

Calculer avec des fractions

Correction de l'exercice 1

1.

$$\begin{aligned} A &= 4 + 3 \times \frac{2}{3} \\ &= 4 + 2 \\ &= 10 \end{aligned}$$

2.

$$\begin{aligned} B &= 1 + \frac{1}{4} \times \frac{2}{5} \\ &= 1 + \frac{2}{20} \\ &= \frac{10}{10} + \frac{1}{10} \\ &= \frac{11}{10} \end{aligned}$$

3.

$$\begin{aligned} C &= \left(\frac{1}{2} + \frac{1}{3} \right) \times 4 \\ &= \left(\frac{3}{6} + \frac{2}{6} \right) \times 4 \\ &= \frac{5}{6} \times 4 \\ &= \frac{20}{6} \\ &= \frac{10}{3} \end{aligned}$$

Correction de l'exercice 2

1.

$$\begin{aligned}
 A &= 4 + 2 \times \left(\frac{-2}{3} + \frac{1}{2} \right) \\
 &= 4 + 2 \times \left(\frac{-4}{6} + \frac{3}{6} \right) \\
 &= 4 + 2 \times \frac{-1}{6} \\
 &= \frac{12}{3} - \frac{1}{3} \\
 &= \frac{11}{3}
 \end{aligned}$$

2.

$$\begin{aligned}
 B &= -\frac{2}{7} \times \left(\frac{1}{3} - \frac{1}{2} \right) \\
 &= -\frac{2}{7} \times \left(\frac{2}{6} - \frac{3}{6} \right) \\
 &= -\frac{2}{7} \times \frac{-1}{6} \\
 &= \frac{2}{42} \\
 &= \frac{1}{21}
 \end{aligned}$$

3.

$$\begin{aligned}
 C &= \frac{8}{11} \times \left(\frac{-1}{13} + \frac{1}{2} \right) + \frac{5}{13} \\
 &= \frac{8}{11} \times \left(\frac{-2}{26} + \frac{13}{26} \right) + \frac{5}{13} \\
 &= \frac{8}{11} \times \frac{11}{26} + \frac{5}{13} \\
 &= \frac{8}{26} + \frac{5}{13} \\
 &= \frac{4}{13} + \frac{5}{13} \\
 &= \frac{9}{13}
 \end{aligned}$$

Correction de l'exercice 3

1.

$$\begin{aligned}
 A &= \frac{\frac{1}{2} + 3}{7} \\
 &= \frac{\frac{1}{2} + \frac{6}{2}}{7} \\
 &= \frac{7}{2} \times \frac{1}{7} \\
 &= \frac{1}{2}
 \end{aligned}$$

2.

$$\begin{aligned}
 B &= \frac{\frac{2}{3} + \frac{1}{2}}{\frac{5}{6}} + 1 \\
 &= \frac{\frac{4}{6} + \frac{3}{6}}{\frac{5}{6}} + 1 \\
 &= \frac{7}{6} \times \frac{6}{5} + 1 \\
 &= \frac{7}{5} + \frac{5}{5} \\
 &= \frac{12}{5}
 \end{aligned}$$

3.

$$\begin{aligned}
 C &= \frac{\frac{1}{5} - 2}{\frac{1}{3}} \times \frac{1}{2} - 5 \\
 &= \frac{\frac{1}{5} - \frac{10}{5}}{\frac{1}{3}} \times \frac{1}{2} - 5 \\
 &= \frac{-9}{5} \times 3 \times \frac{1}{2} - 5 \\
 &= \frac{-27}{10} - \frac{50}{10} \\
 &= \frac{-77}{10}
 \end{aligned}$$

Correction de l'exercice 4

1.

$$\begin{aligned}
 A &= \frac{1}{3} - 2 \times \frac{\frac{-2}{3} - 3}{\frac{1}{2}} \\
 &= \frac{1}{3} - 2 \times \frac{\frac{-2}{3} - \frac{9}{3}}{\frac{1}{2}} \\
 &= \frac{1}{3} - 2 \times \frac{-11}{3} \times 2 \\
 &= \frac{1}{3} + \frac{44}{3} \\
 &= \frac{45}{3} \\
 &= 15
 \end{aligned}$$

2.

