Statistical report

Note Title 10/27/2008

1. ~~Introduction of the study (the description of data, and summary statistics);~~
2. Formal statistical analysis (hypotheses to set up, the choice of test and the discussion on its appropriateness);
3. ~~Your finding and conclusion.~~

1. Data exploration (Chapter 3)
   - Summary statistics
   - Data visualization (Histogram , boxplot)

2. Statistical analysis (Chapter 5)
   - Assumption for normality
   - Hypothesis test

1. Answer the following questions regarding the study in Exercise 5.52, and report your findings. (Data file ex5-52.csv)

   (a) Present a short description of the study and the data, including summary statistics for each variable.

A new reading program was being evaluated in the fourth grade at an elementary school. 20 students were randomly selected and their reading speed and reading comprehension were thoroughly tested. Based on a fixed-length standardized test reading passage, the following speeds (in minutes) and comprehension scores (based on a 100-point scale) were obtained

Variables

Speed : Reading speed in minutes

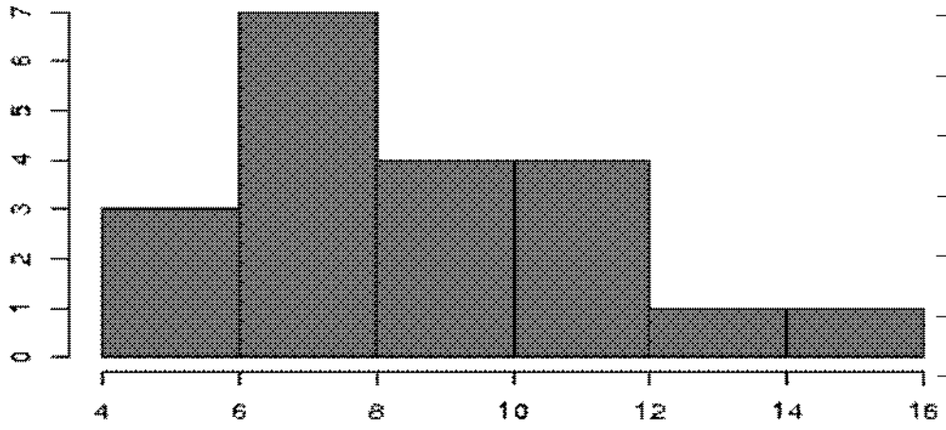
Comprehension : Test scores on a 100-point scale

Summary statistics :

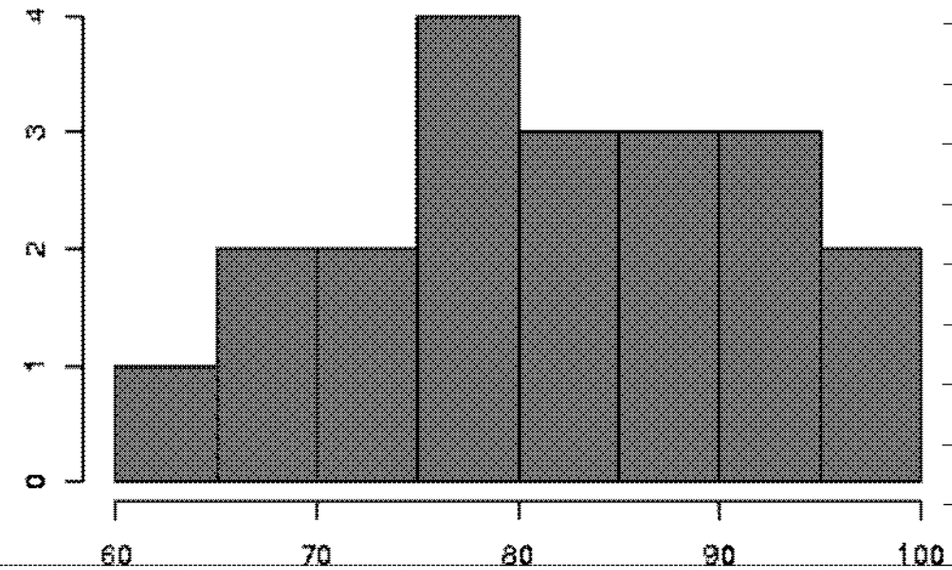
Variable	Mean	S.D	L.Quartile	Median	U.Quartile
Speed	9.1	2.573141	7	8.5	11
Comprehension	82.05	10.8796	75.75	82	90.25

(b) Give graphical presentations of the data, and comment on the shape of distribution for each variable. Can you find any relationship between the reading speed and comprehension?

