

Soru: Aşağıda verilen deneysel verilerin analizini Chauvenet kriterine göre yapınız.

| Numune | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---------|------|-----|------|-----|------|------|-----|-----|------|------|
| Nem (%) | 11,2 | 9,3 | 12,3 | 9,2 | 11,0 | 14,1 | 8,9 | 9,7 | 10,3 | 10,0 |

$$X_m = \frac{1}{n} \sum_{i=1}^n x_i = \frac{1}{10} (106) = 10,6 \Rightarrow$$

$$\sigma = \left[\frac{1}{(n-1)} \cdot \sum_{i=1}^n (x_i - x_m)^2 \right]^{1/2} \Rightarrow \underline{\underline{1,61}}$$

| <u>n</u> | <u>$d_i = x_i - x_m$</u> | <u>d_i / σ</u> | <u>d_{max} / σ</u> |
|----------|-------------------------------------|----------------------------------|--------------------------------------|
| 1 | 0,6 | → 0,373 | <u><u>1,96</u></u> |
| 2 | -1,3 | → 0,807 | |
| 3 | 1,7 | → 1,056 | |
| 4 | -1,4 | → 0,869 | |
| 5 | 0,4 | → 0,248 | |
| 6 | 3,5 | → 2,174 | |
| 7 | -1,7 | → 1,049 | |
| 8 | 0,9 | → 0,559 | |

Kullanılmas

$$\begin{array}{ccc} 9 & -0,3 & \longrightarrow 0,186 \\ 10 & -0,6 & \longrightarrow 0,373 \end{array}$$

6. veri çikarildikten sonra;

$$\underline{\underline{X_m = 10,2}}$$

$$n = 9 \Rightarrow$$

$$\boxed{\sigma = 1,109}$$

$$\sigma = \left[\frac{1}{n-1} \sum_{i=1}^n (x_i - x_m)^2 \right]^{1/2}$$

$$\frac{d_i}{\sigma} \Rightarrow \underline{\underline{\text{Tekrar.}}}$$

$$\frac{d_{\max}}{\sigma} = 1,8 \text{ den büyük eleme}$$

| Hata | % (oran) | | | |
|---------|----------|-----|---------------|---------------|
| 1, 2, 3 | A | B | A Bek | B Bek |
| 4 | 6 | 11 | 10 | 10 |
| 5 | 25 | 23 | 25 | 25 |
| 6 | 10 | 12 | 10 | 10 |
| 7 | 15 | 16 | 15 | 15 |
| 8 | 38 | 30 | 30 | 30 |
| | 6 | 8 | 10 | 10 |
| | 100 | 100 | 100 | 100 |

$$s^2 = \frac{(\text{Gözetken} - \text{Beklenen})^2}{\text{Beklenen}}$$

$$6 + 11 = \underline{\underline{17}}$$

$$\frac{17}{200} = \underline{\underline{8,5}}$$

* {

| | | |
|-------|---|--------------|
| 1,2,3 | → | <u>% 8,5</u> |
| 4 | → | % 25 |
| 5 | → | % 11 |
| 6 | → | % 15,5 |
| 7 | → | % 34 |
| 8 | → | <u>% 7.</u> |

Beklenen
Değerler.

TAYME
EDİLİR

$$s^2 = \left[\frac{(6 - 8,5)^2}{8,5} + \frac{(25 - 25)^2}{25} + \frac{(11 - 11)^2}{11} + \frac{(15 - 15,5)^2}{15} + \frac{(34 - 34)^2}{34} + \frac{(6 - 7)^2}{7} \right] +$$

$$\left[\frac{(11 - 8,5)^2}{8,5} + \frac{(23 - 25)^2}{25} + \frac{(12 - 11)^2}{11} + \frac{(16 - 15,5)^2}{15,5} + \frac{(30 - 34)^2}{34} + \frac{(8 - 7)^2}{7} \right] \Rightarrow$$

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Table 3.6

Chi-squared. P is the probability that the value in the table will be exceeded for a given number of degrees of freedom F^\dagger

