

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 $SD \approx 2.9$
average height, wife, $y \approx 63$ inches $SD \approx 2.5$ $r \approx 0.45$

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 $63 + 0.135(2.5) = 63.3$