

# Groupe des Instituts Excel

## Corrections

### Corrigé de l'exercice 1

Développer chacune des expressions littérales suivantes :

$$A = (3x + 4)^2$$
$$A = (3x)^2 + 2 \times 3x \times 4 + 4^2$$

$$A = 9x^2 + 24x + 16$$

$$B = (10x + 7) \times (10x - 7)$$

$$B = (10x)^2 - 7^2$$

$$B = 100x^2 - 49$$

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

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

$$C = 20x^2 - 4x + 100x - 20$$

$$C = 20x^2 + (-4 + 100)x - 20$$

$$C = 20x^2 + 96x - 20$$

$$D = (x - 3)^2$$

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

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

$$E = \left(\frac{7}{6}x + \frac{10}{9}\right)^2$$

$$E = \left(\frac{7}{6}x\right)^2 + 2 \times \frac{7}{6}x \times \frac{10}{9} + \left(\frac{10}{9}\right)^2$$

$$E = \frac{49}{36}x^2 + \frac{70 \times 2}{27 \times 2}x + \frac{100}{81}$$

$$E = \frac{49}{36}x^2 + \frac{70}{27}x + \frac{100}{81}$$

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

$$F = -((6x)^2 - 7^2)$$

$$F = -(36x^2 - 49)$$

$$F = -36x^2 + 49$$

### Corrigé de l'exercice 2

Développer chacune des expressions littérales suivantes :

$$A = (9x + 4)^2$$
$$A = (9x)^2 + 2 \times 9x \times 4 + 4^2$$

$$A = 81x^2 + 72x + 16$$

$$B = (6x - 9)^2$$

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

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

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

$$C = 2x \times x + 2x \times 2 - 1 \times x - 1 \times 2$$

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

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

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

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

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

$$D = 4x^2 - 81$$

$$E = \left(\frac{3}{8}x - \frac{2}{3}\right) \times \left(\frac{2}{3}x + \frac{3}{8}\right)$$

$$E = \frac{3}{8}x \times \frac{2}{3}x + \frac{3}{8}x \times \frac{3}{8} - \frac{2}{3} \times \frac{2}{3}x - \frac{2}{3} \times \frac{3}{8}$$

$$E = \frac{1 \times 6}{4 \times 6}x^2 + \frac{9}{64}x - \frac{4}{9}x - \frac{1 \times 6}{4 \times 6}$$

$$E = \frac{1 \times 6}{4 \times 6}x^2 + \left(\frac{9}{64} - \frac{4}{9}\right)x - \frac{1 \times 6}{4 \times 6}$$

$$E = \frac{1}{4}x^2 + \left(\frac{9 \times 9}{64 \times 9} - \frac{4 \times 64}{9 \times 64}\right)x - \frac{1}{4}$$

$$E = \frac{1}{4}x^2 + \left(\frac{81}{576} - \frac{256}{576}\right)x - \frac{1}{4}$$

$$E = \frac{1}{4}x^2 - \frac{175}{576}x - \frac{1}{4}$$

$$F = -(10x + 1)^2$$

$$F = -((10x)^2 + 2 \times 10x \times 1 + 1^2)$$

$$F = -(100x^2 + 20x + 1)$$

$$F = -100x^2 - 20x - 1$$

### Corrigé de l'exercice 3

Développer chacune des expressions littérales suivantes :

$$A = (x - 3) \times (3x + 1)$$

$$A = x \times 3x + x \times 1 - 3 \times 3x - 3 \times 1$$

$$A = 3x^2 + x - 9x - 3$$

$$A = 3x^2 + (1 - 9)x - 3$$

$$A = 3x^2 - 8x - 3$$

$$B = (9x - 6)^2$$

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

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

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

$$C = (9x)^2 - 3^2$$

$$C = 81x^2 - 9$$

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

$$D = (6x)^2 + 2 \times 6x \times 10 + 10^2$$

$$D = 36x^2 + 120x + 100$$

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

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

$$E = -(100x^2 + 100x + 25)$$

$$E = -100x^2 - 100x - 25$$

$$F = \left(\frac{1}{7}x - \frac{9}{10}\right)^2$$

$$F = \left(\frac{1}{7}x\right)^2 - 2 \times \frac{1}{7}x \times \frac{9}{10} + \left(\frac{9}{10}\right)^2$$

$$F = \frac{1}{49}x^2 - \frac{9 \times 2}{35 \times 2}x + \frac{81}{100}$$

$$F = \frac{1}{49}x^2 - \frac{9}{35}x + \frac{81}{100}$$

### Corrigé de l'exercice 4

Développer chacune des expressions littérales suivantes :

