SHIKSHA CLASSES

Sub. : Maths | **Answer Paper** | **Total Marks : 30**

Std. IX (CBSE) | **12. Statistics**

Section I (Each 1 Marks)

Multiple choice Questions (MCQs)

Q.1 : The statistical data are of two types. These types are.

Ans : b) primary data and secondary data

Q.2 : Class mark of the class 70 - 80 is ---.

Ans : c) 75

Q.3 : The class marks of a frequency distribution are given as follows : 15, 20, 25 ------

The class corresponding to the class mark 20 is.

Ans : b) 17.5 – 22.5

Q.4 : A data is such that its minimum value is 86 and range is 32, then the maximum value is ------.

Ans : c) 118

Q.5 : The range of the data 25.7, 16.3, 2.8, 21.7, 24.3, 22.7, 24.9 is

Ans : b) 22.9

Q.6 : Find the class width for the grouped frequency distribution of the class intervals 1-20, 21-40, 41-60, ..

Ans : d) 20

Q.7 : What is the class mark of the class interval 90-120?

Ans : b) 105

Q.8 : The collection of information, collected for a purpose is called:

Ans : d) Data

Q.9 : Find the maximum value if the range is 38 and the minimum value is 82.

Ans : c) 120

For question number 10 to 11 two statement are given one labeled Assertion and other labeled Reason select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below

Q.10 : Assertion: Range = Maximum value – Minimum value

Reason: The range of the first 6 multiples of 6 is 9.

Ans : c) Assertion is correct but reason is false

Q.11 : Assertion: the class mark of the class interval 90 –120 is 105

Reason: Class mark = (upper limit + lower limit)/2

Ans : a) both Assertion and reason are correct and reason is correct explanation for Assertion

Section B (Each 2 Marks)

Q.12 : The length of 40 leaves of a plant are measured correct to one millimetre, and the obtained data is represented in the following table.Draw a histogram to represent the given data.

Length (in mm)	Number of leaves
118-126	3
127-135	5
135-144	9
145-153	12
154-162	5
163-171	4
172-180	2

Ans : The given frequency distribution is not continuous. Therefore, first we have to modify it to be continuous distribution.

$$\because \quad \frac{127-126}{2} = \frac{1}{2} = 0.5$$

$\therefore$ The modified class intervals are :

$(118–0.5) – (126 + 0.5) \Rightarrow 117.5 – 126.5$

$(127–0.5) – (135 + 0.5) \Rightarrow 126.5 – 135.5$

$(136–0.5) – (144 + 0.5) \Rightarrow 135.5 – 144.5$

$(145–0.5) – (153 + 0.5) \Rightarrow 144.5 – 153.5$

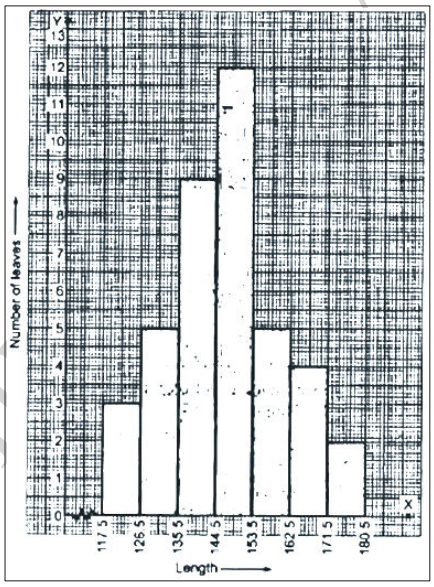
$(154–0.5) – (162 + 0.5) \Rightarrow 153.5 – 162.5$

$(163–0.5) – (171 + 0.5) \Rightarrow 162.5 – 171.5$

$(172–0.5) – (180 + 0.5) \Rightarrow 171.5 – 180.5$

Length (in mm)	Number of leaves
117.5-126.5	3
126.5-135.5	5
135.5-144.5	9
144.5-153.5	12
153.5-162.5	5
162.5-171.5	4
171.5-180.5	2

