

AP Stats – Chap 5

The Standard Deviation as a Ruler and the Normal Model

Dropping a Test

Your Stats teacher has announced that the lower of your two tests for the quarter will be dropped. You earned a 90 on the first one and an 80 on the second. You're all set to drop the 80 until he announces that he grades on a curve. The scores are standardized in order to decide which is the "lower" one. If the mean on the first test was an 88 with a SD of 4, and the mean on the second one was a 75 with a SD of 5...

- a. Which test will be dropped?
- b. Does this seem fair?

z-scores measure...

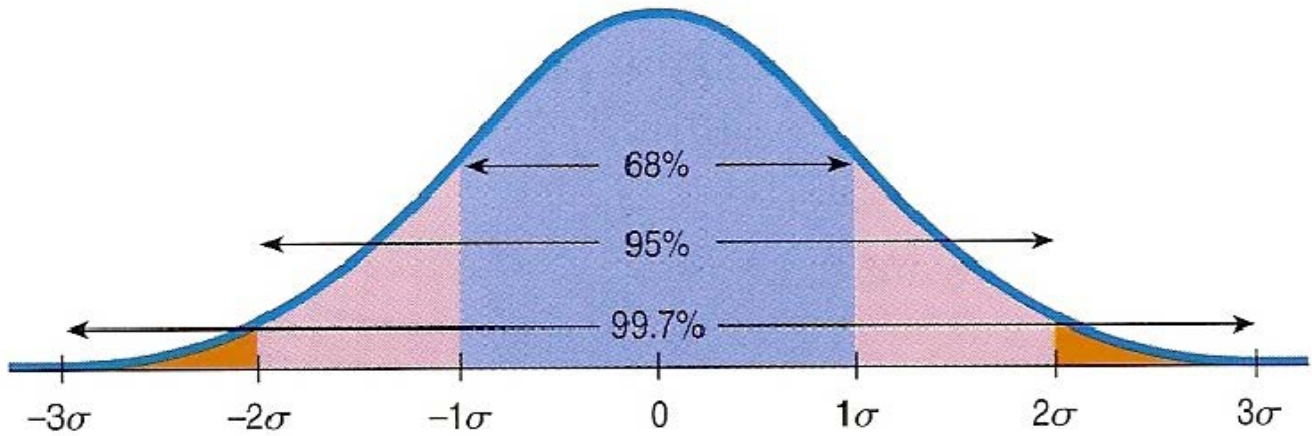
By using z-scores, you can compare values measured...

z-scores give us an indication of **how unusual** a value is compared to the rest of the data. There is no “universal standard” for z-scores, but there are “models” that occur frequently.

Normal models (Normal curves) are appropriate for distribution whose shapes are **unimodal** and **roughly symmetric**.

$N(\mu, \sigma)$ = a Normal model with a mean μ (mew) and a standard deviation σ (sigma). These are **parameters**, numbers that...

The Normal Model
The Normal Curve
The Empirical Rule
De Moivre's Rule
The 68 – 95 – 99.7 Rule



changing raw data into z-scores...

changing z-scores into raw data...

2000 Olympic Heptathlon

The heptathlon consists of seven track and field events: 200m run, 800m run, 100m hurdles, shot put, javelin, high jump, and long jump. Bacher (Italy) had a 800m-run that was 8 seconds faster than the mean and Yelena (Russia) had a long jump that was 60 cm farther than the mean. The 800m run had a mean of 137 seconds and a standard deviation (SD) of 5 seconds, while the mean long jump was 5.98 meters with a SD of 32 cm. Which performance deserves more points in the overall heptathlon score?

Your SAT Score

The three parts of the SAT each have a distribution which is roughly unimodal and symmetric and is designed to have a mean of about 500 and a standard deviation of about 100 for all test takers. In any year, these values may vary slightly, but they are good approximations.

Suppose you score a 680 on one part of the test. Where do you stand among the rest of the students who took the test?

What proportion of the SAT scores are between 410 and 620?

Suppose a college says it admits only people with SAT Verbal test scores among the top 8%. How high does your score need to be in order to get in?