

A psychiatrist believes that 75% of all people who visit doctors have problems of a psychosomatic nature. He decides to select 17 patients at random to test his theory. *Assume the psychiatrist's theory is true.*

1. What is the probability that the 7th selected patient has psychosomatic problems?
2. What is the probability that at least one of the 17 patients have psychosomatic problems?
3. What is the probability that exactly 10 of the 17 patients have psychosomatic problems?

Solution:

1. .75.
2. $1 - (.25)^{17} = 1 - 5.820766 \times 10^{-11} \approx 1.$
3. $C_{10}^{17}(.75)^{10}(.25)^7 = 0.0668448.$