

Corrections (optimisée pour être lues sur les téléphones)

Exercice 1: Calculer les différentes sommes (on notera les étapes) :

$$\begin{aligned} A &= (-7) + (-3) + (+8) + (+4) + (-2) & B &= 15 - 3 + 2 - 7 - 21 \\ &= (-7) + (-3) + (-2) + (+8) + (+4) & &= 15 + 2 - 3 - 7 - 21 \\ &= (-12) + (+12) & &= 17 - 31 \\ &= 0 & &= -14 \end{aligned}$$

$$\begin{aligned} C &= (-6) + (+2) - (-15) + (-1) - (+3) & D &= -4 + 31 - 10 - 5 + 22 - 4 \\ &= -6 + 2 + 15 - 1 - 3 & &= -4 - 10 - 5 - 4 + 31 + 22 \\ &= -10 + 17 & &= -23 + 53 \\ &= 7 & &= 30 \end{aligned}$$

Exercice 2: Calculer les différentes expressions (noter les étapes) :

$$\begin{aligned} A &= (-3) - (+10) & B &= (-7) - (-11) \\ &= -3 - 10 & &= -7 + 11 \\ &= -13 & &= 4 \end{aligned}$$

$$\begin{aligned}
 C &= (+3) - (-4) + (-7) + (+2) & D &= (+7) - (+10) - (-9) + (-3) \\
 &= 3 + 4 - 7 + 2 & &= 7 - 10 + 9 - 3 \\
 &= 9 - 7 & &= 16 - 13 \\
 &= 2 & &= 3
 \end{aligned}$$

$$\begin{aligned}
 E &= -4,1 + 3,9 - (-2,1) + 2 - (+0,9) \\
 &= -4,1 + 3,9 + 2,1 + 2 - 0,9 \\
 &= 3,9 - 0,9 \\
 &= 3
 \end{aligned}$$

Exercice 3:

Calcule A et B en faisant des regroupements astucieux :

$$\begin{aligned}
 A &= (+503) - (-343,8) - (-415,5) - (+743,8) + (-203) + (-84,5) \\
 &= 503 + 343,8 + 415,5 - 743,8 - 203 - 84,5 \\
 &= 300 - 400 + 415,5 - 84,5 \\
 &= -100 + 331 \\
 &= 231
 \end{aligned}$$

$$\begin{aligned}
 B &= (+0,28) + (+12) - (+5,4) + (-9,78) - (+0,12) - (+6,6) \\
 &= 0,28 + 12 - 5,4 - 9,78 - 0,12 - 6,6 \\
 &= -9,5 + 0 - 0,12 \\
 &= -9,62
 \end{aligned}$$

Exercice 4: Calcule les opérations suivantes.

$$\begin{aligned}
 A &= (+14) + (-9) + (-1) + (-6) + (+17) + (-9) + (+14) \\
 &= 14 - 9 - 1 - 6 + 17 - 9 + 14 \\
 &= 14 + 17 + 14 - 9 - 1 - 6 - 9 \\
 &= 45 - 25 = 20
 \end{aligned}$$

$$\begin{aligned}
 B &= (+3,7) + (-5,1) + (+3,9) + (-12,8) + (+13,9) + (-3,7) \\
 &= -5,1 - 12,8 + 3,9 + 13,9 \\
 &= -17,9 + 17,8 \\
 &= -0,1
 \end{aligned}$$

$$\begin{aligned}
 C &= (+15) - (-5) - (+15) \\
 &= 5
 \end{aligned}$$

$$\begin{aligned}
 D &= (-365) - (-8) - (-5) - (+35) + (-8) - (+98) + (-32) \\
 &= -365 + 8 + 5 - 35 - 98 - 32 \\
 &= -530 + 13 = -517
 \end{aligned}$$

