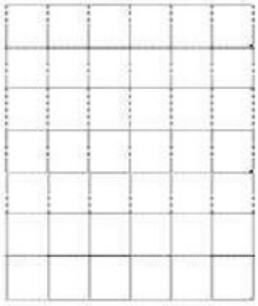
SG 6.1 AP Statistics Name:

1. The probability distribution below is for the random variable X = number of mice caught in traps during a single night in small apartment building.

X	0	1	2	3	4	5
$P(X)$	0.12	0.20	0.31	0.14	0.16	0.07

(a) Make a histogram of this probability distribution in the grid:



(b) Describe $P(X \geq 2)$ in words and find its value.

(c) Express the event "trapping at least one mouse" in terms of X and find its probability.

2. The total sales on a randomly-selected day at Joy's Toy Shop can be represented by the continuous random variable S, which has a Normal distribution with a mean of \$3600 and a standard deviation of \$500. Find and interpret $P(S > \$4000)$.

3. Joe the barber charges \$32 for a shave and haircut and \$20 for just a haircut. Based on experience, he determines that the probability that a randomly selected customer comes in for a shave and haircut is 0.85, the rest of his customers come in for just a haircut. Let J = what Joe charges a randomly-selected customer.

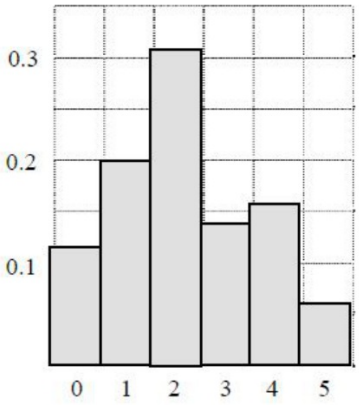
(a) Give the probability distribution for J.

(b) Find and interpret the mean of J, μ_J.

(c) Find and interpret the standard deviation of J, σ_J.

SG 6.1

1. (a) See histogram at right. (b) The probability that two or more mice are caught during a single night; 0.68. (c) $P(x \geq 1) = 0.88$.



2. normalcdf(4000, 9999999, 3600, 500) = 0.2119 OR you can use a z-score

lower, upper, mean, SD

$$P(S > \$4000) = P\left(z > \frac{4000 - 3600}{500}\right) = P(z > 0.8) = 0.2119.$$

normalcdf(.8, 999, 0, 1)

This is the probability that the total sales on a randomly-selected day exceeds $4000.

3. (a)

J		
$P(J)$		

(b) μ_J = the mean amount of money Joe can expect to make per customer in the long run = $20(0.15) + 32(0.85) = \$30.20$.

(c) σ_J = the average distance from the mean ($30.20) for each individual customer =

$$\sqrt{.15(20 - 30.20)^2 + .85(32 - 30.20)^2} = \$4.28.$$

You must show your work on #3. Calc is only to check.

Use your calculator to check: Put data in list 1 and 2, then Stats, Calc, 1-Var Stats, List: L1 and FreqList L2

Friday Homework

Read 6.2
and
College Board Progress Check

There will be another Locus
test soon (not yet, but soon).