# 11. Statistics

**1. The weight of 45 students in a class as follows :**

**38, 42, 35, 45, 40, 42, 35, 38, 40, 45, 45, 38, 40, 42, 35, 35, 40, 45, 38, 35, 35, 40, 42, 38, 45, 38, 40, 42,35, 38, 40, 38, 35, 35, 42, 40, 45, 35, 45,42, 42, 35, 38, 40, 38.**

**Prepare a frequency table and find the mean of the data.**

**Solution : Frequency table :**

| Weight of students (Scores) $x_i$ | Tally Marks | Frequency $f_i$ | $f_i \times x_i$ |
|---|---|---|---|
| 35 | 𝍸 𝍸 \| | 11 | $35 \times 11 = 385$ |
| 38 | 𝍸 𝍸 | 10 | $38 \times 10 = 380$ |
| 40 | 𝍸 \|\|\|\| | 9 | $40 \times 9 = 360$ |
| 42 | 𝍸 \|\|\| | 8 | $42 \times 8 = 336$ |
| 45 | 𝍸 \|\| | 7 | $45 \times 7 = 315$ |
| | | N = 45 | $\sum f_i x_i = 1776$ |

$$\text{Mean } (\overline{x}) = \frac{\sum f_i \times x_i}{N}$$

$$= \frac{1776}{45}$$

$$= \frac{355.2}{9} \quad \text{..... (Dividing by 5)}$$

$$= 39.46$$

∴ **The mean of weight of students in a class is 39.46.**

**2. The rate of coriander of 30 days in the market are given below :**

**5, 3, 4, 3, 4, 5, 5, 4, 4, 5, 3, 4, 5, 5, 5, 3, 3, 4, 5, 3, 5, 3, 3, 4, 5, 5, 4, 3,5, 5.**

**Prepare a frequency table and find the mean of the data.**

| Rate of coriander (Scores) $x_i$ | Tally Marks | Number of coriander (Frequency) $f_i$ | $f_i \times x_i$ |
|---|---|---|---|
| 3 | 𝍸 \|\|\|\| | 9 | $3 \times 9 = 27$ |
| 4 | 𝍸 \|\|\| | 8 | $4 \times 8 = 32$ |
| 5 | 𝍸 𝍸 \|\|\| | 13 | $5 \times 13 = 65$ |
| | | N = 30 | $\sum f_i x_i = 124$ |

$$\text{Mean } (\overline{x}) = \frac{\sum f_i \times x_i}{N}$$

$$= \frac{124}{30}$$

$$= 4.13$$

∴ The mean of the rate of coriander is 4. 13.

**3. The number of boys in the families in a building are given below. Find the mean of data.**

**4, 2, 3, 1, 2, 2, 1, 3, 2, 1, 2, 1, 1, 3, 2.**

**Solution :**

| Family (Scores) $x_i$ | Tally Marks | No. of (Frequency) $f_i$ | $f_i \times x_i$ |
|---|---|---|---|
| 1 | 𝍸 | 5 | $1 \times 5 = 5$ |
| 2 | 𝍸 \| | 6 | $2 \times 6 = 12$ |
| 3 | \|\|\| | 3 | $3 \times 3 = 9$ |
| 4 | \| | 1 | $4 \times 1 = 4$ |
| | | N = 15 | $\sum f_i x_i = 30$ |

$$\text{Mean } (\overline{x}) = \frac{\sum f_i \times x_i}{N}$$

$$= \frac{30}{15} = 2$$

∴ The mean of given data is 2.

**4. The following data is collected in a survey of coconut trees of 15 families in a colony.**

**4, 5, 0, 3, 2, 1, 3, 3, 1, 2, 4, 3, 0, 1, 3.**

**Find the mean of coconut trees.**

| Coconut Trees (Scores) $x_i$ | Tally Marks | No. of coconut trees (Frequency) $f_i$ | $f_i \times x_i$ |
|---|---|---|---|
| 0 | \|\| | 2 | $0 \times 2 = 0$ |
| 1 | \|\|\| | 3 | $1 \times 3 = 3$ |
| 2 | \|\| | 2 | $2 \times 2 = 4$ |
| 3 | 𝍸 | 5 | $3 \times 5 = 15$ |
| 4 | \|\| | 2 | $4 \times 2 = 8$ |
| 5 | \| | 1 | $5 \times 1 = 5$ |
| | | N = 15 | $\sum f_i x_i = 35$ |

$$\text{Mean } (\bar{x}) = \frac{\sum f_i \times x_i}{N}$$

$$= \frac{35}{15} = 2.33$$

∴ The mean of coconut trees is 2.33.

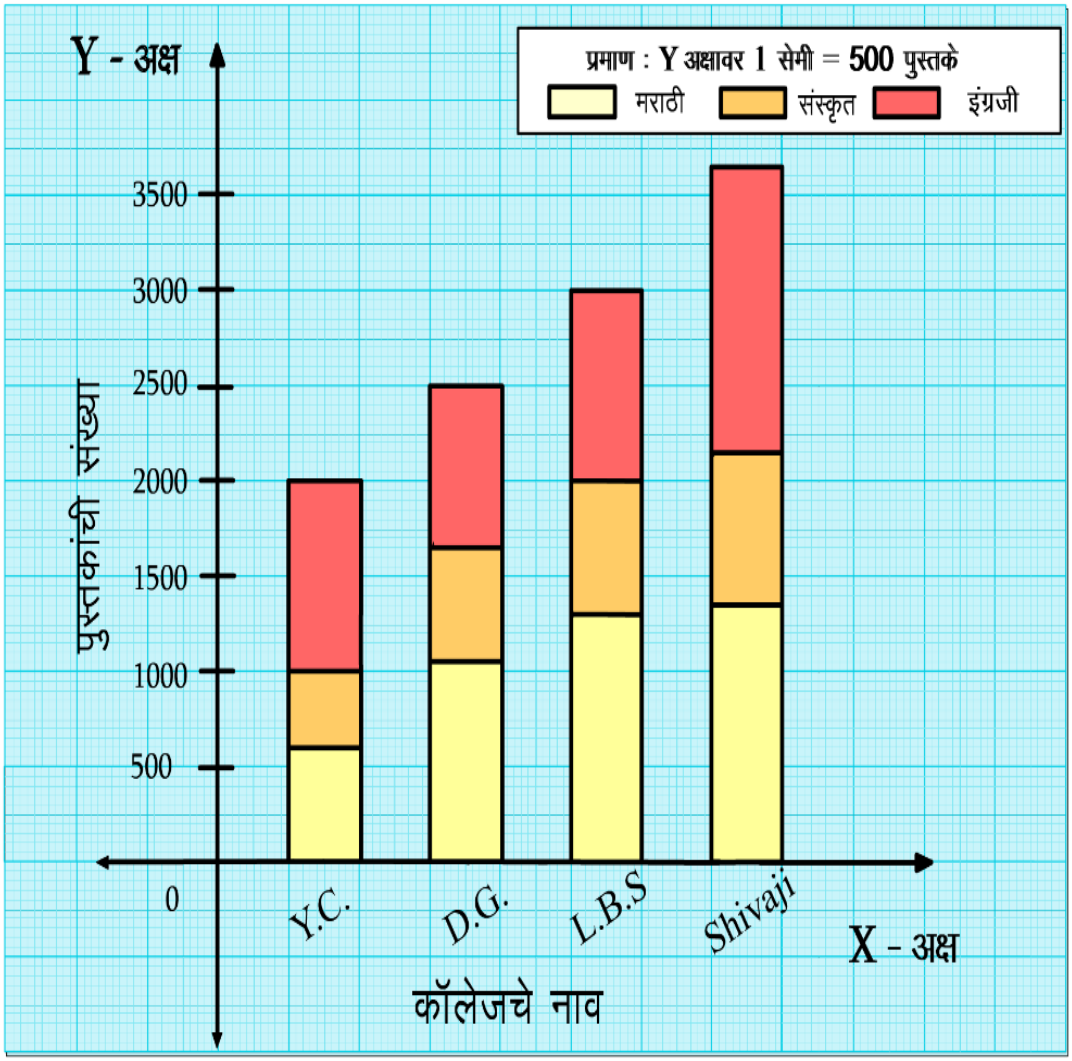
**5. In the following table the number of books of Marathi, Sanskrit and English in a library of four collage in a city is given. Show the data with the help of subdivided bar graph.**

