 4}{1 \times 4} - \frac{3}{4}$

$B = \frac{16}{4} - \frac{3}{4}$

$\boxed{B = \frac{13}{4}}$

$D = -\frac{13}{5} + \frac{3}{7} : \frac{5}{3}$ (prioritaire)

$D = -\frac{13}{5} + \frac{3}{7} \times \frac{3}{5}$

$D = -\frac{13 \times 7}{5 \times 7} + \frac{9}{35}$

$D = -\frac{91}{35} + \frac{9}{35}$

$\boxed{D = -\frac{82}{35}}$

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Calcul fractionnaire.

Suite de l'exercice 6 :

$$E = \left(1 - \frac{1}{7}\right) : \frac{12}{5}$$

$$E = \left(\frac{1\times7}{1\times7} - \frac{1}{7}\right) \times \frac{5}{12}$$ mise au même dénominateur

$$E = \left(\frac{7}{7} - \frac{1}{7}\right) \times \frac{5}{12}$$

$$E = \frac{6}{7} \times \frac{5}{12}$$

$$E = \frac{6 \times 5}{7 \times 6 \times 2}$$ simplification

$$\boxed{E = \frac{5}{14}}$$

$$G = \frac{\frac{2}{3} + \frac{1}{6}}{2 - \frac{1}{2}}$$

$$G = \frac{\frac{2\times2}{3\times2} + \frac{1}{6}}{\frac{2\times2}{1\times2} - \frac{1}{2}}$$ mises au même dénominateur

$$G = \frac{\frac{4}{6} + \frac{1}{6}}{\frac{4}{2} - \frac{1}{2}}$$

$$G = \frac{\frac{5}{6}}{\frac{3}{2}}$$

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

$$G = \frac{5 \times 2}{2 \times 3 \times 3}$$ ← simplification

$$\boxed{G = \frac{5}{9}}$$

$$F = \left(\frac{1}{4} - \frac{1}{5}\right) \times \left(7 + \frac{37}{9}\right)$$

$$F = \left(\frac{1\times5}{4\times5} - \frac{1\times4}{5\times4}\right) \times \left(\frac{7\times9}{1\times9} + \frac{37}{9}\right)$$

$$F = \left(\frac{5}{20} - \frac{4}{20}\right) \times \left(\frac{63}{9} + \frac{37}{9}\right)$$

$$F = \frac{1}{20} \times \frac{100}{9}$$

$$F = \frac{1 \times 20 \times 5}{20 \times 9}$$ ← simplification

$$\boxed{F = \frac{5}{9}}$$

$$H = \frac{3}{4} + \frac{1}{2} \times \left(\frac{2}{3} - 1\right)$$ priorité au signe ×

$$H = \frac{3}{4} + \frac{1}{2} \times \left(\frac{2}{3} - \frac{1\times3}{1\times3}\right)$$

$$H = \frac{3}{4} + \frac{1}{2} \times \left(\frac{2}{3} - \frac{3}{3}\right)$$

$$H = \frac{3}{4} \oplus \frac{1}{2} \times \left(\ominus \frac{1}{3}\right)$$ règle des signes

$$H = \frac{3\times3}{4\times3} - \frac{1\times2}{6\times2}$$

$$H = \frac{9}{12} - \frac{2}{12}$$

$$\boxed{H = \frac{7}{12}}$$

$$I = \frac{6 - \frac{5}{2} + \frac{3}{8}}{3 - \frac{5}{2} - \frac{7}{4}}$$

$$I = \frac{\frac{6\times8}{1\times8} - \frac{5\times4}{2\times4} + \frac{3}{8}}{\frac{3\times4}{1\times4} - \frac{5\times2}{2\times2} - \frac{7}{4}}$$

$$I = \frac{\frac{48}{8} - \frac{20}{8} + \frac{3}{8}}{\frac{12}{4} - \frac{10}{4} - \frac{7}{4}}$$

$$I = \frac{\oplus \frac{31}{8}}{\ominus \frac{5}{4}}$$ règle des signes

$$I = -\frac{31}{8} \times \frac{4}{5}$$

$$I = -\frac{31\times4}{2\times4\times5}$$ ← simplification

$$\boxed{I = -\frac{31}{10}}$$

$$K = \left(\frac{5}{11} - \frac{7}{8}\right) \times 33 - \frac{3}{8}$$ priorité sur le − qui le suit

$$K = \left(\frac{5\times8}{11\times8} - \frac{7\times11}{8\times11}\right) \times 33 - \frac{3}{8}$$

$$K = \left(\frac{40}{88} - \frac{77}{88}\right) \times 33 - \frac{3}{8}$$

$$K = -\frac{37}{88} \times 33 - \frac{3}{8}$$

$$K = -\frac{37 \times 3\times11}{8\times11} - \frac{3}{8}$$

$$K = -\frac{111}{8} - \frac{3}{8}$$

$$K = -\frac{114}{8}$$

$$K = -\frac{57\times2}{4\times2}$$

$$\boxed{K = -\frac{54}{4}}$$

$$J = \left(\frac{2}{3} : \frac{8}{7}\right) : \left(-\frac{7}{6} + \frac{3}{4}\right)$$

$$J = \left(\frac{2}{3} \times \frac{7}{8}\right) : \left(-\frac{7\times2}{6\times2} + \frac{3\times3}{4\times3}\right)$$

$$J = \frac{2\times7}{3\times2\times4} : \left(-\frac{14}{12} + \frac{9}{12}\right)$$

$$J = \frac{7}{12} : \left(-\frac{5}{12}\right)$$

C'est comme une grosse écriture fractionnaire dont je peux multiplier le numérateur et le dénominateur par 12

$$\boxed{J = -\frac{7}{5}}$$

$$J = \frac{\frac{7}{12}}{-\frac{5}{12}}$$

1ère STL S - Corrigé de la feuille d'exercices n°1.
Calcul fractionnaire.

