

Exercice 1 : Simplifier les fractions

$$\frac{8}{7}, \frac{4}{5}, \frac{3}{7}, \frac{7}{5}, \frac{2}{3}, \frac{1}{2}, \frac{6}{7}, \frac{1}{3}, \frac{37}{12}, \frac{6}{7}, \frac{9}{11}, \frac{7}{6}$$

Calculer en détaillant les étapes et donner les résultats sous forme de fractions simplifiées

$$A = \frac{7}{8} - \frac{-5}{3} = \frac{7 \times 3}{8 \times 3} - \frac{-5 \times 8}{8 \times 3} = \frac{21}{24} - \frac{-40}{24} = \frac{21+40}{24} = \frac{61}{24} \quad B = \frac{-8}{15} + \frac{-7}{6} = -\frac{16}{30} - \frac{35}{30} = -\frac{51}{30} = -\frac{17}{10}$$

$$C = \frac{-5}{6} + \frac{9}{8} - \frac{5}{24} = -\frac{20}{24} + \frac{27}{24} - \frac{5}{24} = \frac{2}{24} = \frac{1}{12}$$

$$D = \frac{7}{4} - \left(\frac{-1}{8} - \frac{3}{10} \right) = \frac{7}{4} - \left(-\frac{5}{40} - \frac{12}{40} \right) = \frac{7}{4} + \frac{17}{40} = \frac{70}{40} + \frac{17}{40} = \frac{87}{40} \quad E = \frac{-10}{3} \times \frac{-5}{7} = \frac{10 \times 5}{3 \times 7} = \frac{50}{21}$$

$$F = \frac{18}{-5} \times \frac{20}{-16} \times \frac{-4}{-5} = \frac{18 \times 20 \times 4}{5 \times 16 \times 5} = \frac{2 \times 9 \times 4 \times 5 \times 4}{5 \times 4 \times 4 \times 5} = \frac{18}{5}$$

$$G = \frac{-63}{25} \times \frac{40}{-81} = \frac{9 \times 7 \times 5 \times 8}{5 \times 5 \times 9 \times 9} = \frac{56}{45}$$

$$H = \frac{1}{5} - \frac{3}{5} \times \frac{1}{6} + \frac{1}{2} = \frac{1}{5} - \frac{1}{10} + \frac{1}{2} = \frac{2}{10} - \frac{1}{10} + \frac{5}{10} = \frac{6}{10} = \frac{3}{5}$$

$$I = -\frac{5}{2} \div \frac{4}{15} = -\frac{5}{2} \times \frac{15}{4} = -\frac{75}{8}$$

$$J = \frac{51}{21} \div \frac{68}{7} = \frac{51}{21} \times \frac{7}{68} = \frac{51 \times 7}{21 \times 68} = \frac{17 \times 3 \times 7 \times 3}{7 \times 17 \times 4} = \frac{9}{4}$$

$$K = \frac{72}{35} \div \frac{54}{105} = \frac{72}{35} \times \frac{105}{54} = \frac{18 \times 4 \times 3 \times 35}{35 \times 18 \times 3} = 4$$

$$L = \left(\frac{1}{5} - \frac{3}{10} \right) - \left(\frac{1}{6} - \frac{1}{2} \right) = \left(\frac{2}{10} - \frac{3}{10} \right) - \left(\frac{1}{6} - \frac{3}{6} \right) = -\frac{1}{10} - \left(-\frac{2}{6} \right) = -\frac{1}{10} + \frac{2}{6} = -\frac{3}{30} + \frac{10}{30} = \frac{7}{30}$$

$$M = \frac{2}{3} - \frac{1}{3} \times \frac{4}{5} = \frac{2}{3} - \frac{4}{15} = \frac{10}{15} - \frac{4}{15} = \frac{6}{15} = \frac{2}{5}$$

$$N = \frac{-2}{3} \times \left(\frac{1}{2} - \frac{1}{4} \right) = -\frac{2}{3} \times \left(\frac{2}{4} - \frac{1}{4} \right) = -\frac{2}{3} \times \frac{1}{4} = \frac{-2}{12} = \frac{-1}{6}$$

$$O = \left(\frac{-2}{7} + \frac{5}{42} \right) \times \left(5 - \frac{3}{8} \right) = \left(-\frac{12}{42} + \frac{5}{42} \right) \times \left(\frac{40}{8} - \frac{3}{8} \right) = \frac{-7}{42} \times \frac{37}{8} = \frac{-37}{48}$$

$$P = \left(\frac{1}{8} - \frac{7}{12} \right) \div \left(\frac{7}{6} + \frac{7}{16} \right) = \left(\frac{3}{24} - \frac{14}{24} \right) : \left(\frac{56}{48} + \frac{21}{48} \right) = -\frac{11}{24} : \frac{77}{48} = -\frac{11}{24} \times \frac{48}{77} = -\frac{11 \times 2 \times 24}{24 \times 7 \times 11} = \frac{-2}{7}$$