

Corrigé de l'exercice 1

Développer et réduire chacune des expressions littérales suivantes :

$$A = 5x \times 3$$

$$A = 5 \times x \times 3$$

$$A = 5 \times 3 \times x$$

$$A = 15x$$

$$B = 4 \times 8x$$

$$B = 4 \times 8 \times x$$

$$B = 32x$$

$$C = 6 \times (9x - 4) - 8$$

$$C = 6 \times 9x + 6 \times (-4) - 8$$

$$C = 6 \times 9 \times x - 24 - 8$$

$$C = 54x - 32$$

$$D = 5 \times (3x - 6) + x$$

$$D = 5 \times 3x + 5 \times (-6) + x$$

$$D = 5 \times 3 \times x - 30 + x$$

$$D = 15x + x - 30$$

$$D = (15 + 1)x - 30$$

$$D = 16x - 30$$

$$E = 4x - 6 + (-3x - 1) \times 6$$

$$E = 4x - 6 - 3x \times 6 - 1 \times 6$$

$$E = 4x - 6 - 3 \times x \times 6 - 6$$

$$E = 4x - 6 - 3 \times 6 \times x - 6$$

$$E = 4x - 6 - 18x - 6$$

$$E = 4x - 18x - 6 - 6$$

$$E = (4 - 18)x - 12$$

$$E = -14x - 12$$

Corrigé de l'exercice 2

Développer et réduire chacune des expressions littérales suivantes :

$$A = 8x \times x$$

$$A = 8 \times x \times x$$

$$A = 8x^2$$

$$B = 3x \times 6x$$

$$B = 3 \times x \times 6 \times x$$

$$B = 3 \times 6 \times x \times x$$

$$B = 18x^2$$

$$C = 2 + (10x - 8) \times (3x - 10)$$

$$C = 2 + 10x \times 3x + 10x \times (-10) - 8 \times 3x - 8 \times (-10)$$

$$C = 2 + 10 \times x \times 3 \times x + 10 \times x \times (-10) - 8 \times 3 \times x + 80$$

$$C = 2 + 10 \times 3 \times x \times x + 10 \times (-10) \times x - 24x + 80$$

$$C = 2 + 30x^2 - 100x - 24x + 80$$

$$C = 30x^2 - 100x - 24x + 2 + 80$$

$$C = 30x^2 + (-100 - 24)x + 82$$

$$C = 30x^2 - 124x + 82$$

$$D = 2x^2 + (-10x + 4) \times (-10x + 9)$$

$$D = 2x^2 - 10x \times (-10x) - 10x \times 9 + 4 \times (-10x) + 4 \times 9$$

$$D = 2x^2 - 10 \times x \times (-10) \times x - 10 \times x \times 9 + 4 \times (-10) \times x + 36$$

$$D = 2x^2 - 10 \times (-10) \times x \times x - 10 \times 9 \times x - 40x + 36$$

$$D = 2x^2 - (-100x^2) - 90x - 40x + 36$$

$$D = 102x^2 - 90x - 40x + 36$$

$$D = 102x^2 + (-90 - 40)x + 36$$

$$D = 102x^2 - 130x + 36$$

$$E = (5x + 8) \times (5x + 7) + 5x - 5$$

$$E = 5x \times 5x + 5x \times 7 + 8 \times 5x + 8 \times 7 + 5x - 5$$

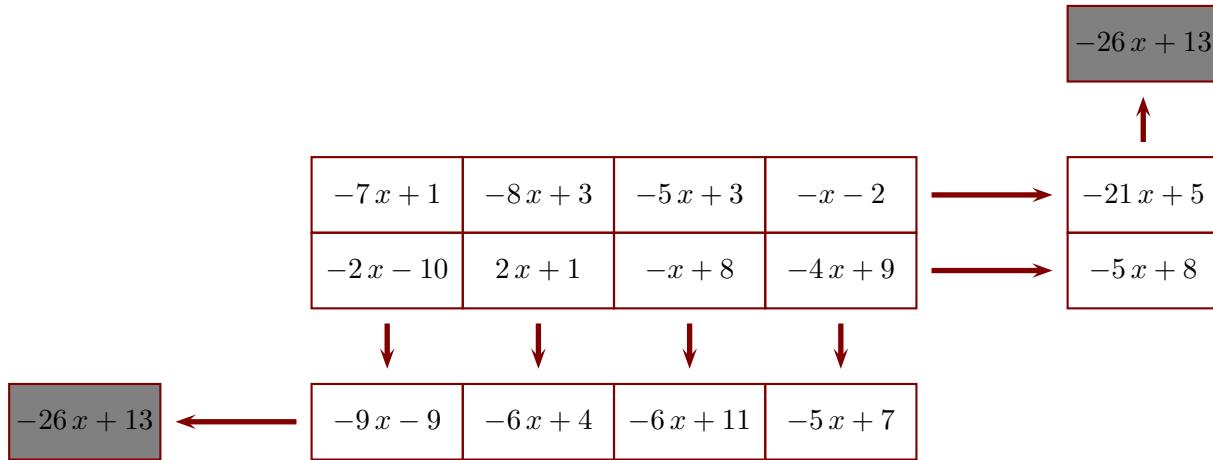
$$E = 5 \times x \times 5 \times x + 5 \times x \times 7 + 8 \times 5 \times x + 56 + 5x - 5$$

