

1- The following is the age for a random sample of 20 school students:

Age(X) in years	10	12	15	18
Frequency	2	6	7	5

The mean of these ages is:

- a) 14.35 b) 13.55 c) 12.15 d) 15.45 e) 15.45

2- A data set has mean $\bar{X} = 60$ and standard deviation $S=10$. Applying Chebyshev's rule, an interval that contains at least 84% of the observations is:

- a) (35,85) b) (40,80) c) (30,90) d) (45,75) e) (20,100)

3- Consider the following sample

X	10	12	15	18
C.F	5	16	20	22

The mode of this sample:

- a) 12 b) 11 c) 22 d) 18 e) 12 and 18

4- The following is the age distribution for a random sample of 20 school students

X	10	12	15	18
C.F	5	16	20	22

The range is:

- a) 8 b) 18 c) 35 d) 5 e) 28

5- The grades of students in a Statistics can have the following statistical measures: Min = 29, the first quartile $Q_1 = 42$, the third quartile $Q_3=70$ and the Max = 89. If each grade is multiplied by -2, then Q_1 of the grades after this multiplication equals:

- a) -140 b) -84 c) 140 d) -178 e) 84

6- The grades of 200 students in a Statistics exam have the following statistical measures: Min =29, the first quartile $Q_1=42$, the second quartile $Q_2 = 70$ and the Max= 89. Then the number of students with grades between 42 and 70 is:

- a) 50 b) 20 c) 100 d) 25 e) 75

7- The following is the age distribution for a random sample of 20 school students

X	10	12	15	18
f	2	6	7	5

The median of this sample is:

- a) 12 b) 15 c) 13.5 d) 7 e) 13

8- For a sample with size $n = 5$, the variance $S^2 = 2.5$ and the sum of squares $\sum X^2 = 55$. Then the sum of observations $\sum X$ for this sample equals

- a) 18 b) 15 c) 225 d) 12.5 e) 11

9- The following is the age distribution for a random sample of 20 school students

X	10	12	15	18
f	2	6	7	5

The percentage of students having age more than 12 years is:

- a) 90% b) 60% c) 12% d) 25% e) 40%

10- On an exam given to 5 students, the mean grade is 78. The grades of 4 of them are 87, 81, 76, and 53. Then the grade of the 5th student is:

- a) 65 b) 93 c) 71 d) 85 e) 99

11- The standard deviation of the sample 5,1,1,5,1 equals:

- a) 1.11 b) 2.19 c) 3.84 d) 4.8 e) 1.96

12- The mean of a sample data of size 100 is 45 and the variance is 200. When an observation is deleted, $\sum X^2$ of this sample becomes 220700, then this observation equals:

- a) 44 b) 40 c) 42 d) 36 e) 38

13- If the mean of the sample 6,1,1,9,x is 5 the x equals:

- a) 8 b) 6 c) 5 d) 7 e) 9

14- the following table gives the grades of 20 students in a quiz

Grade	0	1	2	3	4	5
Frequency	1	1	8	5	3	2

The third quartile Q_3 of these grades is:

- a) 2.5 b) 2 c) 4 d) 3 e) 3.5

- 15- For a sample data, the 30th percentile $P_{30} = 45$ and the 70th percentile $P_{70} = 90$ if each observation in this sample is multiplied by -2 then the 30th percentile becomes:
- a) 45 b) -180 c) -90 d) 180 e) 90

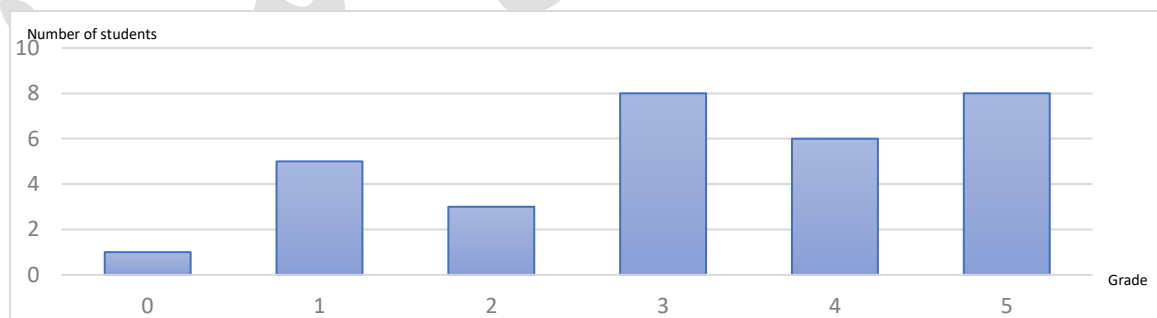
16- Consider the following grouped sample of 25 observations.

