

LA PROVIDENCE – MONTPELLIER

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EXERCICE 1 : Calculer en donnant le résultat en *écriture fractionnaire* :

$A = \frac{-5}{3}$	$B = \frac{-4}{5}$	$C = \frac{-9}{3}$	$D = -\frac{6}{5}$	$E = \frac{-1}{10}$	$F = \frac{-14}{-7}$
$A = \frac{-6}{3} \times \frac{-6}{2}$	$B = \frac{10}{5} \times \frac{12}{2}$	$C = -9 \times \frac{-2}{3}$	$D = +\frac{6}{5} \times \frac{1}{3}$	$E = \frac{-4}{12} \times \frac{-4}{10}$	$F = -\frac{14}{1} \times \frac{3}{-7}$
$A = +\frac{5 \times 6}{3 \times 2}$	$B = -\frac{4 \times 12}{5 \times 2}$	$C = +\frac{9 \times 2}{3}$	$D = \frac{6 \times 1}{5 \times 3}$	$E = +\frac{1 \times 4}{12 \times 10}$	$F = +\frac{14 \times 3}{7}$
$A = \frac{5 \times \boxed{3} \times \boxed{2}}{\boxed{3} \times \boxed{2}}$	$B = -\frac{2 \times \boxed{2} \times 12}{5 \times \boxed{2}}$	$C = \frac{3 \times \boxed{3} \times 2}{\boxed{3}}$	$D = \frac{\boxed{3} \times 2 \times 1}{5 \times \boxed{3}}$	$E = \frac{1 \times \boxed{4}}{\boxed{4} \times 3 \times 10}$	$F = \frac{\boxed{7} \times 2 \times 3}{\boxed{7}}$
$A = 5$	$B = -\frac{24}{5}$	$C = 6$	$D = \frac{2}{5}$	$E = \frac{1}{30}$	$F = 6$

EXERCICE 2 : Calculer en donnant le résultat en *écriture fractionnaire* :

$A = \frac{1}{3} + \frac{4}{3}$	$B = \frac{1}{4} + \frac{-3}{2}$	$C = \frac{\boxed{7} \times 5}{3 \times \boxed{7}}$	$D = \frac{5}{2} + \frac{-8}{3}$	$E = \frac{2}{-6} + \frac{4}{-7}$	$F = \frac{5 \times \frac{6}{7} - 4}{-7 - \left(\frac{-1}{2} - \frac{5}{-3} \right)}$
$A = \frac{5}{7} - \frac{3}{7}$	$B = \frac{1}{5} - \frac{1}{2}$	$C = \frac{6 \times 11}{7 \times 3}$	$D = \frac{3}{4} - \frac{1}{6}$	$E = \frac{2 \times 3}{5} - \frac{4}{-7}$	$F = \frac{5 \times 6 - 4}{-7 - \left(\frac{-1 \times 3}{2 \times 3} + \frac{5 \times 2}{3 \times 2} \right)}$
$A = \frac{3}{1}$	$B = \frac{1}{5 \times 2} + \frac{-3 \times 2}{2 \times 5}$	$C = \frac{5}{3}$	$D = \frac{5 \times 3}{3 \times 3} + \frac{-8 \times 2}{1 \times 2}$	$E = \frac{1 \times 3}{-6} - \frac{3}{7 \times 5}$	$F = \frac{30}{-7} - \frac{4 \times 7}{1 \times 7}$
$A = \frac{5}{3} \times \frac{7}{1}$	$B = \frac{1}{-6} + \frac{-6}{5}$	$C = \frac{5}{22}$	$D = \frac{15}{9} + \frac{-16}{12}$	$E = \frac{6}{-6} - \frac{4}{35}$	$F = \frac{30}{-7} - \frac{4 \times 7}{1 \times 7}$
$A = \frac{5 \times 7}{3 \times 1}$	$B = \frac{10}{-11}$	$C = -\frac{3}{22}$	$D = \frac{6}{9} - \frac{6}{12}$	$E = \frac{3}{-6} - \frac{3}{35}$	$F = \frac{30}{-7} - \frac{4 \times 7}{1 \times 7}$
$A = \frac{35}{3}$	$B = \frac{4}{-11}$	$C = -\frac{5}{3} \times \frac{7}{22}$	$D = \frac{-1}{6} \times \frac{12}{7}$	$E = \frac{2}{-41}$	$F = \frac{30}{-7} - \frac{4 \times 7}{1 \times 7}$
	$B = \frac{10}{-11}$	$C = -\frac{5 \times 7}{3 \times 22}$	$D = -\frac{1 \times 12}{6 \times 7}$	$E = \frac{2}{3} \times \frac{5}{-41}$	$F = \frac{2}{-14} - \frac{7}{6}$
	$B = +\frac{5 \times 10}{4 \times 11}$	$C = -\frac{35}{66}$	$D = -\frac{1 \times 12}{6 \times 7}$	$E = -\frac{2 \times 5}{3 \times 41}$	$F = \frac{2}{-14} - \frac{7}{6}$
	$B = \frac{5 \times \boxed{2} \times 5}{2 \times \boxed{2} \times 11}$		$D = -\frac{1 \times \boxed{6} \times 2}{\boxed{6} \times 7}$	$E = -\frac{10}{123}$	$F = \frac{2}{-21}$
	$B = \frac{25}{22}$		$D = -\frac{2}{7}$		$F = \frac{2}{6}$
					$F = \frac{2}{7} \times \frac{6}{-21}$
					$F = -\frac{2 \times 6}{7 \times 21}$
					$F = -\frac{2 \times \boxed{3} \times 2}{7 \times \boxed{3} \times 7}$
					$F = -\frac{4}{49}$

