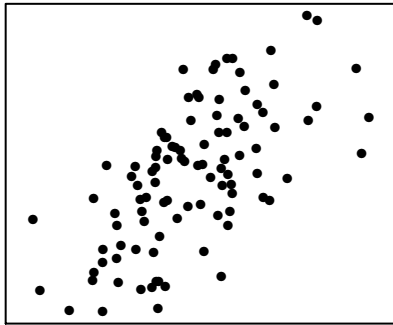


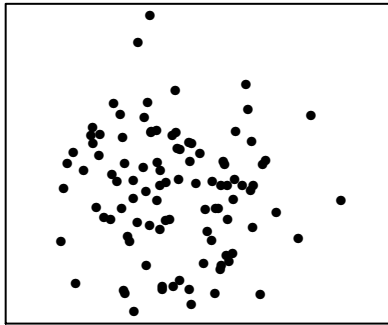
# BIOS 600 · Practice Quiz: Measures of Association

Fall 2011

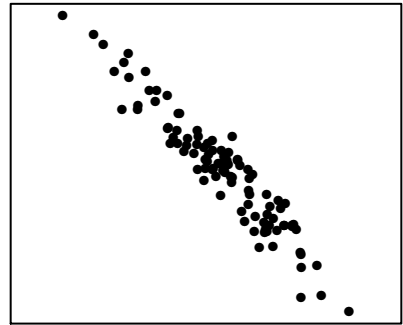
1. The relationship between two variables can be represented by a scatter plot. Identify the plot where  $r = -0.95$ ,  $r = -0.08$ , and  $r = 0.64$ .



(A)



(B)



(C)

2. The correlation coefficient,  $r$ , can be any number from \_\_\_\_ to \_\_\_\_ .

3. Suppose  $X$  denotes a mother's prepregnancy weight in pounds, and  $Y$  is the infant's full term birth weight in pounds. If the correlation between  $X$  and  $Y$  is 0.46, how will the correlation change if

- (a) we scale  $X$  to kilograms?
- (b) we scale  $Y$  to grams?
- (c) we scale  $X$  to kilograms and scale  $Y$  to grams?
- (d) we center  $X$  at 0?
- (e) we center  $Y$  at 0?
- (f) we center both  $X$  and  $Y$  at 0?

4. The correlation of the data in the next plot is close to 0. True or False: Because the correlation is close to 0, an appropriate conclusion is that  $X$  and  $Y$  are not (or very weakly) associated.

If you respond false, what is an appropriate conclusion?



5. Use the following data, and calculate the correlation coefficient of

- (a)  $X$  and  $Y$
- (b)  $X$  and  $Z$

$X$	$Y$	$Z$
-1	1	-1
-2	1	-1
0	2	-1
2	-2	1

6. (Made Up.) Suppose we collect the following data from each state:

- $X$  The average age of new retirees,
- $Y$  The average health score of new retirees.

- (a) The correlation of  $X$  and  $Y$  is a special type of correlation known as what?
- (b) Suppose  $r = 0.89$ . Is an individual's age of retirement a strong predictor of their health score?