Homework#3 Solutions

#1 What is the probability of getting precisely 6 heads in 10 tosses of a fair coin?
SOLUTION: \( \text{binompdf}(10, .5, 6) = .2051 \). (Press: 2nd Vars 0 to get \text{binompdf}).

#2 What is the probability of getting more than 8 heads in 10 tosses of a fair coin?
SOLUTION: \( 1 - \text{binomcdf}(10, .5, 8) = .0107 \). (Press: 2nd Vars Alpha Math to get \text{binomcdf}).

#3 What is the probability of getting less than 3 heads in 10 tosses of a fair coin?
SOLUTION: \( \text{binomcdf}(10, .5, 2) = .0547 \).

#4 What is the probability of getting less than 3 heads in 10 tosses of a biased coin—one where prob(H)=.6?
SOLUTION: \( \text{binomcdf}(10, .6, 2) = .0123 \).

#5 What is the probability of getting more than 3 heads in 10 tosses of a biased coin—one where prob(H)=.6?
SOLUTION: \( 1 - \text{binomcdf}(10, .6, 3) = .9452 \).

#6 The Teleotronic company purchases large shipments of fluorescent bulbs and uses the following acceptance plan: Randomly select and test 50 bulbs, then accept the whole batch if there is at most two bulbs that don’t work. If the rate of getting a defect bulb is 1.2%, what is the probability that a whole batch will be accepted?
SOLUTION: \( \text{binomcdf}(50, .012, 2) = .9777 \).

#7 A surgical technique is performed on twenty people. You are told that there is a 73% chance of success. Find the probability that the surgery is successful for:
(A) Exactly four patients.
(B) At Least four patients.
(C) Less than four patients.
SOLUTION:
(A) \( \text{binompdf}(20, .73, 4) = .000001 \) (Actually 0 if we work to 4decimal places!)
(B) \( 1 - \text{binomcdf}(20, .73, 3) = .9999998984 \) (Actually 1 if we work to 4decimal places!)
(C) \( \text{binomcdf}(20, .73, 3) = .0000001 \) (Actually 0 if we work to 4decimal places!)

#8 The probability of getting a defective radio is 1.2%. A batch of 20 radios are chosen at random. What is the probability of getting 2 or more defective radios in this batch?
SOLUTION: \( 1 - \text{binomcdf}(20, .012, 1) = .0237 \).