



PROBABILITIES TP WITH A SPREADSHEET



To be handed in on Monday June 4th

Part 1 : Experiment

Throw 2 dice, calculate their sum and put a cross in the corresponding line. Do it again until a whole line is filled. Write the name of the winning country at the bottom of the table.

Country	N°																					
Germany	2																					
England	6																					
Denmark	3																					
Spain	8																					
Finland	9																					
France	7																					
Greece	1																					
Italy	12																					
Norway	4																					
Poland	5																					
Portugal	11																					
Sweden	10																					
Winning country:																						

I think I know which country has won....

Part 2 : Modelising

In this part, you will try to understand how I managed to guess which country would win. For this we are going to use a spreadsheet to stimulate a large number of throws.

1- Open the document *3-TP probas-throwing 2 dice* which is in DOKEOS (in assignments/Probas_TP). Save it in your docs. Your final doc has to be placed here as well.

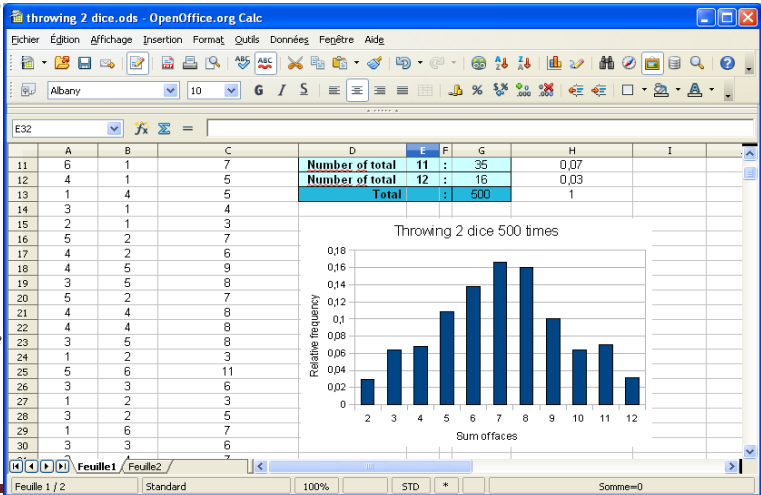
2- a) Write down the formula contained in A2 :
 What does the function ENT() do?
 What does the function ALEA() do?

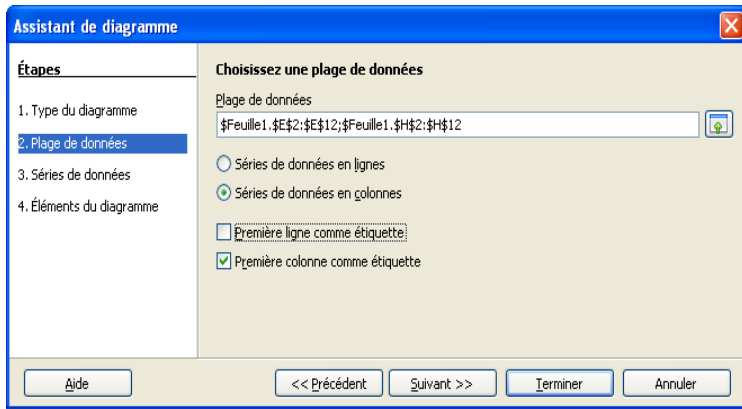
So what do the formulae in the cells below do?: A2 :
 B2 : C2 :

b) Write down the formula contained in G2 :
 What does the function NB.SI() do?
 So what does the formula in G2 do?

c) Highlight cells A2-C2 then, using the copying cross, fill in columns A, B and C up to line 10 001. Then column G to line 12.

d) Make a bar chart representing your answers by highlighting E2-E12 and G2-G12 and then clicking on the bar chart icon. Make sure you click on *Première colonne comme étiquette* as below:





e) Save your work.

f) What can you say about the results?

g) Make a conjecture (hypothesis) :

h) In the spreadsheet document, complete G13, then, from these 10 000 rolls, find the relative frequency of the following events :

Ev1 : « The sum is 6 » in H6. This relative frequency is:.....

Ev2 : « The sum is 7 » in H7. This relative frequency is:.....

Ev3 : « The sum is 8 » in H8. This relative frequency is:.....

i) By pressing « F9 », you can recalculate the page and thus do 10 000 more draws, do this three times in total, noting the relative frequencies of events 1-3 each time

	The sum is 6	The sum is 7	The sum is 8
First time			
Second time			
Third time			

j) What do you notice about the relative frequencies of these 3 events?

.....

k) Does your conjecture still seem to be correct?.....

Part 3 : Mathematical proof

In the table opposite, the numbers in the first column represent the value of the first dice and that of the first line, that of the second dice.

a) Complete the table indicating the sum of the 2 dice.
 From the results obtained in the table, justify your conjecture:

b) How many possible combinations are there?
 ?.....

c) How many of these have the sum 6 ?

	1	2	3	4	5	6
1						
2						
3						
4						
5						
6						

We can say that the probability of event Ev1 : « The sum is 6 » is :

d) How many of the combinations have sum 7 ?

We can say that the probability of event Ev2 : « The sum is 7 » is :

e) How many of the combinations have sum 8 ?

We can say that the probability of event Ev3 : « The sum is 8 » is :

f) Compare the probabilities of these three events with their relative frequencies calculated in 2) - what do you notice?