Quiz 3 (Individual) for Statistics 113
Statistics and Society–Fall 2001
Material Covered: Chapter 10 of Workbook and text
For: Friday, 5th October

Name (please print): _____.
last first

Consider the following results in a study of around 1,000 families:

average height, husband, $x \approx 69$ inches	SD ≈ 2.9
average height, wife, $y \approx 63$ inches	SD ≈ 2.5 $r \approx 0.45$

Notice that the husband's height would be given along the x axis of a scatter plot and the wife's height would be given along the y axis.

(a) [1 point] The slope of the regression line is
(circle closest one) **0.39** / **0.52** / **0.86** / **0.97** / **1.16**.

(b) [1 point] Predict the height of the wife when the height of her husband is 61 inches. (Circle closest one) **57.3** / **59.9** / **61.3** / **61.8** / **62.3**.

(c) [1 point] The regression effect tells us (circle none, one or more)

(i) the percentile rank of the wife's height will always be *less* than the percentile rank of the husband's height.

(ii) the percentile rank of the wife's height will always be *the same as* than the percentile rank of the husband's height.

(iii) the percentile rank of the wife's height will always be *more* than the percentile rank of the husband's height.

(iv) the percentile rank of the wife's height will always be *closer* to the 50th percentile than the percentile rank of the husband's height.

(v) the percentile rank of the wife's height will always be *further away from* the 50th percentile than the percentile rank of the husband's height.

(d) [2 points] Predict the height of the wife when the height of her husband is at the 62th percentile. (Circle closest one) **56.0** / **59.9** / **61.3** / **61.8** / **63.3**.

(a) **0.39**.
$0.45 \times \frac{2.5}{2.9}$

(b) **59.9**.
$61 - 69 = -8$, $\frac{-8}{2.9} \approx -2.76$,
$-2.76(0.45) \approx -1.24$,
$-1.24(2.5) \approx -3.1$, $-3.1 + 63 \approx 59.9$

(c) (iv) **closer**.

(d) **63.3**.
62% below (percentile) implies an area of $62 - 38 = 24\%$ between
24% is 0.30 SDs y is above average using table
$0.45(0.30) \approx 0.135$ SDs x is above average using table
which is $63 + 0.135(2.5) = 63.3$