Grade	0-4	5-9	10-14	15-19	20-24	25-29
Frequency	2	2	8	6	4	3

The class that contains the 80th percentile P_{80} of this sample is:

- a) 25-29 b) 20-24 c) 10-14 d) 15-19 e) 5-9
- 17- The mean of a sample data is 40 and the standard deviation is 8. The percentage of data between 30 and 50 is at least:
- a) 75% b) 48% c) 36% d) 68% e) 42%
- 18- If sample 1 has mean 30, median 34 and mode 38 and sample 2 has mean 38, median 34 and mode 30, then:
- a) sample 1 is skewed to the left and sample 2 is skewed to the right
- b) both samples are skewed to the right.
- c) Sample 1 is skewed to the right and sample 2 is skewed to the left
- d) both samples are skewed to the left.
- e) Both samples are bell shaped (symmetric).

19- the following is the bar chart of a quiz grades:



The mode(s) of the grades is (are):

- a) 8 b) 3 and 5 c) 4 d) 3 only e) 5 only

20- For a sample data the 40th percentile P_{40} is 20 and the 60th percentile P_{60} is 40. Each observation in this sample is multiplied by -2 then 10 is added. Then the 60th percentile becomes:
a) 50 b) -70 c) -80 d) -40 e) -30

21- The grades have $\bar{X} = 58$ and $S=12$. At least 75% of the students got grades between
a) 40 and 90 b) 28 and 86 c) 34 and 82 d) 30 and 88 e) 28 and 78

22- For a sample the mean is 20, the first quartile is 14, the third quartile 28, the standard deviation is 6, if we add 6 to each observation then we divide the result by -2, the new variance will be:
a) 36 b) 18 c) 144 d) 9 e) 72

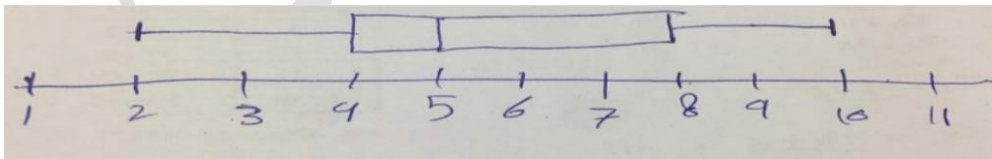
23- The grades of 15 students have mean 40. If the grade of a student is changed from 42 to 48, the new mean will be:
a) 40.7 b) 40.6 c) 40.8 d) 40.2 e) 40.4

24- If the mean of the following observations: 4,0,8,x,1 is 3, then the median is:
a) 3 b) 4 c) 2 d) 5 e) 1

25- For a skewed to the left distribution, if the median=40, then one of the following could be true:
a) Mean=42, Mode=38 b) Mean=38, Mode=43 c) Mean=46, Mode=43
d) Mean=38, Mode=36 e) Mean=43, Mode=46

26- The third quartile of the following data: 4,5,3,1,5,2,6,7,11,8,9 is:
a) 5 b) 7 c) 6 d) 8 e) 9

27- For the following box-plot representing the distribution of the grades of 20 students:



Find the number of students who got marks between 5 and 8.

a) 6 b) 5 c) 3 d) 4 e) 44

28- The grades of 400 students have mean 70 and variance 16. The number of students whose grades are between 62 and 78 is at least
a) 290 b) 320 c) 300 d) 280 e) 310

29- If the mean $\bar{X} = 40$, $S = 4$ and the distribution is symmetric. What is the percentage of data between 36 and 48.

- a) 68% b) 95% c) 81.5% d) 83.5% e) 99%

30- If the mean $\bar{X} = 35$, $S = 2$. Find the 16th percentile of the distribution assuming it's bell-shaped.

- a) 33 b) 31 c) 37 d) 32 e) 33.5

31- If the mean $\bar{X} = 20$, $S = 3$ Find the interval that contains 68% assuming it's symmetric.

- a) (17,23) b) (14,26) c) (17,26) d) (14,23) e) (11,29)

32- If the mean $\bar{X} = 50$ and $S = 5$. Find the percentage of data that lies inside (50, 60). assuming it's symmetric.

- a) 68% b) 95% c) 34% d) 47.5% e) 13.5%

33- If the mean $\bar{X} = 10$ and $S = 1$. Find the percentage of data that lies inside (7, 12). assuming it's symmetric.

- a) 99% b) 95% c) 97% d) 81.5% e) 68%

34- a sample of size 100 students in a Biology exam out of 20 marks. If the mean of the marks is 13 and $S = 2$. assuming that the distribution of the students is symmetric then what is the number of students that scored between (9, 17).

- a) 95% b) 95 c) 68% d) 68 e) 85

35- If the mean $\bar{X} = 24$, $S = 2$ Find the 97.5th percentile assuming the distribution is symmetric.

- a) 26 b) 20 c) 22 d) 28 e) 30

36- In a Sample of 400 students, the grades are bell-shaped with mean = 70 and variance = 36. the grade below which 16% of the grades is?

