

**Objective Type Questions**

**I. Multiple choice questions**

- Using tally marks, which one of the following represents the number eight:
  - |||| |
  - ||||||
  - |||| |
  - |||| |
- The marks (out of 10) obtained by 28 students in a Mathematics test are listed as below.  
8, 1, 2, 6, 5, 5, 5, 0, 1, 9, 7, 8, 0, 5, 8, 3, 0, 8, 10, 10, 3, 4, 8, 7, 8, 9, 2, 0  
The number of students who obtained marks more than or equal to 5 is
  - 13
  - 15
  - 16
  - 17
- In question 2 above, the number of students who score marks less than 4 is
  - 15
  - 13
  - 12
  - 10
- The choices of the fruits of 42 students in a class are as follows:  
A, O, B, M, A, G, B, G, A, G,  
B, M, A, G, M, A, B, G, M, B  
A, O, M, O, G, B, O, M, G, A  
A, B, M, O, M, G, B, A, M, O, M, O  
Where A, B, G, M and O stand for the fruits Apple, Banana, Grapes, Mango and Orange respectively. Which two fruits are liked by an equal number of students?
  - A and M
  - M and B
  - B and O
  - B and G
- According to data of question 4, which fruit is liked by most of the students?
  - O
  - G
  - M
  - A

1) d	2) d	3) d	4) d	5) c
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## II. Multiple choice questions

The weight of 30 students (in kg) of a class is given below:

42, 48, 45, 45, 49, 54, 46, 43, 45, 58, 62, 44, 43, 45, 49



50, 41, 51, 44, 48, 41, 49, 42, 44, 46, 48, 52, 43, 45, 42

On the basis of above data, answer the following question (6 to 8):


- The number of students who have 45 kg weight or more than this is  
a. 18                      b. 5                      c. 20                      d. 21
- The number of students with more than 50 kg weight is  
a. 4                      b. 5                      c. 6                      d. 7
- Which height is recorded of maximum students?  
a. 45                      b. 42                      c. 43                      d. 49

1. (b)	2. (b)	3. (a)
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## I. Fill in the blanks

- A \_\_\_\_\_ is a collection of numbers gathered to give some meaningful information.
- The data can be arranged in a tabular form using \_\_\_\_\_ marks
- A \_\_\_\_\_ represents data through pictures of objects.
- In a bar graph, \_\_\_\_\_ can be drawn horizontally or vertically.
- In a bar graph, bars of \_\_\_\_\_ width can be drawn horizontally or vertically with \_\_\_\_\_ spacing between them.
- An observation occurring seven times in a data is represented as \_\_\_\_\_ using tally marks.
- In a pictograph, if a symbol  represents 20 flowers in a basket then  stands for \_\_\_\_\_ flowers.
- On the scale of 1 unit length = 10 crore, the bar of length 6 units will represent \_\_\_\_\_ crore and of \_\_\_\_\_ units will represent 75.

9. Data means information in the form of \_\_\_\_\_.
10. Data obtained in the \_\_\_\_\_ form is called raw data.
11. Arranging the numerical figures in an ascending or a descending order is called an \_\_\_\_\_.
12. The number of times a particular observation occurs is called its \_\_\_\_\_.
13. Arranging the data in the form a table is called \_\_\_\_\_.



1.Data	2. tally
3. pictograph	4. bars
5. uniform, equal	6. 
7. 60	8. 60, 7.5
9. Numerical figures	10. Original
11. Array	12. Frequency
13.Tabulation	

## II. Fill in the blanks

1. A \_\_\_\_\_ is a collection of numbers gathered to give some meaningful information.
2. The data can be arranged in a tabular form using \_\_\_\_\_ marks.
3. A \_\_\_\_\_ represents data through pictures of objects.
4. Representation of data in form of pictures is called \_\_\_\_\_.
5. In bar graph, width of rectangle is always \_\_\_\_\_.
6. The tally marks \_\_\_\_\_ represents \_\_\_\_\_.
7. In a bar graph, bars of \_\_\_\_\_ width can be drawn horizontally or vertically with \_\_\_\_\_ spacing between them.
8. An observation occurring seven times in a data is represented as \_\_\_\_\_ using tally marks.
9. In a pictograph, if a symbol \* represents 20 flowers in a basket, then \*\*\* stands for \_\_\_\_\_ flowers.
10. On the scale of 1 unit length = 10 crore, the bar of length 6 units will represent \_\_\_\_\_ crore and of \_\_\_\_\_ units will represent 75 crore.

1. data	2. tally	3. pictograph	4. pictograph	5. same
6. 13	7. uniform, equal	8. $\text{N} \parallel$	9. 60	10. 60 core, $7\frac{1}{2}$

### I. True or False

1. In a bar graph, the width of bars may be unequal.
2. In a bar graph, bars of uniform width are drawn vertically only.
3. In a bar graph, the gap between two consecutive bars may not be the same.
4. In a bar graph, each bar (rectangle) represents only one value of the numerical data.
5. To represent the population of different towns using bar graph, it is convenient to take one unit length to represent one person.
6. Pictographs and bar graphs are pictorial representations of the numerical data.
7. An observation occurring five times in a data is recorded as  $\text{||||}$  using tally marks.
8. In a pictograph, if a symbol  represents 50 books in a library shelf, then the symbol  represents 25 books.

1. False	2. False	3. False	4. True	5. False	6. True	7. False	8. True
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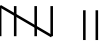

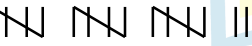
# Next Generation School

**I. Match the following**

Column A	Column B
a. Data obtained in original form	i. Pictograph
b. Method to represent data using frequency	ii. Bargraph
c. Pictorial representation of data by using bars of equal width with equal spacing	iii. Tally
d. Pictorial representation of data using picture symbols	iv. Frequency distribution
e. Bars represent to each observation in data	v. Raw data

a. v
b. iv
c. ii
d. i
e. iii

**II. Match the following**

Column I (Tally marks )	Column II (Number)
a. 	1. 17
b. 	2. 8
c. 	3. 12
d. 	4. 7

a. 4
b. 3
c. 2
d. 1

**I. Very short answer**

1. The following table represents the choice of milk shakes of class VI students:

Choice	Tally marks	No. of Students
Banana shakes only		15
Chocolate shakes only		12
Banana and chocolate shakes		13
	<b>Total</b>	<b>40</b>

Answer the following questions:

- i. How many students like chocolate shake only?
- ii. How many students like chocolate and banana shakes?

i. 12      ii. 13

2. The following table represents the choice of sweets of 40 students.







Choice	Tally marks	No. of students
Gulab Jamun		12
Kaju Barfi		16
Rasgulla		8
Ladoo		4
	<b>Total</b>	<b>40</b>

- (i) How many students like Gulab Jamun?
- (ii) Which sweet students like the most?

i. 12      ii. Kaju Barfi



3. A cupboard have five compartments. In each compartment a row of books is arranged. The details are indicated as follows:

	 1 Book
Row 1	
Row 2	
Row 3	
Row 4	
Row 5	

- a. Which row has the greatest number of books?
  - b. Which row has the least number of books?
- a. The greatest number of books are in Row 4.
  - b. The least number of books are in Row 3.

**II. Very Short Answer**

1. The weight of newborn babies (in kg) in a hospital on a particular day are as follows:

2.3, 2.2, 2.1, 2.7, 2.6, 3.0, 2.5, 2.9, 2.8, 3.1, 2.5, 2.8, 2.7, 2.9, 2.4

How many babies weight below 2.5 kg?

Number of babies having weight less than 2.5 kg

= 2.3, 2.2, 2.1, 2.4 i.e. 4 babies.

2. Which number is represented by  $\overline{\text{||||}}$

$\overline{\text{||||}}$  represents the number 5.

3. In a mathematics test, the following marks were obtained by 40 students. Arrange these marks in a table using tally marks.

8	1	3	7	6	5	5	4	4	2
4	9	5	3	7	1	6	5	2	7
7	3	8	4	2	8	9	5	8	6
7	4	5	6	9	6	4	4	6	6

Find how many students obtained marks equal to or more than 7.

Sol. The table using tally marks is:

Variate	Tally marks	Frequency
15		4
16		6
18		7
20		6
24		5
25		4
27		3
28		3
29		1
30		1
Total		40

Number of students who obtained marks equal to or more than, 7 is 12.

4. In the above question how many students obtained marks below 4?

Sol. Number of students who obtained marks below 4 is 8.



### III. Very Short Answer

**1. What is data**

Information in raw or unorganized form (such as alphabets, numbers or symbols) that refer to, or represent conditions, ideas or objects.

**2. What does  represents in tally marks?**

It represents 5 (frequency)

**3. What are bar graphs?**

Bar graph is a pictorial representation of data using bars of uniform width, with equal space in between two bars.

**4. What are pictographs?**

The pictorial representation of the numerical data using pictures or symbols is called the pictograph of the data.

**5. What is the range of data?**

The difference of maximum and minimum value of given data is called the range of data.

**6. Find the range of data 9, 7, 2, 6, 1, 3, 4, 12.**

Range of data =  $12 - 1 = 11$

**7. What kind of data is collected directly from a source?**

Primary data is collected directly from a source.

**8. What are tally marks?**

Tally marks, also called hash marks, are a Unary numeral system.