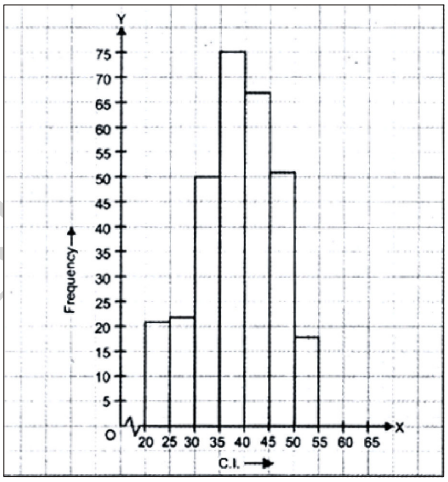
Now, the required histogram of the above frequency distribution is as shown here:



Q.13 : Draw a histogram for the given data :

Class Interval	Frequency
20 – 25	21
25 – 30	22
30 – 35	50
35 – 40	75
40 – 45	67
45 – 50	51
50 – 55	18

Ans : Let us represent class-intervals along x-axis and corresponding frequencies along y-axis on a suitable scale, the required histogram is as under :



OR

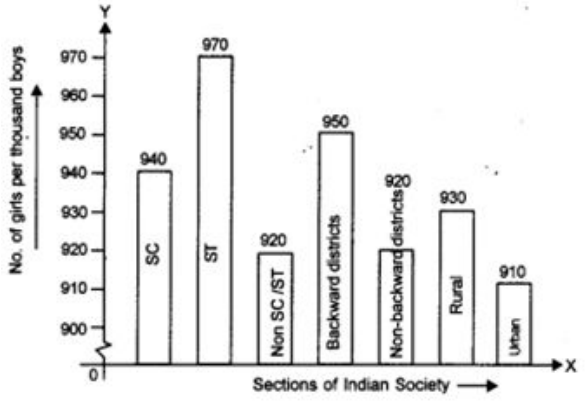
The following data on the number of girls (to the nearest ten) per thousand boys in different sections of the Indian society is given below :

Sections of Indian Society	No. of Girls per thousand Boys
Scheduled Caste (SC)	940
Scheduled Tribe (ST)	970
Non-SC/ST	920
Backward districts	950
Non-backward districts	920
Rural	930
Urban	910

Study the bar graph carefully and answer the following question.

i) In the classroom, discuss what conclusions can be arrived at from the graph.

ii) What steps should be taken to improve the situation ?



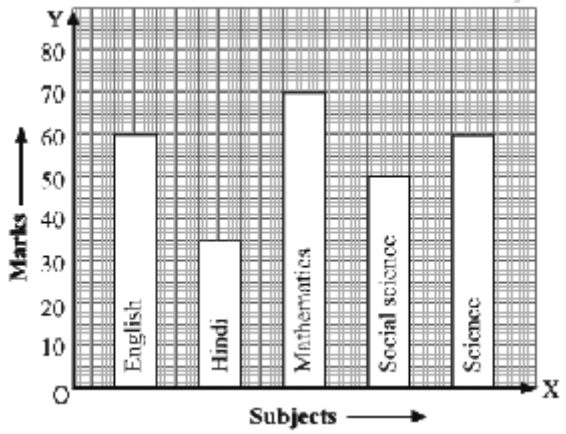
Ans : In the graph, different sections of the society is taken on X-axis and number of girls per thousand boys is taken on the Y-axis. [Scale : 1 cm = 10 girls.]

i) From the graph, the number of girls to the nearest ten per thousand boys are maximum in scheduled tribes whereas they are minimum in urban.

ii) Pre-natal sex determination should strictly banned in urban.

Section C (Each 3 marks)

Q.14 : Look at the bar graph given below.



