

exercice 4

$$1^{\circ}) \begin{array}{l} 2000 > x \\ x < 2000 \end{array} \quad \begin{array}{l} 512 \leq x \\ x \geq 512 \end{array} \quad \begin{array}{l} 0,25 \geq x \\ x \leq 0,25 \end{array} \quad \begin{array}{l} 123 < x \\ x > 123 \end{array} \quad \begin{array}{l} \frac{7}{5} \leq x \\ x \geq \frac{7}{5} \end{array} \quad \begin{array}{l} \frac{1}{3} \geq x \\ x \leq \frac{1}{3} \end{array} \quad \begin{array}{l} 45 < x \\ x > 45 \end{array} \quad \begin{array}{l} \frac{1}{10} > x \\ x < \frac{1}{10} \end{array}$$

$$2^{\circ}) \begin{array}{l} -x \leq 50 \\ x \geq -50 \end{array} \quad \begin{array}{l} -x > 1000 \\ x < -1000 \end{array} \quad \begin{array}{l} -x < 80 \\ x > -80 \end{array} \quad \begin{array}{l} -x > \frac{8}{5} \\ x < -\frac{8}{5} \end{array} \quad \begin{array}{l} -x > 3,075 \\ x \leq -3,075 \end{array} \quad \begin{array}{l} -x < 0 \\ x > 0 \end{array} \quad \begin{array}{l} -x \leq 10 \\ x \geq -10 \end{array}$$

exercice 5

1^o) $-50 < -5 < -1 < 0 < 1 < 50$

2^o) $-150 < -15 < -3 < 0 < 3 < 150$

3^o) $-25 < -\frac{5}{2} < -\frac{1}{2} < 0 < \frac{1}{2} < 25$

4^o) $-50 < -1 < 0 < 1 < 5 < 50$

5^o) $-100 < -2 < 0 < 2 < 10 < 100$

6^o) $-25 < -\frac{1}{2} < 0 < \frac{1}{2} < \frac{3}{2} < 25$

exercice 7

Rappel: au moment où on écrit la multiplication ou division par un nombre négatif, on change le sens.

$$a. \frac{25x}{25} \leq \frac{350}{25} \\ x \leq 14$$

$$b. \frac{792x}{792} < \frac{999}{792} : 9 \\ x < \frac{11}{88}$$

$$c. \frac{0,25x}{0,25} > \frac{4}{0,25} \\ x > 16$$

$$d. \frac{0,01x}{0,01} \geq \frac{0,52}{0,01} \\ x \geq 52$$

$$e. \frac{-3x}{-3} \leq \frac{9}{-3} \\ x \geq -3$$

$$f. \frac{-10x}{-10} > \frac{2020}{-10} \\ x < -202$$

$$g. \frac{-0,4x}{-0,4} < \frac{-100}{-0,4} \\ x > 25$$

$$h. \frac{-15x}{-15} \geq \frac{60}{-15} \\ x \leq -4$$

$$i. \frac{100}{20} \leq \frac{20x}{20} \\ 5 \leq x \\ x \geq 5$$

$$j. \frac{-50}{7} > \frac{7x}{7} \\ -\frac{50}{7} > x \\ x < -\frac{50}{7}$$

$$k. \frac{-25}{50} \geq \frac{50x}{50} \\ -\frac{1}{2} \geq x \\ x \leq -\frac{1}{2}$$

$$l. \frac{75}{15} < \frac{15x}{15} \\ 5 < x \\ x > 5$$

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

$$n. \frac{3}{4} \geq -3x$$

$$\frac{2}{3} \times \frac{1}{-3} > -3x \times \frac{1}{-3} \\ -\frac{4}{9} > x \\ x < -\frac{4}{9}$$

$$-3x \leq \frac{3}{4} \\ -3x > \frac{3}{4} \times \frac{1}{-3} \\ x \geq -\frac{1}{4}$$

$$o. \frac{1}{2} \leq -0,5x \quad \begin{cases} 1 \leq -x \\ -x \geq 1 \\ x \leq -1 \end{cases}$$