**9. What type of data is collected from newspaper?**

Secondary data is collected from newspaper

10. In a pictograph, a symbol ☺ represents 5 persons, then how many symbols represent 20 persons.

Given, ☺ = 5 persons

∴ 4 symbols, i.e. ☺ ☺ ☺ ☺ represent 20 persons.

**I. Short Answer**

1. In an examination, the grades achieved by 30 students of a class are given below. Arrange these grades in a table using tally marks:

B, C, C, E, A, C, B, B, D, D, D, D, B, C, C, C, A, C, B, E, A, D, C, B, E, C, D

On arranging the given data in a table using tally marks, we get the following table

Grades	Tally marks
A	
B	 
C	 
D	 
E	




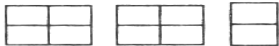


2. Thirty students were interviewed to find out what they want to be in future. Their responses are listed as below:

Doctor, engineer, doctor, pilot, officer, doctor, engineer, doctor, pilot, officer, pilot, engineer, officer, pilot, doctor, engineer, pilot, officer, doctor, officer, doctor, pilot, engineer, doctor, pilot, officer, doctor, pilot, doctor, engineer.

On arranging the given data in a table using tally marks, we get the following table:

Responses	Tally marks	Number of Responses
Doctor	 	10
Engineer	 	6
Pilot	 	8
Officer	 	6

3. Students of Class VI in a school were given a task to count the number of articles made of different materials in the school. The information collected by them is represented as follows:

Material used	Articles  = 20 articles
Wood	
Glass	
Metal	
Rubber	
Plastic	

Observe the pictograph and answer the following questions








- Which material is used in maximum number of articles?
- Which material is used in minimum number of articles?
- Which material is used exactly half the number of articles as those made up of metal?
- What is the total number of articles counted by the students?

In the given pictograph, 1 Box = 20 articles

- Metal material is used in maximum number of articles.
- Glass material is used in minimum number of articles.
- Rubber material is used in exactly half the number of articles as those made up of metal.
- Total no. of articles counted by the students  
 $= 30$  (wood) +  $20$  (glass) +  $50$  (metal) +  $25$  (Rubber) +  $35$  (Plastic)  
 $= 160$  articles.

4. The following pictograph depicts the information about the area in sq km (to nearest hundred) of some districts of Chhattisgarh State:

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District	Area (in km <sup>2</sup> )	 = 1000 sq km
Raigarh		
Rajnandgaon		
Korea		
Mahasamund		
Kabirdham		
Jashpur		

- What is the area of Korea district?
- Which two districts have the same area?
- How many districts have area more than 5000 square kilometres?

In the given pictograph 1 picture = 1000 sq km








- In Korea district, there are 6 pictures given.  
∴ Area of Korea district =  $6 \times 1000 = 6000$  sq km
- From the table, we see that the districts Raigarh and Jashpur has same number of areas, because both has same number of pictures.
- The district having more than 5000 sq km is equal to the district having more than 5 pictures (∴ 1 picture = 1000 sq km). It is clear from the table that, districts Raigarh, Rajnandgaon, Korea and Jashpur have more than 5 picture (i.e. more than 5000 sq km) Hence, number of districts having more than 5000 sq km is four.

5. The number of bottles of cold drinks sold by a shopkeeper on six consecutive days is as follows:

Day	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday
Number of bottles	350	200	300	250	100	150

Prepare a pictograph of the data using one symbol to represent 50 bottles.







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Day	Bottles  = 50 bottles
Sunday	
Monday	
Tuesday	
Wednesday	
Thursday	
Friday	

6. The following table gives information about the circulation of newspaper (dailies) in a town in five languages.

Language	English	Hindi	Tamil	Punjabi	Gujarati
Number of newspapers	5000	8500	500	2500	1000

Prepare a pictograph of the above data, using a symbol of your choice each representing 1000 newspaper.

Language	News paper  = 1000 news papers
English	
Hindi	
Tamil	
Punjabi	
Gujarati	

Age Group	Heights of bar graph
1-20	$\frac{25000}{5000} = 5$
21-40	$\frac{40000}{5000} = 8$
41-60	$\frac{35000}{5000} = 7$
61-80	$\frac{10000}{5000} = 2$

Next Generation School



7. Number of mobile phone users in various age groups in a city is listed below:

Age group (in years)	Number of mobile users
1-20	25000
21-40	40000
41-60	35000
61-80	10000

Draw a bar graph to represent the above information.

To draw a bar graph, we will use the following steps.

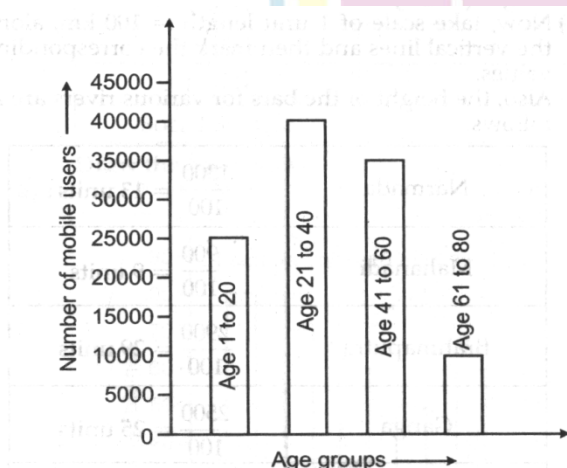
- i. Firstly, draw two perpendicular lines, one is horizontal and one is vertical. Along the horizontal line, mark 'Age group' and along the vertical line mark 'Number of mobiles users'
- ii. Now, take scale of 1 unit length = 5000 mobile users, along the vertical line and then mark the corresponding values.

Also, the heights of the bars for various age group are as follows.

Age Group	Heights of bar graph
1-20	$\frac{25000}{5000} = 5$
21-40	$\frac{40000}{5000} = 8$
41-60	$\frac{35000}{5000} = 7$
61-80	$\frac{10000}{5000} = 2$

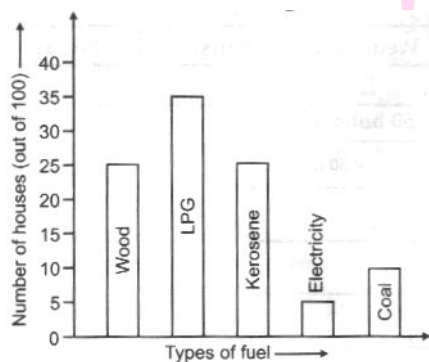
- iii. Draw bars of equal width and of height calculated in step (ii) on the horizontal line with equal spacing (or gap)

Thus we get the following bar graph.



8. The following bar graph shows the number of houses (out of 100) in a town using different types of fuels for cooking.

Read the bar graph and answer the following questions:



- Which fuel is used in maximum number of houses?
- How many houses are using coal as fuel?
- Suppose that the total number of houses in the town is 1 lakh.

From the above graph estimate the number of houses using electricity.

- LPG fuel is used in maximum no. of houses.
- There are 10 houses using coal as fuel.
- The no. of houses using electricity.

$$= \frac{5}{100} \times 1,00,000 = 5,000.$$

9. The length in km (rounded off to nearest hundred) of some major rivers of India is given below

River	Length (in km)
Narmada	1300
Mahanadi	900
Brahmaputra	2900
Ganga	2500
Kaveri	800
Krishna	1300

Draw a bar graph to represent the above information.

To draw a bar graph, we will use the following steps.

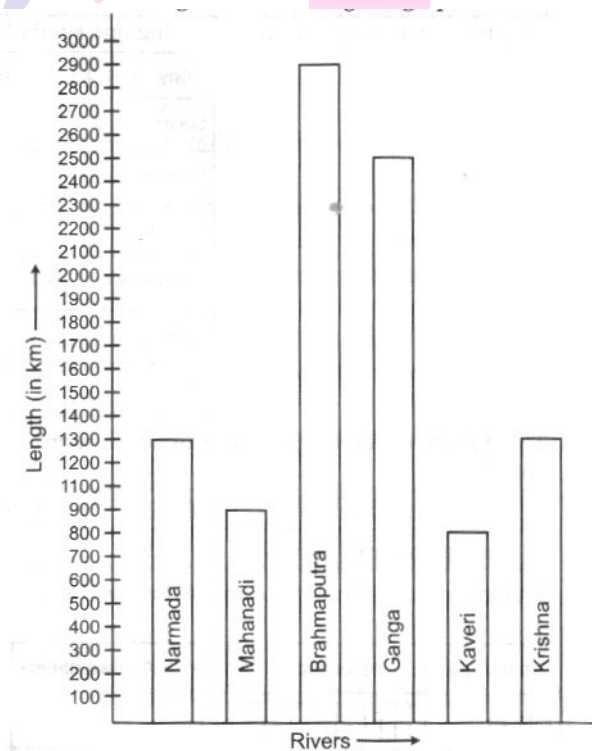
- i. Firstly, draw two perpendicular lines, one is horizontal and other is vertical. Along the horizontal line, mark rivers and along the vertical line mark length (in km).
- ii. Now, take scale of unit length = 100 km, along the vertical lines and then mark the corresponding values.

Also, the height of the bars for various rivers are as follows.

