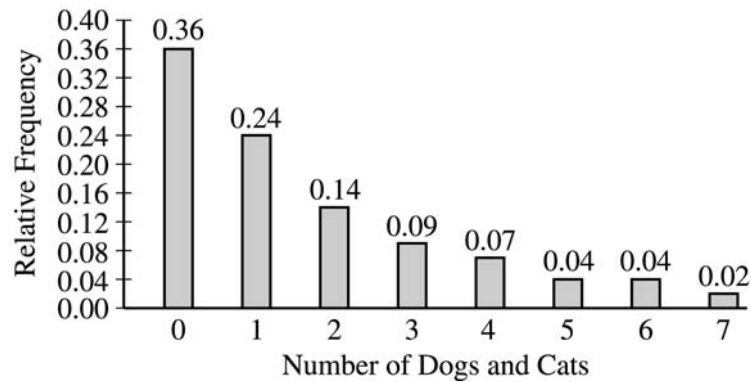


2007 AP[®] STATISTICS FREE-RESPONSE QUESTIONS (Form B)

2. The graph below displays the relative frequency distribution for X , the total number of dogs and cats owned per household, for the households in a large suburban area. For instance, 14 percent of the households own 2 of these pets.



- (a) According to a local law, each household in this area is prohibited from owning more than 3 of these pets. If a household in this area is selected at random, what is the probability that the selected household will be in violation of this law? Show your work.
- (b) If 10 households in this area are selected at random, what is the probability that exactly 2 of them will be in violation of this law? Show your work.
- (c) The mean and standard deviation of X are 1.65 and 1.851, respectively. Suppose 150 households in this area are to be selected at random and \bar{X} , the mean number of dogs and cats per household, is to be computed. Describe the sampling distribution of \bar{X} , including its shape, center, and spread.