

Homework Solutions

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Exercise 29

- (a) The sampling distribution of \hat{p} is normal with mean p and standard deviation $\sqrt{\frac{p(1-p)}{n}}$, but the problem does not tell us what p is, so we have to leave it at that.
- (b) No. The estimator \hat{p} is an unbiased estimator of p for samples of any size. (“Unbiased” means that the estimates are not *systematically* too high or too low.)
- (c) Yes, it does lessen the variability. That is the sole reason for using larger samples.
- (d) It means that if they followed this procedure many times, then in about 95% of the cases they would get a confidence interval that contains the value of p . (It does not mean that there is a 95% that p is in the interval from 0.51 to 0.55.)