

Practice, again

Which test should I use?

Problem setup

- What is the question you are asking?
- What test should be run?
- What is the basis for assuming or not assuming normality?
- What are the H_0 and the H_a for the test?

Phrasing results

- Step 1: what test was run and why was it run?
- Step 2: state significance/non-significance
- Step 3: accept or reject the H_0
- Step 4: relate acceptance or rejection of H_0 back to research question

Practicum

- Day 1: Grouping, frequency distributions, graphs, descriptive statistics
- Day 2: Tests of normality and difference
- Day 3: Tests of relationship

Test yourself

- Answer these with complete sentences as thoroughly as possible.
- Under what circumstances would you use...
 - Non-parametric descriptive statistics?
 - Independent 2 sample t test?
 - Kruskal-Wallis H test?
 - One sample t test?

Test yourself

- Come up with an example for each one of the following tests...
- Make sure you write why you would use each test with the example...
 - Spearman's rho
 - Pearson's r
 - Simple linear regression
 - Multiple regression

Example 2

- There are 245 students in five high schools, if the number of students who scored above the median on the SAT was uniform, there would be 49 expected per school.
- You have a sample of students from five high schools Crete, Texas and you want to see if the number of students above the US median is different than expected
 - Zues HS = 42, Hera HS = 45, Hercules HS = 51, Posidon HS = 47, Athena HS = 60
- Why would you want to know this?
 - What test would you run
 - How would you determine the expected score
 - Set up and do the test by hand

Example 3

- Decentralization theory predicts that unlike for most of US history where population growth occurred mainly in urban areas, there is recently a rural renaissance in which rural areas and small towns are becoming popular places to live
- You have data on two variables % change in population & population density in five year increments from 1960 to 1995 for each state
- Phrase research hypotheses using these variables to test whether or not a rural renaissance is occurring

Example 3, part 2

- If growth is occurring in “rural states” then population density for states should negatively correlate with growth rate
- If growth is occurring in “urban states” then population density for states should positively correlate with growth rate
- Without assuming normality, what test should you use to test these hypotheses?
 - How would you set up the tests to determine whether or not (and how) density correlates to growth rate for each 5 year period?

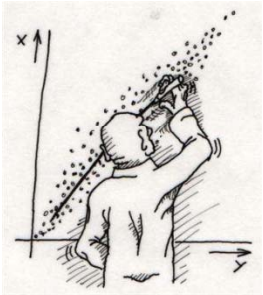
Results Example 3

- Phrase the results in this table

TABLE 13.5

Spearman Correlation Coefficients for State Population Change and Density

Time period	Spearman r_s
1960–1965	+.166
1965–1970	+.176
1970–1975	–.539
1975–1980	–.561
1980–1985	–.406
1985–1990	+.177
1990–1995	–.391



