

Yates - e

## CHAPTER 9 REVIEW EXERCISES

**9.43 REPUBLICAN VOTERS** Voter registration records show that **68%** of all voters in Indianapolis are registered as Republicans. To test whether the numbers dialed by a random digit dialing device really are random, you use the device to call 150 randomly

chosen residential telephones in Indianapolis. Of the registered voters contacted, **73%** are registered Republicans.

- (a) Is each of the boldface numbers a parameter or a statistic? Give the appropriate notation for each.
- (b) What are the mean and the standard deviation of the sample proportion of registered Republicans in samples of size 150 from Indianapolis?
- (c) Find the probability of obtaining an SRS of size 150 from the population of Indianapolis voters in which 73% or more are registered Republicans. How well is your random digit device working?

**9.46 POLLING WOMEN** Suppose that 47% of all adult women think they do not get enough time for themselves. An opinion poll interviews 1025 randomly chosen women and records the sample proportion who feel they don't get enough time for themselves.

- (a) Describe the sampling distribution of  $\hat{p}$ .
- (b) The truth about the population is  $p = 0.47$ . In what range will the middle 95% of all sample results fall?
- (c) What is the probability that the poll gets a sample in which fewer than 45% say they do not get enough time for themselves?

**9.48 MORE ON INSURANCE** The insurance company sees that in the entire population of homeowners, the mean loss from fire is  $\mu = \$250$  and the standard deviation of the loss is  $\sigma = \$300$ . The distribution of losses is strongly right-skewed: many policies have \$0 loss, but a few have large losses. If the company sells 10,000 policies, what is the approximate probability that the average loss will be greater than \$260?

**9.49 IQ TESTS** The Wechsler Adult Intelligence Scale (WAIS) is a common "IQ test" for adults. The distribution of WAIS scores for persons over 16 years of age is approximately normal with mean 100 and standard deviation 15.

- (a) What is the probability that a randomly chosen individual has a WAIS score of 105 or higher?
- (b) What are the mean and standard deviation of the sampling distribution of the average WAIS score  $\bar{x}$  for an SRS of 60 people?
- (c) What is the probability that the average WAIS score of an SRS of 60 people is 105 or higher?
- (d) Would your answers to any of (a), (b), or (c) be affected if the distribution of WAIS scores in the adult population were distinctly nonnormal? **Explain**