

Écritures fractionnaires addition,
soustraction, multiplication

① 1. $\frac{7}{9} + \frac{8}{9} = \frac{7+8}{9} = \frac{15}{9} = \frac{5}{3}$;

2. $-\frac{4}{5} + \frac{11}{20} = -\frac{4 \times 4}{5 \times 4} + \frac{11}{20} = \frac{-16}{20} + \frac{11}{20} = \frac{-5}{20} = \frac{5 \times (-1)}{5 \times 4} = \frac{-1}{4}$;

3. $-\frac{17}{12} - \frac{2}{3} = -\frac{17}{12} - \frac{2 \times 4}{3 \times 4} = \frac{-17}{12} - \frac{8}{12} = \frac{-25}{12}$;

4. $\frac{15}{2} \times \frac{-12}{7} = \frac{-15 \times 2 \times 6}{2 \times 7} = -\frac{90}{7}$;

5. $\frac{35}{8} - \frac{15}{8} = \frac{20}{8} = \frac{5}{2}$; 6. $\frac{5}{3} \times \frac{31}{3} = \frac{5 \times 31}{3 \times 3} = \frac{155}{9}$.

② 1. $a + b = \frac{5}{6} + \frac{7}{36} = \frac{5 \times 6}{6 \times 6} + \frac{7}{36} = \frac{30}{36} + \frac{7}{36} = \frac{37}{36}$.

2. $a - c = \frac{5}{6} - \frac{-11}{54} = \frac{5 \times 9}{6 \times 9} + \frac{11}{54} = \frac{45}{54} + \frac{11}{54} = \frac{56}{54} = \frac{2 \times 28}{2 \times 27} = \frac{28}{27}$.

3. $b + c = \frac{7}{36} + \frac{-11}{54} = \frac{7 \times 3}{36 \times 3} + \frac{2 \times (-11)}{2 \times 54} = \frac{21}{108} + \frac{-22}{108} = \frac{-1}{108}$.

4. $a \times c = \frac{5}{6} \times \frac{-11}{54} = -\frac{55}{324}$.

③

a	b	c	$a - b$	$a \times c$	$a + c$
$\frac{70}{9}$	$\frac{14}{9}$	$\frac{2}{3}$	$\frac{56}{9}$	$\frac{28}{27}$	$\frac{76}{9}$
$\frac{13}{4}$	$\frac{15}{8}$	$\frac{7}{2}$	$\frac{11}{8}$	$\frac{105}{16}$	$\frac{27}{4}$

Écritures fractionnaires : inverse

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x	$\frac{4}{5}$	$-\frac{2}{7}$	-8	0	$\frac{20}{16}$ ou $\frac{5}{4}$	$\frac{1}{9}$	18
$\frac{1}{x}$	$\frac{5}{4}$	$-\frac{7}{2}$	$-\frac{1}{8}$	pas d'inverse	$\frac{16}{20}$	9	$\frac{1}{18}$

2 1. $\frac{4}{5} \times \frac{5}{4} = \frac{4 \times 5}{5 \times 4} = 1$; 2. $\frac{7}{2} \times \frac{2}{7} = 1$; 3. $8 \times \frac{1}{8} = 1$;

4. zéro n'a pas d'inverse; 5. $\frac{20}{16} \times \frac{16}{20} = 1$; 6. $\frac{1}{9} \times 9 = \frac{9}{9} = 1$;

7. $18 \times \frac{1}{18} = 1$.

3 1. $\frac{2}{7} \times \frac{7}{2} = 1$; 2. $5 \times \frac{1}{5} = 1$; 3. $-\frac{1}{13} \times (-13) = 1$; 4. $\frac{1}{15} \times 15 = 1$.

4 1. $6 \times \frac{1}{6} = 1$; $\frac{1}{6}$ est l'inverse de 6.

2. $\frac{1}{-3} \times (-3) = 1$; $\frac{1}{-3}$ est l'inverse de -3 .

