

1. Environmentalists would like to stop coal-burning companies from emitting mercury, because they believe it is contaminating the fish. Mercury is now at dangerous levels in many river fish. Coal-burning companies claim that they are not to blame -- the fish are getting mercury poisoning from some other source. To settle the matter, some data was collected about the mercury levels in various rivers and their proximity to coal-burning plants:

Proximity to coal-burning plant (in miles)	Mercury level
180	60
150	65
20	96
670	41

For ease of calculation, here are some pre-computed values:

$$\text{sum}(x) = 1020$$

$$\text{sum}(y) = 262$$

$$\text{sum}(x*y) = 49940$$

$$\text{sum}(x*x) = 504200$$

$$\text{sum}(y*y) = 18722$$

$$\text{mean}(x) = 255$$

$$\text{mean}(y) = 65.5$$

- a) Find the correlation between proximity and mercury level.

- b) Test whether there is significant evidence that proximity and mercury level are related at the .05 level.