Corrigés : Calculer un enchaînement d'opérations

1 Écris chacune de ces expressions avec le moins de signes possible puis calcule.

A = 7 + (– 6) × (– 6)
A = 7 + 6 × 6
A = 43

B = 13 – (+ 3) × (– 4) – 8
B = 13 + 3 × 4 – 8
B = 13 + 12 – 8
B = 25 – 8
B = 17

C = – 30 ÷ (– 9 + 15)
C = – 30 ÷ (– 9 + 15)
C = – 30 ÷ 6
C = – 5

D = – 3 – 9 × (– 3)
D = – 3 + 9 × 3
D = – 3 + 27
D = 24

E = – 3 × 6 × (– 2 + 8)
E = – 3 × 6 × (– 2 + 8)
E = – 3 × 6 × 6
E = – 108

2 Écris chacune de ces expressions avec le moins de signes possible puis calcule.

A = – 22 + (13 – 5) × (– 5)
A = – 22 + (13 – 5) × (– 5)
A = – 22 + 8 × (– 5)
A = – 22 – 40
A = – 62

B = (– 2) × (– 8) + 2 × (– 20) ÷ 4
B = 2 × 8 – 2 × 20 ÷ 4
B = 16 + (-40) ÷ 4
B = 16 – 10
B = 6

C = – 28 + (5 – 2) × (– 4)
C = – 28 + (5 – 2) × (– 4)
C = – 28 + 3 × (– 4)
C = – 28 + (– 12)
C = – 40

D = 7 × (– 7) + 3 × (– 25) ÷ (– 5)
D = – 7 × 7 + 3 × 25 ÷ 5
D = – 49 + 75 ÷ 5
D = – 49 + 15
D = – 34

E = – 3,2 × (– 6) + (– 2,3 – 7,7)
E = 3,2 × 6 – (2,3 + 7,7)
E = 19,2 – 10
E = 9,2

F = 150 ÷ (– 1,2 – 9 × 3,2)
F = 150 ÷ (– 1,2 – 9 × 3,2)
F = 150 ÷ (– 1,2 – 28,8)
F = 150 ÷ (– 30)
F = – 5

3 Calcule les expressions suivantes.

A = 3 – 4 × (5 – 2)
A = 3 – 4 × 3
A = 3 – 12
A = – 9

B = 3 × 4 – 2 × (4 – 1)
B = 12 – 2 × 3
B = 12 – 6
B = 6

C = 5 – 2 × 3 + 2 × 7
C = 5 – 6 + 14
C = – 1 + 14
C = 13

D = – 3 + (1 – 5) × (– 6)
D = – 3 + (– 4) × (– 6)
D = – 3 + 24
D = + 21

E = 1 – 2 × 3 + 4 × (– 5)
E = 1 – 6 – 20
E = – 5 – 20
E = – 25

F = 1 + (– 2)² – (– 3)²
F = 1 + 4 – 9
F = 5 – 9
F = – 4

4 Calcule les expressions suivantes.

$A = \frac{11}{2-5} = \frac{11}{-3} = -\frac{11}{3}$

$B = \frac{-6-3}{2+7} = \frac{-9}{9} = -1$

$C = \frac{-2-(-4)}{6-7} = \frac{2}{-1} = -2$

5 Calcule et donne le résultat le plus simplifié possible.

$A = \frac{2}{3} - \frac{7}{3} \times \frac{8}{21}$ $A = \frac{2}{3} - \frac{7\times8}{3\times7\times3}$

$A = \frac{2}{3} - \frac{8}{9} = \frac{6-8}{9} = -\frac{2}{9}$

$B = \left(\frac{3}{4} - \frac{5}{6}\right) \times \frac{3}{2} = \left(\frac{9}{12} - \frac{10}{12}\right) \times \frac{3}{2} = \frac{-1}{12} \times \frac{3}{2}$

$B = \frac{-3}{24} = \frac{-1}{8}$

$C = 11 \div \left(\frac{2}{3} - \frac{5}{2}\right) = 11 \div \left(\frac{4}{6} - \frac{15}{6}\right) = 11 \div \frac{-11}{6}$

$C = 11 \times \frac{6}{-11} = -6$

$D = \frac{3}{7} - \frac{15}{7} \div \frac{5}{24} = \frac{3}{7} - \frac{15}{7} \times \frac{24}{5} = \frac{3}{7} - \frac{3\times5\times24}{7\times5}$

$D = \frac{3}{7} - \frac{72}{7} = \frac{-69}{7}$

$E = \left(\frac{11}{7} - \frac{2}{5}\right) \times \frac{24}{7} = \left(\frac{55}{35} - \frac{14}{35}\right) \times \frac{24}{7} = \frac{41}{35} \times \frac{24}{7}$

$E = \frac{984}{245}$

$F = \frac{25}{15} \times \left(\frac{1}{18} + \frac{1}{24}\right) = \frac{25}{15} \times \left(\frac{4}{72} + \frac{3}{72}\right)$