3. $\frac{-7}{15} \times \frac{15}{-7} = 1$; $\frac{-7}{15}$ et $\frac{15}{-7}$ sont des nombres inverses.

4. $\frac{10}{-3} \times \frac{-3}{10} = 1$; $\frac{10}{-3}$ et $\frac{-3}{10}$ sont des nombres inverses.

5. $0,01 \times 100 = 1$; 100 est l'inverse de 0,01.

5 1. a. $\frac{-3}{11} \times \frac{11}{-3} = 1$ et $\frac{-3}{11} + \frac{3}{11} = 0$.

b. $\frac{11}{-3}$ est l'inverse de $\frac{-3}{11}$. $\frac{3}{11}$ est l'opposé de $\frac{-3}{11}$.

2. a. Tous les nombres sauf 0 ont un inverse.

b. Tous les nombres ont un opposé.

c. L'opposé de l'inverse de -8 est $-\left(\frac{1}{-8}\right)$ ou encore $\frac{1}{8}$ ou encore 0,125.

Écritures fractionnaires : quotient

$$\textcircled{1} \quad 1. \frac{\frac{2}{3}}{5} = \frac{2}{3} \times \frac{1}{5} = \frac{2}{15} \quad 2. \frac{(-7)}{\frac{1}{-7}} = (-7) \times (-7) = 49.$$

$$3. \frac{\frac{100}{45}}{\frac{250}{36}} = \frac{100}{45} \times \frac{36}{250} = \frac{2 \times 2 \times 25 \times 9 \times 4}{9 \times 5 \times 25 \times 2 \times 5} = \frac{2 \times 4}{5 \times 5} = \frac{8}{25}$$

$$\textcircled{2} \quad 1. \frac{\frac{5}{6}}{\frac{2}{-3}} = \frac{5}{6} \times \frac{-3}{2} = -\frac{5 \times 3}{2 \times 3 \times 2} = -\frac{5}{4}$$

$$2. \frac{\frac{-4}{7}}{\frac{-5}{9}} = \frac{-4}{7} \times \frac{9}{-5} = \frac{36}{35}$$

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

$$\textcircled{3} \quad 1. \frac{\frac{e}{f}}{\frac{30}{35}} = \frac{35}{48} = \frac{24}{35} \times \frac{30}{48} = \frac{24 \times 5 \times 2 \times 3}{7 \times 5 \times 24 \times 2} = \frac{3}{7}$$

$$2. \frac{1}{d} = \frac{1}{\frac{15}{16}} = \frac{16}{15}$$

$$3. \frac{d \times f}{e} = \frac{\frac{15}{16} \times \frac{48}{30}}{\frac{24}{35}} = \frac{15 \times 16 \times 3}{16 \times 15 \times 2} = \frac{3}{2} = \frac{3}{2} \times \frac{35}{24} = \frac{3 \times 35}{2 \times 8 \times 3} = \frac{35}{16}$$

$$\textcircled{4} \quad 1. \frac{11}{4} = \frac{-6}{11} \times \frac{1}{4} = \frac{-6}{44} = \frac{-3}{22}. \text{ Le quart de } \frac{-6}{11} \text{ est égal à } \frac{-3}{22}.$$

$$2. \frac{5}{4} = \frac{5}{6} \times \frac{1}{4} = \frac{5}{24}. \text{ Chacun des quatre enfants recevra } \frac{5}{24} \text{ du gâteau.}$$

$$\textcircled{5} \quad 1. A = \frac{\frac{3}{4}}{\frac{1}{2} + \frac{5}{8}} = \frac{\frac{3}{4}}{\frac{4}{8} + \frac{5}{8}} = \frac{\frac{3}{4}}{\frac{9}{8}} = \frac{3}{4} \times \frac{8}{9} = \frac{3 \times 4 \times 2}{4 \times 3 \times 3} = \frac{2}{3}$$

$$2. B = 28 \times \frac{6}{\frac{27}{2}} = 28 \times 6 \times \frac{2}{27} = \frac{28 \times 3 \times 2 \times 2}{3 \times 9} = \frac{112}{9}$$

