CENTRE DE FORMATION PROFESSIONNELLE
BERNE FRANCOPHONE

Corrigé partie 1

Exercice 1

(a) $3-4\cdot 2=3-8=-5$

(b) $3\cdot 3+2^2-1\cdot 3=9+4-3=10$

(c) $5\cdot 7-2^4\cdot 0-3^2\cdot 2=35-0-9\cdot 2=35-18=17$

(d) $17-(12-2)+28\div 7=17-10+4=11$

(e) $\dfrac{\sqrt{64+36}}{2}=\dfrac{\sqrt{100}}{2}=\dfrac{10}{2}=5$

(f) $(6-2)^2\div\sqrt{36-16\cdot 2}=4^2\div\sqrt{36-32}=16\div\sqrt{4}=16\div 2=8$

Exercice 2

(a) $\dfrac{\cancel{3}}{5}\cdot\dfrac{2}{\cancel{3}}=\dfrac{2}{5}$

(b) $\dfrac{\overset{4}{\cancel{20}}}{\underset{1}{\cancel{3}}}\cdot\dfrac{\overset{10}{\cancel{30}}}{\underset{1}{\cancel{5}}}=\dfrac{40}{1}=40$

(c) $\dfrac{49}{125}\div\dfrac{7}{75}=\dfrac{\overset{7}{\cancel{49}}}{\underset{5}{\cancel{125}}}\cdot\dfrac{\overset{3}{\cancel{75}}}{\underset{1}{\cancel{7}}}=\dfrac{21}{5}$

(d) $\dfrac{1}{4}-\dfrac{\overset{3}{\cancel{9}}}{\underset{4}{\cancel{12}}}=\dfrac{-2}{4}=-\dfrac{1}{2}$

(e) $\dfrac{13}{60}+\dfrac{7}{45}=\dfrac{13\cdot 3+7\cdot 4}{180}=\dfrac{39+28}{180}=\dfrac{67}{180}$

(f) $\left(\dfrac{\overset{1}{\cancel{3}}}{\underset{3}{\cancel{9}}}+\dfrac{\overset{1}{\cancel{4}}}{\underset{3}{\cancel{12}}}\right)\div\left(\dfrac{4}{5}-\dfrac{2}{3}\right)=\dfrac{1+1}{3}\div\dfrac{4\cdot 3-2\cdot 5}{15}=\dfrac{2}{3}\div\dfrac{2}{15}=\dfrac{\cancel{2}}{\underset{1}{\cancel{3}}}\cdot\dfrac{\overset{5}{\cancel{15}}}{\cancel{2}}=\dfrac{5}{1}=5$

Exercice 3

(a) $ab + 3a^2b - 5ab + 2ab^2 - 3a^2b + 2ab^2 = ab - 5ab + 3a^2b - 3a^2b + 2ab^2 + 2ab^2 = -4ab + 4ab^2$

(b) $10x + 3y - (5x + 3y) - 2x - (x - y) = 10x + 3y - 5x - 3y - 2x - x + y =$
$= 10x - 5x - 2x - x + 3y - 3y + y = 2x + y$

(c) $8a \cdot (2a + 3b - c) = 16a^2 + 24ab - 8ac$

(d) $(x - 2y)(2x - y) = 2x^2 - xy - 4xy + 2y^2 = 2x^2 - 5xy + 2y^2$

Exercice 4

400 oranges $\leftrightarrow$ 2 heures

1. $30\,\text{min} = \frac{2\,\text{heures}}{4} \Rightarrow \frac{400}{4} = \underline{\underline{100 \text{ oranges}}}$
2. A 2 : 400 oranges en 2 heures

   Tout seul : $\frac{400}{2} = 200$ oranges en 2 heures donc $\frac{200}{2} = \underline{\underline{100 \text{ oranges en 1 heure}}}$
3. 400 oranges en 2 heures $\Rightarrow$ 100 oranges en $\frac{2}{4} = 0.5$ heures

   $\Rightarrow$ 500 oranges en $0.5 \cdot 5 = \underline{\underline{2.5 \text{ heures}}}$
4. Réponse 2 : Tout seul ça fait 100 oranges en 1 heures, donc à 3 : <u>300 oranges en 1heures</u>

