

Escape Classroom

Analyse Mathématiques 1



ING 1

Etude des fonctions

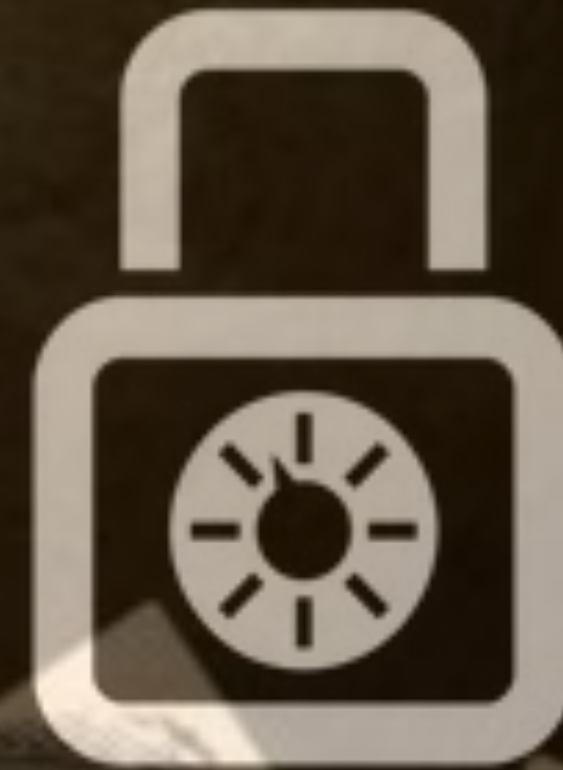
M.Bosco

Let's try to escape the Maths Room !



TRAPPED

in math class.



Group work,
problem solving,
order of operations,
Algebraic thinking.

carton classroom



WHAT DID THE SPELLING BOOK SAY TO THE MATH BOOK? "I KNOW I CAN COUNT ON YOU!"

The Context :

A mad mathematician trapped your all class in the classroom. So as to escape the room, you have to use your knowledge to crack the code at the end to let you go out.

Solve the problems at each level and be sure to record your answers in the answers sheet. Once all the levels are complete, retrieve the completion code to break out and save the day.

You must hurry and escape before remain trapped in the Maths class for a long time. Before starting , you must form a team of 3-4 people.

You have 60 minutes to do that, good luck !



Are you ready ?



Let's begin !

