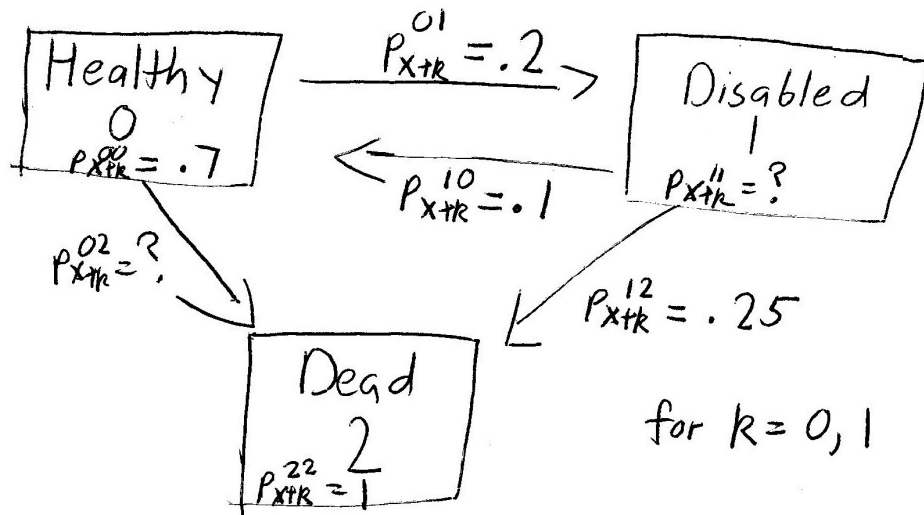


Solution 151



We want the variance of the number of the 100 original lives that die in the first 2 years.

For the Binomial distribution, $\text{Var}(X) = m p q$
 $m = 100$ $p =$ The probability of being in state 2 after 2 years.

$$P = (p_x^{00})(p_{x+1}^{02}) + (p_x^{01})(p_{x+1}^{12}) + (p_x^{02})(p_{x+1}^{22})$$

$$p_{x+k}^{02} = 1 - .7 - .2 = .1$$

$$P = (.7)(.1) + (.2)(.25) + (.1)(1) = .22$$

$$\text{Var}(X) = (100)(.22)(1 - .22) = 17 \quad \boxed{C}$$