Exercice 5

(a) $F = \frac{A \cdot B^2}{2 \cdot \mu} \quad | \cdot 2 \cdot \mu$

$2 \cdot \mu \cdot F = A \cdot B^2 \quad | \cdot \frac{1}{A}$

$B^2 = \frac{2\mu F}{A} \quad | \sqrt{\ }$

$B = \sqrt{\frac{2\mu F}{A}}$

(b) $F = \frac{A \cdot B^2}{2 \cdot \mu} \quad | \cdot 2 \cdot \mu$

$2 \cdot \mu \cdot F = A \cdot B^2 \quad | \cdot \frac{1}{2F}$

$\mu = \frac{A \cdot B^2}{2F}$

Exercice 6

$$V = \frac{\pi \cdot d^2}{4} \cdot h$$

Volume extérieur : $V_1 = \frac{\pi \cdot d_1^2}{4} \cdot h = \frac{\pi \cdot 20^2}{4} \cdot 50 = \frac{\pi \cdot 400}{4} \cdot 50 = \pi \cdot 100 \cdot 50 = 5000\pi \cong 15708 \text{ cm}^3$

Volume intérieur : $V_2 = \frac{\pi \cdot d_2^2}{4} \cdot h = \frac{\pi \cdot 16^2}{4} \cdot 50 = \frac{\pi \cdot 256}{4} \cdot 50 = \pi \cdot 64 \cdot 50 = 3200\pi \cong 10053 \text{ cm}^3$

Volume cherché : $V = V_1 - V_2 = 5000\pi - 3200\pi = 1800\pi \cong 5655 \text{ cm}^3$ *5654.866776*

Exercice 7

$26x - 24 + x^2 - 28x = 75 - 6x + 25 + x^2$	Réduire
$x^2 - 2x - 24 = x^2 - 6x + 100$	$-x^2 + 6x + 24$
$4x = 124$	$\cdot \frac{1}{4}$
$x = 31$	

Exercice 8

a)

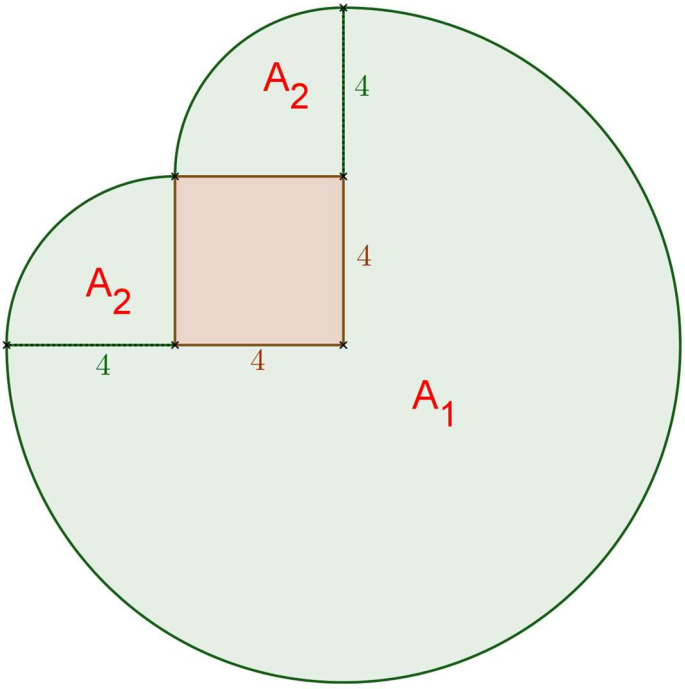
b) $v = \frac{d}{t} = \frac{120}{1.5} = 80 \text{ km/h}$

c) A partir de 10h45 : $t = \frac{d}{v} = \frac{300 - 120}{120} = \frac{180}{120} = 1.5 \text{ h} = 1\text{h}30\,\text{min}$

Elle arrive à 12h15.

d) $v = \frac{d}{t} = \frac{300}{3.25 - 0.5} \cong 109 \text{ km/h}$

Exercice 9



$A = A_1 + 2 \cdot A_2$

A_1 : ¾ de cercle de rayon 8m $\Rightarrow$ $A_1 = \frac{3}{4} \cdot \pi \cdot 8^2 = 48\pi \text{ m}^2$

A_2 : ¼ de cercle de rayon 4m $\Rightarrow$ $A_2 = \frac{1}{4} \cdot \pi \cdot 4^2 = 4\pi \text{ m}^2$

$\Rightarrow$ $A = 48\pi + 2 \cdot 4\pi = 56\pi \cong 176 \text{ m}^2$ 175.9291886