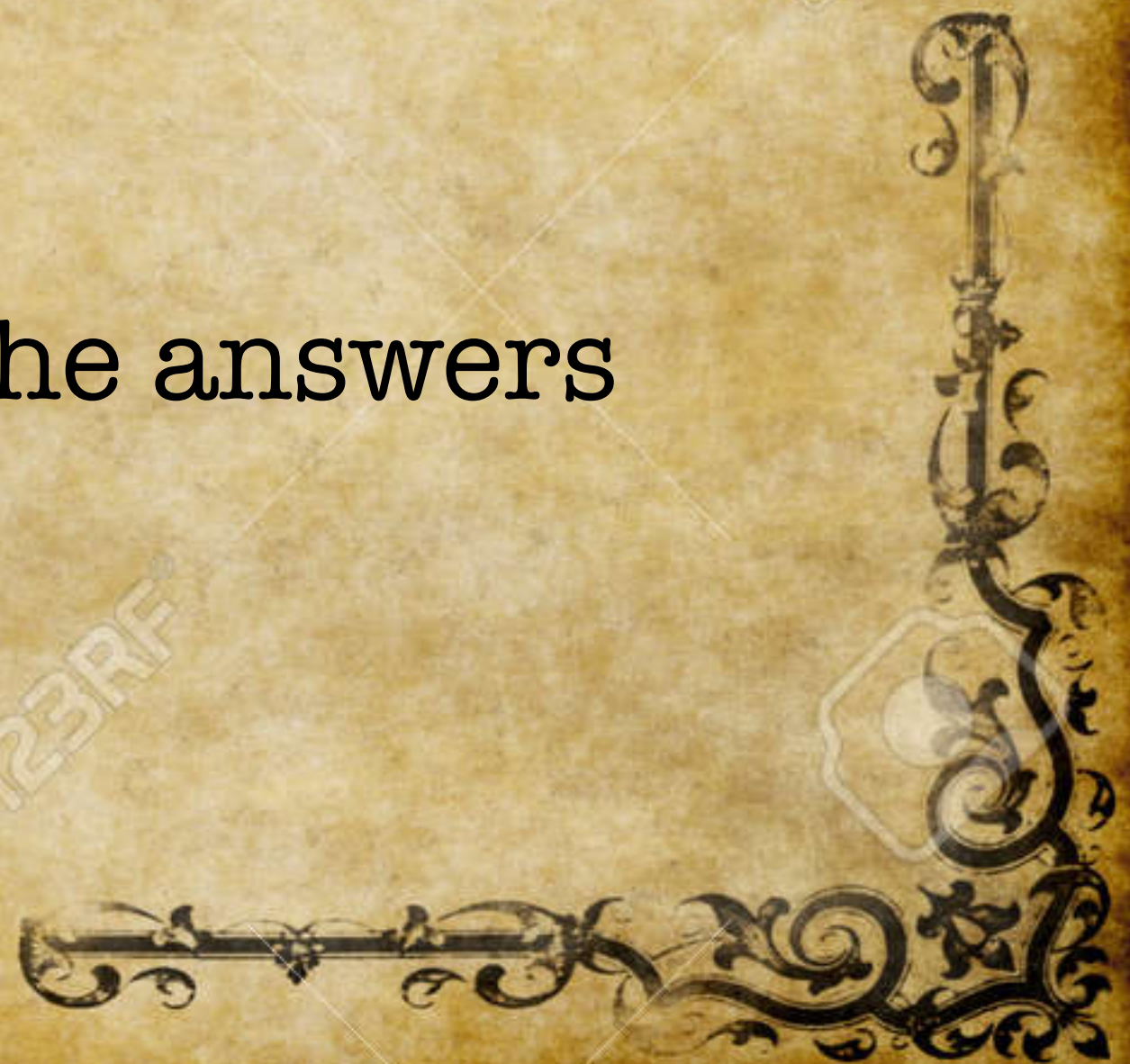


LEVEL 1 :

1) Find out as many words as you can referring to the functions

2) Then count them and keep the number and keep the number in your mind for the end of the game

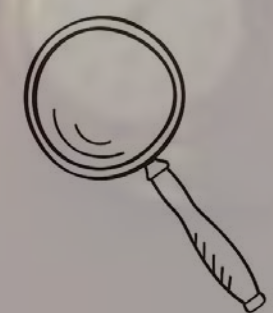
3) Write all your answers in the answers sheet



LEVEL 1 :

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | G | E | F | L | G | E | A | R | M | M | A | G | E | C | L | G | E | N | M | N | A | M |
| B | P | | O | A | K | P | C | H | E | M | B | L | A | O | P | A | C | C | C | T | B | S |
| C | T | P | N | B | G | E | E | A | M | C | C | P | B | G | E | C | T | R | A | V | C | T |
| M | H | C | C | C | L | T | G | B | K | O | I | L | C | K | T | E | V | O | B | I | N | V |
| N | E | N | T | P | A | V | F | C | C | C | N | P | K | C | V | G | I | I | C | C | S | I |
| E | O | M | I | L | B | I | U | P | K | E | T | T | R | P | I | F | T | S | K | A | G | E |
| T | R | N | O | P | C | P | H | C | L | L | A | V | M | O | K | U | V | S | M | B | P | S |
| N | E | P | N | A | G | E | S | B | N | L | B | I | T | P | Q | A | I | A | N | C | N | M |
| E | M | N | P | B | T | S | A | S | G | E | C | G | E | H | T | U | H | N | N | S | N | E |
| G | E | A | P | L | V | V | H | M | H | T | S | S | T | A | V | A | E | T | G | E | U | P |
| N | C | B | P | S | I | C | C | O | S | I | N | U | S | B | I | C | T | A | P | N | S | K |
| A | | C | N | R | L | L | A | G | E | A | L | S | O | C | H | E | V | E | I | S | P | S |
| T | C | N | E | S | M | C | B | T | N | B | P | G | E | S | C | G | I | T | C | C | U | T |
| A | P | D | L | A | T | N | C | N | H | C | H | O | A | G | E | F | N | P | P | N | S | V |
| B | G | E | T | B | F | O | N | C | T | I | O | N | B | H | P | O | P | T | I | O | S | I |
| C | P | G | E | C | T | G | E | T | H | G | E | O | C | O | C | T | O | S | T | G | E | T |