exercice 6

a. $x - 80 \leq 200$

$x \leq 200 + 80$

$x \leq 280$

b. $x + 10 < 45$

$x < 45 - 10$

$x < 35$

c. $x - 70 \geq 3$

$x \geq 3 + 70$

$x \geq 73$

d. $x + 45 \geq 90$

$x \geq 90 - 45$

$x \geq 45$

e. $-x + 14 \leq 18$

$-x \leq 32$

$x \geq -32$

f. $-x - 700 \geq 735$

$-x \geq 1435$

$x \leq -1435$

g. $-x - 4 < -75$

$-x < -71$

$x > 71$

h. $-x + 27 = 8$

$-x = -19$

$x = 19$

i. $10 \leq x + 4$

$6 \leq x$

$x \geq 6$

j. $-45 > -x + 7$

$-52 > -x \rightarrow 52 < x$

$x > 52$

k. $-55 < -x - 77$

$x < -55 - 77$

$x < -132$

l. $47 > x - 212$

$259 > x$

$x \leq 259$

exercice 8

a. $3x - 2 \geq 7$

$3x \geq 9$

$x \geq 3$

b. $5x + 4 < -11$

$5x < -15$

$x < -3$

c. $8x - 8 \geq 8$

$8x \geq 16$

$x \geq 2$

d. $4x + 7 \leq -9$

$4x \leq -16$

$x \leq -4$

e. $8x - 5 \geq 3x + 10$

$8x - 3x \geq 10 + 5$

$5x \geq 15$

$x \geq 3$

f. $-2x - 4 \geq 2x + 4$

$-4 - 4 \geq 2x + 2x$

$-8 \geq 4x$

$4x \leq -8$

$x \leq -2$

g. $70x + 4 \leq -5x + 3$

$70x + 5x \leq 3 - 4$

$12x \leq -1$

$x \leq -\frac{1}{12}$

h. $-5x + 13 \leq 15x - 22$

$22 + 13 \leq 15x + 5x$

$35 \leq 20x$

$20x \geq 35$

$x \geq \frac{35}{20}$

$x \geq 1,75$

i. $0,4x - 2 \geq 2,6x + 13$

$-13 - 2 \geq 2,6x - 0,4x$

$-15 \geq 2,2x$

$2,2x \leq -15$

$x \leq \frac{-15 \times 10}{2,2 \times 10}$

$x \leq \frac{-150}{22} = -\frac{75}{11}$

j. $0,1x + 10 < 0,1 + 10x$

$0,1x - 10x < 0,1 - 10$

$-9,9x < -9,9$

$-\frac{9,9}{-9,9} x > \frac{-9,9}{-9,9}$

$x > 1$

k. $-0,1x - 5 > 0,4x + 5$

$-0,1x - 0,4x > 5 + 5$

$-0,5x > 10$

$\frac{-0,5}{-0,5} x < \frac{10}{-0,5}$

$x < 20$

l. $-0,70x + 1 \leq 3,3x$

$1 \leq 3,3x + 0,7x$

$1 \leq 4x$

$4x \geq 1$

$x \geq \frac{1}{4}$

exercice 9.

a. $\frac{2}{5}x + \frac{1}{3} < \frac{3}{2}x - \frac{1}{3}$

$$\frac{2 \times 2}{5 \times 2}x - \frac{3 \times 5}{2 \times 5}x < \frac{-1}{3} - \frac{1}{3}$$

$$10 \times \frac{4x - 15x}{10} < \frac{-2}{3} \times 10$$

$$4x - 15x < \frac{-20}{3}$$

$$-11x < \frac{-20}{3}$$

$$-11x \times \frac{1}{-11} > \frac{-20}{3} \times \frac{1}{-11}$$

$$x > \frac{20}{33}$$

b. $\frac{-7}{3}x + 1 \geq \frac{5}{3}x + \frac{x}{2}$

$$-1 \geq \frac{5}{3}x + \frac{7}{3}x + \frac{x}{2}$$

$$-1 \geq \frac{12}{3}x + \frac{x}{2}$$

$$-1 \geq 4x + 0,5x$$

$$-1 \geq 4,5x$$

$$4,5x \leq -1$$

$$x \leq \frac{-1}{4,5} \times 10$$

$$x \leq \frac{10}{-45} \times 5$$

$$x \leq \frac{2}{9}$$

c. $\frac{1}{2}x - \frac{1}{3} \leq \frac{1}{3} + \frac{7x}{9}$

$$\frac{-1}{3} - \frac{1}{3} \leq \frac{-1 \times 3}{2 \times 3}x + \frac{7 \times 2}{9 \times 2}x$$

$$\frac{-2}{3} \leq \frac{(-3+14)x}{18}$$

$$\frac{18}{5} \times \frac{-2}{9} \leq \frac{5x}{18} \times \frac{18}{5}$$

$$\frac{-4}{5} \leq x$$

$$x \geq \frac{-4}{5}$$

exercice 10

$$2x(x-5)+4 \leq 2(x^2-3x+5)$$

$$2x^2-10x+4 \leq 2x^2-6x+10$$

$$2x^2-2x^2-10x+6x \leq 10-4$$

$$-4x \leq 6$$

$$\frac{-4x}{-4} > \frac{6}{-4}$$

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