

THE TWELVE DAYS OF STATISTICS

KEY

On the first day of Statistics, my true love gave to me: A Partridge in a Pear Tree.



If the probability of getting a partridge is 0.58 and the probability of getting a pear tree is 0.76, and these are independent events, find the probability of getting a partridge and a pear tree.

.4408

On the second day of Statistics, my true love gave to me: Two Turtle Doves.

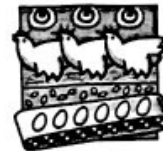


If the probability of a female turtle dove is 0.53, find the probability of at least one female turtle dove in the pair.

$$1 - (P(X=0)) = 1 - .2209$$

.7791

On the third day of Statistics, my true love gave to me: Three French Hens.



If the probability of a hen truly having French citizenship is 0.81, find the probability of exactly two French hens out of the three.

binom PDF

$$P(X=2) = C_3^2 (.81)^2 (.19)$$

.3740

On the fourth day of Statistics, my true love gave to me: Four Calling Birds.



If there is an infinite number of calling birds and the probability of a bird actually calling is 0.63, find the probability of finding the first calling bird on the third attempt.

geom PDF $\rightarrow P(X=3) = (.37)^2 (.63)$

.0862

On the fifth day of Statistics, my true love gave to me: Five Golden Rings.



If the probability of getting a real golden ring is 0.72, find the probability of getting three or fewer golden rings in the five.

binom CDF $P(X=3)$

.4303

On the sixth day of Statistics, my true love gave to me: Six Geese A-laying.



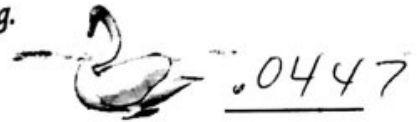
If the probability of an authentic laying goose is 0.83 and there is an unlimited number of geese, find the probability of getting a laying goose on or before the fourth trial.

geom CDF $P(X \leq 4)$

.9992

On the seventh day of Statistics, my true love gave to me: Seven Swans A-swimming.

If the probability of a swan drowning is 0.23, find the probability of exactly 4 out of the 7 swans drowning.



Binom PDF $P(X=4)$

On the eighth day of Statistics, my true love gave to me: Eight Maids A-milking.

If the probability of getting a sour maid a-milking is 0.38, find the expected number of sour maids a-milking in the group of 8.



$\mu_x = 8(.38)$

On the ninth day of Statistics, my true love gave to me: Nine Ladies Dancing.

If the probability of a dancing lady accepting an invitation to dance is 0.18, find the expected number of ladies you would have to ask before one accepts.



$\mu_x = 1/.18$

On the tenth day of Statistics, my true love gave to me: Ten Lords A-leaping.

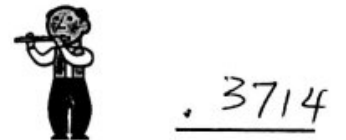
If the probability of a lame leaping lord is 0.24 and there is an unlimited number of leaping lords, find the probability of getting your first lame leaping lord after the sixth attempt.



Geom CDF $P(X > 6) = 1 - P(X \leq 6)$

On the eleventh day of Statistics, my true love gave to me: Eleven Pipers Piping.

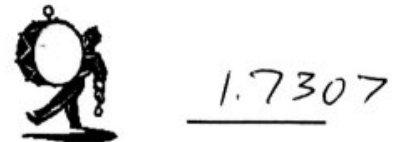
If the probability of frozen pipes is 0.63, find the probability of 8 or more frozen pipes out of the eleven.



binom CDF $P(X \geq 8) = 1 - P(X \leq 7)$

On the twelfth day of Statistics, my true love gave to me: Twelve Drummers Drumming.

If the probability of a dribbling drummer is 0.48, find the standard deviation of the dribbling drummers drumming for twelve drummers drumming.



$\sigma = \sqrt{npq} = \sqrt{12(.48)(.52)}$