$$\boxed{\text{Double distributivité}}$$

Niveau 3

Exercice 3 p18

a) D a pour côté 3 cm

C a pour côté 7 cm

Aire du rectagle $E = 1 \times (7+2) = 1 \times 9 = 9 \, cm^2$

b)

Côté du carré $C = a+b$

Côté du carré $D = b-a$

Longueur de $E : (a+b)+a = 2a+b$

Largeur de $E : (b-a) + b - (a+b) = b - 2a$

c) Aire de E

$$A_E = (2a+b)(b-2a)$$
$$= 2a \times b + 2a \times (-2a) + b \times b + b \times (-2a)$$
$$= 2ab - 4a^2 + b^2 - 2ab$$
$$= b^2 - 4a^2$$

d) Aire $= [(a+b)+b][a+b+b-2a]$
$$= (a+2b)(2b-a)$$
$$= a \times 2b + a \times (-a) + 2b \times 2b + 2b \times (-a)$$
$$= 2ab - a^2 + 4b^2 - 2ab$$
$$= 4b^2 - a^2$$

F1 Exercice 2

$A = (x+1)(2x+1)$

$\quad = 2x^2 + x + 2x + 1$

$\quad = 2x^2 + 3x + 1$

$B = (3x+1)(2x+2)$

$\quad = 6x^2 + 6x + 2x + 2$

$\quad = 6x^2 + 8x + 2$

$C = (2x+1)(5-2x)$

$\quad = 10x - 4x^2 + 5 - 2x$

$\quad = -4x^2 + 8x + 5$

$D = (3x-2)(1-x)$

$\quad = 3x - 3x^2 - 2 + 2x$

$\quad = -3x^2 + 5x - 2$

$E = -(x+1)(2x-3)$

$\quad = -(2x^2 - 3x + 2x - 3)$

$\quad = -(2x^2 - x - 3)$

$\quad = -2x^2 + x + 3$

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

$\quad = 2(2 - x - 2x + x^2)$

$\quad = 2(2 - 3x + x^2)$

$\quad = 4 - 6x + 2x^2$

F1 Exercice 3

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

$\quad = 3x - 3 + 2x^2 + x + 2x + 1$

$\quad = 2x^2 + 6x - 2$

$B = (x+2)(x+1) + (x+3)(2x-1)$

$\quad = x^2 + x + 2x + 2 + 2x^2 - x + 6x - 3$

$\quad = 3x^2 + 8x - 1$

$C = 5(x-1)(x+4) - 3(x+2)$

$\quad = 5(x^2 + 4x - x - 4) - 3x - 6$

$\quad = 5x^2 + 15x - 20 - 3x - 6$

$\quad = 5x^2 + 12x - 26$

$$D = -(2x-3) + x(x-1)$$
$$= -2x + 6 + x^2 - x$$
$$= x^2 - 3x + 6$$

$$E = (2-x)(1+x) - 3(5-2x)$$
$$= 2 + 2x - x - x^2 - 15 + 6x$$
$$= -x^2 + 7x - 13$$

$$F = 3x(x-1) - (x-2)(2x-4)$$
$$= 3x^2 - 3x - (2x^2 - 4x - 4x + 8)$$
$$= 3x^2 - 3x - (2x^2 - 8x + 8)$$
$$= 3x^2 - 3x - 2x^2 + 8x - 8$$
$$= x^2 + 5x - 8$$

Exercice 4 - F1

$$A = (3x-2)(2x+8) - (3-5x)(-2x+8)$$
$$= 6x^2 + 24x - 4x - 16 - (-6x + 24 - 10x^2 - 40x)$$
$$= 6x^2 + 20x - 16 - (-10x^2 - 46x + 24)$$
$$= 6x^2 + 20x - 16 + 10x^2 + 46x - 24)$$
$$= 16x^2 + 66x - 40$$

$$B = (x+1)(x+2) - 5(x+2)$$
$$= x^2 + 2x + x + 2 - 5x - 10$$
$$= x^2 - 2x - 8$$

$$C = (2x+1)(2x+1) + (2x+1)(x+3)$$
$$= 4x^2 + 2x + 2x + 1 + 2x^2 + 6x + x + 3$$
$$= 6x^2 + 11x + 4$$

