

## Equations du premier degre

Consignes :

1. Travail autocorrigé : (photomath)  
<http://physamath-cochez.be>
2. N'hésite pas à t'aider des vidéos.
3. Idée : si tu as une tablette, tu peux télécharger le pdf et écrire directement sur le document.
4. Tu peux toujours me contacter par mail : [catherine.cochez@aru2.be](mailto:catherine.cochez@aru2.be)

# 1

**RÉSOUS les équations.**

**ÉCRIS tous tes calculs. ÉCRIS la ou les solutions. VÉRIFIE ta réponse.**



1)  $3x = -12$

$$\begin{array}{r} \boxed{3x} = -12 \\ \div 3 \quad \div 3 \\ x = -4 \end{array}$$

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

$$\begin{array}{r} \frac{x}{2} = -5 \\ \cdot 2 \quad \cdot 2 \\ x = -10 \end{array}$$

2)  $4x - 1 = 5$

$$\begin{array}{r} \boxed{4x - 1} = 5 \\ +1 \quad +1 \\ 4x = 6 \\ \div 4 \quad \div 4 \\ x = 1,5 \end{array}$$

2)  $5b - 8 = -2b + 41$

$$\begin{array}{r} +2b \quad +2b \\ \boxed{7b - 8} = 41 \\ +8 \quad +8 \\ 7b = 49 \\ \frac{7b}{7} = \frac{49}{7} \\ b = 7 \end{array}$$

3)  $-2y + 8 = 4y + 32$

$$\begin{array}{r} -2y + 8 = 4y + 32 \\ +2y \quad +2y \\ 8 = \boxed{6y + 32} \\ -32 \quad -32 \\ -24 = 6y \\ \div 6 \quad \div 6 \\ -4 = y \end{array}$$

3)  $6 - \frac{x}{2} = 4$

$$\begin{array}{r} \boxed{6 - \frac{x}{2}} = 4 \\ -6 \quad -6 \\ -\frac{x}{2} = -2 \\ \cdot 2 \quad \cdot 2 \\ -x = -4 \\ \div -1 \quad \div -1 \\ x = 4 \end{array}$$

CORRECTION



Suite ...

$$-\frac{5b}{2} = 40$$

$$-5b = 40 \cdot 2$$

$$-5b = 80$$

$$b = \frac{80}{-5}$$

$$b = -16$$

Vérif  $S = \{-16\}$

$$-\frac{5 \times (-16)}{2} = ? = 40$$

$$\frac{80}{2} = ? = 40$$

$$40 = ? = 40$$

**Vrai**

$$5(4x + 9) = -8x + 12$$

$$20x + 45 = -8x + 12$$

$$20x + 8x = 12 - 45$$

$$28x = -33$$

$$x = -\frac{33}{28}$$

$$S = \left\{ -\frac{33}{28} \right\}$$

1)

$$\frac{5(2y + 12)}{12} = 30$$

$$5(2y + 12) = 30 \cdot 12$$

$$10y + 60 = 360$$

$$10y = 360 - 60$$

$$10y = 300$$

$$y = 30$$

$$S = \{30\}$$

Vérif

$$\frac{5 \times (2 \times 30 + 12)}{12} = ? = 30$$

$$\frac{5 \times (60 + 12)}{12} = ? = 30$$

$$\frac{5 \times (72)}{12} = ? = 30$$

$$\frac{360}{12} = ? = 30$$

$$30 = ? = 30$$

**Vrai**

2)

$$\frac{8x}{4} - 6 = -4x - \frac{12}{5}$$

$$\frac{40x}{20} - \frac{120}{20} = \frac{-80}{20}x - \frac{48}{20}$$

$$40x - 120 = -80x - 48$$

$$40x + 80x = -48 + 120$$

$$120x = 72$$

$$x = \frac{72}{120}$$

$$x = \frac{3}{5}$$

$$S = \left\{ \frac{3}{5} \right\}$$



4)

$$4(2x - 9) + 24x + 24 = 4(8x + 5) + 13$$

$$4(2x - 9) + 24x + 24 = 4(8x + 5) + 13$$

$$8x - 36 + 24x + 24 = 32x + 20 + 13$$

$$8x + 24x - 32x = 20 + 13 + 36 - 24$$

$$0x = 45$$

Équation impossible

Car  $0 \neq 45$

$$S = \{ \}$$



# 3

## Après cet échauffement Source Crock'Math2 P18 ex1



1)

$$\frac{3x+2}{4} + \frac{2x-1}{2} = \frac{x}{2}$$

$$\frac{3x+2+2(2x-1)}{4} = \frac{2x}{4}$$

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

$$3x+2+4x-2 = 2x$$

$$7x = 2x$$

$$7x - 2x = 0$$

$$5x = 0$$

$$x = 0$$

$$S = \{0\}$$

$$\frac{3x-2}{5} - \frac{7x+1}{2} = -3\left(x - \frac{5}{2}\right) - \frac{1}{10}$$

