

## Puissances

### Correction 9

- a.  $0,6512 \times 10^4 = 6,512 \times 10^5$  est faux car :  
 $0,6512 \times 10^4 \times 10^1 \times 10^{-1} = 0,6512 \times 10 \times 10^4 \times 10^{-1}$   
 $= 6,512 \times 10^3$
- b.  $0,0021 \times 10^{-2} = 2,1 \times 10^{-5}$  est vraie car :  
 $0,0021 \times 10^{-2} = 0,0021 \times 10^{-2} \times 10^3 \times 10^{-3}$   
 $= 0,0021 \times 10^3 \times 10^{-2} \times 10^{-3} = 2,1 \times 10^{-5}$
- c.  $5\,000 \times 10^2 = 5 \times 10^{-1}$  est faux car :  
 $5\,000 \times 10^2 = 5\,000 \times 10^2 \times 10^3 \times 10^{-3}$   
 $= 5\,000 \times 10^{-3} \times 10^2 \times 10^3 = 5 \times 10^5$
- d.  $32,1 \times 10^{-1} = 3,21 \times 10^0$  est vraie car :  
 $32,1 \times 10^{-1} = 32,1 \times 10^{-1} \times 10^1 \times 10^{-1}$   
 $= 32,1 \times 10^{-1} \times 10^{-1} \times 10^1 = 3,21 \times 10^0$
- e.  $561 \times 10^7 = 5,61 \times 10^9$  est vraie car :  
 $561 \times 10^7 = 561 \times 10^7 \times 10^{-2} \times 10^2$   
 $= 561 \times 10^{-2} \times 10^7 \times 10^2 = 5,61 \times 10^9$
- f.  $0,000\,000\,023 \times 10^{-1} = 2,3 \times 10^{-9}$  est vraie car :  
 $0,000\,000\,023 \times 10^{-1} = 0,000\,000\,023 \times 10^{-1} \times 10^8 \times 10^{-8}$   
 $= 0,000\,000\,023 \times 10^8 \times 10^{-1} \times 10^{-8} = 2,3 \times 10^{-9}$

### Correction 12

- a.  $31\,970\,000 = 3,197 \times 10^7$
- b.  $0,000\,002\,127 = 2,127 \times 10^{-6}$
- c.  $3\,512 \times 10^5 = (3\,512 \times 10^{-3}) \times (10^3 \times 10^5) = 3,512 \times 10^8$
- d.  $0,004\,5 \times 10^6 = (0,004\,5 \times 10^3) \times (10^{-3} \times 10^6) = 4,5 \times 10^3$
- e.  $251,37 \times 10^{-11} = (251,37 \times 10^{-2}) \times (10^2 \times 10^{-11})$   
 $= 2,5137 \times 10^{-9}$
- f.  $0,031 \times 10^{-7} = (0,031 \times 10^2) \times (10^{-2} \times 10^{-7}) = 3,1 \times 10^{-9}$

### Correction 10

- a.  $56,8 \times 10^2 = (56,8 \times 10^{-1}) \times (10^2 \times 10^1) = 5,68 \times 10^3$
- b.  $0,0023 \times 10^{-7} = (0,0023 \times 10^3) \times (10^{-7} \times 10^{-3})$   
 $= 2,3 \times 10^{-10}$
- c.  $123,45 \times 10^{-4} = (123,45 \times 10^{-2}) \times (10^{-4} \times 10^2)$   
 $= 1,2345 \times 10^{-2}$
- d.  $0,091 \times 10^2 = (0,091 \times 10^2) \times (10^2 \times 10^{-2}) = 9,1 \times 10^0$

### Correction 11

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- a.  $4\,540\,000 = (4\,540\,000 \times 10^{-6}) \times 10^6 = 4,54 \times 10^6$
- b.  $0,000\,054 = (0,000\,054 \times 10^5) \times 10^{-5} = 5,4 \times 10^{-5}$
- c.  $354,1 \times 10^{11} = (354,1 \times 10^{-2}) \times (10^{11} \times 10^2)$   
 $= 3,541 \times 10^{11+2} = 3,541 \times 10^{13}$
- d.  $79,8 \times 10^{-8} = (79,8 \times 10^{-1}) \times (10^{-8} \times 10^1)$   
 $= 7,98 \times 10^{-8+1} = 7,98 \times 10^{-7}$
- e.  $0,000\,079 \times 10^8 = (0,000\,079 \times 10^5) \times (10^8 \times 10^{-5})$   
 $= 7,9 \times 10^{8+(-5)} = 7,9 \times 10^3$
- f.  $0,005\,2 \times 10^{-4} = (0,005\,2 \times 10^3) \times (10^{-4} \times 10^{-3})$   
 $= 5,2 \times 10^{-4-3} = 5,2 \times 10^{-7}$