Read it carefully and answer the following questions.

i) What information does the bar graph give?

ii) In which subject is the student very good?

iii) In which subject is he poor?

Ans : i) The bar graph shows the marks obtained by a student in various subjects in an examination.

ii) The student scores very good in mathematics, as the height of the corresponding bar is the highest.

iii) The student scores bad in Hindi, as the height of the corresponding bar is the lowest.

OR

100 surnames were randomly pickedup from a local telephone directory and a frequency distribution of the number of letters in the English alphabet in the surnames was found as follows:

No. of letters	No of Surnames
1 – 4	6
4 – 6	30
6 – 8	44
8 – 12	16
12 – 20	4

i) Draw a histogram to depict the given information.

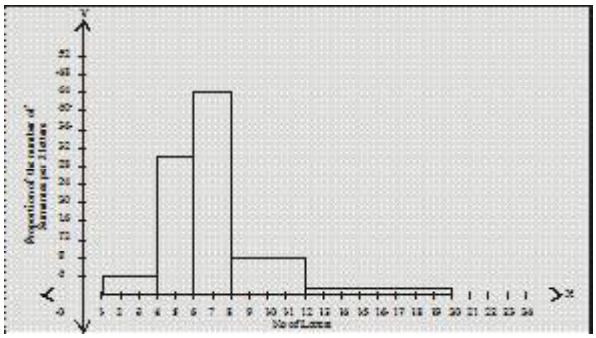
ii) Write the class interval in which the maximum number of surname lie.

Ans : i) Here, it can be observed that the data has class intervals of varying width. The proportion of the number of surnames per 2 letters interval can be calculated as follows.

No. of letters	Frequency (No. of Surnames)	Width of Class	Length of rectangles
1 – 4	6	3	$\frac{6\times 2}{3}=4$
4 – 6	30	2	$\frac{30\times 2}{2}=30$
6 – 8	44	2	$\frac{44\times 2}{2}=44$
8 – 12	16	4	$\frac{16\times 2}{4}=8$
12 – 20	4	8	$\frac{4\times 2}{8}=1$

By taking the number of letters on x-axis and the proportion of the number of

surnames per 2 letters interval on y-axis and choosing an appropriate scale (1 unit = 8 students) for y-axis), the histogram can be constructed as follows :



ii) The class interval in which the maximum number of surnames lies in 6 -8 as it has 44 surnames in it i.e. the maximum for this data.

Q.15 : A survey conducted by an organisation for the cause of illness and death among the women between the ages 15-44 (in years) worldwide, found the following figures (in %).

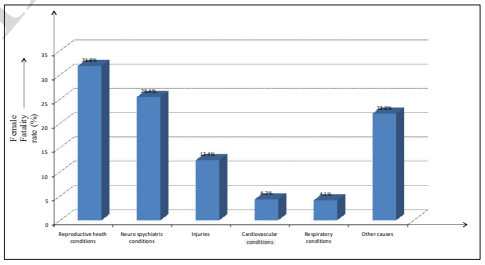
S.No.	Causes	Female Fatality rate (%)
1	Reproductive health conditions	31.8
2	Neuro spychiatric conditions	25.4
3	Injuries	12.4
4	Cardiovascular conditions	4.3
5	Respiratory conditions	4.1
6	Other causes	22.0

i) Represent the information given above graphically

ii) Which condition is the major cause of women's ill health and death worldwide?

iii) Try to find out with the help of your teacher, any two factors which play a major role in the cause in (ii) above being the major cause

Ans :



ii) Reproductive health conditions is the major cause of woman's ill health and death worldwide as 31.8% of women are affected by it.

iii) The two major factors for the woman's ill health and death worldwide are :

Lack of medical facilities and Lack of correct knowledge of treatment.

Section - D

Q16 : In a school marks obtained by 80 students are given in the table. Draw a histogram. Also, make frequency polygon.

