

Math 130: Introductory Statistics
Worksheet 1: Measures of variation

Suppose a researcher is interested in how well a diet pill works in combination with regular exercise. To answer this question he takes 20 people, gives half of them the diet pill (the treatment group), and the other half of them a placebo (the control group). They all exercise for 1 month and their weight losses are given below. Let x_i denote the weight loss of individual i in the control group and y_i denote the weight loss of individual i for someone in the treatment group.

x_i	y_i	$(x_i - \bar{x})$	$(y_i - \bar{y})$	$(x_i - \bar{x})^2$	$(y_i - \bar{y})^2$
9	7				
9	3				
5	3				
3	12				
8	10				
12	8				
4	18				
9	7				
11	6				
10	16				
$\sum_{i=1}^{10} x_i = 80$	$\sum_{i=1}^{10} x_i = 90$				

1. Fill in the table below.
2. Fill in the sums of each column in the last row.
3. Compute the mean, variance, and the standard deviation of the control group.
4. Compute the mean, variance, and the standard deviation of the treatment group.
5. Compute the coefficient of variation for each group.
6. Take the individual in the treatment group with a weight loss of 18 lbs. How many standard deviations is this from the mean?