

Answer on Question #69170 – Math – Statistics and Probability

Question

Use the fact that the mean of a geometric distribution is $\mu = 1/p$ and the variance is $\sigma^2 = q/p^2$.

A company assumes that 0.5% of the paychecks for a year were calculated incorrectly. The company has 200 employees that examines the payroll records from one month.

1. Find the mean, variance, and standard deviation.
2. How many employees payroll records would you expect to examine before finding one with an error?

Solution

1)

The mean is

$$\mu = \frac{1}{p} = \frac{1}{0.005} = 200.$$

The variance is

$$\sigma^2 = \frac{q}{p^2} = \frac{1-p}{p^2} = \frac{1-0.005}{0.005^2} = 39800.$$

The standard deviation is

$$\sigma = \sqrt{39800} \approx 199.$$

- 2) We would expect to examine $\mu = 200$ employees payroll records before finding one with an error.

Answer: 1) 200; 39800; 199; 2) 200.