

Exercice 1.

a) $20 - 4 \cdot 2 = 20 - 8 = 12$

b) $2^2 + 2^3 = 4 + 8 = 12$

c) $\sqrt{\frac{4}{9}} = \frac{\sqrt{4}}{\sqrt{9}} = \frac{2}{3}$

d) $(-4)^2 = (-4) \cdot (-4) = 16$

e) $17 - 4^2 = 17 - 16 = 1$

f) $\sqrt{25 - 9} = \sqrt{16} = 4$

Exercice 2.

a) Faux, car c'est $2^3 \cdot 2^4$ qui vaut 2^7 .

b) Faux, car $3^2 + 4^2 = 9 + 16 = 25$ et $7^2 = 49$.

c) Vrai, car $3^2 \cdot 4^2 = 9 \cdot 16 = 144 = 12^2 = (3 \cdot 4)^2$.

d) Vrai, car $(3^2)^5 = 3^2 \cdot 3^2 \cdot 3^2 \cdot 3^2 \cdot 3^2 = 3^{10} = 3^{2 \cdot 5}$

Exercice 3.

a) $\frac{2}{3} + \frac{5}{4} = \frac{2 \cdot 4 + 5 \cdot 3}{3 \cdot 4} = \frac{8 + 15}{12} = \frac{23}{12}$

b) $\frac{5}{2} - \frac{1}{3} = \frac{5 \cdot 3 - 1 \cdot 2}{2 \cdot 3} = \frac{15 - 2}{6} = \frac{13}{6}$

c) $\frac{2}{3} \cdot \frac{9}{4} = \frac{2 \cdot 9}{3 \cdot 4} = \frac{18}{12} = \frac{9}{6} = \frac{3}{2}$

d) $\frac{2}{3} : \frac{5}{6} = \frac{2}{3} \cdot \frac{6}{5} = \frac{2 \cdot 6}{3 \cdot 5} = \frac{12}{15} = \frac{4}{5}$

Exercice 4.

a) $0,00034 = 3,4 \cdot 10^{-4}$

b) $4634000 = 4,634 \cdot 10^6$

Exercice 5.

$1,23 \cdot 10^5 = 123'000$

$35,2 \cdot 10^3 = 35'200$

$0,47 \cdot 10^4 = 4'700$

$589 \cdot 10^{-2} = 5,89$

$\Rightarrow 589 \cdot 10^{-2} < 0,47 \cdot 10^4 < 35,2 \cdot 10^3 < 1,23 \cdot 10^5$

Exercice 6

$a + b + c = 4 + 2 + (-3) = 6 - 3 = 3$

$a - (b + c) = 4 - (2 + (-3)) = 4 - (2 - 3) = 4 - (-1) = 4 + 1 = 5$

$$a-b+c = 4-2+(-3) = 2-3 = -1.$$

Exercice 7

1^{ère} famille: $3n / 2n+n / n+n+n / 4n-n$
2^{ème} famille: $n^3 / n^2 \cdot n / n \cdot n \cdot n / \frac{n^4}{n}$.

Exercice 8:

$$\begin{array}{l|l} \text{a)} & \\ \frac{4x}{3} = 8 & \cdot 3 \\ 4x = 24 & : 4 \\ x = 6 & \end{array}$$

$$\begin{array}{l|l} \text{b)} & \\ 15x-1 = 3x+23 & -3x \\ 12x-1 = 23 & +1 \\ 12x = 24 & : 12 \\ x = 2 & \end{array}$$

Exercice 9

Calculons les $\frac{2}{5}$ de la bière (= ce qui a été bu): $\frac{2}{5}$ de 20l = $\frac{2}{5} \cdot 20 = \frac{2}{5} \cdot \frac{20}{1} = \frac{2 \cdot 20}{5 \cdot 1} = \frac{40}{5} = 8$ l
Ainsi il reste $20 - 8 = 12$ l de bière.

Exercice 10

a) $2a+3a-a = 4a$

b) $4x+7x-3 = 11x-3$

c) $-2x \cdot x^2 = -2x^3$

d) $-2x(x+x) = -2x \cdot 2x = -4x^2$ ou $-2x \underbrace{(x+x)} = -2x \cdot x - 2x \cdot x = -2x^2 - 2x^2 = -4x^2$

e) $x(c+2d) = xc + 2xd$.