

Grade 8 Mathematics Worksheet

Data interpretation of random digits

Questions:

1. A computer is used to generate random digits. The results for 100 digits are listed below.

0	HHH	II	
1	HHH	III	
2	HHH	I	
3	HHH	HHH	II
4	HHH	HHH	II
5	HHH	HHH	
6	HHH	IIII	
7	HHH	HHH	II
8	HHH	HHH	
9	HHH	HHH	IIII

- a) What is the relative frequency of the digit 6 being generated?
- b) If the computer is asked to generate 2 000 random digits, how many times will the number six be generated?
- c) What is the probability of generating a six?
- d) Describe the difference between the two answers you gave in (a) and in (c).

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Solution

1.
 - a) There are a total of 100 results and the tally for 6 is 9. So relative frequency for 6 is $\frac{9}{100} = 0,09$.
 - b) Out of a sample of 2 000, the number 6 will appear $2000 \times \frac{9}{100} = 180$ times based on this information.
 - c) The probability of generating a six will be 0,09.
 - d) The relative frequency is based on a small sample, and the larger we make the sample, the more the relative frequency will approach the theoretical probability.

Make learners aware of the law of large numbers where the relative frequency tends to the same value as the theoretical probability.