

3. Among persons donating blood to a clinic, 85% have Rh⁺ blood. Six people donate blood at the clinic on a particular day.

(a) Find the probability that at most three of the six have Rh⁺ blood.

(b) Find the probability that at most one of the six does not have Rh⁺ blood.

(c) What is the probability that the number of Rh⁺ donors lies within two standard deviations of the mean number?

(d) The clinic needs six Rh⁺ donors on a certain day. How many people must donate blood to have the probability of obtaining blood from at least six Rh⁺ donors over 0.95?

★ **BONUS:** A system consists of n components, each of which will independently function with probability p . The system will operate effectively if at least one-half of its components function. For what values of p is a 5-component system more likely to operate effectively than a 3-component system?