

Quiz 6 for Statistics 301
Elementary Statistical Methods - Fall 2000
Material Covered: Section 10.1 of Workbook and Sections 10.1,10.3,10.4
of text
Friday, 17th November

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. Consider the following data of the depression–dejection score (a low value indicates deeply depressed or dejected) versus sleeping ability (a low value indicates poor sleep) of ten aging geniuses.

sleeping ability, x	23	34	37	44	57	60	72	85	87	100
depression–dejection score, y	10	40	35	47	62	62	73	88	91	93

- (a) [1] The linear regression equation is given by (circle closest one)
- (i) $\hat{y} = 2.05 - 1.04x$
 - (ii) $\hat{y} = -2.05 - 1.04x$
 - (iii) $\hat{y} = -2.05 + 1.04x$
 - (iv) $\hat{y} = 2.05 + 1.04x$
 - (v) $\hat{y} = -2.05x + 1.04$
- (b) [1] When the sleeping ability is $x = 50$, we can use the linear regression equation to tell us that the approximate depression–dejection score is (circle closest one) **49.83 / 50.12 / 50.56 / 51.21 / 52.01**.
- (c) [1] The standard error of estimate is (circle closest one) **2.33 / 4.78 / 6.26 / 7.78 / 8.33**.
- (d) [2] The 82% confidence interval at $x = 50$ is (circle closest one)
- (i) (30, 70)
 - (ii) (33, 67)
 - (iii) (35, 65)
 - (iv) (37, 63)
 - (v) (41, 59)

(a) (iii)

(b) **49.83**

(c) **6.26**

(d) (v) $(y_p \pm t_c S_e \sqrt{1 + \frac{1}{n} + \frac{(x - \bar{x})^2}{SS_x}} = 49.83 \pm (1.40)(6.26) \sqrt{1 + \frac{1}{10} + \frac{(50 - 59.9)^2}{5936.9}}$, where
 $SS_x = \sum x^2 - (\sum x)^2/n = 41817 - 599^2/10$