Name	Height
Narmada	$\frac{1300}{100} = 13$ units
Mahanadi	$\frac{900}{100} = 9$ units
Brahmaputra	$\frac{2900}{100} = 29$ units
Ganga	$\frac{2500}{100} = 25$ units
Kaveri	$\frac{800}{100} = 8$ units
Krishna	$\frac{1300}{100} = 13$ units

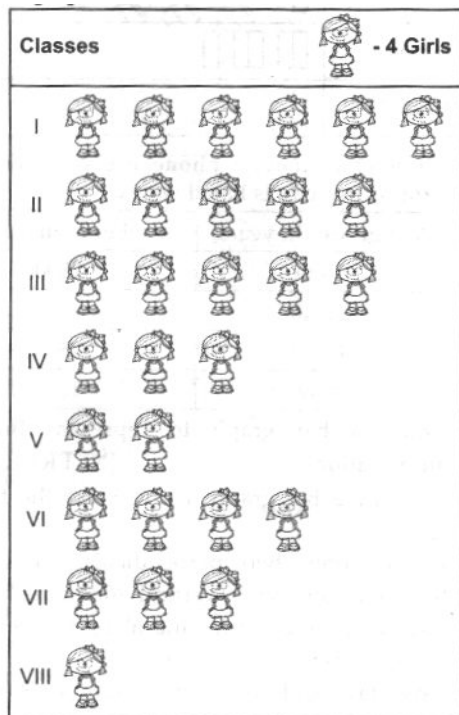
- iii. Draw bars of equal width and the height calculated in Step (ii) on the horizontal line with equal spacing or gap between them.

Thus, we get the following bar graph.





10. The number of girl students in each class of a co-educational middle school is depicted by the pictograph:



Observe above pictograph and answer the following questions:

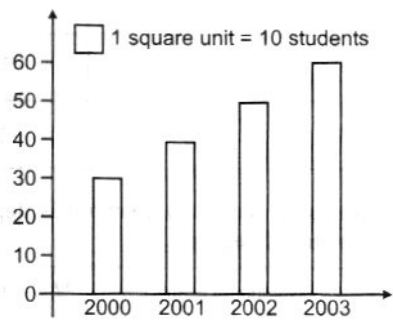
- Which class has the minimum number of girl students?
- Is the numbers of girls in Class VI class is less than the number of girls in Class V?
- How many girls are there in lass VII?

Looking at the given pictograph, clearly.

- The minimum number of girl students are in class VIII.
- No.
- Number of girls in class VII =  $3 \times 4 = 12$ .

11. Read the following bar graph of a particular class of a school. Answer the following questions:

- What is the scale of this graph?
- How many new students are added every year ?
- Is the number of students in the year 2003 twice that in the year 2000 ?



Sol. (a) The scale is 1 unit length=10 students .

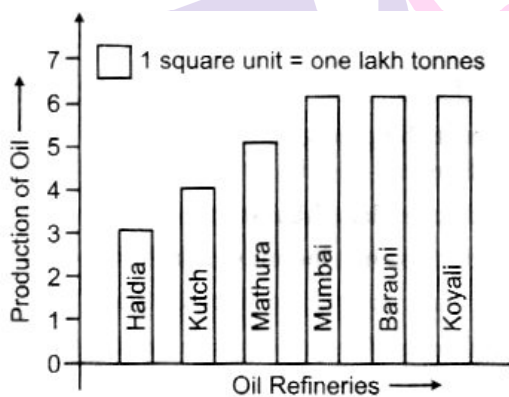
(b) 10 students are added every year.

(c) Number of students in 2000 =  $3 \times 10 = 30$

Number of students in 2003 =  $6 \times 10 = 60$

Number of students in the year 2003 is twice that of in the year 2000.

12. Read the following bar graph :



(a) What is the information given by the bar graph ?

(b) Which oil refinery produces maximum oil ?

(c) Name refineries which produces oil less than 4 lakh tonnes.

(d) How much oil is produced by Mumbai oil refinery ?

(a) The bar graph gives the information about the production of oil in six different oil refineries.

(b) Maximum oil produced by Mumbai, Barauni and Koyali oil refinery.

(c) Oil refinery named Haldia produces oil less than 4 lakh tonnes.

(d) 6 lakh tonnes of oil is produced by Mumbai oil refinery.

13. Given below are the ages of 25 students of class VIII in a school. Prepare a discrete Frequency distribution.

15, 16, 16, 14, 17, 17, 16, 15, 15, 16, 16, 17, 15, 15, 16, 16, 14, 16, 15, 14, 15, 16, 16, 15, 14, 15,

Sol. Frequency distribution of age of 25 students .

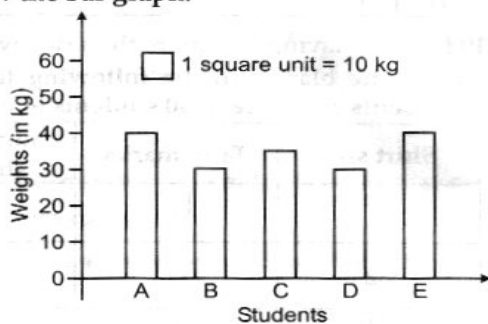
Age	Tally marks	Frequency
14		4
15		8
16		10
17		3
Total		25

14. The Weights of five students are shown below :

Students	Weight (in kg)
A	40
B	30
C	35
D	30
E	40

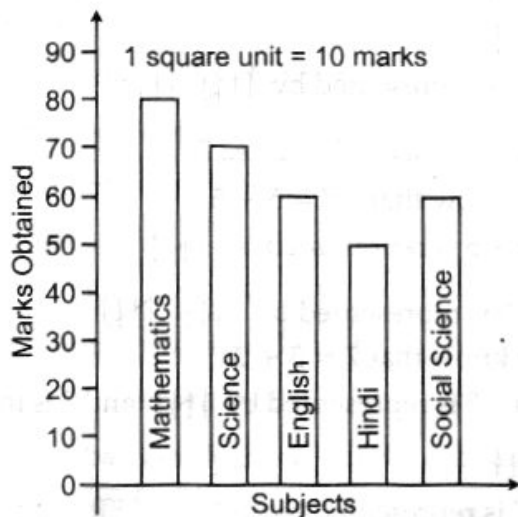
Sol.

Draw the bar graph.



15. The marks obtained by meenu in different subjects in annual examination are shown below:

Draw the bar graph.



## II. Short Answer

1. The number of two wheelers owned individually by each of 50 families are listed below.

Subjects	Marks obtained
Maths	80
Science	70
English	60
Hindi	50
Social science	60

Make a table using tally marks.

1, 1, 2, 1, 1, 1, 2, 1, 2, 1, 0, 1, 1, 2, 3, 1, 2, 1, 1, 2, 1, 2, 3, 1, 0, 2, 1, 0, 2, 1, 2, 1, 2, 1, 1, 4, 1, 3, 1, 1, 2, 1, 1, 1, 1, 2, 3, 2, 1, 1

Find the number of families having two or more two wheelers.

On arranging the given data in a table using tally marks, we get the following table:

Number of two wheelers	Tally marks
0	
1	
2	
3	
4	

19 families having 2 or more than two wheelers.

2. Fill in the blanks in the following table which represents shirt size of 40 students of a school.

Shirt size	Tally marks	number of students
30		3
32		-
34	-	8
36		-
38	-	10
40	-	7

i. Shows, four vertical lines and one interest line.

∴ Its count to be  $4 + 1$  (i.e., 5)

ii. We know that,  $8 = 5 + 3$

Here, 5 is represented by  and 3 is represented by 

∴ 8 is represented by 

iii. Means  $5 + 2$  i.e., 7

iv. We know that,  $10 = 5 + 5$

Here, 5 is represented by 

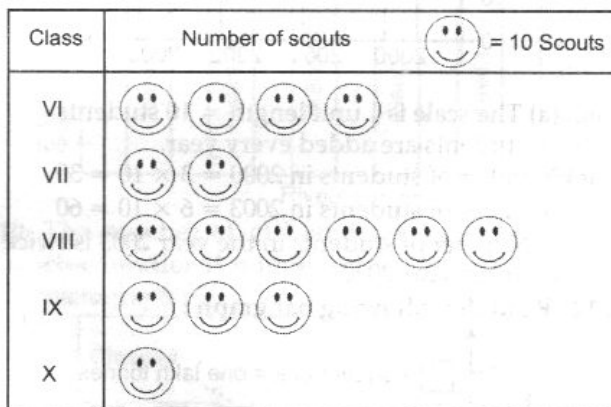
∴ 10 is represented 

- v. We know that  $7 = 5 + 2$   
 Here, 5 is represented by and 2 is represented by   
 $\therefore$  7 is represented by

Thus, the complete table is shown as

Shirt size	Tally marks	number of students
30		3
32		5
34		8
36		7
38		10
40		7

3. The number of scouts in a school is depicted by the following pictograph.



Observe the pictograph and answer the following questions:

- Which class has the minimum number of scouts?
  - Which class has the maximum number of scouts?
  - How many scouts are there in Class VI?
  - Which class has exactly four times the scouts as that of Class X?
  - What is the total number of scouts in the Classes VI to X?
- Class X has minimum number of scouts
  - Class VIII has maximum number of scouts
  - There are  $40 = (4 \times 10)$  scouts in Class VI
  - Class VI has exactly four times the scouts as that of Class X
  - Total no. of scouts in the classes VI to X =  $40 + 20 + 60 + 30 + 10 = 160$

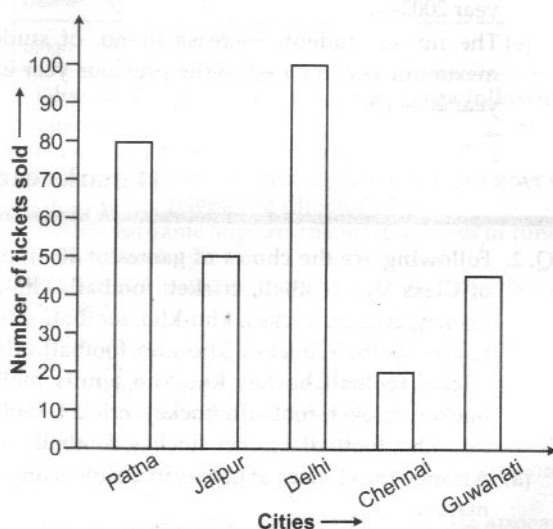


4. The following graph gives the information about the number of railway tickets sold for different cities on a railway ticket counter between 6.00 am and 10.00 am. Read the bar graph and answer the following questions.

