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Materia: Estadística Descriptiva

Grado: 2

Grupo: A

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 ACTIVIDAD 1

| | | | | | |
|----|----|----|----|----|----|
| 90 | 60 | 59 | 65 | 72 | 41 |
| 45 | 90 | 79 | 42 | 68 | 45 |
| 70 | 80 | 75 | 41 | 53 | 54 |
| 78 | 42 | 66 | 45 | 64 | 58 |
| 55 | 56 | 84 | 56 | 77 | 64 |
| 67 | 67 | 79 | 49 | 44 | 76 |
| 90 | 87 | 80 | 85 | 90 | 80 |

$$\text{Rango} = \frac{(\text{No. mayor} - \text{No. menor}) + 1}{\text{No. de intervalo}}$$

$$\text{Rango} = \frac{(90 - 41) + 1}{5} = 10$$

| INTERVALO | f_i | % f_i | F_i | % F_i | \bar{x}_i | $f_i \bar{x}_i$ | \bar{x}_i^2 | $f_i \bar{x}_i^2$ |
|-----------|-------|---------|-------|---------|-------------|-----------------|---------------|-------------------|
| 41-50 | 9 | 21.4% | 9 | 21.4% | 45.5 | 409.5 | 2,070.25 | 18,632.25 |
| 51-60 | 8 | 19.04% | 17 | 40.4% | 55.5 | 444 | 3,080.25 | 24,642 |
| 61-70 | 8 | 19.04% | 25 | 59.5% | 65.5 | 524 | 4,290.25 | 34,322 |
| 71-80 | 10 | 23.8% | 35 | 83.3% | 75.5 | 755 | 5,700.25 | 57,002.5 |
| 81-90 | 7 | 16.6% | 42 | 100% | 85.5 | 598.5 | 7,310.25 | 51,171.75 |
| | | | | | | 2,731 | | 185,770.5 |

QUANTILES $\rightarrow Q_n = L_i + \frac{\frac{kn}{4} - F_{i-1}}{f_i} \cdot a_i$

$$Q_1 = \frac{(42)(1)}{4} = 10.5$$

$$Q_1 = 51 + \frac{10.5 - 9}{8} \cdot 9$$

$$Q_1 = 52.68$$

$$Q_2 = \frac{(42)(2)}{4} = 21$$

$$Q_2 = 61 + \frac{21 - 17}{8} \cdot 9$$

$$Q_2 = 65.5$$

$$Q_3 = \frac{(42)(3)}{4} = 31.5$$

$$Q_3 = 71 + \frac{31.5 - 25.9}{10} \cdot 9$$

$$Q_3 = 76.85$$

DESILES → $D_n = L_i + \frac{n}{10} - f_{ia-1} \cdot a_i$

| | | |
|---|---|---|
| $D_1 = \frac{(42)(1)}{10} = 4.2$ $D_1 = 41 + \frac{4.2 - 0}{9} \cdot 9$ $D_1 = 82 \rightarrow$ | $D_2 = \frac{(42)(2)}{10} = 8.4$ $D_2 = 41 + \frac{8.4 - 0}{9} \cdot 9$ $D_2 = 49.4 \rightarrow$ | $D_3 = \frac{(42)(3)}{10} = 12.6$ $D_3 = 51 + \frac{12.6 - 9}{8} \cdot 9$ $D_3 = 55.05 \rightarrow$ |
| $D_4 = \frac{(42)(4)}{10} = 16.8$ $D_4 = 51 + \frac{16.8 - 9}{8} \cdot 9$ $D_4 = 59.77 \rightarrow$ | $D_5 = \frac{(42)(5)}{10} = 21$ $D_5 = 61 + \frac{21 - 17}{8} \cdot 9$ $D_5 = 65.5 \rightarrow$ | $D_6 = \frac{(42)(6)}{10} = 25.2$ $D_6 = 71 + \frac{25.2 - 25}{10} \cdot 9$ $D_6 = 71.18 \rightarrow$ |
| $D_7 = \frac{(42)(7)}{10} = 29.4$ $D_7 = 71 + \frac{29.4 - 25}{10} \cdot 9$ $D_7 = 74.96 \rightarrow$ | $D_8 = \frac{(42)(8)}{10} = 33.6$ $D_8 = 71 + \frac{33.6 - 25}{10} \cdot 9$ $D_8 = 78.74 \rightarrow$ | $D_9 = \frac{(42)(9)}{10} = 37.8$ $D_9 = 81 + \frac{37.8 - 35}{7} \cdot 9$ $D_9 = 84.6 \rightarrow$ |

