**Descriptive Statistics Practice Exercises**

 Work these exercises without using a computer. Do use your calculator. At the end of the document you fill find the answers. If you need more practice, please work the exercises at the end of the chapters in Howell.

**Exercise 1**

 Students in my undergraduate statistics class, Summer, 2010, were asked to rate how fearful they were of the course (statophobia), using a scale from 0 (absolutely no fear) to 10 (extreme sympathetic arousal and crippling emotions). Here are the data for the male students:

| **Statopha** |
| --- |
|  | Frequency |
|   | 5 | 1 |
| 7 | 2 |
| 10 | 1 |
| Total | 4 |
| a. Gender = Male |

 For these 4 scores, compute the mean, median, mode, range, sample variance, and sample standard deviation. Compare the mean to the median and then comment on the shape of the distribution.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Y** | **(Y-M)** | **(Y-M)2** |
|  | **5** | **-2.25** | **5.0625** |
|  | **7** | **-0.25** | **.0625** |
|  | **7** | **-0.25** | **.0625** |
|  | **10** | **2.75** | **7.5625** |

**Exercise 2**

Here are the data for the female students in that same class:

| **Statopha** |
| --- |
|  | Frequency |
|   | 5 | 3 |
| 6 | 4 |
| 7 | 2 |
| 8 | 3 |
| 9 | 2 |
| Total | 14 |
| a. Gender = Female |

 For these 14 scores, compute the mean, median, mode, range, sample variance, and sample standard deviation.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Y | (Y-M) | (Y-M)2 |
|  | 5 | -1.786 | 3.190 |
|  | 5 | -1.786 | 3.190 |
|  | 5 | -1.786 | 3.190 |
|  | 6 | -0.786 | .618 |
|  | 6 | -0.786 | .618 |
|  | 6 | -0.786 | .618 |
|  | 6 | -0.786 | .618 |
|  | 7 | 0.21 | .044 |
|  | 7 | 0.21 | .044 |
|  | 8 | 1.214 | 1.474 |
|  | 8 | 1.214 | 1.474 |
|  | 8 | 1.214 | 1.474 |
|  | 9 | 2.214 | 4.902 |
|  | 9 | 2.214 | 4.902 |

**Exercise 3**

 Imagine that Sue Cash is a female student in your statistics class and she gets a score of 9 on the measure of statophobia. Using the sample mean and standard deviation for the female students in that summer class, convert her score of 9 to a *z* score.

 Suppose that we wanted to convert the statophobia scores to a standard score system with a mean of 100 and a standard deviation of 15 (like IQ scores). What would Suzie’s score be?

 Suppose that Sue is not a woman but rather a man – [A Boy Named Sue](https://www.youtube.com/watch?v=WOHPuY88Ry4). Recalculate his *z* score and IQ-like score using the sample mean and standard deviation for the male students in that summer class.

**And Now For A Little Fun**

 To find the answer to each of the below, do the indicated calculation on an eight‑digit floating decimal point calculator and then invert the calculator to read the answer from the upside-down display.

1. An evil German, Nazi minister of propaganda, 1933‑1945.

 11(22842 + 463)

2. German phrase often said by person in item # 1:

 

3. Magazines printed on glossy paper (British)

 53.000001(1,002,926)

4. What roosters always are, hens never are:

 

5. What does the Eskimo's fiancée do after accepting his proposal of marriage

 First two words: 

 Second two words: .0912(.867) + .000081

6. Mr. Potatohead's hometown:

 4(952 ‑ 248)

**Answers**

**Exercise 1**

 Sum = 5+7+7+10=29

 Mean = 29/4 = 7.25

 Sum of squared deviations from the mean = 5.0625+.0625+.0625+7.5625 = 12.75

 Sample variance = 12.75/3 = 4.25

 Sample standard deviation = 

 The median location is (N+1)/2 = 5/2 = 2.5. The 2.5th score from either tail falls between one 7 and the other 7. The mean of 7 and 7 is 7. The median is 7.

 The mean is a bit higher than the median, indicating a bit of positive skewness. If you used SAS or SPSS to compute the *g1* estimate of skewness, it would be +0.713.

**Exercise 2**

 Sum = 3(5)+4(6)+2(7)+3(8)+2(9) = 95

 Mean = 95/14 = 6.786

 Sum of squared deviations of scores from their mean = 3(3.19) + 4(.618) + 2(.044) + 3(1.474) + 2(4.902) = 26.356.

 Sample variance = 26.356/13 = 2.027

 Sample standard deviation = 

The median location is 15/2 = 7.5. The 7.5th score from either tail falls between a 6 and a 7. The mean of 6 and 7 is 6.5. The median is 6.5.

 The mean is slightly greater than the median, indicating a little bit of positive skewness. If you used SAS or SPSS to compute the *g1* estimate of skewness, it would be +0.25.

**Exercise 3**

 

 IQ-like Standard Score = 100 + (1.555)(15) = 123.325

 The boy named Sue: 

 IQ-like Standard Score = 100 + (.849)(15) = 112.735

 The means and standard deviations we have used here are what psychologists call “normative statistics.” That is, they estimate the characteristics of a particular population of scores. When computing a standard score, it is important that one use the appropriate norms. Notice that Sue’s standard score is greatly affected by whether we use the norms for female students or the norms for male students.

**Calculator Fun**

1. 57388309 → GOEBBELS

2. 71349315 → SIEG hEIL

3. 53155079 → GLOSSIES

4. 5537993 → EGGLESS

5. 53790.345 → ShE OGLES 0.0791514 → hIS IGLOO

6. 35108 → BOISE

* [Lesson on Descriptive Statistics](http://core.ecu.edu/psyc/wuenschk/docs30/descript.pdf)
* [Statistics Lessons](http://core.ecu.edu/psyc/wuenschk/StatsLessons.htm)
* [Karl L. Wuensch](http://core.ecu.edu/psyc/WuenschK/KLW.htm)