

Corrigé de l'exercice 1

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

$$A = \frac{1}{5} - \frac{11}{15}$$

$$A = \frac{1 \times 3}{5 \times 3} - \frac{11}{15}$$

$$A = \frac{-8}{15}$$

$$B = 3 + \frac{2}{9}$$

$$B = \frac{3 \times 9}{1 \times 9} + \frac{2}{9}$$

$$B = \frac{29}{9}$$

$$C = \frac{11}{5} + \frac{11}{3}$$

$$C = \frac{11 \times 3}{5 \times 3} + \frac{11 \times 5}{3 \times 5}$$

$$C = \frac{88}{15}$$

$$D = \frac{13}{5} - \frac{3}{4}$$

$$D = \frac{13 \times 4}{5 \times 4} - \frac{3 \times 5}{4 \times 5}$$

$$D = \frac{37}{20}$$

$$E = \frac{3}{5} - \frac{-11}{3}$$

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

$$E = \frac{64}{15}$$

$$F = \frac{-11}{5} + \frac{7}{4}$$

$$F = \frac{-11 \times 4}{5 \times 4} + \frac{7 \times 5}{4 \times 5}$$

$$F = \frac{-9}{20}$$

$$G = \frac{-11}{10} - \frac{7}{4}$$

$$G = \frac{-11 \times 2}{10 \times 2} - \frac{7 \times 5}{4 \times 5}$$

$$G = \frac{-57}{20}$$

$$H = \frac{-11}{6} + \frac{-4}{15}$$

$$H = \frac{-11 \times 5}{6 \times 5} + \frac{-4 \times 2}{15 \times 2}$$

$$H = \frac{-63}{30}$$

$$H = \frac{-21 \times 3}{10 \times 3}$$

$$H = \frac{-21}{10}$$

Corrigé de l'exercice 2

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

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

$$A = \frac{4}{15}$$

$$B = \frac{7}{5} \div \frac{2}{7}$$

$$B = \frac{7}{5} \times \frac{7}{2}$$

$$B = \frac{49}{10}$$

$$C = \frac{-1}{5} \div \frac{1}{6}$$

$$C = \frac{-1}{5} \times 6$$

$$C = \frac{-6}{5}$$

$$D = \frac{1}{-4} \times \frac{-1}{-3}$$

$$D = \frac{-1}{12}$$

$$E = \frac{15}{8} \times \frac{16}{45}$$

$$E = \frac{1 \times \cancel{15}}{1 \times \cancel{8}} \times \frac{2 \times \cancel{8}}{3 \times \cancel{15}}$$

$$E = \frac{2}{3}$$

$$F = \frac{21}{10} \div \frac{49}{15}$$

$$F = \frac{21}{10} \times \frac{15}{49}$$

$$F = \frac{3 \times \cancel{7}}{2 \times \cancel{5}} \times \frac{3 \times \cancel{5}}{7 \times \cancel{7}}$$

$$F = \frac{9}{14}$$

$$G = \frac{-90}{-45} \times \frac{-9}{20}$$

$$G = \frac{-2 \times \cancel{45}}{-1 \times \cancel{45}} \times \frac{-9}{20}$$

$$G = 2 \times \frac{-9}{20}$$

$$G = 1 \times \cancel{2} \times \frac{-9}{10 \times \cancel{2}}$$

$$G = \frac{-9}{10}$$

$$H = \frac{70}{27} \div \frac{-42}{-9}$$

$$H = \frac{70}{27} \times \frac{9}{42}$$

$$H = \frac{70}{27} \times \frac{3 \times \cancel{3}}{14 \times \cancel{3}}$$

$$H = \frac{70}{27} \times \frac{3}{14}$$

$$H = \frac{5 \times \cancel{14}}{9 \times \cancel{3}} \times \frac{1 \times \cancel{3}}{1 \times \cancel{14}}$$