$$\begin{aligned}
 E &= 5 \times 5 \times x \times x + 5 \times 7 \times x + 40x + 5x + 56 - 5 \\
 E &= 25x^2 + 35x + (40 + 5)x + 51 \\
 E &= 25x^2 + (35 + 40 + 5)x + 51
 \end{aligned}$$

$$E = 25x^2 + 80x + 51$$

Corrigé de l'exercice 3

Le principe est le suivant : l'extrémité de chaque flèche indique la somme de la ligne ou de la colonne correspondante. Compléter, sachant que x représente un nombre quelconque et que le contenu des deux cases grises doit être le même.



Ligne du bas :

$$\begin{aligned}
 A &= -7x + 1 - 2x - 10 \\
 A &= -7x - 2x + 1 - 10 \\
 A &= (-7 - 2)x - 9
 \end{aligned}$$

$$A = -9x - 9$$

$$\begin{aligned}
 B &= -8x + 3 + 2x + 1 \\
 B &= -8x + 2x + 3 + 1 \\
 B &= (-8 + 2)x + 4
 \end{aligned}$$

$$B = -6x + 4$$

$$\begin{aligned}
 C &= -5x + 3 - x + 8 \\
 C &= -5x - x + 3 + 8 \\
 C &= (-5 - 1)x + 11
 \end{aligned}$$

$$C = -6x + 11$$

$$\begin{aligned}
 D &= -x - 2 - 4x + 9 \\
 D &= -x - 4x - 2 + 9 \\
 D &= (-1 - 4)x + 7
 \end{aligned}$$

$$D = -5x + 7$$

Colonne de droite :

$$\begin{aligned}
 E &= -2x - 10 + 2x + 1 - x + 8 - 4x + 9 \\
 E &= -2x + 2x - x - 4x - 10 + 1 + 8 + 9 \\
 E &= (-2 + 2 - 1 - 4)x + 8
 \end{aligned}$$

$$E = -5x + 8$$

$$\begin{aligned}
 F &= -7x + 1 - 8x + 3 - 5x + 3 - x - 2 \\
 F &= -7x - 8x - 5x - x + 1 + 3 + 3 - 2 \\
 F &= (-7 - 8 - 5 - 1)x + 5
 \end{aligned}$$

$$F = -21x + 5$$

Cases grises :

$$\begin{aligned}
 G &= -9x - 9 - 6x + 4 - 6x + 11 - 5x + 7 \\
 G &= -9x - 6x - 6x - 5x - 9 + 4 + 11 + 7 \\
 G &= (-9 - 6 - 6 - 5)x + 13
 \end{aligned}$$

$$G = -26x + 13$$

$$\begin{aligned}
 H &= -5x + 8 - 21x + 5 \\
 H &= -5x - 21x + 8 + 5 \\
 H &= (-5 - 21)x + 13
 \end{aligned}$$

$$H = -26x + 13$$

Corrigé de l'exercice 4

Réduire, si possible, les expressions suivantes :

