

Effectuer les calculs suivants :

$$\frac{3}{4} + \frac{5}{6} \times \frac{3}{2}$$

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

$$\frac{5 - 3 \times 7}{5 + 9 \times 3}$$

$$\frac{\frac{2}{3} + \frac{1}{2}}{\frac{17}{9} - \frac{1}{3}}$$

$$\frac{5}{7} + \frac{1}{7} \times \left(5 + \frac{1}{2}\right)$$

$$\frac{\frac{1}{3} + \frac{1}{4}}{\frac{10}{9}}$$

$$\frac{\frac{2}{3} + \frac{1}{4}}{\frac{17}{9} - \frac{1}{6}}$$

$$\frac{2}{13} - \frac{5}{12} \div \frac{10}{16}$$

$$\frac{\frac{4}{3} - \frac{5}{6}}{\frac{1}{2} + 1}$$

$$2 - \frac{5}{\frac{12}{\frac{1}{3} - \frac{8}{5}}}$$

$$\frac{4}{3 + \frac{\frac{3}{10}}{\frac{5}{2} - \frac{2}{5}}}$$

$$\frac{\frac{5}{3} - \frac{7}{4}}{1 + \frac{1}{6}}$$

$$\begin{aligned}
 \text{— On a : } \frac{3}{4} + \frac{5}{6} \times \frac{3}{2} &= \frac{3}{4} + \frac{5 \times 3}{6 \times 2} \\
 &= \frac{3}{4} + \frac{3 \times 2 \times 2}{5 \times 3} \\
 &= \frac{3}{4} + \frac{3 \times 2 \times 2}{5 \times 3} \\
 &= \frac{3}{4} + \frac{3 \times 2 \times 2}{5} \\
 &= \frac{3}{4} + \frac{2 \times 2}{5} \\
 &= \frac{3}{4} + \frac{4}{5} \\
 &= \frac{3 + 4}{4} \\
 &= \frac{8}{4} \\
 &= \frac{4 \times 2}{4} \\
 &= 2
 \end{aligned}$$

$$\begin{aligned}
 \text{— On a : } \left(\frac{1}{2} - \frac{1}{3}\right) \times \frac{5}{6} &= \left(\frac{1 \times 3}{2 \times 3} - \frac{1 \times 2}{3 \times 2}\right) \times \frac{5}{6} \\
 &= \left(\frac{3}{6} - \frac{2}{6}\right) \times \frac{5}{6} \\
 &= \frac{3 - 2}{6} \times \frac{5}{6} \\
 &= \frac{1}{6} \times \frac{5}{6} \\
 &= \frac{1 \times 5}{6 \times 6} \\
 &= \frac{5}{36}
 \end{aligned}$$

$$\begin{aligned}
 \text{— On a : } \frac{5 - 3 \times 7}{5 + 9 \times 3} &= \frac{5 - 21}{5 + 27} \\
 &= \frac{-16}{32} \\
 &= \frac{-2 \times 8}{2 \times 16} \\
 &= \frac{-1}{2}
 \end{aligned}$$

Pistes de réflexion

- Pour ce qui est des règles opératoires, on n'oubliera pas que certaines opérations sont prioritaires...
- Pour la simplification, on essaiera de décomposer numérateur et dénominateur en produit d'entiers afin d'obtenir une relation de la forme $\frac{a}{b} = \frac{k \times a'}{k \times b'}$ qui permet donc d'écrire que $\frac{a}{b} = \frac{a'}{b'}$.
- On pourra cependant procéder à des simplifications avant de se lancer dans les calculs...

$$\begin{aligned}
 \text{— On a : } \frac{\frac{2}{3} + \frac{1}{2}}{\frac{17}{9} - \frac{1}{3}} &= \frac{\frac{2 \times 2}{3 \times 2} + \frac{1 \times 3}{2 \times 3}}{\frac{17}{9} - \frac{1 \times 3}{3 \times 3}} \\
 &= \frac{\frac{4}{9} + \frac{3}{9}}{\frac{17}{9} - \frac{3}{9}} \\
 &= \frac{\frac{6}{9}}{\frac{14}{9}} \\
 &= \frac{6}{14} \\
 &= \frac{7^9}{6 \times 7 \times 14} \\
 &= \frac{7^9}{\frac{2}{3} \times 3 \times \frac{3 \times 3}{2 \times 7}} \\
 &= \frac{7^9}{\frac{4}{3}}
 \end{aligned}$$

