

**Quiz 4 for Statistics 301**  
**Elementary Statistical Methods - Fall 2000**  
**Material Covered: Section 9.1 of Workbook and Sections 9.1,9.2 of text**  
**Friday, 20th October**

This is a 15 minute quiz, worth 5% and marked out of 5 points. The total possible points awarded for each question is given in square brackets at the beginning of each question.

Name (please print): \_\_\_\_\_ . ID Number: \_\_\_\_\_  
last first

**3.** Sleepy Head Incorporated claims the citizens of Westville spend \$105 on pillows a year. Outraged citizens claim the average is lower than \$105. Suppose, in a random sample of 39 Westville citizens, the sample average spent on pillows is \$104 and the sample standard deviation is \$3.50. Test at 1%.

- (a) [1] Circle all the *true* (correct) statements.
- (i) This test asks which of one of two possible choices for the statistic  $\mu$  is correct.
  - (ii) This is a left-sided test.
  - (iii) The null hypothesis is  $H_0 : \mu = 104$ .
  - (iv) The sample of 39 Westville citizens need not be taken at random.
  - (v) The amount spent on pillows need not follow a normal distribution.
- (b) [1] The observed value of the test statistic (which, remember, can be either standardized or not) is equal to (circle none, one or more) **-2.33 / -1.78 / 103.7 / 104 / 105**.
- (c) [1] The critical value is equal to (circle none, one or more) **-2.33 / -1.78 / 103.7 / 104 / 105**.
- (d) [1] Since the test statistic is larger than the critical value, we (circle one)
- (i) disagree with the citizen's claim that less than \$105, ...
  - (ii) disagree with the citizen's claim that about \$105, ...
  - (iii) agree with the citizen's claim that less than \$105, ...
  - (iv) disagree with Sleepy Head's assertion that less than \$105, ...
  - (v) agree with Sleepy Head's assertion that about \$105, ...
- ... on average, is spent on pillows.

(e) [1] Match the two columns below.

statistical terms	sleepy example
(i) population	(i) Westville citizens
(ii) sample	(ii) yearly average spent on pillows by Westville citizens
(iii) statistic	(iii) amount spent on pillows by each of chosen 39
(iv) parameter	(iv) yearly average spent on pillows by chosen 39
	(v) 39 citizens
	(vi) amount spent on pillows by each of the Westville citizens

statistical terms	(i)	(ii)	(iii)	(iv)
sleepy example				

(a) (ii), (v)

(b) **-1.78, 104**

(c) **-2.33, 103.7**

(d) (i)

(e) (vi), (iii), (iv), (ii)