- How many tickets were sold in all?
- For which city were the maximum number of tickets sold?
- For which city were the minimum number of tickets sold?
- Name the cities for which the number of tickets sold is more than 20.
- Fill in the blank

Number of tickets sold for Delhi and Jaipur together exceeds the total number of tickets sold for Patna and Chennai by.

Graph



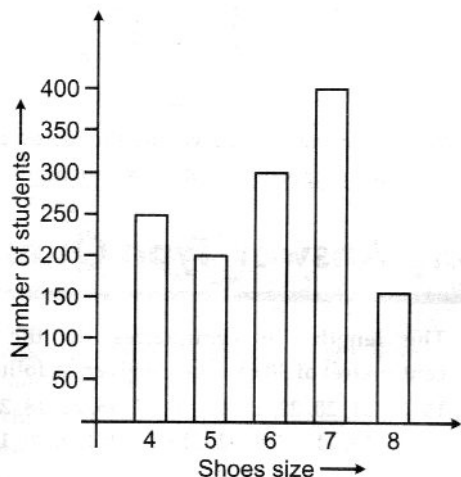
- From the given bar graph, it is clear that the height of bar graph is represented by the number of tickets sold.  
 $\therefore$  Number of tickets sold for Patna = 80  
 Number of tickets sold for Jaipur = 50  
 Number of tickets sold for Delhi = 100  
 Number of tickets sold for Chennai = 20  
 And number of tickets sold for Guwahati = 45  
 Now, total number of tickets sold for all cities =  $80 + 50 + 100 + 20 + 45 = 295$ .
- From the given bar graph, it is clear that maximum number of tickets sold is shown by largest bar (i.e. 100). Hence, the maximum number of tickets sold for Delhi.
- From the given bar graph, it is clear that minimum number of tickets sold is shown by smallest bar (i.e. 20). Hence, the minimum number of tickets were sold for Chennai.
- From the given bar graph, it is clear that tickets sold for cities Patna, Jaipur, Delhi and Guwahati is more than 20.

e. From the given bar graph, number of tickets sold for Delhi and Jaipur =  $100 + 50$   
= 150

And number of tickets sold for Patna and Chennai =  $80 + 20 = 100$

$\therefore$  Number of tickets sold for Delhi and Jaipur together exceeds the total number of tickets sold for Patna and Chennai by 50 (i.e.  $150 - 100 = 50$ ).

5. The following bar graph represents the data for different sizes of shoes worn by the students in a school. Read the graph and answer the following questions.



- Find the number of students whose shoe sizes have been collected.
- What is the number of students wearing shoe size 6?
- What are the different sizes of the shoes worn by the students?
- Which shoe size is worn by the maximum number of students?
- Which shoe size is worn by minimum number of students?
- State whether true or false:

The total number of students wearing shoe sizes 5 and 8 is the same as the number of students wearing shoe size 6.

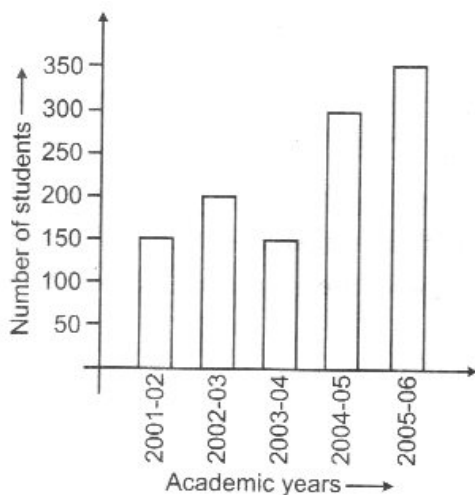
- The no. of students whose shoe size have been collected =  $250 + 200 + 300 + 400 + 150 = 1300$
- The no. of students wearing shoe size 6 = 300
- The different sizes of the shoes worn by the students are: 4, 5, 6, 7, & 8.
- The maximum no. of students worn shoe size is 7.
- The minimum no. of students worn shoe size is 8.
- The given statement is false.

Next Generation School



6. Read the bar graph given below and answer the following questions:

Scale: 1 unit = 50



- What information is given by the bar graph?
- In which year is the number of students maximum?
- In which year is the number of students twice as that of 2001 - 02?
- In which year did the number of students decrease as compared to previous year?
- In which year is the increase in number of students maximum as compared to the previous year?

- Number of students in different Academic year.
- The no. of students maximum in year 2005-06.
- The no. of students twice as that of 2001-02 is the year 2004-05.
- The decrease as compared to previous year is the year 2003-04.
- The no. of students increase in no. of students maximum as compared to the previous year is the year 2004-05.

### III Short Answer

1. Fill in the blanks:

- On the scale of 1 unit length = 10 crore , the bar of length 6 units will represent \_\_\_\_\_ crore and of \_\_\_\_\_ units will represent 75 crore.
- In a bar graph, bars of \_\_\_\_\_ width can be drawn horizontally or vertically with \_\_\_\_\_ spacing between them.

iii. Each item of the data is called an \_\_\_\_\_.

iv. Tallies are usually marked in bunches of \_\_\_\_\_.

Sol. (i) 60, 7.5 (ii) uniform, equal (iii) observation (iv) fives

2. The marks obtained by the students in a class that (out of 10) are given below: 6, 9, 8, 5, 5, 4, 9, 8, 5, 6, 9, 9, 7, 8, 9, 7, 6, 9, 8, 6, 7, 5, 8, 9, 4, 5, 8, 7.

Represent the above data in the form of a frequency distribution table.

Sol. We may present the data, as shown below:

Marks	Tally Marks	Frequency
4		2
5		5
6		4
7		4
8		6
9		7

3. Thirty students were interviewed to find out what they want to be in future. Their responses are listed as below:

Doctor, engineer, doctor, pilot, officer, doctor, engineer, doctor, pilot, officer, pilot, engineer, officer, pilot, doctor, engineer, pilot, officer, doctor, officer, doctor, pilot, engineer, doctor, pilot, officer, doctor, pilot, doctor, engineer.

Arrange the data in a table using tally marks.

Responses	Tally Marks	No. of Responses
Doctor		10
Engineer		6
Pilot		8
Officer		6

4. The number of two wheelers owned individually by each of 50 families are listed below. Make a table using tally marks.

1, 1, 2, 1, 1, 1, 2, 1, 1, 1, 0, 1, 1, 2, 3, 1, 2, 1, 1, 2, 1, 2, 3, 1, 0, 2, 1, 0, 2, 1, 2, 1, 2, 1, 1, 4, 1, 3, 1, 1, 2, 1, 1, 1, 1, 2, 3, 2, 1, 1.

Find the number of families having two or more, two wheelers.

Sol. We may prepare table, as shown below:

No. of two wheelers	Tally Marks	No. of Families
0		3
1		28
2		14
3		4
4		1

The number of families having two or more than two wheelers is 19.

5. Following is the choice of sweets of 30 students of Class VI.

Laddoo, Barfi, Laddoo, Jalebi, Laddoo, Rasgulla, Jalebi, Laddoo, Barfi, Rasgulla, Laddoo, Jalebi, Jalebi, Rasgulla, Laddoo, Rasgulla, Jalebi, Laddoo, Rasgulla, Laddoo, Laddoo, Barfi, Rasgulla, Rasgulla, Jalebi, Rasgulla, Laddoo, Rasgulla, Jalebi, Laddoo.

- Arrange the names of sweets in a table using tally marks.
- Which sweet is preferred by most of the students?

Sol. (i)

Sweets	Tally Marks	Number of Students
Laddoo		11
Barfi		3
Jalebi		7
Rasgulla		9

(ii) Most of the students prefer Laddoo.

6. The number of girl students in each class of a co-educational middle school is depicted by the pictograph:








Classes	Number of Girl Students
I	6 Girls
II	5 Girls
III	5 Girls
IV	4 Girls
V	3 Girls
VI	4 Girls
VII	3 Girls
VIII	2 Girls

Observe this pictograph and answer the following questions:

- Which class has the minimum number of girl students?
- Is the number of girls in Class VI less than the number of girls in Class V?
- How many girls are there in Class VII?

