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# Simple Random Sampling

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# Population, Sample, Sampling

- Population: Collection of all the items related to an enquiry is called population
- Sample: A sample is a representative part of population
- Sampling: Process of selecting sample from population is called sampling

# Types of Sampling

- Probability sampling: Probability of selection of each individual is known and pre determined

- Non-probability sampling: Probability of selection of each individual is not known

# Simple Random Sampling

The proces of selecting a sample that allows individual in the defined population to have an equal and independent chance of being selected for the sample

# Steps in Random Sampling

1. Identify and define the population

2. Determine the desired sample size

3. List all members of the population

4. Assign all individuals on the list consecutive number from zero to the required number. Each individual must have the same number of digits as each other individual

5. Select an arbitrary number in the table of random numbers (we can also use lottery method, or random number generator)

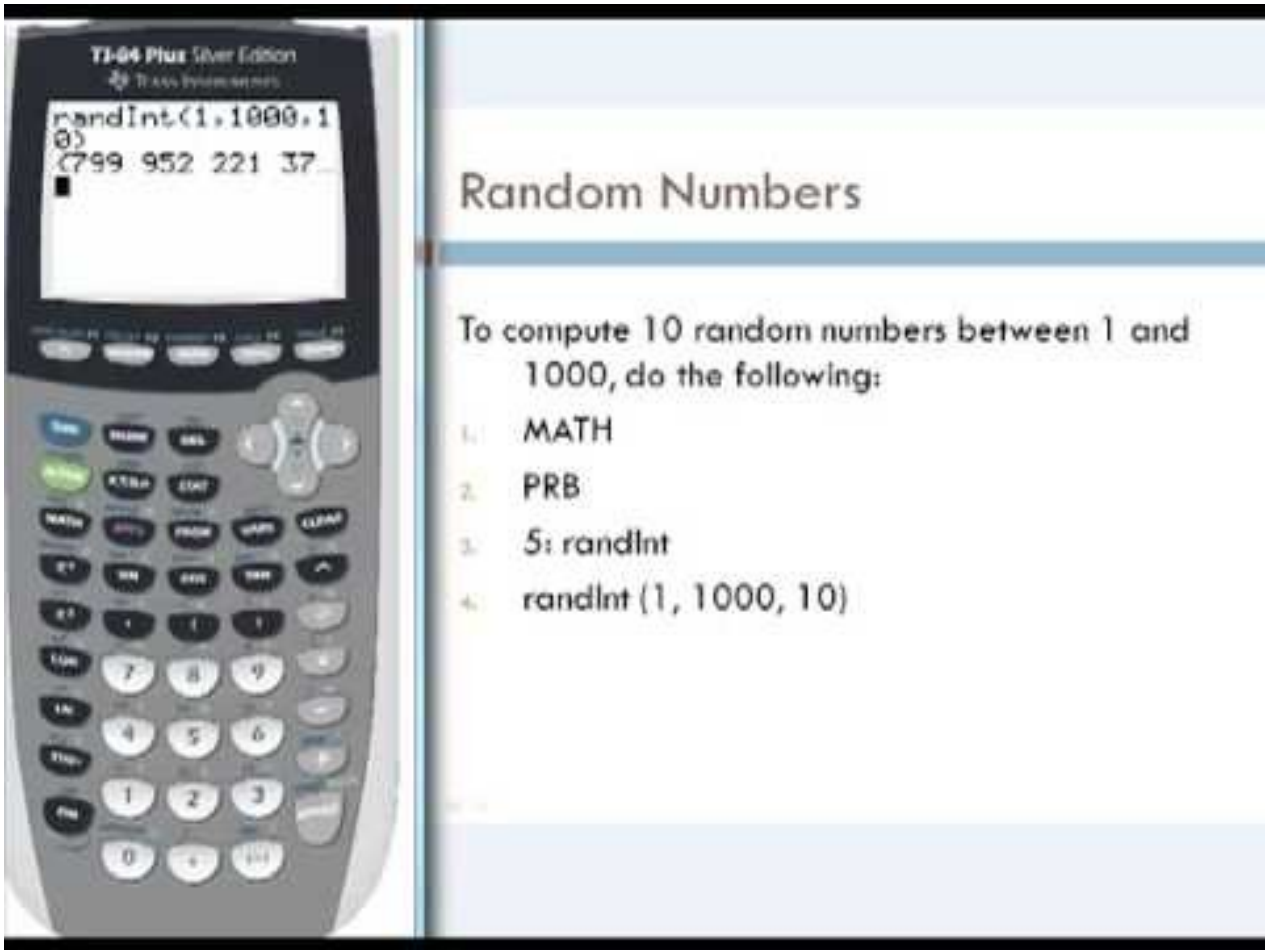
6. For the selected number, look only at the number of digits assigned to each population member

7. If the number corresponds to the number assigned to any of the individual in the population, then that individual is included in the sample

8. Go to the next number in the column and repeat step #7 until the desired number of individuals has been selected for the sample

