

Exercice 1

Effectuer les calculs suivants et donner le résultat sous la forme d'une fraction simplifiée :

$$\begin{array}{l} A = \frac{-14}{13} \times \left(\frac{4}{31} - \frac{4}{31} \right) \\ B = \frac{15}{28} + \frac{-15}{28} - \frac{-14}{19} \end{array} \quad \left| \quad \begin{array}{l} C = \frac{-7}{16} + \frac{-5}{27} \div \frac{10}{27} \\ D = \frac{-7}{17} + \frac{16}{7} \div \frac{2}{21} \end{array} \quad \left| \quad \begin{array}{l} E = \frac{-8}{3} + \frac{-7}{15} \div \frac{1}{33} \\ F = \frac{-1}{13} + \frac{16}{3} \div \frac{-4}{27} \end{array} \right.$$

Exercice 2

Effectuer les calculs suivants et donner le résultat sous la forme d'une fraction simplifiée :

$$\begin{array}{l} A = \frac{13}{20} \times \left(\frac{5}{6} + \frac{-5}{2} \right) \\ B = \frac{-3}{8} \div \left(\frac{14}{5} - \frac{8}{3} \right) \end{array} \quad \left| \quad \begin{array}{l} C = \frac{-13}{5} \div \frac{3}{32} \times \frac{-3}{32} \\ D = \frac{13}{2} \times \left(\frac{9}{2} - \frac{5}{26} \right) \end{array} \quad \left| \quad \begin{array}{l} E = \frac{-10}{7} \times \left(\frac{-15}{8} + \frac{9}{16} \right) \\ F = \frac{-6}{5} - \frac{-16}{3} \div \frac{1}{6} \end{array} \right.$$

Exercice 3

Effectuer les calculs suivants et donner le résultat sous la forme d'une fraction simplifiée :

$$\begin{array}{l} A = \frac{-5}{3} \times \frac{3}{4} \div \frac{10}{29} \\ B = \frac{-15}{19} \div \frac{5}{38} \times \frac{-3}{2} \end{array} \quad \left| \quad \begin{array}{l} C = \frac{-15}{16} \div \left(\frac{13}{14} - \frac{11}{14} \right) \\ D = \frac{-9}{5} - \frac{-7}{5} \div \frac{-2}{23} \end{array} \quad \left| \quad \begin{array}{l} E = \frac{6}{5} - \frac{-14}{3} \div \frac{1}{11} \\ F = \frac{-2}{9} \div \frac{1}{36} + \frac{-5}{19} \end{array} \right.$$

Exercice 4

Effectuer les calculs suivants et donner le résultat sous la forme d'une fraction simplifiée :

$$\begin{array}{l} A = \frac{9}{8} \times \frac{8}{9} + \frac{7}{11} \\ B = \frac{-5}{16} + \frac{11}{16} \div \frac{11}{20} \end{array} \quad \left| \quad \begin{array}{l} C = \frac{-7}{10} \times \left(\frac{3}{35} - \frac{14}{5} \right) \\ D = \frac{-1}{18} - \left(\frac{7}{3} + \frac{-8}{3} \right) \end{array} \quad \left| \quad \begin{array}{l} E = \frac{-2}{3} - \left(\frac{5}{9} + \frac{-10}{3} \right) \\ F = \frac{-12}{17} \times \left(\frac{-12}{5} - \frac{-14}{3} \right) \end{array} \right.$$

Exercice 5

Effectuer les calculs suivants et donner le résultat sous la forme d'une fraction simplifiée :

$$\begin{array}{l} A = \frac{14}{3} \div \frac{7}{18} - \frac{11}{7} \\ B = \frac{2}{3} \div \left(\frac{11}{15} + \frac{-4}{5} \right) \end{array} \quad \left| \quad \begin{array}{l} C = \frac{16}{13} \times \frac{13}{6} \div \frac{-6}{19} \\ D = \frac{14}{9} - \frac{-5}{2} \div \frac{5}{39} \end{array} \quad \left| \quad \begin{array}{l} E = \frac{-13}{14} \times \left(\frac{-11}{2} - \frac{15}{38} \right) \\ F = \frac{-8}{7} + \frac{16}{31} \div \frac{-7}{31} \end{array} \right.$$