Sol. (i) VIII (ii) No (iii) 12

7. In a village six fruit merchants sold the following number of fruit baskets in a particular season:








Name of Fruit Merchants	Number of Fruit Baskets	 → 100 Fruit Baskets
Rahim		
Lakhanpal		
Anwar		
Martin		
Ranjit Singh		
Joseph		

Observe this pictograph and answer the following questions:

- Which merchant sold the maximum number of baskets?
- How many fruit baskets were sold by Anwar?
- The merchants who have sold 600 or more number of baskets are planning to buy a godown for the next season. Can you name them?

Sol. (i) Martin (ii) 700 (iii) Anwar, Martin, Ranjit, Singh.

8. The following pictograph depicts the information about the areas in sq km (to nearest hundred) of some districts of Chhattisgarh State:

District	Area (in km <sup>2</sup> )	 → 1000 sq km
Raigarh		
Rajnandgaon		
Dhamtari		
Mahasamund		
Kabirdham		
Jashpur		



- i. What is the area of Dhamtari district?
- ii. Which two districts have the same area?
- iii. How many districts have area more than 5000 square kilometers?

Sol.

- i. 6000 sq km
- ii. Raigarh and Jashpur
- iii. 4

9. The number of fans sold by a shopkeeper during 6 months are given below:

Month	March	April	May	June	July	August
Number of fans sold	30	40	60	50	20	30

Taking the scale : 10 fans sold, draw the pictograph.

Sol. We draw the pictograph as shown below taking, scale : = 10 fans.

Months	No. of Fans Sold  = 10 fans
March	
April	
May	
June	
July	
August	




Next Generation School

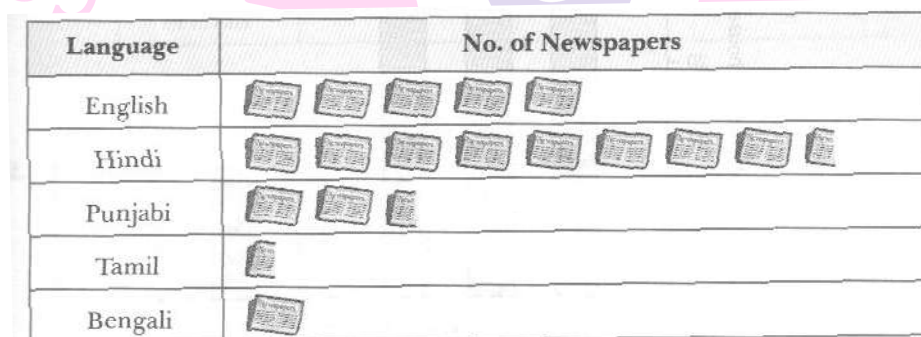
10. The following table gives information about the circulation of newspapers in a town in five languages.

Language	English	Hindi	Punjabi	Tamil	Bengali
Number of Newspapers	5000	8500	2500	500	1000

Prepare a pictograph of the above data, using a symbol of your choice, each representing 1000 newspaper.

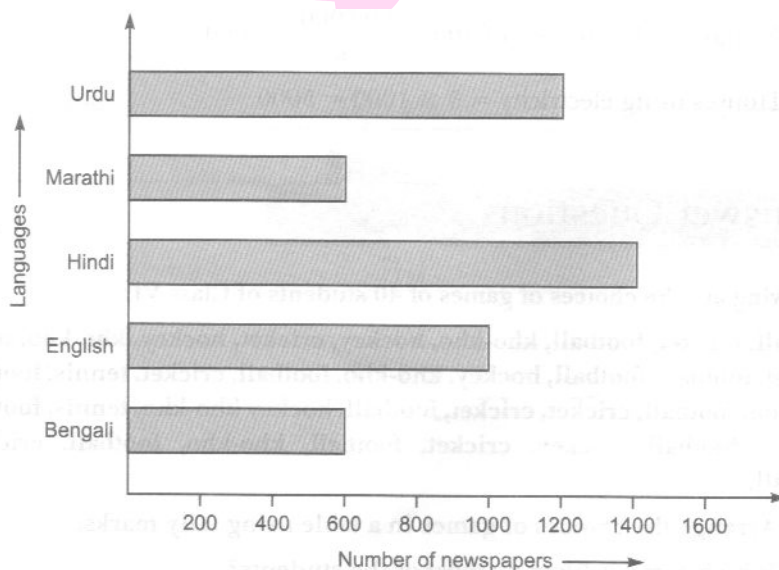
Sol. Scale  = 1000 newspapers

Now, we draw pictograph



11. The bar graph given below represents the circulation of newspapers in different languages in a town. Study the bar graph and answer the following questions:

- What is the circulation of English newspapers?
- Name the two languages in which circulation of newspapers is the same.
- By how much is the circulation of newspapers in Hindi more than the newspaper in Bengali?



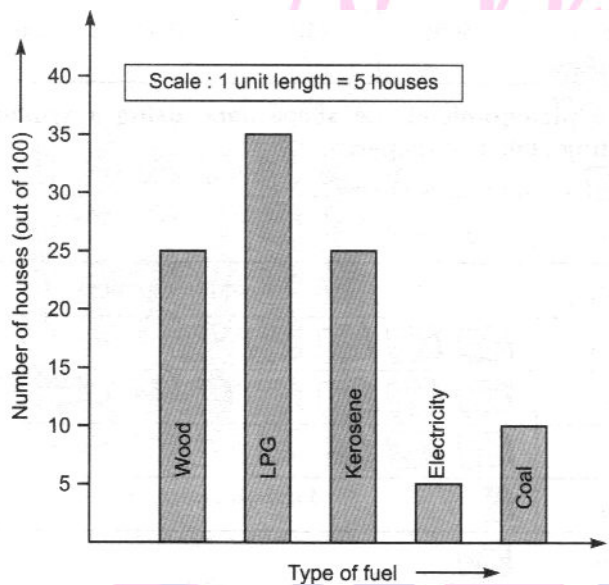
Sol. (i) 1000

(ii) Marathi and Bengali

(iii) 800

12. The following bar graph shows the number of houses (out of 100) in a town using different types of fuels for cooking.

Read the bar graph and answer the following questions:



- (i) Which fuel is used in maximum number of houses?
- (ii) How many houses are using coal as fuel?
- (iii) Suppose that the total number of houses in the town is 1 lakh. From the above graph estimate the number of houses using electricity.

Sol. (i) LPG

(ii) 10

(iii) Number of houses out of 100 =  $\frac{1,00,000}{100} = 1000$

Houses using electricity =  $5 \times 1000 = 5000$

Responses	Tally marks	Number of responses
Doctor		10
Engineer		6
Pilot		8
Officer		6

Next Generation School

## IV Short Answer

1. The blood groups of 25 students are recorded as follows:

A, B, O, A, AB, O, A, O, B, A, AB, AB, A, A, B, B, O, B, AB, O, A, B.

Arrange the information in a table using tally marks.

Blood group	Tally marks	Number of students
A	≠ III	8
B	≠ II	7
O	≠ I	6
AB	III	4

2. The following pictograph depicts the information about the areas in sq km (to nearest hundred) of some districts of Chhattisgarh State.

District	Area (in km <sup>2</sup> )      ⊗ = 1000 sq km
Raigarh	⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗
Rajnandgaon	⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗
Koria	⊗ ⊗ ⊗ ⊗ ⊗ ⊗
Mahasamund	⊗ ⊗ ⊗ ⊗ ⊗
Jashpur	⊗ ⊗ ⊗ ⊗ ⊗ ⊗ ⊗

- a. What is the area of Koria district?
  - b. Which two districts have the same area?
  - c. How many districts have area more than 5000 square kilometers?
- a. Area of Koria district = 6000 sq km
  - b. Raigarh and Jashpur have the same area.
  - c. Four districts have area more than 5000 sq km.

3. Rakesh is playing with a dice. He threw the dice 40 times and noted the outcomes as follows.

1, 2, 1, 5, 3, 5, 5, 3, 2, 2, 1, 6, 6, 6, 4, 6, 3, 5, 2, 3, 3, 5, 4, 1, 5, 5, 2, 4, 5, 5, 2, 4, 1, 6, 6, 1, 5, 6, 1, 5.

We draw the following table using tally marks for given information.

Numbers	Tally marks	Number of times
1	≠ II	7
2	≠ I	6
3	≠ I	5
4	≠ III	4
5	≠ ≠ I	11
6	≠ II	7



4. Thirty students were interviewed to find out what they want to be in future. Their responses are listed as below.

Doctor, engineer, doctor, pilot, officer, doctor, engineer, doctor, pilot, officer, pilot, engineer, officer, pilot, doctor, engineer, pilot, officer, doctor, officer, doctor, pilot, engineer, doctor, pilot, officer, doctor, pilot, doctor, engineer.

Arrange the data in a table using tally marks.

We draw the following table using tally marks for given information.

Responses	Tally marks	Number of responses
Doctor		10
Engineer		6
Pilot		8
Officer		6

### I Long Answer

1. The lengths in centimetres (to the nearest centimetre) of 30 carrots are given as follows:

15, 22, 21, 20, 22, 15, 15, 20, 20, 15, 20, 18, 20, 22, 21, 20, 21, 18, 18, 20, 18, 21, 18, 22, 20, 15, 21, 18, 20

Arrange the data given above in a table using tally marks and answer the following questions.

- What is the number of carrots which have length more than 20 cm?
- Which length of the carrots occur maximum number of times? Minimum number of times?

On arranging the given data in a table using tally marks, we get the following table.