$$\begin{aligned}
 \text{— On a : } \frac{5}{7} + \frac{1}{7} \left(5 + \frac{1}{2} \right) &= \frac{5}{7} + \frac{1}{7} \left(\frac{5}{1} + \frac{1}{2} \right) \\
 &= \frac{5}{7} + \frac{1}{7} \left(\frac{5 \times 2}{1 \times 2} + \frac{1}{2} \right) \\
 &= \frac{5}{7} + \frac{1}{7} \times \left(\frac{10}{2} + \frac{1}{2} \right) \\
 &= \frac{5}{7} + \frac{1}{7} \times \frac{10+1}{2} \\
 &= \frac{5}{7} + \frac{1}{7} \times \frac{11}{2} \\
 &= \frac{5}{7} + \frac{1}{7} \times \frac{11}{2} \\
 &= \frac{7 \times 2}{7 \times 2} + \frac{11}{7 \times 2} \\
 &= \frac{10}{14} + \frac{11}{14} \\
 &= \frac{14}{14} + \frac{11}{14} \\
 &= \frac{21}{14} \\
 &= \frac{14}{3 \times 7} \\
 &= \frac{2}{3} \times 7 \\
 &= \frac{2}{2}
 \end{aligned}$$

$$\begin{aligned}
 \text{— On a : } \frac{\frac{1}{3} + \frac{1}{4}}{\frac{10}{9}} &= \frac{\frac{1 \times 4}{3 \times 4} + \frac{1 \times 3}{4 \times 3}}{\frac{10}{9}} \\
 &= \frac{\frac{4}{12} + \frac{3}{12}}{\frac{10}{9}} \\
 &= \frac{\frac{7}{12}}{\frac{10}{9}} \\
 &= \frac{7^9}{12 \times 10} \\
 &= \frac{7^9}{\frac{4 \times 3}{7 \times 3} \times \frac{3 \times 3}{10}} \\
 &= \frac{4 \times 10}{21} \\
 &= \frac{40}{21}
 \end{aligned}$$

$$\begin{aligned}
 \text{— On a : } \frac{\frac{2}{3} + \frac{1}{4}}{\frac{17}{9} - \frac{1}{6}} &= \frac{\frac{2 \times 4}{3 \times 4} + \frac{1 \times 3}{4 \times 3}}{\frac{17 \times 2}{17 \times 2} - \frac{3 \times 1}{3 \times 1}} \\
 &= \frac{\frac{8}{12} + \frac{3}{12}}{\frac{9 \times 2}{8 \times 2} - \frac{3}{3 \times 6}} \\
 &= \frac{\frac{12}{34} + \frac{12}{34}}{\frac{18}{8+3} - \frac{18}{18}} \\
 &= \frac{\frac{12}{34} - \frac{12}{34}}{\frac{11}{18}} \\
 &= \frac{12}{31} \\
 &= \frac{18}{11} \times \frac{18}{31} \\
 &= \frac{12}{11} \times \frac{18}{31} \times \frac{3 \times 6}{31} \\
 &= \frac{2 \times 6}{11 \times 3} \times \frac{3 \times 6}{31} \\
 &= \frac{2 \times 31}{33} \\
 &= \frac{2}{62}
 \end{aligned}$$

$$\begin{aligned}
 \text{— On a : } \quad \frac{2}{13} - \frac{5}{12} \div \frac{10}{16} &= \frac{2}{13} - \frac{5}{12} \times \frac{16}{10} \\
 &= \frac{2}{13} - \frac{5}{12} \times \frac{4 \times 4}{5 \times 2} \\
 &= \frac{2}{13} - \frac{4 \times 3}{4 \times 3} \times \frac{4 \times 4}{5 \times 2} \\
 &= \frac{2}{13} - \frac{4}{5} \\
 &= \frac{2 \times 5}{13 \times 5} - \frac{4 \times 13}{5 \times 13} \\
 &= \frac{10}{65} - \frac{52}{65} \\
 &= \frac{10 - 52}{65} \\
 &= -\frac{42}{65} \\
 &= -\frac{42 \times 20}{65 \times 20} \\
 &= -\frac{840}{1300} \\
 &= -\frac{84}{130} \\
 &= -\frac{42}{65}
 \end{aligned}$$

$$\begin{aligned}
 \text{— On a : } \quad \frac{\frac{4}{3} - \frac{5}{6}}{\frac{1}{2} + 1} &= \frac{\frac{4 \times 2}{3 \times 2} - \frac{5}{6}}{\frac{1}{2} + \frac{1}{1}} \\
 &= \frac{\frac{8}{6} - \frac{5}{6}}{\frac{1}{2} + \frac{1 \times 2}{1 \times 2}} \\
 &= \frac{\frac{8 - 5}{6}}{\frac{2}{2} + \frac{1 \times 2}{1 \times 2}} \\
 &= \frac{\frac{3}{6}}{\frac{2}{2} + \frac{2}{2}} \\
 &= \frac{\frac{3}{6}}{\frac{2 + 2}{2}} \\
 &= \frac{\frac{3}{6}}{\frac{4}{2}} \\
 &= \frac{\frac{3}{6} \times 2}{\frac{4}{2} \times 2} \\
 &= \frac{\frac{3 \times 2}{6 \times 2}}{\frac{4 \times 2}{2 \times 2}} \\
 &= \frac{\frac{6}{12}}{\frac{8}{4}} \\
 &= \frac{6}{12} \times \frac{4}{8} \\
 &= \frac{6 \times 4}{12 \times 8} \\
 &= \frac{24}{96} \\
 &= \frac{1}{4}
 \end{aligned}$$

