AP STATISTICS NAME _____

PART II TEST REVIEW #2 DATE _____PER _____

For each statement below, explain why the statement cannot be true:

1) The correlation between gender and number of siblings is -0.171.

2) The correlation between a person's age and their reaction time on a reflex test is 1.08.

3) The correlation between age and weight of a new born baby is 0.83 ounces per day.

Match each pair of variables to its most likely value of r. (not all answers will be used)

4) Length of hair and grade point average _____

5) Microwave power setting (0-100%) and time it takes to boil water _____

6) Height and weight in 40-year old males _____

a. Exactly 1.0

b. - 0.55

c. +0.68

d. Close to 0

e. -0.97

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7) Sketch a scatterplot below which would demonstrate a strong association but would have a correlation (r) close to zero.

8) Define the term "lurking variable" and give an example.

9) For the following scatterplot, draw in a point that would increase the correlation (r).

10) For the following scatterplot, draw in a point that would make the slope (b) of the regression line decrease.

11) Sketch a residual plot below that would indicate that the model used was a good fit.

12) Sketch a residual plot below that would indicate that the model used was not appropriate.

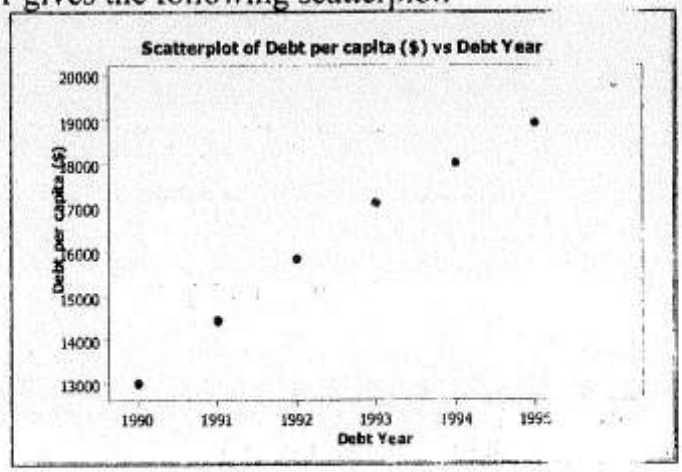
13) If y increases by 12 every time x increases by 1, is this pattern linear or exponential?

14) If y is multiplied by 4 every time x increases by 1, is this pattern linear or exponential?

15) What does a positive residual tell you?

16)

Personal debt According to *The World Almanac and Book of [illegible] 2004*, the debt per capita for the years 1990-2001 gives the following scatterplot:



Regression output gives the equation of the regression line as $\hat{Debt} = -2,231,226 + 1128(Year)$ with $R^2 = 98.8\%$.

a. What is the response variable?

b. What is the correlation coefficient r?

c. Explain in context what the slope of the line means.

d. Explain in context what $R^2 = 98.8\%$ means.

e. You decide to take a look at a residuals plot before making [illegible] predictions. Based on the following residuals plot, does linear regression seem appro[illegible] for these data? Explain.