| CLASSE | CONSUMO kWh | Nº de lamb | $x_i$ | $x_i l_i$ | $F_i$ | $fn_i$ % | $Fn_i$ % |
|---|---|---|---|---|---|---|---|
| 1 | 0 ⊢ 50 | 2 | 25 | 50 | 2 | 0,8 | 0,8 |
| 2 | 50 ⊢ 100 | 15 | 75 | 1125 | 17 | 6 | 6,8 |
| 3 | 100 ⊢ 150 | 32 | 125 | 4000 | 49 | 12,8 | 19,6 |
| 4 | 150 ⊢ 200 | 47 | 175 | 8225 | 96 | 18,8 | 38,4 |
| 5 | 200 ⊢ 250 | 50 | 225 | 11250 | 146 | 20 | 58,4 |
| 6 | 250 ⊢ 300 | 80 | 275 | 22000 | 226 | 32 | 90,4 |
| 7 | 300 ⊢ 350 | 24 | 325 | 7800 | 250 | 9,6 | 100 |
| | | 250 | | 54450 | | | |

1.1 $\bar{x} = \frac{\sum x_i l_i}{\sum l_i} = \frac{54450}{250} = 217,8$

Em média, cada residência gasta 217,8 kWh

1.2 $fn_1 = \frac{2}{250} = 0,008$ 0,8% $fn_5 = \frac{50}{250} = 0,2$ 20%

$fn_2 = \frac{15}{250} = 0,06$ 6% $fn_6 = \frac{80}{250} = 0,32$ 32%

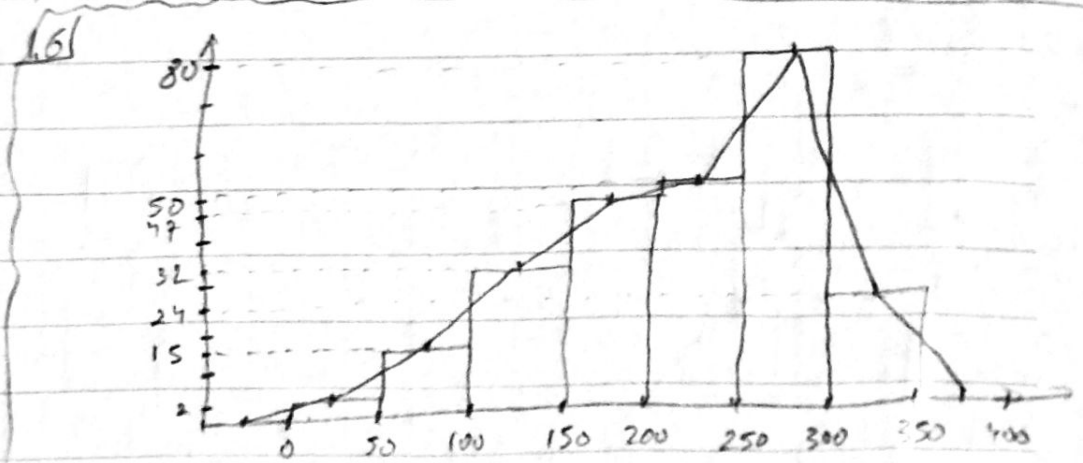
$fn_3 = \frac{32}{250} = 0,128$ 12,8% $fn_7 = \frac{24}{250} = 0,096$ 9,6%

$fn_4 = \frac{47}{250} = 0,188$ 18,8%

1.3 20%

1.4 38,4%

1.5 41,6%



1.7 $$Md = l_{md} + \frac{\frac{n}{2} - F_{ANT}}{f_{md}} \cdot h$$

$\frac{n}{2} = \frac{250}{2} = 125^{\circ}$ ↑ 5ª CLASSE

$Md = 200 + \frac{125 - 96}{50} \cdot 50 = 200 + 29 = 229$

$Md = 229$

1.8 CLASSE MODAL 6ª

1.9 $A_T = 325 - 25 = 300$ ⇐ (OBS)

1.10 $$DMS = \frac{\sum |x_i - \bar{x}| f_i}{\sum f_i}$$

$|x_1 - \bar{x}| f_1 = |125 - 217,8| \cdot 2 = 385,6$
$|x_2 - \bar{x}| f_2 = |175 - 217,8| \cdot 15 = 2142$
$|x_3 - \bar{x}| f_3 = |125 - 217,8| \cdot 32 = 2969,6$
$|x_4 - \bar{x}| f_4 = |175 - 217,8| \cdot 47 = 2011,6$
$|x_5 - \bar{x}| f_5 = |225 - 217,8| \cdot 50 = 360$
$|x_6 - \bar{x}| f_6 = |225 - 217,8| \cdot 80 = 4576$
$|x_7 - \bar{x}| f_7 = |325 - 217,8| \cdot 24 = 2572,8$
$15017,6$