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

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

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

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

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

$$B = 36x^2 - 36x + 9$$

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

$$C = x^2 - 8^2$$

$$C = x^2 - 64$$

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

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

$$D = 18x^2 + 36x - 9x - 18$$

$$D = 18x^2 + (36 - 9)x - 18$$

$$D = 18x^2 + 27x - 18$$

$$E = -(5x + 7)^2$$

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

$$E = -(25x^2 + 70x + 49)$$

$$E = -25x^2 - 70x - 49$$

$$F = \left(\frac{4}{3}x - \frac{1}{8}\right) \times \left(\frac{4}{3}x + \frac{1}{8}\right)$$

$$F = \left(\frac{4}{3}x\right)^2 - \left(\frac{1}{8}\right)^2$$

$$F = \frac{16}{9}x^2 - \frac{1}{64}$$

## Corrigé de l'exercice 5

Développer chacune des expressions littérales suivantes :

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

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

$$A = 36x^2 - 12x + 1$$

$$B = (6x + 10)^2$$

$$B = (6x)^2 + 2 \times 6x \times 10 + 10^2$$

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

$$D = 49x^2 - 49$$

$$E = \left(7x + \frac{5}{4}\right) \times \left(7x - \frac{5}{4}\right)$$

$$E = (7x)^2 - \left(\frac{5}{4}\right)^2$$

$$E = 49x^2 - \frac{25}{16}$$

$$B = 36x^2 + 120x + 100$$

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

$$C = (9x)^2 - 2^2$$

$$C = 81x^2 - 4$$

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

$$F = -(3x - 8) \times (8x + 3)$$

$$F = -(3x \times 8x + 3x \times 3 - 8 \times 8x - 8 \times 3)$$

$$F = -(24x^2 + 9x - 64x - 24)$$

$$F = -(24x^2 + (9 - 64)x - 24)$$

$$F = -(24x^2 - 55x - 24)$$

$$F = -24x^2 + 55x + 24$$

## Corrigé de l'exercice 6

Développer chacune des expressions littérales suivantes :

$$A = (2x - 8) \times (8x + 2)$$

$$A = 2x \times 8x + 2x \times 2 - 8 \times 8x - 8 \times 2$$

$$A = 16x^2 + 4x - 64x - 16$$

$$A = 16x^2 + (4 - 64)x - 16$$

$$A = 16x^2 - 60x - 16$$

$$B = (x + 9)^2$$

$$B = x^2 + 2 \times x \times 9 + 9^2$$

$$B = x^2 + 18x + 81$$

$$C = (7x - 8) \times (7x + 8)$$

$$C = (7x)^2 - 8^2$$

$$C = 49x^2 - 64$$

$$D = (3x - 7)^2$$

$$D = (3x)^2 - 2 \times 3x \times 7 + 7^2$$

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

$$E = -(9x - 10) \times (9x + 10)$$

$$E = -((9x)^2 - 10^2)$$

$$E = -(81x^2 - 100)$$

$$E = -81x^2 + 100$$

$$F = \left(\frac{4}{5}x + \frac{1}{3}\right) \times \left(\frac{1}{3}x - \frac{4}{5}\right)$$

$$F = \frac{4}{5}x \times \frac{1}{3}x + \frac{4}{5}x \times \left(-\frac{4}{5}\right) + \frac{1}{3} \times \frac{1}{3}x + \frac{1}{3} \times \left(-\frac{4}{5}\right)$$

$$F = \frac{4}{15}x^2 - \frac{16}{25}x + \frac{1}{9}x - \frac{4}{15}$$

$$F = \frac{4}{15}x^2 + \left(\frac{-16}{25} + \frac{1}{9}\right)x - \frac{4}{15}$$

$$F = \frac{4}{15}x^2 + \left(\frac{-16 \times 9}{25 \times 9} + \frac{1 \times 25}{9 \times 25}\right)x - \frac{4}{15}$$

$$F = \frac{4}{15}x^2 + \left(\frac{-144}{225} + \frac{25}{225}\right)x - \frac{4}{15}$$

$$F = \frac{4}{15}x^2 - \frac{119}{225}x - \frac{4}{15}$$