*Random Number Table*

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | 17 | 42 | 01 | 72 | 33 | 94 | 55 | 89 | 65 | 58 | 60 |
| 74 | 49 | 04 | 27 | 56 | 49 | 11 | 63 | 77 | 79 | 90 | 31 |
| 94 | 70 | 49 | 49 | 05 | 74 | 64 | 00 | 26 | 07 | 23 | 00 |
| 22 | 15 | 78 | 49 | 74 | 37 | 50 | 94 | 13 | 90 | 08 | 14 |
| 93 | 29 | 12 | 20 | 26 | 22 | 66 | 98 | 37 | 53 | 82 | 62 |
| 45 | 04 | 77 | 48 | 87 | 77 | 66 | 91 | 42 | 98 | 17 | 26 |
| 44 | 91 | 99 | 08 | 72 | 87 | 33 | 58 | 12 | 08 | 91 | 12 |
| 16 | 23 | 91 | 95 | 97 | 98 | 52 | 49 | 40 | 37 | 21 | 46 |
| 04 | 50 | 65 | 37 | 99 | 57 | 74 | 98 | 93 | 99 | 78 | 30 |
| 32 | 70 | 17 | 05 | 79 | 58 | 50 | 26 | 54 | 30 | 01 | 88 |
| 03 | 64 | 59 | 55 | 85 | 63 | 49 | 46 | 61 | 89 | 33 | 79 |
| 62 | 49 | 00 | 67 | 28 | 96 | 19 | 65 | 13 | 44 | 78 | 39 |
| 61 | 00 | 95 | 85 | 86 | 94 | 64 | 17 | 47 | 67 | 87 | 59 |
| 89 | 03 | 90 | 40 | 10 | 60 | 18 | 43 | 97 | 37 | 68 | 97 |


TI-84 Plus Silver Edition
randInt(1,1000,1
0)
{799 952 221 37
Random Numbers
To compute 10 random numbers between 1 and 1000, do the following:
1. MATH
2. PRB
3. 5: randInt
4. randInt (1, 1000, 10)

# Advantages of SRS

1. Easy to conduct

2. Strategy requires minimum knowledge of the population to be sampled

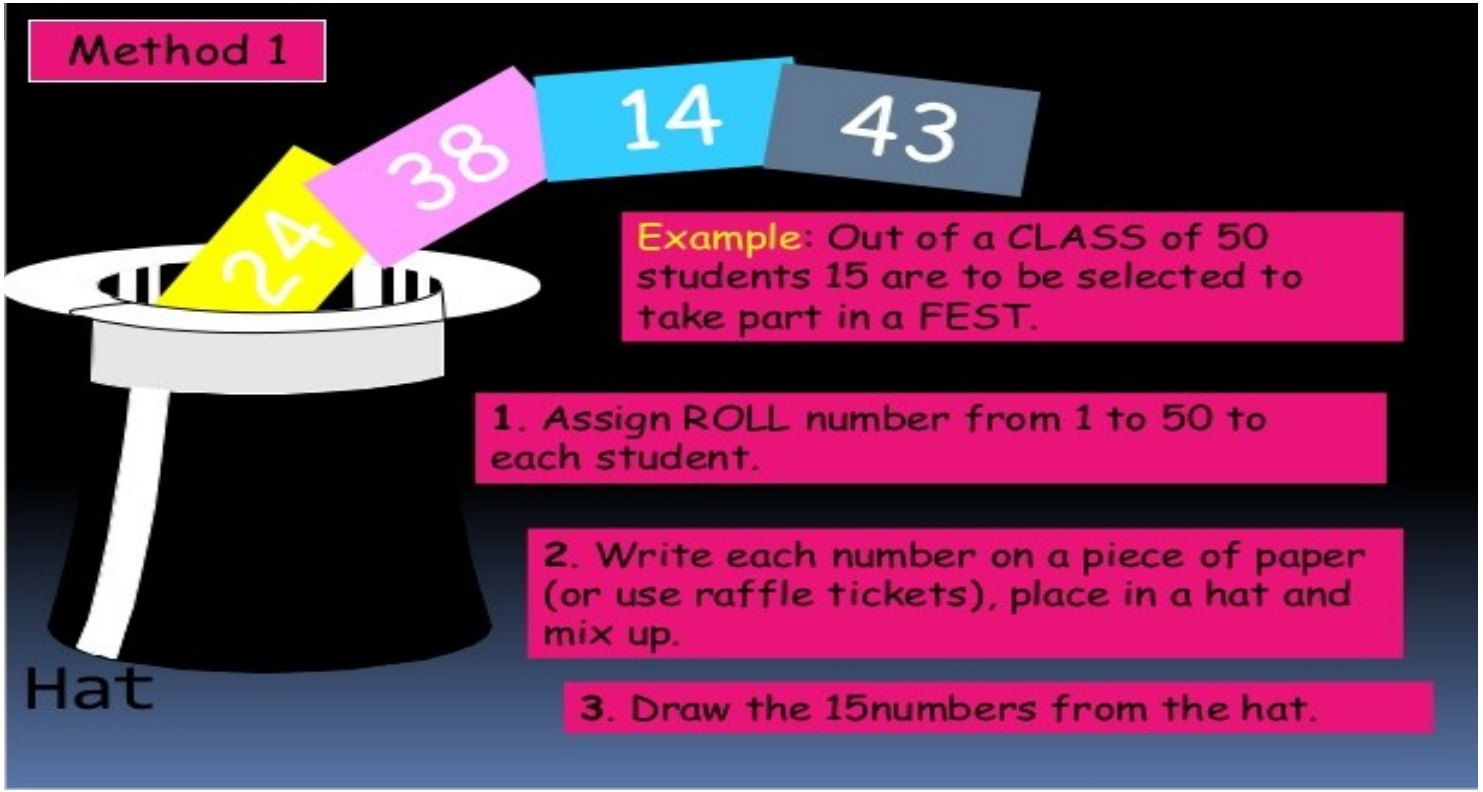
# Disadvantages of SRS

1. List of all the population is needed

   ~ Attaining complete list of population can become difficult

2. Contacting with all the population may be challenging, as sample may be scattered.

# Example1.Using lottery method



# Example2.Random table method

- Suppose we want to select a sample of size 15 from a population of 5000 then number all 5000 items from 1 to 5000, select a page at random from table and choose first 15 numbers which are less than or equal to 15.
- A company that manufactures batteries for Bikes, cars and trucks, wants to calculate the Life time of battery.
- Students in a class are to be selected by teacher to explain something.

# Thank You