

Corrigé de l'exercice 1

Développer et réduire chacune des expressions littérales suivantes :

$$A = 4 \times 9x$$

$$A = 4 \times 9 \times x$$

$$A = 36x$$

$$B = 5 \times 6x$$

$$B = 5 \times 6 \times x$$

$$B = 30x$$

$$C = -2x + (-9x - 4) \times 8$$

$$C = -2x - 9x \times 8 - 4 \times 8$$

$$C = -2x - 9 \times x \times 8 - 32$$

$$C = -2x - 9 \times 8 \times x - 32$$

$$C = -2x - 72x - 32$$

$$C = (-2 - 72)x - 32$$

$$C = -74x - 32$$

$$D = -7x - 4 + 8 \times (6x - 5)$$

$$D = -7x - 4 + 8 \times 6x + 8 \times (-5)$$

$$D = -7x - 4 + 8 \times 6 \times x - 40$$

$$D = -7x - 4 + 48x - 40$$

$$D = -7x + 48x - 4 - 40$$

$$D = (-7 + 48)x - 44$$

$$D = 41x - 44$$

$$E = 3 + (8x + 9) \times 5$$

$$E = 3 + 8x \times 5 + 9 \times 5$$

$$E = 3 + 8 \times x \times 5 + 45$$

$$E = 3 + 8 \times 5 \times x + 45$$

$$E = 3 + 40x + 45$$

$$E = 40x + 3 + 45$$

$$E = 40x + 48$$

Corrigé de l'exercice 2

Développer et réduire chacune des expressions littérales suivantes :

$$A = x \times 9x$$

$$A = x \times 9 \times x$$

$$A = 9 \times x \times x$$

$$A = 9x^2$$

$$B = 3x \times 8x$$

$$B = 3 \times x \times 8 \times x$$

$$B = 3 \times 8 \times x \times x$$

$$B = 24x^2$$

$$C = (4x - 4) \times (-8x - 3) - 6x - 9$$

$$C = 4x \times (-8x) + 4x \times (-3) - 4 \times (-8x) - 4 \times (-3) - 6x - 9$$

$$C = 4 \times x \times (-8) \times x + 4 \times x \times (-3) - 4 \times (-8) \times x + 12 - 6x - 9$$

$$C = 4 \times (-8) \times x \times x + 4 \times (-3) \times x + 32x - 6x + 12 - 9$$

$$C = -32x^2 - 12x + (32 - 6)x + 3$$

$$C = -32x^2 + (-12 + 32 - 6)x + 3$$

$$C = -32x^2 + 14x + 3$$

$$D = (-3x - 9) \times (-10x + 4) - 9x^2$$

$$D = -3x \times (-10x) - 3x \times 4 - 9 \times (-10x) - 9 \times 4 - 9x^2$$

$$D = -3 \times x \times (-10) \times x - 3 \times x \times 4 - 9 \times (-10) \times x - 36 - 9x^2$$

$$D = -3 \times (-10) \times x \times x - 3 \times 4 \times x + 90x - 9x^2 - 36$$

$$D = 30x^2 - 12x - 9x^2 + 90x - 36$$

$$D = 30x^2 - 9x^2 - 12x + 90x - 36$$

$$D = (30 - 9)x^2 + (-12 + 90)x - 36$$

$$D = 21x^2 + 78x - 36$$

$$E = 8 + (2x - 7) \times (-8x - 9)$$

$$E = 8 + 2x \times (-8x) + 2x \times (-9) - 7 \times (-8x) - 7 \times (-9)$$

$$E = 8 + 2 \times x \times (-8) \times x + 2 \times x \times (-9) - 7 \times (-8) \times x + 63$$