$$\frac{3x-2}{5} - \frac{(7x+1)}{2} = -3x + \frac{15}{2} - \frac{1}{10}$$

$$\frac{2(3x-2) - 5(7x+1)}{10} = \frac{-30x + 15 * 5 - 1}{10}$$

$$2(3x-2) - 5(7x+1) = -30x + 15 * 5 - 1$$

$$6x - 4 - 35x - 5 = -30x + 75 - 1$$

$$6x - 35x + 30x = 75 - 1 + 4 + 5$$

$$x = 83$$

$$S = \{83\}$$

2)

$$\frac{3x+1}{4} - \frac{x-2}{3} = \frac{5x-3}{12}$$

$$\frac{3(3x+1)}{12} - \frac{4(x-2)}{12} = \frac{5x-3}{12}$$

$$\frac{9x+3-4x+8}{12} = \frac{5x-3}{12}$$

$$9x+3-4x+8 = 5x-3$$

$$9x-4x-5x = -3-3-8$$

$$0x = -14$$

Equation impossible

$$S = \{ \}$$

$$\frac{-6x+1}{5} - \frac{3 \cdot (x+1)}{4} = \frac{2x+1}{10} - \frac{4x}{5}$$

$$\frac{-6x+1}{5} - \frac{3x+3}{4} = \frac{2x+1}{10} - \frac{4x}{5}$$

$$\frac{(-6x+1)}{5} - \frac{(3x+3)}{4} = \frac{(2x+1)}{10} - \frac{(4x)}{5}$$

$$\frac{4 \cdot (-6x+1)}{5 \cdot 4} - \frac{5 \cdot (3x+3)}{5 \cdot 4} = \frac{2 \cdot (2x+1)}{2 \cdot 10} - \frac{4 \cdot (4x)}{4 \cdot 5}$$

$$4 \cdot (-6x+1) - 5 \cdot (3x+3) = 2 \cdot (2x+1) - 4 \cdot (4x)$$

$$-24x+4-15x-15 = 4x+2-16x$$

$$-24x-15x-4x+16x = 2-4+15$$

$$-27x = 13$$

$$x = -\frac{13}{27}$$

$$S = \left\{ -\frac{13}{27} \right\}$$

3)

$$\frac{3}{2}(2-3x) - \frac{1}{3} = -\frac{4x-2}{2}$$

$$\frac{3 \cdot (2-3x)}{2} - \frac{1}{3} = -\frac{(4x-2)}{2}$$

$$\frac{3 \cdot 3 \cdot (2-3x)}{3 \cdot 2} - \frac{2 \cdot 1}{2 \cdot 3} = -\frac{3 \cdot (4x-2)}{3 \cdot 2}$$

$$9 \cdot (2-3x) - 2 = -3 \cdot (4x-2)$$

$$18 - 27x - 2 = -12x + 6$$

$$-27x + 12x = 6 - 18 + 2$$

$$-15x = -10$$

$$x = \frac{-10}{-15}$$

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

$$S = \left\{ \frac{2}{3} \right\}$$

5)

$$(3x+4) \cdot (4x-2) = -\frac{2x+3}{5} + 12x^2$$

$$12x^2 - 6x + 16x - 8 = -\frac{(2x+3)}{5} + 12x^2$$

$$12x^2 - 12x^2 - 6x + 16x - 8 = \frac{-(2x+3)}{5}$$

$$10x - 8 = \frac{-(2x+3)}{5}$$

$$\frac{5(10x-8)}{5} = \frac{-(2x+3)}{5}$$

$$5(10x-8) = -(2x+3)$$

$$50x - 40 = -2x - 3$$

$$50x + 2x = -3 + 40$$

$$52x = 37$$

$$x = \frac{37}{52}$$

$$S = \left\{ \frac{37}{52} \right\}$$

**Bon travail !**



# 4

## SE DÉPASSER

Source Crock'Math2 P18 ex1



1)

$$\begin{aligned} \frac{-3(y-\frac{1}{2})}{\cancel{6}} + \frac{y+2}{3} &= \frac{3y-4}{6} \\ -3y + \frac{3}{2} + \frac{y+2}{\cancel{3}} &= \frac{3y-4}{6} \\ \frac{-18y}{6} + \frac{3}{6} + \frac{2y+4}{6} &= \frac{3y-4}{6} \\ \frac{-18y+3+2y+4}{6} &= \frac{3y-4}{6} \\ \frac{-16y+7}{6} &= \frac{3y-4}{6} \\ -16y+7 &= 3y-4 \\ -19y &= -11 \\ y &= \frac{11}{19} \\ S &= \left\{ \frac{11}{19} \right\} \end{aligned}$$

3)

$$\begin{aligned} \frac{-3(x+2)}{\cancel{6}} &= \frac{2x-1}{3} \\ -3x-6 &= \frac{2x-1}{3} \\ \frac{-9x-18}{3} &= \frac{2x-1}{3} \\ -9x-18 &= 2x-1 \\ -2x-9x &= -1+18 \\ -11x &= 17 \\ x &= -\frac{17}{11} \end{aligned}$$

