

- b. Find the equation of the regression line.
- c. Based on the preceding results, can we conclude that the stress from the m has an effect on systolic blood pressure? Why or why not?

Cumulative Review Exercises

1. Effects of Heredity and Environment on IQ In studying the effects of heredity and environment on intelligence, it has been helpful to analyze the IQs of identical twins who were separated soon after birth. Identical twins share identical genes. By raising identical twins raised apart, we can eliminate the variable of heredity and isolate the effects of the environment. The accompanying table shows the IQs of 12 pairs of identical twins (older twins are x) raised apart (based on data from "IQs of Identical Twins Reared Apart," by Arthur Jensen, *Behavioral Genetics*). The sample data here are typical of those obtained from other studies.
 - a. Find the mean and standard deviation of the sample of older twins.
 - b. Find the mean and standard deviation of the sample of younger twins.
 - c. Based on the results from parts (a) and (b), does there appear to be a difference between the means of the two populations? In exploring the association between the means of the two populations, is such a comparison of the two sample means the best approach? or why not?
 - d. Combine all of the sample IQ scores, then use a 0.05 significance level to test the claim that the mean IQ score of twins reared apart is different from the mean IQ score of twins reared together.
 - e. Is there an association between IQs of twins who were separated soon after birth? What method did you use? Write a summary statement about the effect of heredity and environment on intelligence, and note that your conclusions will be based on this relatively small sample of 12 pairs of identical twins.

x	107	96	103	90	96	113	86	99	109	105	96
y	111	97	116	107	99	111	85	108	102	105	100

2. Measuring Lung Volumes In a study of techniques used to measure lung volumes, physiological data were collected for 10 subjects. The values given in the accompanying table are in liters, representing the measured forced vital capacities of 10 subjects in a sitting position and in a supine (lying) position. The issue we want to investigate is whether the position (sitting or supine) has an effect on the measured values.
 - a. If we test for a correlation between the sitting values and the supine values, will the result allow us to determine whether the position (sitting or supine) has an effect on the measured values? Why or why not?
 - b. Use an appropriate test for the claim that the position has no effect, so the mean difference is zero.

Subject	A	B	C	D	E	F	G	H	I	J
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