1) A recent statistics exam yielded the following 25 scores. Construct a grouped frequency distribution with the class limits shown below. 1) A

67 89 75 54 64
53 83 69 68 92
87 84 43 80 88
76 83 76 98 55
73 80 41 85 95

Sort the data & tally the numbers by classes:
41 43 53 54 55 64 67 68 69 73 75 76 76 80 80 83 83 84 85 87 88 89 92 95 98

| Class Limits | Frequency |
|---|---|
| 41-50 | |
| 51-60 | |
| 61-70 | |
| 71-80 | |
| 81-90 | |
| 91-100 | |

The frequency of a class then is the number of data values contained in a specific class.
That is, class 41-50 has a frequency of 2 because there two values in the range 41 to 50 ; namely, 41 and 43.

A)

| Class Limits | Frequency |
|---|---|
| 41-50 | 2 |
| 51-60 | 3 |
| 61-70 | 4 |
| 71-80 | 6 |
| 81-90 | 7 |
| 91-100 | 3 |

B)

| Class Limits | Frequency |
|---|---|
| 41-50 | 2 |
| 51-60 | 3 |
| 61-70 | 5 |
| 71-80 | 5 |
| 81-90 | 6 |
| 91-100 | 4 |

2) The cumulative frequency for a class is the sum of the frequencies of the classes less than and equal to the upper boundary of the specific class. 2) B

A) False B) True

A cumulative frequency distribution is a distribution that shows the number of data values less than or equal to a specific value (usually an upper boundary). The values are found by adding the frequencies of the classes less than or equal to the upper class boundary of a specific class.

3) The following frequency distribution presents the weights in pounds (lb) of a sample of visitors to a health clinic. 3) C

| Weight (lb) | Frequency |
|---|---|
| 100-109 | 1 |
| 110-119 | 1 |
| 120-129 | 8 |
| 130-139 | 5 |
| 140-149 | 10 |
| 150-159 | 9 |
| 160-169 | 5 |
| 170-179 | 2 |

What is the class width?

A) 80 B) 11 C) 10 D) 9

The class width for a class in a frequency distribution is found by subtracting the lower (or upper) class limit of one class from the lower (or upper) class limit of the next class.
In this question: 110 - 100 = 10, 120 -110 = 10, etc.

4) For the class 6-17, the class boundaries are _____. 4) C

A) 6 and 17 B) 6.5 and 16.5 C) 5.5 and 17.5 D) 5 and 18

Lower limit - 0.5 that is 6 - 0.5 = 5.5
Upper limit + 0.5 and 17 + 0.5 = 17.5

5) Find the class boundaries, midpoint, and width of the class 23-33. 5) C

A) boundaries: 23-33; midpoint: 28; width: 10
B) boundaries: 23.5-32.5; midpoint: 28; width: 9
C) boundaries: 22.5-33.5; midpoint: 28; width: 11
D) boundaries: 22.5-33.5; midpoint: 28; width: 10

Boundaries: 23 - 0.5 = 22.5 & 33 + 0.5 = 33.5

Midpoint: (lower limit + upper limit)/ 2 = (23 + 33)/2 = 56/2 = 28

Width: if the given class ends in 33, the next class begins in 34:
34 - 23 = 11

6) What is the midpoint of the class 7-11? 6) C

A) 9.5 B) 5 C) 9 D) 4

Midpoint: (lower limit + upper limit)/ 2 = (7+ 11)/2 = 18/2 = 9

The class midpoint Xm is obtained by adding the lower and upper boundaries and dividing by 2, or adding the lower and upper limits and dividing by 2

7) State the reason why the following frequency distribution is incorrectly constructed. 7) B

| Class | Frequency |
|---|---|
| 48-53 | 2 |
| 54-59 | 0 |
| 60-65 | 6 |
| 66-72 | 4 |
| 73-78 | 3 |

A) there is no percent column
B) class width is not uniform
C) a class has been omitted
D) class limits overlap

Find all class widths:
54 - 48 = 6
60 -54 = 6
66 - 60 = 6
73 -66 = 7 one class width is different

8) State the reason why the following frequency distribution is incorrectly constructed. 8) A

| Class | Frequency |
|---|---|
| 48-53 | 1 |
| 53-58 | 1 |
| 58-63 | 3 |
| 63-68 | 5 |
| 68-73 | 2 |

A) class limits overlap
B) class width is not uniform
C) a class has been omitted
D) there is no percent column

The first class: 48 - 53 & the second class, 53 - 58 overlap as 53 is included in both classes.

9) The following frequency distribution presents the frequency of passenger vehicles that pass through a certain intersection from 8:00 AM to 9:00 AM on a particular day. 9) B

| Vehicle Type | Frequency |
|---|---|
| Motorcycle | 13 |
| Sedan | 62 |
| SUV | 62 |
| Truck | 45 |

Find total Frequency = 182 and divide each class frequency by the total frequency:
13/182 = 0.071
62/182 = 0.341
62/182 = 0.341
45/182 = 0.247

Construct a relative frequency distribution for the data.

A) --

B)

| Vehicle Type | Relative Frequency |
|---|---|
| Motorcycle | 0.071 |
| Sedan | 0.341 |
| SUV | 0.341 |
| Truck | 0.247 |

Relative frequency is the number of times a specific event occurs compared to the total number of events. It can be represented as a fraction, decimal, or percentage.

10) A survey was taken on how much trust people place in the information they read on the Internet. Construct a categorical frequency distribution for the data. A trust in all that they read, M trust in most of what they read, H trust in about one-half of what they read, S trust in a small portion of what they read.

10) B

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| S | H | M | M | M | S | H | A | M | M |
| M | A | H | M | H | M | M | M | M | M |
| A | M | M | M | S | M | H | H | A | M |
| S | H | M | M | M | M | M | A | H | A |

Tally the dataset, divide each frequency by the total frequency (40).

A)

| Class | Frequency |
|---|---|
| A | 6 |
| M | 22 |
| H | 4 |
| S | 8 |

B)

| Class | Freq | Percent |
|---|---|---|
| A | 6 | 15% |
| M | 22 | 55% |
| H | 8 | 20% |
| S | 4 | 10% |
| | 40 | 100% |

A frequency table that uses percentages for categorical data has a column that shows the percentage of observations in each category out of all observations. The relative frequency of a category is the number of individuals in that category divided by the total sample size, then multiplied by 100 to get the percentage