

Quiz 4 for Statistics 301
Elementary Statistical Methods - Spring 2001
Material Covered: Section 9.1 of Workbook and Sections 9.1,9.2 of text
Friday, 9th March

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

1. The International Olympic Committee (IOC) believes the average age of all athletes competing in any Olympic games is 25. The US Olympic Committee (USOC) does not think this applies to US athletes and, in particular, claims the average age of competing US athletes is less than 25. Suppose, in a random sample of 45 US athletes, the sample average age is 23.5 and the sample standard deviation is 3.5. Test at 1%.

- (a) [1 point] Circle all the *true* (correct) statements.
 - (i) The alternative hypothesis is $H_0 : \mu = 25$.
 - (ii) The null hypothesis is $H_0 : \bar{x} = 23.5$.
 - (iii) This is a left-sided test.
 - (iv) The sample of 45 US athletes need not be taken at random.
 - (v) The US athlete ages need not follow a normal distribution.
- (b) [1 point] The observed value of the test statistic (which, remember, can be either standardized or not) is equal to (circle two) **-2.87 / -1.50 / 1.50 / 2.87 / 23.5**.
- (c) [1 point] The (standardized) critical value is equal to (circle one) **-2.33 / -1.78 / -1.65 / 1.65 / 2.33**.
- (d) [1 point] Since the test statistic is smaller than the critical value, we (circle none, one or more)
 - (i) agree with the USOC's claim that the average age is greater than 25.
 - (ii) agree with the USOC's claim that the average age is equal to 25.
 - (iii) agree with the USOC's claim that the average age is less than 25.
 - (iv) agree with the IOC's claim that the average age is equal to 25.
 - (v) agree with the IOC's claim that the average age is less than 25.
- (e) [1 point] Match the two columns below.

statistical terms	US athlete example
(A) population	(A) US athletes
(B) sample	(B) average age of all US athletes
(C) statistic	(C) age of 45 US athletes
(D) parameter	(D) average age of 45 US athletes
	(E) average age of all athletes
	(F) age of all US athletes

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

(a) (iii), (v)

(b) **-2.87, -1.50**

(c) **-2.33**

(d) (iii)

(e) F, C, D, B