

## 4.H: Random Variables (Homework)

### 4.2 Hypergeometric Distribution

47. A group of Martial Arts students is planning on participating in an upcoming demonstration. Six are students of Tae Kwon Do; seven are students of Shotokan Karate. Suppose that eight students are randomly picked to be in the first demonstration. We are interested in the number of Shotokan Karate students in that first demonstration

Suppose that 1,000 babies from healthy baby nurseries were randomly surveyed. Find the probability that exactly two babies were born deaf.

Use the following information to answer the next four exercises. Recently, a nurse commented that when a patient calls the medical advice line claiming to have the flu, the chance that he or she truly has the flu (and not just a nasty cold) is only about 4%. Of the next 25 patients calling in claiming to have the flu, we are interested in how many actually have the flu.

53. Define the random variable and list its possible values.

54. State the distribution of  $X$ .

55. Find the probability that at least four of the 25 patients actually have the flu.

56. On average, for every 25 patients calling in, how many do you expect to have the flu?

57. People visiting video rental stores often rent more than one DVD at a time. The probability distribution for DVD rentals per customer at Video To Go is given Table 4.H. 5. There is five-video limit per customer at this store, so nobody ever rents more than five DVDs.

Table 4.H. 1

$x$	$P(x)$
0	0.03
1	0.50
2	0.24
3	
4	0.07
5	0.04

Use the following information to answer the next two exercises: The probability that the San Jose Sharks will win any given game is 0.3694 based on a 13-year win history of 382 wins out of 1,034 games played (as of a certain date). An upcoming monthly schedule contains 12 games.59.

The expected number of wins for that upcoming month is:

Let  $X$  = the number of games won in that upcoming month.

60. What is the probability that the San Jose Sharks win six games in that upcoming month?

Use the following information to answer the next two exercises: The average number of times per week that Mrs. Plum's cats wake her up at night because they want to play is ten. We are interested in the number of times her cats wake her up each week.93.

In words, the random variable  $X$  = \_\_\_\_\_

94. Find the probability that her cats will wake her up no more than five times next week.

1. the number of times Mrs. Plum's cats wake her up each week.
2. the number of times Mrs. Plum's cats wake her up each hour.
3. the number of times Mrs. Plum's cats wake her up each night.
4. the number of times Mrs. Plum's cats wake her up.
5. 0.5000

6. 0.9329  
7. 0.0378  
8. 0.0671

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