

- 2.5-8.** Show that $63/512$ is the probability that the fifth head is observed on the tenth independent flip of an unbiased coin.
- 2.5-9.** An excellent free-throw shooter attempts several free throws until she misses.
- If $p = 0.9$ is her probability of making a free throw, what is the probability of having the first miss on the 13th attempt or later?
 - If she continues shooting until she misses three, what is the probability that the third miss occurs on the 30th attempt?
- 2.5-10.** Suppose that a basketball player different from the one in Example 2.5-5 can make a free throw 60% of the time. Let X equal the minimum number of free throws that this player must attempt to make a total of 10 shots.
- Give the mean, variance, and standard deviation of X .
 - Find $P(X = 16)$.
- 2.5-11.** Let X equal the number of flips of a fair coin that are required to observe the same face on consecutive flips.
- Find the p.m.f. of X . **HINT:** Draw a tree diagram.
 - Find the moment-generating function of X .
 - Use the m.g.f. to find the values of (i) the mean and (ii) the variance of X .
 - Find the values of (i) $P(X \leq 3)$, (ii) $P(X \geq 5)$, and (iii) $P(X = 3)$.