| College / Subject | Y.C. | D.G | L.B.S. | Shivaji |
|---|---|---|---|---|
| Marathi | 600 | 1050 | 1300 | 1350 |
| Sunskrit | 400 | 600 | 700 | 800 |
| English | 1000 | 850 | 1000 | 1500 |

## Solution :

| College / Subject | Y.C. | D.G | L.B.S. | Shivaji |
|---|---|---|---|---|
| Marathi | 600 | 1050 | 1300 | 1350 |
| Sanskrit | 400 | 600 | 700 | 800 |
| English | 1000 | 850 | 1000 | 1500 |
| | 2000 | 2500 | 3000 | 3650 |

## Graph :


Y - अक्ष
प्रमाण : Y अक्षावर 1 सेमी = 500 पुस्तके
मराठी
संस्कृत
इंग्रजी
3500
3000
2500
2000
1500
1000
500
0
पुस्तकांची संख्या
Y.C.
D.G.
L.B.S
Shivaji
X - अक्ष
कॉलेजचे नाव

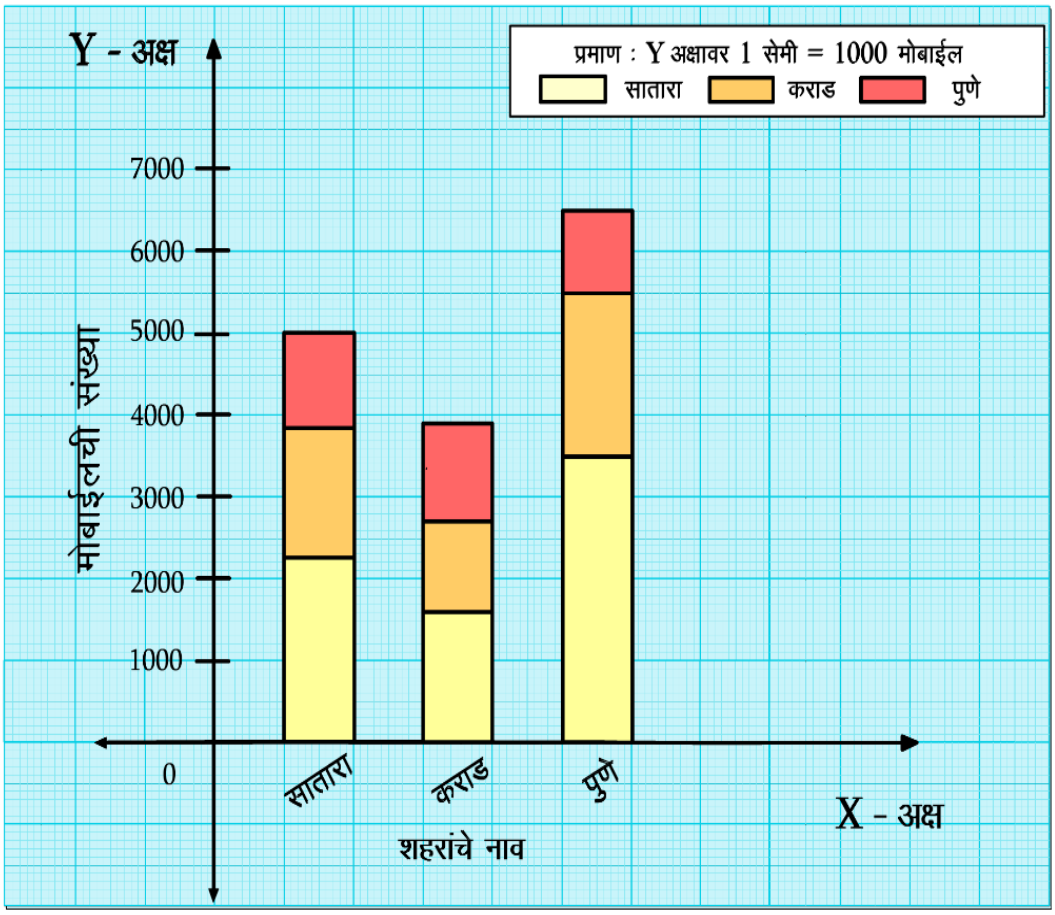
**6. The information of the sale of different mobile companies in three cities is given in the following table. Draw a subdivided bar graph to show the data.**

| City / Mobile | Satara | Karad | Pune |
|---|---|---|---|
| Nokia | 2250 | 1650 | 3500 |
| Samsung | 1600 | 1100 | 2000 |
| L. G | 1150 | 1200 | 1000 |

## Solution :

| City / Mobile | Satara | Karad | Pune |
|---|---|---|---|
| Nokia | 2250 | 1600 | 3500 |
| Samsung | 1600 | 1100 | 2000 |
| L.G | 1150 | 1200 | 1000 |
| Total | 5000 | 3900 | 6500 |

## Graph :


Y - अक्ष
प्रमाण : Y अक्षावर 1 सेमी = 1000 मोबाईल
सातारा
कराड
पुणे
7000
6000
5000
4000
3000
2000
1000
0
मोबाईलची संख्या
सातारा
कराड
पुणे
X - अक्ष
शहरांचे नाव

