

Fractions

Définitions et règles

$$a/b := a : b := \frac{a}{b}$$

$$\frac{a}{b} \cdot \frac{c}{d} := \frac{a}{b} \cdot \frac{c}{d}$$

$$\frac{a}{b} + \frac{c}{d} = \frac{ad + bc}{bd} \quad (\text{même dénominateur})$$

$$\frac{a}{b} \cdot \frac{c}{d} = \frac{ac}{bd}$$

$$\frac{\frac{a}{b}}{\frac{c}{d}} = \frac{ad}{bc} \quad (\text{multiplication par la fraction réciproque})$$

$$\frac{ab}{ac} = \frac{b}{c} \quad (\text{réduire ou augmenter})$$

Exercices 1

1. $\frac{1}{5} \cdot \frac{1}{7}$

3. $\frac{6 \cdot 13}{5 \cdot (-13)}$

5. $\frac{3}{8} + \frac{5}{9}$

2. $\frac{4}{5} \cdot \frac{-7}{9}$

4. $\frac{2}{3} + \frac{4}{3}$

6. $\frac{3}{4} : \frac{5}{7}$

Exercices 2

1. $\frac{-3}{4} \cdot \frac{7}{-2}$

3. $-\frac{3}{5} \cdot \frac{15}{-9}$

5. $\frac{23}{25} \cdot \frac{125}{69} \cdot 12$

2. $\frac{8}{3} \cdot \frac{-5}{4}$

4. $-\frac{11}{15} \left(-\frac{60}{121}\right)$

6. $\frac{42}{123} \cdot \frac{41}{6} \cdot \frac{36}{24} \cdot \frac{3}{14}$

Exercices 3

1. $-\frac{3}{13} : \frac{5}{26}$

3. $16 : \frac{-4}{5}$

5. $\left(\frac{1}{4} : \frac{6}{7}\right) : \frac{3}{8}$

2. $\frac{15}{8} : 18$

4. $\frac{75}{49} : \frac{30}{14}$

6. $\frac{1}{4} : \left(\frac{6}{7} : \frac{3}{8}\right)$

Exercices 4

1. $\frac{8}{5} : \frac{3}{7}$

5. $11 - \frac{22}{8}$

9. $\frac{3}{2} - \frac{4}{3} - \frac{1}{7}$

2. $\frac{5}{42} + \frac{3}{14}$

6. $\frac{2}{12} - \frac{3}{7}$

10. $\frac{19}{7} - \frac{11}{6} + \frac{6}{21}$

3. $\frac{1}{6} - \frac{10}{9}$

7. $\frac{5}{6} + \frac{1}{12} - \frac{7}{24}$

11. $\frac{5}{14} - \frac{2}{35} + \frac{3}{70} - \frac{2}{7}$

4. $\frac{13}{3} - 3$

8. $\frac{8}{3} - \frac{5}{9} + \frac{1}{6}$

12. $\frac{8}{3} - \frac{6}{5} - \frac{3}{4} - \frac{1}{20}$

Exercices 5

1. $\left(\frac{4}{7} : \frac{3}{14}\right) \frac{7}{22}$

3. $\left(\frac{12}{35} : \frac{15}{14}\right) \frac{5}{2}$

5. $\left(\frac{2}{3} - \frac{1}{5} - \frac{5}{6}\right) \left(\frac{2}{11} - \frac{1}{22}\right)$

2. $\left(\frac{2}{3} - \frac{3}{4}\right) : \frac{5}{6}$

4. $\left(\left(\frac{4}{7} - \left(\frac{3}{5} : \frac{5}{6}\right)\right) \frac{15}{26}\right) - \frac{3}{7}$

6. $\left(\frac{7}{22} : \frac{5}{14}\right) : \left(5 - \frac{17}{35}\right)$

Exercices 6

1. $\frac{4}{x} - \frac{2}{x}$
2. $\frac{4}{x} - \frac{2}{y}$
3. $\frac{4c}{x} - \frac{2c}{x}$
4. $\frac{n+x}{3} + \frac{n-x}{3}$
5. $\frac{ax-ay}{m+n} + \frac{nx+ny}{m+n}$
6. $\frac{3x}{6} + \frac{5x}{9}$
7. $\frac{a+3b}{2} + \frac{3a-b}{4} + \frac{2a-5y}{8}$
8. $\frac{5x}{12a} + \frac{8x}{15b}$
9. $\frac{5x+3y}{3a} - \frac{2x+5y}{6b} + \frac{8x+6y}{6ab}$
10. $\frac{6x}{bc} \frac{bc}{18x}$
11. $\frac{a+b}{n} \frac{c+d}{a-b} \frac{nx}{a+b} \frac{a-b}{c+d}$
12. $\frac{2a}{3b} + \frac{5ac}{4bd}$
13. $\frac{144abx}{3c} : 12ax$
14. $\left(3 + \frac{5}{8}\right) a : \left(\frac{39}{14} \frac{a}{b}\right)$
15. $\frac{8ac-4adx-a}{2a}$
16. $\frac{6(x+y)}{15(x-y)} : \frac{3(x+y)}{5(x-y)}$
17. $\frac{24nx-12bx+16cx}{-4x}$
18. $\frac{36x-54z}{4x-6z}$

Solutions 1

1. $\frac{1}{35}$
2. $-\frac{28}{45}$
3. $-\frac{6}{5}$
4. 2
5. $\frac{67}{72}$
6. $\frac{21}{20}$

Solutions 2

1. $\frac{21}{8}$
2. $-\frac{10}{3}$
3. 1
4. $\frac{4}{11}$
5. 20
6. $\frac{3}{4}$

Solutions 3

1. $-\frac{6}{5}$
2. $\frac{5}{48}$
3. -20
4. $\frac{5}{7}$
5. $\frac{7}{9}$
6. $\frac{7}{64}$

Solutions 4

1. $\frac{56}{15}$
2. $\frac{1}{3}$
3. $-\frac{17}{18}$
4. $\frac{4}{3}$
5. $\frac{33}{4}$
6. $-\frac{11}{42}$
7. $\frac{5}{8}$
8. $\frac{41}{18}$
9. $\frac{1}{42}$
10. $\frac{7}{6}$
11. $\frac{2}{35}$
12. $\frac{2}{3}$

Solutions 5

1. $\frac{28}{33}$
2. $-\frac{1}{10}$
3. $\frac{4}{5}$
4. $-\frac{18}{35}$
5. $-\frac{1}{20}$
6. $\frac{343}{1738}$

Solutions 6

1. $\frac{2}{x}$
2. $\frac{4y-2x}{xy}$
3. $\frac{2c}{x}$
4. $\frac{2n}{3}$
5. $\frac{a(x-y)+n(x+y)}{m+n}$
6. $\frac{19x}{18}$
7. $\frac{12a+10b-5y}{8}$
8. $\frac{20bx+40ax}{60ab} = \frac{x(b+2a)}{3ab}$
9. $\frac{10bx+6by-2ax-5ay+8x+6y}{6ab}$
10. $\frac{1}{3}$
11. x
12. $\frac{8ad+15ac}{12bd}$

$$13. \frac{4a^2b}{c}x^2$$

$$14. \frac{203b}{156}$$

$$15. \frac{8ac-4adx-a}{2a} = 4c-2dx-\frac{1}{2}$$

$$16. \frac{6(x+y)5(x-y)}{5(x-y)3(x+y)} = 2$$

$$17. 3b - 4c - 6n$$

$$18. \frac{6(6x-9z)}{4(x-z)} = \frac{3}{2} \frac{(6x-9z)}{(x-z)}$$