

Math 201 - Program #4

April 7, 2011

Name _____

Write, compile, and test a C++ program that determines the mean, sample standard deviation, minimum value, and maximum value of a collection of user-entered data. The work-horse for your program should be a function named `stats` with a function header line similar to

```
void stats( int n, float x[], float &mean, float &s, float &min, float &max )
```

This function should be called by using the syntax `stats(n, x, mean, s, min, max)`, where

- `n` is the number of data points;
- `x` is a one-dimensional array containing the numbers entered by the user;
- `mean` is the mean of the numbers;
- `s` is the sample standard deviation;
- `min` is the minimum number; and
- `max` is the maximum number.

The main function should read the collection of numbers from standard input (i.e. keyboard) until end-of-file (Ctrl+Z) is reached.

Use the following formula to compute the sample standard deviation s :

$$s^2 = \frac{\sum_{i=1}^n x_i^2 - (\sum_{i=1}^n x_i)^2/n}{n - 1}$$

Program output should include:

1. Number of numbers entered
2. Mean of the numbers
3. Sample standard deviation
4. Minimum number
5. Maximum number