$$D = -2x(3x+1) - (6x-1)(x-3)$$
$$= -6x^2 - 2x - (6x^2 - 18x - x + 3)$$
$$= -6x^2 - 2x - (6x^2 - 19x + 3)$$
$$= -6x^2 - 2x - 6x^2 + 19x - 3$$
$$= -12x^2 + 17x - 3$$

$$E = 3x + 5x(4-2x) - 2(2x - 3x + 5)$$
$$= 3x + 20x - 10x^2 - 4x + 6x - 10$$
$$= -10x^2 + 25x - 10$$

$$F = 8 + 2x - 2x(3x-4) + 5x(3-x)$$
$$= 8 + 2x - 6x^2 + 8x + 15x - 5x^2$$
$$= -11x^2 + 25x + 8$$

$$G = 4x^2 - (x+3)(x-2) + 2(x-2)$$
$$= 4x^2 - (x^2 - 2x + 3x - 6) + 2x - 4$$
$$= 4x^2 - (x^2 + x - 6) + 2x - 4$$
$$= 4x^2 - x^2 - x + 6 + 2x - 4$$
$$= 3x^2 + x + 2$$

Fl Exercice 6

$$A = (4x+3)^2$$
$$= (4x+3)(4x+3)$$
$$= 16x^2 + 12x + 12x + 9$$
$$= 16x^2 + 24x + 9$$

$$B = (4x-2)^2 - 2(x+2)$$
$$= (4x-2)(4x-2) - 2x - 4$$
$$= 16x^2 - 8x - 8x + 4 - 2x - 4$$
$$= 16x^2 - 18x$$

$$C = (3x-2)(3x+2)$$
$$= 9x^2 + 6x - 6x - 4$$
$$= 9x^2 - 4$$

$$D = (2x+1)(2x-1) + 4(2 + 3(x+1))$$
$$= 4x^2 - 2x + 2x - 1 + 4(2 + 3x + 3)$$
$$= 4x^2 - 1 + 4(3x+5)$$
$$= 4x^2 - 1 + 12x + 20$$
$$= 4x^2 + 12x + 19$$

F2   Développent 1

$$A = (4x+3)^2$$
$$= (4x+3)(4x+3)$$
$$= 16x^2 + 12x + 12x + 9$$
$$= 16x^2 + 24x + 9$$

$$B = (4x+8)(4x-8)$$
$$= 16x^2 - 32x + 34x - 64$$
$$= 16x^2 - 64$$

$$C = (6x-3)^2$$
$$= (6x-3)(6x-3)$$
$$= 36x^2 - 18x - 18x + 9$$
$$= 36x^2 - 36x + 9$$

F2   Développent 2

$$A = (-6x+2)(8x-3)$$
$$= -48x^2 + 18x + 16x - 6$$
$$= -48x^2 + 34x - 6$$

$$B = (6x+8)^2$$
$$= (6x+8)(6x+8)$$
$$= 36x^2 + 48x + 48x + 64$$
$$= 36x^2 + 96x + 64$$

$$C = (6x+9)(6x-9)$$
$$= 36x^2 - 54x + 54x - 81$$
$$= 36x^2 - 81$$

$B = (5x-2)(5x-8) - (3x-5)(x+7)$

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

$\qquad - \left[3x \times x + 3x \times 7 + (-5) \times x + (-5) \times 7 \right]$

$= 25x^2 - 40x - 10x + 16$

$\qquad - \left[3x^2 + 21x - 5x - 35 \right]$

$= 25x^2 - 40x - 10x + 16 - 3x^2 - 21x + 5x + 35$

$= \underline{22x^2 - 66x + 51}$

$C = (2x+3)(5x-8) - (2x-4)(5x-1)$

$= 2x \times 5x + 2x \times (-8) + 3 \times 5x + 3 \times (-8)$

$\qquad - \left[2x \times 5x + 2x \times (-1) + (-4) \times 5x + (-4) \times (-1) \right]$

$= 10x^2 - 16x + 15x - 24 - \left[10x^2 - 2x - 20x + 4 \right]$

$= 10x^2 - 16x + 15x - 24 - 10x^2 + 2x + 20x - 4$

$= \underline{21x - 28}$