Exercice 6

Effectuer les calculs suivants et donner le résultat sous la forme d'une fraction simplifiée :

$$\begin{array}{l} A = \frac{-14}{15} \div \left(\frac{14}{15} - \frac{-1}{5} \right) \\ B = \frac{15}{32} \times \frac{4}{3} \div \frac{5}{13} \end{array} \quad \left| \quad \begin{array}{l} C = \frac{9}{7} + \frac{-5}{6} \div \frac{7}{33} \\ D = \frac{-11}{9} + \frac{2}{3} \div \frac{-1}{11} \end{array} \quad \left| \quad \begin{array}{l} E = \frac{9}{2} \div \frac{5}{19} + \frac{-9}{20} \\ F = \frac{11}{8} \div \frac{11}{24} + \frac{-6}{13} \end{array} \right.$$

Corrigé de l'exercice 1

Effectuer les calculs suivants et donner le résultat sous la forme d'une fraction simplifiée :

$$A = \frac{-14}{13} \times \left(\frac{4}{31} - \frac{4}{31} \right)$$

$$A = \frac{-14}{13} \times 0$$

$$A = 0$$

$$B = \frac{15}{28} + \frac{-15}{28} - \frac{-14}{19}$$

$$B = 0 - \frac{-14}{19}$$

$$B = \frac{14}{19}$$

$$C = \frac{-7}{16} + \frac{-5}{27} \div \frac{10}{27}$$

$$C = \frac{-7}{16} + \frac{-5}{27} \times \frac{27}{10}$$

$$C = \frac{-7}{16} + \frac{-1 \times \cancel{5}}{1 \times \cancel{27}} \times \frac{1 \times \cancel{27}}{2 \times \cancel{5}}$$

$$C = \frac{-7}{16} + \frac{-1}{2}$$

$$C = \frac{-7}{16} + \frac{-1 \times 8}{2 \times 8}$$

$$C = \frac{-15}{16}$$

$$D = \frac{-7}{17} + \frac{16}{7} \div \frac{2}{21}$$

$$D = \frac{-7}{17} + \frac{16}{7} \times \frac{21}{2}$$

$$D = \frac{-7}{17} + \frac{8 \times \cancel{2}}{1 \times \cancel{7}} \times \frac{3 \times \cancel{7}}{1 \times \cancel{2}}$$

$$D = \frac{-7}{17} + 24$$

$$D = \frac{-7}{17} + \frac{24 \times 17}{1 \times 17}$$

$$D = \frac{401}{17}$$

$$E = \frac{-8}{3} + \frac{-7}{15} \div \frac{1}{33}$$

$$E = \frac{-8}{3} + \frac{-7}{15} \times 33$$

$$E = \frac{-8}{3} + \frac{-7}{5 \times \cancel{3}} \times 11 \times \cancel{3}$$

$$E = \frac{-8}{3} + \frac{-77}{5}$$

$$E = \frac{-8 \times 5}{3 \times 5} + \frac{-77 \times 3}{5 \times 3}$$

$$E = \frac{-271}{15}$$

$$F = \frac{-1}{13} + \frac{16}{3} \div \frac{-4}{27}$$

$$F = \frac{-1}{13} + \frac{16}{3} \times \frac{-27}{4}$$

$$F = \frac{-1}{13} + \frac{4 \times \cancel{4}}{1 \times \cancel{3}} \times \frac{-9 \times \cancel{3}}{1 \times \cancel{4}}$$

