

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

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

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

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

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

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

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

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

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 $7x + 5 = 0$

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

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

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

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

EXERCICE 4.7 RESOUDRE

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

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

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

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

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

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

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

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

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

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

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 $\frac{-\frac{5}{2}}{x} = \frac{5}{3}$

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

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

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

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

Bien sûr : $\frac{-6}{4} = -\frac{3}{2}$!!!

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