$$H = \frac{5}{9}$$

Corrigé de l'exercice 3

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

$$A = \frac{-7}{2} - \left(\frac{4}{9} + \frac{-11}{3} \right)$$

$$A = \frac{-7}{2} - \left(\frac{4}{9} + \frac{-11 \times 3}{3 \times 3} \right)$$

$$A = \frac{-7}{2} - \frac{-29}{9}$$

$$A = \frac{-7 \times 9}{2 \times 9} - \frac{-29 \times 2}{9 \times 2}$$

$$A = \frac{-5}{18}$$

$$B = \frac{-2}{3} \times \frac{-8}{5} \div \frac{2}{3}$$

$$B = \frac{16}{15} \div \frac{2}{3}$$

$$B = \frac{16}{15} \times \frac{3}{2}$$

$$B = \frac{8 \times \cancel{2}}{5 \times \cancel{3}} \times \frac{1 \times \cancel{3}}{1 \times \cancel{2}}$$

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

$$C = \frac{-3}{4} \div \frac{-1}{30} \times \frac{-9}{40}$$

$$C = \frac{-3}{4} \times -30 \times \frac{-9}{40}$$

$$C = \frac{-3}{2 \times \cancel{2}} \times -15 \times \cancel{2} \times \frac{-9}{40}$$

$$C = \frac{45}{2} \times \frac{-9}{40}$$

$$C = \frac{9 \times \cancel{5}}{2} \times \frac{-9}{8 \times \cancel{5}}$$

$$C = \frac{-81}{16}$$

$$D = \frac{14}{13} + \frac{-7}{39} \div \frac{7}{36}$$

$$D = \frac{14}{13} + \frac{-7}{39} \times \frac{36}{7}$$

$$D = \frac{14}{13} + \frac{-1 \times \cancel{7}}{13 \times \cancel{3}} \times \frac{12 \times \cancel{3}}{1 \times \cancel{7}}$$

$$D = \frac{14}{13} + \frac{-12}{13}$$

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

$$E = \frac{-3}{17} + \frac{4}{21} \div \frac{-2}{21}$$

$$E = \frac{-3}{17} + \frac{4}{21} \times \frac{-21}{2}$$

$$E = \frac{-3}{17} + \frac{2 \times \cancel{2}}{1 \times \cancel{21}} \times \frac{-1 \times \cancel{21}}{1 \times \cancel{2}}$$

$$E = \frac{-3}{17} + -2$$

$$E = \frac{-3}{17} + \frac{-2 \times 17}{1 \times 17}$$

$$E = \frac{-37}{17}$$

$$F = \frac{-13}{2} + \frac{-7}{6} \times \frac{-16}{7}$$

$$F = \frac{-13}{2} + \frac{-1 \times \cancel{7}}{3 \times \cancel{2}} \times \frac{-8 \times \cancel{2}}{1 \times \cancel{7}}$$

$$F = \frac{-13}{2} + \frac{8}{3}$$

$$F = \frac{-13 \times 3}{2 \times 3} + \frac{8 \times 2}{3 \times 2}$$

$$F = \frac{-23}{6}$$

Corrigé de l'exercice 4

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

$$A = \frac{-8}{13} \times \frac{9}{2} - \frac{7}{13}$$

$$A = \frac{-4 \times \cancel{2}}{13} \times \frac{9}{1 \times \cancel{2}} - \frac{7}{13}$$

$$A = \frac{-36}{13} - \frac{7}{13}$$

$$A = \frac{-43}{13}$$

$$B = \frac{-16}{7} \times \left(\frac{-11}{4} + \frac{7}{16} \right)$$

$$B = \frac{-16}{7} \times \left(\frac{-11 \times 4}{4 \times 4} + \frac{7}{16} \right)$$

