

**BACCALAURÉAT GENERAL  
ÉPREUVE SPÉCIFIQUE DES SECTIONS EUROPÉENNES  
MATHÉMATIQUES - ANGLAIS**

**SUJET 8**

**‘Guesstimation’  
Theme : Sequences**

**Ce sujet comporte une page. L'usage de tout modèle de calculatrice, avec ou sans mode examen, est autorisé.**

Being able to estimate is a useful skill and one that most humans are rather good at. For example, did you know that when trying to judge whether something is at a right-angle or not, most humans can spot errors of less than a degree?

5 The ability to estimate can also help with everyday things, such as crossing a road. By estimating the speed and distance of vehicles, you can judge whether or not you have enough time to cross a road safely.

However, people don't think in terms of units naturally. Rather than thinking, 'That car is moving at about 20 kilometres an hour', you are more likely to think in terms of, 'That's too fast,' or, 'There's enough time to cross.' [...]

10 Estimation can also be useful when using calculators and spreadsheets<sup>1</sup> to work things out. This is because if you have a rough idea of how much the total will be, it's much easier to spot when a mistake has been made, so that you can check if the wrong button has been pressed.

Extract from: Mike GOLDSMITH *“from zero to infinity (and beyond)  
Cool maths stuff you need to know”, 2012*

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

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<sup>1</sup> Spreadsheet : Tableur

## II. Exercise

In 2015, there were 70 members in a handball club. The manager noticed that each year, 88% of the members were renewing their membership and that there were 18 new members. We assume that this pattern is the same every year.

Let  $a_1$  be the number of members in 2015 ;  $a_2$  be the number of members in 2016 and so on.

1. a. Calculate  $a_2$  and  $a_3$  (round your answers to the nearest whole value).

Interpret  $a_3$ .

- b. Justify the following formula:  $a_{n+1} = 0.88a_n + 18$ .

2. Here is a spreadsheet:

	A	B	C	D	E	F	G
1	Year	2015	2016	2017	2018	2019	2020
2	Rank n	1	2	3	4	5	6
3	a_n	70					

Among these three formulas, which one(s) can be written in the cell C3?

$$=B3*88+18$$

$$=C2*0.12+18$$

$$=B3*0.88+18$$

$$=B3-B3*0.12+18$$

3. Using your calculator, do you think it's possible
- to reach 120 members in this handball club;
  - to reach 180 members.