Exercice 5: Calcule les expressions suivantes :

$$\begin{aligned}
 A &= -1,5 - [2 - (-5) - (-2 + 3,5)] \times 2 \\
 &= -1,5 - [2 + 5 - 1,5] \times 2 \\
 &= -1,5 - 11 = -12,5
 \end{aligned}$$

$$\begin{aligned}
 B &= 2 \times 2,1 - [4 \times 2 - (-5) + 5 \times 4,1] \\
 &= 4,2 - [8 + 5 + 20,5] \\
 &= 4,2 - [+33,5] \\
 &= -29,3
 \end{aligned}$$

$$\begin{aligned}
 C &= [18,5 - (52 - 48,8 \times 2)] + (13-6) \times 2,5 \\
 &= [18,5 - (52 - 97,6)] + 7 \times 2,5 \\
 &= [18,5 - (-45,6)] + 17,5 \\
 &= 64,1 + 17,5 = 81,6
 \end{aligned}$$

$$\begin{aligned}
D &= [21,5 + 14 \times 4] \times [12,5 + 83,5] - 24 \times [25 \times 3 - 65] \\
&= [21,5 + 56] \times [+96] - 24 \times [75 - 65] \\
&= [77,5] \times [+96] - 24 \times [10] \\
&= 7440 - 240 \\
&= 7200
\end{aligned}$$

$$\begin{aligned}
E &= 121,3 - (2,1 : 0,7) + [(0,42 \times 7) : 21] \times (65,3 - 17) \\
&= 121,3 - (21 : 7) + [(2.94) : 21] \times (48.3) \\
&= 121,3 - 3 + [0.14] \times (48.3) \\
&= 121,3 - 3 + 6.762 \\
&= 125,062
\end{aligned}$$

$$\begin{aligned}
M &= [83,4 + (12 + 24 \times 15) \times 0,8] + (44,5 - 13) \times 2 - 123 \\
&= [83,4 + (12 + 360) \times 0,8] + (31,5) \times 2 - 123 \\
&= [83,4 + 372 \times 0,8] + 63 - 123 \\
&= [83,4 + 297,6] + 63 - 123 \\
&= 381 + 63 - 123 \\
&= 444 - 123 = 321
\end{aligned}$$

Exercice 6: Effectue les calculs suivants :

$$A = 5 + (-9) + 6$$

$$= 5 - 9 + 6$$

$$= 2$$

$$B = -8 + 1 + (-2)$$

$$= 3 - 2$$

$$= 1$$

$$C = -9 + (-8) + 3 - (-2) \quad D = 12 - 7 + (-6) - (-13) + (-12)$$

$$= -9 - 8 + 3 + 2 \quad = 12 - 7 - 6 + 13 - 12$$

$$= -17 + 5 \quad = 13 - 13$$

$$= -12 \quad = 0$$

$$E = (3 - 5) + (1 - 4 + 6) - (-2 + 9)$$

$$= -2 + 3 - (+7)$$

$$= 1 - 7$$

$$= -6$$

$$F = 2 - (5 + 7 - 3) - 9 - (3 + 6)$$

$$= 2 - (+9) - 9 - 9$$

$$= 2 - 27 = -25$$

Exercise 7:

$$\begin{aligned} A &= (+16) - (+13) & F &= 4 + (-11) + (+9) + (-16) - (-17) \\ &= 16 - 13 & &= 4 - 11 + 9 - 16 + 17 \\ &= 3 & &= 30 - 27 = 3 \end{aligned}$$

$$\begin{aligned} B &= 15 - (-17) & G &= (+16) + (-10) - (+3) - (+6) - (-5) \\ &= 15 + 17 & &= 16 - 10 - 3 - 6 + 5 \\ &= 32 & &= 2 \end{aligned}$$

$$\begin{aligned} C &= (+12) - (-5) & H &= - (+11) - (-5) - (+6) + (-7) + (+8) \\ &= 12 + 5 & &= -11 + 5 - 6 - 7 + 8 \\ &= 17 & &= -24 + 13 \\ & & &= -11 \end{aligned}$$

$$\begin{aligned} D &= -13 - (+7) & I &= (-25) + 8 + 25 + (-50) + 79 \\ &= -13 - 7 & &= -25 + 8 + 25 - 50 + 79 \\ &= -20 & &= -50 + 87 \\ & & &= 37 \end{aligned}$$

$$\begin{aligned}
 E &= (-15) + (-26) - (-8) & J &= -7 - (-17) - 43 - (-56) \\
 &= -15 - 26 + 8 & &= -7 + 17 - 43 + 56 \\
 &= -41 + 8 & &= -50 + 73 \\
 &= -33 & &= 23
 \end{aligned}$$

$$\begin{aligned}
 K &= 12,5 - (-4,5) - 7,3 - (-8,1) + (-8,1) \\
 &= 12,5 + 4,5 - 7,3 + 8,1 - 8,1 \\
 &= 17 - 7,3 & &= 9,7
 \end{aligned}$$