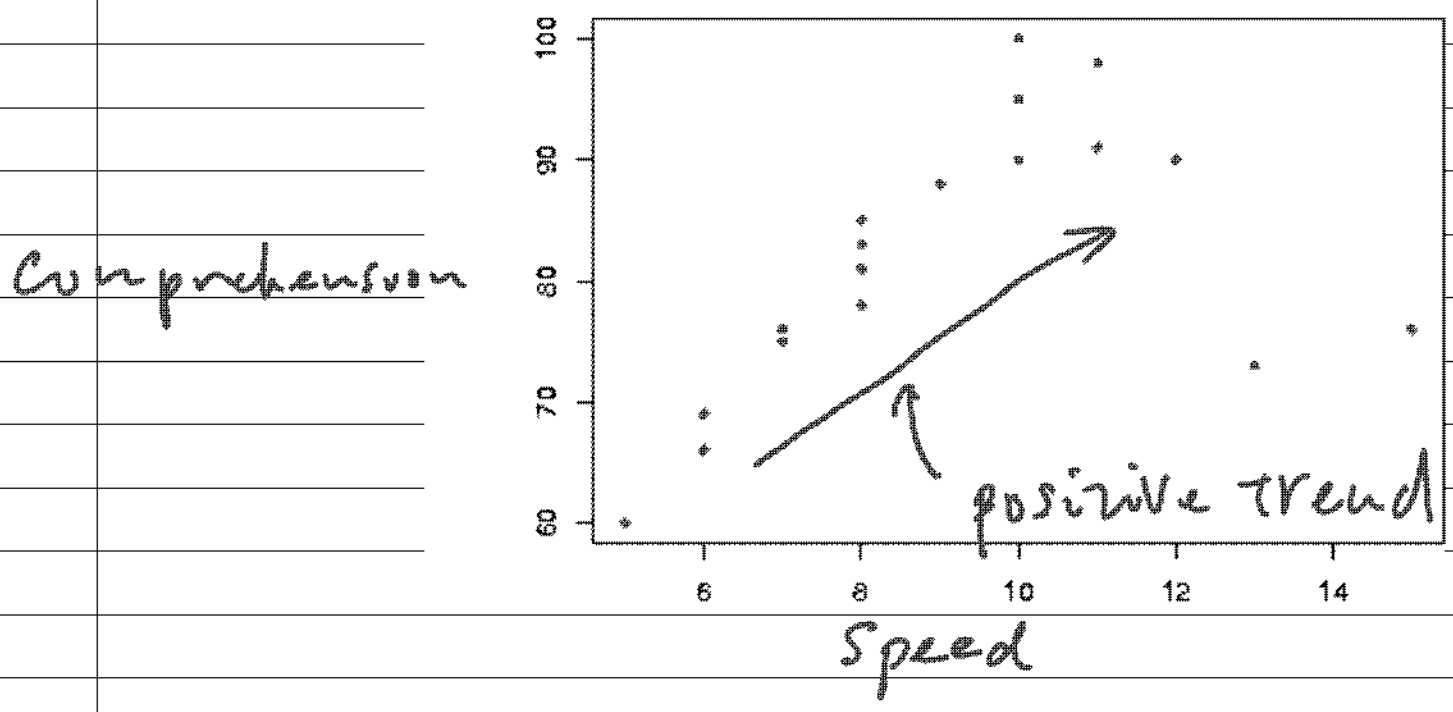
Histogram of Speed : Skewed to the right