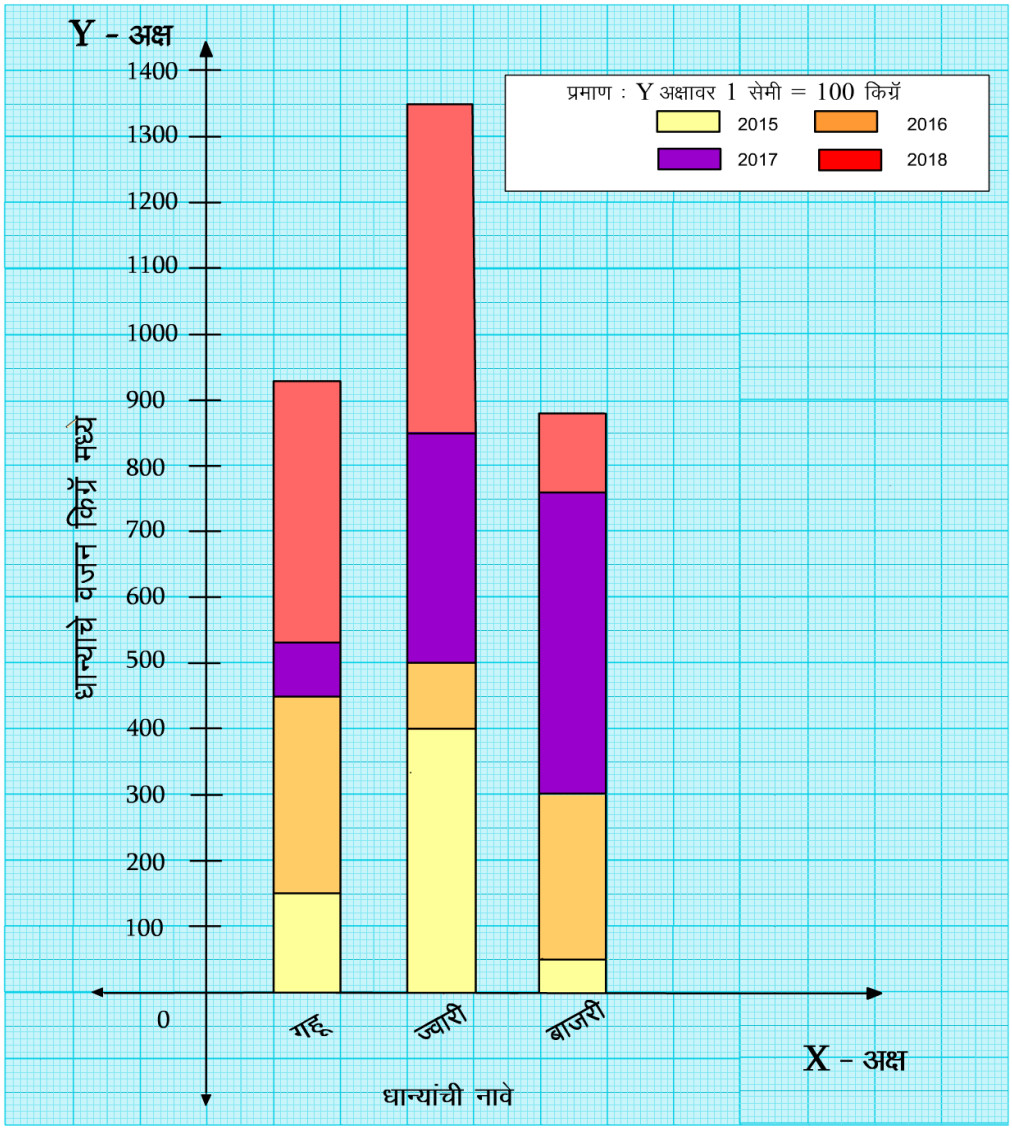
**7. The following table shows the production of wheat, Jowar and Bajra in 100 kg obtained by a farmer in the year 2015 to 2018. Draw a subdivided bar diagram to show the data.**

| Grain / Year | Wheat | Jowar | Bajra |
|---|---|---|---|
| 2015 | 150 | 400 | 50 |
| 2016 | 300 | 100 | 250 |
| 2017 | 80 | 350 | 460 |
| 2018 | 400 | 500 | 120 |

## Solution :

| Grain / Year | Wheat | Jowar | Bajra |
|---|---|---|---|
| 2015 | 150 | 400 | 50 |
| 2016 | 300 | 100 | 250 |
| 2017 | 80 | 350 | 460 |
| 2018 | 400 | 500 | 120 |
| Total | 930 | 1350 | 880 |

# Graph :


Y - अक्ष
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
धान्याचे वजन किंग्रॅ मध्ये
प्रमाण : Y अक्षावर 1 सेमी = 100 किग्रॅ
2015
2016
2017
2018
गहू
ज्वारी
बाजरी
धान्यांची नावे
X - अक्ष

**8. In the following table, data of the number of prizes achieved during the last 20 years in the state level oratory competition by 'Maharaja Sayajirao Highschool' Satara is given below.**

**1, 4, 2, 3, 2, 1, 2, 3, 2, 4, 3, 2, 1, 2, 3, 2, 1, 2, 2, 2.**

**Prepare a frequency table and find the mean of the data.**

| Awards (Scores) $x_i$ | Tally Marks | Number of awards $f_i$ | $f_i \times x_i$ |
|---|---|---|---|
| 1 | 𝍸 | 4 | $1 \times 4 = 4$ |
| 2 | 𝍸 𝍸 | 10 | $2 \times 10 = 20$ |
| 3 | 𝍸 | 4 | $3 \times 4 = 12$ |
| 4 | \|\| | 2 | $4 \times 2 = 8$ |
| | | N = 20 | $\sum f_i x_i = 44$ |

$$\text{Mean} = (\bar{x}) = \frac{\sum f_i x_i}{N}$$

$$= \frac{44}{20}$$

$$= 2.2$$

∴ The mean of awards is 2.2 .

