REVIEW QUESTIONS

1. Let x represent the number of broken eggs in a randomly selected carton of 12 eggs. The probability distribution for x is given in Table 20.14. (The probability of 5 or more broken eggs in a carton is so small that this possibility is not included in the probability model.)

x	0	1	2	3	4
$p(x)$	0.73	0.15	0.07	0.03	?

Table 20.14.

a. Determine the value of $p(4)$. Interpret this value in the context of broken eggs.

b. Calculate the probability of randomly selecting a carton of eggs and finding that two or more of the eggs are broken.

c. Draw a probability histogram for the distribution of x.

d. Calculate μ = the mean number of broken eggs per carton. Interpret the meaning of μ in the context of broken eggs.

2. In each of the situations that follow decide if the random variable is discrete or continuous. Justify your answer.

a. The number of unbroken Cheerios in a 9-ounce box of Cheerios.

b. The time it takes to complete an exam.

c. The hourly rate for a worker at a fast-food restaurant.

d. The length of a fish.

3. Suppose you toss a fair coin three times.

a. List the outcomes in the sample space.

Assume that the outcomes in the sample space that you determined for (a) are equally likely. Give the probability distribution for the random variables in (b – d). Then calculate their means and standard deviations.

b. Let x = the number of heads.

c. Let y = the absolute difference in the number of heads and tails: in other words, |number of heads – number of tails|.

d. Let w = the sum of the number of heads and tails.

4. A study of White-throated Sparrows indicates that their wingspan is normally distributed with mean 70 mm and standard deviation 3 mm. Let w = wingspan of a randomly selected White-throated Sparrow. Use technology or the standard normal table to find the probabilities in (a) – (c).

a. $P(w < 68)$

b. $P(w \geq 75)$

c. $P(68 < x < 75)$