9. A restaurant serves eight entrées of fish, 12 of beef, and 10 of poultry. If customers select from these entrées randomly, what is the probability that at most two of the next six customers order fish entrées?

$P(X \le 2) =$

$\binom{6}{0}\left(\frac{8}{30}\right)^0\left(1-\frac{8}{30}\right)^6$

$+\binom{6}{1}\left(\frac{8}{30}\right)^1\left(1-\frac{8}{30}\right)^5$

$+\binom{6}{2}\left(\frac{8}{30}\right)^2\left(1-\frac{8}{30}\right)^4$

$\approx .8031$

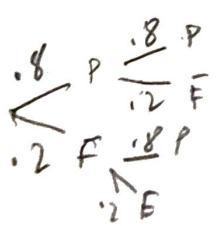
$p = \frac{8}{30}$

$n = 6$

$x = 2$

80.3%

10. A certain electronic system contains 10 components. Suppose that the probability that each individual component will fail is 0.2 and that the components fail independently of each other. Given that at least one of the components has failed, what is the probability that at least two of the components have failed?



$P(\ge 2 \mid \ge 1) = \frac{P(\ge 2 \wedge \ge 1)}{P(\ge 2)} = \frac{.557}{.62} = .8982$

$P(\ge 1) = \binom{10}{0}(.2)^0 \cdot (1-0.2)^{10}$

$= 1 - 0.107$

$= 0.893$

$P(\ge 2) = \quad + \binom{10}{1}(.2)^1(1-.2)^9$

$= 1 - 0.376$

$= 0.624$

89.3%