$$E = 8 + 2 \times (-8) \times x \times x + 2 \times (-9) \times x + 56x + 63$$

$$E = 8 - 16x^2 - 18x + 56x + 63$$

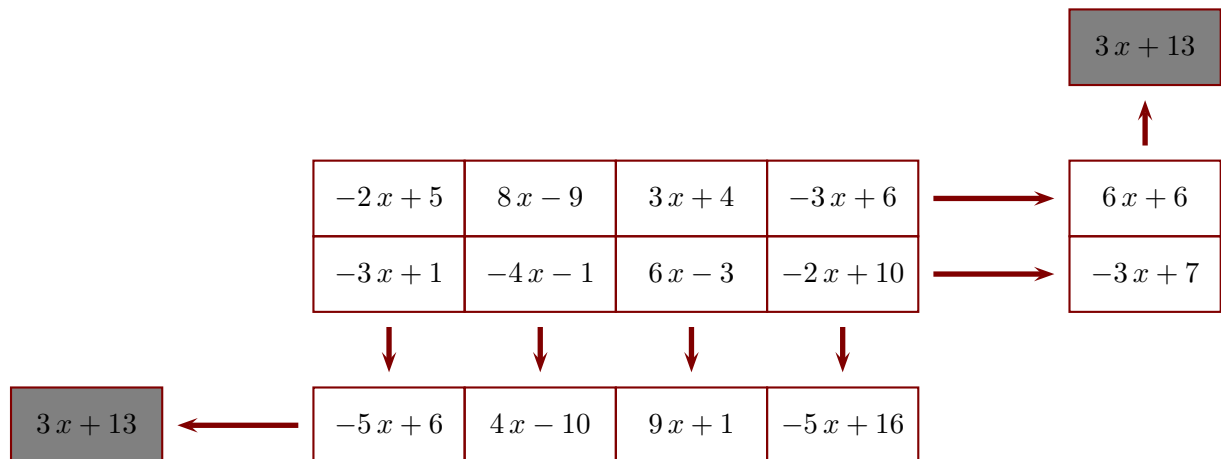
$$E = -16x^2 - 18x + 56x + 8 + 63$$

$$E = -16x^2 + (-18 + 56)x + 71$$

$$E = -16x^2 + 38x + 71$$

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 :

$$\begin{aligned} A &= -2x + 5 - 3x + 1 \\ A &= -2x - 3x + 5 + 1 \\ A &= (-2 - 3)x + 6 \\ A &= -5x + 6 \end{aligned}$$

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

$$\begin{aligned} C &= 3x + 4 + 6x - 3 \\ C &= 3x + 6x + 4 - 3 \\ C &= (3 + 6)x + 1 \\ C &= 9x + 1 \end{aligned}$$

$$\begin{aligned} D &= -3x + 6 - 2x + 10 \\ D &= -3x - 2x + 6 + 10 \\ D &= (-3 - 2)x + 16 \\ D &= -5x + 16 \end{aligned}$$

Colonne de droite :

$$\begin{aligned} E &= -3x + 1 - 4x - 1 + 6x - 3 - 2x + 10 \\ E &= -3x - 4x + 6x - 2x + 1 - 1 - 3 + 10 \\ E &= (-3 - 4 + 6 - 2)x + 7 \\ E &= -3x + 7 \end{aligned}$$

$$\begin{aligned} F &= -2x + 5 + 8x - 9 + 3x + 4 - 3x + 6 \\ F &= -2x + 8x + 3x - 3x + 5 - 9 + 4 + 6 \\ F &= (-2 + 8 + 3 - 3)x + 6 \\ F &= 6x + 6 \end{aligned}$$

Cases grises :

$$\begin{aligned} G &= -5x + 6 + 4x - 10 + 9x + 1 - 5x + 16 \\ G &= -5x + 4x + 9x - 5x + 6 - 10 + 1 + 16 \\ G &= (-5 + 4 + 9 - 5)x + 13 \\ G &= 3x + 13 \end{aligned}$$

$$\begin{aligned} H &= -3x + 7 + 6x + 6 \\ H &= -3x + 6x + 7 + 6 \\ H &= (-3 + 6)x + 13 \\ H &= 3x + 13 \end{aligned}$$

Corrigé de l'exercice 4

Réduire, si possible, les expressions suivantes :

►1. $A = 9t - 8t$

$$A = (9 - 8) t$$

$$A = t$$

►2. $B = -4t^2 \times (-1)$

$$B = -4 \times t^2 \times (-1)$$

$$B = -4 \times (-1) \times t^2$$

$$B = 4t^2$$

►3. $C = -4t \times (-t)$

$$C = -4 \times t \times (-1) \times t$$

$$C = -4 \times (-1) \times t \times t$$

$$C = 4t^2$$

►4. $D = -6x \times 3$

$$D = -6 \times x \times 3$$

$$D = -6 \times 3 \times x$$

$$D = -18x$$

►5. $E = -6 \times 10t^2$

$$E = -6 \times 10 \times t^2$$

$$E = -60t^2$$

►6. $F = -8y - (-4y)$

$$F = (-8 + 4) y$$

$$F = -4y$$

►7. $G = -5x \times 3x$

$$G = -5 \times x \times 3 \times x$$

$$G = -5 \times 3 \times x \times x$$

$$G = -15x^2$$

►8. $H = 4t - (-2t)$

$$H = (4 + 2) t$$

$$H = 6t$$

►9. $I = 1 \times (-a)$

$$I = 1 \times (-1) \times a$$

$$I = -a$$

Corrigé de l'exercice 5

Réduire chacune des expressions littérales suivantes :