$$F = \frac{-1}{13} + -36$$

$$F = \frac{-1}{13} + \frac{-36 \times 13}{1 \times 13}$$

$$F = \frac{-469}{13}$$

Corrigé de l'exercice 2

Effectuer les calculs suivants et donner le résultat sous la forme d'une fraction simplifiée :

$$A = \frac{13}{20} \times \left(\frac{5}{6} + \frac{-5}{2} \right)$$

$$A = \frac{13}{20} \times \left(\frac{5}{6} + \frac{-5 \times 3}{2 \times 3} \right)$$

$$A = \frac{13}{20} \times \frac{-10}{6}$$

$$A = \frac{13}{20} \times \frac{-5 \times 2}{3 \times 2}$$

$$A = \frac{13}{20} \times \frac{-5}{3}$$

$$A = \frac{13}{4 \times \cancel{5}} \times \frac{-1 \times \cancel{5}}{3}$$

$$A = \frac{-13}{12}$$

$$B = \frac{-3}{8} \div \left(\frac{14}{5} - \frac{8}{3} \right)$$

$$B = \frac{-3}{8} \div \left(\frac{14 \times 3}{5 \times 3} - \frac{8 \times 5}{3 \times 5} \right)$$

$$B = \frac{-3}{8} \div \frac{2}{15}$$

$$B = \frac{-3}{8} \times \frac{15}{2}$$

$$B = \frac{-45}{16}$$

$$C = \frac{-13}{5} \div \frac{3}{32} \times \frac{-3}{32}$$

$$C = \frac{-13}{5} \times \frac{32}{3} \times \frac{-3}{32}$$

$$C = \frac{-416}{15} \times \frac{-3}{32}$$

$$C = \frac{-13 \times \cancel{32}}{5 \times \cancel{3}} \times \frac{-1 \times \cancel{3}}{1 \times \cancel{32}}$$

$$C = \frac{13}{5}$$

$$D = \frac{13}{2} \times \left(\frac{9}{2} - \frac{5}{26} \right)$$

$$D = \frac{13}{2} \times \left(\frac{9 \times 13}{2 \times 13} - \frac{5}{26} \right)$$

$$D = \frac{13}{2} \times \frac{112}{26}$$

$$D = \frac{13}{2} \times \frac{56 \times 2}{13 \times 2}$$

$$D = \frac{13}{2} \times \frac{56}{13}$$

$$D = \frac{1 \times \cancel{13}}{1 \times \cancel{2}} \times \frac{28 \times \cancel{2}}{1 \times \cancel{13}}$$

$$D = 28$$

$$E = \frac{-10}{7} \times \left(\frac{-15}{8} + \frac{9}{16} \right)$$

$$E = \frac{-10}{7} \times \left(\frac{-15 \times 2}{8 \times 2} + \frac{9}{16} \right)$$

$$E = \frac{-10}{7} \times \frac{-21}{16}$$

$$E = \frac{-5 \times \cancel{2}}{1 \times \cancel{7}} \times \frac{-3 \times \cancel{7}}{8 \times \cancel{2}}$$

$$E = \frac{15}{8}$$

$$F = \frac{-6}{5} - \frac{-16}{3} \div \frac{1}{6}$$

$$F = \frac{-6}{5} - \frac{-16}{3} \times 6$$

$$F = \frac{-6}{5} - \frac{-16}{1 \times \cancel{3}} \times 2 \times \cancel{3}$$

$$F = \frac{-6}{5} - -32$$

$$F = \frac{-6}{5} - \frac{-32 \times 5}{1 \times 5}$$

$$F = \frac{154}{5}$$

Corrigé de l'exercice 3

Effectuer les calculs suivants et donner le résultat sous la forme d'une fraction simplifiée :

$$A = \frac{-5}{3} \times \frac{3}{4} \div \frac{10}{29}$$

$$A = \frac{-5}{1 \times \cancel{3}} \times \frac{1 \times \cancel{3}}{4} \div \frac{10}{29}$$

