THEME N°2 : OPERATIONS SUR LES FRACTIONS CORRECTION

Exercice 1 :

Effectue les calculs suivants en donnant le résultat sous forme de fraction irréductible.

$A = \frac{-5}{6} + \frac{7}{18}$ $A = \frac{-5 \times 3}{6 \times 3} + \frac{7}{18}$ $A = \frac{-15}{18} + \frac{7}{18}$ $A = \frac{-15 + 7}{18}$ $A = \frac{-8}{18}$ $A = -\frac{2 \times 2 \times 2}{2 \times 3 \times 3}$ $A = -\frac{2 \times 2}{3 \times 3}$ $A = -\frac{4}{9}$	$B = \frac{5}{15} - \frac{4}{3}$ $B = \frac{5}{15} - \frac{4 \times 5}{3 \times 5}$ $B = \frac{5}{15} - \frac{20}{15}$ $B = \frac{5 - 20}{15}$ $B = \frac{-15}{15}$ $B = -1$	$C = 3 - \frac{16}{3}$ $C = \frac{3}{1} - \frac{16}{3}$ $C = \frac{3 \times 3}{1 \times 3} - \frac{16}{3}$ $C = \frac{9}{3} - \frac{16}{3}$ $C = \frac{9 - 16}{3}$ $C = \frac{-7}{3}$
$D = \frac{-8}{5} + 2$ $D = \frac{-8}{5} + \frac{2}{1}$ $D = \frac{-8}{5} + \frac{2 \times 5}{1 \times 5}$ $D = \frac{-8}{5} + \frac{10}{5}$ $D = \frac{2}{5}$	$E = \frac{2}{3} + \frac{7}{2}$ $E = \frac{2 \times 2}{3 \times 2} + \frac{7 \times 3}{2 \times 3}$ $E = \frac{4}{6} + \frac{21}{6}$ $E = \frac{4 + 21}{6}$ $E = \frac{25}{6}$	$F = \frac{6}{5} - \frac{9}{4}$ $F = \frac{6 \times 4}{5 \times 4} - \frac{9 \times 5}{4 \times 5}$ $F = \frac{24}{20} - \frac{45}{20}$ $F = \frac{24 - 45}{20}$ $F = \frac{-21}{20}$

$G = \frac{1}{4} + \frac{5}{6}$ $G = \frac{1 \times 3}{4 \times 3} + \frac{5 \times 2}{6 \times 2}$ $G = \frac{3}{12} + \frac{10}{12}$ $G = \frac{3 + 10}{12}$ $G = \frac{13}{12}$	$H = -\frac{7}{15} + \frac{23}{6}$ $H = -\frac{7 \times 2}{15 \times 2} + \frac{23 \times 5}{6 \times 5}$ $H = -\frac{14}{30} + \frac{115}{30}$ $H = \frac{-14 + 115}{30}$ $H = \frac{101}{30}$

Exercice 2 :

Effectue les calculs suivants en donnant le résultat sous forme de fraction irréductible. Pense à simplifier en décomposant avant d'effectuer les calculs !

$A = \frac{2}{7} \times \frac{4}{3}$ $A = \frac{2 \times 4}{7 \times 3}$ $A = \frac{8}{21}$	$B = 7 \times \frac{4}{11}$ $B = \frac{7}{1} \times \frac{4}{11}$ $B = \frac{7 \times 4}{1 \times 11}$ $B = \frac{28}{11}$	$C = \frac{2}{5} \times \frac{5}{9}$ $C = \frac{2 \times 5}{5 \times 9}$ $C = \frac{2}{9}$
$D = \frac{4}{3} \times \frac{3}{16}$ $D = \frac{4 \times 3}{3 \times 16}$ $D = \frac{4 \times 3}{3 \times 4 \times 4}$ $D = \frac{1}{4}$	$E = \frac{-7}{6} \times \frac{18}{7}$ $E = -\frac{7 \times 18}{6 \times 7}$ $E = -\frac{7 \times 6 \times 3}{6 \times 7}$ $E = -3$	$F = \frac{-5}{7} \times \frac{-9}{15}$ $F = +\frac{5 \times 9}{7 \times 15}$ $F = \frac{5 \times 3 \times 3}{7 \times 3 \times 5}$ $F = \frac{3}{7}$

$$G = -20 \times \frac{8}{-30}$$

$$G = \frac{-20}{1} \times \frac{8}{-30}$$

$$G = + \frac{20 \times 8}{1 \times 30}$$

$$G = \frac{2 \times 10 \times 8}{3 \times 10}$$

$$G = \frac{2 \times 8}{3}$$

$$G = \frac{16}{3}$$

$$H = \frac{-50}{49} \times \frac{7}{5}$$

$$H = - \frac{50 \times 7}{49 \times 5}$$

$$H = - \frac{5 \times 10 \times 7}{7 \times 7 \times 5}$$

$$H = - \frac{10}{7}$$

$$I = \frac{18}{-15} \times \frac{-3}{-24}$$

$$I = - \frac{18 \times 3}{15 \times 24}$$

$$I = - \frac{6 \times 3 \times 3}{5 \times 3 \times 6 \times 4}$$

$$I = - \frac{3}{5 \times 4}$$

$$I = - \frac{3}{20}$$

$$K = \frac{-77}{10} \times \frac{20}{-14}$$

$$K = + \frac{77 \times 20}{10 \times 14}$$

$$K = \frac{7 \times 11 \times 2 \times 10}{10 \times 7 \times 2}$$

$$K = 11$$

Exercice 3 :

Effectue les calculs suivants en donnant le résultat sous forme de fraction irréductible.