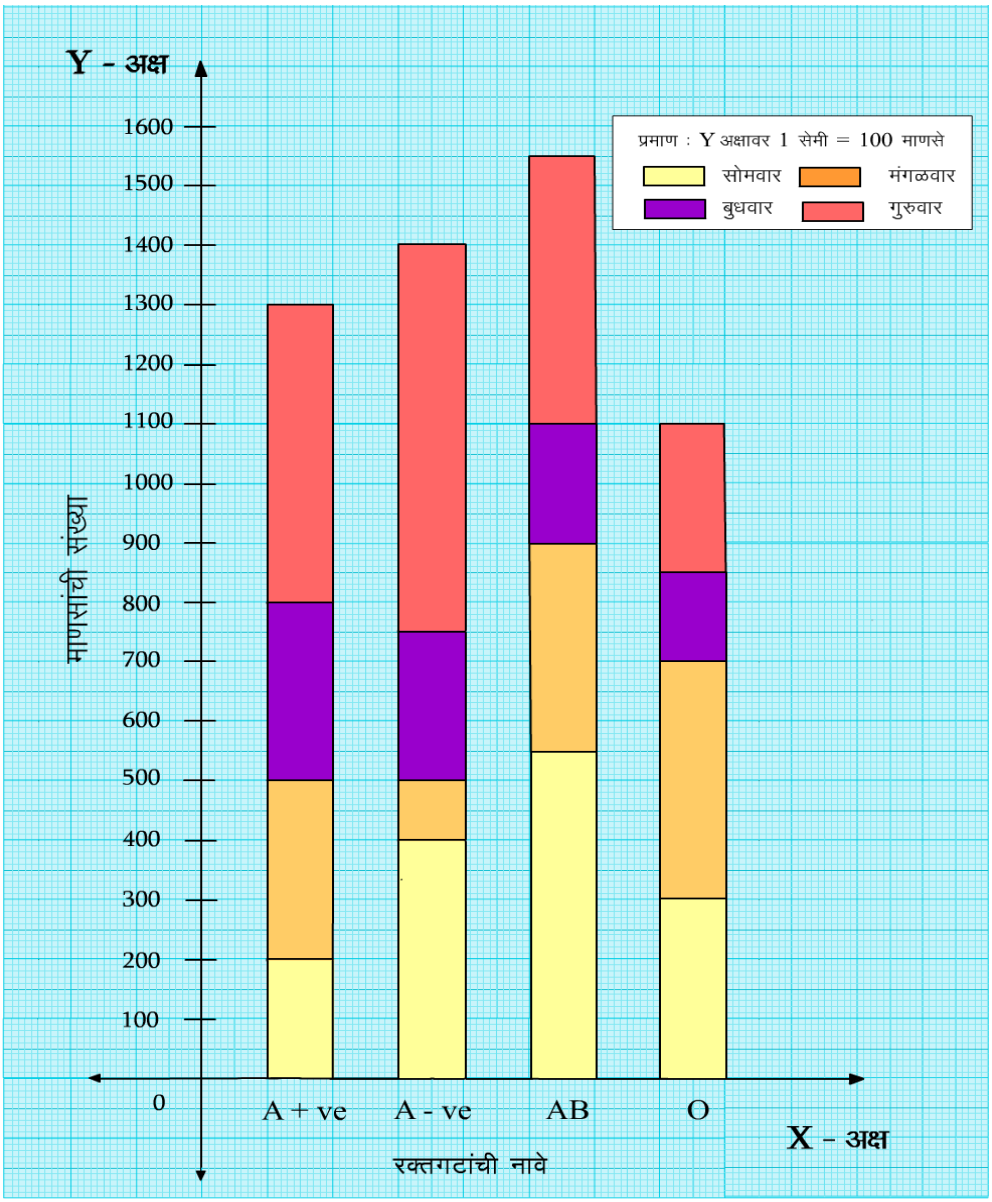
**9. The following table shows in formula about the people who have donated blood in a blood donation camp organized from Monday to Thursday in a city. Show the data with the help of sub-divided bar graph.**

| Blood Group / Days | A+ | A- | AB | O |
|---|---|---|---|---|
| Monday | 200 | 400 | 550 | 300 |
| Tuesday | 300 | 100 | 350 | 400 |
| Wednesday | 300 | 250 | 200 | 150 |
| Thursday | 500 | 650 | 450 | 250 |

# Ans :

| Blood Group / Days | A + Ve | A - Ve | AB | O |
|---|---|---|---|---|
| Monday | 200 | 400 | 550 | 300 |
| Tuesday | 300 | 100 | 350 | 400 |
| Wednesday | 300 | 250 | 200 | 150 |
| Thursday | 500 | 650 | 450 | 250 |
| Total | 1300 | 1400 | 1550 | 1100 |

# Graph :


Y - अक्ष
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
माणसांची संख्या
प्रमाण : Y अक्षावर 1 सेमी = 100 माणसे
सोमवार
मंगळवार
बुधवार
गुरुवार
A + ve
A - ve
AB
O
X - अक्ष
रक्तगटांची नावे

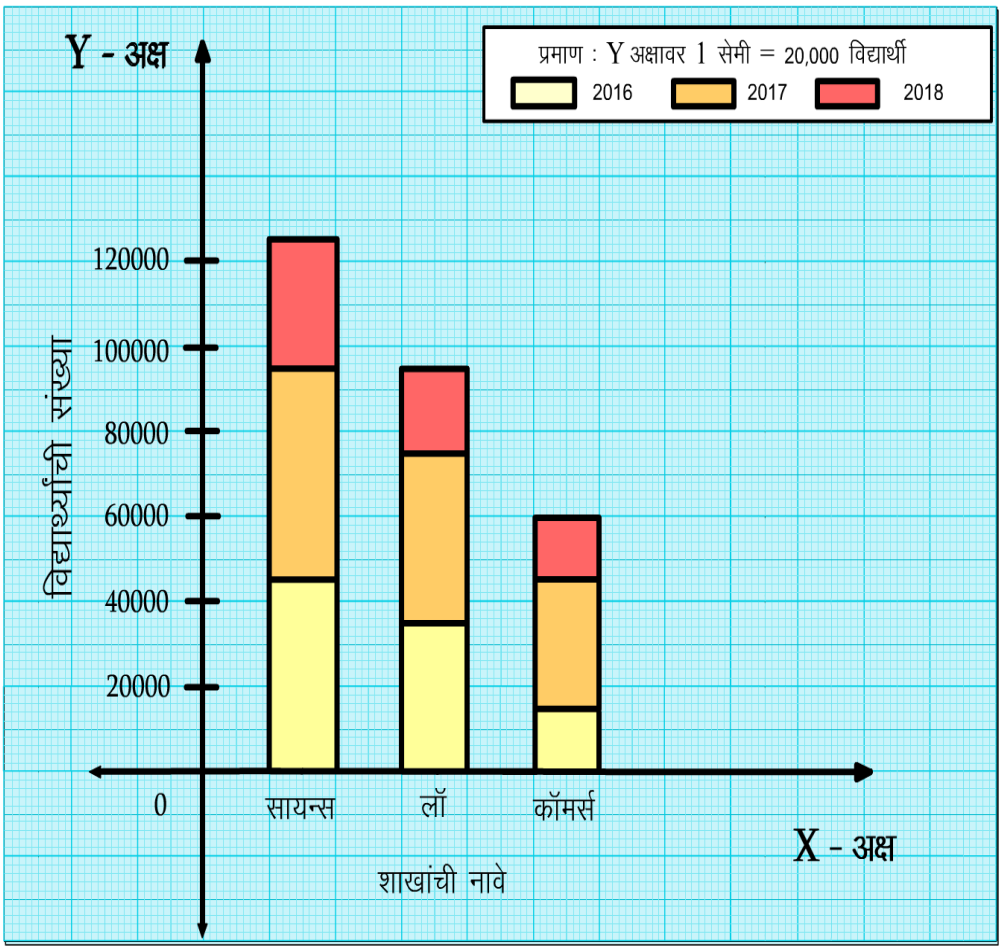
**10. The following table shows the number of students admission for science, law and commerce branch in the year 20 16 to 2018 in a city. Show the information by a sub - divided bar - diagram.**

| Branch / Year | Science | Law | Commerce |
|---|---|---|---|
| 2016 | 45000 | 35000 | 15000 |
| 2017 | 50000 | 40000 | 30000 |
| 2018 | 30000 | 20000 | 15000 |