$$A = \frac{-5}{4} \div \frac{10}{29}$$

$$A = \frac{-5}{4} \times \frac{29}{10}$$

$$A = \frac{-1 \times \cancel{5}}{4} \times \frac{29}{2 \times \cancel{5}}$$

$$A = \frac{-29}{8}$$

$$B = \frac{-15}{19} \div \frac{5}{38} \times \frac{-3}{2}$$

$$B = \frac{-15}{19} \times \frac{38}{5} \times \frac{-3}{2}$$

$$B = \frac{-3 \times \cancel{5}}{1 \times \cancel{19}} \times \frac{2 \times \cancel{19}}{1 \times \cancel{5}} \times \frac{-3}{2}$$

$$B = -6 \times \frac{-3}{2}$$

$$B = -3 \times \cancel{2} \times \frac{-3}{1 \times \cancel{2}}$$

$$B = 9$$

$$C = \frac{-15}{16} \div \left(\frac{13}{14} - \frac{11}{14} \right)$$

$$C = \frac{-15}{16} \div \frac{2}{14}$$

$$C = \frac{-15}{16} \div \frac{1 \times 2}{7 \times 2}$$

$$C = \frac{-15}{16} \div \frac{1}{7}$$

$$C = \frac{-15}{16} \times 7$$

$$C = \frac{-105}{16}$$

$$D = \frac{-9}{5} - \frac{-7}{5} \div \frac{-2}{23}$$

$$D = \frac{-9}{5} - \frac{-7}{5} \times \frac{-23}{2}$$

$$D = \frac{-9}{5} - \frac{161}{10}$$

$$D = \frac{-9 \times 2}{5 \times 2} - \frac{161}{10}$$

$$D = \frac{-179}{10}$$

$$E = \frac{6}{5} - \frac{-14}{3} \div \frac{1}{11}$$

$$E = \frac{6}{5} - \frac{-14}{3} \times 11$$

$$E = \frac{6}{5} - \frac{-154}{3}$$

$$E = \frac{6 \times 3}{5 \times 3} - \frac{-154 \times 5}{3 \times 5}$$

$$E = \frac{788}{15}$$

$$F = \frac{-2}{9} \div \frac{1}{36} + \frac{-5}{19}$$

$$F = \frac{-2}{9} \times 36 + \frac{-5}{19}$$

$$F = \frac{-2}{1 \times \cancel{9}} \times 4 \times \cancel{9} + \frac{-5}{19}$$

$$F = -8 + \frac{-5}{19}$$

$$F = \frac{-8 \times 19}{1 \times 19} + \frac{-5}{19}$$

$$F = \frac{-157}{19}$$

Corrigé de l'exercice 4

Effectuer les calculs suivants et donner le résultat sous la forme d'une fraction simplifiée :

$$A = \frac{9}{8} \times \frac{8}{9} + \frac{7}{11}$$

$$A = \frac{1 \times \cancel{9}}{1 \times \cancel{8}} \times \frac{1 \times \cancel{8}}{1 \times \cancel{9}} + \frac{7}{11}$$

$$A = 1 + \frac{7}{11}$$

$$A = \frac{1 \times 11}{1 \times 11} + \frac{7}{11}$$

$$A = \frac{18}{11}$$

$$B = \frac{-5}{16} + \frac{11}{16} \div \frac{11}{20}$$

$$B = \frac{-5}{16} + \frac{11}{16} \times \frac{20}{11}$$

$$B = \frac{-5}{16} + \frac{1 \times \cancel{11}}{4 \times \cancel{4}} \times \frac{5 \times \cancel{4}}{1 \times \cancel{11}}$$

$$B = \frac{-5}{16} + \frac{5}{4}$$

$$B = \frac{-5}{16} + \frac{5 \times 4}{4 \times 4}$$

$$B = \frac{15}{16}$$

$$C = \frac{-7}{10} \times \left(\frac{3}{35} - \frac{14}{5} \right)$$

$$C = \frac{-7}{10} \times \left(\frac{3}{35} - \frac{14 \times 7}{5 \times 7} \right)$$