$F = \frac{25}{15} \times \frac{7}{72} = \frac{175}{1080} = \frac{35\times5}{216\times5} = \frac{35}{216}$

6 Calcule puis simplifie au maximum le résultat.

$E = \frac{3 - \frac{7}{5}}{1 - \frac{9}{10}} = \frac{\frac{15}{5} - \frac{7}{5}}{\frac{10}{10} - \frac{9}{10}} = \frac{\frac{8}{5}}{\frac{1}{10}} = \frac{8}{5} \times 10$ E= 16

$F = \frac{7}{-8} + \frac{\frac{5}{6}}{4} - 1 = \frac{-7}{8} + \frac{5}{6} \times \frac{1}{4} - 1$

$F = \frac{-21}{24} + \frac{5}{24} - \frac{24}{24} = \frac{-40}{24} = \frac{-5}{3}$

7 Calcule et simplifie au maximum le résultat.

$A = \frac{\frac{3}{2} - \frac{1}{3}}{\frac{3}{4} + \frac{2}{3}} = \frac{\frac{9}{6} - \frac{2}{6}}{\frac{9}{12} + \frac{8}{12}} = \frac{\frac{7}{6}}{\frac{17}{12}}$

$A = \frac{7}{6} \times \frac{12}{17} = \frac{14}{17}$

$B = 2 + \frac{\frac{2}{7}}{\frac{5}{14}} = 2 + \frac{2}{7} \times \frac{14}{5} = 2 + \frac{4}{5}$

$B = \frac{10}{5} + \frac{4}{5} = \frac{14}{5}$

$C = -\frac{3}{14} - \frac{3}{\frac{7}{5}} + 2 = \frac{-3}{14} - 3 \times \frac{5}{7} + 2$

$C = \frac{-6}{28} - \frac{60}{28} + \frac{56}{28} = \frac{-10}{28} = \frac{-5}{14}$

$D = \frac{7}{5} + \frac{\frac{8}{15}}{\frac{2}{3}} - \frac{19}{2} = \frac{7}{5} + \frac{8}{15} \times \frac{3}{2} - \frac{19}{2}$

$D = \frac{7}{5} + \frac{4}{5} - \frac{19}{2} = \frac{14}{10} + \frac{8}{10} - \frac{95}{10} = \frac{-73}{10}$

AUTO EVALUATION

8 Calcule en détaillant les étapes et donne le résultat sous la forme d'une fraction irréductible ou d'un nombre décimal.

$A = \frac{24 \times 9 \times 72 \times 121}{36 \times 33 \times 64}$

$= \frac{3\times8\times9\times8\times9\times11\times11}{4\times9\times3\times11\times8\times8}$

$= \frac{9\times11}{4} = \frac{99}{4} = 24{,}75$

$B = 56 \times \frac{15}{128} - \frac{1}{18} = \frac{7\times8\times15}{8\times16} - \frac{1}{18}$

$= \frac{105}{16} - \frac{1}{18} = \frac{945}{144} - \frac{8}{144} = \frac{937}{144}$

$C = \left(\frac{24}{15} + \frac{35}{25}\right) \times \frac{20}{33} = \left(\frac{8}{5} + \frac{7}{5}\right) \times \frac{20}{33}$

$= 3 \times \frac{20}{33} = 3 \times \frac{20}{3\times11} = \frac{20}{11}$

$D = \frac{81}{63} \div \left(4 - \frac{2}{14}\right) = \frac{9}{7} \div \left(\frac{28}{7} - \frac{1}{7}\right)$

$= \frac{9}{7} \div \frac{27}{7} = \frac{9}{7} \times \frac{7}{27} = \frac{9}{27} = \frac{1}{3}$

$E = \frac{56}{15} \times \frac{\frac{5}{6} - \frac{5}{4}}{\frac{1}{2} + \frac{2}{3}} = \frac{56}{15} \times \frac{\frac{10}{12} - \frac{15}{12}}{\frac{3}{6} + \frac{4}{6}}$

$= \frac{56}{15} \times \frac{-\frac{5}{12}}{\frac{7}{6}} = \frac{56}{15} \times \frac{-5}{12} \times \frac{6}{7}$

$= -\frac{8\times7\times5\times6}{3\times5\times2\times6\times7} = -\frac{4}{3}$

$F = 3 + \frac{2}{15} \times \left(5 \times \frac{23}{25} - \frac{12}{49} \div \frac{9}{14}\right) \div \frac{1}{70}$

$= 3 + \frac{2}{15} \times \left(\frac{23}{5} - \frac{12}{49} \times \frac{14}{9}\right) \times 70$

$= 3 + \frac{2}{15} \times \left(\frac{23}{5} - \frac{8}{21}\right) \times 70 = 3 + \frac{2}{15} \times \left(\frac{483}{105} - \frac{40}{105}\right) \times 70$

$= 3 + \frac{2}{15} \times \frac{443}{105} \times 70 = 3 + \frac{1772}{45} = \frac{135}{45} + \frac{1772}{45} = \frac{1907}{45}$