Chapter 17

17.4
We can find the expectation of the number of hits per square from the table by calculating (0*229 + 1*211 + 2*93 + 3*35 + 4*7 + 7*1)/576 = 0.93

Since we are modeling a Poisson distribution, we set u to 0.93 giving

p(k) = 0.93^k * exp(-.93)/k! = .93^k * 0.394 / k!

We can make the following table where the left column is the value calculated from the above equation, and the right column is the probability of a square receiving k hits estimated by the original data. We get

Number of hits	Poisson	Original Data
0	0.394	0.397
1	0.366	0.366
2	0.170	0.162
3	0.053	0.061
4	0.012	0.012
5	0.002	0
6	0.0003	0
7	0.000047	0.0017

17.6
a)
We estimate the mean u as the sum of the x's /n, giving 228377.2/5732 = 39.84

The variance can be estimated by the sum of the x^2s divided by N less the estimated mean squared.

9124064/5732 – 39.84^2 = 1591.8 – 1587.2 = 4.57

b)
From the histogram, 38.5 to 42.5 represents four bins of about .18, .19, .16, and .12. Adding this gives about .65.