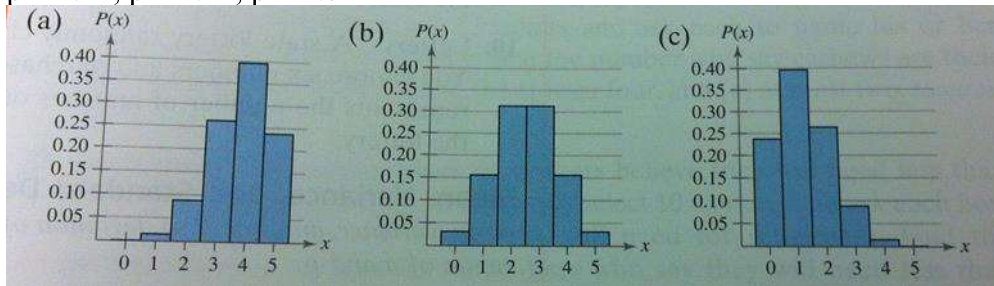**Graphical Analysis** *In Exercise 1, match the give probabilities with the correct graph. The histograms each represent binomial distributions. Each distribution has the same number of trials n but different probabilities of success p.*

   1. $p = 0.25$, $p = 0.50$, $p = 0.75$

Graphical Analysis *In Exercise 2, match the given value of n with the correct graph.   Each histogram shown represents part of a binomial distribution. Each distribution has the same probability of success p but different numbers of trials n. What happens as the value of n increases and the probability of success remains the same?*

   2. $n = 5$, $n = 10$, $n = 15$.
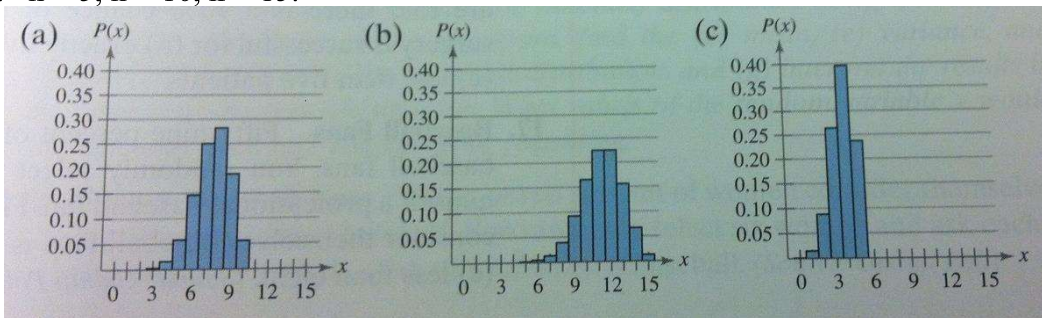
   3.   Identify the unusual values of x in each histogram in Exercise 2.

Identifying and Understanding Binomial Experiments *In Exercises 4 and 5, decide whether the experiment is a binomial experiment. If it is, identify a success, specify the values of n, p, and q, and list the possible values of the random variable x. If it is not a binomial experiment, explain why.*

   4.   **Clothing Store Purchases** From past records, a clothing store finds that 26% of the people who enter the store will make a purchase. During a one-hour period, 18 people entered the store. The random variable represents the number of people who did not make a purchase.

   5.   **Lottery** A state lottery randomly chooses 6 balls numbered from 1 to 40. You chose six numbers and purchase a lottery ticket. The random variable represents the number of matches on your ticket to the numbers drawn in the lottery.

Mean, Variance, and Standard Deviation *In Exercises 6 and 7, find the mean, variance, and standard deviation of the binomial distribution with the given values of n and p.*

6. n = 64, p = 0.85

7. n = 316, p = 0.72

Finding Binomial Probabilities *In Exercises 8-10, find the indicated probabilities. If convenient, use technology to find the probabilities.*

8. **Surgery Success** A surgical technique is performed on seven patients. You are told there is a 70% chance of success. Find the probability that the surgery is successful for (a) exactly five patients, (b) at least five patients, and (c) less than five patients.

9. **Favorite Cookie** Ten percent of adults say oatmeal raisin is their favorite cookie. You randomly select 12 adults and ask each to name his or her favorite cookie. Find the probability that the number who say oatmeal raisin is their favorite cookie is (a) exactly four, (b) at least four, and (c) less than four.

10. **Career Advancement** Twenty-four percent of executives say that older workers have blocked their career advancement. You randomly select 12 executives and ask if they feel that older workers have blocked their career advancement. Find the probability that the number who say older workers have blocked their career advancement is (a) exactly four, (b) more than four, and (c) between four and eight inclusive.

Constructing Binomial Distributions *In Exercises 11 and 12, (a) construct a binomial distribution, (b) graph the binomial distribution using a histogram, (c) describe the shape of the histogram, find the (d) mean, (e) variance, and (f) standard deviation of the binomial distribution, and (g) interpret the results in the context of the real-life situation. What values of the random variable x would you consider unusual? Explain your reasoning.*

11. **No trouble Sleeping** One in four adults says he or she has no trouble sleeping at night. You randomly select five adults and ask each if he or she has no trouble sleeping at night.

12. **Blood Types** Thirty-eight percent of people in the United States have type O+ blood. You randomly select five Americans and ask them if their blood type is O+.