| P $F =$ | 0.995 | 0.990 | 0.975 | 0.950 | 0.900 | 0.750 | 0.500 | 0.250 | 0.100 | 0.050 | 0.025 | 0.010 |
|--------------|----------|---------|----------|----------|---------|---------|---------|-------|-------|-------|-------|-------|
| 1 | 0.004393 | 0.00457 | 0.004982 | 0.005393 | 0.00598 | 0.00706 | 0.00955 | 1.32 | 2.71 | 3.84 | 5.02 | 6.63 |
| 2 | 0.0100 | 0.0201 | 0.0506 | 0.103 | 0.211 | 0.575 | 1.39 | 2.77 | 4.61 | 5.99 | 7.38 | 9.21 |
| 3 | 0.0717 | 0.115 | 0.216 | 0.352 | 0.584 | 1.21 | 2.37 | 4.11 | 6.25 | 7.81 | 9.35 | 11.3 |
| 4 | 0.207 | 0.297 | 0.484 | 0.711 | 1.06 | 1.92 | 3.36 | 5.39 | 7.78 | 9.49 | 11.1 | 13.3 |
| 5 | 0.412 | 0.554 | 0.831 | 1.15 | 1.61 | 2.67 | 4.35 | 6.63 | 9.24 | 11.1 | 12.8 | 15.1 |
| 6 | 0.676 | 0.872 | 1.24 | 1.64 | 2.20 | 3.45 | 5.35 | 7.84 | 10.6 | 12.6 | 14.4 | 16.8 |
| 7 | 0.989 | 1.24 | 1.69 | 2.17 | 2.83 | 4.25 | 6.35 | 9.04 | 12.0 | 14.1 | 16.0 | 18.5 |
| 8 | 1.35 | 1.65 | 2.18 | 2.73 | 3.49 | 5.07 | 7.34 | 10.2 | 13.4 | 15.5 | 17.5 | 20.1 |
| 9 | 1.73 | 2.09 | 2.70 | 3.33 | 4.17 | 5.90 | 8.34 | 11.4 | 14.7 | 16.9 | 19.0 | 21.7 |
| 10 | 2.16 | 2.56 | 3.25 | 3.94 | 4.87 | 6.74 | 9.34 | 12.5 | 16.0 | 18.3 | 20.5 | 23.2 |
| 11 | 2.60 | 3.05 | 3.82 | 4.57 | 5.58 | 7.58 | 10.3 | 13.7 | 17.3 | 19.7 | 21.9 | 24.7 |
| 12 | 3.07 | 3.57 | 4.40 | 5.23 | 6.30 | 8.44 | 11.3 | 14.8 | 18.5 | 21.0 | 23.3 | 26.2 |
| 13 | 3.57 | 4.11 | 5.01 | 5.89 | 7.04 | 9.30 | 12.3 | 16.0 | 19.8 | 22.4 | 24.7 | 27.7 |
| 14 | 4.07 | 4.66 | 5.63 | 6.57 | 7.79 | 10.2 | 13.3 | 17.1 | 21.1 | 23.7 | 26.1 | 29.1 |
| 15 | 4.60 | 5.23 | 6.26 | 7.26 | 8.55 | 11.0 | 14.3 | 18.2 | 22.3 | 25.0 | 27.5 | 30.6 |
| 16 | 5.14 | 5.81 | 6.91 | 7.96 | 9.31 | 11.9 | 15.3 | 19.4 | 23.5 | 26.3 | 28.8 | 32.0 |
| 17 | 5.70 | 6.41 | 7.56 | 8.67 | 10.1 | 12.8 | 16.3 | 20.5 | 24.8 | 27.6 | 30.2 | 33.4 |
| 18 | 6.26 | 7.01 | 8.23 | 9.39 | 10.9 | 13.7 | 17.3 | 21.6 | 26.0 | 28.9 | 31.5 | 34.8 |
| 19 | 6.84 | 7.63 | 8.91 | 10.1 | 11.7 | 14.6 | 18.3 | 22.7 | 27.2 | 30.1 | 32.9 | 36.2 |
| 20 | 7.43 | 8.26 | 9.59 | 10.9 | 12.4 | 15.5 | 19.3 | 23.8 | 28.4 | 31.4 | 34.2 | 37.6 |
| 21 | 8.03 | 8.90 | 10.3 | 11.6 | 13.2 | 16.3 | 20.3 | 24.9 | 29.6 | 32.7 | 35.5 | 38.9 |
| 22 | 8.64 | 9.54 | 11.0 | 12.3 | 14.0 | 17.2 | 21.3 | 26.0 | 30.8 | 33.9 | 36.8 | 40.3 |
| 23 | 9.26 | 10.2 | 11.7 | 13.1 | 14.8 | 18.1 | 22.3 | 27.1 | 32.0 | 35.2 | 38.1 | 41.6 |
| 24 | 9.89 | 10.9 | 12.4 | 13.8 | 15.7 | 19.0 | 23.3 | 28.3 | 33.2 | 36.4 | 39.4 | 43.0 |
| 25 | 10.5 | 11.5 | 13.1 | 14.6 | 16.5 | 19.9 | 24.3 | 29.3 | 34.4 | 37.7 | 40.6 | 44.3 |
| 26 | 11.2 | 12.2 | 13.8 | 15.4 | 17.3 | 20.8 | 25.3 | 30.4 | 35.6 | 38.9 | 41.9 | 45.6 |
| 27 | 11.8 | 12.9 | 14.6 | 16.2 | 18.1 | 21.7 | 26.3 | 31.5 | 36.7 | 40.1 | 43.2 | 47.0 |
| 28 | 12.5 | 13.6 | 15.3 | 16.9 | 18.9 | 22.7 | 27.3 | 32.6 | 37.9 | 41.3 | 44.5 | 48.3 |
| 29 | 13.1 | 14.3 | 16.0 | 17.7 | 19.8 | 23.6 | 28.3 | 33.7 | 39.1 | 42.6 | 45.7 | 49.6 |
| 30 | 13.8 | 15.0 | 16.8 | 18.5 | 20.6 | 24.5 | 29.3 | 34.8 | 40.3 | 43.8 | 47.0 | 50.9 |

† From C. M. Thompson: *Biometrika*, vol. 32, 1941, as abridged by A. M. Mood and F. A. Graybill, *Introduction to the Theory of Statistics*, 2d ed., McGraw-Hill, New York, 1969.