PERSENTILES → $P_n = L_i + \frac{n}{100} - f_{ia-1} \cdot a_i$

| | | |
|--|---|--|
| $P_8 = \frac{(42)(8)}{100} = 3.36$ $P_8 = 41 + \frac{3.36 - 0}{9} \cdot 9$ $P_8 = 44.36 \rightarrow$ | $P_{12} = \frac{(42)(12)}{100} = 5.04$ $P_{12} = 41 + \frac{5.04 - 0}{9} \cdot 9$ $P_{12} = 46.04 \rightarrow$ | $P_{23} = \frac{(42)(23)}{100} = 9.66$ $P_{23} = 51 + \frac{9.66 - 9}{8} \cdot 9$ $P_{23} = 51.74 \rightarrow$ |
| $P_{54} = \frac{(42)(54)}{100} = 22.6$ $P_{54} = 61 + \frac{22.6 - 17}{8} \cdot 9$ $P_{54} = 67.3 \rightarrow$ | $P_{81} = \frac{(42)(81)}{100} = 34.02$ $P_{81} = 71 + \frac{34.02 - 25}{100} \cdot 9$ $P_{81} = 79.11 \rightarrow$ | |

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ACTIVIDAD 2

8 INTERVALOS

| | | | | | | | | |
|------|-----|-----|-----|-----|----|-----|----|-----|
| | 105 | 101 | 100 | 101 | 84 | 94 | 90 | 76 |
| = (E | 50 | 54 | 97 | 52 | 77 | 93 | 90 | 84 |
| - | 100 | 67 | 97 | 54 | 65 | 100 | 98 | 98 |
| = 5 | 104 | 94 | 86 | 65 | 86 | 105 | 94 | 100 |
| | 65 | 67 | 76 | 56 | 85 | 50 | 55 | 105 |
| e = | 76 | 76 | 104 | 64 | 84 | 87 | 50 | 100 |
| | 87 | 80 | 85 | 75 | 87 | 99 | 63 | 102 |

P₂
$$\text{Rango} = \frac{(\text{No. mayor} - \text{No menor}) + 1}{\text{No. de intervalo}}$$

P
$$\text{Rango} = \frac{105 - 50 + 1}{8} = 7$$

| INTERVALO | f _i | %f _i | F _{ia} | %F _{ia} | \bar{x}_i | f _i \bar{x}_i | \bar{x}_i^2 | f _i \bar{x}_i^2 |
|-----------|-------------------|-----------------|-----------------|------------------|-------------|----------------------------|---------------|------------------------------|
| 50-56 | 8 | 14.2% | 8 | 14.2% | 53 | 424 | 2,809 | 22,472 |
| 57-63 | 1 | 1.78% | 9 | 16.0% | 60 | 60 | 3600 | 3600 |
| 64-70 | 6 | 10.7% | 15 | 26.7% | 67 | 402 | 4,489 | 26,934 |
| 71-77 | 6 | 10.7% | 21 | 37.5% | 74 | 444 | 5,476 | 32,856 |
| 78-84 | 4 | 7.14% | 25 | 44.6% | 81 | 324 | 6,561 | 26,244 |
| 85-91 | 9 | 16.0% | 34 | 60.7% | 88 | 792 | 7,744 | 69,696 |
| 92-98 | 8 | 14.2% | 42 | 75% | 95 | 760 | 9,025 | 72,200 |
| 99-105 | 14 | 25 | 56 | 100% | 102 | 1,428 | 10,404 | 145,656 |
| | $\Sigma f_i = 56$ | | | | | 4,634 | | 399,658 |

