How I spent last summer

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October 30, 2018

Abstract

In this article, I shall discuss how I spent last summer

[Comments in bold in brackets, like this one, should not be in your output, these are instructions for you to follow, or elements to be replaced by your contents, like [Your name], etc.]

Introduction

Preparation is described in Section 1, beginning in Section 2, and summer proper in Section 3. Section 4 contains a photo showing **[your description]**

[use `\section{..}` etc. with `\label{..}` and `\ref{..}` commands, not 'manual' numbers]

1 Preparation

Prepare for summer: **[use itemize or/and enumerate, not 'manual' numbers]**

- Get fit
  1. Jogging
  2. Press-ups
  3. Learn to swim
- Buy summer clothes
- Buy tickets

2 May

Apart from recreational activities, in May I also did some maths, as described in Subsection 2.3.

2.1 May weather

It was raining *a lot*. This phenomenon is explained in [1, Section 4]. [**use `\cite` command for references to bibliography (and `thebibliography` environment at the end with `\bibitem{..}` commands)**]

2.2 Reading books

Because of what is described in Subsection 2.1, we stayed indoors and read the book [2].

2.3 Maths

I was also revising some maths for A-level exams, like the following.

[**use environments for theorems, lemmas with `\label{..}` and `\ref{..}`**]

Theorem 1. *The solutions of a quadratic equation* $ax^2 + bx + c = 0$ *are given by the formulae*

$$x_1 = \frac{-b + \sqrt{b^2 - 4ac}}{2a} \quad \text{and} \quad x_2 = \frac{-b - \sqrt{b^2 - 4ac}}{2a}.$$

Lemma 1. *A finite sum* $\sum_{i=0}^{k} r^i a_0$ *of a geometric progression with ratio* $r \neq 1$ *is equal to*

$$a_0 \left(\frac{1 - r^{k+1}}{1 - r} \right).$$

Proof. We have [**for numbered equation use `equation` environment with `\label{..}`, then refer by using `\eqref{..}`; use `\cdots` for nice dots**]

$$(1 - r)(1 + r + r^2 + \cdots + r^k) = 1 - r^{k+1}, \tag{1}$$

which is verified by expanding brackets:

$$(1 + r + r^2 + \cdots + r^k) - r(1 + r + r^2 + \cdots + r^k)$$
$$= 1 + r + r^2 + \cdots + r^k - r - r^2 - \cdots - r^k - r^{k+1} = 1 - r^{k+1}.$$

Dividing both sides of formula (1) by $r - 1$ and multiplying by a_0 we have

$$a_0 + r a_0 + r^2 a_0 + r^3 a_0 + \cdots + r^k a_0 = a_0 \left(\frac{1 - r^{k+1}}{1 - r} \right).$$

□

Theorem 2. *The infinite sum* $\sum_{i=0}^{\infty} r^i a_0$ *of a geometric progression with ratio* r *satisfying* $0 < r < 1$ *is equal to* $\frac{a_0}{1-r}$.

Proof. The sum $\sum_{i=0}^{\infty} r^i a_0$ is equal to the limit of the partial sums $\sum_{i=0}^{k} r^i a_0$ as k tends to ∞. By Lemma 1,

$$\sum_{i=0}^{k} r^i a_0 = a_0 \left(\frac{1 - r^{k+1}}{1 - r} \right).$$

When $0 < r < 1$, the term r^{k+1} tends to 0 as k tends to ∞. Hence the result. □

3 Summer proper

After exams, we watched football matches on TV. At the moment the table in group E looks as in Table 1. [**use `tabular` environment, create the table and fill it as you like; use `table` environment, use `\label{..}` after `\caption{..}`; table may appear on top of page, which is also OK; refer using `\ref{..}`**]

Table 1: Euro 2016. Group E

Pos	Team	Pld	W	D	L	GD	Pts	Qualification

4 Photo

[**RECALL: LATEX⇒DVI is tricky with pictures. Instead, change "Output profile" to LATEX⇒PDF (in drop-down menu). View the PDF output by Adobe Reader directly from the folder by double-clicking the PDF file (not by pressing "view output" in TEXNICCENTER)**].

[**Alternatively, you can make Adobe Reader working correctly from TEXNICCENTER in INB2305 by modifying the configuration: in menu "BUILD⇒DEFINE OUTPUT PROFILES⇒VIEWER" choose profile LATEX⇒PDF in the left pane, then in the three "server" boxes add without space R17 after each "acroview", thus replacing it by "acroviewR17". On the networked machines using PDF is fine, different PDF viewer is linked there.**]

Figure 1 shows [**how we .....**] [**use some photo of yours, or whatever, any jpg or pdf file will do; use `figure` environment, use `\label{..}` after `\caption{..}`**]

Figure 1: [**your caption**]

[**use** `thebibliography` **environment with** `\bibitem{..}` **commands**)]

References

[1] A. Nother, Recent advances in weather prediction, *J. Adv. Weather* **76**, no. 3 (2013), 23–45.

[2] S. Someone, *A great book*, Lincoln, 2014.