## Ans :

| Branch / Year | Science | Law | Commerce |
|---|---|---|---|
| 2016 | 45000 | 35000 | 15000 |
| 2017 | 50000 | 40000 | 30000 |
| 2018 | 30000 | 20000 | 15000 |
| Total | 1,25,000 | 95000 | 60000 |

# Graph :


Y - अक्ष
प्रमाण : Y अक्षावर 1 सेमी = 20,000 विद्यार्थी
2016
2017
2018
120000
100000
80000
60000
40000
20000
0
विद्यार्थ्यांची संख्या
सायन्स
लॉ
कॉमर्स
X - अक्ष
शाखांची नावे

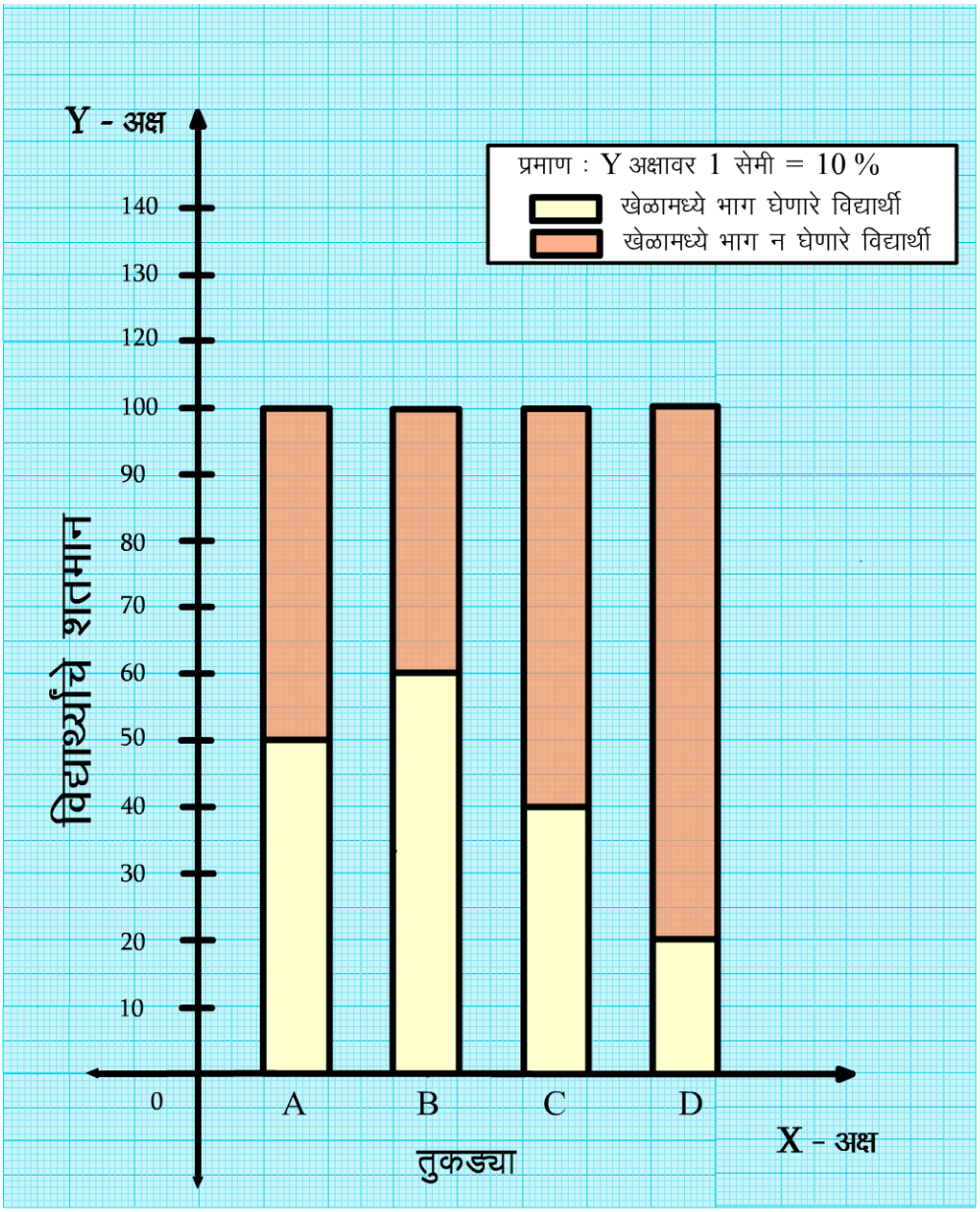
## 11. Draw a percentage bar graph from the following table :

| Division of standard 8 | A | B | C | D |
|---|---|---|---|---|
| Number of students participate in hockey | 40 | 39 | 30 | 17 |
| Total students | 80 | 65 | 75 | 85 |

**Ans :**

| Division of standard 8 | A | B | C | D |
|---|---|---|---|---|
| Number of students participate in hockey | 40 | 39 | 30 | 17 |
| Total students | 80 | 65 | 75 | 85 |
| Percentage of number of students participate in hockey | $\frac{40}{80} \times 100$ $= \boxed{50}$ | $\frac{39}{65} \times 100$ $= \boxed{60}$ | $\frac{30}{75} \times 100$ $= \boxed{40}$ | $\frac{17}{85} \times 100$ $= \boxed{20}$ |

## Graph :


Y - अक्ष
प्रमाण : Y अक्षावर 1 सेमी = 10 %
खेळामध्ये भाग घेणारे विद्यार्थी
खेळामध्ये भाग न घेणारे विद्यार्थी
विद्यार्थ्यांचे शतमान
140
130
120
100
90
80
70
60
50
40
30
20
10
0
A
B
C
D
तुकड्या
X - अक्ष

