

## Les nombres relatifs – CORRECTION

### ◆ Additionner et soustraire des nombres relatifs

#### Exercice 11 page 74

$$\begin{aligned} A &= 0,4 + (-5) + (-2,5) + 5 + 1,6 \\ &= \mathbf{0,4 + 1,6} + 5 + \mathbf{(-5) + (-2,5)} \\ &= 7 + (-7,5) \\ &= -0,5 \end{aligned}$$

$$\begin{aligned} B &= (-5,5) + 1,95 + 5,1 + (-1,5) + 0,05 + (-2,3) \\ &= 5,1 + \mathbf{1,95 + 0,05} + \mathbf{(-5,5) + (-1,5)} + (-2,3) \\ &= 7,1 + (-9,3) \\ &= -2,2 \end{aligned}$$

$$\begin{aligned} C &= 250 + (-425) + 150 + (-123) + (-75) + 38 \\ &= \mathbf{250 + 150 + 38} + \mathbf{(-425) + (-75)} + 38 \\ &= 438 + (-538) \\ &= -100 \end{aligned}$$

#### Exercice 19 page 75

- a.  $3,2 - 5,35 = 3,2 + (-5,35) = -2,15$
- b.  $8,1 - (+15) = 8,1 + (-15) = -6,9$
- c.  $4,7 - (-5) = 4,7 + 5 = 9,7$
- d.  $-120 - 56 = -120 + (-56) = -176$
- e.  $-284 - (-45) = -284 + 45 = -239$
- f.  $-0,06 - (3,4) = -0,06 + (-3,4) = -3,46$

### ◆ Multiplier et diviser des nombres relatifs

#### Exercice 21 page 87

$$\begin{aligned} A &= -(10 \times 3 \times 2 \times 5 \times 6) = -10 \times 10 \times 18 = -1\,800 \\ B &= 4,3 \times 10 \times 2 \times 1 \times 1 = 86 \\ C &= -(0,8 \times 4 \times 0,3 \times 2 \times 1) = -0,24 \times 8 = 1,92 \end{aligned}$$

#### Exercice 27 page 87

$$\begin{aligned} A &= 40 \div (-5) = -8 \\ C &= 46 \div (-1) = -46 \\ E &= (-54) \div (-6) = 9 \\ B &= (-32) \div (-8) = 4 \\ D &= (-25) \div 25 = -1 \\ F &= (-42) \div (-7) = 6 \end{aligned}$$

### ◆ Priorités opératoires

#### Exercice 20 page 97



$$\begin{aligned} \text{a. } -8 + 10 \times (-3) - (-5) \\ &= -8 + (-30) + 5 \\ &= -38 + 5 \\ &= -33 \end{aligned}$$

$$\begin{aligned} \text{c. } \frac{-4 \times 5 + 8}{-2 - 1} \\ &= \frac{-20 + 8}{-3} \\ &= \frac{-12}{-3} \\ &= 4 \end{aligned}$$

$$\begin{aligned} \text{b. } [(10 - 17) \times 3 - 5] \times 2 \\ &= (-7 \times 3 - 5) \times 2 \\ &= (-21 - 5) \times 2 \\ &= -26 \times 2 \\ &= -52 \end{aligned}$$

$$\begin{aligned} \text{d. } \frac{12 - 6 \times (-4)}{-3 \times 2} \\ &= \frac{12 - (-24)}{-6} \\ &= \frac{36}{-6} \\ &= -6 \end{aligned}$$

## Les fractions – CORRECTION

### ◆ Additionner et soustraire des fractions

#### Exercice 19 page 121

$$\text{a. } \frac{4}{3} + \frac{7}{3} = \frac{4+7}{3} = \frac{11}{3}$$

$$\text{b. } \frac{2}{7} + \frac{8}{7} = \frac{2+8}{7} = \frac{10}{7}$$

$$\text{c. } \frac{9}{5} - \frac{7}{5} = \frac{9-7}{5} = \frac{2}{5}$$

$$\text{d. } \frac{4}{6} + \frac{11}{6} - \frac{5}{6} = \frac{4+11-5}{6} = \frac{10}{6}$$

$$\text{e. } \frac{5}{2} - \frac{3}{2} - \frac{7}{2} = \frac{5-3-7}{2} = \frac{-5}{2}$$

#### Exercice 25 page 121

$$A = \frac{5}{4} + \frac{1}{6} = \frac{5 \times 3}{4 \times 3} + \frac{1 \times 2}{6 \times 2} = \frac{15}{12} + \frac{2}{12} = \frac{17}{12}$$

$$B = \frac{7}{15} - \frac{3}{10} = \frac{7 \times 2}{15 \times 2} - \frac{3 \times 3}{10 \times 3} = \frac{14}{30} - \frac{9}{30} = \frac{5}{30}$$

$$C = -\frac{5}{8} + \frac{5}{12} = -\frac{5 \times 3}{8 \times 3} + \frac{5 \times 2}{12 \times 2} = -\frac{15}{24} + \frac{10}{24} = \frac{-5}{24}$$