Exercices fractionnaires : priorités opératoires.

$$\textcircled{1} \quad 1. \frac{24}{7} - \frac{5}{4} + \frac{3}{2} = \frac{24}{7} - \frac{15}{8} = \frac{24 \times 8 - 15 \times 7}{7 \times 4 \times 2} = \frac{192}{56} - \frac{105}{56} = \frac{87}{56}$$

$$2. \frac{17}{10} \times \left(\frac{22}{51} + \frac{4}{17} \right) = \frac{17}{10} \times \left(\frac{22}{51} + \frac{12}{51} \right) = \frac{17}{10} \times \frac{34}{51}$$

$$\text{ou} \quad \frac{17 \times 17 \times 2}{5 \times 2 \times 17 \times 3} = \frac{17}{15}$$

$$3. \frac{\frac{4}{5} - \frac{2}{3}}{\frac{4}{5} \times \frac{2}{3}} = \frac{\frac{12}{15} - \frac{10}{15}}{\frac{8}{15}} = \frac{\frac{2}{15}}{\frac{8}{15}} = \frac{2}{15} \times \frac{15}{8} = \frac{2}{8} = \frac{1}{4}$$

$$4. \frac{\frac{8}{27} + \frac{5}{6} \times \frac{16}{9}}{\frac{3}{18}} = \frac{\frac{8}{27} + \frac{80}{54}}{\frac{3}{18}} = \frac{\frac{8}{27} + \frac{40}{27}}{\frac{3}{18}} = \frac{\frac{48}{27}}{\frac{3}{18}} = \frac{48}{27} \times \frac{18}{3} = \frac{32}{3}$$

$$\textcircled{2} \quad 1. -\frac{2}{5} + \frac{7}{5} \times \frac{11}{2} = -\frac{2}{5} + \frac{77}{10} = -\frac{4}{10} + \frac{77}{10} = \frac{73}{10}$$

$$2. -\frac{13}{5} \times \left(\frac{19}{26} - \frac{2}{13} \right) = -\frac{13}{5} \times \left(\frac{19}{26} - \frac{4}{26} \right) = -\frac{13}{5} \times \frac{15}{26} = -\frac{13 \times 5 \times 3}{5 \times 13 \times 2} = -\frac{3}{2}$$

$$3. \frac{\frac{2}{3} \times \frac{1}{4}}{\frac{2}{3} + \frac{1}{4}} = \frac{\frac{2}{3 \times 2 \times 2}}{\frac{8}{12} + \frac{3}{12}} = \frac{\frac{1}{6}}{\frac{11}{12}} = \frac{1}{6} \times \frac{12}{11} = \frac{2 \times 6}{6 \times 11} = \frac{2}{11}$$

$$\textcircled{3} \quad 1. a + 3b - c = \frac{2}{5} + 3 \times \left(-\frac{3}{4} \right) - \frac{4}{3} = \frac{2}{5} - \frac{9}{4} - \frac{4}{3} = \frac{24}{60} - \frac{135}{60} - \frac{80}{60} = -\frac{191}{60}$$

$$2. \frac{a+b}{b \times c} = \frac{\frac{2}{5} + \frac{-3}{4}}{\frac{-3}{4} \times \frac{4}{3}} = \frac{\frac{8}{20} + \frac{-15}{20}}{-1} = \frac{-7}{20} \times (-1) = \frac{7}{20}$$

$$3. \frac{1}{15} - (a+c) \times b = \frac{1}{15} - \left(\frac{2}{5} + \frac{4}{3} \right) \times \left(-\frac{3}{4} \right) = \frac{1}{15} - \left(\frac{6}{15} + \frac{20}{15} \right) \times \left(-\frac{3}{4} \right) \\ = \frac{1}{15} - \frac{26}{15} \times \left(-\frac{3}{4} \right) = \frac{1}{15} + \frac{78}{60} = \frac{4}{60} + \frac{78}{60} = \frac{41}{30}$$