

4. After putting your favorite CD in your CD player, you set the player to shuffle mode, which plays all the songs on the disc in random order, but still never repeats a song. There are 13 songs on the disc, of which you like 10.
- (a) What is the probability that you like the first song?
  - (b) What is the probability that you like the first two songs?
  - (c) What is the probability that you don't like the second song?
5. Suppose Matt finds 7 cans, all with their labels torn off. He can remember that 2 contain pineapple, while the rest contain tomatoes. Hoping to make some spaghetti sauce, he decides to open 3 cans at random.
- (a) How many ways are there for him to choose the 3 cans?
  - (b) How many ways are there for him to choose the 3 cans, with exactly 2 containing tomatoes?
  - (c) What is the *probability* of at least 2 containing tomatoes?
6. Inside a bag is a bunch of balls with numbers on them. Four have 0 on them, three have 1, two have 2, and one has 3. Two balls are drawn at random, one at a time. Let  $X$  be the random variable which is the number on the first ball *minus* the number on the second ball.
- (a) What are the possible outcomes for  $X$ ?
  - (b) What the the probability distribution function  $f(x)$ ?
7. For a given STAT class, the probability of getting a certain number of points out of 30 on the exam is given by the follow distribution function:
- (a) Find the Expected value of  $X = E[X] = \mu$ .
  - (b) Find the Variance of  $X = V[X] = \sigma^2$ .
  - (c) Find the Standard Deviation of  $X = \sigma$ .