$$A = 7x - 3 - (-8x + 6)$$

$$A = 7x - 3 + 8x - 6$$

$$A = 7x + 8x - 3 - 6$$

$$A = (7 + 8) x - 9$$

$$A = 15x - 9$$

$$B = -9x + (4x - 1) + 8$$

$$B = -9x + 4x - 1 + 8$$

$$B = (-9 + 4) x + 7$$

$$B = -5x + 7$$

$$C = -(-5x + 9) + 3x - 3$$

$$C = 5x - 9 + 3x - 3$$

$$C = 5x + 3x - 9 - 3$$

$$C = (5 + 3) x - 12$$

$$C = 8x - 12$$

$$D = (-8x + 1) + 4 - 2x$$

$$D = -8x + 1 - 2x + 4$$

$$D = -8x - 2x + 1 + 4$$

$$D = (-8 - 2) x + 5$$

$$D = -10x + 5$$

$$E = 2 - 9x - (-x + 8)$$

$$E = -9x + 2 - (-x + 8)$$

$$E = -9x + 2 + x - 8$$

$$E = -9x + x + 2 - 8$$

$$E = (-9 + 1) x - 6$$

$$E = -8x - 6$$

$$F = -8x - 2 - (2x - 10)$$

$$F = -8x - 2 - 2x + 10$$

$$F = -8x - 2x - 2 + 10$$

$$F = (-8 - 2) x + 8$$

$$F = -10x + 8$$

Corrigé de l'exercice 6

Développer chacune des expressions littérales suivantes :

$$A = (8x + 10)^2$$

$$A = (8x)^2 + 2 \times 8x \times 10 + 10^2$$

$$A = 64x^2 + 160x + 100$$

$$B = (9x + 7) \times (7x - 9)$$

$$B = 9x \times 7x + 9x \times (-9) + 7 \times 7x + 7 \times (-9)$$

$$B = 63x^2 - 81x + 49x - 63$$

$$B = 63x^2 + (-81 + 49) x - 63$$

$$B = 63x^2 - 32x - 63$$

$$C = (x - 10) \times (x + 10)$$

$$C = x^2 - 10^2$$

$$C = x^2 - 100$$

$$D = (x - 5)^2$$

$$D = x^2 - 2 \times x \times 5 + 5^2$$

$$D = x^2 - 10x + 25$$

$$E = \left(2x - \frac{5}{9}\right) \times \left(\frac{5}{9}x + 2\right)$$

$$E = 2x \times \frac{5}{9}x + 2x \times 2 + -\frac{5}{9} \times \frac{5}{9}x + -\frac{5}{9} \times 2$$

$$E = \frac{10}{9}x^2 + 4x + -\frac{25}{81}x + -\frac{10}{9}$$

$$E = \frac{10}{9}x^2 + \left(4 - \frac{25}{81}\right)x - \frac{10}{9}$$

$$E = \frac{10}{9}x^2 + \left(\frac{4 \times 81}{1 \times 81} - \frac{25}{81}\right)x - \frac{10}{9}$$

$$E = \frac{10}{9}x^2 + \left(\frac{324}{81} - \frac{25}{81}\right)x - \frac{10}{9}$$

$$E = \frac{10}{9}x^2 + \frac{299}{81}x - \frac{10}{9}$$

$$F = -(6x - 4)^2$$

$$F = -\left((6x)^2 - 2 \times 6x \times 4 + 4^2\right)$$

$$F = -(36x^2 - 48x + 16)$$

$$F = -36x^2 + 48x - 16$$

Corrigé de l'exercice 7

Factoriser chacune des expressions littérales suivantes :

$$A = -9x^2 + 49$$

$$A = \sqrt{49^2} - (\sqrt{9}x)^2$$

$$A = (\sqrt{49} + \sqrt{9}x) \times (\sqrt{49} - \sqrt{9}x)$$

$$A = (\sqrt{9}x + \sqrt{49}) \times (7 - 3x)$$

$$A = (\sqrt{9}x + \sqrt{49}) \times (-3x + 7)$$

$$A = (3x + 7) \times (-3x + 7)$$

$$B = 100 - (-3x + 2)^2$$

$$B = 10^2 - (-3x + 2)^2$$

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

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

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

$$B = (-3x + 12) \times (3x + 8)$$

$$C = (x + 8) \times (8x + 1) + (-8x + 3) \times (x + 8)$$

$$C = (x + 8) \times (8x + 1 - 8x + 3)$$

$$C = (x + 8) \times (8x - 8x + 1 + 3)$$

$$C = (x + 8) \times 4$$

$$D = 49x^2 + 70x + 25$$

$$D = (7x)^2 + 2 \times 7x \times 5 + 5^2$$

$$D = (7x + 5)^2$$

$$E = (-4x + 1)^2 - (-4x + 1) \times (-6x + 2)$$

$$E = (-4x + 1) \times (-4x + 1) - (-4x + 1) \times (-6x + 2)$$

$$E = (-4x + 1) \times (-4x + 1 - (-6x + 2))$$

$$E = (-4x + 1) \times (-4x + 1 + 6x - 2)$$

$$E = (-4x + 1) \times (-4x + 6x + 1 - 2)$$

$$E = (-4x + 1) \times (2x - 1)$$

$$F = (4x + 10) \times (10x - 6) + 10x - 6$$

$$F = (4x + 10) \times (10x - 6) + (10x - 6) \times 1$$

$$F = (10x - 6) \times (4x + 10 + 1)$$

$$F = (10x - 6) \times (4x + 11)$$