

CORRECTION : RESOLUTION D'EQUATIONS

Exercice 1 :

a) $2 \times 5 - 3 = 7$ 7
 $7 = 7$

Donc 5 est solution de l'équation.

b) $5 \times 8 - 8 = 32$ $6 \times 8 - 17 = 31$
 $32 \neq 31$

Donc 8 n'est pas solution de l'équation.

c) $8 \times 3 = 24$ $9 \times 3 - 3 = 24$
 $24 = 24$

Donc 3 est solution de l'équation.

d) $2 \times 6^2 + 8 = 80$ $7 \times 6 = 42$
 $80 \neq 42$

Donc 6 n'est pas solution de l'équation.

e) $2 \times (-2) + 3 = -1$ $7 \times (-2) - 6 = -20$
 $-1 \neq -20$

Donc (-2) n'est pas solution de l'équation.

Exercice 2 :

Léa : $5 \times 3^2 - 10 \times 3 + 2 = 17$ $7 \times 3 - 4 = 17$ Myriam : $5 \times 0^2 - 10 \times 0 + 2 = 2$ $7 \times 0 - 4 = -4$
 $17 = 17$ $2 \neq -4$

Donc 3 est une solution de l'équation.

Donc 0 n'est pas une solution de l'équation.

L'égalité n'est donc pas vraie pour n'importe quelle valeur, puisqu'elle n'est pas vraie pour $x = 0$.
 C'est donc Myriam qui a raison.

Exercice 3 :

$5x = 2$	$9x = 4$	$3x = 5$	$-3x = -8$	$-17x = 4$	$9x = -3$
$x = \frac{2}{5}$	$x = \frac{4}{9}$	$x = \frac{5}{3}$	$x = \frac{-8}{-3} = \frac{8}{3}$	$x = \frac{4}{-17}$	$x = \frac{-3}{9} = \frac{-1}{3}$

Exercice 4 :

$5x + 7 = 2$	$9x = 4x + 1$	$5x - 2 = 3x$	$6 - 3x = 7$	$-4x = 2 - 3x$
$5x = -5$	$5x = 1$	$5x = 3x + 2$	$-3x = 1$	$-x = 2$
$x = -\frac{5}{5} = -1$	$x = \frac{1}{5}$	$2x = 2$	$x = \frac{1}{-3}$	$x = \frac{2}{-1} = -2$
		$x = \frac{2}{2} = 1$		

Exercice 5 :

$4x + 5 = 5x + 2$	$7x + 10 = 4x + 25$	$3x - 2 = 2x + 7$
$4x = 5x - 3$	$7x = 4x + 15$	$3x = 2x + 9$
$-x = -3$	$3x = 15$	$x = 9$
$x = \frac{-3}{-1} = 3$	$x = \frac{15}{3} = 5$	

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$$4x - 5 = 11x - 2$$

$$4x = 11x + 3$$

$$-7x = 3$$

$$x = \frac{3}{-7}$$

$$5x - 7 = 8x - 13$$

$$5x = 8x - 6$$

$$-3x = -6$$

$$x = \frac{-6}{-3} = 2$$

$$14 - 2x = 3x - 36$$

$$-2x = 3x - 50$$

$$-5x = -50$$

$$x = \frac{-50}{-5} = 10$$

Exercice 6 :

$$1) \quad 2x + 2l = 62 \qquad 2l = 62 - 2x \qquad l = \frac{62-2x}{2} = 31 - x$$

$$A = L \times l = x \times (31 - x) = 31x - x^2$$

$$2) \quad L = x + 2 \qquad \text{et} \qquad l = 31 - x - 1 = 30 - x$$

$$A = L \times l = (x + 2) \times (30 - x) = -x^2 + 28x + 60$$

$$3) \quad 31x - x^2 = -x^2 + 28x + 60$$

$$31x = 28x + 60$$

$$3x = 60$$

$$x = \frac{60}{3} = 20 \text{ m}$$

Exercice 7 :

