وزارة التربية والتعليم العالي المديريّـة العامة للتربية دائرة الامتحانات الرسمية	امتحانات الشهادة المتوسطة	دورة العام ٢٠١٨ العادية السبت ٢ حزيران ٢٠١٨ للمكفوفين

عدد المسائل: خمس	مسابقة في مادة الرياضيات المدة: ساعتان	الاسم: الرقم:

إرشادات عامة: - يسمح باستعمال آلة حاسبة غير قابلة للبرمجة أو اختزان المعلومات أو رسم البيانات.
- يستطيع المرشح الإجابة بالترتيب الذي يناسبه دون الالتزام بترتيب المسائل الواردة في المسابقة.

I - (3 points)

In the table below, only one of the proposed answers to each question is correct.
Write down the number of the question and give, **with justification**, its corresponding answer.

N°	Questions	Proposed answers		
		a	b	c
1	$\frac{1}{3}-\frac{1}{3}\times\frac{6}{7}=$	0	$\frac{1}{21}$	$\frac{6}{7}$
2	$\left(3+\sqrt{5}\right)^2-14=$	$9+\sqrt{5}$	0	$6\sqrt{5}$
3	The five grades of a student over 20 are: 10 ; 12 ; 13 ; 16 and 19. The average grade is:	13	14	14.5

II - (5.5 points)

Given $A(x)=(3x-2)^2-(2x-1)(3x-2)$ and $B(x)=9x^2-4$.

1) a. Verify that $A(x)=(3x-2)(x-1)$.

b. Solve the equation $A(x)=0$.

2) Factorize $B(x)$.

3) Let $F(x)=\dfrac{(3x-2)(3x+2)}{A(x)}$.

a. For what values of x, is F(x) defined?

b. Simplify F(x).

c. Does the equation $F(x)=-12$ admit a solution? Justify.

III - (5.5 points)

1) Solve the following system: $\begin{cases}2x+5y=50\,000\\2x+3y=38\,000\end{cases}$

2) In a museum, 2 adults and 5 kids buy tickets and pay 50 000 LL;
4 adults and 6 kids pay 76 000 LL.

a. Prove that the previous information is modeled by the system given in question **1)**.

b. Find the price of the ticket of an adult and that of a kid.

3) For a group of 30 kids and 4 adults, the director of the museum decided to offer a reduction of 25% on the total amount paid for the tickets. Calculate then the amount paid.

IV - (4 points)

Consider the numbers $\mathbf{A=(x+1)^2+y^2}$ and $\mathbf{B=2(x-1)^2+2(y-4)^2}$ (x and y are two real numbers).

In what follows take **x = 4** and **y = 0**

1) a. Calculate A and B.

b. verify that B = 2A.

2) Let $C=\frac{A}{B}$. Calculate C.

3) Let $D=\frac{\sqrt{2}+\sqrt{18}}{2\sqrt{2}}$.

Verify that D is an integer,

4) Prove that C x D = 1.

V- (2 points)

Consider the numbers a = 6, b = 4, $c = 2\sqrt{13}$ and $d=\frac{16}{\sqrt{13}}$.

1) Prove that $a^2+b^2=c^2$.

2) Prove that $c=\frac{32}{d}$.