Feuille de calcul n°8 — Priorités des opérations

Exercice 1. Effectuer les opérations suivantes.

$A = 4 \times 5 - 3 - 2 \times 2$ $B = 4 \times 5 - (3 - 2) \times 2$ $C = 4 \times (5 - 3) - 2 \times 2$
$D = 4 \times (5 - 3 - 2) \times 2$ $E = 4 \times 5 - (3 - 2 \times 2)$ $F = 4 \times (5 - (3 - 2)) \times 2$

Solution.
$A = 20 - 3 - 4 = 13$ $B = 20 - 1 \times 2 = 18$ $C = 4 \times 2 - 4 = 4$
$D = 4 \times 0 \times 2 = 0$ $E = 20 - (-1) = 21$ $F = 4 \times 4 \times 2 = 32$

Exercice 2. Effectuer les opérations suivantes.

$A = -10 - (-4) - 1 + 30 + (-15)$ $B = 12 - (-21) \times 7$ $C = (-3 - 6) \times (6 - 8)$
$D = -15 + (-14) + 30 - 15 + (-9)$ $E = (4 - 5) \times (-2 - 6)$ $F = 4 - 5 \times (-2 - 6)$

Solution.
$A = -10 + 4 - 1 + 30 - 15 = 8$ $B = 12 + 147 = 159$ $C = (-9) \times (-2) = 18$
$D = -15 - 14 + 30 - 15 - 9 = -23$ $E = (-1) \times (-8) = 8$ $F = 4 - 5 \times (-8) = 44.$

Exercice 3. Simplifier les expressions suivantes.

$A = 2x - 3 - (x + 4)$ $B = 2x - (3 - x) + 4$ $C = 2x - (3 - x + 4)$ $D = x - (x + 10)$

Solution.
$A = 2x - 3 - x - 4 = x - 7$ $B = 2x - 3 + x + 4 = 3x + 1$ $C = 2x - 3 + x - 4 = 3x - 7$
$D = x - x - 10 = -10.$

Exercice 4. Effectuer les opérations suivantes.

$$A = \left(4 \times \frac{6}{4} + \frac{24}{3}\right) \times \frac{1}{28} \qquad B = \left(\frac{1}{2} + \frac{2}{3}\right) \times \frac{1}{2} + \frac{5}{6}$$
$$C = \left(\frac{1}{2} + \frac{1}{4}\right) \div \left(\frac{1}{3} + \frac{1}{6}\right) \qquad D = \left(1 - \frac{1}{2} - \frac{1}{4}\right) \times 4$$

Solution.
$A = (6 + 8) \times \dfrac{1}{28} = \dfrac{14}{28} = \dfrac{1}{2}$ $B = \left(\dfrac{3}{6} + \dfrac{4}{6}\right) \times \dfrac{1}{2} + \dfrac{5}{6} = \dfrac{7}{6} \times \dfrac{1}{2} + \dfrac{5}{6} = \dfrac{7}{12} + \dfrac{10}{12} = \dfrac{17}{12}$
$C = \dfrac{\frac{2}{4} + \frac{1}{4}}{\frac{2}{6} + \frac{1}{6}} = \dfrac{\frac{3}{4}}{\frac{3}{6}} = \dfrac{\frac{3}{4}}{\frac{1}{2}} = \dfrac{3}{4} \times 2 = \dfrac{3}{2}$ $D = \left(\dfrac{4}{4} - \dfrac{2}{4} - \dfrac{1}{4}\right) \times 4 = \dfrac{1}{4} \times 4 = 1.$

Exercice 5. Effectuer les opérations suivantes.

$$A = 5 \times 2^3 - 2^3 \times 7 \qquad B = (5 \times 2)^3 - 2^2 \times 7$$
$$C = 5 \times (2^3 - 2)^2 \times 7 \qquad D = 5 \times (2^3 - 2^2)^2 \times 7$$

Solution.
$A = 2^3 \times (5-7) = 8 \times (-2) = -16$ $\quad B = 10^3 - 4 \times 7 = 1000 - 28 = 972$
$C = 5 \times (8-2)^2 \times 7 = 5 \times 6^2 \times 7 = 5 \times 36 \times 7 = 180 \times 7 = 1260$
$D = 5 \times (8-4)^2 \times 7 = 5 \times 4^2 \times 7 = 5 \times 16 \times 7 = 80 \times 7 = 560$

Exercice 6. Dans chacun des cas suivants, calculer et simplifier au maximum $A(n+1)$.

1. $A(n) = n + 3n^2$ $\quad$ **2.** $A(n) = 3 - 2n$ $\quad$ **3.** $A(n) = \dfrac{5}{n+1}$ $\quad$ **4.** $A(n) = \dfrac{n+2}{3-n}$

Solution.
1. $A(n+1) = (n+1)+3(n+1)^2 = n+1+3(n^2+2n+1) = n+1+3n^2+6n+3 = 3n^2+7n+4$
2. $A(n+1) = 3 - 2(n+1) = 3 - 2n - 2 = -2n + 1$
3. $A(n+1) = \dfrac{5}{(n+1)+1} = \dfrac{5}{n+2}$
4. $A(n+1) = \dfrac{(n+1)+2}{3-(n+1)} = \dfrac{n+3}{2-n}$.