WHY IS SIX AFRAID OF SEVEN? BECAUSE SEVEN EIGHT NINE!






LEVEL 2 :

1) Follow the instructions in the next page

2) Call your teacher in order to see if it is correct...

3) ...in that case he will give you a clue to find the mystery code



LEVEL 2 :

Déterminer les fonctions réciproques des fonctions suivantes :

1) $f(x) = 6x + 8$

2) $f(x) = \frac{4}{\sqrt{x}}$

3) $f(x) = x^2 + 6$

4) $f(x) = (x + 2)^2$

5) $f(x) = \frac{1}{2}(e^x + e^{-x})$




LEVEL 3 :

1) Follow the instructions in the next page

2) Call your teacher in order to see if it is correct...

3) ...in that case he will give you a clue to find the mystery code



LEVEL 3 :

Soit la fonction g dérivable, définie sur $[0 ; +\infty[$ par $g(x) = x^2 e^x - 1$.

- 1) Étudier le sens de variation de la fonction g .
- 2) Démontrer qu'il existe un unique réel a appartenant à $[0 ; +\infty[$ tel que $g(a) = 0$.
- 3) Démontrer que a appartient à l'intervalle $[0,703 ; 0,704]$.
- 4) Déterminer le signe de $g(x)$ sur $[0 ; +\infty[$.

WHY WAS THE MATH BOOK SAD? IT HAD A LOT OF PROBLEMS.




LEVEL 4 :

1) Follow the instructions in the next page

2) Call your teacher in order to see if it is correct...

3) ...in that case he will give you a clue to find the mystery code



LEVEL 4 :

Etude de ch :

- a) Montrer que la fonction ch est une bijection dont on précisera les intervalles de départ et d'arrivée.
- b) Représenter l'allure de ch et de sa fonction réciproque
- c) On note argch , la fonction réciproque, donner une expression de argch
- d) Calculer la dérivée de argch de deux manières différentes

Cracking the mystery number :

LE MESSAGE CODÉ EST LE SUIVANT : VO XYWLBO WICDOBO OCD NSH

L'ALGORITHME DE CHIFFREMENT UTILISÉ EST CELUI DE CÉSAR :

| CLAIR | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z |
|-------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CODE | | | | | | | Q | | | | | | | | Y | | | | | | | | | | | |

DEMANDE À TON ENSEIGNANT SI TU AS RÉUSSI LE NIVEAU 4 ET SI C'EST LE CAS, IL TE DONNERA LA CLÉ MYSTÈRE POUR DÉCHIFFRER LE CODE CI-DESSUS QUI TE PERMETTRA DE TROUVER LE NOMBRE MYSTÈRE :

CLÉ MYSTÈRE :

LE MESSAGE CLAIR EST LE SUIVANT :

NOMBRE MYSTÈRE :




LEVEL 5 :

1) Follow the instructions in the next page

2) Call your teacher in order to see if it is correct...

