

CORRIGE - M. QUET

EXERCICE 4.1 On donne l'expression littérale :

$$A = 3x - 2$$

$$a. x = \frac{1}{2} : A = 3 \times \frac{1}{2} - 2 = \frac{3}{2} - \frac{2 \times 2}{1 \times 2} = \frac{3}{2} - \frac{4}{2} = -\frac{1}{2}$$

$$x = \frac{3}{2} : A = 3 \times \frac{3}{2} - 2 = \frac{9}{2} - \frac{2 \times 2}{1 \times 2} = \frac{9}{2} - \frac{4}{2} = \frac{5}{2}$$

$$x = \frac{3}{4} : A = 3 \times \frac{3}{4} - 2 = \frac{9}{4} - \frac{2 \times 4}{1 \times 4} = \frac{9}{4} - \frac{8}{4} = \frac{1}{4}$$

$$x = \frac{2}{3} : A = 3 \times \frac{2}{3} - 2 = 2 - 2 = 0$$

b. Une solution de l'équation $3x - 2 = 0$ est $x = \frac{2}{3}$

EXERCICE 4.2 On donne l'expression littérale :

$$B = \frac{3}{2}x + \frac{5}{2}$$

$$a. x = \frac{1}{2} : B = \frac{3}{2} \times \frac{1}{2} + \frac{5}{2} = \frac{3}{4} + \frac{5 \times 2}{2 \times 2} = \frac{3}{4} + \frac{10}{4} = \frac{13}{4}$$

$$x = \frac{5}{3} : B = \frac{3}{2} \times \frac{5}{3} + \frac{5}{2} = \frac{\boxed{3} \times 5}{2 \times \boxed{3}} + \frac{5}{2} = \frac{10}{2} = 5$$

$$x = -\frac{4}{3} : B = \frac{3}{2} \times \left(-\frac{4}{3}\right) + \frac{5}{2} = -\frac{\boxed{3} \times 4}{2 \times \boxed{3}} + \frac{5}{2} = \frac{1}{2}$$

$$x = -\frac{5}{3} : B = \frac{3}{2} \times \left(-\frac{5}{3}\right) + \frac{5}{2} = -\frac{\boxed{3} \times 5}{2 \times \boxed{3}} + \frac{5}{2} = 0$$

b. Une solution de l'équation $\frac{3}{2}x + \frac{5}{2} = 0$ est $x = -\frac{5}{3}$

EXERCICE 4.3 On donne l'expression littérale :

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

$$a. x = \frac{1}{3} : C = \frac{1}{2} - \frac{3}{4} \times \frac{1}{3} = \frac{1}{2} - \frac{\boxed{3} \times 1}{4 \times \boxed{3}} = \frac{1 \times 2}{2 \times 2} - \frac{1}{4} = \frac{1}{4}$$

$$x = -\frac{2}{3} : C = \frac{1}{2} - \frac{3}{4} \times \left(-\frac{2}{3}\right) = \frac{1 \times 2}{2 \times 2} + \frac{2}{4} = \frac{4}{4} = 1$$

$$x = -\frac{1}{6} : C = \frac{1}{2} - \frac{3}{4} \times \left(-\frac{1}{6}\right) = \frac{1 \times 4}{2 \times 4} + \frac{1}{8} = \frac{5}{8}$$

$$x = \frac{2}{3} : C = \frac{1}{2} - \frac{3}{4} \times \frac{2}{3} = \frac{1}{2} - \frac{\boxed{3} \times 2}{4 \times \boxed{3}} = \frac{1}{2} - \frac{1}{2} = 0$$

b. Une solution de l'équation $\frac{1}{2} - \frac{3}{4}x = 0$ est $x = \frac{2}{3}$

EXERCICE 4.4 On donne 4 expressions littérales :

$$a. x = \frac{5}{2} : A = 5 \times \frac{5}{2} + 2 = \frac{25}{2} + \frac{2 \times 2}{1 \times 2} = \frac{25}{2} + \frac{4}{2} = \frac{29}{2}$$

$$B = 2 \times \frac{5}{2} + 5 = \frac{2 \times 5}{2} + 5 = 5 + 5 = 10$$

$$C = 2 \times \frac{5}{2} - 5 = \frac{2 \times 5}{2} - 5 = 5 - 5 = 0$$

$$D = 5 \times \frac{5}{2} - 2 = \frac{25}{2} - \frac{2 \times 2}{1 \times 2} = \frac{25}{2} - \frac{4}{2} = \frac{21}{2}$$

b. $\frac{5}{2}$ est une solution de l'équation $2x - 5 = 0$

EXERCICE 4.5 On donne 4 expressions littérales :