- a) 65 b) 64 c) 63 d) 67 e) 66

37- for the following table, find the 70th percentile:

class	1-5	6-10	11-15	16-20
frequency	4	5	10	1

- b) 13.625 b) 13.278 c) 13 d) 13.886 e) 13.97

- 38- In a sample of 600 observations, the number above which 330 observations is?
- a) The 40th percentile
 - b) The 45th percentile
 - c) The 50th percentile
 - d) The 25th percentile
 - e) The 35th percentile
- 39- In a sample of 11 observations, the mean is 15 and the variance is 8, in such a case the sum of square of the observations $E(x)^2 =$
- b) 2555 b) 2505 c) 2565 d) 2515 e) 2535
- 40- In a sample the standard deviation is 7. If each observation X is changed to $Y = -6X - 15$, then the new standard deviation will be.
- a) -57 b) 30 c) 36 d) 42 e) -42
- 41- In a sample of 485 students, the heights have mean 177 cm and standard deviation 6 cm. The number of students whose heights between 168 cm and 186 cm is?
- a) At most 233 b) At most 389 c) At least 247 d) At least 258 e) At least 269
- 42- If the observations in a given sample are skewed to the right with Median = 69, then only one of the following could be correct:
- a) Mean = 75 and Mode = 81
 - b) Mean = 61 and Mode = 64
 - c) Mean = 63 and Mode = 78
 - d) Mean = 73 and Mode = 71
 - e) Mean = 73 and Mode = 6
- 43- Suppose each employee in the company receives a \$3000 raise for next year (each employee's salary is increased by \$3000). The standard deviation of the salaries for the employees will:
- a) be multiplied by 3000 b) increase by 3000 c) be unchanged d) increase by $\sqrt{3000}$
 - e) be multiplied by 3000^2
- 44- If the heights of students has a symmetric distribution about the median $Q_2 = 170$ cm. and the upper quartile $Q_3 = 185$ cm, then the 25th percentile is equal to:
- a) 15 b) 155 c) 185 d) 75 e) 30

45- A data set produced the five summary shown below. There are no outliers in this data set.

Min	First quartile	Median	Third quartile	Max
22	31.2	44.5	59.8	67

which of the following conclusion can be drawn from the data?

1. The mean is less than 44.5
2. Approximately 75% of the scores below 59.8
3. Approximately 50% of the scores lie between 31.2 and 59.8

a) 1 only b) 2 only c) 3 only d) 1 and 3 only e) 2 and 3 only

46- A set of data has the following five number summary:

Min	First quartile	Median	Third quartile	Max
17	39	40	59	95

which of the following contains all of the outliers in the distribution?

- a) 83, 85, 90 b) 17, 78, 80, 85, 90 c) 90, 92, 95 d) 2, 3, 85, 90 e) 0, 80, 84, 90

47- Which of the following are true statements:

1. Variance is the square root of the standard deviation.
2. The standard deviation is zero only when all values are the same.
3. The standard deviation is strongly effected by outliers

a) 1 and 2 b) 1 and 3 c) 2 and 3 d) None of them e) all of them

48- In a distribution of 160 values with a mean of 72, at least 120 fall within the interval (67, 77).

Approximately the percentage of values that should fall in the interval (64.5, 79.5) is :

- a) 75% b) 93.75% c) 88.88% d) 96% e) 55.55%

49- There are three children in a room, ages five, six and seven. If a six-year-old child enters the room, then:

- a) The mean age will stay the same but the variance will increase.
- b) The mean age and variance will stay the same.
- c) The mean age will stay the same but the variance will decrease.
- d) The mean age and variance will increase.
- e) The mean age and variance will decrease.

50- If the frequency curve of a set data has a bell- shape with mean 200 and variance 100, then the percentage of observations that lies in the interval (210,220) is approximately equals to:

- a) 81.5% b) 83.5% c) 2% d) 13.5% e) 15.5%

51- Given the sample data: -3,-1,2,4,6,7,8. If each observation in this sample is multiplied by -2, then the first quartile of the new sample data will be:

- a) 2 b) -14 c) 1 d) 14 e) -2

52- If the median of the observations 0,3,x,11 is 5, then the mean of these observations will be:

- a) 5.75 b) 5 c) 4.75 d) 5.25 e) 5.5

53- In a sample $Q1 = 40$ and $Q3 = 50$. In such a case the following observations are outliers:

- a) 21, 30 b) 21, 53 c) 27, 63 d) 27, 86 e) 21, 86

1	a	26	d	51	b
2	a	27	b	52	d
3	a	28	c	53	e
4	a	29	c		
5	a	30	a		
6	a	31	a		
7	b	32	d		
8	b	33	c		
9	B	34	b		
10	B	35	d		
11	B	36	b		
12	b	37	c		
13	a	38	b		
14	e	39	a		
15	b	40	d		
16	b	41	e		
17	C	42	e		
18	a	43	c		
19	b	44	b		
20	e	45	e		
21	c	46	c		
22	d	47	c		
23	e	48	c		
24	c	49	c		
25	b	50	d		