Interpret this graph in a paragraph

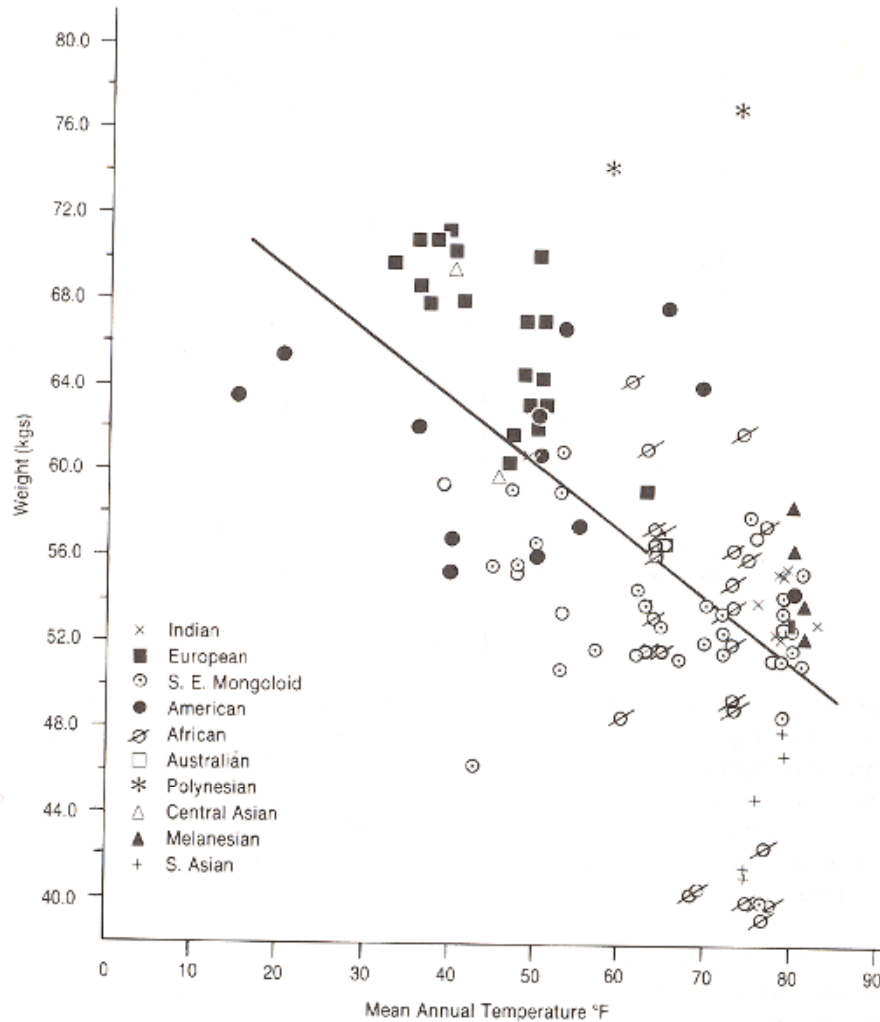
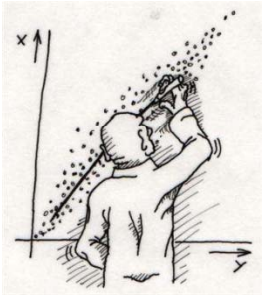
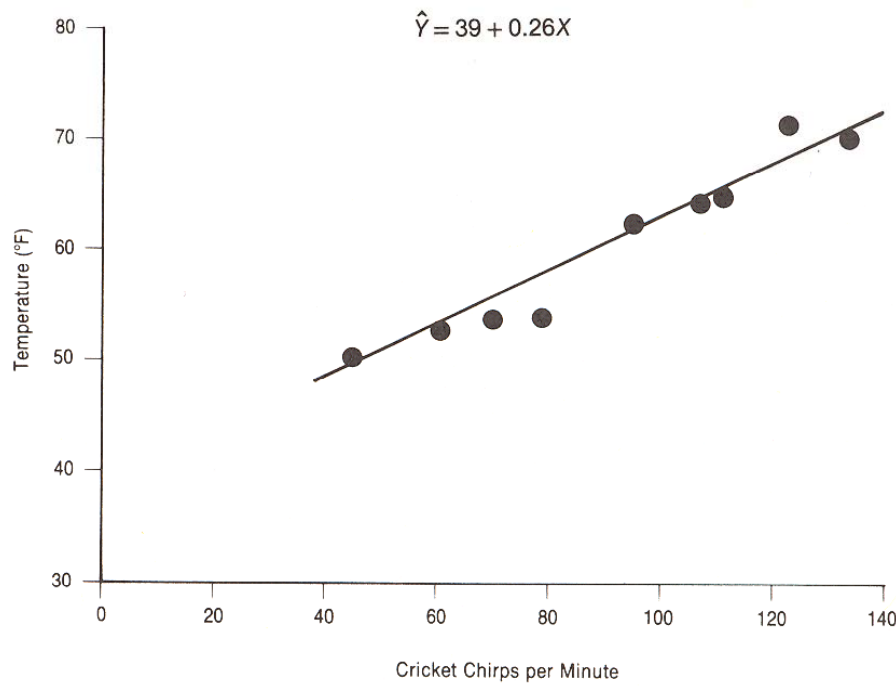


Fig. 13.5 Scattergram used to generate equation for Bergmann's rule in Fig. 13.4 (after Roberts 1953: fig. 7).