$$a. x = -\frac{3}{7} : A = 3 + 7 \times \left(-\frac{3}{7}\right) = 3 - 3 = 0$$

$$B = 3 - 7 \times \left(-\frac{3}{7}\right) = 3 + 3 = 6$$

$$C = -3 + 7 \times \left(-\frac{3}{7}\right) = -3 - 3 = -6$$

$$D = -3 - 7 \times \left(-\frac{3}{7}\right) = -3 + 3 = 0$$

b. $-\frac{3}{7}$ est une solution des équations $3 + 7x = 0$ et $-3 - 7x = 0$

EXERCICE 4.6 RESOUDRE $7x + 5 = 0$

$$7 \times \frac{5}{7} + 5 = 5 + 5 = 10 \qquad 7 \times \frac{7}{5} + 5 = \frac{49}{5} + \frac{25}{5} = \frac{74}{5}$$

$$7 \times \left(-\frac{5}{7}\right) + 5 = -5 + 5 = 0$$

$$7 \times \left(-\frac{7}{5}\right) + 5 = -\frac{49}{5} + \frac{25}{5} = -\frac{24}{5}$$

La solution de l'équation $7x + 5 = 0$ est $x = -\frac{5}{7}$

EXERCICE 4.7 RESOUDRE $\frac{5}{2}x + 3 = 0$

$$\frac{\boxed{5}}{2} \times \frac{6}{\boxed{5}} + 3 = 3 + 3 = 6 \qquad \frac{\boxed{5}}{2} \times \left(-\frac{1}{\boxed{5}}\right) + 3 = -\frac{1}{2} + \frac{6}{2} = \frac{5}{2}$$

$$\frac{\boxed{5}}{2} \times \left(-\frac{6}{\boxed{5}}\right) + 3 = -3 + 3 = 0 \qquad \frac{\boxed{5}}{2} \times \frac{1}{\boxed{5}} + 3 = \frac{1}{2} + \frac{6}{2} = \frac{7}{2}$$

La solution de l'équation $\frac{5}{2}x + 3 = 0$ est $x = -\frac{6}{5}$

EXERCICE 4.8 RESOUDRE $-\frac{1}{2} - \frac{3}{5}x = 0$

$$-\frac{1}{2} - \frac{3}{5} \times \left(-\frac{3}{2}\right) = -\frac{1 \times 5}{2 \times 5} + \frac{9}{10} = -\frac{5}{10} + \frac{9}{10} = \frac{4}{10} = \frac{2}{5}$$

$$-\frac{1}{2} - \frac{\boxed{3}}{5} \times \left(-\frac{2}{\boxed{3}}\right) = -\frac{1}{2} + \frac{2}{5} = -\frac{5}{10} + \frac{4}{10} = -\frac{1}{10}$$

$$-\frac{1}{2} - \frac{3}{5} \times \frac{1}{5} = -\frac{1 \times 25}{2 \times 25} - \frac{3 \times 2}{25 \times 2} = -\frac{25}{50} - \frac{6}{50} = -\frac{31}{50}$$

$$-\frac{1}{2} - \frac{3}{5} \times \left(-\frac{5}{6}\right) = -\frac{1}{2} + \frac{\boxed{3} \times \boxed{5}}{\boxed{5} \times 2 \times \boxed{3}} = -\frac{1}{2} + \frac{1}{2} = 0$$

La solution de l'équation $-\frac{1}{2} - \frac{3}{5}x = 0$ est $x = -\frac{5}{6}$

NOMBRES RELATIFS EN ECRITURE FRACTIONNAIRE

EXERCICES 4

EXERCICE 4.9 RESOUDRE $5x + 3 = 4 + 2x$

$$x = \frac{5}{3} : 5x + 3 = 5 \times \frac{5}{3} + 3 = \frac{25}{3} + \frac{9}{3} = \frac{34}{3}$$

$$4 + 2x = 4 + 2 \times \frac{5}{3} = \frac{12}{3} + \frac{10}{3} = \frac{22}{3}$$

$$x = \frac{4}{2} = 2 : 5x + 3 = 5 \times 2 + 3 = 10 + 3 = 13$$

$$4 + 2x = 4 + 2 \times 2 = 4 + 4 = 8$$

$$x = \frac{2}{3} : 5x + 3 = 5 \times \frac{2}{3} + 3 = \frac{10}{3} + \frac{9}{3} = \frac{19}{3}$$

$$4 + 2x = 4 + 2 \times \frac{2}{3} = \frac{12}{3} + \frac{4}{3} = \frac{16}{3}$$

$$x = \frac{1}{3} : 5x + 3 = 5 \times \frac{1}{3} + 3 = \frac{5}{3} + \frac{9}{3} = \frac{14}{3}$$

$$4 + 2x = 4 + 2 \times \frac{1}{3} = \frac{12}{3} + \frac{2}{3} = \frac{14}{3}$$