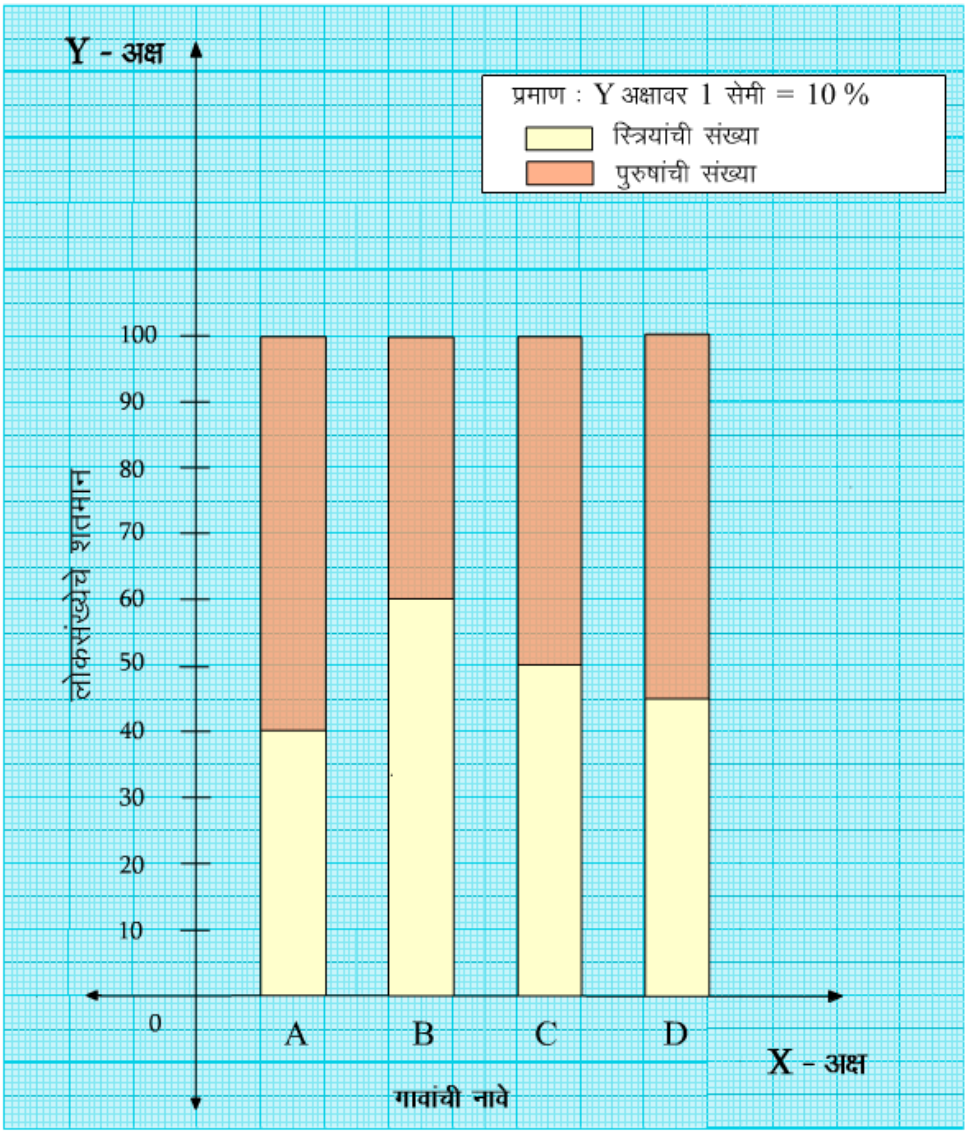
**12. Show the following information by a percentage bar graph.**

| Name of town | A | B | C | D |
|---|---|---|---|---|
| Number of females | 1200 | 2400 | 1600 | 1800 |
| Number of males | 1800 | 1600 | 1600 | 2200 |

**Ans :**

| Number of town | A | B | C | D |
|---|---|---|---|---|
| Number of females | 1200 | 2400 | 1600 | 1800 |
| Number of males | 1800 | 1600 | 1600 | 2200 |
| Total | 3000 | 4000 | 3200 | 4000 |
| Percentage of female | $\frac{1200}{3000} \times 100$ $= \boxed{40}$ | $\frac{2400}{4000} \times 100$ $= \boxed{60}$ | $\frac{1600}{4000} \times 100$ $= \boxed{50}$ | $\frac{1800}{4000} \times 100$ $= \boxed{45}$ |
| Percentage of male | $100 - 40$ $= \boxed{60}$ | $100 - 60$ $= \boxed{40}$ | $100 - 50$ $= \boxed{50}$ | $100 - 45$ $= \boxed{55}$ |

## Graph :


Y - अक्ष
प्रमाण : Y अक्षावर 1 सेमी = 10 %
स्त्रियांची संख्या
पुरुषांची संख्या
100
90
80
70
60
50
40
30
20
10
0
लोकसंख्येचे शतमान
A
B
C
D
X - अक्ष
गावांची नावे

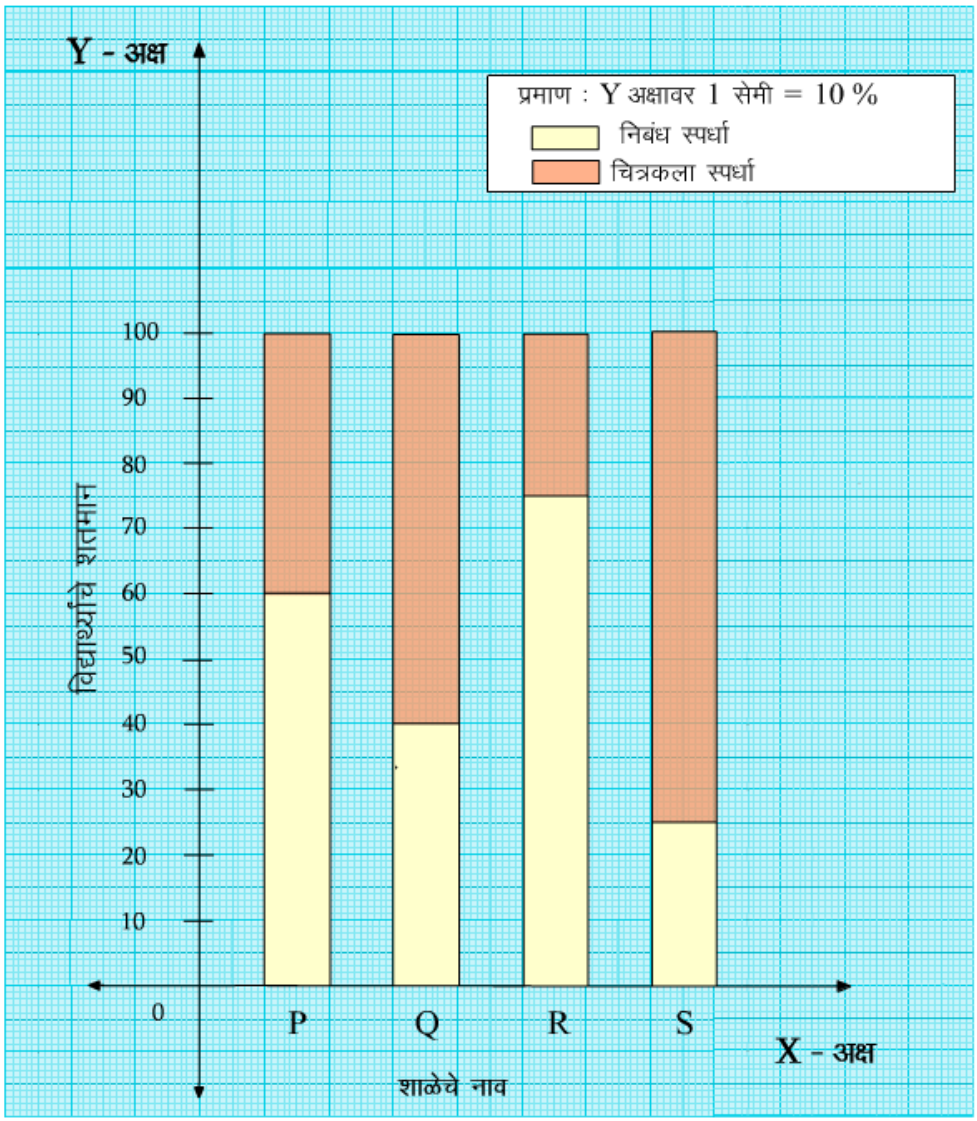
**13. In the following table data of the students in 9th standard participates in essay and drawing competition is given. Show the information by a percentage bar graph.**

