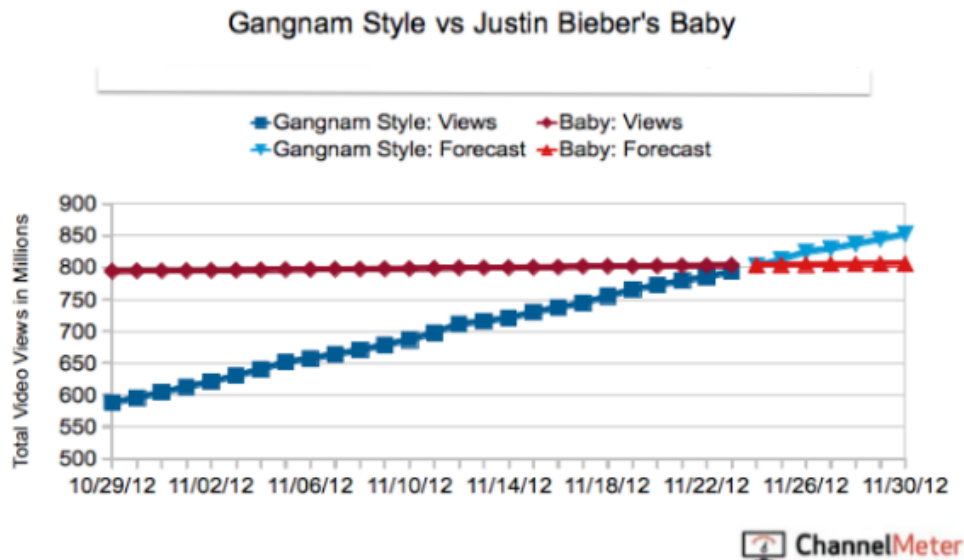## Épreuve de section européenne

A Korean success story

Gangnam Style is a very popular YouTube video, outpacing Justin Bieber's Baby which has had more than 804 million views. Released on July 15th, 2012, the single by Korean singer PSY has smashed all previous records for a music video or any piece of digital content.

Gangnam Style had its best day ever on Oct. 28th, clocking 24,463,506 views. Our data shows that since it was released the video has an average of 6.1 million daily views. Gangnam Style has already been viewed more than 190 million times since Nov. 1st.

Our graph below shows the performances of Gangam Style and Baby since the end of October 2012. The growth for Baby is flat, while Gangnam Style continues to surge.

ChannelMeter predicts Gangnam Style will be the first video in history to reach 1 billion views on Dec. 21st, 2012, according to our analysis. ChannelMeter previously predicted Gangnam Style would become the most popular video in history on Nov. 22nd, reaching 1 billion views on or before Dec. 12th, 2012.

From http://insidechannelmeter.wordpress.com

Questions
1. *"The growth for Baby is flat"* (l.8): give an interpretation in mathematical terms of this statement. Do you think it can be absolutely true?
2. According to the graph, what kind of sequence would describe the global view count for Gangnam Style?
3. We approximate the overall number of views with such a sequence: let u_n be the overall number of views, in millions, n days after Oct. 30th; we assume that $u_0 = 600$.
    a. According to paragraph 2, what is the common difference of the sequence?
    b. *"Gangnam Style has already been viewed more than 190 million times since Nov. 1st"*: use this piece of information to estimate the date when this article was written. Using the sequence u_n, how many views were expected on Nov. 22nd?

c. Using u_n as an estimation, can you confirm that Gangnam Style reached one billion views on Dec. 12th? Do you know another type of sequence? Could it have modelled this problem?