BACCALAURÉAT GÉNÉRAL
ÉPREUVE SPÉCIFIQUE DES SECTIONS EUROPÉENNES
MATHÉMATIQUES – ANGLAIS

SUJET 12

Lewis CARROLL
Thème : Nombres et Probabilités -

Ce sujet comporte 2 pages. L'usage de tout modèle de calculatrice, avec ou sans mode examen, est autorisé.

Charles Dodgson (1832-1898) was the third of 11 children. He developed a talent for entertaining his brothers and sisters with stories, games and puzzles. He became a math teacher, and a published mathematician. Dodgson is best known as the author of Alice's Adventures in Wonderland, under the pen name Lewis Carroll.

Carroll liked old-fashioned algebra and Euclidean geometry but suddenly at his time, math students were using different mathematical methods to prove things like one and one not equaling two. It seemed to Carroll that they were just being difficult on purpose, so he mocked them in prose.

When Alice attempts to do math, she gets mixed up. She tries simple multiplication, but comes up with four times five equaling twelve. In regular math, of course, this doesn't work. Alice was calculating in base ten, but her answers slipped into higher base systems. Four times five is twenty, which in base eighteen makes twelve. When you change the system of measurement, but keep thinking of it as the original standard, you can be as lost as Alice.

Adapted from the Story museum website, Oxford NPR, New Scientist, and the NY Times

Vous devez restituer le sujet à la fin de l'épreuve

I. Explain what the text deals with and comment on it.

II. Exercise: Carroll diagram

The purpose of Carroll diagram is to help organize how we sort different math concepts on a visual graph by two different categories using yes/no situations.

1. What are the definitions of even and odd numbers?

2. What is the definition of a prime number?

3. Diagrams

a. Complete the following Carroll diagram with the first twenty natural numbers.

	Prime	**Not prime**
Even		
Not even		

b. Compute the probability of having a not prime number if the number is not even (considering the first twenty natural numbers).

c. Do you know other kinds of diagrams that can be used for a finite collection of different sets?

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