

Exercice 1

Développer et réduire chacune des expressions littérales suivantes :

$$\left. \begin{array}{l} A = x \times 4x \\ B = 4x \times 4x \\ C = (7x - 9) \times (-3x + 4) + 8x^2 \end{array} \right| \begin{array}{l} D = (9x - 2) \times (10x - 1) + 4 \\ E = (-x + 9) \times (9x + 6) + 9x - 4 \end{array}$$

Exercice 2

Développer et réduire chacune des expressions littérales suivantes :

$$\left. \begin{array}{l} A = 3x \times x \\ B = 3x \times 4x \\ C = (9x + 2) \times (-9x - 8) - 2x + 5 \end{array} \right| \begin{array}{l} D = (-5x - 9) \times (5x + 4) + 4 \\ E = (3x + 5) \times (-5x + 10) - 2x^2 \end{array}$$

Exercice 3

Développer chacune des expressions littérales suivantes :

$$\left. \begin{array}{l} A = (3x + 3)^2 \\ B = (10x - 2)^2 \\ C = (4x + 10) \times (10x - 4) \end{array} \right| \begin{array}{l} D = (6x - 10) \times (6x + 10) \\ E = \left(\frac{3}{10}x + \frac{10}{7}\right) \times \left(\frac{10}{7}x - \frac{3}{10}\right) \\ F = -(10x - 4)^2 \end{array}$$

Exercice 4

Développer chacune des expressions littérales suivantes :

$$\left. \begin{array}{l} A = (10x + 3)^2 \\ B = (8x - 5) \times (8x + 5) \\ C = (3x - 2) \times (2x + 3) \end{array} \right| \begin{array}{l} D = (8x - 9)^2 \\ E = \left(\frac{2}{3}x + \frac{2}{5}\right)^2 \\ F = -(6x + 1) \times (6x - 1) \end{array}$$

Exercice 5

Factoriser chacune des expressions littérales suivantes :

$$\left. \begin{array}{l} A = -(10x + 10) \times (-9x + 4) + (10x + 10) \times (5x + 6) \\ B = -25x^2 + 36 \\ C = 16x^2 + 40x + 25 \end{array} \right| \begin{array}{l} D = -1 + (10x - 4)^2 \\ E = (5x + 5)^2 + (5x + 5) \times (6x + 1) \\ F = x + 7 + (3x + 6) \times (x + 7) \end{array}$$

Exercice 6

Factoriser chacune des expressions littérales suivantes :

$$\left. \begin{array}{l} A = -64x^2 + 100 \\ B = (8x + 7) \times (4x + 7) + (x - 3) \times (4x + 7) \\ C = 64x^2 + 144x + 81 \end{array} \right| \begin{array}{l} D = -(8x + 5)^2 + 4x^2 \\ E = -(2x - 3) \times (2x + 6) + 2x + 6 \\ F = (3x + 10)^2 + (4x + 5) \times (3x + 10) \end{array}$$

Corrigé de l'exercice 1

Développer et réduire chacune des expressions littérales suivantes :

$$A = x \times 4x$$

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

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

$$A = 4x^2$$

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

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

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

$$B = 16x^2$$

$$C = (7x - 9) \times (-3x + 4) + 8x^2$$

$$C = 7x \times (-3x) + 7x \times 4 - 9 \times (-3x) - 9 \times 4 + 8x^2$$

$$C = 7 \times x \times (-3) \times x + 7 \times x \times 4 - 9 \times (-3) \times x - 36 + 8x^2$$

$$C = 7 \times (-3) \times x \times x + 7 \times 4 \times x + 27x + 8x^2 - 36$$

$$C = -21x^2 + 28x + 8x^2 + 27x - 36$$

$$C = -21x^2 + 8x^2 + 28x + 27x - 36$$

$$C = (-21 + 8)x^2 + (28 + 27)x - 36$$

$$C = -13x^2 + 55x - 36$$

$$D = (9x - 2) \times (10x - 1) + 4$$

$$D = 9x \times 10x + 9x \times (-1) - 2 \times 10x - 2 \times (-1) + 4$$

$$D = 9 \times x \times 10 \times x + 9 \times x \times (-1) - 2 \times 10 \times x + 2 + 4$$

$$D = 9 \times 10 \times x \times x + 9 \times (-1) \times x - 20x + 6$$

$$D = 90x^2 - 9x - 20x + 6$$

$$D = 90x^2 + (-9 - 20)x + 6$$

$$D = 90x^2 - 29x + 6$$

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

$$E = -x \times 9x - x \times 6 + 9 \times 9x + 9 \times 6 + 9x - 4$$

$$E = -1 \times x \times 9 \times x - 1 \times x \times 6 + 9 \times 9 \times x + 54 + 9x - 4$$

