

STATDISK display. Is there sufficient evidence to support the claim that there is a linear correlation between the durations of eruptions and the time intervals to the next eruptions? Explain.

**STATDISK**

Correlation Results:  
Correlation coeff,  $r$ : 0.6869123  
Critical  $r$ :  $\pm 0.3120061$   
P-value (two-tailed): 0.000

**6. Old Faithful** For 40 eruptions of the Old Faithful geyser in Yellowstone National Park, duration times (sec) were recorded along with the heights (ft) of the eruptions. The paired duration and height measurements were used to obtain the results shown in the accompanying Excel display. Is there sufficient evidence to support the claim that there is a linear correlation between the durations of eruptions and the heights of the eruptions? Explain.

**EXCEL**

A	B	C
	Column 1	Column 2
Column 1	1	
Column 2	0.091548	1

**7. Heights of Fathers and Sons** The heights (in inches) of a sample of 10 father/son pairs of subjects were measured. Minitab results are shown below (based on data from the National Health Examination Survey). Is there sufficient evidence to support the claim that there is a linear correlation between the heights of fathers and the heights of their sons? Explain.

**MINITAB**

Pearson correlation of FATHER and SON = 0.149  
P-Value = 0.681

**8. Cereal Killers** The amounts of sugar (grams of sugar per gram of cereal) and calories (per gram of cereal) were recorded for a sample of 16 different cereals. TI-83/84 Plus calculator results are shown here. Is there sufficient evidence to support the claim that there is a linear correlation between sugar and calories in a gram of cereal? Explain.

**TI-83/84 PLUS**

LinRegTTest  
 $y=a+bx$   
 $b \neq 0$  and  $r \neq 0$   
 $\uparrow b = .5789830508$   
 $s = .1117312583$   
 $r^2 = .5858430396$   
 $r = .7654038409$

**Importance of Graphing.** Exercises 9 and 10 provide two data sets from "Graphs in Statistical Analysis," by F. J. Anscombe, The American Statistician, Vol. 27. For each exercise,

- Construct a scatterplot.
- Find the value of the linear correlation coefficient  $r$ , then determine whether there is sufficient evidence to support the claim of a linear correlation between the two variables.
- Identify the feature of the data that would be missed if part (b) was completed without constructing the scatterplot.