Carrots (length in cm)	Tally marks	number of carrots
15		5
18		6
20		9
21		6
22		4

a. Here we have to find the length of the carrots having more than 20 cm. So we have to add the carrots having length 21 cm and 22 cm.

$$\therefore \text{Number of such carrots} = 6 + 4 = 10$$

b. From the table, we can say that length of carrots 20 cm occurs the maximum number of times i.e. 9 times and the length of carrots 22 cm occurs the minimum number of times i.e. 4 times.

2. Following are the choice of games of 40 students of Class VI: football, cricket, football, kho-kho, hockey, cricket, hockey, kho-kho, football, cricket, tennis, football, hockey, kho-kho, football, cricket, cricket, football, hockey, kho-kho, tennis, football, hockey, cricket, football, hockey, cricket, football, kho-kho, football, cricket, hockey, football.

a. Arrange the choice of games in a table using tally marks.

b. Which game is liked by most of the students?

c. Which game is liked by minimum number of students?

a. Firstly, write the name of games in first column, then in second column use tally marks to represent number of students lie corresponding games and in the third column write the number of students. Thus, we get the following table.

Games	Tally marks	Number of students
Football		13
Cricket		9
Kho-kho		6
Hockey		8
Tennis		4
Total		40

b. By examine the above table, we see that the football is liked by most of the students, (i.e. 13 students)

c. By examine the above table, we see that the tennis is liked by minimum number of students (i.e. 4 students).

## II Long Answer

1. The number of scouts in a school is depicted by the following pictograph:

Class	Number of scouts	= 10 scouts
VI		
VII		
VIII		
IX		
X		

Observe the pictograph and answer the following questions:

- i. Which class has the minimum number of scouts?
- ii. Which class has the maximum number of scouts?
- iii. How many scouts are there in Class VI?
- iv. Which class has exactly four times the scouts as that of Class X?
- v. What is the total number of scouts in the Classes VI to X?

- (i) X      (ii) VIII      (iii) 40      (iv) VI      (v) 160

2. The following pictograph depicts the information about the sale of electric bulbs on different days of a weeks:

Days	Number of bulbs	= 2 bulbs
Monday		
Tuesday		
Wednesday		
Thursday		
Friday		
Saturday		
Sunday		

Observe the pictograph and answer the following questions:

- i. How many bulbs were sold on Wednesday?
- ii. On which day maximum number of bulbs were sold?
- iii. If one bulb was sold at the rate of ₹ 10, what was the total earning of Sunday?
- iv. Can you find out the total earning of the week?
- v. If one big carton can hold 9 bulbs. How many cartons were needed in the given week, more than 7, more than 8 or more than 9?

Sol.

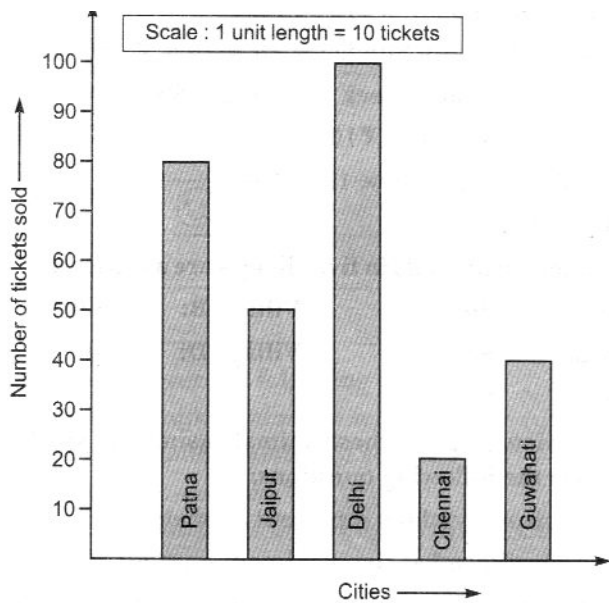
- i. 8
- ii. Sunday
- iii. Bulb sold on Sunday =  $9 \times 2 = 18$   
Rate of each bulb = ₹ 10  
Total earning on Sunday =  $18 \times 10 = ₹ 180$
- iv. Total bulb sold in week =  $43 \times 2 = 86$   
Rate of each bulb = ₹ 10  
Total earning =  $86 \times 10 = ₹ 860$
- v. More than 9.

6. The following graph gives the information about the number of railway tickets sold for different cities on a railway ticket counter between 6.00 am to 10.00 am.

Read the bar graph and answer the following questions:

- i. How many tickets were sold in all?
- ii. For which city were the maximum number of tickets sold?
- iii. For which city were the minimum number of tickets sold?
- iv. Name the cities for which the number of tickets sold is more than 20.
- v. Fill in the blanks:

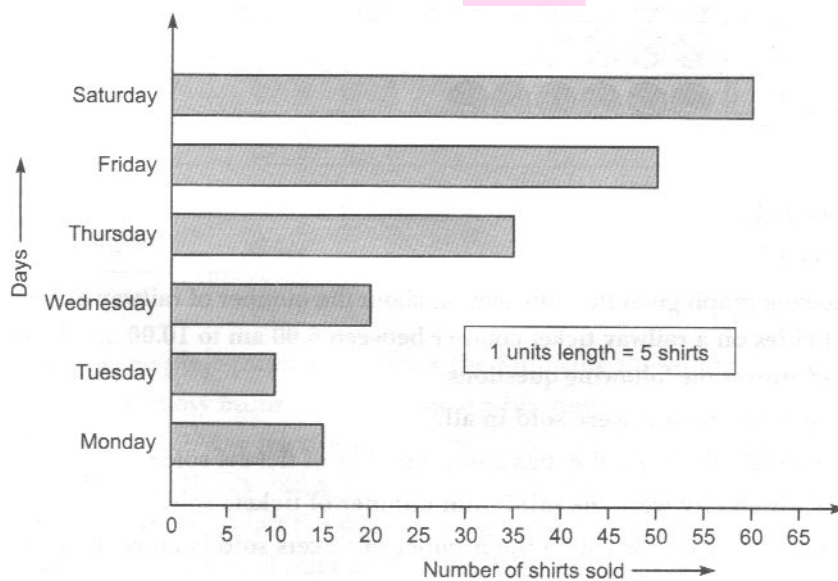
Number of tickets sold for Delhi and Jaipur together exceeds the total number of tickets sold for Patna and Chennai by \_\_\_\_\_.



Sol.

- (i) 290
- (ii) Delhi
- (iii) Patna, Jaipur, Delhi, GUwahati
- (iv) 50

7. Observe this bar graph which is showing the sale of shirts in a readymade shop from Monday to Saturday.



Now answer the following questions:

- i. What information does the above bar graph give?

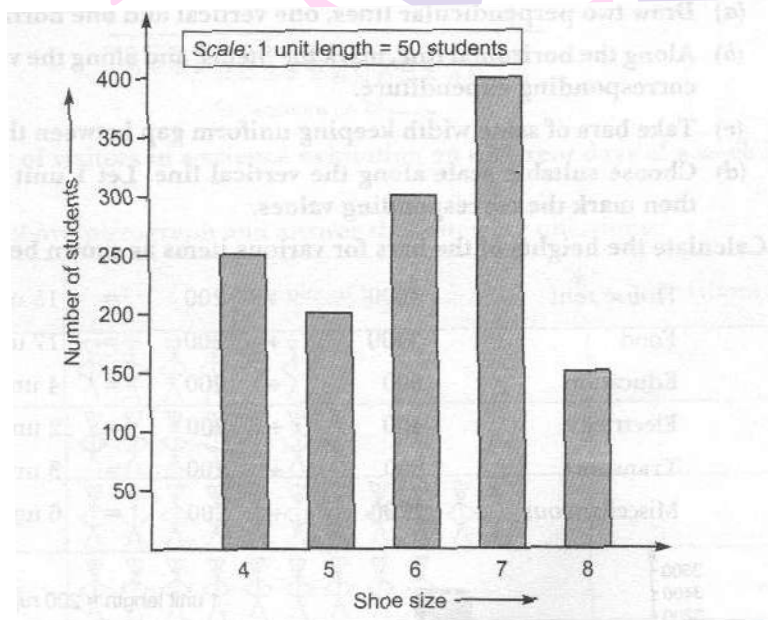


- ii. What is the scale chosen on the horizontal line representing number of shirts?
- iii. On which day were the maximum number of shirts sold? How many shirts were sold on that day?
- iv. On which day were the minimum number of shirts sold?
- v. How many shirts were sold on Thursday?

Sol.

- i. This graph shows the number of shirts sold from Monday to Saturday.
- ii. 1 unit = 5 shirts
- iii. Saturday, 60
- iv. Tuesday
- v. 35

8. The following bar graph represents the data for different sizes of shoes worn by the students in a school. Read the graph and answer the following questions.



- i. Find the number of students whose shoe sizes have been collected.
- ii. What is the number of students wearing shoe size 6?
- iii. What are the different sizes of the shoes worn by the students?
- iv. Which shoe size is worn by the maximum number of students?
- v. Which shoe size is worn by minimum number of students?

vi. State whether true or false:

The total number of students wearing shoe sizes 5 and 8 is the same as the number of students wearing shoe size 6.

Sol.

- i. 1300
- ii. 300
- iii. 4, 5, 6, 7, 8
- iv. 7
- v. 8
- vi. False.