►1. $A = 3x^2 - 5x^2$

$$A = (3 - 5) x^2$$

$$A = -2x^2$$

►2. $B = -t^2 - (-6t^2)$

$$B = (-1 + 6) t^2$$

$$B = 5t^2$$

►3. $C = -10y^2 \times (-7)$

$$C = -10 \times y^2 \times (-7)$$

$$C = -10 \times (-7) \times y^2$$

$$C = 70y^2$$

►4. $D = -4a - (-2a)$

$$D = (-4 + 2) a$$

$$D = -2a$$

►5. $E = -6x^2 - 3x^2$

$$E = (-6 - 3) x^2$$

$$E = -9x^2$$

►6. $F = 10t^2 - (-9t^2)$

$$F = (10 + 9) t^2$$

$$F = 19t^2$$

►7. $G = -4x \times 4$

$$G = -4 \times x \times 4$$

$$G = -4 \times 4 \times x$$

$$G = -16x$$

►8. $H = 2y \times (-1)$

$$H = 2 \times y \times (-1)$$

$$H = 2 \times (-1) \times y$$

$$H = -2y$$

►9. $I = -10t + 3t$

$$I = (-10 + 3) t$$

$$I = -7t$$

Corrigé de l'exercice 5

Réduire chacune des expressions littérales suivantes :

$$A = 7x + (2x + 9) + 7$$

$$A = 7x + 2x + 9 + 7$$

$$A = (7 + 2)x + 16$$

$$A = 9x + 16$$

$$B = 3x + 10 - (-7x - 6)$$

$$B = 3x + 10 + 7x + 6$$

$$B = 3x + 7x + 10 + 6$$

$$B = (3 + 7)x + 16$$

$$B = 10x + 16$$

$$C = (-6x + 4) + 2 - 9x$$

$$C = -6x + 4 - 9x + 2$$

$$C = -6x - 9x + 4 + 2$$

$$C = (-6 - 9)x + 6$$

$$C = -15x + 6$$

$$D = 2 + 9x - (-10x + 1)$$

$$D = 9x + 2 - (-10x + 1)$$

$$D = 9x + 2 + 10x - 1$$

$$D = 9x + 10x + 2 - 1$$

$$D = (9 + 10)x + 1$$

$$D = 19x + 1$$

$$E = 5x - 7 - (-x + 8)$$

$$E = 5x - 7 + x - 8$$

$$E = 5x + x - 7 - 8$$

$$E = (5 + 1)x - 15$$

$$E = 6x - 15$$

$$F = 9x - 3 - (4x - 4)$$

$$F = 9x - 3 - 4x + 4$$

$$F = 9x - 4x - 3 + 4$$

$$F = (9 - 4)x + 1$$

$$F = 5x + 1$$

Corrigé de l'exercice 6

Calculer les expressions suivantes et donner le résultat sous la forme d'une fraction irréductible.

$$A = \frac{\frac{3}{4} - 1}{\frac{3}{4} - 10}$$

$$A = \frac{\frac{3}{4} - \frac{1 \times 4}{1 \times 4}}{\frac{3}{4} - \frac{10 \times 4}{1 \times 4}}$$

$$A = \frac{\frac{3}{4} - \frac{4}{4}}{\frac{3}{4} - \frac{40}{4}}$$

$$A = \frac{-1}{4} \div \frac{-37}{4}$$

$$A = \frac{-1}{4} \times \frac{-4}{37}$$

$$A = \frac{-1}{-1 \times \cancel{4}} \times \frac{1 \times \cancel{-4}}{37}$$

$$\boxed{A = \frac{1}{37}}$$

$$B = \frac{-8}{3} - \frac{4}{3} \div \frac{-5}{3}$$

$$B = \frac{-8}{3} - \frac{4}{3} \times \frac{-3}{5}$$

$$B = \frac{-8}{3} - \frac{4}{-1 \times \cancel{-3}} \times \frac{1 \times \cancel{-3}}{5}$$

$$B = \frac{-8}{3} - \frac{-4}{5}$$

$$B = \frac{-8 \times 5}{3 \times 5} - \frac{-4 \times 3}{5 \times 3}$$

$$B = \frac{-40}{15} - \frac{-12}{15}$$

$$\boxed{B = \frac{-28}{15}}$$

$$C = \frac{-10}{3} \div \left(\frac{-3}{2} - \frac{13}{5} \right)$$

$$C = \frac{-10}{3} \div \left(\frac{-3 \times 5}{2 \times 5} - \frac{13 \times 2}{5 \times 2} \right)$$

$$C = \frac{-10}{3} \div \left(\frac{-15}{10} - \frac{26}{10} \right)$$

$$C = \frac{-10}{3} \div \frac{-41}{10}$$

$$C = \frac{-10}{3} \times \frac{-10}{41}$$

$$C = \frac{-10}{-3 \times \cancel{-1}} \times \frac{10 \times \cancel{-1}}{41}$$

$$\boxed{C = \frac{100}{123}}$$