**Pseudocode for the Z-Score Python Script**

Sample Data Setup

Create three datasets:

population1 - a list of positive integers that is not normally distributed.

population2 - a mix of negative and positive integers, roughly normally distributed.

population3 - a list of positive integers, roughly normally distributed.

Function Definitions

Function: mean(data\_set)

Takes in a list of numbers called data\_set.

Calculate the sum of all the numbers and divide by the total count to get the average.

Return the average value.

Function: stdev(data\_set, avg)

Takes in a list of numbers (data\_set) and their average (avg)

Calculate the variance by finding the squared difference between each number and the mean, summing these squared differences, and dividing by the count of numbers.

Take the square root of the variance to get the standard deviation.

Return the standard deviation.

Function: least(data\_set)

Takes in a list of numbers called data\_set.

Find and return the smallest value in the list.

Function: greatest(data\_set)

Takes in a list of numbers called data\_set.

Find and return the largest value in the list.

Function: z\_score(x, mu, sigma)

Takes in the value of interest (x), the mean of the dataset (mu), and the standard deviation (sigma).

Calculate the z-score by subtracting the mean (mu) from x, then dividing by sigma.

Return the calculated z-score.

Testing Functions

Function: test\_z\_score\_function()

Calculate the average (pop1\_avg) of population1 using mean()

Calculate the standard deviation (pop1\_sd) of population1 using stdev().

Compute the z-score of pop1\_avg using z\_score() and print the result.

Find the maximum value (pop2\_greatest) of population2 using greatest().

Calculate the average (pop2\_avg) and standard deviation (pop2\_sd) of population2.

Compute the z-score of pop2\_greatest and print the result.

Function: run\_automated\_tests()

Create a list of test cases, each containing values (x, mu, sigma, and expected\_result).

For each test case:

Calculate the z-score using z\_score().

Compare the computed z-score to the expected result within a small tolerance (1e-6).

Print whether the test passed or failed.

If all tests pass, print a success message. Otherwise, indicate which tests failed.

Main Execution

Run test\_z\_score\_function() to manually verify key scenarios.

Run run\_automated\_tests() to automatically check multiple cases and ensure accuracy.

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