PSYC 4301: Psychological Tests and Measurements

Tarleton State University | Homework 2 | Spring 2020

1. Normalize the following scores to have mean 50 and standard deviation 10 (these are often called *T scores* by some test publishers).

Score	Frequency
37	6
36	124
35	58
34	10
33	2

2. Composite SAT scores consist of two subtests: Reading and Writing, which has mean $\mu_1 = 531$ and standard deviation $\sigma_1 = 104$, and Math, which has mean $\mu_2 = 528$ and standard deviation $\sigma_2 = 117$. In addition, the correlation between the two subtests is $\rho = 0.81$.

   (a) Compute the mean composite SAT score.

   (b) Compute the standard deviation for the composite SAT. Be sure to show the variance-covariance matrix for the two subtests.

   (c) Suppose you score a 1250 on the composite SAT. What is your percentile rank?

3. Five students were given the following scores on three essay questions:

	Q1	Q2	Q3
Ann	9	8	7
Bill	5	3	4
Carol	8	8	7
David	7	6	8
Erin	6	5	7

   (a) Calculate the mean and standard deviation for each item.

   (b) Compute the pairwise correlations between each item.

   (c) Compute the variance-covariance matrix for the three questions.

   (d) Compute the mean and standard deviation of the composite score that is found by summing the scores from the three essay questions.