1. Define independent events.

2. Give an example of two independent events.

3. Give an example of two events that are not independent.

4. State the four criteria for a binomial experiment.

5. If \( \binom{n}{r} \cdot p^r \cdot (1 - p)^{n-r} \) represents the probability that an event occurs exactly \( r \) times in \( n \) independent trials,
   a. what does the quantity \( p \) represent?
   
   b. what does the quantity \( 1 - p \) represent?

6. Suppose a fair coin is tossed 5 times.
   a. What could the quantity \( \binom{5}{4} \) represent?
   
   b. What could the quantity \( 5^5 \) represent?
   
   c. What could the quantity \( \binom{5}{4}(0.5)^4(0.5)^1 \) represent?

In 7 and 8, consider a 5-question multiple-choice quiz with three possible answers per question. If each question is answered by guessing, the probability of correctly answering any one question is \( \frac{1}{3} \).

7. What is the probability of correctly answering exactly 3 questions?

8. What is the probability of scoring at least 75% on the quiz?
In 9–12, suppose you are taking ten shots from the free-throw line. Recently you've had a 70% probability of making each basket. If this pattern continues, give the probability that you will get
9. exactly 5 baskets. ____________
10. exactly 7 baskets. ____________
11. exactly 10 baskets. ____________
12. at least 7 baskets. ____________

In 13–16, suppose a fair coin is tossed 12 times. Give the probability of each event.
13. exactly 2 heads. ____________
14. exactly 6 heads. ____________
15. exactly 10 tails. ____________
16. no more than 2 tails. ____________

17. Consider tossing a coin with \( P(H) = 0.6 \). You toss the coin 5 times. Calculate the probability of
a. 0 tails. ____________
b. exactly 1 tail. ____________
c. exactly 2 tails. ____________
d. exactly 3 tails. ____________
e. exactly 4 tails. ____________
f. exactly 5 tails. ____________

18. Suppose you roll a die. Find the probability of getting
a. a 6. ____________
b. a 4. ____________
c. a 2 or a 3. ____________
d. a number less than 4. ____________

19. The Eagles are playing a four-game series with the Ravens. Suppose there is a 90% probability that the Ravens will win any particular game. Find the probability that the Ravens win
a. all four games. ____________
b. exactly three games. ____________
c. exactly one game. ____________
d. none of the games. ____________

20. A charity routinely sells more tickets for a fund-raising dinner than they expect to serve. Suppose the charity sells 400 tickets. From previous data, they expect that each guest has an 88% chance of showing up for the banquet. Find the probability that more than 398 people show up. ____________