$$\begin{aligned}
 B &= 1 - \frac{2}{7} \times \left(\frac{1}{3} - 1 \right) \\
 &= 1 - \frac{2}{7} \times \frac{-2}{3} \\
 &= \frac{21}{21} + \frac{4}{21} \\
 &= \frac{25}{21}
 \end{aligned}$$

3.

$$\begin{aligned}
 C &= \frac{5}{13} \times \left(\frac{1}{11} + \frac{1}{2} \right) + \frac{9}{11} \\
 &= \frac{5}{13} \times \left(\frac{1}{11} + \frac{1}{2} \right) + \frac{9}{11} \\
 &= \frac{5}{13} \times \left(\frac{2}{22} + \frac{11}{22} \right) + \frac{9}{11} \\
 &= \frac{5}{13} \times \frac{13}{22} + \frac{9}{11} \\
 &= \frac{5}{22} + \frac{18}{22} \\
 &= \frac{23}{22}
 \end{aligned}$$

Correction de l'exercice 5

1.

$$\begin{aligned}
 A &= -\frac{1}{3} - 2 \times \frac{2 - \frac{1}{2}}{\frac{1}{2} + 1} \\
 &= -\frac{1}{3} - 2 \times \frac{\frac{3}{2}}{\frac{3}{2}} \\
 &= -\frac{1}{3} - 2 \\
 &= -\frac{1}{3} - \frac{6}{3} \\
 &= -\frac{7}{3}
 \end{aligned}$$

2.

$$\begin{aligned}
 B &= 3 - \frac{2}{5} \times \left(\frac{1}{7} - 1 \right) \\
 &= 3 - \frac{2}{5} \times \left(\frac{1}{7} - \frac{7}{7} \right) \\
 &= 3 - \frac{2}{5} \times \frac{-6}{7} \\
 &= 3 + \frac{12}{35} \\
 &= \frac{105}{35} + \frac{12}{35} \\
 &= \frac{117}{35}
 \end{aligned}$$

3.

$$\begin{aligned}
 C &= -\frac{2}{9} \times \left(\frac{-1}{2} - \frac{-1}{3} \right) + \frac{5}{3} \\
 &= -\frac{2}{9} \times \left(\frac{-3}{6} - \frac{-2}{6} \right) + \frac{5}{3} \\
 &= -\frac{2}{9} \times \frac{-1}{6} + \frac{5}{3} \\
 &= \frac{2}{54} + \frac{5}{3} \\
 &= \frac{1}{27} + \frac{5}{3} \\
 &= \frac{1}{27} + \frac{45}{27} \\
 &= \frac{46}{27}
 \end{aligned}$$

Correction de l'exercice 6

1.

$$\begin{aligned}
 A &= 5 + 4 \times \left(\frac{1}{2} + \frac{1}{4} \right) \\
 &= 5 + 4 \times \frac{3}{4} \\
 &= 5 + 3 \\
 &= 8
 \end{aligned}$$

2.

$$\begin{aligned}
 B &= 3 + \frac{1}{3} \times \left(\frac{2}{5} + \frac{13}{5} \right) \\
 &= 3 + \frac{1}{3} \times \frac{15}{5} \\
 &= 3 + \frac{1}{3} \times 3 \\
 &= 3 + 1 \\
 &= 4
 \end{aligned}$$

3.

$$\begin{aligned}
 C &= \left(\frac{2}{3} + \frac{1}{6} \right) \times 6 \\
 &= \frac{5}{6} \times 6 \\
 &= 5
 \end{aligned}$$

Correction de l'exercice 7

1.

$$\begin{aligned}
 A &= \frac{\frac{1}{2} + 3}{\frac{7}{2}} \\
 &= \frac{7}{2} \times \frac{2}{7} \\
 &= 1
 \end{aligned}$$

2.

$$\begin{aligned}
 B &= \frac{\frac{2}{3} + 3}{\frac{5}{6} + 1} \\
 &= \frac{11}{3} \times \frac{6}{11} \\
 &= 2
 \end{aligned}$$

3.