## Calcul littéral

### A. Simplifications simples

#### Correction 1

- a.  $-2x + 5 - 4x + 3 = -6x + 8$
- b.  $-5x + 4x + 3 = -x + 3$
- c.  $x^2 + x + 3x + 5x^2 + 1 = 6x^2 + 4x + 1$
- d.  $6x^2 - 3 + 5x - 7x^2 + 4 - 2x = -x^2 + 3x + 1$
- e.  $-2x \times 3x + 2x + 3x^2 - 4x = -6x^2 + 2x + 3x^2 - 4x$   
 $= -3x^2 - 2x$
- f.  $2 \times (3x^2) - (4x) \times x + x^2 = 6x^2 - 4x^2 + x^2 = 3x^2$

#### Correction 4

- a.  $5 \times x + (-3) \times 2x + x \times 2x = 5x - 6x + 2x^2$   
 $= 2x^2 - x$
- b.  $2x \times (-2x) + (-x^2) \times (-2) = -4x^2 + 2x^2 = -2x^2$
- c.  $(-3) \times x + (-2x) \times (+2x) + x^2 \times 3$   
 $= -3x - 4x^2 + 3x^2 = -x^2 - 3x$
- d.  $(-3x) \times (2 - x) + 3 \times (x^2 + 3)$   
 $= (-3x) \times 2 - (-3x) \times x + 3 \times x^2 + 3 \times 3$   
 $= -6x + 3x^2 + 3x^2 + 9 = 6x^2 - 6x + 9$

### D. Rappels : simple distributivité

#### Correction 6

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- a.  $2(x - 2) + 3(x + 2) = 2x - 4 + 3x + 6 = 5x + 2$
- b.  $4(1 - x) + (3x + 1) = 4 - 4x + 3x + 1 = -x + 5$
- c.  $3(2x - 5) - 2(x - 1) = 6x - 15 - 2x + 2 = 4x - 13$
- d.  $3(3x - 2) - (2 - x) = 9x - 6 - 2 + x = 10x - 8$
- e.  $-4(x - 2) + 3(2x + 1) = -4x + 8 + 6x + 3 = 2x + 11$
- f.  $3(2x - 2) - 3(2 - 3x) = 6x - 6 - 6 + 9x = 15x - 12$

### B. Distributivité : développement

#### Correction 3

- a.  $3 \times (2x + 4) = 3 \times 2x + 3 \times 4 = 6x + 12$
- b.  $x \times (2x - 1) = x \times 2x - x \times 1 = 2x^2 - x$
- c.  $(3 - 2x)x = 3 \times x - 2x \times x = 3x - 2x^2$
- d.  $x + (2x - 1) \times 2 = x + 2x \times 2 - 1 \times 2$   
 $= x + 4x - 2 = 5x - 2$

### C. Distributivité : factorisation

#### Correction 5

- a.  $3 \times x + 6 = 3 \times x + 3 \times 2 = 3(x + 2)$
- b.  $4x^2 - 3x = 4x \times x - 3 \times x = (4x - 3)x = x(4x - 3)$
- c.  $15x^2 + 5 = 5 \times 3x^2 + 5 \times 1 = 5 \times (3x^2 + 1) = 5(3x^2 + 1)$
- d.  $5x^2 + 4x = x \times 5x + x \times 4 = x(5x + 4)$
- e.  $6x^2 + 9x = 3x \times 2x + 3x \times 3 = 3x(2x + 3)$
- f.  $12x^2 - 4x = 4x \times 3x - 4x \times 1 = 4x(3x - 1)$

### E. Rappels : double distributivité

#### Correction 7

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- a.  $(x + 1)(2x + 1) = 2x^2 + x + 2x + 1 = 2x^2 + 3x + 1$
- b.  $(3x + 1)(2x + 2) = 6x^2 + 6x + 2x + 2$   
 $= 6x^2 + 8x + 2$
- c.  $(2x + 1)(5 - 2x) = 10x - 4x^2 + 5 - 2x$   
 $= -4x^2 + 8x + 5$
- d.  $(3x - 2)(1 - x) = 3x - 3x^2 - 2 + 2x = -3x^2 + 5x - 2$
- e.  $-(x + 1)(2x - 3) = -(2x^2 - 3x + 2x - 3)$   
 $= -(2x^2 - x - 3) = -2x^2 + x + 3$
- f.  $2(1 - x)(2 - x) = 2(2 - x - 2x + x^2)$   
 $= 2(x^2 - 3x + 2) = 2x^2 - 6x + 4$