$$E = -1 \times 9 \times x \times x - 1 \times 6 \times x + 81x + 9x + 54 - 4$$

$$E = -9x^2 - 6x + (81 + 9)x + 50$$

$$E = -9x^2 + (-6 + 81 + 9)x + 50$$

$$E = -9x^2 + 84x + 50$$

Corrigé de l'exercice 2

Développer et réduire chacune des expressions littérales suivantes :

$$A = 3x \times x$$

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

$$A = 3x^2$$

$$B = 3 \times x \times 4 \times x$$

$$B = 3 \times 4 \times x \times x$$

$$B = 12x^2$$

$$B = 3x \times 4x$$

$$C = (9x + 2) \times (-9x - 8) - 2x + 5$$

$$C = 9x \times (-9x) + 9x \times (-8) + 2 \times (-9x) + 2 \times (-8) - 2x + 5$$

$$C = 9 \times x \times (-9) \times x + 9 \times x \times (-8) + 2 \times (-9) \times x - 16 - 2x + 5$$

$$C = 9 \times (-9) \times x \times x + 9 \times (-8) \times x - 18x - 2x - 16 + 5$$

$$C = -81x^2 - 72x + (-18 - 2)x - 11$$

$$C = -81x^2 + (-72 + (-18) - 2)x - 11$$

$$C = -81x^2 - 92x - 11$$

$$D = (-5x - 9) \times (5x + 4) + 4$$

$$D = -5x \times 5x - 5x \times 4 - 9 \times 5x - 9 \times 4 + 4$$

$$D = -5 \times x \times 5 \times x - 5 \times x \times 4 - 9 \times 5 \times x - 36 + 4$$

$$D = -5 \times 5 \times x \times x - 5 \times 4 \times x - 45x - 32$$

$$D = -25x^2 - 20x - 45x - 32$$

$$D = -25x^2 + (-20 - 45)x - 32$$

$$D = -25x^2 - 65x - 32$$

$$E = (3x + 5) \times (-5x + 10) - 2x^2$$

$$E = 3x \times (-5x) + 3x \times 10 + 5 \times (-5x) + 5 \times 10 - 2x^2$$

$$E = 3 \times x \times (-5) \times x + 3 \times x \times 10 + 5 \times (-5) \times x + 50 - 2x^2$$

$$E = 3 \times (-5) \times x \times x + 3 \times 10 \times x - 25x - 2x^2 + 50$$

$$E = -15x^2 + 30x - 2x^2 - 25x + 50$$

$$E = -15x^2 - 2x^2 + 30x - 25x + 50$$

$$E = (-15 - 2)x^2 + (30 - 25)x + 50$$

$$E = -17x^2 + 5x + 50$$

Corrigé de l'exercice 3

Développer chacune des expressions littérales suivantes :

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

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

$$A = 9x^2 + 18x + 9$$

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

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

$$B = 100x^2 - 40x + 4$$

$$C = (4x + 10) \times (10x - 4)$$

$$C = 4x \times 10x + 4x \times (-4) + 10 \times 10x + 10 \times (-4)$$

$$C = 40x^2 - 16x + 100x - 40$$

$$C = 40x^2 + (-16 + 100)x - 40$$

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

$$D = (6x - 10) \times (6x + 10)$$

$$D = (6x)^2 - 10^2$$

$$D = 36x^2 - 100$$

$$E = \left(\frac{3}{10}x + \frac{10}{7}\right) \times \left(\frac{10}{7}x - \frac{3}{10}\right)$$

$$E = \frac{3}{10}x \times \frac{10}{7}x + \frac{3}{10}x \times \left(-\frac{3}{10}\right) + \frac{10}{7} \times \frac{10}{7}x + \frac{10}{7} \times \left(-\frac{3}{10}\right)$$

$$E = \frac{3 \times 10}{7 \times 10}x^2 - \frac{9}{100}x + \frac{100}{49}x - \frac{3 \times 10}{7 \times 10}$$

$$E = \frac{3 \times 10}{7 \times 10}x^2 + \left(\frac{-9}{100} + \frac{100}{49}\right)x - \frac{3 \times 10}{7 \times 10}$$

$$E = \frac{3}{7}x^2 + \left(\frac{-9 \times 49}{100 \times 49} + \frac{100 \times 100}{49 \times 100}\right)x - \frac{3}{7}$$

$$E = \frac{3}{7}x^2 + \left(\frac{-441}{4900} + \frac{10000}{4900}\right)x - \frac{3}{7}$$

$$E = \frac{3}{7}x^2 + \frac{9559}{4900}x - \frac{3}{7}$$

$$F = -(10x - 4)^2$$

$$F = -\left((10x)^2 - 2 \times 10x \times 4 + 4^2\right)$$

$$F = -(100x^2 - 80x + 16)$$

$$F = -100x^2 + 80x - 16$$

Corrigé de l'exercice 4

Développer chacune des expressions littérales suivantes :