$A = \frac{2}{7} \div \frac{3}{5}$ $A = \frac{2}{7} \times \frac{5}{3}$ $A = \frac{2 \times 5}{7 \times 3}$ $A = \frac{10}{21}$	$B = \frac{9}{4} \div \frac{11}{5}$ $B = \frac{9}{4} \times \frac{5}{11}$ $B = \frac{9 \times 5}{4 \times 11}$ $B = \frac{45}{44}$	$C = \frac{-2}{7} \div \frac{4}{3}$ $C = -\frac{2}{7} \times \frac{4}{3}$ $C = -\frac{2 \times 4}{7 \times 3}$ $C = -\frac{8}{21}$	$D = 18 \div \frac{30}{7}$ $D = \frac{18}{1} \div \frac{30}{7}$ $D = \frac{18}{1} \times \frac{7}{30}$ $D = \frac{18 \times 7}{1 \times 30}$ $D = \frac{3 \times 6 \times 7}{1 \times 6 \times 5}$ $D = \frac{7 \times 3}{1 \times 5}$ $D = \frac{21}{5}$	$E = \frac{40}{-6} \div (-10)$ $E = \frac{40}{-6} \div \frac{-10}{1}$ $E = +\frac{40}{6} \times \frac{1}{10}$ $E = \frac{40 \times 1}{6 \times 10}$ $E = \frac{2 \times 2 \times 10 \times 1}{2 \times 3 \times 10}$ $E = \frac{2 \times 1}{3}$ $E = \frac{2}{3}$

Exercice 4 :

Effectue les calculs suivants en indiquant les étapes intermédiaires et donne le résultat sous forme de fraction irréductible.

$A = \frac{2}{3} \times \left(\frac{7}{5} + \frac{2}{5}\right)$ $A = \frac{2}{3} \times \frac{9}{5}$ $A = \frac{2 \times 9}{3 \times 5}$ $A = \frac{2 \times 3 \times 3}{3 \times 5}$ $A = \frac{6}{15}$	$B = \left(\frac{7}{4} - \frac{1}{2}\right) \times \left(\frac{12}{15} + \frac{2}{3}\right)$ $B = \left(\frac{7}{4} - \frac{1 \times 2}{2 \times 2}\right) \times \left(\frac{12}{15} + \frac{2 \times 5}{3 \times 5}\right)$ $B = \left(\frac{7}{4} - \frac{2}{4}\right) \times \left(\frac{12}{15} + \frac{10}{15}\right)$ $B = \frac{5}{4} \times \frac{22}{15}$ $B = \frac{5 \times 2 \times 11}{2 \times 2 \times 5 \times 3}$ $B = \frac{11}{6}$
$C = \frac{17}{14} - \frac{2}{7} \times \frac{5}{8}$ $C = \frac{17}{14} - \frac{2 \times 5}{7 \times 8}$ $C = \frac{17}{14} - \frac{2 \times 5}{7 \times 4 \times 2}$ $C = \frac{17}{14} - \frac{5}{28}$ $C = \frac{17 \times 2}{14 \times 2} - \frac{5}{28}$ $C = \frac{34}{28} - \frac{5}{28}$ $C = \frac{29}{28}$	$D = \left(\frac{11}{8} - \frac{9}{4}\right) \div \left(\frac{7}{12} - \frac{2}{3}\right)$ $D = \left(\frac{11}{8} - \frac{9 \times 2}{4 \times 2}\right) \times \left(\frac{7}{12} - \frac{2 \times 4}{3 \times 4}\right)$ $D = \left(\frac{11}{8} - \frac{18}{8}\right) \times \left(\frac{7}{12} - \frac{8}{12}\right)$ $D = \frac{-7}{8} \times \frac{-1}{12}$ $D = \frac{7}{96}$

$$E = 4 \times \left(\frac{3}{9} - \frac{7}{6}\right)$$

$$E = \frac{4}{1} \times \left(\frac{3 \times 2}{9 \times 2} - \frac{7 \times 3}{6 \times 3}\right)$$

$$E = \frac{4}{1} \times \left(\frac{3 \times 2}{9 \times 2} - \frac{7 \times 3}{6 \times 3}\right)$$

$$E = \frac{4}{1} \times \left(\frac{6}{18} - \frac{21}{18}\right)$$

$$E = \frac{4}{1} \times \frac{-15}{18}$$

$$E = -\frac{2 \times 2 \times 5 \times 3}{1 \times 2 \times 3 \times 3}$$

$$E = -\frac{2 \times 5}{3}$$

$$E = -\frac{10}{3}$$

$$F = \frac{33}{4} \div \left(\frac{7}{6} - \frac{4}{5}\right)$$

$$F = \frac{33}{4} \div \left(\frac{7 \times 5}{6 \times 5} - \frac{4 \times 6}{5 \times 6}\right)$$

$$F = \frac{33}{4} \div \left(\frac{35}{30} - \frac{24}{30}\right)$$

$$F = \frac{33}{4} \div \frac{11}{30}$$

$$F = \frac{33}{4} \times \frac{30}{11}$$

$$F = \frac{3 \times 11 \times 2 \times 15}{2 \times 2 \times 11}$$

$$F = \frac{3 \times 15}{2}$$

$$F = \frac{45}{2}$$