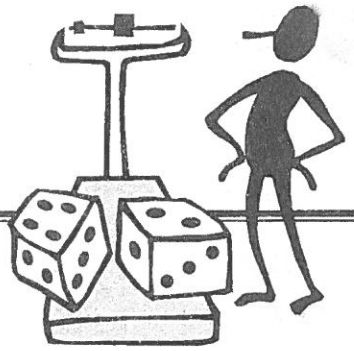
Chapter 19: Confidence Intervals for Proportions



Key Vocabulary:

- standard error
- confidence level
- confidence interval
- margin of error
- critical value
- one-proportion z-interval

Calculator Skills:

- 1-PropZInt

1. Describe the *sampling distribution model* of $\hat{p}$. What *assumptions* must you make for this description to be reasonable?

2. What is the *standard error* of $\hat{p}$? When would you use *standard error* in place of *standard deviation*?

3. Explain the meaning of the following statement: "We are 95% *confident* that between 42.1% and 61.7% of sea fans are infected."

4. What is meant by a *confidence interval*?

5. What is the general form of a *confidence interval* for a one-proportion z-interval (p.371)?

6. Explain how to calculate *margin of error* (p.374).

7. As the *confidence level* increases, what happens to the *margin of error*? What happens to the *confidence interval*?

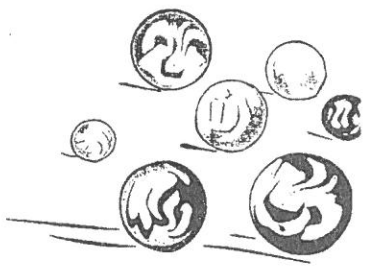
8. By how many times must the sample size n increase in order to cut the *margin of error* in half?

9. Why is it best to have high *confidence* and a small *margin of error*?

10. What is the *critical value* z^* for a 90% *confidence interval*? Draw a sketch.

11. What is the *critical value* z^* for a 95% *confidence interval*? Draw a sketch.

12. What is the *critical value* z^* for a 99% *confidence interval*? Draw a sketch.



13. What assumptions and conditions must you consider before creating a *confidence interval* for a proportion?

14. What effect does increasing your sample size have on the *margin of error*? What effect does it have on the *confidence level*? What effect does it have on the *confidence interval*?

15. The formula used to determine the sample size n that will yield a confidence interval for a population proportion with a specified margin of error m is $m = z^* \sqrt{\frac{\hat{p}\hat{q}}{n}}$. Solve for n.