

Groupe des Instituts Excel

Corrections

Corrigé de l'exercice 1

Développer chacune des expressions littérales suivantes :

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

$$A = 4x^2 + 40x + 100$$

$$B = (x - 5)^2$$
$$B = x^2 - 2 \times x \times 5 + 5^2$$

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

$$C = (7x - 2) \times (2x + 7)$$
$$C = 7x \times 2x + 7x \times 7 - 2 \times 2x - 2 \times 7$$
$$C = 14x^2 + 49x - 4x - 14$$
$$C = 14x^2 + (49 - 4)x - 14$$

$$C = 14x^2 + 45x - 14$$

$$D = (2x + 6) \times (2x - 6)$$

$$D = (2x)^2 - 6^2$$

$$D = 4x^2 - 36$$

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

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

$$E = -(81x^2 - 64)$$

$$E = -81x^2 + 64$$

$$F = \left(\frac{10}{7}x - \frac{8}{9}\right)^2$$

$$F = \left(\frac{10}{7}x\right)^2 - 2 \times \frac{10}{7}x \times \frac{8}{9} + \left(\frac{8}{9}\right)^2$$

$$F = \frac{100}{49}x^2 - \frac{160}{63}x + \frac{64}{81}$$

Corrigé de l'exercice 2

Développer chacune des expressions littérales suivantes :

$$A = (10x - 3) \times (3x + 10)$$
$$A = 10x \times 3x + 10x \times 10 - 3 \times 3x - 3 \times 10$$

$$A = 30x^2 + 100x - 9x - 30$$

$$A = 30x^2 + (100 - 9)x - 30$$

$$A = 30x^2 + 91x - 30$$

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

$$B = (7x)^2 - 7^2$$

$$B = 49x^2 - 49$$

$$C = (x - 5)^2$$
$$C = x^2 - 2 \times x \times 5 + 5^2$$

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

$$D = (9x + 3)^2$$

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

$$D = 81x^2 + 54x + 9$$

$$E = -(10x - 3)^2$$

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

$$E = -(100x^2 - 60x + 9)$$

$$E = -100x^2 + 60x - 9$$

$$F = \left(\frac{7}{9}x + \frac{1}{5}\right)^2$$

$$F = \left(\frac{7}{9}x\right)^2 + 2 \times \frac{7}{9}x \times \frac{1}{5} + \left(\frac{1}{5}\right)^2$$

$$F = \frac{49}{81}x^2 + \frac{14}{45}x + \frac{1}{25}$$

Corrigé de l'exercice 3

Développer chacune des expressions littérales suivantes :

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

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

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

$$B = (2x + 5)^2$$

$$B = (2x)^2 + 2 \times 2x \times 5 + 5^2$$

$$B = 4x^2 + 20x + 25$$

$$C = (3x + 5) \times (5x - 3)$$

$$C = 3x \times 5x + 3x \times (-3) + 5 \times 5x + 5 \times (-3)$$

$$C = 15x^2 - 9x + 25x - 15$$

$$C = 15x^2 + (-9 + 25)x - 15$$

$$C = 15x^2 + 16x - 15$$

$$D = (2x - 5) \times (2x + 5)$$

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

$$D = 4x^2 - 25$$

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

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

$$E = -(2x^2 - x + 4x - 2)$$

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

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

$$E = -2x^2 - 3x + 2$$

$$F = \left(x - \frac{1}{3}\right)^2$$

$$F = x^2 - 2 \times x \times \frac{1}{3} + \left(\frac{1}{3}\right)^2$$

$$F = x^2 - \left(2 \times x \times \frac{1}{3}\right) + \frac{1}{9}$$

$$F = x^2 - \frac{2}{3}x + \frac{1}{9}$$

Corrigé de l'exercice 4

Développer chacune des expressions littérales suivantes :

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

$$A = (7x)^2 - 9^2$$

$$A = 49x^2 - 81$$

$$B = (4x - 5)^2$$

$$B = (4x)^2 - 2 \times 4x \times 5 + 5^2$$

$$B = 16x^2 - 40x + 25$$

$$C = (2x + 3)^2$$

$$C = (2x)^2 + 2 \times 2x \times 3 + 3^2$$

$$C = 4x^2 + 12x + 9$$

$$D = (3x - 2) \times (2x + 3)$$

$$D = 3x \times 2x + 3x \times 3 - 2 \times 2x - 2 \times 3$$

$$D = 6x^2 + 9x - 4x - 6$$

$$D = 6x^2 + (9 - 4)x - 6$$

$$D = 6x^2 + 5x - 6$$

$$E = -(9x + 6)^2$$

$$E = -((9x)^2 + 2 \times 9x \times 6 + 6^2)$$

$$E = -(81x^2 + 108x + 36)$$

$$E = -81x^2 - 108x - 36$$

$$F = \left(\frac{2}{9}x + \frac{1}{9}\right) \times \left(\frac{1}{9}x - \frac{2}{9}\right)$$

$$F = \frac{2}{9}x \times \frac{1}{9}x + \frac{2}{9}x \times \left(-\frac{2}{9}\right) + \frac{1}{9} \times \frac{1}{9}x + \frac{1}{9} \times \left(-\frac{2}{9}\right)$$

