Question #72633, Math / Statistics and Probability

Solution: Let X be the random variable denoting number of college seniors who disapprove of smoking pot daily from the sample of 12.

So, clearly X ~ Binomial (12, 0.7).

The probability that the number of people who disapprove of smoking pot daily is

a) Anywhere from 7 to 9

Required probability is P(X=7) + P(X=8) + P(X=9)=  ${}^{12}C_7 * (0.7)^7 * (0.3)^5 + {}^{12}C_8 * (0.7)^8 * (0.3)^4 + {}^{12}C_9 * (0.7)^9 * (0.3)^3$ .

b) At most 5

Required probability is P(X=0) + P(X=1) + P(X=2) + P(X=3) + P(X=4) + P(X=5)=  $(0.3)^{12} + {}^{12}C_1 * (0.7)^* (0.3)^{11} + {}^{12}C_2 * (0.7)^2 * (0.3)^{10} + {}^{12}C_3 * (0.7)^3 * (0.3)^9 + {}^{12}C_4 * (0.7)^4 * (0.3)^8 + {}^{12}C_5 * (0.7)^5 * (0.3)^7.$ 

c) Not less than 8

Required probability is P(X=12) + P(X=11) + P(X=10) + P(X=9) + P(X=8)=  $(0.7)^{12} + {}^{12}C_{11}^{*}(0.3)^{*}(0.7)^{11} + {}^{12}C_{10}^{*}(0.3)^{2} * (0.7)^{10} + {}^{12}C_{9}^{*}(0.3)^{3} * (0.7)^{9} + {}^{12}C_{8}^{*}(0.3)^{4} * (0.7)^{8}.$ 

Answer provided by www.AssignmentExpert.com