Académie de Toulouse – sections européennes – session 2016

Sujet n°26

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SEQUENCES : The cement factories

In its first month of operation, a cement factory, *A*, produces 4,000 tons of cement.
Then, production rises by 250 tons per month. This growth in production is illustrated for the first five months in the table below.

Month number (n)	1	2	3	4	5
Amount of cement produced (in tons)	4,000	4,250	4,500	4,750	5,000

1. Which kind of sequence describes this situation? Give its characteristics.

2. In which month does the quantity of cement amount to 9,250 tons?

A second factory, *B*, starts production at exactly the same time as the first one.
In its first month of production it produces 3,000 tons of cement.
Then production increases by 8% per month.

3. Find an expression for the total amount of cement produced by this factory after *n* months.

Let be the total amount of cement produced by factory *A* in the first *n* months, and be the total amount of cement produced by factory *B* in the first *n* months.

4. Find the smallest value of *n* for which.