$$B = \frac{-16}{7} \times \frac{-37}{16}$$

$$B = \frac{-1 \times \cancel{16}}{7} \times \frac{-37}{1 \times \cancel{16}}$$

$$B = \frac{37}{7}$$

$$C = \frac{11}{21} + \frac{16}{25} \div \frac{-6}{25}$$

$$C = \frac{11}{21} + \frac{16}{25} \times \frac{-25}{6}$$

$$C = \frac{11}{21} + \frac{8 \times \cancel{2}}{1 \times \cancel{25}} \times \frac{-1 \times \cancel{25}}{3 \times \cancel{2}}$$

$$C = \frac{11}{21} + \frac{-8}{3}$$

$$C = \frac{11}{21} + \frac{-8 \times 7}{3 \times 7}$$

$$C = \frac{-45}{21}$$

$$C = \frac{-15 \times 3}{7 \times 3}$$

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

$$D = \frac{-1}{2} - \left(\frac{13}{10} + \frac{4}{5} \right)$$

$$D = \frac{-1}{2} - \left(\frac{13}{10} + \frac{4 \times 2}{5 \times 2} \right)$$

$$D = \frac{-1}{2} - \frac{21}{10}$$

$$D = \frac{-1 \times 5}{2 \times 5} - \frac{21}{10}$$

$$D = \frac{-26}{10}$$

$$D = \frac{-13 \times 2}{5 \times 2}$$

$$D = \frac{-13}{5}$$

$$E = \frac{14}{11} \div \frac{1}{23} \times \frac{4}{23}$$

$$E = \frac{14}{11} \times 23 \times \frac{4}{23}$$

$$E = \frac{322}{11} \times \frac{4}{23}$$

$$E = \frac{14 \times \cancel{23}}{11} \times \frac{4}{1 \times \cancel{23}}$$

$$E = \frac{56}{11}$$

$$F = \frac{11}{8} - \frac{7}{24} \div \frac{-7}{39}$$

$$F = \frac{11}{8} - \frac{7}{24} \times \frac{-39}{7}$$

$$F = \frac{11}{8} - \frac{1 \times \cancel{7}}{8 \times \cancel{3}} \times \frac{-13 \times \cancel{3}}{1 \times \cancel{7}}$$

$$F = \frac{11}{8} - \frac{-13}{8}$$

$$F = \frac{24}{8}$$

$$F = \frac{3 \times 8}{1 \times 8}$$

$$F = 3$$

Corrigé de l'exercice 5

Calculer les expressions suivantes et donner le résultat sous la forme d'une fraction irréductible.

$$A = \frac{18}{13} + \frac{-20}{39} \div \frac{-18}{13}$$

$$A = \frac{18}{13} + \frac{-20}{39} \times \frac{-13}{18}$$

$$A = \frac{18}{13} + \frac{-10 \times \cancel{2}}{-3 \times \cancel{13}} \times \frac{1 \times \cancel{13}}{9 \times \cancel{2}}$$

$$A = \frac{18}{13} + \frac{10}{27}$$

$$A = \frac{18 \times 27}{13 \times 27} + \frac{10 \times 13}{27 \times 13}$$

$$A = \frac{486}{351} + \frac{130}{351}$$

$$A = \frac{616}{351}$$

$$B = \frac{-1}{2} \times \left(\frac{-11}{2} + \frac{7}{9} \right)$$

$$B = \frac{-1}{2} \times \left(\frac{-11 \times 9}{2 \times 9} + \frac{7 \times 2}{9 \times 2} \right)$$

$$B = \frac{-1}{2} \times \left(\frac{-99}{18} + \frac{14}{18} \right)$$

$$B = \frac{-1}{2} \times \frac{-85}{18}$$

$$B = \frac{-1}{-2 \times \cancel{1}} \times \frac{85 \times \cancel{1}}{18}$$

$$B = \frac{85}{36}$$

$$C = \frac{\frac{-2}{5} - 7}{\frac{-5}{3} - 10}$$

$$C = \frac{\frac{-2}{5} - \frac{7 \times 5}{1 \times 5}}{\frac{-5}{3} - \frac{10 \times 3}{1 \times 3}}$$