Exercice 8: Calcule habilement les expressions ci-dessous :

$$\begin{aligned}
 A &= -1,2 + 3,7 - 2,4 - 3,7 & &= -3,6 \\
 B &= -23 + 13,2 - 23 + 4,8 & &= -46 + 18 & &= -28 \\
 C &= -11 + 35 + 7 + (-15) + 4 & &= -26 + 46 & &= 20 \\
 D &= 13 + (-8) + (-13) + 9 + (-2) & &= 9 - 10 & &= -1 \\
 E &= -4,75 + 51,3 + 5 + 0,75 + (-1,3) & &= -4 & + 50 & + 5 &= 51 \\
 F &= 82,7 + (-4,9) + (-2,7) + 4 & &= 80 + 4 - 4,9 & &= 79,1 \\
 G &= -38,1 + 4,25 + 38,1 - 3 - 1,25 & &= 0 \\
 H &= -7 + 78,9 - 2,65 - 5,9 + 5,65 - 11 & &= -7 - 11 + 73 + 3 & &= -18 + 76 = 58
 \end{aligned}$$

Exercise 9

$$A = \frac{25}{12} \times \frac{6}{35} = \frac{5 \times 5 \times 2 \times 3}{2 \times 2 \times 3 \times 7 \times 5} = \frac{5}{2 \times 7} = \frac{5}{14}$$

$$B = \frac{100}{21} \times \frac{63}{50} = \frac{2 \times 5 \times 2 \times 5 \times 3 \times 3 \times 7}{3 \times 7 \times 2 \times 5 \times 5} = \frac{2 \times 3}{1} = 6$$

$$C = \frac{70}{27} \times \frac{9}{50} = \frac{7 \times 2 \times 5 \times 3 \times 3}{3 \times 3 \times 3 \times 2 \times 5 \times 5} = \frac{7}{3 \times 5} = \frac{7}{15}$$

$$D = \frac{2}{45} \times \frac{63}{10} = \frac{2 \times 7 \times 3 \times 3}{3 \times 3 \times 5 \times 2 \times 5} = \frac{7}{5 \times 5} = \frac{7}{25}$$

Exercise 10

$$A = \frac{15}{11} + \frac{-9}{11} \times \frac{22}{3} = \frac{15}{11} + \frac{-1 \times 3 \times 3 \times 2 \times 11}{11 \times 3} = \frac{15}{11} + (-6)$$

$$= \frac{15}{11} + \left(-\frac{6 \times 11}{1 \times 11}\right) = \frac{15}{11} + \left(-\frac{66}{11}\right) = -\frac{51}{11}$$

$$B = \frac{\frac{-3}{4} + 9}{\frac{-7}{4} - 6} = \frac{\frac{-3}{4} + \frac{9}{1}}{\frac{-7}{4} - \frac{6}{1}} = \frac{\frac{-3}{4} + \frac{9 \times 4}{1 \times 4}}{\frac{-7}{4} - \frac{6 \times 4}{1 \times 4}} = \frac{\frac{-3}{4} + \frac{36}{4}}{\frac{-7}{4} - \frac{24}{4}} = \frac{\frac{33}{4}}{\frac{-31}{4}} = \frac{\frac{33}{4} \times 4}{\frac{-31}{4} \times 4} = \frac{33}{-31}$$

$$C = \frac{9}{4} \times \left(\frac{1}{12} - \frac{9}{7}\right) = \frac{9}{4} \times \left(\frac{1 \times 7}{12 \times 7} - \frac{9 \times 12}{7 \times 12}\right) = \frac{9}{4} \times \left(\frac{7}{84} - \frac{108}{84}\right)$$

$$= \frac{9}{4} \times \left(\frac{-101}{84}\right) = \frac{3 \times 3 \times (-101)}{4 \times 3 \times 28} = \frac{-303}{112}$$