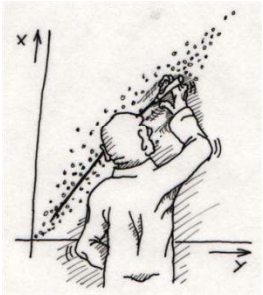


Interpret this graph in a paragraph

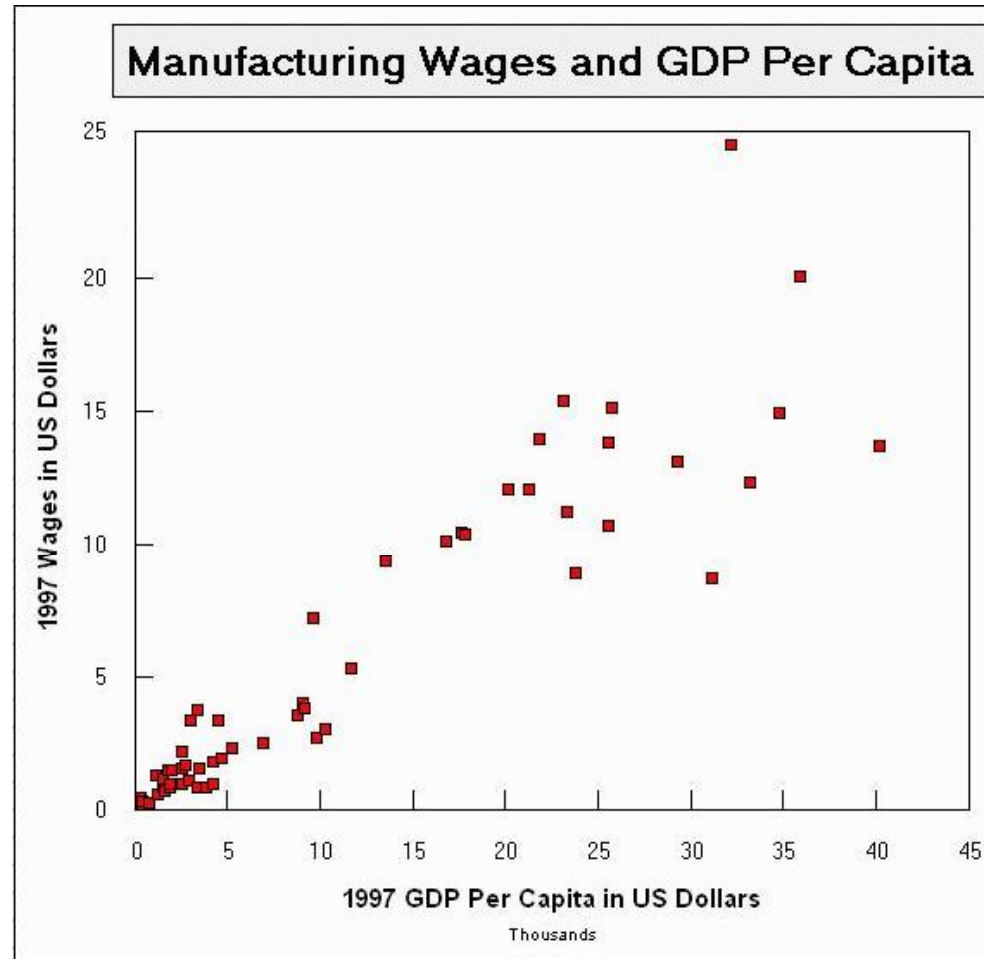


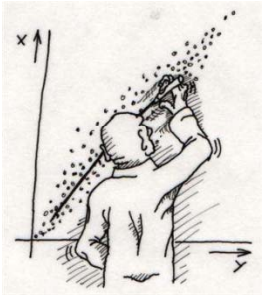
At 87.34 chirps per minute what temperature would you predict outside? This could come in quite handy absent a thermometer.

What about at 40.56 chirps per minute?