| Name of School | P | Q | R | S |
|---|---|---|---|---|
| Number of students participate in essay competition | 300 | 240 | 300 | 100 |
| Number of students participate in drawing competition | 200 | 360 | 100 | 300 |

**Ans :**

| Number of School | P | Q | R | S |
|---|---|---|---|---|
| Number of students participate in essay competition | 300 | 240 | 300 | 100 |
| Number of students participate in drawing competition | 200 | 360 | 100 | 300 |
| Total | 500 | 600 | 400 | 400 |
| Percentage of number of students participate in essay competition | $\frac{300}{500} \times 100$ $= \boxed{60}$ | $\frac{240}{600} \times 100$ $= \boxed{40}$ | $\frac{300}{400} \times 100$ $= \boxed{75}$ | $\frac{100}{400} \times 100$ $= \boxed{25}$ |
| Percentage of number of students participate in drawing competition | $100 - 60$ $= 40$ | $100 - 40$ $= 60$ | $100 - 75$ $= 25$ | $100 - 25$ $= 75$ |

## Graph :


Y - अक्ष
प्रमाण : Y अक्षावर 1 सेमी = 10 %
निबंध स्पर्धा
चित्रकला स्पर्धा
100
90
80
70
60
50
40
30
20
10
0
विद्यार्थ्यांचे शतमान
P
Q
R
S
X - अक्ष
शाळेचे नाव

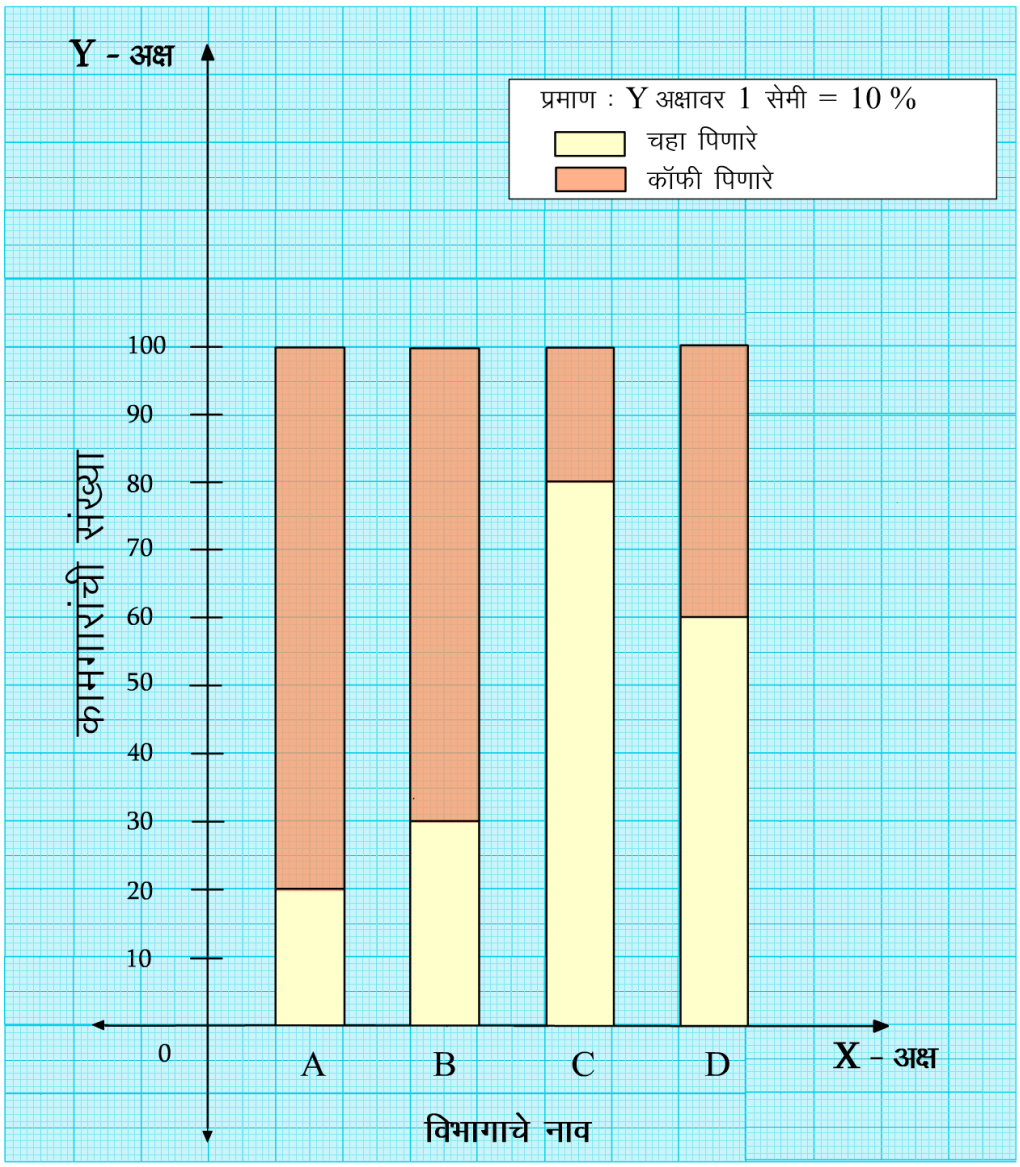
**14. The following table shows the number of workers who drinking tea and coffee in the four different divisions of a company. Draw a percentage bar graph to show the data.**

| Division / Employee | A | B | C | D |
|---|---|---|---|---|
| Employees who are drinking tea | 30 | 54 | 120 | 120 |
| Employee who are drinking coffee | 120 | 126 | 30 | 80 |