$$C = \frac{\frac{-2}{5} - \frac{35}{5}}{\frac{-5}{3} - \frac{30}{3}}$$

$$C = \frac{\frac{-2}{5} - \frac{35}{5}}{\frac{-5}{3} - \frac{30}{3}}$$

$$C = \frac{-37}{5} \div \frac{-35}{3}$$

$$C = \frac{-37}{5} \times \frac{-3}{35}$$

$$C = \frac{-37}{-5 \times \cancel{1}} \times \frac{3 \times \cancel{1}}{35}$$

$$C = \frac{111}{175}$$

Corrigé de l'exercice 6

Calculer les expressions suivantes et donner le résultat sous la forme d'une fraction irréductible.

$$A = \frac{\frac{-1}{6} + 2}{\frac{-1}{2} + 9}$$

$$A = \frac{\frac{-1}{6} + \frac{2 \times 6}{1 \times 6}}{\frac{-1}{2} + \frac{9 \times 2}{1 \times 2}}$$

$$A = \frac{\frac{-1}{6} + \frac{12}{6}}{\frac{-1}{2} + \frac{18}{2}}$$

$$A = \frac{11}{6} \div \frac{17}{2}$$

$$A = \frac{11}{6} \times \frac{2}{17}$$

$$A = \frac{11}{3 \times \cancel{2}} \times \frac{1 \times \cancel{2}}{17}$$

$$A = \frac{11}{51}$$

$$B = \frac{-8}{5} \div \left(\frac{9}{11} - \frac{-5}{8} \right)$$

$$B = \frac{-8}{5} \div \left(\frac{9 \times 8}{11 \times 8} - \frac{-5 \times 11}{8 \times 11} \right)$$

$$B = \frac{-8}{5} \div \left(\frac{72}{88} - \frac{-55}{88} \right)$$

$$B = \frac{-8}{5} \div \frac{127}{88}$$

$$B = \frac{-8}{5} \times \frac{88}{127}$$

$$B = \frac{-704}{635}$$

$$C = \frac{-20}{9} + \frac{-4}{9} \times \frac{-1}{3}$$

$$C = \frac{-20}{9} + \frac{-4}{-9 \times \cancel{1}} \times \frac{1 \times \cancel{1}}{3}$$

$$C = \frac{-20}{9} + \frac{4}{27}$$

$$C = \frac{-20 \times 3}{9 \times 3} + \frac{4}{27}$$

$$C = \frac{-60}{27} + \frac{4}{27}$$

$$C = \frac{-56}{27}$$

Corrigé de l'exercice 7

Calculer les expressions suivantes et donner le résultat sous la forme d'une fraction irréductible.

$$A = \frac{4}{3} \div \left(\frac{8}{5} - \frac{-5}{6} \right)$$

$$A = \frac{4}{3} \div \left(\frac{8 \times 6}{5 \times 6} - \frac{-5 \times 5}{6 \times 5} \right)$$

$$A = \frac{4}{3} \div \left(\frac{48}{30} - \frac{-25}{30} \right)$$

$$A = \frac{4}{3} \div \frac{73}{30}$$

$$A = \frac{4}{3} \times \frac{30}{73}$$

$$A = \frac{4}{1 \times \cancel{3}} \times \frac{10 \times \cancel{3}}{73}$$

$$A = \frac{40}{73}$$

$$B = \frac{-8}{7} + 2$$

$$\frac{-1}{3} - 4$$

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

$$\frac{-1}{3} - \frac{4 \times 3}{1 \times 3}$$

$$B = \frac{-8}{7} + \frac{14}{7}$$

$$\frac{-1}{3} - \frac{12}{3}$$

$$B = \frac{6}{7} \div \frac{-13}{3}$$

$$B = \frac{6}{7} \times \frac{-3}{13}$$

$$B = \frac{6}{-7 \times \cancel{1}} \times \frac{3 \times \cancel{1}}{13}$$

$$B = \frac{-18}{91}$$

$$C = 8 - \frac{1}{5} \times \frac{49}{18}$$

$$C = 8 - \frac{49}{90}$$

$$C = \frac{8 \times 90}{1 \times 90} - \frac{49}{90}$$

$$C = \frac{720}{90} - \frac{49}{90}$$

$$C = \frac{671}{90}$$

Corrigé de l'exercice 8

Calculer les expressions suivantes et donner le résultat sous la forme d'une fraction irréductible.

