

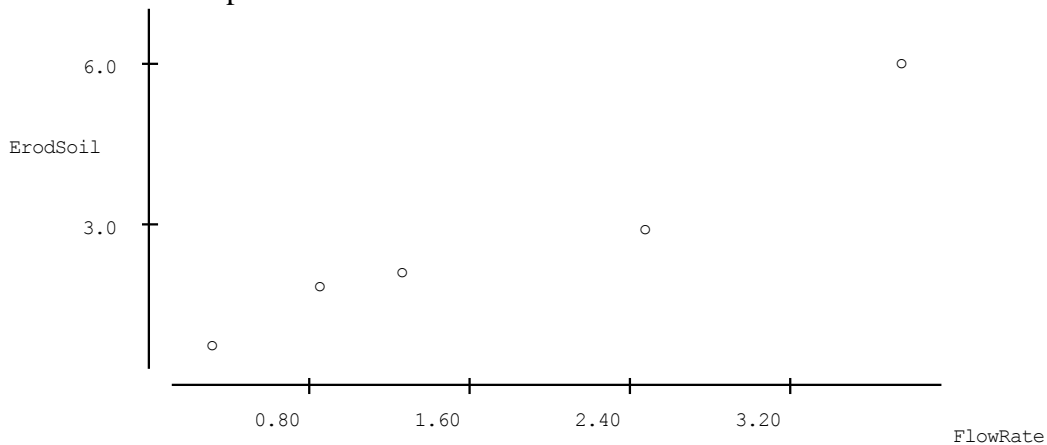
A.P. Statistics
Assignment 2-4

Remember to show your thinking through your work.

1. When water flows across farmland, some of the soil is washed away, resulting in erosion. Researchers released water across a test bed at different flow rates and measured the amount of soil washed away. The following table gives the flow (in liters per second) and the weight (in kilograms) of eroded soil:

Flow Rate	0.31	0.85	1.26	2.47	3.75
Eroded Soil	0.82	1.95	2.18	3.01	6.07

Here is a plot of the data.



- (a) Is the association positive or negative?

<type answer here>

- (b) Estimate the correlation r .

<type answer here>

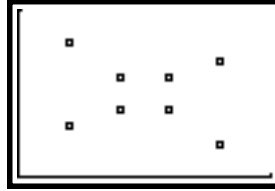
- (c) Explain why your r is reasonable based on the scatterplot.

<type answer here>

2. You may NOT use your calculator for this exercise. Match the following scatterplots with the appropriate correlation from the list. Justify your answer. Note that not all of the correlations are used. The viewing window is the same in all four plots.



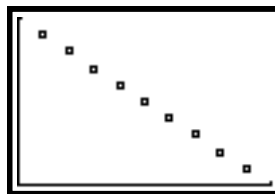
Scatterplot A



Scatterplot B



Scatterplot C



Scatterplot D

Correlations:

$r = -.48$

$r = .98$

$r = .82$

$r = -.17$

$r = 1$

$r = .17$

$r = -1$

- (a) Scatterplot A

<type answer here>

- (b) Scatterplot B

<type answer here>

- (c) Scatterplot C

<type answer here>

- (d) Scatterplot D

<type answer here>

3. The AP Statistics exam was first administered in May 1997 to the largest first year group in any discipline in the AP program. And since that time, the number of students taking the exam has grown at an impressive rate. Here are the actual data:

<u>Year</u>	<u>Number of students</u>
1997	7 667
1998	15 486
1999	25 240
2000	35 119
2001	41 609
2002	50 000 (est.)

- (a) Make a scatterplot for these data. Is there an explanatory–response relationship between these variables? If so, which variable is the explanatory variable?

<type answer here>

- (b) Describe the direction and form of the relationship.

<type answer here>

- (c) Explain in simple language what this says about year and number of students taking the AP Statistics exam.

<type answer here>

- (d) Estimate the correlation.

<type answer here>

- (e) Explain why your r -value is reasonable based on the scatterplot.

<type answer here>