Uriting and spelling numbers in English

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A number is composed of *digits* that are 0, 1, 2, 3, 4, 5, 6, 7, 8, 9. The place of these digits set the value of the number: our system is a *positional system* or *place value notation*.

Write these numbers with words : 1 : <u>one</u> 10: Ten 100 : <u>one hundred</u> 1 000 : <u>one thousand</u>

When a number has more than 3 digits, you can use a *comma* to split the number into groups of 3 digits: 10,000 ; 7,546,931; 145,000,121, ... This is a widespread convention in English-speaking countries (except South Africa).

Write these numbers with words:

10,000 : ten thousand100,000 : one hundred thousand1,000,000 : one million100,000 : one hundred thousand

To name numbers, English-speaking countries use the *short scale system*, based upon a <u>one thousand</u> unit. To put it briefly, **the number 1,000,000,000 is read** *one billion*, **the number 1,000,000,000,000 is read** *one trillion, and so on* (you multiply by <u>one thousand</u> each time you move up one unit in the scale of numbers).

The system in use in France is called the *long scale system*, and is based upon a <u>one</u> million unit.

Write these numbers with words :

546,121: five hundred and forty-six thousand one hundred and twenty-one

27,889,126 : twenty-seven million eight hundred and eighty-nine thousand one hundred and twenty-six

1,002,430,291 : <u>one billion two million four hundred and thirty thousand two</u> hundred and ninety-one

2,000,000,000,030: two trillion and thirty

Note : these names are mostly used in a scientific context; in everyday life, and in economics in particular, 1,000,000,000 is read *one thousand billion*, as we often do in France.

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A number has an integer part and a decimal part: to separate the two, most English-speaking countries use a *dot or period*. Thus, a price of two and a half euros will be written $2.50 \in$.

Names of digit places :



Drawing a curve – functions

Below is a *table* with the average temperatures of three cities: Moscow, Bangkok and Buenos Aires.

	Average Temperature	Jan.	Feb.	Mar.	Apr.	May	Jun.
Moscow	5.3	-7.5	-6.7	-1.4	6.4	12.8	17.1
Bangkok	28.5	26.7	28.2	29.5	30.5	30.0	29.5
Buenos Aires	17.7	24.6	23.3	21.7	17.7	14.6	11.5

	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Moscow	18.4	16.5	10.8	5.0	-1.6	-5.5
Bangkok	29.1	28.8	28.5	28.2	27.4	26.2
Buenos Aires	11.1	12.6	14.5	17.5	20.2	23.4

(source : Rika Nempyo - Chronological Scientific Tables – from http://web-japan.org/stat/stats/01CEN15.html)

We will draw a *curve* of temperatures for each city.

I. Coordinates

In an *orthonormal basis*, a *point* can be located by its <u>coordinates</u>. These are two numbers which control its horizontal position (the <u>abscissa</u>) and its vertical position (the <u>ordinate</u>). We can read them on the *x*-axis and the *y*-axis.



Exercise : find the coordinates of the following points :



II. Curves

Use the table to draw the temperature curves for each city below : plot 12 points for each, and link them with a curved line. Use a different colour for each city.

40.0	(Celsiu	ıs)										
40.0												
35.0	F											-
30.0	\mathbf{F}											-
25.0	+											-
20.0	\mathbf{F}											-
15.0	-											-
10.0	-											-
5.0	-											-
0.0	\mathbf{F}											-
-5.0	-											-
-10.0	-											-
-15.0												
	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.

1) Which city has the highest temperatures ? Which city has the lowest temperatures ?

Bangkok has the highest temperatures, and Moscow has the lowest

2) Find the highest and lowest temperatures for each city.

Moscow : 18.4 and -7.5. Bangkok : 30.5 and 26.2 Buenos Aires : 24.6 and 11.1

3) What can you say about Bangkok's curve ? Is it the same for Moscow ? We can say that Bangkok's curve doesn't have a wide amplitude: the difference between its maximum and minimum is small. On the contrary, Moscow's has a wider amplitude : it raises high and goes down quite low.

4) What can you say about the temperatures of Buenos Aires ? We can say two things. First, the evolution is in opposition with those of Bangkok and Moscow : when they increase, Buenos Aires' curve decreases, and conversely, they decrease while the last curve increases. Second, the amplitude of Buenos Aires' curve is between Moscow's and Babgkok's.