$$A = \frac{\frac{-7}{3} + 3}{\frac{-4}{9} + 9}$$

$$A = \frac{\frac{-7}{3} + \frac{3 \times 3}{1 \times 3}}{\frac{-4}{9} + \frac{9 \times 9}{1 \times 9}}$$

$$A = \frac{\frac{-7}{3} + \frac{9}{3}}{\frac{-4}{9} + \frac{81}{9}}$$

$$A = \frac{2}{3} \div \frac{77}{9}$$

$$A = \frac{2}{3} \times \frac{9}{77}$$

$$A = \frac{2}{1 \times 3} \times \frac{3 \times 3}{77}$$

$$A = \frac{6}{77}$$

$$B = 22 - \frac{-11}{3} \div \frac{-44}{25}$$

$$B = 22 - \frac{-11}{3} \times \frac{-25}{44}$$

$$B = 22 - \frac{-1 \times 11}{-3 \times 3} \times \frac{25 \times 1}{4 \times 4}$$

$$B = 22 - \frac{25}{12}$$

$$B = \frac{22 \times 12}{1 \times 12} - \frac{25}{12}$$

$$B = \frac{264}{12} - \frac{25}{12}$$

$$B = \frac{239}{12}$$

$$C = \frac{-4}{3} \times \left(\frac{1}{4} - \frac{-11}{7} \right)$$

$$C = \frac{-4}{3} \times \left(\frac{1 \times 7}{4 \times 7} - \frac{-11 \times 4}{7 \times 4} \right)$$

$$C = \frac{-4}{3} \times \left(\frac{7}{28} - \frac{-44}{28} \right)$$

$$C = \frac{-4}{3} \times \frac{51}{28}$$

$$C = \frac{-1 \times 4}{1 \times 3} \times \frac{17 \times 3}{7 \times 4}$$

$$C = \frac{-17}{7}$$

Corrigé de l'exercice 9

Résoudre l'équation :

$$\frac{2x+1}{8} + \frac{-2x+6}{6} = \frac{9x-6}{4}$$

$$\frac{(2x+1) \times 3}{8 \times 3} + \frac{(-2x+6) \times 4}{6 \times 4} = \frac{(9x-6) \times 6}{4 \times 6}$$

$$\frac{6x+3-8x+24}{24} = \frac{54x-36}{24}$$

$$-2x+27 = 54x-36$$

$$-2x-54x = -36-27$$

$$-56x = -63$$

$$x = \frac{63}{56} = \frac{9}{8}$$

La solution de cette équation est $\frac{9}{8}$.

Corrigé de l'exercice 10

Résoudre l'équation :

$$\frac{6x - 4}{3} - \frac{-6x - 2}{2} = \frac{-6x - 10}{6}$$

$$\frac{(6x - 4) \times 2}{3 \times 2} - \frac{(-6x - 2) \times 3}{2 \times 3} = \frac{-6x - 10}{6}$$

$$\frac{12x - 8 - (-18x - 6)}{\cancel{6}} = \frac{-6x - 10}{\cancel{6}}$$

$$12x - 8 + 18x + 6 = -6x - 10$$

$$30x - 2 = -6x - 10$$

$$30x + 6x = -10 + 2$$

$$36x = -8$$

$$x = \frac{-8}{36} = \frac{-2}{9}$$

La solution de cette équation est $\frac{-2}{9}$.