$$x(x + 13) = 0$$

$$x = 0 \qquad \text{ou} \qquad x + 13 = 0$$

$$x = 0 \qquad \text{ou} \qquad x = -13$$

$$x(18 - x) = 0$$

$$x = 0 \qquad \text{ou} \qquad 18 - x = 0$$

$$x = 0 \qquad \text{ou} \qquad x = 18$$

$$(3x + 6)(x + 12) = 0$$

$$3x + 6 = 0 \qquad \text{ou} \qquad x + 12 = 0$$

$$3x = -6 \qquad \text{ou} \qquad x = -12$$

$$x = \frac{-6}{3} = -2 \qquad \text{ou} \qquad x = -12$$

$$(2x - 1)(x - 12) = 0$$

$$2x - 1 = 0 \qquad \text{ou} \qquad x - 12 = 0$$

$$2x = 1 \qquad \text{ou} \qquad x = 12$$

$$x = \frac{1}{2} \qquad \text{ou} \qquad x = 12$$

$$(4x - 8)(3x - 1) = 0$$

$$4x - 8 = 0 \qquad \text{ou} \qquad 3x - 1 = 0$$

$$4x = 8 \qquad \text{ou} \qquad 3x = 1$$

$$x = \frac{8}{4} = 2 \qquad \text{ou} \qquad x = \frac{1}{3}$$

$$(-5x + 10)(7x - 3) = 0$$

$$-5x + 10 = 0 \qquad \text{ou} \qquad 7x - 3 = 0$$

$$-5x = -10 \qquad \text{ou} \qquad 7x = 3$$

$$x = \frac{-10}{-5} = 2 \qquad \text{ou} \qquad x = \frac{3}{7}$$

$$(-4x + 5)(9x + 13) = 0$$

$$-4x + 5 = 0 \qquad \text{ou} \qquad 9x + 13 = 0$$

$$-4x = -5 \qquad \text{ou} \qquad 9x = -13$$

$$x = \frac{-5}{-4} \qquad \text{ou} \qquad x = -\frac{13}{9}$$

$$(x + 1)(-2x - 3) = 0$$

$$x + 1 = 0 \qquad \text{ou} \qquad -2x - 3 = 0$$

$$x = -1 \qquad \text{ou} \qquad -2x = 3$$

$$x = -1 \qquad \text{ou} \qquad x = \frac{3}{-2}$$

$$(x + 5)^2 = 0$$

$$x + 5 = 0$$

$$x = -5$$

$$(x - 7)^2 = 0$$

$$x - 7 = 0$$

$$x = 7$$

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$$(2x - 4)^2 = 0$$

$$2x - 4 = 0$$

$$2x = 4$$

$$x = 2$$

$$(5x + 2)^2 = 0$$

$$5x + 2 = 0$$

$$5x = -2$$

$$x = -\frac{2}{5}$$

Exercice 8 :

$$(x + 1)(5x - 1) - (x + 1)(3x - 12) = 0$$

$$(x + 1)[(5x - 1) - (3x - 12)] = 0$$

$$(x + 1)[5x - 1 - 3x + 12] = 0$$

$$(x + 1)[2x + 11] = 0$$

$$x + 1 = 0 \quad \text{ou} \quad 2x + 11 = 0$$

$$x = -1 \quad \text{ou} \quad 2x = -11$$

$$x = -1 \quad \text{ou} \quad x = -\frac{11}{2}$$

Exercice 8 :

$$D = (2x - 3)(5 - x) + (2x - 3)^2 = (2x - 3)(5 - x) + (2x - 3)(2x - 3)$$

$$\begin{aligned} 1) \quad D &= 2x \times 5 + 2x \times (-x) + (-3) \times 5 + (-3) \times (-x) + 2x \times 2x + 2x \times (-3) + (-3) \times 2x + (-3) \times (-3) \\ &= 10x - 2x^2 - 15 + 3x + 4x^2 - 6x - 6x + 9 \\ &= 2x^2 + x - 6 \end{aligned}$$

$$\begin{aligned} 2) \quad D &= (2x - 3)(5 - x) + (2x - 3)(2x - 3) \\ &= (2x - 3)[(5 - x) + (2x - 3)] \\ &= (2x - 3)[5 - x + 2x - 3] \\ &= (2x - 3)[x + 2] \end{aligned}$$

Pas de souci pour enlever les parenthèses car c'est un +

$$3) \quad (2x - 3)(x + 2) = 0$$

$$2x - 3 = 0 \quad \text{ou} \quad x + 2 = 0$$

$$2x = 3 \quad \text{ou} \quad x = -2$$

$$x = \frac{3}{2} \quad \text{ou} \quad x = -2$$

Exercice 10 : Il faut factoriser avant de pouvoir résoudre ces équations

$$3x^2 + 2x = 0$$

$$x(3x + 2) = 0$$

$$x = 0 \quad \text{ou} \quad 3x + 2 = 0$$

$$x = 0 \quad \text{ou} \quad 3x = -2$$

$$x = 0 \quad \text{ou} \quad x = -\frac{2}{3}$$

$$(x + 2)(-x + 1) + (x - 3)(x + 2) = 0$$

$$(x + 2)[(-x + 1) + (x + 3)] = 0$$

$$(x + 2)[-x + 1 + x + 3] = 0$$

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$$(x + 2)4 = 0$$

$$x + 2 = 0$$

$$x = -2$$

$$(2x - 6)(-x + 5) - 2(-x + 5) = 0$$

$$(-x + 5)[(2x - 6) - 2] = 0$$

$$(-x + 5)[2x - 6 - 2] = 0$$

$$(-x + 5)[2x - 8] = 0$$

$$-x + 5 = 0 \quad \text{ou} \quad 2x - 8 = 0$$

$$-x = -5 \quad \text{ou} \quad 2x = 8$$

$$x = 5 \quad \text{ou} \quad x = \frac{8}{2} = 4$$

$$(5x - 8)(x - 3) - (x - 1)(x - 3) = 0$$

$$(x - 3)[(5x - 8) - (x - 1)] = 0$$

$$(x - 3)[5x - 8 - x + 1] = 0$$

$$(x - 3)[4x - 7] = 0$$

$$x - 3 = 0 \quad \text{ou} \quad 4x - 7 = 0$$

$$x = 3 \quad \text{ou} \quad 4x = 7$$

$$x = 3 \quad \text{ou} \quad x = \frac{7}{4}$$