

# Groupe des Instituts Excel

## Corrections

### Corrigé de l'exercice 1

Factoriser chacune des expressions littérales suivantes :

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

$$A = (6x)^2 + 2 \times 6x \times 8 + 8^2$$

$$A = (6x + 8)^2$$

$$B = (-5x - 7)^2 - 49x^2$$

$$B = (-5x - 7)^2 - (7x)^2$$

$$B = (-5x - 7 + 7x) \times (-5x - 7 - 7x)$$

$$B = (-5x + 7x - 7) \times (-5x - 7x - 7)$$

$$B = (2x - 7) \times (-12x - 7)$$

$$C = -(-7x + 1) \times (x + 4) + (-9x + 9) \times (-7x + 1)$$

$$C = (-7x + 1) \times (-(x + 4) - 9x + 9)$$

$$C = (-7x + 1) \times (-x - 4 - 9x + 9)$$

$$C = (-7x + 1) \times (-x - 9x - 4 + 9)$$

$$C = (-7x + 1) \times (-10x + 5)$$

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

$$D = (\sqrt{36x})^2 - (\sqrt{4})^2$$

$$D = (\sqrt{36x}\sqrt{4}) \times (\sqrt{36x} - (\sqrt{4}))$$

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

$$E = (-7x - 8)^2 + (-7x - 8) \times (-9x + 10)$$

$$E = (-7x - 8) \times (-7x - 8) + (-7x - 8) \times (-9x + 10)$$

$$E = (-7x - 8) \times (-7x - 8 - 9x + 10)$$

$$E = (-7x - 8) \times (-7x - 9x - 8 + 10)$$

$$E = (-7x - 8) \times (-16x + 2)$$

$$F = (10x + 7) \times (9x + 2) + 10x + 7$$

$$F = (10x + 7) \times (9x + 2) + (10x + 7) \times 1$$

$$F = (10x + 7) \times (9x + 2 + 1)$$

$$F = (10x + 7) \times (9x + 3)$$

### Corrigé de l'exercice 2

Factoriser chacune des expressions littérales suivantes :

$$A = -(4x + 1)^2 + 16$$

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

$$A = (4 + 4x + 1) \times (4 - (4x + 1))$$

$$A = (4x + 4 + 1) \times (4 - 4x - 1)$$

$$A = (4x + 4 + 1) \times (-4x + 4 - 1)$$

$$A = (4x + 5) \times (-4x + 3)$$

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

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

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

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

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

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

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

$$C = (-3x + 9) \times (x - 16)$$

$$D = -49x^2 + 81$$

$$D = (\sqrt{81})^2 - (\sqrt{49x})^2$$

$$D = (\sqrt{81}\sqrt{49x}) \times (\sqrt{81} - (\sqrt{49x}))$$

$$D = (\sqrt{49x} + \sqrt{81}) \times (9 - 7x)$$

$$D = (\sqrt{49x} + \sqrt{81}) \times (-7x + 9)$$

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

$$E = (8x - 1) \times (8x - 6) + 8x - 1$$

$$E = (8x - 1) \times (8x - 6) + (8x - 1) \times 1$$

$$E = (8x - 1) \times (8x - 6 + 1)$$

$$E = (8x - 1) \times (8x - 5)$$

$$F = (-5x - 4)^2 + (-5x - 4) \times (2x + 1)$$

$$F = (-5x - 4) \times (-5x - 4) + (-5x - 4) \times (2x + 1)$$

$$F = (-5x - 4) \times (-5x - 4 + 2x + 1)$$

$$F = (-5x - 4) \times (-5x + 2x - 4 + 1)$$

$$F = (-5x - 4) \times (-3x - 3)$$

### Corrigé de l'exercice 3

Factoriser chacune des expressions littérales suivantes :

$$A = 49x^2 + 84x + 36$$

$$A = (7x)^2 + 2 \times 7x \times 6 + 6^2$$

$$A = (7x + 6)^2$$

$$B = 49x^2 - 16$$

$$B = (\sqrt{49}x)^2 - (\sqrt{16})^2$$

$$B = (\sqrt{49}x\sqrt{16}) \times (\sqrt{49}x - (\sqrt{16}))$$

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

$$C = (6x + 1) \times (-5x + 5) + (x + 10) \times (6x + 1)$$

$$C = (6x + 1) \times (-5x + 5 + x + 10)$$

$$C = (6x + 1) \times (-5x + x + 5 + 10)$$

$$C = (6x + 1) \times (-4x + 15)$$

$$D = (3x - 3)^2 - 4x^2$$

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

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

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

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

$$E = 3x + 2 + (3x + 2) \times (5x - 1)$$

$$E = (3x + 2) \times 1 + (3x + 2) \times (5x - 1)$$

$$E = (3x + 2) \times (1 + 5x - 1)$$

$$E = (3x + 2) \times (5x + 1 - 1)$$

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

$$F = (-4x + 4) \times (x - 7) - (-4x + 4)^2$$

$$F = (-4x + 4) \times (x - 7) - (-4x + 4) \times (-4x + 4)$$

$$F = (-4x + 4) \times (x - 7 - (-4x + 4))$$

$$F = (-4x + 4) \times (x - 7 + 4x - 4)$$

$$F = (-4x + 4) \times (x + 4x - 7 - 4)$$

$$F = (-4x + 4) \times (5x - 11)$$

### Corrigé de l'exercice 4

Factoriser chacune des expressions littérales suivantes :