EXERCICE 3 : Polynésie 2001 :

Les multiples de 21 sont : 21, 42, 63 : on voit que 42 est aussi un multiple de 7 et de 2 :

$$A = \frac{3}{7} + \frac{4}{21} - \frac{5}{2} = \frac{3 \times 6}{7 \times 6} + \frac{4 \times 2}{21 \times 2} - \frac{5 \times 21}{2 \times 21} = \frac{18}{42} + \frac{8}{42} - \frac{105}{42} = \frac{18+8-105}{42} = \frac{24-105}{42} = -\frac{81}{42}$$

EXERCICE 4 : Afrique du Nord 2001 :

$$E = \frac{3}{5} - \frac{1}{5} \times \left(\frac{5}{2} + 2 \right) = \frac{3}{5} - \frac{1}{5} \times \left(\frac{5}{2} + \frac{2 \times 2}{1 \times 2} \right) = \frac{3}{5} - \frac{1}{5} \times \left(\frac{5}{2} + \frac{4}{2} \right) = \frac{3}{5} - \frac{1}{5} \times \frac{9}{2} = \frac{3}{5} - \frac{1 \times 9}{5 \times 2} = \frac{3 \times 2}{5 \times 2} - \frac{9}{10} = \frac{6}{10} - \frac{9}{10} = -\frac{3}{10}$$

EXERCICE 5 : Rennes 2000 :

$$B = \frac{2}{3} - \frac{4}{3} \times \frac{5}{2} = \frac{2}{3} - \frac{4 \times 5}{3 \times 2} = \frac{2}{3} - \frac{\boxed{2} \times 2 \times 5}{3 \times \boxed{2}} = \frac{2}{3} - \frac{10}{3} = -\frac{8}{3}$$

$$C = 5 + \left(1 + \frac{1}{8} \right) \div \frac{3}{4} = 5 + \left(\frac{8}{8} + \frac{1}{8} \right) \times \frac{4}{3} = 5 + \frac{9}{8} \times \frac{4}{3} = 5 + \frac{9 \times 4}{8 \times 3} = 5 + \frac{3 \times \boxed{3} \times \boxed{4}}{2 \times \boxed{4} \times \boxed{3}} = 5 + \frac{3}{2} = \frac{5 \times 2}{1 \times 2} + \frac{3}{2} = \frac{10}{2} + \frac{3}{2} = \frac{13}{2}$$

EXERCICE 6 : Paris 2001 :

$$A = \frac{12}{5} - \frac{3}{5} \times \frac{7}{9} = \frac{12}{5} - \frac{3 \times 7}{5 \times 9} = \frac{12}{5} - \frac{\boxed{3} \times 7}{5 \times 3 \times \boxed{3}} = \frac{12}{5} - \frac{7}{15} = \frac{12 \times 3}{5 \times 3} - \frac{7}{15} = \frac{36}{15} - \frac{7}{15} = \frac{29}{15}$$

$$B = \left(\frac{2}{3} - 3 \right) \div \frac{1}{9} = \left(\frac{2}{3} - \frac{3 \times 3}{1 \times 3} \right) \times \frac{9}{1} = \left(\frac{2}{3} - \frac{9}{3} \right) \times 9 = -\frac{7}{3} \times 9 = -\frac{7 \times 9}{3} = -\frac{7 \times 3 \times \boxed{3}}{\boxed{3}} = -21$$

EXERCICE 7 : Nantes 2001 :

$$A = \frac{7}{3} - \frac{4}{3} \div \frac{2}{5} = \frac{7}{3} - \frac{4}{3} \times \frac{5}{2} = \frac{7}{3} - \frac{4 \times 5}{3 \times 2} = \frac{7}{3} - \frac{2 \times \boxed{2} \times 5}{3 \times \boxed{2}} = \frac{7}{3} - \frac{10}{3} = -\frac{3}{3} = -1$$

EXERCICE 8 : Antilles 2001 :

$$A = \frac{7}{6} + \frac{11}{3} \times \frac{5}{4} = \frac{7}{6} + \frac{11 \times 5}{3 \times 4} = \frac{7}{6} + \frac{55}{12} = \frac{7 \times 2}{6 \times 2} + \frac{55}{12} = \frac{14}{12} + \frac{55}{12} = \frac{69}{12} = \frac{\boxed{3} \times 23}{\boxed{3} \times 4} = \frac{23}{4}$$