3) ...in that case he will give you a clue to find the mystery code



LEVEL 5 :

On considère la fonction f suivante : $f(x) = xsh\left(\frac{1}{x}\right)$

- 1) Donner le domaine de définition de la fonction f .
- 2) Etudier la parité de la fonction f .
- 3) Etudier le comportement de f aux bornes de son intervalle de définition.
- 4) Justifier que f est dérivable et déterminer l'expression de sa dérivée.
- 5) Dresser le tableau de variations de la fonction f .

The end



Answers sheet

Date :

Group number :

Students :

Mark : /20



Answers sheet

Level 1 :

Level 2 :

Level 3 :

Answers sheet

Level 4 :

Level 5 :



It's almost done...

Crack the code !

| Levels | Clues |
|----------------|-------|
| Level 1 | |
| Level 2 | |
| Level 3 | |
| Level 4 | |
| Level 5 | |
| All together | |
| Translate it ! | |



POLICE PROFILE

A little survey...

- 1) Qu'avez vous pensé de ce type d'exercice ?**
- 2) Trouvez vous cette modalité intéressante? Pourquoi ?**
- 3) Aimerez vous refaire ce type d'exercice ?**
- 4) Avez vous des propositions d'amélioration ?**
- 5) Quelle note sur 20 apporteriez vous à cette modalité ?**
- 6) Avez vous des remarques ?**

Solutions



SOLUTION LEVEL 1 :

| | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | F | | | | | R | | | | | | | | | | | | | | |
| | | | O | | | | | | E | | | | | | | | | C | | | | |
| | T | | N | | | | | | | C | | | | | | | | R | | | | |
| | H | | C | | | | | | | | I | | | | | | | O | | | | |
| | E | | T | | | | | | | | | P | | | | | | I | | | | |
| E | O | | I | | | | | | | E | | | R | | | | | S | | | | |
| T | R | | O | | | | | | L | | | | | O | | | | S | | | | |
| N | E | | N | | | | | B | | | | | | | Q | | | A | | | | |
| E | M | | | | | | A | | | | | | | | | U | | N | | | | E |
| G | E | | | | | V | | | | | | | | | | | E | T | | | U | |
| N | | | | | I | | C | O | S | I | N | U | S | | | | | | | N | | |
| A | | | | R | | | | | | | | | | | | | | | I | | | S |
| T | | | E | | | | | | | | | | | | | | | T | | | U | |
| | | D | | | | | | | | | | | | | | | N | | | N | | |
| | | | | | | F | O | N | C | T | I | O | N | | | O | | | I | | | |
| | | | | | | | | | | | | | | | | C | | | S | | | |

Answer : 10

Cracking the mystery number :

LE MESSAGE CODÉ EST LE SUIVANT : VO XYWLBO WICDBO OCD NSH

L'ALGORITHME DE CHIFFREMENT UTILISÉ EST CELUI DE CÉSAR :

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| CLAIR | A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z |
| CODE | K | L | M | N | O | P | Q | R | S | T | U | V | W | X | Y | Z | A | B | C | D | E | F | G | H | I | J |

DEMANDE À TON ENSEIGNANT SI TU AS RÉUSSI LE NIVEAU 4 ET SI C'EST LE CAS, IL TE DONNERA LA CLÉ MYSTÈRE POUR DÉCHIFFRER LE CODE CI-DESSUS QUI TE PERMETTRA DE TROUVER LE NOMBRE MYSTÈRE :

CLÉ MYSTÈRE : 10

LE MESSAGE CLAIR EST LE SUIVANT : LE NOMBRE MYSTERE EST DIX

NOMBRE MYSTÈRE : 10

Results

Correct answers :

| Levels | Clues |
|----------------|---|
| Level 1 | A seven-letter word that has the letter Q |
| Level 2 | and all five vowels |
| Level 3 | A redwood tree |
| Level 4 | especially the California redwood |
| Level 5 | It's a name of a national park |
| All together | Sequoia |
| Translate it ! | Séquoia |