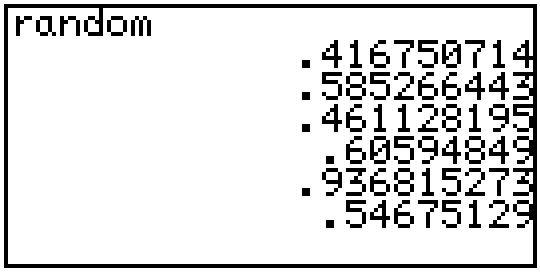
SHARP

# Random Numbers




Though you may initially think otherwise, it is virtually impossible to simply write down a set of random numbers. Whether consciously or subconsciously, some form of bias in selecting the numbers would be introduced by the human mind.

For example, if you had selected the number 137, in your attempt to be random, you would probably be biased against choosing the number 138 (or even 137 again) as your next choice for a random number hence removing the random nature of the number selection.

Fortunately there are a number of ways of removing this bias. The graphics calculator provides you with one easy alternative as it has a built in random number generator that you can easily access and use.

## Preparing your calculator

Though the random number generator will work in other modes, it is generally better to work in normal calculation mode to avoid cluttering the screen and some other problems.

## Keystrokes

The [MATH] key will pull up the maths menu. Either use [▲] and [▼] or press [tan] to select the PROB entry. Once that is highlighted, press [1] to insert the random function followed by [ENTER] to generate a random number between 0 and 0.999.

Generally, the sequence will simply be [MATH][tan][1][ENTER]. Try this sequence a few times and note the different random numbers generated. Note also that once you have inserted random in the normal calculation screen, you can evaluate it repeatedly by pressing [ENTER], giving a different result each time.

Naturally you are more likely to want random numbers in a range other 0 to 0.999. This is easily achieved by adapting the basic sequence.

a) To generate numbers between 0 and 10:

[MATH][tan][1] [×][1][0][ENTER]

Can you see that this will convert our numbers to a range of 0 to 9.999?

b) To generate numbers between 30 and 40:

[MATH] [tan] [1] [×] [1] [0] [+] [3] [0] [ENTER]

Check that this has the desired effect.

## Practice

1 Generate a random number between 0 and 100.
2 Generate a random number between 60 and 70.
3 Generate a random number between 200 and 300.
4 Generate a random number between 50 and 75.

## Solutions

1 random *100

- Press [+ − ÷ ×]
- Insert the random token by pressing [MATH] [tan] [1]
- Multiply the random number by the range you need (in this case 100).
- Add the displacement of the random number (in this case 0).
- Press [ENTER] to generate the random number

2 random *10+60

- Follow procedure above.

3 random *100+200

- Follow procedure above.

4 random *25+50

- Follow procedure above.