Logo $DMS = \frac{15017,6}{250} \approx 60,0704$

1.11 $S^2_{(x)} = \frac{\sum (x_i - \bar{x})^2 f_i}{\sum f_i - 1}$ ← AMOSTRA

$(x_1 - \bar{x})^2 f_1 = (25 - 217,8)^2 \cdot 2 = 74.343,68$

$(x_2 - \bar{x})^2 f_2 = (75 - 217,8)^2 \cdot 15 = 305.877,60$

$(x_3 - \bar{x})^2 f_3 = (125 - 217,8)^2 \cdot 32 = 275.578,88$

$(x_4 - \bar{x})^2 f_4 = (175 - 217,8)^2 \cdot 47 = 86.096,48$

$(x_5 - \bar{x})^2 f_5 = (225 - 217,8)^2 \cdot 50 = 2.592,00$

$(x_6 - \bar{x})^2 f_6 = (275 - 217,8)^2 \cdot 80 = 261.747,20$

$(x_7 - \bar{x})^2 f_7 = (325 - 217,8)^2 \cdot 24 = 275.804,16$

$1.282.040$

Logo $S^2_{(x)} = \frac{1282040}{250 - 1} = 5148,75502$

1.12 $S_{(x)} = \sqrt{S^2_{(x)}} = \sqrt{5148,75502} = 71,75482576$

1.13 $CV_{(x)} = \frac{S_{(x)}}{\bar{x}} = \frac{71,754}{217,8} = 0,329452 \approx 32,95\%$

1.14 $V_{(x)} = \frac{S^2_{(x)}}{(\bar{x})^2} = 0,108539165 \approx 10,85\%$

1.15 $d_1 = P_{25}$ $(P_{25})^0 = \frac{i \cdot n}{100} = \frac{25 \cdot 250}{100} = 62,5^\circ$ ← CLASSE

$P_{25} = l_{25} + \frac{\frac{i \cdot n}{2} - FaAnt}{d_{25}} \cdot h = 150 + \frac{62,5 - 49}{47} \cdot 50$

$P_{25} = 150 + \frac{13,5}{47} \cdot 50 = 150 + \frac{675}{47} = 150 + 14,36$

$\boxed{P_{25} = 164,36}$

1.16 $Q_3 = P_{75}$ $\quad (P_{75})^\circ = \frac{i.n}{100} = \frac{75.250}{100} = \frac{18750}{100} = 187,50°$

6ª CLASSE

$$P_{75} = l_{75} + \frac{\frac{i.n}{100} - F_{ANT}}{l_{75}} \cdot h = 250 + \frac{187,50 - 146}{80} \cdot 50$$

$$P_{75} = 250 + \frac{41,5}{80} \cdot 50 = 250 + \frac{2075}{80} = 250 + 25,93$$

$P_{75} = 275,93$

1.18 $D_6 = P_{60}$ $\quad (P_{60})^\circ = \frac{i.n}{100} = \frac{60.250}{100} = \frac{15000}{100} = 150°$

6ª CLASSE

$$P_{60} = l_{60} + \frac{\frac{i.n}{100} - F_{ANT}}{l_{60}} \cdot h = 250 + \frac{150 - 146}{80} \cdot 50$$

$$P_{60} = 250 + \frac{4}{80} \cdot 50 = 250 + \frac{200}{80} = 250 + 2,5$$

$P_{60} = 252,5$

1.17 $P_{10} = P_{10}$ $\quad (P_{10})^\circ = \frac{i.n}{100} = \frac{10.250}{100} = 25°$

3ª CLASSE

$$P_{10} = l_{10} + \frac{\frac{i.n}{100} - F_{ANT}}{l_{10}} \cdot h = 100 + \frac{25 - A}{32} \cdot 50$$

$$P_{10} = 100 + \frac{8}{32} \cdot 50 = 100 + \frac{400}{32} = 100 + 12,5 = 112,5$$

$P_{10} = 112,5$

1.19 $P_{90} = P_{90}$ $\quad (P_{90})^\circ = \frac{90 \cdot 250}{100} = 225^\circ$

6ª CLASSE

$P_{90} = l_{90} + \frac{\frac{i \cdot n}{100} - F_{ANT}}{f_{90}} \cdot h = 250 + \frac{225 - 146}{80} \cdot 50$

$P_{90} = 250 + \frac{79}{80} \cdot 50 = 250 + \frac{3950}{80} = 250 + 49,375$

$P_{90} = 299,375$

1.20 $K_4 = P_{80}$ $\quad (P_{80})^\circ = \frac{80 \cdot 250}{100} = 200^\circ$

6ª CLASSE

$P_{80} = l_{80} + \frac{\frac{i \cdot n}{100} - F_{ANT}}{f_{80}} \cdot h = 250 + \frac{200 - 146}{80} \cdot 50$

$P_{80} = 250 + \frac{54}{80} \cdot 50 = 250 + \frac{2700}{80} = 250 + 33,75$

$P_{80} = 283,75$

1.21 $\quad \Phi_1 \quad K_4$

$\quad \downarrow \quad \downarrow$

$\quad P_{25} \quad P_{80} \Rightarrow 80 - 25 = 55\%$

1.22 $\quad P_{10} \quad \Phi_3$

$\quad \downarrow \quad \downarrow$

$\quad P_{10} \quad P_{75} \Rightarrow 75 - 10 = 65\%$ de 250

$\frac{65}{100} 250 = \frac{16250}{100} = 162,50 \approx 163$