

Les ensembles de nombres

$\mathbb{N}$ entiers naturels $0, 1, 2, 3, \dots$

$\mathbb{Z}$ entiers relatifs $\dots, -2, -1, 0, 1, 2, 3, \dots$

$\mathbb{Q}$ ensemble des nombres rationnels $\left\{ \frac{a}{b} \mid \begin{array}{l} \text{tel que} \\ a \in \mathbb{Z}, b \in \mathbb{N}, b \neq 0 \end{array} \right\}$

$\mathbb{R}$ ensemble des nombres réels

$$\sqrt{2} \in \mathbb{R}, \quad \sqrt{2} \notin \mathbb{Q}$$

$$\pi \in \mathbb{R}, \quad \pi \notin \mathbb{Q}$$

Règles de calculs des fractions en exemple

1) Simplification : $\frac{\overset{6}{\cancel{12}}}{\underset{9}{\cancel{18}}} = \frac{\overset{2}{\cancel{6}}}{\underset{3}{\cancel{9}}} = \boxed{\frac{2}{3}}$

$$12 \overline{) 18}$$

0.6666666666666667

2) Multiplication : $\blacktriangleright 1. A = \frac{4}{21} \times \frac{27}{16} = \frac{\overset{1}{\cancel{4}} \cdot \overset{9}{\cancel{27}}}{\cancel{21} \cdot \cancel{16}} = \frac{9}{28}$

3) Division : $\frac{5}{12} \div \frac{15}{16} = \frac{5}{12} \times \frac{16}{15} = \frac{\overset{1}{\cancel{5}} \cdot \overset{4}{\cancel{16}}}{\underset{3}{\cancel{12}} \cdot \underset{3}{\cancel{15}}} = \frac{4}{9}$

4) Addition : $\blacktriangleright 3. C = \frac{10}{\underset{8}{8}} - \frac{7}{\underset{64}{64}} = \frac{80}{64} - \frac{7}{64} = \frac{80-7}{64} = \frac{73}{64}$

Calcul littéral

$$\begin{aligned} C &= 7x - 10 + (6x - 5) \cdot 7 = 7x - 10 + (42x - 35) \\ &= \underline{7x} - \underline{10} + \underline{42x} - \underline{35} \\ &= \underline{49x} - \underline{45} \end{aligned}$$

$$\begin{aligned} C &= (6x + 1) \cdot (8x - 2) + 8x - 4 = \underline{48x} - \underline{12x} + \underline{8x} - \underline{2} + \underline{8x} - \underline{4} \\ &= \underline{44x} + \underline{8x} - 6 \\ &= 52x - 6 \end{aligned}$$

$$\textcircled{1} (A + B)^2 = A^2 + 2AB + B^2$$

$$\textcircled{2} (A - B)^2 = A^2 - 2AB + B^2$$

$$\textcircled{3} (A + B)(A - B) = A^2 - B^2$$

$$\begin{aligned} D &= (x + 4) \cdot (x - 4) \quad \textcircled{3} \quad x^2 - 16^2 \\ E &= \left(6x + \frac{9}{7}\right)^2 \quad \textcircled{1} \quad 36x^2 + 2 \cdot 6x \cdot \frac{9}{7} + \frac{81}{49} = 36x^2 + \frac{108x}{7} + \frac{81}{49} \\ F &= -\left[(2x - 10) \cdot (2x + 10)\right] \quad \textcircled{3} \quad -\left(4x^2 - 100\right) = -4x^2 + 100 \end{aligned}$$