

Answer on Question #46385 – Math – Statistics and Probability

If 500 people each select a number a random between 1 and 100, what is the probability that 4 people select the number 25?

Solution:

$m = 4$ – people that have selected number 25;
 $n = 500$ – all people;

The probability that one person will select number 25 is equal to

$$p = \frac{1}{100}$$

Now we can use a probability Poisson Probability formula. The probability of achieving exactly m successes in n trials is ($\lambda = n \cdot p = 500 \cdot \frac{1}{100} = 5$)

$$P(4 \text{ people select number 25}) = \frac{\lambda^m}{m!} e^{-\lambda} = \frac{5^4}{4!} e^{-5} = 0.175$$

Answer: probability is equal to 0,175.