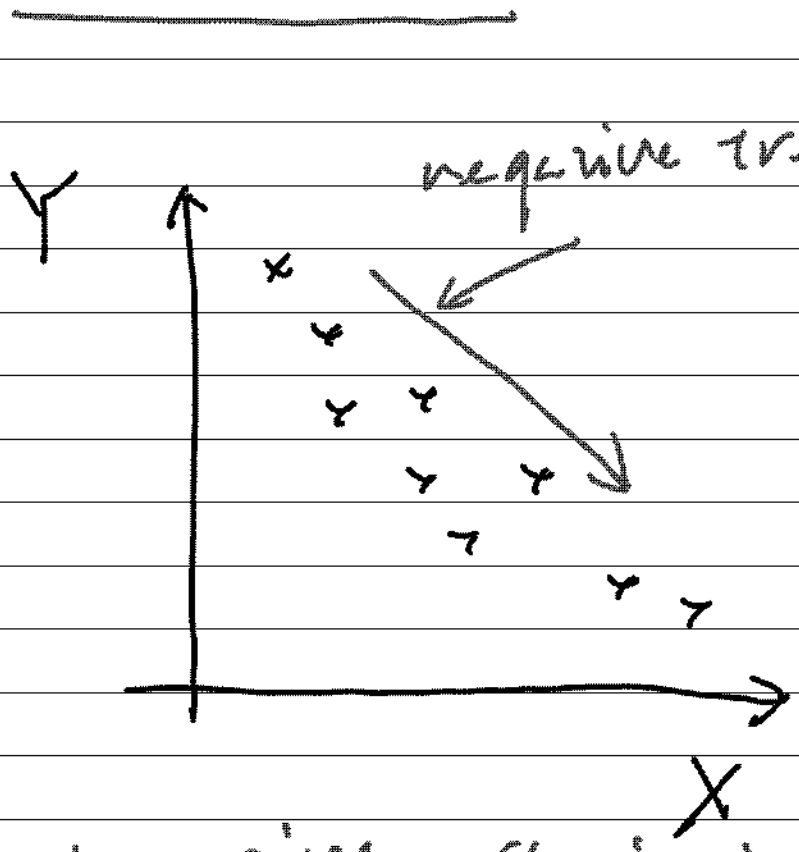
Histogram of Comprehension : Symmetric



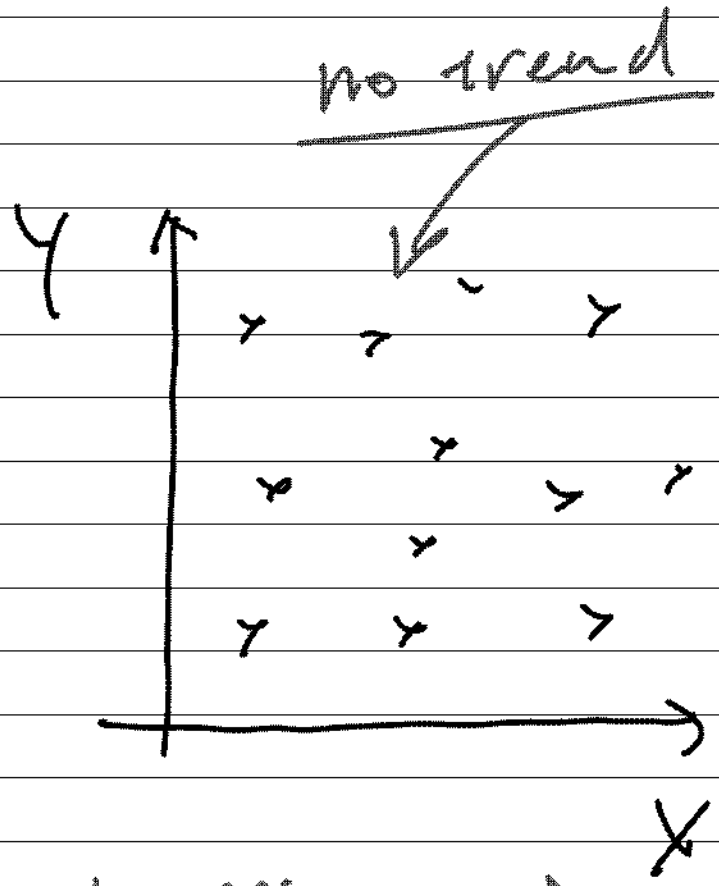
Scatter plot for Speed against Comprehension.



Speed and comprehension have positive association



negative association



no association

⇓

Independence of two variables

(c) Researchers want to find statistical evidence that the mean comprehension for all fourth graders is greater than 80? Construct the null and the alternative hypothesis for the test.

μ = mean comprehension

$H_0: \mu \leq 80$

$H_A: \mu > 80$