2)

$$\begin{aligned} 3\left(\frac{4}{5}x-1\right) - \frac{4(2x-3)}{3} + 3\left(1-\frac{x}{3}\right) &= 0 \\ \frac{12}{5}x - 3 + \frac{-8x+12}{3} - 3 + \frac{3x}{3} &= 0 \\ \frac{36x}{15} - \frac{45}{15} + \frac{-40x+60}{15} - \frac{15x}{15} &= \frac{0 \cdot 15}{15} \\ 36x - 45 + (-40x + 60) - 15x &= 0 \\ -19x + 15 &= 0 \\ -19x &= -15 \\ x &= \frac{15}{19} \\ S &= \left\{ \frac{15}{19} \right\} \end{aligned}$$

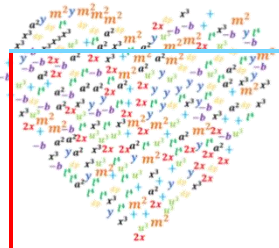
4)

$$\begin{aligned} \frac{-3x}{2} - \frac{6}{4} &= \frac{-3(x+1)}{4} - \frac{x}{2} \\ \frac{-6x}{4} - \frac{6}{4} &= \frac{-12(x+1)}{4} - \frac{2x}{4} \\ -6x - 6 &= -12(x+1) - 2x \\ -6x - 6 &= -12x - 12 - 2x \\ 14x - 6x &= -12 + 6 \\ 8x &= -6 \\ x &= -\frac{3}{4} \\ S &= \left\{ -\frac{3}{4} \right\} \end{aligned}$$

**Bon travail**

Bon tra

1)



$$-3\left(y - \frac{1}{2}\right) + \frac{y+2}{3} = \frac{3y-4}{6}$$

$$-3(y - \frac{1}{2}) + \frac{y+2}{3} = \frac{3y-4}{6}$$

$$\frac{-3y + \frac{3}{2}}{1} + \frac{y+2}{3} = \frac{3y-4}{6} \quad \text{den 6}$$

$$\frac{-18y + 9}{6} + \frac{2y+4}{6} = \frac{3y-4}{6}$$

$$-18y + 9 + 2y + 4 = 3y - 4$$

$$\ominus 19y = -17 \quad \ominus 17$$
$$y = \frac{-17}{-19} \quad S = \left\{ \frac{17}{19} \right\}$$

2)

$$3\left(\frac{4}{5}x - 1\right) - \frac{4(2x-3)}{3} + 3\left(1 - \frac{x}{3}\right) = 0$$

3)

$$-3(x+2) = \frac{2x-1}{3}$$



4)

$$\begin{aligned}
 & \frac{-3x}{2 \cdot 2} - \frac{6}{4} = \frac{-3(x+1)}{2 \cdot 2} - \frac{x \cdot 2}{2 \cdot 2} \quad \text{Den 4.} \\
 & \frac{-6x}{4} - \frac{6}{4} = \frac{-12(x+1)}{4} - \frac{2x}{4} \quad \text{ou Den 2.} \\
 & -6x - 6 = -12(x+1) - 2x \\
 & -6x - 6 = -12x - 12 - 2x \\
 & 8x = -6 \\
 & x = -\frac{3}{4} \quad \mathcal{S} = \left\{ -\frac{3}{4} \right\}
 \end{aligned}$$

5)

$$\begin{aligned}
 & \frac{3(x-3)(x+3)}{2 \cdot 3} - \frac{2(x+2)^2}{3 \cdot 2} = \frac{x^2-3}{6} - \frac{1 \cdot 6}{6} \\
 & \frac{3(x^2-9)}{6} - \frac{2(x^2+4x+4)}{6} = \frac{x^2-3-6}{6} \\
 & \frac{3x^2-27}{6} - \frac{2x^2-8x-8}{6} = \frac{x^2-9}{6} \\
 & x^2 - 8x = -9 + 35 \\
 & -8x = 26 \\
 & x = -\frac{13}{4} \\
 & \mathcal{S} = \left\{ -\frac{13}{4} \right\}
 \end{aligned}$$

6)

$$\begin{aligned}
 & \frac{(3x-1)^2 \cdot 3}{3 \cdot 2} - \frac{3(x-3)(x+3)}{2 \cdot 3} = \frac{3x \cdot (5x-1)}{2 \cdot 3 \cdot 6} \\
 & \frac{2 \cdot (9x^2 - 6x + 1)}{6} - \frac{3(x^2-9)}{6} = \frac{3x(5x-1)}{6} \\
 & \frac{18x^2 - 12x + 2}{6} - \frac{3x^2 + 27}{6} = \frac{15x^2 - 3x}{6} \\
 & 15x^2 - 12x + 29 = 15x^2 - 3x \\
 & ~~15x^2~~ - ~~15x^2~~ - 12x + 3x = -29 \\
 & -9x = -29 \\
 & x = \frac{29}{9} \\
 & \mathcal{S} = \left\{ \frac{29}{9} \right\}
 \end{aligned}$$