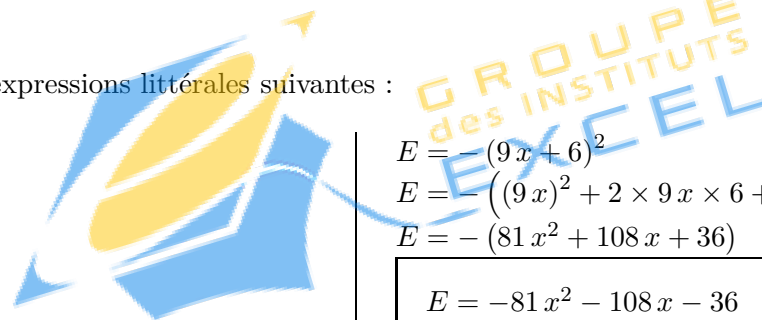
$$F = \frac{2}{81}x^2 - \frac{4}{81}x + \frac{1}{81}x - \frac{2}{81}$$

$$F = \frac{2}{81}x^2 + \left(\frac{-4}{81} + \frac{1}{81}\right)x - \frac{2}{81}$$

$$F = \frac{2}{81}x^2 - \frac{3}{81}x - \frac{2}{81}$$

$$F = \frac{2}{81}x^2 - \frac{1 \times 3}{27 \times 3}x - \frac{2}{81}$$

$$F = \frac{2}{81}x^2 - \frac{1}{27}x - \frac{2}{81}$$



Corrigé de l'exercice 5

Développer chacune des expressions littérales suivantes :

$$\begin{aligned}A &= (10x - 4) \times (4x + 10) \\A &= 10x \times 4x + 10x \times 10 - 4 \times 4x - 4 \times 10 \\A &= 40x^2 + 100x - 16x - 40 \\A &= 40x^2 + (100 - 16)x - 40\end{aligned}$$

$$A = 40x^2 + 84x - 40$$

$$\begin{aligned}B &= (8x + 6)^2 \\B &= (8x)^2 + 2 \times 8x \times 6 + 6^2\end{aligned}$$

$$D = 81x^2 - 108x + 36$$

$$\begin{aligned}E &= -(6x - 10) \times (10x + 6) \\E &= -(6x \times 10x + 6x \times 6 - 10 \times 10x - 10 \times 6) \\E &= -(60x^2 + 36x - 100x - 60) \\E &= -(60x^2 + (36 - 100)x - 60) \\E &= -(60x^2 - 64x - 60)\end{aligned}$$

$$E = -60x^2 + 64x + 60$$

$$B = 64x^2 + 96x + 36$$

$$\begin{aligned}C &= (x + 8) \times (x - 8) \\C &= x^2 - 8^2\end{aligned}$$

$$C = x^2 - 64$$

$$\begin{aligned}D &= (9x - 6)^2 \\D &= (9x)^2 - 2 \times 9x \times 6 + 6^2\end{aligned}$$

$$\begin{aligned}F &= \left(\frac{5}{9}x - \frac{2}{5}\right)^2 \\F &= \left(\frac{5}{9}x\right)^2 - 2 \times \frac{5}{9}x \times \frac{2}{5} + \left(\frac{2}{5}\right)^2 \\F &= \frac{25}{81}x^2 - \frac{4 \times \cancel{5}}{9 \times \cancel{5}}x + \frac{4}{25}\end{aligned}$$

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

Corrigé de l'exercice 6

Développer chacune des expressions littérales suivantes :

$$\begin{aligned}A &= (8x + 3)^2 \\A &= (8x)^2 + 2 \times 8x \times 3 + 3^2\end{aligned}$$

$$A = 64x^2 + 48x + 9$$

$$\begin{aligned}B &= (7x - 3)^2 \\B &= (7x)^2 - 2 \times 7x \times 3 + 3^2\end{aligned}$$

$$B = 49x^2 - 42x + 9$$

$$\begin{aligned}C &= (7x + 7) \times (7x - 7) \\C &= (7x)^2 - 7^2\end{aligned}$$

$$C = 49x^2 - 49$$

$$\begin{aligned}D &= (4x - 4) \times (4x + 4) \\D &= (4x)^2 - 4^2\end{aligned}$$

$$D = 16x^2 - 16$$

$$\begin{aligned}E &= -(7x + 4)^2 \\E &= -\left((7x)^2 + 2 \times 7x \times 4 + 4^2\right) \\E &= -(49x^2 + 56x + 16)\end{aligned}$$

$$E = -49x^2 - 56x - 16$$

$$F = \left(8x + \frac{4}{5}\right) \times \left(8x - \frac{4}{5}\right)$$

$$F = (8x)^2 - \left(\frac{4}{5}\right)^2$$

$$F = 64x^2 - \frac{16}{25}$$