

DIRECTIONS:

- Write answers to hypothesis tests using the **Four Steps format** shown on p. 27 in the Notes. Use significance level $\alpha = 5\%$ whenever the text does not specify α .
 - Some HW problems require calculator only; others use MINITAB. Being familiar with both techniques reinforces your understanding of each. (See MINITAB steps in the Topic 3 Notes.)
 - Professor Whitten has altered textbook instructions for some exercises.
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A. Textbook Exercises (Chapter 8)

- Exercise 8.52 (p. 514)
(Use formulas and calculator only. Use at least 4 decimal places in calculations.)
Add part (b): Interpret the CI.
- Exercise 8.56
(Use Four Steps with calculator and table only.)
- Use MINITAB to find the CI in Exercise 8.52
(Show all decimal places which MINITAB provides.)
- Use MINITAB to find the P -value in Exercise 8.56
(Show all decimal places.)
- Exercise 8.53
(Use calculator only)
Add part (b): Interpret the CI.
- Exercise 8.57
(Use calculator only)
- Use MINITAB to find the CI in Exercise 8.53
(Show all decimal places.)
- Use MINITAB to find the P -value in Exercise 8.57
(Show all decimal places.)
- Exercise 8.68 (p. 522)
(Use either calculator or MINITAB, your choice)
Add part (c): Interpret the CI.
Add part (d): How does the conclusion translate into raw numbers of men and women on the UI campus? (For simplicity assume 15,000 women and 15,000 men for 30,000 total undergrads on campus.)

(Homework assignment continues on the next page)

B. Additional Practice

- (1) A colleague of yours in a Marketing class says:

I looked up some survey data on the Web which compares the market share for Coca-Cola Classic by age: younger than 40 years old and 40 or older. I ran MINITAB twice to get 95% confidence intervals for both groups. The proportions which drink Coca-Cola Classic every day are:

- Younger than 40: (0.1104, 0.1789)
- 40 or older: (0.0405, 0.0780)

So with 95% confidence the younger market share exceeds the older market share by at least

$$11.04 - 7.80 = 3.24\%$$

- (a) Is the above analysis a correct use of statistics? Explain why or why not.

- (2) Suppose you work as an intern for Hills Bank downtown. At a 10:00 am meeting you're scheduled to report what recent data show about how much more likely "impulse buys" are for consumers who use credit cards compared to consumers who don't use credit cards. (Refer to Exercise 8.61 on p. 521 for the data.)

Remembering your stats, you carefully define

p_1 = proportion of impulse buys made by credit-card users

p_2 = proportion of impulse buys made by non-credit-card users

A friend of yours at the bank offered to do a quick MINITAB analysis for you because she knows you're busy. At 9:55 am she hands you the following printout:

Test and CI for Two Proportions			
Sample	X	N	Sample p
1	35	48	0.729167
2	31	49	0.632653

Difference = p (1) - p (2)
Estimate for difference: 0.0965136
95% CI for difference: (-0.0879433, 0.280971)
Test for difference = 0 (vs not = 0): Z = 1.02 P-Value = 0.308

- (a) What is the printout's interpretation (with 95% confidence), assuming that it matches your definitions for p_1 and p_2 ?
- (b) What data-entry mistake did your friend apparently make? Is the interpretation in (a) correct?
- (c) You don't have time to re-run MINITAB or use a calculator before the meeting. Use the printout to figure out the correct interpretation (with 95% confidence), if possible.

(end of assignment)