Exercice 11

$$A = \frac{\frac{-1}{3} - 4}{\frac{7}{10} - 7} = \frac{\frac{-1}{3} - \frac{4}{1}}{\frac{7}{10} - \frac{1}{1}} = \frac{\frac{-1}{3} - \frac{4 \times 3}{1 \times 3}}{\frac{7}{10} - \frac{1 \times 3}{1 \times 3}} = \frac{\frac{-1}{3} - \frac{12}{3}}{\frac{7}{10} - \frac{3}{10}} = \frac{\frac{-13}{3}}{\frac{-63}{10}}$$

$$\frac{-13}{3} \div \frac{-63}{10} = \frac{-13}{3} \times \frac{10}{-63} = \frac{-1 \times 13 \times 2 \times 5}{3 \times (-1) \times 3 \times 7 \times 3} = \frac{130}{189}$$

$$B = \frac{-18}{5} - \frac{-81}{40} \div \frac{81}{20} = \frac{-18}{5} - \frac{-81}{40} \times \frac{20}{81} = \frac{-18}{5} - \frac{-1 \times 81}{2 \times 20} \times \frac{20}{81} = \frac{-18}{5} - \frac{-1}{2}$$

$$= \frac{-18 \times 2}{5 \times 2} - \frac{-1 \times 5}{2 \times 5} = \frac{-36}{10} - \frac{-5}{10} = \frac{-36}{10} + \frac{5}{10} = \frac{-31}{10}$$

$$C = \frac{-2}{9} \div \left(\frac{9}{4} - \frac{-11}{7} \right) = \frac{-2}{9} \div \left(\frac{9 \times 7}{4 \times 7} - \frac{-11 \times 4}{7 \times 4} \right) = \frac{-2}{9} \div \left(\frac{63}{28} - \frac{-44}{28} \right)$$

$$= \frac{-2}{9} \div \left(\frac{63}{28} + \frac{44}{28} \right) = \frac{-2}{9} \div \left(\frac{107}{28} \right) = \frac{-2}{9} \times \frac{28}{107} = \frac{-1 \times 2 \times 2 \times 2 \times 7}{3 \times 3 \times 107} = -\frac{56}{963}$$

Exercice 12

$$A = \frac{-1}{5} \times \left(\frac{4 \times 5}{13 \times 5} - \frac{3 \times 13}{5 \times 13} \right) = \frac{-1}{5} \times \left(\frac{20}{65} - \frac{39}{65} \right) = \frac{-1}{5} \times \left(\frac{-19}{65} \right) = \frac{19}{325}$$

$$B = \frac{\frac{2}{3} + 6}{\frac{3}{4} - 5} = \frac{\frac{2}{3} + \frac{6}{1}}{\frac{3}{4} - \frac{5}{1}} = \frac{\frac{2}{3} + \frac{6 \times 3}{1 \times 3}}{\frac{3}{4} - \frac{5 \times 3}{1 \times 3}} = \frac{\frac{2}{3} + \frac{18}{3}}{\frac{3}{4} - \frac{20}{4}}$$

$$= \frac{\frac{16}{3}}{\frac{-17}{4}} = \frac{16}{3} \div \frac{-17}{4} = \frac{16}{3} \times \frac{4}{-1 \times 17} = \frac{64}{-51}$$

$$C = \frac{-2}{5} - \frac{1}{5} \times \frac{35}{4} = \frac{-2 \times 4}{5 \times 4} - \frac{1 \times 35}{5 \times 4} = \frac{-2 \times 4}{5 \times 4} - \frac{35}{5 \times 4} = \frac{-8}{20} - \frac{35}{20} = \frac{-43}{20}$$