Marks obtained (Mid Volue)	Number of students
305	12
315	18
325	28
335	15
345	5
355	2

Ans : ∴ Lower limit of first class interval is

305 - 5 = 300

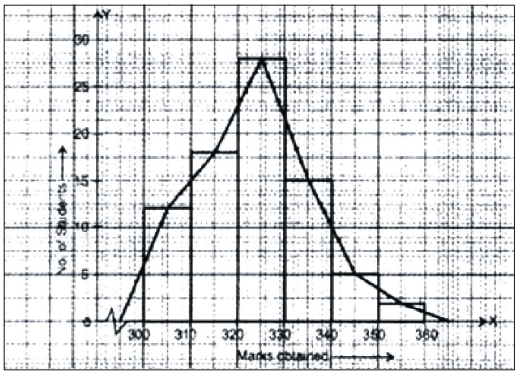
Upper limit of first class interval is

305 + 5 = 310

Thus, first class interval is 300 - 310

Marks obtained	Number of students
300-310	12
310-320	18
320-330	28
330-340	15
340-350	5
350-360	2

Required histogram and frequency polygon is given on the graph paper.



OR

Shimpi, a class IX student received cash award of 10000 (Ten thousand) in the singing competition. Her father advised her to make a budget plan for spending this amount. She made the following plan :

S.No.	Head	Amount
1.	Donation to religious place	200
2.	Tultion fee to needy child	100
3.	Welfare of senior citizens	500
4.	Welfare ofstrect children	800
5.	Saring in bank	4000
6.	Books for librry	2000
7.	Placnic for family	1000
8.	Gift to grand prarents	1100
9.	Tea party to friends	300
	Total	**10000**

Make a bar graph for the above data.

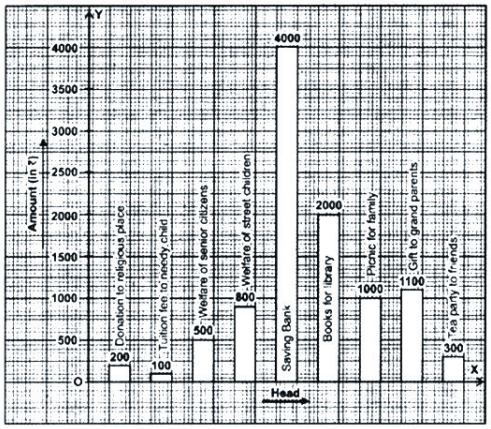
From above answer the following questions :

i) Which mathematical concepts have been covered in this ?

ii) How will you rate her budget plan ? In your opinion which head has been given(a) more than deserved and (b) less than it deserved ?

iii) Which values are depicted in her plan?

Ans : The bar graph of given data is given below:



In the graph, head is taken on X-axis and amount is taken on Y-axis.

i) Representation of data using bar graph.

ii) Very good

a) Picnic for family

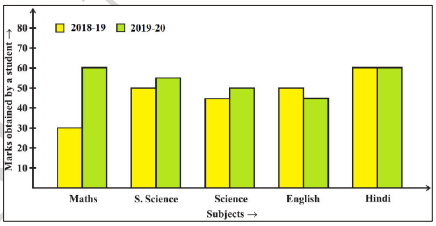
b) Tuition fee for needy child

iii) Help the needy people and respect the elders.

SECTION - E

Q.17 : Case Study : (Any Four) **4**

The Class teacher of Class X preparing result analysis of a student. She compares the marks of a student obtained in Class IX (2018-19) and Class X (2019-20) using the double bar graph as shown below:



i) In which subject has the performance improved the most?

Ans : a) Maths

ii) In which subject has the performance deteriorated?

Ans : d) English

iii) In which subject is the performance at par?

Ans : a) Hindi

iv) What is the difference in Maths Subject?

Ans : b) 30

v) What is the percentage of marks obtained by a student in Class X (2019-20)?

Ans : c) 54%

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