

Homework 2

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M&Ms©Data

M&Ms© are the colorful candy coated chocolate candies, and are sold with an advertised net weight of 47.9 grams.

Some curious students acquired 30 packages of M&Ms© and counted the number of candies in each package, and the total weight of those M&Ms©. After this strenuous exercise, they consumed the evidence.

Using the columns method, compute the Average and Variance of the weight of the candies in the packages, in grams.

The **mean**. The mean is the center that we will use to further examine the “spread” of the values.

The mean we use is the arithmetic average, which is calculated by first adding the values of all the observations, then dividing by the number of observations.

<http://www.mms.com/>

The **Mean** of a data set refers to the arithmetic mean of the values, denoted \bar{x}

$$\sum_{i=0}^n x_i = x_1 + x_2 + x_3 + \cdots + x_{27} + x_{28} + x_{29} + x_{30}$$

$$\bar{x} = \frac{\sum_{i=1}^N x_i}{N}$$

$$Dev_{\bar{x}} = (x_i - \bar{x})$$

$$Dev_{\bar{x}}^2 = (x_i - \bar{x})^2$$

$$Var(X) = \frac{\sum_{i=1}^N Dev_{\bar{x}}^2}{N} = \frac{\sum_{i=1}^N (x_i - \bar{x})^2}{N}$$

$$StdDev(X) = \sqrt{Var(X)}$$

$$\begin{aligned} &= 46.22 + 46.72 + 46.94 + 47.61 + 47.67 + 47.70 + 47.98 + 48.28 + 48.33 + \\ &48.45 + 48.49 + 48.72 + 48.74 + 48.95 + 48.98 + 49.16 + 49.40 + 49.69 + \\ &49.79 + 49.80 + 49.80 + 50.01 + 50.23 + 50.40 + 50.43 + 50.97 + 51.53 + \\ &51.68 + 51.71 + 52.06 = 1476.44 \end{aligned}$$

Obs	Weight	Deviation	DeviationSq
x_1	46.22	-2.99	8.97
x_2	46.72	-2.49	6.22
x_3	46.94	-2.27	5.17
x_4	47.61	-1.60	2.57
x_5	47.67	-1.54	2.39
x_6	47.70	-1.51	2.29
x_7	47.98	-1.23	1.52
x_8	48.28	-0.93	0.87
x_9	48.33	-0.88	0.78
x_{10}	48.45	-0.76	0.58
x_{11}	48.49	-0.72	0.53
x_{12}	48.72	-0.49	0.24
x_{13}	48.74	-0.47	0.23
x_{14}	48.95	-0.26	0.07
x_{15}	48.98	-0.23	0.06
x_{16}	49.16	-0.05	0.00
x_{17}	49.40	0.19	0.03
x_{18}	49.69	0.48	0.23
x_{19}	49.79	0.58	0.33
x_{20}	49.80	0.59	0.34
x_{21}	49.80	0.59	0.34
x_{22}	50.01	0.80	0.63
x_{23}	50.23	1.02	1.03
x_{24}	50.40	1.19	1.41
x_{25}	50.43	1.22	1.48
x_{26}	50.97	1.76	3.08
x_{27}	51.53	2.32	5.36
x_{28}	51.68	2.47	6.08
x_{29}	51.71	2.50	6.23
x_{30}	52.06	2.85	8.10
Total	1476.44	0.00	67.17
Total/N	49.21	0.00	2.24
	Mean	Zero	Variance

Table 1: Deviations

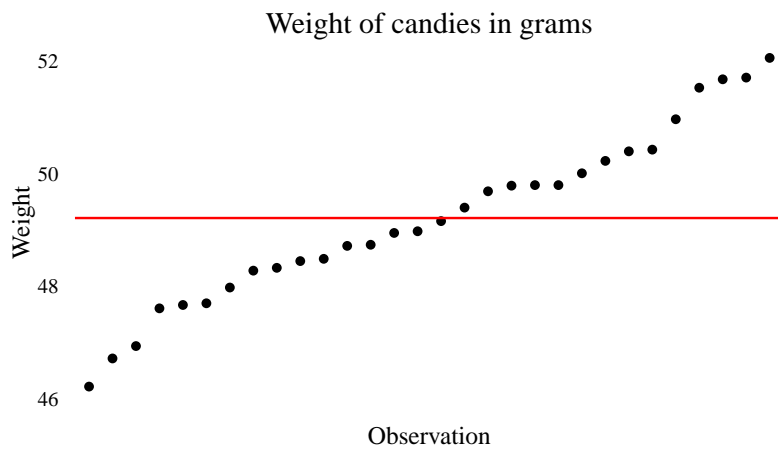


Figure 1: Draw a line at the Mean