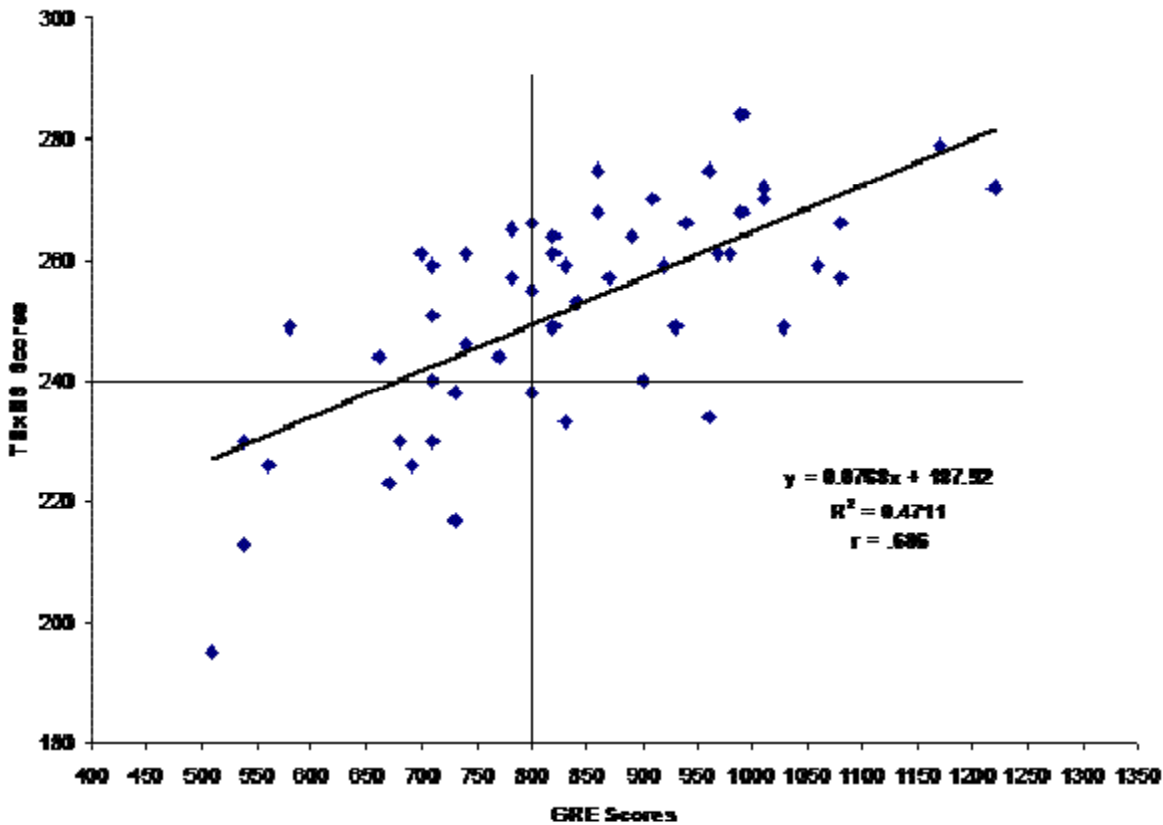


Interpret this graph in a paragraph





Interpret this graph in a paragraph

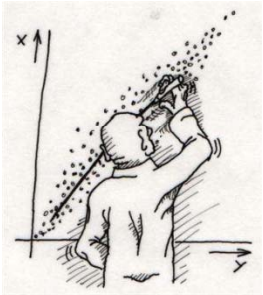


$$R = 0.67$$
$$R^2 = 0.47$$

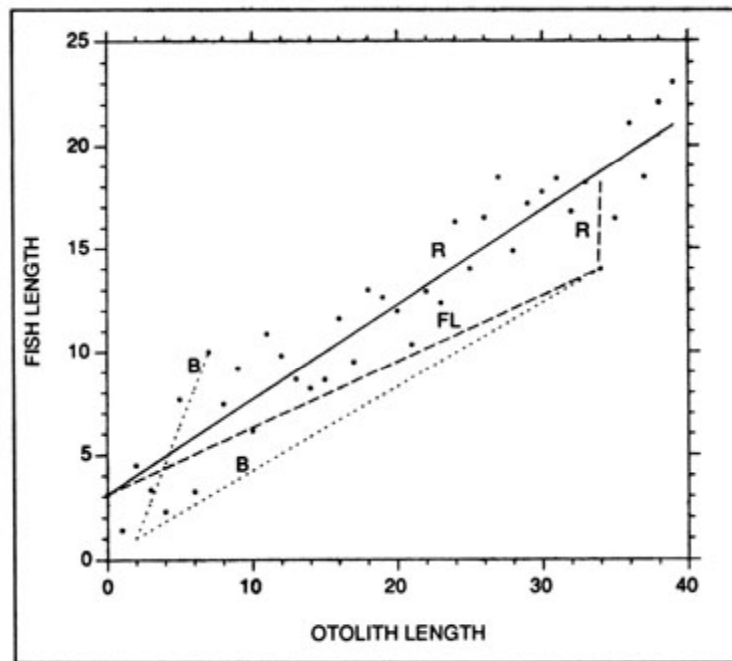
$$Y = 0.077X + 187.52$$

What TEXES score is predicted with a GRE of 1010?

Of 1233?



Interpret this graph in a paragraph



Otoliths are bony parts of fish that survive well in archaeological sites.