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1. Statistics as a numerical fact can be defined as a set of data that has numerical value. They are either as a result of count or measurement e.g. height of object, weight of object, prices of goods etc. it can further be classified into discrete and continuous data.

* Discrete data: are numeric data that are countable. They assume whole numbers only. E.g. number of cars imported into a country.
* Continuous data: are numeric data that are not countable but measurable. They assume any number on the real number line e.g. fraction, decimals etc.

**WHILE**

Statistics as a field of study is a body of knowledge that deals with data connection, data presentation, data analysis, and data interpretation. There are two broad categories of statistics as a discipline. They include:

Descriptive Statistics and Inferential Statistics

2a. Sample size: 1005

b. Qualitative data

c. For ease and understanding, it would make more sense to use percentage

d. 29% \* 1005=291.45 respondents

3a. Annual sales: quantitative with scale - dollars ($)

b. Soft drink size: qualitative with scale (small, medium, large)

c. Employee classification: qualitative with scale (gs1, gs2, gs3….gs18)

d. Earnings per share: quantitative with scale - dollars ($)

e. Method of payment (qualitative with scale - cash, check, credit card)

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|  |  |  |
| --- | --- | --- |
| Response | Frequency | Relative Frequency |
|  |  |  |
| B | 24 |  |
| C | 36 |  |
|  |  |  |

5a. Relative Frequency for class D

1-(0.22+0.18+0.40) =0.20

b. Frequency for class D

0.20\* 200 = 40

|  |  |  |  |
| --- | --- | --- | --- |
| Class | RELATIVE FREQUENCY | FREQUENCY | PERCENT (%) FREQUENCY |
| A | 0.22 | 44 | 22% |
| B | 0.18 | 36 | 18% |
| C | 0.40 | 80 | 40% |
| D | 0.20 | 40 | 20% |
|  | 1 | 200 | 100% |

6A**.**

B.)

C.)

7a.

|  |  |  |
| --- | --- | --- |
| Class | Frequency | Relative/% frequency |
| 12-14 | 2 |  |
| 15-17 | 8 |  |
| 18-20 | 11 |  |
| 21-23 | 10 |  |
| 24-26 | 9 |  |
|  | 40 | 1 |

8a.

Mean=

Mean = 1800

Median= (15+1)/2th position

8th position = 1,351

b. Q1 =25% of 15

Q3 =75% of 15

c. Range

d. S2 = Variance=

=

Variance= 3430282.8

S.d(s) =

e. The slope of the data is positively skewed to the right. This is expected because most changes will be small, but some will be larger.

f. Yes, the data contains outliners (extreme value)

9a. by arranging the data;

Median for men=27

Median for women=25

b. Q1 for men=25, Q1 for women=22

Q3 for men=29, Q3 for women=26

c. This age range is from the given data with the best outcomes for the young couples. The natality rate and development on all areas for both is rated high above 50%.

10d. for women, this table helps to encourage women to get married at the right time to prevent unhealthy birthgiving.

Contingency table

|  |  |  |  |
| --- | --- | --- | --- |
|  | Plain bottled water | Soft drinks | Total |
| Men | 120 | 80 | 200 |
| Women | 160 | 40 | 200 |
|  | 280 | 120 | 400 |

= =0.67

e. P(S/M)=

f. P(S/W) =

g. No, it’s not; P(S/M) ≠P(S) because 0.4≠0.3

No, it’s not; P(S/W) ≠P (W) because 0.4≠0.3

11. Bi (n, p)

p=0.4 Q =1-0.4

q=0.6

a.P(x=1) =

b.P(x=0) =

c.P(x=1) =

d. P(x1) = = 0.64

e. E(x) =n\*p=2\*0.4=0.8

r2=n\*p\*q=2\*0.4\*0.6=0.48

r=

12. Bi (10, 0.1) then, q=1-0.1=0.09

a. P(x=0) =

b. P(x=0) =

c. P (x≤ 2) =

d. P(x

e. E(x) =np=10\*0.1=1

f. Variance (x) =n\*p\*q=1\*0.9=0.9 r=

13 a.Bi (20, 0.7) then, q=1-0.7=0.3

b. P(x=12) =

c. P(x=16) =

d. P (x≥16) =

e. E(x) =n\*p=20\*0.7=14

f. Variance (x) =n\*p\*q=14\*0.3=4.2 S.D =

1. Xβ (n, 0.23) P=0.23 q=1-0.23=0.77
2. P(x≥2) =
3. N=10, p(x=0)=
4. Given;

Formula for poisson probability;

F(x) =

1. F(x) =
2. The expected number of occurrences in three time periods is the mean of the mean of one time period multiplied by the number of time periods;
3. \*3=6

= f(x) when

= F(x) =

1. F(2) =
2. F(6) =

F (5) =

1. 1call =2mins, Hence university of Lagos would take;

1/2call= 1min

1. E(X) = 60MINS = 1/2 \* 60
2. 5MINS= 5\* 1/2CALLS

P(x=3) = F(x) = =

1. P(x=0) =
2. A. P(0≤Z≤0.83)
3. P(-1.57≤Z≤0) 0.5 -0.0582 0.4418
4. P(Z>0.44) 0.32999
5. P(Z≥-0.23)
6. P(Z <1.20)
7. P(Z≤0.71)

The z-value is the sample mean decreased by the population mean, divided by the standard deviation;

1. Z= Thus, P(z>0.84)=0.225
2. Z= Thus, P(z<-1.42)=0.0778
3. Z=-0.85 Thus, P(-0.85<z<0.84)=0.3023+0.2996=0.6019
4. Z= Thus, P(z<-0.29)=0.3859