

DIRECTIONS:

- Write your answers to hypothesis tests in the **Four Steps format** shown on p. 26 in the Notes. You'll be asked to use this format on quizzes and exams.
 - Some HW problems require calculator only; others use MINITAB. Being familiar with both techniques reinforces your understanding of each. **Compare Topic 2 Notebook answers for Examples 4 and 5 to corresponding MINITAB answers in the First-Discussion Handout for guidance.**
 - Notice that Professor Whitten has altered the textbook's instructions for some exercises.
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A. Stats Concepts and Terminology (Chapter 3)

- Exercise 3.21 (p. 191) (SRS means *simple random sample*.)

For the three exercises 3.70, 3.71, 3.85 below, also identify the parameter or statistic as a mean or a proportion and attach the appropriate symbol μ , \bar{x} , p , or \hat{p} .

- Exercise 3.70 (p. 211)
- Exercise 3.71
- Exercise 3.85

B. Means Problems (Chapters 6, 7)

- Exercise 6.59 (p. 395)
- Exercise 7.3 (p. 428)
 - (a) Find \bar{x} and s by entering numbers into your calculator. Then use a calculator and the CI formula to find the answer, rounded to the nearest cent.
 - (b) Type the data into a MINITAB column and find the CI with the *samples in columns* one-sample t procedure. Round answer to the nearest cent.
- Exercise 7.4 Find the answer two ways (calculator and MINITAB), just as you did in Exercise 7.3.
- Exercise 7.5
 - (a) Use the Four Steps with calculator and table. Use $\alpha = .10$.
 - (b) Use a one-sample t test in MINITAB to find the exact P -value. (Use all available decimal places.)
 - (c) Are your answers to (a) and (b) consistent? Explain.

(continued)

- Exercise 7.7 Use Four Steps and 5% significance. Find answers with calculator and table.
- Exercise 7.7, Part 2: Find the exact P -value for Exercise 7.7.
- Exercise 7.40 Do parts (a) and (b) only, using calculator and table.
- Exercise 7.40, Part 2: Use MINITAB to find the exact P -value and CI.

C. Proportions Problems (Chapter 8)

- Exercise 8.1 (p. 497) Find the answer using calculator only.
- Exercise 8.1, Part 2: Find the answer using MINITAB only.
- Exercise 8.6 Use calculator and table only, with $\alpha = .10$. Answer part (c) also.
- Exercise 8.6, Part 2: Use MINITAB to find P -value.
- Exercise 8.44 (p. 509) Use either calculator and table or MINITAB (your choice.)

D. Additional Practice

- (1) Do college students really gain weight during their freshman year? The lore is that they do, and this phenomenon is called the “freshman 15” because of speculation that students typically gain as much as 15 pounds during the first year of college.
 - (a) Describe the statistical population.
 - (b) Define a population proportion of interest. (Also attach a symbol to your definition.)
 - (c) Define a population mean of interest. (Also attach a symbol to your definition.)

- (2) Fred operates an outdoor hot dog stand on a street corner in Dubuque, Iowa. Last year, Fred’s average daily revenue during the winter months was \$420. Revenue figures from several days this winter (in dollars) are

290 450 114 234 292 595 313 222

Does Fred’s average daily revenue this winter differ from last winter’s average?

- (a) Apply the Four Steps at an 8% significance level, using calculator and table only.
- (b) Use MINITAB to answer Fred’s question.
 - What is the exact P -value? _____
 - Repeat Step 3 and Step 4 based on MINITAB output.

(continued)

- (3) A *dividend* is a payment made by a company to owners of stock in that company. Some U.S. stocks have paid dividends within the past year, while others have not. Eight U.S. stocks which have paid dividends within the past year are listed below, together with the variable x measured on each stock:

$$x = \text{Dividends paid within the past year as a percent of stock price} = \frac{\text{Dividends}}{\text{Price}} \times 100\%$$

Stock	x
1	3%
2	6%
3	3%
4	12%
5	4%
6	1%
7	2%
8	6%

Investment Firm A is interested only in U.S. stocks which paid dividends of 5% or less within the past year. (Stocks which paid more than 5% are considered too risky to research or consider for investment.)

- (a) From Firm A's perspective, what is the statistical population?
- (b) From Firm A's perspective, define a population parameter. (Attach a symbol to your definition.)
- (c) From Firm A's perspective, identify the value of a sample statistic. (Attach a symbol.)

Now consider the following question:

Does the mean dividend for all stocks of interest to Firm A exceed 2%?
(Test using $\alpha = 0.10$.)

- (d) Choose the correct value of the t statistic from the following choices:
(A) -1.941 (B) 0.500 (C) 1.177 (D) 2.145 (E) 2.631
- (e) Use the t Table to find the P -value.
- (f) Interpret the decision.

(end of assignment)