Exercice 13

Effectuez et simplifiez les calculs suivants :

$$E = \frac{7}{5} - \frac{2}{15}$$

$$= \frac{7 \times 3}{5 \times 3} - \frac{2}{15}$$

$$= \frac{19}{15}$$

$$F = \frac{9}{5} - \frac{8}{7}$$

$$= \frac{9 \times 7}{5 \times 7} - \frac{8 \times 5}{7 \times 5}$$

$$= \frac{23}{35}$$

$$G = \frac{3}{22} - \frac{20}{33}$$

$$= \frac{3 \times 3}{2 \times 11 \times 3} - \frac{20 \times 2}{3 \times 11 \times 2}$$

$$= -\frac{31}{66}$$

$$H = \frac{-7}{18} - \frac{-5}{12}$$

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

$$= \frac{1}{36}$$

$$I = \frac{-9}{20} \times \frac{4}{-15}$$

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

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

$$J = \frac{-13}{-7} \times \frac{-5}{-13}$$

$$= \frac{-1 \times 13 \times (-1) \times 5}{-1 \times 7 \times (-1) \times 13}$$

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

$$J' = \frac{21}{25} : \frac{28}{15}$$

$$= \frac{21}{25} \times \frac{15}{28}$$

$$= \frac{3 \times 7 \times 3 \times 5}{5 \times 5 \times 7 \times 2 \times 2} = \frac{9}{20}$$

$$K = 2 \div \frac{10}{-3}$$

$$= \frac{2}{1} \times \frac{-3}{10}$$

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

Exercice 14

Effectuez et simplifiez les calculs suivants :

$$L = \frac{6}{7} - \frac{4}{7} \times \frac{5}{2}$$

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

$$= \frac{-4}{7}$$

$$M = \frac{3}{4} + \frac{2}{5} \times \frac{10}{3}$$

$$= \frac{3}{4} + \frac{2 \times 2 \times 5}{5 \times 3}$$

$$= \frac{3 \times 3}{4 \times 3} + \frac{4 \times 4}{3 \times 4} = \frac{25}{12}$$

$$N = \frac{2}{3} \times (-9) \times \frac{12}{14}$$

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

$$= \frac{-36}{7}$$

$$O = \frac{34}{5} : \left(\frac{4}{5} - \frac{8}{3} \right)$$

$$P = \frac{\frac{1}{2} - \frac{2}{3}}{\frac{3}{7} - \frac{4}{5}}$$

$$= \frac{34}{5} : \left(\frac{4 \times 3}{5 \times 3} - \frac{8 \times 5}{3 \times 5} \right)$$

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

$$= \frac{34}{5} : \left(\frac{-28}{15} \right)$$

$$= \frac{\frac{-1}{6}}{\frac{-13}{35}} = \frac{-1}{6} \div \frac{-13}{35}$$

$$= \frac{2 \times 17 \times 3 \times 5}{5 \times (-1) \times 7 \times 2 \times 2}$$

$$= \frac{-1}{6} \times \frac{7 \times 5}{-1 \times 13}$$

$$= \frac{51}{-14}$$

$$= \frac{35}{78}$$

Exercise 15

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

$$Y = \frac{\frac{5}{4} + \frac{2}{5}}{2 \times \frac{7}{5}}$$

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

$$= \frac{\frac{3 \times 5}{1 \times 5} - \frac{2}{5}}{\frac{7}{10}}$$

$$= \frac{\frac{5 \times 5}{4 \times 5} + \frac{2 \times 4}{5 \times 4}}{\frac{2}{1} \times \frac{7}{5}}$$

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

$$= \frac{\frac{13}{5}}{\frac{7}{10}} = \frac{13}{5} \div \frac{7}{10}$$

$$= \frac{\frac{33}{20}}{\frac{14}{5}} = \frac{33}{20} \div \frac{14}{5}$$

$$= \frac{\frac{-5}{6}}{\frac{49}{30}} = \frac{-5}{6} \div \frac{49}{30}$$

$$= \frac{13}{5} \times \frac{2 \times 5}{7}$$

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

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

$$= \frac{26}{7}$$

$$= \frac{33}{56}$$

$$= \frac{-25}{49}$$