Suite de l'exercice 6.

$$L = \frac{3 - \frac{5}{3} + \frac{2}{5}}{\frac{1}{2} + \frac{1}{3} - \frac{2}{5}}$$

$$L = \frac{\frac{3\times15}{1\times15} - \frac{5\times5}{3\times5} + \frac{2\times3}{5\times3}}{\frac{1\times15}{2\times15} + \frac{1\times10}{3\times10} - \frac{2\times6}{5\times6}} \rightarrow L = \frac{\frac{45}{15} - \frac{25}{15} + \frac{6}{15}}{\frac{15}{30} + \frac{10}{30} - \frac{12}{30}}$$

$$L = \frac{\frac{26}{15}}{\frac{13}{30}} \rightarrow L = \frac{26}{15} \times \frac{30}{13} \rightarrow L = \frac{13\times2\times15\times2}{15\times13\times1}$$

$$\boxed{L = 4}$$

$$M = \left(\frac{3}{4} - \frac{5}{3}\right) \times \frac{2 - \frac{4}{7}}{3} \times \frac{1}{\frac{4}{3} - \frac{1}{2}}$$

$$M = \left(\frac{3\times3}{4\times3} - \frac{5\times4}{3\times4}\right) \times \frac{\frac{2\times7}{1\times7} - \frac{4}{7}}{3} \times \frac{1}{\frac{4\times2}{3\times2} - \frac{1\times3}{2\times3}}$$

$$M = \left(\frac{9}{12} - \frac{20}{12}\right) \times \frac{\frac{14}{7} - \frac{4}{7}}{3} \times \frac{1}{\frac{8}{6} - \frac{3}{6}}$$

$$M = -\frac{11}{12} \times \frac{\frac{10}{7}}{3} \times \frac{1}{\frac{5}{6}}$$

Comme la multiplication est associative *, on peut ôter ces parenthèses

$$M = -\frac{11}{12} \times \left\{\frac{10}{7} \times \frac{1}{3}\right\} \times \left\{1 \times \frac{6}{5}\right\}$$

$$M = -\frac{11\times10\times6}{12\times7\times3\times5}$$

$$M = -\frac{\cancel{11}\times\cancel{2}\times\cancel{5}\times\cancel{2}\times\cancel{3}}{\cancel{3}\times\cancel{2}\times\cancel{2}\times\cancel{7}\times\cancel{3}\times\cancel{5}}$$

$$\boxed{M = -\frac{11}{21}}$$

* la multiplication est ASSOCIATIVE : on peut regrouper les facteurs comme on le souhaite :
$(4\times3)\times(7\times5)$ est égale à $4\times(3\times7)\times5$ ou à $4\times(3\times7\times5)$ ou à $4\times3\times7\times5$ par exemple

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$$N = 3 - \frac{3 + \frac{3}{\boxed{3 - \frac{1}{3}}}}{3 - \frac{3}{\boxed{3 + \frac{1}{3}}}}$$

à faire dans un premier temps

$$N = 3 - \frac{3 + \frac{3}{\frac{3\times3}{1\times3} - \frac{1}{3}}}{3 - \frac{3}{\frac{3\times3}{1\times3} + \frac{1}{3}}}$$

$$N = 3 - \frac{3 + \frac{3}{\frac{9}{3} - \frac{1}{3}}}{3 - \frac{3}{\frac{9}{3} + \frac{1}{3}}}$$

$$N = 3 - \frac{3 + \boxed{\frac{3}{\frac{8}{3}}}}{3 - \boxed{\frac{3}{\frac{10}{3}}}}$$

$$N = 3 - \frac{3 + \boxed{3\times\frac{3}{8}}}{3 - \boxed{3\times\frac{3}{10}}}$$

$$N = 3 - \frac{\frac{3\times8}{1\times8} + \frac{9}{8}}{\frac{3\times10}{1\times10} - \frac{9}{10}}$$

$$N = 3 - \frac{\frac{24}{8} + \frac{9}{8}}{\frac{30}{10} - \frac{9}{10}}$$

$$N = 3 - \frac{\frac{33}{8}}{\frac{21}{10}}$$

$$N = 3 - \frac{33}{8} \times \frac{10}{21}$$

$$N = 3 - \frac{\cancel{3}\times11\times\cancel{2}\times5}{\cancel{2}\times4\times7\times\cancel{3}}$$

$$N = \frac{3\times28}{1\times28} - \frac{55}{28}$$

$$N = \frac{84}{28} - \frac{55}{28}$$

$$\boxed{N = \frac{29}{28}}$$