

Binomial Distributions Questions

$$(1) ({}_{20}C_{10})(.7)^{10}(.3)^{10} = 0.03$$

$$(2) ({}_{20}C_{17})(.7)^{17}(.3)^3 = 0.07$$

$$(3) ({}_{20}C_{20})(.7)^{20}(.3)^0 = 0.0008$$

$$(4) ({}_{20}C_5)(.7)^5(.3)^{15} = 0.00004$$

$$(5) ({}_{20}C_{16})(.7)^{16}(.3)^4 \\ + ({}_{20}C_{17})(.7)^{17}(.3)^3 \\ + ({}_{20}C_{18})(.7)^{18}(.3)^2 \\ + ({}_{20}C_{19})(.7)^{19}(.3)^1 \\ + ({}_{20}C_{20})(.7)^{20}(.3)^0 = 0.24$$

$$(6) ({}_{20}C_{11})(.7)^{11}(.3)^9 = 0.07$$

$$(7) (20)(0.7) = 14 \text{ shots}$$

$$(8) \text{ exactly } 3 \quad ({}_{8}C_3)(.1)^3(.9)^5 = 0.03$$

$$\text{at most } 3 \quad ({}_{8}C_0)(.1)^0(.9)^8 \\ + ({}_{8}C_1)(.1)^1(.9)^7 \\ + ({}_{8}C_2)(.1)^2(.9)^6 \\ + ({}_{8}C_3)(.1)^3(.9)^5 = 0.99$$

$$(9) \text{ exactly } 2 \quad ({}_{5}C_2)(.3)^2(.7)^3 = 0.31$$

$$\text{at least } 2 \quad ({}_{5}C_2)(.3)^2(.7)^3 \\ + ({}_{5}C_3)(.3)^3(.7)^2 \\ + ({}_{5}C_4)(.3)^4(.7)^1 \\ + ({}_{5}C_5)(.3)^5(.7)^0 = 0.47$$