$$A = (10x + 3)^2$$

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

$$A = 100x^2 + 60x + 9$$

$$B = (8x - 5) \times (8x + 5)$$

$$B = (8x)^2 - 5^2$$

$$B = 64x^2 - 25$$

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

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

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

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

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

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

$$D = (8x)^2 - 2 \times 8x \times 9 + 9^2$$

$$D = 64x^2 - 144x + 81$$

$$E = \left(\frac{2}{3}x + \frac{2}{5}\right)^2$$

$$E = \left(\frac{2}{3}x\right)^2 + 2 \times \frac{2}{3}x \times \frac{2}{5} + \left(\frac{2}{5}\right)^2$$

$$E = \frac{4}{9}x^2 + \frac{8}{15}x + \frac{4}{25}$$

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

$$F = -((6x)^2 - 1^2)$$

$$F = -(36x^2 - 1)$$

$$F = -36x^2 + 1$$

Corrigé de l'exercice 5

Factoriser chacune des expressions littérales suivantes :

$$A = -(10x + 10) \times (-9x + 4) + (10x + 10) \times (5x + 6)$$

$$A = (10x + 10) \times (-(-9x + 4) + 5x + 6)$$

$$A = (10x + 10) \times (9x - 4 + 5x + 6)$$

$$A = (10x + 10) \times (9x + 5x - 4 + 6)$$

$$A = (10x + 10) \times (14x + 2)$$

$$B = -25x^2 + 36$$

$$B = (\sqrt{36})^2 - (\sqrt{25}x)^2$$

$$B = (\sqrt{36}\sqrt{25}x) \times (\sqrt{36} - (\sqrt{25}x))$$

$$B = (\sqrt{25}x + \sqrt{36}) \times (6 - 5x)$$

$$B = (\sqrt{25}x + \sqrt{36}) \times (-5x + 6)$$

$$B = (5x + 6) \times (-5x + 6)$$

$$C = 16x^2 + 40x + 25$$

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

$$C = (4x + 5)^2$$

$$D = -1 + (10x - 4)^2$$

$$D = -1^2 + (10x - 4)^2$$

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

$$D = (10x - 3) \times (10x - 5)$$

$$E = (5x + 5)^2 + (5x + 5) \times (6x + 1)$$

$$E = (5x + 5) \times (5x + 5) + (5x + 5) \times (6x + 1)$$

$$E = (5x + 5) \times (5x + 5 + 6x + 1)$$

$$E = (5x + 5) \times (5x + 6x + 5 + 1)$$

$$E = (5x + 5) \times (11x + 6)$$

$$F = x + 7 + (3x + 6) \times (x + 7)$$

$$F = (x + 7) \times 1 + (3x + 6) \times (x + 7)$$

$$F = (x + 7) \times (1 + 3x + 6)$$

$$F = (x + 7) \times (3x + 1 + 6)$$

$$F = (x + 7) \times (3x + 7)$$

Corrigé de l'exercice 6

Factoriser chacune des expressions littérales suivantes :

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

$$A = (\sqrt{100})^2 - (\sqrt{64}x)^2$$

$$A = (\sqrt{100}\sqrt{64}x) \times (\sqrt{100} - (\sqrt{64}x))$$

$$A = (\sqrt{64}x + \sqrt{100}) \times (10 - 8x)$$

$$A = (\sqrt{64}x + \sqrt{100}) \times (-8x + 10)$$

$$A = (8x + 10) \times (-8x + 10)$$

$$B = (8x + 7) \times (4x + 7) + (x - 3) \times (4x + 7)$$

$$B = (4x + 7) \times (8x + 7 + x - 3)$$

$$B = (4x + 7) \times (8x + x + 7 - 3)$$

$$B = (4x + 7) \times (9x + 4)$$

$$C = 64x^2 + 144x + 81$$

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

$$C = (8x + 9)^2$$

$$D = -(8x + 5)^2 + 4x^2$$

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

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

$$D = (10x + 5) \times (2x - 8x - 5)$$

$$D = (10x + 5) \times (-6x - 5)$$

$$E = -(2x - 3) \times (2x + 6) + 2x + 6$$

$$E = -(2x - 3) \times (2x + 6) + (2x + 6) \times 1$$

$$E = (2x + 6) \times (-(2x - 3) + 1)$$

$$E = (2x + 6) \times (-2x + 3 + 1)$$

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

$$F = (3x + 10)^2 + (4x + 5) \times (3x + 10)$$

$$F = (3x + 10) \times (3x + 10) + (4x + 5) \times (3x + 10)$$

$$F = (3x + 10) \times (3x + 10 + 4x + 5)$$

$$F = (3x + 10) \times (3x + 4x + 10 + 5)$$

$$F = (3x + 10) \times (7x + 15)$$