135. Key: E

\[
\text{Var}(N) = E\left[ \text{Var}(N|\lambda)\right] + \text{Var}\left[ E(N|\lambda)\right] = E(\lambda) + \text{Var}(\lambda) = 1.50 + 0.75 = 2.25
\]

136. Key: D

\(X\) follows a geometric distribution with \(p = \frac{1}{6}\). \(Y = 2\) implies the first roll is not a 6 and the second roll is a 6. This means a 5 is obtained for the first time on the first roll (probability = 20\%) or a 5 is obtained for the first time on the third or later roll (probability = 80\%).

\[
E[X \mid X \geq 3] = \frac{1}{p} + 2 = 6 + 2 = 8, \text{ so } E[X|Y = 2] = 0.2(1) + 0.8(8) = 6.6
\]

137. Key: E

Because \(X\) and \(Y\) are independent and identically distributed, the moment generating function of \(X + Y\) equals \(K^2(t)\), where \(K(t)\) is the moment generating function common to \(X\) and \(Y\). Thus, \(K(t) = 0.30e^{-t} + 0.40 + 0.30e^t\). This is the moment generating function of a discrete random variable that assumes the values -1, 0, and 1 with respective probabilities 0.30, 0.40, and 0.30. The value we seek is thus 0.70.