**III Long answer**




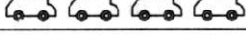

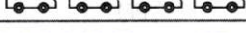
1. The sale of cars of Maruti Udhog in the city of Delhi from January to June in a year are as follows.

Take  = 50 cars

Months	January	February	March	April	May	June
Number of cars	350	400	250	200	350	200

Represent them as a pictograph.

We draw the following table using given information.

Months	Number of cars
January	
February	
March	
April	
May	
June	

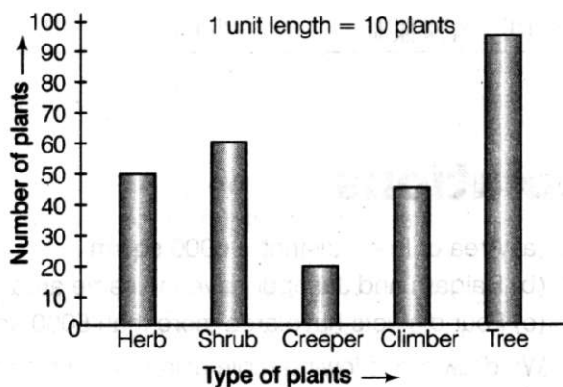
2. In a botanical garden, the number of different types of plants are found as follows:

Types of the plants	Number of plants
Herb	50
Shrub	60
Creeper	20
Climber	45
Tree	95

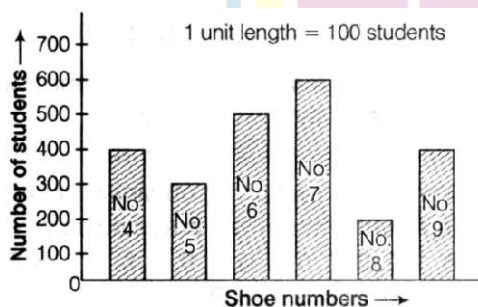
Draw a bar graph to represent the above information and answer the following questions.

- Which type of plant is maximum in number in the garden?
- Which type of plant is minimum in number in the garden?

- Tree is maximum in number in the garden.
- Creeper is minimum in number in the garden.



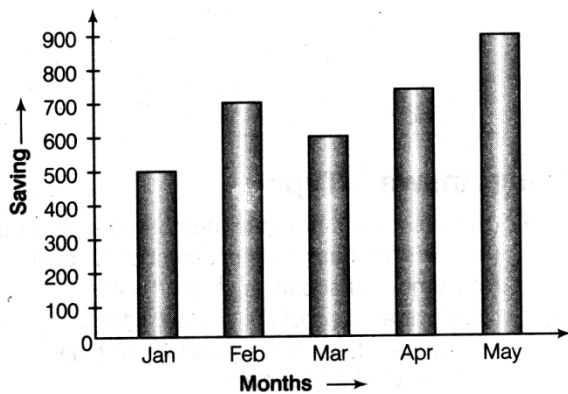
3. Read the following bar graph and answer the questions given below.



- What does this bar graph represent?
- Mention the different number of shoes worn by the students.



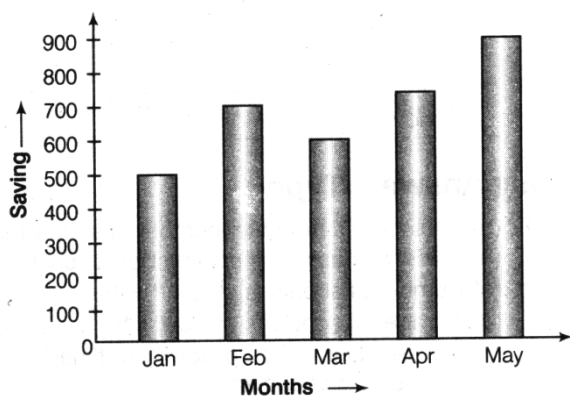
- iii. Which shoe number is worn by maximum number of students?
- iv. Which shoe number is worn by minimum number of students?
- v. How many students worn shoe number 9?
- vi. Find total number of students in the school.



- i. This bar graph represents the shoes worn by the students of different numbers.
- ii. Different number of shoes worn by the students are 4, 5, 6, 7, 8 and 9.
- iii. Shoes number 7 is worn by maximum number of students.
- iv. Shoe number 8 is worn by minimum number of students.
- v. 400 students worn shoe number 9.
- vi. Total number of students in the school =  $400 + 300 + 500 + 600 + 200 + 400 = 2400$

4. Soniya saves ₹ 500 in January, ₹ 700 in February, ₹ 600 in March, ₹ 750 in April and ₹ 900 in May.

- a. Draw a bar graph to represent Soniya's saving.
- b. In which month, her saving is maximum?
- c. What value is depicted by Soniya?



- a. Let 1 unit length = ₹100
- b. In May, her saving is maximum.
- c. Economy saving for future planning.

5. Fill in the blanks in the following table, which represents shirt size of 40 students of a school.

Shirt size	Tally marks	Number of students
30		3
32		—
34	—	8
36		—
38		10
40	—	7

i.  $\overline{\text{||||}}$  Shows four vertical lines and one intersecting line.

∴ It counts to be four plus one (i.e.5)

ii. We know that,  $8 = 5 + 3$

Here, 5 is represented by  $\overline{\text{||||}}$  and is represented by

∴ 8 is represented by

iii. Means  $5 + 2$  i.e. 7.

iv. We know that,  $10 = 5 + 5$

Here, 5 is represented by  $\overline{\text{||||}}$

∴ 10 is represented by  $\overline{\text{||||}} \overline{\text{||||}}$

v. We know that,  $10 = 5 + 5$

Here, 5 is represented by  $\overline{\text{||||}}$  and 2 is represented by

∴ 7 is represented by  $\overline{\text{||||}}$

Thus, the complete table is shown below.

Shirt size	Tally marks	Number of students
30		3
32	$\overline{\text{    }}$	5
34	$\overline{\text{    }}$	8
36	$\overline{\text{    }}$	7
38	$\overline{\text{    }}$ $\overline{\text{    }}$	10
40	$\overline{\text{    }}$	7

6. The following table gives information about the circulation of newspaper (dailies) in a town in five languages.

Language	English	Hindi	Tamil	Punjab	Gujarati
Number of newspapers	5000	8500	500	2500	1000

Prepare a pictograph of the above data, using a symbol of your choice.

1000 newspapers can be represented by  $\boxed{+}$  and 500 newspaper represented by  $\square$

**For English language**

5000 newspapers can be represented by 5 complete symbols.

**For Hindi language**

8500 newspapers can be represented by 8 complete and 1 incomplete symbol.

**For Tamil language**

500 newspapers can be represented by 1 incomplete symbol.

**For Punjabi language**  $\boxed{+}$

2500 newspapers can be represented by 2 complete symbol and 1 incomplete symbol.

**For Gujarati language**

1000 newspapers can be represented by 1 complete symbol.

Hence, the required pictograph of given data is shown below.

Take  $\boxed{+}$  = 1000 newspapers and  $\square$  = 500 newspaper

Language	Numbers of newspapers
English	$\boxed{+}\boxed{+}\boxed{+}\boxed{+}\boxed{+}$
Hindi	$\boxed{+}\boxed{+}\boxed{+}\boxed{+}\boxed{+}\boxed{+}\boxed{+}\boxed{+}\square$
Tamil	$\square$
Punjabi	$\boxed{+}\boxed{+}\square$
Gujarati	$\boxed{+}$

## I High Order Thinking Skills

1. Following pictograph represents some surnames of people listed in the telephone directory of a city .

Surname	Number of people	- 100 people
Khan		
Patel		
Rao		
Roy		
Saikia		
Singh		

Observe the pictograph and answer the following questions:

- How many people have surname 'Roy'?
- Which surname appears the maximum number of times in the telephone directory?
- Which surname appears the least number of times in the directory?
- Which two surname appear an equal number of times?

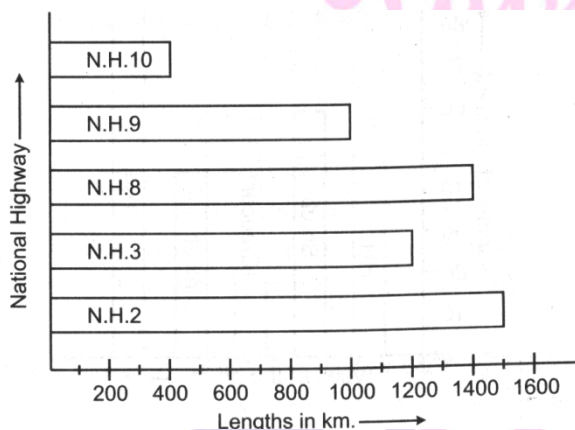
In the given pictograph, 1 palm = 100 people

- The total number of palm having surname Roy = 4  
 $\therefore$  The total number of people having surname Roy =  $4 \times 100 = 400$  people
- From the given table, we see that the patel appears the maximum number of times in the telephone directory i.e.  $5 \times 100 = 500$  times.
- From the given table, we see that the saikia appears the minimum number of times in the telephone directory i.e.  $2 \times 100 = 200$  times
- From the given table, we see that the Rao, Khan and Roy has appears the same
- number of times in the telephone directory i.e.  $4 \times 100 = 400$  times.