$$C = \frac{-7}{10} \times \frac{-95}{35}$$

$$C = \frac{-7}{10} \times \frac{-19 \times 5}{7 \times 5}$$

$$C = \frac{-7}{10} \times \frac{-19}{7}$$

$$C = \frac{-1 \times 7}{10} \times \frac{-19}{1 \times 7}$$

$$C = \frac{19}{10}$$

$$D = \frac{-1}{18} - \left(\frac{7}{3} + \frac{-8}{3} \right)$$

$$D = \frac{-1}{18} - \frac{-1}{3}$$

$$D = \frac{-1}{18} - \frac{-1 \times 6}{3 \times 6}$$

$$D = \frac{5}{18}$$

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

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

$$E = \frac{-2}{3} - \frac{-25}{9}$$

$$E = \frac{-2 \times 3}{3 \times 3} - \frac{-25}{9}$$

$$E = \frac{19}{9}$$

$$F = \frac{-12}{17} \times \left(\frac{-12}{5} - \frac{-14}{3} \right)$$

$$F = \frac{-12}{17} \times \left(\frac{-12 \times 3}{5 \times 3} - \frac{-14 \times 5}{3 \times 5} \right)$$

$$F = \frac{-12}{17} \times \frac{34}{15}$$

$$F = \frac{-4 \times 3}{1 \times 17} \times \frac{2 \times 17}{5 \times 3}$$

$$F = \frac{-8}{5}$$

Corrigé de l'exercice 5

Effectuer les calculs suivants et donner le résultat sous la forme d'une fraction simplifiée :

$$A = \frac{14}{3} \div \frac{7}{18} - \frac{11}{7}$$

$$A = \frac{14}{3} \times \frac{18}{7} - \frac{11}{7}$$

$$A = \frac{2 \times 7}{1 \times 3} \times \frac{6 \times 3}{1 \times 7} - \frac{11}{7}$$

$$A = 12 - \frac{11}{7}$$

$$A = \frac{12 \times 7}{1 \times 7} - \frac{11}{7}$$

$$A = \frac{73}{7}$$

$$B = \frac{2}{3} \div \left(\frac{11}{15} + \frac{-4}{5} \right)$$

$$B = \frac{2}{3} \div \left(\frac{11}{15} + \frac{-4 \times 3}{5 \times 3} \right)$$

$$B = \frac{2}{3} \div \frac{-1}{15}$$

$$B = \frac{2}{3} \times -15$$

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

$$B = -10$$

$$C = \frac{16}{13} \times \frac{13}{6} \div \frac{-6}{19}$$

$$C = \frac{8 \times 2}{1 \times 13} \times \frac{1 \times 13}{3 \times 2} \div \frac{-6}{19}$$

$$C = \frac{8}{3} \div \frac{-6}{19}$$

$$C = \frac{8}{3} \times \frac{-19}{6}$$

$$C = \frac{4 \times 2}{3} \times \frac{-19}{3 \times 2}$$

$$C = \frac{-76}{9}$$

$$D = \frac{14}{9} - \frac{-5}{2} \div \frac{5}{39}$$

$$D = \frac{14}{9} - \frac{-5}{2} \times \frac{39}{5}$$

$$D = \frac{14}{9} - \frac{-1 \times 3}{2} \times \frac{39}{1 \times 3}$$

$$D = \frac{14}{9} - \frac{-39}{2}$$

$$D = \frac{14 \times 2}{9 \times 2} - \frac{-39 \times 9}{2 \times 9}$$

$$D = \frac{379}{18}$$

$$E = \frac{-13}{14} \times \left(\frac{-11}{2} - \frac{15}{38} \right)$$

$$E = \frac{-13}{14} \times \left(\frac{-11 \times 19}{2 \times 19} - \frac{15}{38} \right)$$

