Equations&inéquations - mini-révision Nom_____Per_____

1. $\left(\frac{3}{5}(4-x)\right)=\left(\frac{2(3x+1)}{3}\right)$ $\times 15$ $\times 15$ ou produit croisé

$9(4-x) = 10(3x+1)$

$36 - 9x = 30x + 10$

$+9x \quad +9x$

$36 = 39x + 10$

$-10 \quad -10$

$26 = 39x$

$x = \frac{26}{39} = \frac{2}{3}$

2. $7(4x-1)+5 = 6x-2(5-x)+1$

- enlever les parenthèses
- termes semblables
- isoler le x

$28x - 7 + 5 = 6x - 10 + 2x + 1$

$28x - 2 = 8x - 9$

$-8x \quad -8x$

$20x - 2 = -9$

$+2 \quad +2$

$20x = -7$

$x = -\frac{7}{20}$

3. $\left(\frac{2-x}{4}-\frac{5-2x}{3}\right)=\left(\frac{x}{2}-3\right)$ $\times 12$ $\times 12$

Dénominateur commun = 12

$\frac{\cancel{12}^{3}(2-x)}{\cancel{4}} - \frac{\cancel{12}^{4}(5-2x)}{\cancel{3}} = \frac{12\cdot x}{2} - 36$

Éliminer le Den. Comm.

$3(2-x) - 4(5-2x) = 6x - 36$

Enlever parentheses (distributivité)

$6 - 3x - 20 + 8x = 6x - 36$

Termes semblables

$-14 + 5x = 6x - 36$

Isoler le x.

$-5x \quad -5x$

$-14 = x - 36$

$+36 \quad +36$

$+36 \qquad +36$

$\boxed{x = 22}$

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

Dénominateur commun = 12

$12 \cdot 3x - \frac{\cancel{12}^{3}(1-2x)}{\cancel{4}} = 48 - \frac{\cancel{12}^{4}(x+5)}{\cancel{3}}$

$36x - 3(1-2x) = 48 - 4(x+5)$

$36x - 3 + 6x = 48 - 4x - 20$

$42x - 3 = 28 - 4x$

$+4x \qquad +4x$

$46x = 31$

$\boxed{x = \frac{31}{46}}$

5. $\left(4x - \frac{10-x}{5}\right) = \left(3(x-3) + \frac{5x}{2}\right)$ $\times 10$ $\times 10$

Den. commun = 10

$40x - \frac{\cancel{10}^{2}(10-x)}{\cancel{5}} = 30(x-3) - \frac{5x \cdot \cancel{10}^{5}}{\cancel{2}}$

$40x - 2(10-x) = 30(x-3) - 25x$

$40x - 20 + 2x = 30x - 90 - 25x$

$42x - 20 = 5x - 90$

$-5x \quad +20 \qquad -5x \quad +20$

$37x = -70$

$\boxed{x = -\frac{70}{37}}$

6. $\left(x - \frac{x}{2} + \frac{x}{3}\right) = \left(\frac{5}{4} + 5(x-6)\right)$ $\times 12$ $\times 12$

Den. commun = 12

$12x - \frac{12x}{2} + \frac{12x}{3} = \frac{\cancel{12}^{3} \cdot 5}{\cancel{4}} + 60(x-6)$

$12x - 6x + 4x = 15 + 60x - 360$

$10x = 60x - 345$

$-60x \qquad -60x$

$10x = 60x - 345$

$-60x \quad -60x$

$-50x = -345$

$x = \frac{345}{50} = \frac{69}{10}$

2. Résous les inéquations suivantes et représente la solution a l'aide d'un diagramme :

1. $-2x + 5 < -4x + 23$

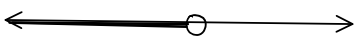
$+4x \quad +4x$

$2x + 5 < 23$

$-5 \quad -5$

$2x < 18$

$x < 9$



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2. $-3(4 - x) \leq 7x - 10$

$-12 + 3x \leq 7x - 10$

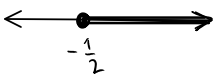
$-3x \quad -3x$

$-12 \leq 4x - 10$

$+10 \quad +10$

$-2 \leq 4x$

$-\frac{1}{2} \leq x$



$-\frac{1}{2}$

3. $\frac{x}{-5} \geq 2(x+1)$ $\quad \times -5$ $\quad \times -5$ → ALERTE ! N. NEGATIF !

D.C. = -5

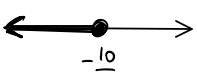
$\frac{-5x}{-5} \leq -10(x+1)$

$x \leq -10x - 10$

$+10x \quad +10x$

$11x \leq -10$

$x \leq -\frac{10}{11}$



$-\frac{10}{11}$

4. $1 - \frac{x+1}{3} \leq 6 - x$ $\quad \times 3$ $\quad \times 3$

D. COMMUN = 3

$3 - \frac{3(x+1)}{3} \leq 18 - 3x$

$3 - (x+1) \leq 18 - 3x$

$3 - x - 1 \leq 18 - 3x$

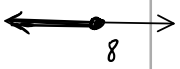
$2 - x \leq 18 - 3x$

$+3x \quad +3x$

$2 + 2x \leq 18$

$2x \leq 16$

$x \leq 8$



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$x \leq -\frac{10}{11}$

$+3x \qquad +3x$

$2 \leq 2x \leq 18$

$2x \leq 16$

$x \leq 8$

5. $-4(2x-3) > 3(5-2x)$

$-8x + 12 > 15 - 6x$

$+6x \qquad +6x$

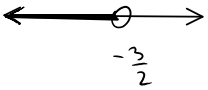
$-2x + 12 > 15$

$-12 \quad -12$

$-2x > 3$

$\div(-2) \quad \div(-2)$

$x < -\frac{3}{2}$



$-\frac{3}{2}$

6. $\left(\frac{x-1}{3}\right) < \left(9 - \frac{x+2}{2}\right)$ $\times 6$ $\times 6$

Den. commun = 6

$\frac{2\cancel{6}(x-1)}{\cancel{3}} < 9 \cdot 6 - \frac{\cancel{6}^{3}(x+2)}{\cancel{2}}$

$2(x-1) < 54 - 3(x+2)$

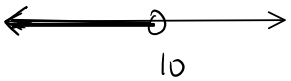
$2x - 2 < 54 - 3x - 6$

$2x - 2 < 48 - 3x$

$+3x \quad +2 \qquad +2 \quad +3x$

$5x < 50$

$x < 10$



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Equations avec des paramètres

1. $ax + b = 17$

$ax = 17 - b$

$\div a \qquad \div a$

$x = \frac{17-b}{a}$

2. $ax - 5 = b$

$+5 \quad +5$

$ax = b + 5$

$\div a \qquad \div a$

$x = \frac{b+5}{a}$

3. $\frac{x}{a} - 4 = b$

$+4 \quad +4$

$\frac{x}{a} = b + 4$

$\times a \qquad \times a$

4. $ax + bx = 8$

$x(a+b) = 8$

$\div(a+b) \quad \div(a+b)$

8

$\frac{x}{a} = b+4$

$\times a \quad \times a$

$x = a(b+4)$

$\div(a+b) \quad \div(a+b)$

$x = \frac{8}{a+b}$

5. $x - 2(1-x) = b$

$x - 2 + 2x = b$

$3x - 2 = b$

$+2 \quad +2$

$3x = b+2$

$\div 3 \quad \div 3$

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

6. $\frac{x}{2} - a = b$

$+a \quad +a$

$\frac{x}{2} = a+b$

$\times 2 \quad \times 2$

$x = 2(a+b)$