

CORRECTION FICHE 1 (MATHÉMATIQUES)

Classe: 3^e

CALCUL LITTÉRAL

Exercice 1 : Valeur de x

$$\frac{1}{3} = \frac{x}{7} \Leftrightarrow 3x = 7$$
$$\boxed{x = \frac{7}{3}}$$

$$\frac{5}{x} = -\frac{3}{2} \Leftrightarrow 3x = -10$$
$$\boxed{x = -\frac{10}{3}}$$

$$\frac{2}{1-x} = \frac{1}{7} \Leftrightarrow 1-x = 14$$
$$\Leftrightarrow -x = 14-1$$
$$\Leftrightarrow -x = 13$$
$$\boxed{x = -13}$$

$$-\frac{5}{7} = \frac{-x}{20} \Leftrightarrow 7x = 100$$
$$\boxed{x = \frac{100}{7}}$$

$$\frac{\frac{4}{x}}{\frac{7}{6}} = \frac{1}{2} \Leftrightarrow \frac{8}{x} = \frac{7}{6}$$
$$\Leftrightarrow 7x = 48$$
$$\boxed{x = \frac{48}{7}}$$

$$-\frac{x+3}{2} = \frac{-x}{7} \Leftrightarrow 7(-x+3) = -2x$$
$$\Leftrightarrow -7x+21 = -2x$$
$$\Leftrightarrow -7x+2x = -21$$
$$\Leftrightarrow -5x = -21$$
$$\boxed{x = \frac{21}{5}}$$

$$-\frac{x-2}{x+1} = -\frac{2}{5} \Leftrightarrow 5(-x-2) = -2(x+1)$$
$$\Leftrightarrow -5x-10 = -2x-2$$
$$\Leftrightarrow -5x+2x = -2+10$$
$$\Leftrightarrow -3x = 8$$
$$\boxed{x = -\frac{8}{3}}$$

Exercice 2 : Calculs

$$A = \frac{7}{5} + \frac{3}{4}$$
$$= \frac{28}{20} + \frac{15}{20}$$
$$= \frac{28+15}{20}$$

$$\boxed{A = \frac{43}{20}}$$

$$B = \frac{6}{7} - \frac{3}{4}$$
$$= \frac{24}{28} - \frac{21}{28}$$
$$= \frac{24-21}{28}$$

$$\boxed{B = \frac{3}{28}}$$

$$C = -\frac{8}{3} + 2$$
$$= -\frac{8}{3} + \frac{2}{1}$$
$$= -\frac{8}{3} + \frac{6}{3}$$
$$= \frac{-8+6}{3}$$

$$\boxed{C = -\frac{2}{3}}$$

$$D = \frac{3}{5} \times \frac{1}{2}$$
$$= \frac{3 \times 1}{5 \times 2}$$
$$\boxed{D = \frac{3}{10}}$$

$$E = \frac{3}{5} : \frac{7}{4}$$

$$= \frac{3}{5} \times \frac{4}{7}$$

$$= \frac{3 \times 4}{5 \times 7}$$

$$E = \frac{12}{35}$$

$$F = \frac{1}{7} : (-5)$$

$$= \frac{1}{7} \times \left(-\frac{1}{5}\right)$$

$$= \frac{1 \times (-1)}{7 \times 5}$$

$$F = -\frac{1}{35}$$

$$G = \frac{8}{5} : \frac{3}{5}$$

$$= \frac{8}{5} \times \frac{5}{3}$$

$$= \frac{8 \times 5}{5 \times 3}$$

$$G = \frac{40}{15}$$

$$G = \frac{8}{3}$$

Exercice 3: Calculs

$$A = \frac{7}{3} \times \frac{3}{6} + \frac{7}{4}$$

$$= \frac{7}{6} + \frac{7}{4}$$

$$= \frac{28}{24} + \frac{42}{24}$$

$$= \frac{28+42}{24}$$

$$= \frac{70}{24}$$

$$A = \frac{35}{12}$$

$$B = 3 \times \left(1 - \frac{3}{2}\right)$$

$$= 3 \times \left(\frac{2-3}{2}\right)$$

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

$$B = -\frac{3}{2}$$

$$C = \frac{5}{3} \times \frac{2}{11}$$

$$= \frac{5 \times 2}{3 \times 11}$$

$$C = \frac{10}{33}$$

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

$$= \left(\frac{6-1}{3}\right) : \left(\frac{8+3}{2}\right)$$

$$= \frac{5}{3} : \frac{11}{2}$$

Exercice 4: Ecriture sous forme de puissance.