$\frac{n}{4} - f_{i-1} \cdot a_i$

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QUANTILES $\rightarrow Q_n = L_i + \frac{\frac{n}{4} - F_{i-1} \cdot a_i}{f_i}$

$$Q_1 = \frac{(56)(1)}{4} = 14 \quad Q_2 = \frac{(56)(2)}{4} = 28 \quad Q_3 = \frac{(56)(3)}{4} = 42$$

$$Q_1 = 64 + \frac{14 - 9}{6} \cdot 6 \quad Q_2 = 85 + \frac{28 - 25}{9} \cdot 6 \quad Q_3 = 92 + \frac{42 - 34}{8} \cdot 6$$

$$Q_1 = \underline{69}$$

$$Q_2 = \underline{87}$$

$$Q_3 = \underline{98}$$

DESILES $\rightarrow L_i + \frac{\frac{n}{10} - F_{i-1} \cdot a_i}{f_i}$

$$D_1 = \frac{(56)(1)}{10} = 5.6 \quad D_2 = \frac{(56)(2)}{10} = 11.2 \quad D_3 = \frac{(56)(3)}{10} = 16.8$$

$$D_1 = 64 + \frac{5.6 - 9}{6} \cdot 6$$

$$D_2 = 64 + \frac{11.2 - 9}{6} \cdot 6$$

$$D_3 = 71 + \frac{16.8 - 15}{6} \cdot 6$$

$$D_1 = \underline{60.6}$$

$$D_2 = \underline{66.2}$$

$$D_3 = \underline{72.8}$$

$$D_4 = \frac{(56)(4)}{10} = 22.4$$

$$D_5 = \frac{(56)(5)}{10} = 28$$

$$D_6 = \frac{(56)(6)}{10} = 33.6$$

$$D_4 = 78 + \frac{22.4 - 21}{4} \cdot 6$$

$$D_5 = 85 + \frac{28 - 25}{9} \cdot 6$$

$$D_6 = 85 + \frac{33.6 - 21}{4} \cdot 6$$

$$D_4 = \underline{80.1}$$

$$D_5 = \underline{87}$$

$$D_6 = \underline{103.9}$$

$$D_7 = \frac{(56)(7)}{10} = 39.2$$

$$D_8 = \frac{(56)(8)}{10} = 44.8$$

$$D_9 = \frac{(56)(9)}{10} = 50.4$$

$$D_7 = 92 + \frac{39.2 - 34}{8} \cdot 6$$

$$D_8 = 92 + \frac{44.8 - 34}{8} \cdot 6$$

$$D_9 = 92 + \frac{50.4 - 34}{8} \cdot 6$$

$$D_7 = \underline{95.9}$$

$$D_8 = \underline{100.1}$$

$$D_9 = \underline{104.3}$$

$$\text{PERCENTILES} \rightarrow P_n = \frac{n}{100} \cdot f_{i-1} + \frac{n - f_{i-1}}{f_i} \cdot d_i$$

$$P_8 = \frac{(56)(8)}{100} = 4.48$$

$$P_{12} = \frac{(56)(12)}{100} = 6.72$$

$$P_8 = 50 + \frac{4.48 - 0}{8} \cdot 6$$

$$P_{12} = 50 + \frac{6.72 - 0}{8} \cdot 6$$

$$P_8 = \underline{53.36}$$

$$P_{12} = \underline{55.04}$$

$$P_{23} = \frac{(56)(23)}{100} = 12.88$$

$$P_{54} = \frac{(56)(54)}{100} = 30.24$$

$$P_{23} = 64 + \frac{12.88 - 9}{6} \cdot 6$$

$$P_{54} = 85 + \frac{30.24 - 25}{9} \cdot 6$$

$$P_{23} = \underline{67.88}$$

$$P_{54} = \underline{88.49}$$

$$P_{81} = \frac{(56)(81)}{100} = 41.31$$

$$P_{81} = 92 + \frac{41.31 - 34}{8} \cdot 6$$

$$P_{81} = \underline{97.4}$$

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