$$A = -36 + (-6x + 3)^2$$

$$A = -6^2 + (-6x + 3)^2$$

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

$$A = (-6x + 9) \times (-6x - 3)$$

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

$$B = (\sqrt{81})^2 - (\sqrt{36}x)^2$$

$$B = (\sqrt{81}\sqrt{36}x) \times (\sqrt{81} - (\sqrt{36}x))$$

$$B = (\sqrt{36}x + \sqrt{81}) \times (9 - 6x)$$

$$B = (\sqrt{36}x + \sqrt{81}) \times (-6x + 9)$$

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

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

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

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

$$D = (6x + 2) \times (4x + 3) + (6x + 2) \times (5x + 7)$$

$$D = (6x + 2) \times (4x + 3 + 5x + 7)$$

$$D = (6x + 2) \times (4x + 5x + 3 + 7)$$

$$D = (6x + 2) \times (9x + 10)$$

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

$$E = -(5x - 10) \times 1 + (5x - 10) \times (10x - 3)$$

$$E = (5x - 10) \times (-1 + 10x - 3)$$

$$E = (5x - 10) \times (10x - 1 - 3)$$

$$E = (5x - 10) \times (10x - 4)$$

$$F = (8x + 7) \times (10x + 4) + (10x + 4)^2$$

$$F = (8x + 7) \times (10x + 4) + (10x + 4) \times (10x + 4)$$

$$F = (10x + 4) \times (8x + 7 + 10x + 4)$$

$$F = (10x + 4) \times (8x + 10x + 7 + 4)$$

$$F = (10x + 4) \times (18x + 11)$$

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## Corrigé de l'exercice 5

Factoriser chacune des expressions littérales suivantes :

$$A = 100x^2 - 100x + 25$$

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

$$A = (10x - 5)^2$$

$$B = (9x + 8)^2 - 64x^2$$

$$B = (9x + 8)^2 - (8x)^2$$

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

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

$$B = (17x + 8) \times (x + 8)$$

$$C = (-6x + 6) \times (10x - 9) - (2x + 1) \times (-6x + 6)$$

$$C = (-6x + 6) \times (10x - 9 - (2x + 1))$$

$$C = (-6x + 6) \times (10x - 9 - 2x - 1)$$

$$C = (-6x + 6) \times (10x - 2x - 9 - 1)$$

$$C = (-6x + 6) \times (8x - 10)$$

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

$$D = (\sqrt{100})^2 - (\sqrt{1}x)^2$$

$$D = (\sqrt{100}\sqrt{1}x) \times (\sqrt{100} - (\sqrt{1}x))$$

$$D = (\sqrt{1}x + \sqrt{100}) \times (10 - x)$$

$$D = (\sqrt{1}x + \sqrt{100}) \times (-x + 10)$$

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

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

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

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

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

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

$$F = 8x + 1 + (7x + 5) \times (8x + 1)$$

$$F = (8x + 1) \times 1 + (7x + 5) \times (8x + 1)$$

$$F = (8x + 1) \times (1 + 7x + 5)$$

$$F = (8x + 1) \times (7x + 1 + 5)$$

$$F = (8x + 1) \times (7x + 6)$$

## Corrigé de l'exercice 6

Factoriser chacune des expressions littérales suivantes :

$$A = -(5x + 1) \times (6x + 8) + (6x + 8) \times (8x - 3)$$

$$A = (6x + 8) \times (-5x + 1) + 8x - 3$$

$$A = (6x + 8) \times (-5x - 1 + 8x - 3)$$

$$A = (6x + 8) \times (-5x + 8x - 1 - 3)$$

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

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

$$B = (8x)^2 + 2 \times 8x \times 3 + 3^2$$

$$B = (8x + 3)^2$$

$$C = (8x + 10)^2 - 64$$

$$C = (8x + 10)^2 - 8^2$$

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

$$C = (8x + 18) \times (8x + 2)$$

$$D = 4x^2 - 64$$

$$D = (\sqrt{4}x)^2 - (\sqrt{64})^2$$

$$D = (\sqrt{4}x\sqrt{64}) \times (\sqrt{4}x - (\sqrt{64}))$$

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

$$E = (4x + 4) \times (10x + 6) + 4x + 4$$

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

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

$$E = (4x + 4) \times (10x + 7)$$

$$F = (-6x + 6)^2 + (-7x + 8) \times (-6x + 6)$$

$$F = (-6x + 6) \times (-6x + 6) + (-7x + 8) \times (-6x + 6)$$

$$F = (-6x + 6) \times (-6x + 6 - 7x + 8)$$

$$F = (-6x + 6) \times (-6x - 7x + 6 + 8)$$

$$F = (-6x + 6) \times (-13x + 14)$$