1. An insurer has 10 independent one-year term life insurance policies. The face amount of each policy is 1000. The probability of a claim occurring in the year under consideration is 0.1. Find the probability that the insurer will pay more than the total expected claim for the year.

   (A) 0.01  (b) 0.10  (C) 0.16  (D) 0.26  (E) 0.31

   (P285. 24)

2. A family has five children. Assuming that the probability of a girl on each birth was 0.5 and that the five births were independent, what is the probability the family has at least one girl, given that they have at least one boy?

   \( \frac{31}{32} \) (B) \( \frac{30}{31} \) (C) \( \frac{15}{16} \) (D) \( \frac{5}{31} \) (E) \( \frac{5}{32} \)

   [11/81 #5] (P313. 28)

3. Suppose \( X \) is a binomial random variable based upon \( n \) independent trials, with \( p \) being the probability of success on each trial. If \( \Pr(X=n) = 0.00032 \) and \( \Pr(X=n-1)=0.00128n \).

   What is \( p \)?

   (A) 0.20  (B) 0.25  (C) 0.40  (D) 0.80  (E) 1/4n

   [11/81 #50] (P370. 27)

4. Suppose a box contains 4 blue, 5 white, 6 red, and 7 green balls. In how many of all possible samples of size 5, chosen without replacement, will every color be represented?

   (A) 1260  (B) 1680  (C) 2520  (D) 7560  (E) 15120

   [05/ 83 # 1] (P413. 9)

5. Let \( P \) be the probability that an MP3 player produced in a certain factory is defective, with \( P \) assumed a priori to have the uniform distribution on \([0,1]\). In a sample of one hundred MPE players, 1 is found to be defective. Based on this experience, determine the posterior expected value of \( P \)

   \( \frac{1}{100} \) (B) \( \frac{2}{101} \) (C) \( \frac{2}{99} \) (D) \( \frac{1}{50} \) (E) \( \frac{1}{51} \)

   (P280. 19)

6. You are given a random variable, \( R \), distributed uniformly between 0.04 and 0.12, describing the distribution of the effective annual rate of return on a stock with the current price of 100. The price of the stock one year from now is \( S=100(1+R) \). Find the median of the distribution of \( S \).

   (A) 104  (b) 105  (C) 106  (D) 107  (E) 108

   (P471. 4)

7. Let \( X_1,\ldots,X_n \) be independently an uniformly distributed on the interval \((-A, A)\). What is \( \Pr\{\min(X_1,\ldots,X_n) \leq -b \text{ or } \max(X_1,\ldots,X_n) \geq a\} \), where \( 0<a<A \) and \( 0<b<A \)?
\[(A) I - (a + b)^n\]
\[(B) I - \left(\frac{a + b}{A}\right)^n\]
\[(C) I - \left(\frac{a + b}{2A}\right)^n\]
\[(D) I - \left(\frac{a - b}{2A}\right)^n\]
\[(E) I - \left(\frac{a - b}{A}\right)^n\]

[05/83 #25] (P449.14)

8. The number of typos per chapter of an actuarial examination study manual follows a binomial distribution with \(n=5\) and \(p=0.1\). Given that there are \(m\) typos in a given chapter, the number of calculation errors in the same chapter is 0 with probability 0.60, \(m\) with probability 0.30, and \(m+1\) with probability 0.10. Calculate the expected number of typos in a chapter given that there are 2 calculation errors in that chapter.

\[(A) \frac{7}{5} \quad (B) \frac{3}{5} \quad (C) \frac{9}{5} \quad (D) \frac{5}{7} \quad (E) \frac{9}{7}\]

(P 500.1)

Answer: DBADE ECA