

1. Which of the following variables are quantitative and which are qualitative? Classify the quantitative variables as discrete or continuous.

- | | |
|--|----------------------------------|
| (a) The temperature of the water | <u>Quantitative - Contineous</u> |
| (b) The tally marks on a frequency table | <u>Quantitative - Discrete</u> |
| (c) The time to finish this test | <u>Quantitative - Contineous</u> |
| (d) Political affiliation | <u>Qualitative</u> |
| (e) Ranking in class | <u>Quantitative - Discrete</u> |

2. For each of the following, determine which of the four levels of measurement is most appropriate. (Nominal, Ordinal, Interval or Ratio)

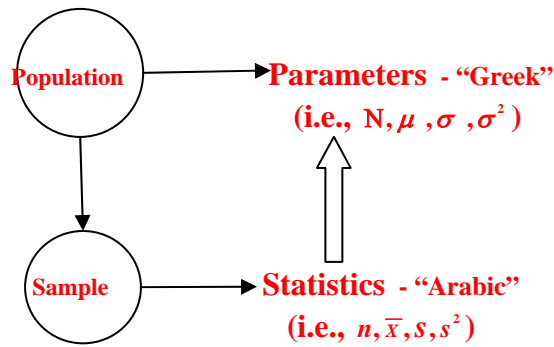
- | | |
|---|-----------------|
| (a) The make of cars in the parking lot of the Mall. | <u>Nominal</u> |
| (b) The average temperature of the 10 cities | <u>Interval</u> |
| (c) The distances driven by cars in a test of fuel consumption. | <u>Ratio</u> |
| (d) Rating of “Good”, “Better” and “Best” | <u>Ordinal</u> |

3. Identify the type of sampling used in each case.

(Random, Cluster, Stratified, Systematic, or Convenience)

- | | |
|---|--------------------|
| (a) A pollster selects drivers who are waiting to have their cars repaired at a local Sears Auto store. | <u>Convenience</u> |
| (b) A pollster selects every 50th name in a telephone book. | <u>Systematic</u> |
| (c) A pollster selects 100 men and 100 women. | <u>Stratified</u> |
| (d) A pollster selects 50 people from each of 40 countries. | <u>Cluster</u> |
| (e) A pollster writes the names of each voter on a card, shuffles the cards, then draws 25 names. | <u>Random</u> |

4. Distinguish between a statistic and a parameter. Also, relate them to populations and sample spaces.



5. Use the given sample data to find each of the listed values.

62 52 52 52 64 69 69 76

- | | | | |
|---------------|-------------|----------------|----------------------------|
| (a) Mean | <u>62</u> | (b) Median | <u>63</u> |
| (c) Mode | <u>52</u> | (d) Midrange | <u>64</u> |
| (e) Range | <u>24</u> | (f) Variance | <u>85.43</u> |
| (g) Std. Dev. | <u>9.24</u> | (h) Q_1 | <u>52</u> |
| (i) D_2 | <u>52</u> | (j) P_{88} | <u>76</u> |
| (k) IQR | <u>17</u> | (l) $64 = P_k$ | <u>P_{50}</u> |

x	$x - \bar{x}$	$(x - \bar{x})^2$
52	-10	100
52	-10	100
52	-10	100
62	0	0
64	2	4
69	7	49
69	7	49
76	14	196
$\Sigma = 496$		$\Sigma = 598$

$$\bar{x} = \frac{\sum x}{n} = \frac{496}{8} = 62$$

$$s = \sqrt{\left(\frac{\sum (x - \bar{x})^2}{n - 1}\right)} = \sqrt{\left(\frac{598}{8 - 1}\right)} = \sqrt{85.43} = 9.24$$

