

# Statistical Simulations - 2

*This resource was written by Derek Smith with the support of CASIO New Zealand. It may be freely distributed but remains the intellectual property of the author and CASIO.*

Select RUN mode from the main menu by using the arrow keys to highlight the RUN icon or pressing 1.



**Note:** Rolling a dice with 4 – n sides or using the calculator random number generator to do simulations- not much of a choice really!. The calculator will generate a 10 digit random number 0.abcdefghij BUT to simulate the roll of a dice then the instructions:

$$\text{Int}(\text{ran}\# \times n)+1$$

are required.

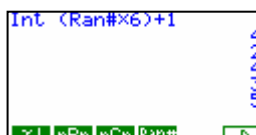
1. OPTN key		2. F6 key	
3. F4 key		4. F2 key	
5. OPTN key		6. F6 key	
7. F3 key		8. F4 key	

This will generate a random number that is either a 1, 2, 3, 4, 5 or 6.

**Example 1:** Farmer Brown has a flock of sheep and he has records of the way the flock has breed over three (3) seasons. Every ewe has a lamb, but a ewe also has 1 chance in 6 of breeding twin lambs. Use the random number generator above to generate the breeding pattern of 30 ewes in Farmer Brown’s flock. How many lambs were born?

Each time you press the **EXE** key record the number and collate the results. (**Note:** your numbers will be different to these ones that I have generated randomly.)

Here are some of them! The rest are recorded below.



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

Number generated	1	2	3	4	5	6
Frequency	6	7	6	3	7	1

**Answer:** 31 lambs (Total is 61altogether: 30 ewes and 31 lambs.)

**Example 2:** Farmer Brown has a flock of sheep and he has records of the way the flock has breed over three (3) seasons. Every ewe has a lamb, but a ewe also has 1 chance in 6 of breeding twin lambs. . If a string of the same digits occur (two or more selected in a row) in the simulation, then a ewe and the lamb die in the birth process. Use the random number generator above to generate the breeding pattern of 30 ewes in Farmer Brown’s

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

Number generated	1	2	3	4	5	6
Frequency	1	6	6	7	8	2

**Answer:** 28 ewes, 30 lambs (as 2 ewes and the lambs have died.)