La solution de l'équation $5x + 3 = 4 + 2x$ est $x = \frac{1}{3}$ **EXERCICE 4.10** RESOUDRE $\frac{5}{2}x + \frac{1}{3} = \frac{5}{6}$

$$x = \frac{1}{3} : \frac{5}{2}x + \frac{1}{3} = \frac{5}{2} \times \frac{1}{3} + \frac{1}{3} = \frac{5}{6} + \frac{2}{6} = \frac{7}{6}$$

$$x = \frac{1}{4} : \frac{5}{2}x + \frac{1}{3} = \frac{5}{2} \times \frac{1}{4} + \frac{1}{3} = \frac{5}{8} + \frac{1}{3} = \frac{15}{24} + \frac{8}{24} = \frac{23}{24}$$

$$x = \frac{1}{5} : \frac{5}{2}x + \frac{1}{3} = \frac{5}{2} \times \frac{1}{5} + \frac{1}{3} = \frac{1}{2} + \frac{1}{3} = \frac{3}{6} + \frac{2}{6} = \frac{5}{6}$$

$$x = \frac{1}{6} : \frac{5}{2}x + \frac{1}{3} = \frac{5}{2} \times \frac{1}{6} + \frac{1}{3} = \frac{5}{12} + \frac{1}{3} = \frac{5}{12} + \frac{4}{12} = \frac{9}{12} = \frac{3}{4}$$

La solution de l'équation $\frac{5}{2}x + \frac{1}{3} = \frac{5}{6}$ est $x = \frac{1}{5}$ **EXERCICE 4.11** RESOUDRE $\frac{1}{2}x + \frac{3}{2} = \frac{3}{2}x + \frac{1}{4}$

$$x = \frac{1}{2} : \frac{1}{2}x + \frac{3}{2} = \frac{1}{2} \times \frac{1}{2} + \frac{3}{2} = \frac{1}{4} + \frac{6}{4} = \frac{7}{4}$$

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

$$x = \frac{5}{4} : \frac{1}{2}x + \frac{3}{2} = \frac{1}{2} \times \frac{5}{4} + \frac{3}{2} = \frac{5}{8} + \frac{12}{8} = \frac{17}{8}$$

$$\frac{3}{2}x + \frac{1}{4} = \frac{3}{2} \times \frac{5}{4} + \frac{1}{4} = \frac{15}{8} + \frac{2}{8} = \frac{17}{8}$$

$$x = -\frac{5}{4} : \frac{1}{2}x + \frac{3}{2} = \frac{1}{2} \times \left(-\frac{5}{4}\right) + \frac{3}{2} = -\frac{5}{8} + \frac{12}{8} = \frac{7}{8}$$

$$\frac{3}{2}x + \frac{1}{4} = \frac{3}{2} \times \left(-\frac{5}{4}\right) + \frac{1}{4} = -\frac{15}{8} + \frac{2}{8} = -\frac{13}{8}$$

$$x = -\frac{1}{2} : \frac{1}{2}x + \frac{3}{2} = \frac{1}{2} \times \left(-\frac{1}{2}\right) + \frac{3}{2} = -\frac{1}{4} + \frac{6}{4} = \frac{5}{4}$$

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

La solution de l'équation $\frac{1}{2}x + \frac{3}{2} = \frac{3}{2}x + \frac{1}{4}$ est $x = \frac{5}{4}$ **EXERCICE 4.12** RESOUDRE $\frac{-5}{x} = \frac{5}{3}$

$$x = \frac{5}{3} : \frac{-5}{x} = \frac{-5}{\frac{5}{3}} = -\frac{5}{1} \times \frac{3}{5} = -\frac{3}{1}$$

$$x = -\frac{7}{4} : \frac{-5}{x} = \frac{-5}{-\frac{7}{4}} = +\frac{5}{2} \times \frac{4}{7} = \frac{5 \times \boxed{2} \times 2}{\boxed{2} \times 7} = \frac{10}{7}$$

$$x = -\frac{3}{2} : \frac{-5}{x} = \frac{-5}{-\frac{3}{2}} = +\frac{5}{\boxed{2}} \times \frac{\boxed{2}}{3} = \frac{5}{3}$$

$$x = -\frac{6}{4} : \frac{-5}{x} = \frac{-5}{-\frac{6}{4}} = +\frac{5}{2} \times \frac{4}{6} = \frac{5 \times \boxed{2} \times \boxed{2}}{\boxed{2} \times \boxed{2} \times 3} = \frac{5}{3}$$

Bien sûr : $\frac{-6}{4} = -\frac{3}{2}$!!!La solution de l'équation $\frac{-5}{x} = \frac{5}{3}$ est $x = -\frac{3}{2}$