$$\begin{aligned}
 \text{— On a : } \quad \frac{2 - \frac{5}{12}}{\frac{1}{3} - \frac{5}{5}} &= \frac{\frac{2}{1} - \frac{5}{12}}{\frac{1 \times 5}{1 \times 5} - \frac{8 \times 3}{8 \times 3}} \\
 &= \frac{\frac{2 \times 12}{2 \times 12} - \frac{5 \times 3}{5 \times 3}}{\frac{5}{5} - \frac{24}{24}} \\
 &= \frac{\frac{24}{24} - \frac{15}{24}}{\frac{5}{5} - \frac{24}{24}} \\
 &= \frac{\frac{24 - 15}{24}}{\frac{5}{5} - \frac{24}{24}} \\
 &= \frac{\frac{9}{24}}{\frac{5}{5} - \frac{24}{24}} \\
 &= \frac{\frac{3}{8}}{\frac{5}{5} - \frac{24}{24}} \\
 &= \frac{\frac{3}{8} \times 15}{\frac{5}{5} - \frac{24}{24}} \\
 &= \frac{\frac{45}{8}}{\frac{5}{5} - \frac{24}{24}} \\
 &= \frac{\frac{45}{8} \times 3}{\frac{5}{5} - \frac{24}{24}} \\
 &= \frac{\frac{135}{8}}{\frac{5}{5} - \frac{24}{24}} \\
 &= \frac{135}{8 \times (5 - 24)} \\
 &= \frac{135}{8 \times (-19)} \\
 &= -\frac{135}{152}
 \end{aligned}$$

$$\begin{aligned}
 \text{— On a : } \frac{3 + \frac{4}{10}}{\frac{5}{2} - \frac{2}{5}} &= \frac{\frac{3}{1} + \frac{4}{10}}{\frac{5 \times 5}{2 \times 5} - \frac{2 \times 2}{5 \times 2}} \\
 &= \frac{\frac{3 \times 10}{1 \times 10} + \frac{4}{10}}{\frac{25}{4} - \frac{4}{10}} \\
 &= \frac{\frac{30}{10} + \frac{4}{10}}{\frac{25}{4} - \frac{4}{10}} \\
 &= \frac{\frac{30 + 4}{10}}{\frac{25}{4} - \frac{4}{10}} \\
 &= \frac{\frac{34}{10}}{\frac{25}{4} - \frac{4}{10}} \\
 &= \frac{\frac{34}{10}}{\frac{25 \times 4}{4} - \frac{4 \times 4}{10}} \\
 &= \frac{\frac{34}{10}}{\frac{100}{4} - \frac{16}{10}} \\
 &= \frac{\frac{34}{10}}{\frac{100 \times 10}{4 \times 10} - \frac{16 \times 10}{10 \times 10}} \\
 &= \frac{\frac{34}{10}}{\frac{1000}{40} - \frac{160}{100}} \\
 &= \frac{\frac{34}{10}}{\frac{1000 - 160}{400}} \\
 &= \frac{\frac{34}{10}}{\frac{840}{400}} \\
 &= \frac{34}{10} \times \frac{400}{840} \\
 &= \frac{34 \times 40}{10 \times 84} \\
 &= \frac{34 \times 4}{10 \times 84} \\
 &= \frac{34 \times 2}{5 \times 84} \\
 &= \frac{34 \times 1}{5 \times 42} \\
 &= \frac{34}{210} \\
 &= \frac{17}{105}
 \end{aligned}$$

$$\begin{aligned}
 \text{— On a : } \frac{\frac{5}{3} - \frac{7}{4}}{1 + \frac{1}{6}} &= \frac{\frac{5 \times 4}{3 \times 4} - \frac{7 \times 3}{4 \times 3}}{\frac{1}{1} + \frac{1}{6}} \\
 &= \frac{\frac{20}{12} - \frac{21}{12}}{\frac{1}{1} + \frac{1}{6}} \\
 &= \frac{\frac{20 - 21}{12}}{\frac{1}{1} + \frac{1}{6}} \\
 &= \frac{\frac{-1}{12}}{\frac{1}{1} + \frac{1}{6}} \\
 &= \frac{\frac{-1}{12}}{\frac{1 \times 6}{1 \times 6} + \frac{1}{6}} \\
 &= \frac{\frac{-1}{12}}{\frac{6}{6} + \frac{1}{6}} \\
 &= \frac{\frac{-1}{12}}{\frac{6 + 1}{6}} \\
 &= \frac{\frac{-1}{12}}{\frac{7}{6}} \\
 &= \frac{-1}{12} \times \frac{6}{7} \\
 &= \frac{-1 \times 6}{12 \times 7} \\
 &= \frac{-6}{84} \\
 &= \frac{-1}{14}
 \end{aligned}$$