#### Exercice 27 page 121

$$\begin{aligned} A &= \frac{5}{7} - \left( \frac{3}{2} - \frac{5}{4} \right) = \frac{5}{7} - \left( \frac{3 \times 2}{2 \times 2} - \frac{5}{4} \right) \\ &= \frac{5}{7} - \left( \frac{6}{4} - \frac{5}{4} \right) = \frac{5}{7} - \frac{1}{4} = \frac{5 \times 4}{7 \times 4} - \frac{1 \times 7}{4 \times 7} \\ &= \frac{20}{28} - \frac{7}{28} = \frac{13}{28} \end{aligned}$$

$$\begin{aligned} B &= \left( \frac{5}{8} + \frac{-7}{4} \right) - \left( \frac{-1}{3} - \frac{4}{3} \right) = \left( \frac{5}{8} + \frac{-7 \times 2}{4 \times 2} \right) - \left( \frac{-1}{3} - \frac{4}{3} \right) \\ &= \left( \frac{5}{8} + \frac{-14}{8} \right) - \left( \frac{-1}{3} - \frac{4}{3} \right) = \frac{-9}{8} - \frac{-5}{3} \\ &= \frac{-9 \times 3}{8 \times 3} - \frac{-5 \times 8}{3 \times 8} = \frac{-27}{24} - \frac{-40}{24} = \frac{-27 + 40}{24} \\ &= \frac{13}{24} \end{aligned}$$



### ◆ Multiplier et diviser des fractions

#### Exercice 5 page 132

$$A = \frac{7 \times 5}{3 \times 4 \times 3} = \frac{35}{36}$$

$$B = -\frac{4 \times 5 \times 5}{3 \times 7 \times 3} = -\frac{100}{63}$$

#### Exercice 28 page 133

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

$$C = \frac{5}{6} \times \frac{5}{6} = \frac{25}{36}$$

$$B = (-3) \times \frac{5}{11} = -\frac{15}{11}$$

$$D = \frac{2}{-3} \times \frac{7}{-5} = \frac{14}{15}$$

♦ Priorités opératoires

Exercice 33 page 133



$$A = \frac{7}{3} - \frac{4}{3} \times \frac{5}{8} = \frac{7}{3} - \frac{4 \times 5}{3 \times 4 \times 2} = \frac{7}{3} - \frac{5}{6} = \frac{14}{6} - \frac{5}{6} = \frac{9}{6}$$

$$B = \frac{-4}{9} \times \frac{1}{5} \times \frac{7}{3} = -\frac{28}{135}$$

$$C = -\frac{8}{3} \times \frac{6}{-5} + \frac{7}{4} = \frac{8 \times 3 \times 2}{3 \times 5} + \frac{7}{4} = \frac{16}{5} + \frac{7}{4} = \frac{64}{20} + \frac{35}{20} = \frac{99}{20}$$

Exercice 34 page 133



$$\begin{aligned} L &= \frac{-7}{5} \div \left( \frac{4}{18} - \frac{7}{18} \right) = \frac{-7}{5} \div \frac{-3}{18} = \frac{-7}{5} \times \frac{18}{-3} \\ &= \frac{7 \times 3 \times 6}{5 \times 3} = \frac{42}{5} \end{aligned}$$

$$\begin{aligned} M &= \left( \frac{8}{10} + \frac{-15}{10} \right) \div \left( \frac{-27}{12} - \frac{2}{12} \right) = \frac{-7}{10} \div \frac{-29}{12} \\ &= \frac{-7}{10} \times \frac{12}{-29} = \frac{7 \times 2 \times 6}{2 \times 5 \times 29} = \frac{42}{145} \end{aligned}$$

## Les puissances – CORRECTION

### ♦ Propriétés des puissances

#### Exercices 1

$$A = 12 - 2^3 \times 5$$

$$A = 12 - 8 \times 5$$

$$A = 12 - 40$$

$$A = -28$$

$$B = 18 + (7 - 11)^2$$

$$B = 18 + (-4)^2$$

$$B = 18 + 16$$

$$B = 34$$

$$C = 2 \times [7 \div 10^2 - (-2)^3]$$

$$C = 2 \times [7 \div 100 - (-8)]$$

$$C = 2 \times [0,07 - (-8)]$$

$$C = 2 \times [0,07 + 8]$$

$$C = 2 \times 8,07$$

$$C = 16,14$$

#### Exercices 2

$$10^5 \times 10^1 \times 10^6 = 10^{5+1+6} = 10^{12}$$

$$\frac{10^5}{10^{-3}} = 10^{5-(-3)} = 10^8$$

$$\frac{10^{-2}}{10^{-3}} = 10^{-2-(-3)} = 10^1$$

$$\frac{10^4}{10^3} \times \frac{10^9}{10^3} = 10^{4-3} \times 10^{9-3} = 10^1 \times 10^6 = 10^7$$

$$10 \times \frac{10^{-1}}{10^4} \times 10^2 = 10 \times 10^{-1-4} \times 10^2 = 10 \times 10^{-5} \times 10^2 = 10^{-2}$$

$$\frac{(10^2)^3 \times 10^{-4}}{(10^4)^{-3} \times 10^2} = \frac{10^6 \times 10^{-4}}{10^{-12} \times 10^2} = \frac{10^2}{10^{-10}} = 10^{2-(-10)} = 10^{12}$$

### ♦ Ecriture scientifique

#### Exercice 25 page 41

*Rappel de la définition : L'écriture scientifique d'un nombre décimal positif est l'écriture de la forme  $a \times 10^n$  où  $a$  est un nombre décimal qui ne comporte qu'un seul chiffre non nul avant la virgule.*

Les écritures scientifiques sont donc les réponses :

a)  $1,3 \times 10^7$

b)  $7,6 \times 10^{-2}$

c)  $2 \times 10^0$

#### Exercice 28 page 41

a)  $789 \times 10^4 = 7,89 \times 10^6$

b)  $0,67 \times 10^{-3} = 6,7 \times 10^{-4}$

c)  $0,003 \times 10^6 = 3 \times 10^3$

d)  $12,8 \times 10^{-1} = 1,28 \times 10^0$