L1	L2	L3	1
62			
52			
52			
52			
62			
64			
69			
69			
76			
L1()=62			

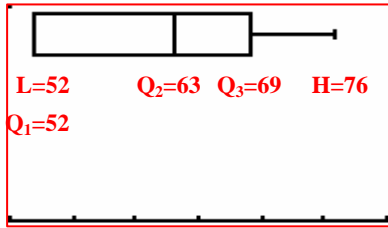
1-Var Stats L1

1-Var Stats
$\bar{x}=62$
$\Sigma x=496$
$\Sigma x^2=31350$
$Sx=9.242757783$
$\sigma x=8.645808233$
$n=8$

1-Var Stats
$n=8$
$\min X=52$
$Q_1=52$
$\text{Med}=63$
$Q_3=69$
$\max X=76$

6. Construct a Box & Whisker graph (a five value graph) that corresponds to the data given in problem 5.

Describe the shape of the Data: C or e



- a) Uniform
- b) Normal (Bell Shaped)
- c) Skewed to the Right
- d) Skewed to the Left
- e) None of the above

7. Use the frequency table below to find the following values:

- (a) Mean 71.55
- (b) Median 75.5
- (c) Standard Deviation 16.85
- (d) Modal Class ”71 – 80”

x	f	x_m	$f \cdot x_m$	$f \cdot x_m^2$
31 - 40	3	35.5	106.5	3780.75
41 - 50	2	45.5	91.0	4140.50
51 - 60	4	55.5	222.0	12321.00
61 - 70	5	65.5	327.5	21451.00
71 - 80	12	75.5	906.0	68403.00
81 - 90	8	85.5	684.0	58482.00
91 - 100	4	95.5	382.0	36481.00
	n = 38		Σ = 2719.0	Σ = 205059.50

$$\bar{x} = \frac{\sum f \cdot x_m}{n} = \frac{2719}{38} = 71.55$$

$$s = \sqrt{\frac{n \cdot \sum f \cdot x_m^2 - (\sum f \cdot x_m)^2}{n(n-1)}} = \sqrt{\frac{38 \cdot (205059.5) - (2719)^2}{38 \cdot (38-1)}} = \sqrt{284.00} = 16.85$$

L1	L2	L3	Z
35.5	3		
45.5	2		
55.5	4		
65.5	5		
75.5	12		
85.5	8		
95.5	4		
L2(1)=3			

1-Var Stats L1,L
Σ

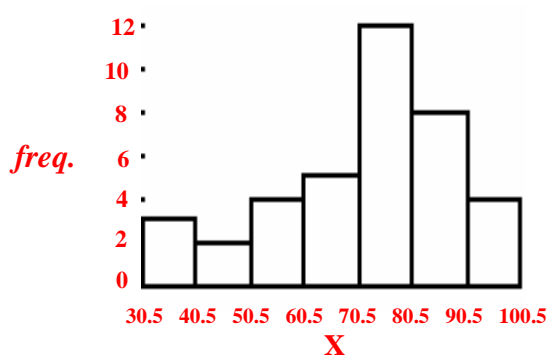
1-Var Stats
x̄=71.55263158
Σx=2719
Σx²=205059.5
Sx=16.85221514
σx=16.62899713
n=38

1-Var Stats
n=38
minX=35.5
Q1=65.5
Med=75.5
Q3=85.5
maxX=95.5

8. Referring to the frequency table given in problem 7, answer the following questions.

- (a) What is the lower class limit for the first class? (a) 31
- (b) What is the class mark of the first class? (b) 35.5
- (c) What is the lower class boundary of the first class? (c) 30.5
- (d) What is the sample size n? (d) 38
- (e) What is the class width? (e) 10

9. Construct a Histogram that corresponds to the frequency table given in problem 7.



10. Construct the cumulative frequency table and ogive that correspond to the frequency table given in problem 7.

Class	Cumm <i>f</i>
Less than 40.5	3
Less than 50.5	5
Less than 60.5	9
Less than 70.5	14
Less than 80.5	26
Less than 90.5	34
Less than 100.5	38

