# AP Statistics - Chapter 2B Warm-Ups

5. I measure a response variable Y at each of several times. A scatterplot of $\log Y$ versus time of measurement looks approximately like a positively sloping straight line. We may conclude that
A) the correlation between time of measurement and Y is negative, since logarithms of positive fractions (such as correlations) are negative
B) the rate of growth of Y is positive, but slowing down over time
C) an exponential growth model would approximately describe the relationship between Y and time of measurement
D) a mistake has been made. It would have been better to plot Y versus the logarithm of the time of measurement

6. Using least-squares regression, I determine that the logarithm (base 10) of the population of a country is approximately described by the equation $\log(\text{population}) = -13.5 + 0.01 \times (\text{year})$
Based on this equation, the population of the country in the year 2000 should be about
A) 6.5   B) 665   C) 2,000,000   D) 3,167,277

12. Researchers studied a sample of 100 adults between the ages of 25 and 35 and found a strong negative correlation between the amount of vitamin C an individual consumed and the number of pounds the individual was overweight. Which of the following may we conclude?
A) This is strong, but not conclusive, evidence that large amounts of vitamin C inhibit weight gain
B) If the amount of vitamin C consumed and the number of pounds overweight for each individual in this study were plotted on a scatterplot, the points would lie close to a negatively sloping straight line
C) If a larger sample of adults between the ages of 25 and 35 had been studied, the correlation would have been even stronger
D) All of the above

15. When exploring very large sets of data involving many variables, which of the following is true?
A) Extrapolation is safe because it is based on a greater quantity of evidence
B) Associations will be stronger than would be seen in a much smaller subset of the data
C) A strong association is good evidence for causation because it is based on a large quantity of information
D) None of the above

20. Consider the following scatterplot.
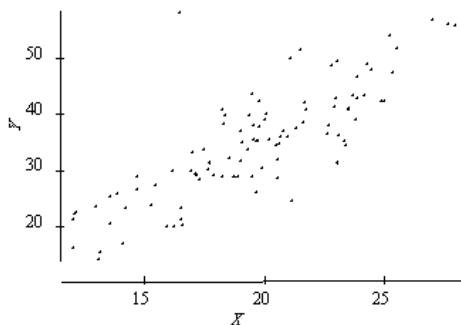
From this plot we can conclude
A) that there is evidence of a modest cause-and-effect relation between X and Y with increases in X causing increases in Y
B) that there is an outlier in the plot   C) that there is a strongly influential point in the plot   D) all of the above

22. When possible, the best way to establish that an observed association is the result of a cause-and-effect relation is by means of
A) the least-squares regression line   B) the correlation coefficient
C) examining z-scores rather than the original variables   D) a well-designed experiment

32. A study of the salaries of full professors at Upper Wabash Tech shows that the median salary for female professors is considerably less than the median male salary. However, further investigation shows that the median salaries for male and female full professors are about the same in every department (English, physics, etc.) of the university. This apparent contradiction is an example of
A) Extrapolation   B) Simpson's Paradox   C) causation   D) correlation

34. The two-way table below categorizes suicides committed in 1983 by the sex of the victim and the method used.

Method	Male	Female
Firearms	13,959	2,641
Poison	3,148	2,469
Hanging	3,222	709
Other	1,457	690

Which of the following statements is consistent with the table?
A) There is absolutely no evidence of a relation between the sex of the victim and the method of suicide used
B) More women commit suicide than men
C) Men display a greater tendency to use firearms to commit suicide than do women
D) The correlation between method of suicide and sex of the victim is clearly positive

35. In a study of the link between high blood pressure and cardiovascular disease, a group of white males ages 35 to 64 was followed for five years. At the beginning of the study, each man had his blood pressure measured; the blood pressure was classified as either "low" systolic blood pressure (less than 140 mmHg) or "high" blood pressure (140 mmHg or higher). The following table gives the number of men in each blood pressure category and the number of deaths from cardiovascular disease during the five-year period.

Blood Pressure	Deaths	Total
Low	10	2000
High	50	3500

Based on the data given here, which of the following statements is correct?
A) These data are consistent with the idea that there is a link between high blood pressure and death from cardiovascular disease
B) The mortality rate (proportion of deaths) for men with high blood pressure is five times that of men with low blood pressure
C) These data probably understate the link between high blood pressure and death from cardiovascular disease, since men will tend to understate their true blood pressure
D) All of the above

A review of voter registration records in a small town yielded the following table of the number of males and females registered as Democrat, Republican, or some other affiliation.

	Male	Female
Democrat	300	600
Republican	500	300
Other	200	100

41. The proportion of males that are registered as Democrats is
A) 300   B) 0.33   C) 0.30   D) 0.15

42. The proportion of registered Democrats who are male is
A) 300   B) 0.33   C) 0.30   D) 0.15

43. The proportion of all voters who are male and registered Democrats is
A) 300   B) 0.33   C) 0.30   D) 0.15

Answer Key

5.	C
6.	D
12.	B
15.	D
20.	B
22.	D
32.	B
34.	C
35.	A
41.	C
42.	B
43.	D