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2. The bar graph given below represents approximate length (in kilometres) of some National High ways in India. Study the bar graph and answer the following questions:

Scale: 1 unit length = 200 km



- Which National Highway (N.H.) is the longest among the above?
  - Which National Highway is the shortest among the above?
  - What is the length of National Highway 9?
  - Length of which National Highway is about three times the Nation Highway 10?
- N.H. 2 is the longest among the above
  - N.H. 10 is the shortest among the above
  - The length of N.H. 9 is 900 km.
  - N.H. 8 is about three times of the N.H. 10.



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## II High Order Thinking Skills

1 .Following table shows the monthly expenditure of Imran's family on various items.

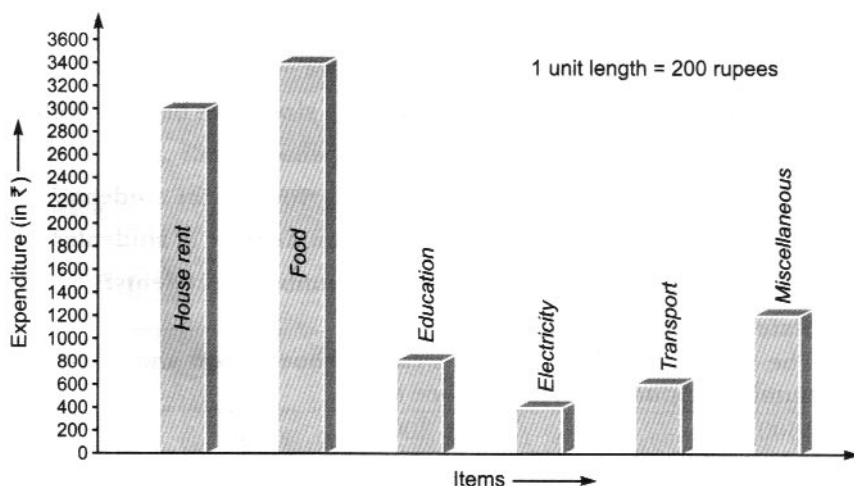
Items	Expenditure (in ₹)
House rent	3000
Food	3400
Education	800
Electricity	400
Transport	600
Miscellaneous	1200

To represent this data in the form of a bar diagram, here are the steps.

- Draw two perpendicular lines, one vertical and one horizontal.
- Along the horizontal line, mark the 'items' and along the vertical line, mark the corresponding expenditure.
- Take bars of same width keeping uniform gap between them.
- Choose suitable scale along the vertical line. Let 1 unit length = ₹ 200 and then mark the corresponding values.

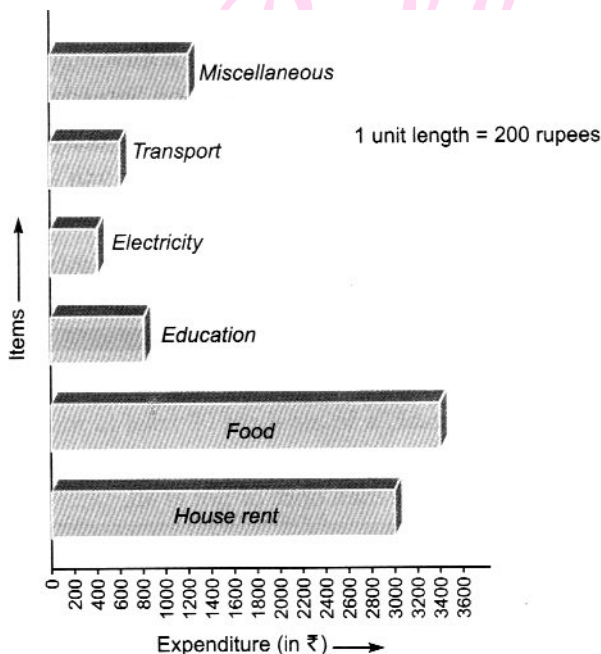
Sol. Calculate the heights of the bars for various items as shown below.

House rent	:	3000	÷	200	=	15 units
Food	:	3400	÷	200	=	17 units
Education	:	800	÷	200	=	4 units
Electricity	:	400	÷	200	=	2 units
Transport	:	600	÷	200	=	3 units
Miscellaneous	:	1200	÷	200	=	6 units





Same data can be represented by interchanging positions of items and expenditure as shown below:



2. The number of visitors in a science exhibition on different days of a week is shown below:

Look at the above pictograph and answer the following questions:

Days	Number of bulbs	☼ = 100 visitors
Monday	☼ ☼ ☼ ☼ ☼ ☼	
Tuesday	☼ ☼ ☼ ☼ ☼ ☼ ☼	
Wednesday	☼ ☼ ☼ ☼ ☼ ☼ ☼ ☼ ☼	
Thursday	☼ ☼ ☼ ☼ ☼ ☼ ☼ ☼	
Friday	☼ ☼ ☼ ☼ ☼ ☼ ☼	
Saturday	☼ ☼ ☼ ☼ ☼ ☼ ☼ ☼ ☼ ☼ ☼	

- What is the total number of visitors from Monday to Saturday?
- On which day was the number of visitors maximum? What was their total number?
- On which day was the number of visitors minimum?

- iv. On which day was the number of visitors same as the number of visitors on two days taken together?

Sol. Number of visitors on Monday, Tuesday, Wednesday, Thursday, Friday, and Saturday were 550, 700, 1000, 900, 900 and 1250 respectively.

- i. The total number of visitors from Monday to Saturday =  $550 + 700 + 1000 + 900 + 900 + 1250 = 5300$ .
- ii. The number of visitors was maximum on Saturday and the number was 1250.
- iii. The number of visitors was minimum on Monday and the number was 550.

The number of visitors on Saturday was 1250 which was equal to the total number of visitors on Monday (550) and Tuesday (700).

### I. Value based questions

1. In a botanical garden, the number of different types of plants are found as follows.

Name of the plant	Number of plants
Herb	50
Shrub	60
Creeper	20
Climber	45
Tree	95

Draw a bar graph to represent the above information and answer the following questions:

- a. Which type of plant is maximum in number in the garden?
- b. Which type of plant is minimum number in the garden?

To draw a bar graph, we will use the following steps:

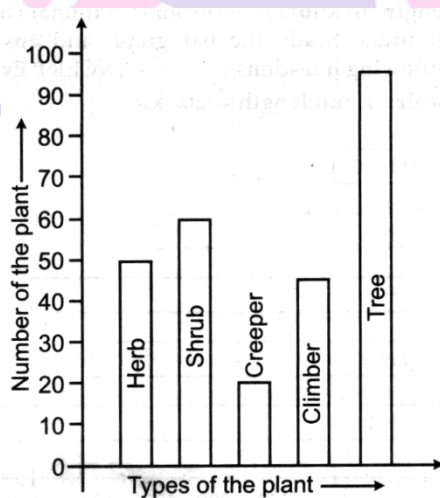
- i. Firstly, draw two perpendicular lines, one is horizontal and one is vertical. Along the horizontal line, mark 'type of the plant' and along the vertical line mark 'Number of plants'.

- ii. Now, take scale of 1 unit length = 10 plants along the vertical lines and then mark the corresponding values.

Also, the heights of the bars for various type of the plant are as follows:

Type of the plant	Height of bar group
Herb	$\frac{50}{10} = 5$
Shrub	$\frac{60}{10} = 6$
Creeping	$\frac{20}{10} = 2$
Climber	$\frac{45}{10} = 4.5$
Tree	$\frac{95}{10} = 9.5$

- iii. Draw bars of equal width and of heights calculated in step (ii) on the horizontal line with equal spacing (or gap) Thus, we get the following bar graph

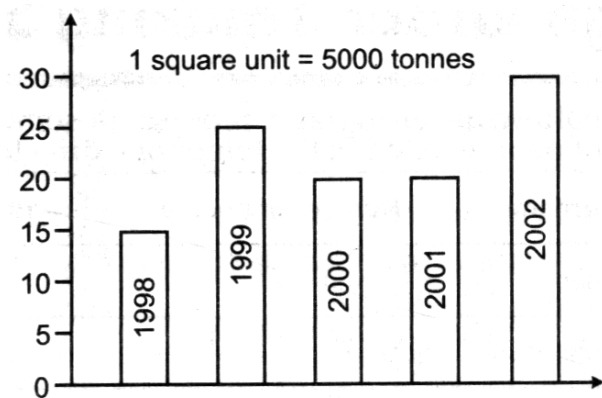


- Trees are the maximum in number in the garden
- Creepers are the minimum in number in the garden

2. (i) Form a discrete frequency distribution from the following scores:

15, 18, 16, 20, 25, 10, 16, 15, 18, 18, 16, 24, 15, 20, 28, 30, 27, 16, 24, 25, 20, 18, 28, 27, 25, 24, 24, 18, 18, 18, 20, 16, 15, 20, 27, 28, 29, 16

- i. The bar graph given alongside shows the amount of wheat purchased government during the years 1998-2002.



- a. The wheat production maximum?
- b. The wheat production minimum?

i. Frequency distribution of scores

Variate	Tally marks	Frequency
15		4
16		6
18		7
20		6
24		5
25		4
27		3
28		3
29		1
30		1
<b>Total</b>		<b>40</b>

- ii.
  - a. The wheat production was maximum in the year 2002.
  - b. The wheat production was minimum in the year 1998.



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