

① Describe the variables implicit in these 11 items as quantitative or qualitative, and describe the scales of measurement.

1.) Age of household head

↳ kuantitatif

↳ Skala interval

2.) Sex of household head

↳ kualitatif

↳ skala nominal

3.) Number of people in household

↳ kuantitatif

↳ skala ordinal

4.) Use of electric heating (yes or no)

↳ kualitatif

↳ skala nominal

5.) Number of large appliances used daily

↳ kuantitatif

↳ Skala rasio

6.) Thermostat acting in winter

↳ kualitatif

↳ skala ordinal

7.) Average number of hours

heating is on

↳ kuantitatif

↳ skala interval

8.) Average number of heating days

↳ kuantitatif

↳ skala interval

9.) Household income

↳ kuantitatif

↳ skala rasio

10.) Average monthly electric bill

↳ kuantitatif

↳ skala interval

11.) Ranking of this electric company as compared with two previous electricity suppliers.

↳ kualitatif

↳ skala ordinal

② Find the median, the interquartile range, and the 45th percentile of the following data. 201, 35, 19, 97, 42, 76, 77, 35, 29, 71, 192, 110, 102, 125, 521, 295, 158, 11, 28, 30

\* Answer: 11, 19, 28, 29, 30, 35, 35, 42, 71, 76, 77, 97, 102, 110, 125, 158, 192, 201, 295, 521

↳ Median =  $\frac{76 + 77}{2} = 76,5 //$

↳ Interquartile range =  $Q_1 = \frac{35 + 30}{2} = 32,5$

$Q_3 = \frac{158 + 125}{2} = 141,5$

$Q_3 - Q_1 = 141,5 - 32,5 = 109 //$

↳ 45th percentile : Data (20) × 45%

= Data ke-9

= 71 //

③ • Mean :  $\frac{13,9 + 15,0 + 17,4 + 17,6 + 18,4 + 19,1 + 21,6 + 22,1 + 25,7 + 27,4 + 29,1 + 30,7 + 31,1 + 32,7 + 38,9}{15}$

$= 24,046667$  atau \$ 24.046.666.666.777,- //

• Median = 21,6 atau \$ 21.600.000.000,- //

• Standar Deviasi =  $\mu = 24,04667$

$$= \sqrt{\frac{\sum_{i=1}^n (x_i - \mu)^2}{n}}$$

$$\sqrt{\frac{(13,9 - 24,046667)^2 + (15,0 - \mu)^2 + (17,4 - \mu)^2 + (17,6 - \mu)^2 + (18,4 - \mu)^2 + (19,1 - \mu)^2 + (21,6 - \mu)^2 + (22,1 - \mu)^2 + (25,7 - \mu)^2 + (27,4 - \mu)^2 + (29,1 - \mu)^2 + (30,7 - \mu)^2 + (31,1 - \mu)^2 + (32,7 - \mu)^2 + (38,9 - \mu)^2}{15}}$$

$$= \sqrt{\frac{102,954845 + 81,8421784 + 44,1781782 + 41,5595115 + 31,8848448 + 24,4695114 + 5,98617794 + 3,78951124 + 2,7335105 + 11,2448442 + 25,5361774 + 44,266844 + 49,7495106 + 74,8801772 + 220,62151}{15}}$$

$= \sqrt{51,0464887} = 7,14468255 //$

④ • ▶ EUROPE

$$\mu = \frac{122 + 140 + 127 + 107 + 120 + 101 + 122 + 132 + 120}{9} = 121,2 //$$

$$\sigma^2 = \frac{0,64 + 353,44 + 33,64 + 201,64 + 1,44 + 0,64 + 116,64 + 1,44}{9} = 78,83 //$$

$$\sigma = \sqrt{78,83} = 8,87 //$$

• ▶ ASIA

$$\mu = \frac{127 + 127 + 127 + 127 + 116 + 120 + 128 + 140}{8} = 126,5 //$$

$$\sigma^2 = \frac{0,25 + 0,25 + 0,25 + 0,25 + 110,25 + 42,25 + 2,25 + 182,25}{8} = 42,25 //$$

$$\sigma = \sqrt{42,25} = 6,5 //$$

• ▶ North America

$$\mu = \frac{140 + 127 + 140 + 130 + 157 + 124}{6} = 136,33 //$$

$$\sigma = \sqrt{122,213} = 11,05 //$$

$$\sigma^2 = \frac{13,46 + 87,04 + 13,46 + 40,06 + 427,24 + 152,02}{6} = 122,213 //$$

$$\textcircled{5} P(A) = 0,96 \rightarrow P(A^c) = 0,04$$

$$P(B) = 0,96 \rightarrow P(B^c) = 0,04$$

$$(a) P(A) \cdot P(B) = 0,04 \cdot 0,04 = 0,0016 //$$

$$(b) 1 - 0,0016 = 0,9984 //$$

$$\textcircled{6} \begin{array}{l} \text{Cat lateks Ca)} \\ \text{Semigloss CB)} \\ \text{Roller Cc)} \end{array} \left\{ \begin{array}{l} P(A) = 0,75 \\ P(B) = 0,25 \\ \text{PCCIA)} = 0,6 \\ \text{PCCIB)} = 0,3 \end{array} \right. \quad \begin{array}{l} P(C) = P(C|A) \cdot P(A) + P(C|B) \cdot P(B) \\ = 0,6 \cdot 0,75 + 0,3 \cdot 0,25 \\ P(C) = \frac{9}{20} + \frac{3}{40} = \frac{21}{40} \end{array}$$

$$P(A|C) = \frac{P(C|A) \cdot P(A)}{P(C)} = \frac{0,6 \cdot 0,75}{\frac{21}{40}}$$

$$= \frac{6}{7} //$$

$$\textcircled{7} P(h) = 0,05$$

$$P(B|h) = 0,78 \quad P(h|B) = \frac{P(B|h) \cdot P(h)}{P(B)}$$

$$P(s|h) = 0,06$$

$$P(A) = 0,78 \quad P(A^c) = 0,22$$

$$P(B) = 0,94 \quad P(B^c) = 0,06$$

$$P(C) = 0,059$$

$$P(h) = 0,05, \quad P(Th) = 0,95$$

$$P(Ds|h) = 0,78 \quad P(Ds|Th) = 0,06$$

$$P(Ds) = P(Ds|h) \cdot P(h) + P(Ds|Th) \cdot P(Th)$$

$$= 0,78 \cdot 0,05 + 0,06 \cdot 0,95$$

$$= 0,039 + 0,057 = 0,096$$

$$P(h|Ds) = \frac{78 \cdot 5}{10 \cdot 000} \cdot \frac{1000}{96} = \frac{39}{96} = 0,40625 //$$



⑧ ~~Populasi~~ (a) Populasi: Baterai yang dihasilkan mesin selama 1 bulan

Sampel : 25 buah baterai

Variabel : Diameter baterai

Skala : Rasio Ccm)

(b) Populasi: Seluruh rumah penduduk di Surabaya

Sampel : 200 rumah tangga

Variabel : Ada atau tidak jamban dalam rumah

Skala : Nomina ( ya / tidak)

### ③ Grafik