$$A = a^4 \times a$$

$$= a^{4+1}$$

$$A = a^5$$

$$B = a^5 \times a^{-3}$$

$$= a^{5+(-3)}$$

$$= a^{5-3}$$

$$B = a^2$$

$$C = a^4 \times a^{-9}$$

$$= a^{4+(-9)}$$

$$= a^{4-9}$$

$$C = a^{-5}$$

$$D = a^6 \times a^{10}$$

$$= a^{6+10}$$

$$D = a^{16}$$

$$E = (a^4)^5$$

$$= a^{4 \times 5}$$

$$E = a^{20}$$

$$F = (a^{-2})^7$$

$$= a^{-2 \times 7}$$

$$F = a^{-14}$$

$$G = (a^{-2})^{-3}$$

$$= a^{-2 \times (-3)}$$

$$G = a^6$$

$$H = \frac{a^5}{a^2}$$

$$= a^{5-2}$$

$$H = a^3$$

$$I = \frac{a^{-3}}{a^{-6}}$$

$$= a^{-3-(-6)}$$

$$= a^{-3+6}$$

$$I = a^3$$

$$J = \frac{a^{-2}}{a^5}$$

$$= a^{-2-5}$$

$$J = a^{-7}$$

$$K = \frac{a^3}{a^{-5}}$$

$$= a^{3-(-5)}$$

$$= a^{3+5}$$

$$K = a^8$$

Exercice 5 : Ecriture sous forme de fraction irréductible

$$A = \frac{5 \times 10^8 \times 3^2}{3 \times 10}$$

$$= \frac{10^8}{10} \times \frac{3^2}{3} \times 5$$

$$= 10^{8-1} \times 3^{2-1} \times 5$$

$$= 10^7 \times 3 \times 5$$

$$A = 10^7 \times 15$$

$$B = \frac{48 \times 10^{-3} \times 3 \times 10^{-6}}{36 \times 10^{-5}}$$

$$= \frac{2^4 \times 3 \times 10^{-3} \times 3 \times 10^{-6}}{2^2 \times 3^2 \times 10^{-5}}$$

$$= \frac{2^4 \times 3^2 \times 10^{-9}}{2^2 \times 3^2 \times 10^{-5}}$$

$$= 2^2 \times 10^{-9-(-5)}$$

$$= 2^2 \times 10^{-9+5}$$

$$= 2^2 \times 10^{-4}$$

$$B = \frac{2^2}{10^4} \Rightarrow B = \frac{2^2}{(10^2)^2} \Rightarrow B = \left(\frac{2}{10^2}\right)^2$$

$$C = \frac{10^{-2} \times (3 \times 10^{-4})^2}{18 \times 10^{-7}}$$

$$= \frac{10^{-2} \times 3^2 \times 10^{-8}}{2 \times 3^2 \times 10^{-7}}$$

$$= \frac{10^{-10}}{2 \times 10^{-7}}$$

$$= \frac{1}{2} \times 10^{-10+7}$$

$$C = \frac{10^{-3}}{2}$$

$$D = \frac{10^{-3} \times 9}{27}$$

$$= \frac{10^{-3} \times 3^2}{3^3}$$

$$= 10^{-3} \times 3^{2-3}$$

$$D = \frac{10^{-3}}{3}$$

Exercice 6

$$A = \frac{a^{-2}b^{-2}}{(a^{-2}b)^4} \quad \text{et} \quad B = \frac{(a^2bc)^4}{(ab)^2}$$

Justification

$$\begin{aligned} A &= \frac{a^{-2}b^{-2}}{(a^{-2}b)^4} \\ &= \frac{a^{-2}b^{-2}}{a^{-8}b^4} \\ &= \frac{a^{-2}}{a^{-8}} \times \frac{b^{-2}}{b^4} \\ &= a^{-2+8} \times b^{-2-4} \\ &= a^6 \times b^{-6} \\ &= \frac{a^6}{b^6} \end{aligned}$$

$$\boxed{A = \left(\frac{a}{b}\right)^6}$$

$$\begin{aligned} B &= \frac{(a^2bc)^4}{(ab)^2} \\ &= \frac{a^8b^4c^4}{a^2b^2} \\ &= a^6 \times b^2 \times c^4 \end{aligned}$$

$$\boxed{B = a^6b^2c^4}$$

réponse Attendue
Erreur dans l'Énoncé