

Bus 273: Statistical Analysis for Business

Fall 2014

PROBLEM SHEET # 7

Problem 1: Kinder Surprise is a chocolate egg containing a small toy, see Figure 1. The toy often requires assembly, see Figure 2. Some of the most popular toys include limited-edition collections of cartoon characters (figurines), which do not require assembly; an example is shown in Figure 3. These figurines are said to be found in every seventh egg.

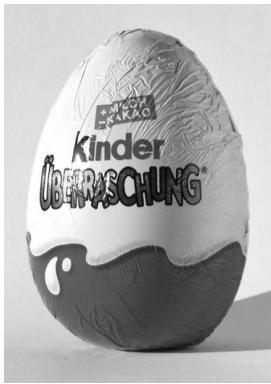


Figure 1



Figure 2



Figure 3

Harun is an enthusiastic collector of Kinder Surprise figurines. He tests eggs by shaking them to find out whether they contain a figurine. In this way, if there is a figurine in an egg, Harun will discover it with probability 80%, while he will falsely decide that there is a figurine in the egg with probability 10% if there is actually none.

- Draw an event tree for Harun's situation, showing all relevant events and probabilities.
- Write down the expression to compute the probability that an egg will include a figurine, after it has passed Harun's test. (Write the correct expression with all probabilities plugged in; you need not compute the value of the expression.)
- The probability in (b) is ca. 0.57. Do you think it is really informative to see whether an egg passes Harun's test or not? Give reasons for your answer.

Problem 2: A random variable R has a probability distribution as follows:

r	0	1	2	3
$P(R = r)$	$2k$	$3k$	$13k$	$2k$

Compute $P(R < 2)$.