$$E = \frac{-13}{14} \times \frac{-224}{38}$$

$$E = \frac{-13}{14} \times \frac{-112 \times 2}{19 \times 2}$$

$$E = \frac{-13}{14} \times \frac{-112}{19}$$

$$E = \frac{-13}{1 \times 14} \times \frac{-8 \times 14}{19}$$

$$E = \frac{104}{19}$$

$$F = \frac{-8}{7} + \frac{16}{31} \div \frac{-7}{31}$$

$$F = \frac{-8}{7} + \frac{16}{31} \times \frac{-31}{7}$$

$$F = \frac{-8}{7} + \frac{16}{1 \times 31} \times \frac{-1 \times 31}{7}$$

$$F = \frac{-8}{7} + \frac{-16}{7}$$

$$F = \frac{-24}{7}$$

Corrigé de l'exercice 6

Effectuer les calculs suivants et donner le résultat sous la forme d'une fraction simplifiée :

$$A = \frac{-14}{15} \div \left(\frac{14}{15} - \frac{-1}{5} \right)$$

$$A = \frac{-14}{15} \div \left(\frac{14}{15} - \frac{-1 \times 3}{5 \times 3} \right)$$

$$A = \frac{-14}{15} \div \frac{17}{15}$$

$$A = \frac{-14}{15} \times \frac{15}{17}$$

$$A = \frac{-14}{1 \times \cancel{15}} \times \frac{1 \times \cancel{15}}{17}$$

$$A = \frac{-14}{17}$$

$$B = \frac{15}{32} \times \frac{4}{3} \div \frac{5}{13}$$

$$B = \frac{5 \times \cancel{3}}{8 \times \cancel{4}} \times \frac{1 \times \cancel{4}}{1 \times \cancel{3}} \div \frac{5}{13}$$

$$B = \frac{5}{8} \div \frac{5}{13}$$

$$B = \frac{5}{8} \times \frac{13}{5}$$

$$B = \frac{1 \times \cancel{5}}{8} \times \frac{13}{1 \times \cancel{5}}$$

$$B = \frac{13}{8}$$

$$C = \frac{9}{7} + \frac{-5}{6} \div \frac{7}{33}$$

$$C = \frac{9}{7} + \frac{-5}{6} \times \frac{33}{7}$$

$$C = \frac{9}{7} + \frac{-5}{2 \times \cancel{3}} \times \frac{11 \times \cancel{3}}{7}$$

$$C = \frac{9}{7} + \frac{-55}{14}$$

$$C = \frac{9 \times 2}{7 \times 2} + \frac{-55}{14}$$

$$C = \frac{-37}{14}$$

$$D = \frac{-11}{9} + \frac{2}{3} \div \frac{-1}{11}$$

$$D = \frac{-11}{9} + \frac{2}{3} \times -11$$

$$D = \frac{-11}{9} + \frac{-22}{3}$$

$$D = \frac{-11}{9} + \frac{-22 \times 3}{3 \times 3}$$

$$D = \frac{-77}{9}$$

$$E = \frac{9}{2} \div \frac{5}{19} + \frac{-9}{20}$$

$$E = \frac{9}{2} \times \frac{19}{5} + \frac{-9}{20}$$

$$E = \frac{171}{10} + \frac{-9}{20}$$

$$E = \frac{171 \times 2}{10 \times 2} + \frac{-9}{20}$$

$$E = \frac{333}{20}$$

$$F = \frac{11}{8} \div \frac{11}{24} + \frac{-6}{13}$$

$$F = \frac{11}{8} \times \frac{24}{11} + \frac{-6}{13}$$

$$F = \frac{1 \times \cancel{11}}{1 \times \cancel{8}} \times \frac{3 \times \cancel{8}}{1 \times \cancel{11}} + \frac{-6}{13}$$

$$F = 3 + \frac{-6}{13}$$

$$F = \frac{3 \times 13}{1 \times 13} + \frac{-6}{13}$$

$$F = \frac{33}{13}$$