

Section B

T-Test

Sample Size	x	x ²	x	x ²
1	Black Ruth		Beaunensis	
1	6.2	38.44	5.1	26.01
2	6.3	39.69	5.2	27.04
3	5.9	34.81	4.7	22.09
4	5.5	30.25	6.6	36
5	5.6	31.36	4.4	19.36
6	6.0	36	4.9	24.01
7	6.2	38.44	5.3	28.09

$$\Sigma x = 41.7 \quad \Sigma x^2 = 428.99 \quad \Sigma x = 35.6 \quad \Sigma x^2 = 182.6$$

$$\bar{x} = 5.957$$

$$\bar{x} = 5.1$$

$$s = \sqrt{\frac{428.99 - \frac{(41.7)^2}{7}}{7-1}}$$

$$s = \sqrt{\frac{182.6 - \frac{(35.6)^2}{7}}{7-1}}$$

$$s = \frac{428.99 - 248.413}{6}$$

$$s = \frac{182.6 - 5.086}{6}$$

$$= \frac{180.577}{6} = \sqrt{30.096}$$

$$s = \frac{177.514}{6} = \sqrt{29.586}$$

$$s = 5.486$$

$$SD = 5.439$$

T-Test

$$t = \frac{5.957}{\sqrt{\frac{(7-1) \times 30.096 + (7-1) \times 29.586}{7+7-2} \times \frac{7+7}{7 \times 7}}}$$

$$= \frac{5.957}{\sqrt{8.536}} = \frac{5.957}{2.921} = 2.039$$

Linear Regression

$$\sum x = 50, \sum y = 38, \sum xy = 234, \sum x^2 = 2143, \sum y^2 = 1457$$

$$B = \frac{\sum xy - \frac{\sum x \sum y}{n}}{\sum x^2 - \frac{(\sum x)^2}{n}} = \frac{234 - \frac{50 \times 38}{7}}{2143 - \frac{(50)^2}{7}} = \frac{491 - 271.429}{1401.57} = \frac{219.571}{1401.57}$$

$$B = 0.430, A = 35.708$$

$$A = \bar{y} - B\bar{x} = 5.429 - 0.430 \times 7.143 = 4.999 \approx 7.145$$

$$\hat{y} = a + b \cdot x = 35.708 + 0.430 \times 5 = 186.69$$

Fleissman's Rank

$$r_s = 1 - \frac{6 \sum D^2}{n(n^2 - 1)} = 1 - \frac{6 \times 155}{8(8^2 - 1)}$$

$$= 1 - \frac{930}{504}$$

$$= 1 - 1.845$$

$$= 0.845$$

Chi Square

Expected: Row total x Column total

$$\frac{100}{100} \times \frac{100}{100} = 100$$

$$\chi^2 = \frac{\sum \frac{(O - E)^2}{E}}{1} = \frac{100 \times \frac{(10 - 10)^2}{100}}{1} = 0$$

Wilcoxon

$$T_+ = 54, (T_+ \text{ ALL RANKS in } +)$$

$$T_- = -1$$