$$\begin{aligned}
 C &= \frac{\frac{1}{3} - \frac{7}{3}}{\frac{2}{3} \times \frac{3}{4} - 1} \\
 &= -\frac{6}{3} \times \left(-\frac{2}{1}\right) \\
 &= -2 \times (-2) \\
 &= \mathbf{4}
 \end{aligned}$$

Correction de l'exercice 8

1.

$$\begin{aligned}
 A &= 6 + 3 \times \left(-\frac{1}{3}\right) \\
 &= 6 - 1 \\
 &= \mathbf{5}
 \end{aligned}$$

2.

$$\begin{aligned}
 B &= -\frac{9}{2} \times \frac{4}{6} \\
 &= -\frac{9}{2} \times \frac{2}{3} \\
 &= -\frac{18}{6} \\
 &= -\mathbf{3}
 \end{aligned}$$

3.

$$\begin{aligned}
 C &= \frac{2}{3} \times \frac{1}{2} + \frac{2}{3} \\
 &= \frac{1}{3} + \frac{2}{3} \\
 &= \mathbf{1}
 \end{aligned}$$

Correction de l'exercice 9

1.

$$\begin{aligned}
 A &= \frac{\frac{1}{2} + 3 \times \left(-\frac{2}{3} + \frac{1}{2}\right)}{-\frac{1}{6}} \\
 &= \frac{\frac{1}{2} + 3 \times \left(-\frac{4}{6} + \frac{3}{6}\right)}{-\frac{1}{6}} \\
 &= \left(\frac{1}{2} + 3 \times \frac{-1}{6}\right) \times (-6) \\
 &= \left(\frac{1}{2} + \frac{-1}{2}\right) \times (-6) \\
 &= 0 \times (-6) \\
 &= \mathbf{0}
 \end{aligned}$$

2.

$$\begin{aligned}
 B &= \frac{-\frac{2}{5} \times \left(\frac{1}{3} - 1\right)}{\frac{4}{15}} \\
 &= \frac{-\frac{2}{5} \times \frac{-2}{3}}{\frac{4}{15}} \\
 &= \frac{4}{15} \times \frac{15}{4} \\
 &= \mathbf{1}
 \end{aligned}$$

3.

$$\begin{aligned}
 C &= \frac{\frac{1}{2} - \frac{1}{2} \times \left(\frac{5}{3} + 1\right)}{-\frac{1}{6}} \\
 &= \left(\frac{1}{2} - \frac{1}{2} \times \frac{8}{3}\right) \times (-6) \\
 &= \left(\frac{1}{2} - \frac{4}{3}\right) \times (-6) \\
 &= \left(\frac{3}{6} - \frac{8}{6}\right) \times (-6) \\
 &= -\frac{5}{6} \times (-6) \\
 &= \mathbf{5}
 \end{aligned}$$

 Correction de l'exercice 10

1.

$$\begin{aligned} A &= \frac{-3 - 5 \times \left(\frac{1}{4} - \frac{1}{2}\right)}{\frac{1}{4}} \\ &= \left(-3 - 5 \times \frac{-1}{4}\right) \times 4 \\ &= \left(-3 + \frac{5}{4}\right) \times 4 \\ &= \left(-\frac{12}{4} + \frac{5}{4}\right) \times 4 \\ &= \frac{-7}{4} \times 4 \\ &= -\mathbf{7} \end{aligned}$$

2.

$$\begin{aligned} B &= \frac{1 + 2 \times \left(\frac{3}{10} - \frac{1}{5}\right)}{\frac{1}{5}} \\ &= \left(1 + 2 \times \frac{1}{10}\right) \times 5 \\ &= \left(1 + \frac{1}{5}\right) \times 5 \\ &= \frac{6}{5} \times 5 \\ &= \mathbf{6} \end{aligned}$$



3.

$$\begin{aligned} C &= \frac{\left(\frac{2}{3} - \frac{1}{6}\right) \times 4}{-\frac{1}{3} + 1} \\ C &= \frac{\left(\frac{4}{6} - \frac{1}{6}\right) \times 4}{-\frac{1}{3} + 1} \\ &= \frac{\frac{3}{6} \times 4}{\frac{2}{3}} \\ &= \frac{\frac{1}{2} \times 4}{\frac{2}{3}} \\ &= 2 \times \frac{3}{2} \\ &= \mathbf{3} \end{aligned}$$