**Ans :**

| Division / Employee | A | B | C | D |
|---|---|---|---|---|
| Employees who are drinking tea | 30 | 54 | 120 | 120 |
| Employees who are drinking coffee | 120 | 126 | 30 | 80 |
| Total | 150 | 180 | 150 | 200 |
| Percentage of employees who are drinking tea | $\frac{30}{150} \times 100 = 20$ | $\frac{54}{180} \times 100 = 30$ | $\frac{120}{150} \times 100 = 80$ | $\frac{120}{200} \times 100 = 60$ |
| Percentage of employees who are drinking coffee | $100 - 20 = 80$ | $100 - 30 = 70$ | $100 - 80 = 20$ | $100 - 60 = 40$ |

## Graph :


Y - अक्ष
प्रमाण : Y अक्षावर 1 सेमी = 10 %
चहा पिणारे
कॉफी पिणारे
कामगारांची संख्या
100
90
80
70
60
50
40
30
20
10
0
A
B
C
D
X - अक्ष
विभागाचे नाव

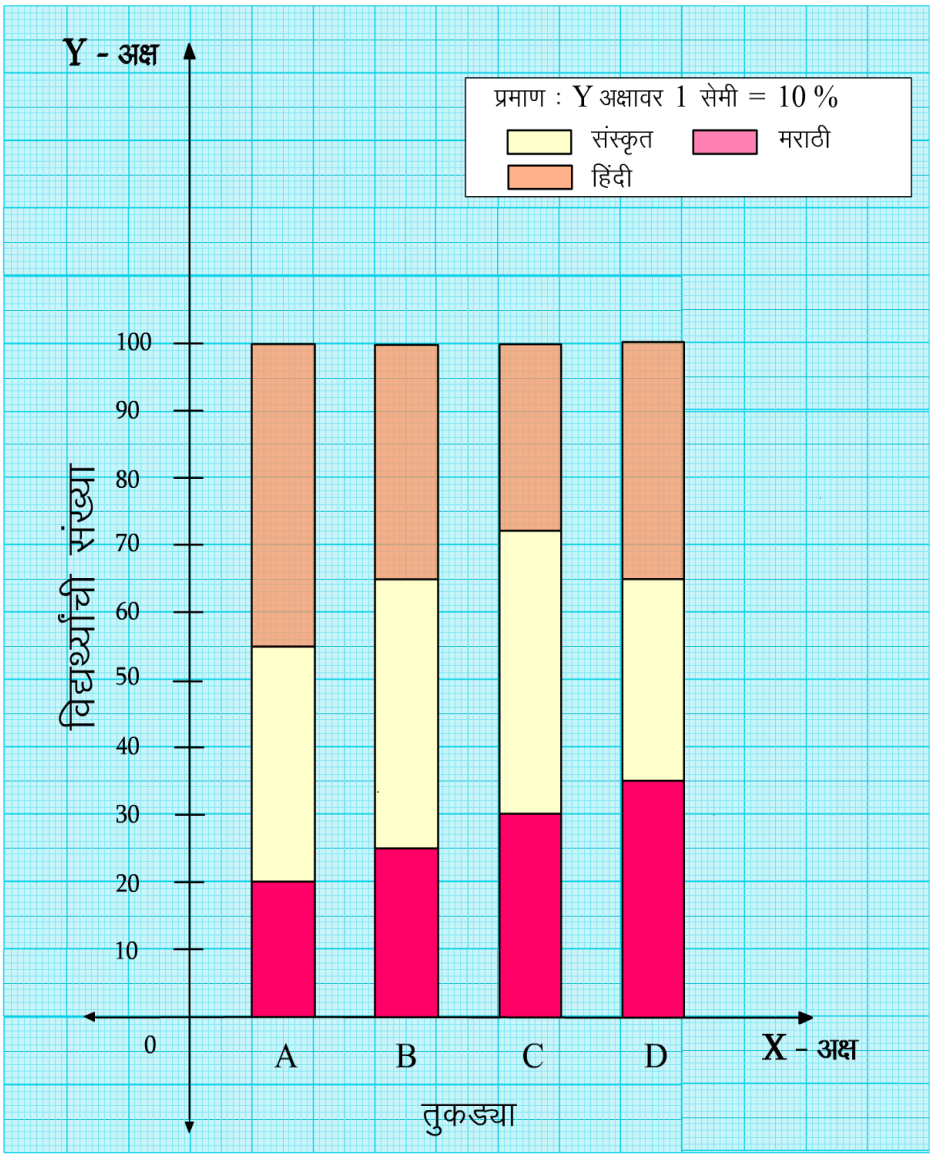
**15. The following table shows the data of the number of students in the standard 8, studied Sanskrit, Marathi and Hindi in a school are given as follows. Show the information by a percentage bar graph.**

| Division / Subject | A | B | C | D |
|---|---|---|---|---|
| Sanskrit | 20 | 25 | 30 | 35 |
| Hindi | 35 | 40 | 42 | 30 |
| Marathi | 45 | 35 | 28 | 35 |

## Solution :

| Subject \ Division | A | B | C | D |
|---|---|---|---|---|
| Students who taking Sanskrit subject | 20 | 25 | 30 | 35 |
| Students who taking Hindi subject | 35 | 40 | 42 | 30 |
| Students who taking Marathi subject | 45 | 35 | 28 | 35 |
| Total | 100 | 100 | 100 | 100 |
| Percentage of students who taking Sanskrit subject | $\frac{20}{100} \times 100 = 20$ | $\frac{25}{100} \times 100 = 25$ | $\frac{30}{100} \times 100 = 30$ | $\frac{35}{100} \times 100 = 35$ |
| Percentage of students who taking Hindi subject | $\frac{35}{100} \times 100 = 35$ | $\frac{40}{100} \times 100 = 40$ | $\frac{42}{100} \times 100 = 42$ | $\frac{30}{100} \times 100 = 30$ |
| Percentage of students who taking Marathi subject | $\frac{45}{100} \times 100 = 45$ | $\frac{35}{100} \times 100 = 35$ | $\frac{28}{100} \times 100 = 28$ | $\frac{35}{100} \times 100 = 35$ |

# Graph :


Y - अक्ष
प्रमाण : Y अक्षावर 1 सेमी = 10 %
संस्कृत
मराठी
हिंदी
100
90
80
70
60
50
40
30
20
10
0
विद्यार्थ्यांची संख्या
A
B
C
D
X - अक्ष
तुकड्या

**16. The following marks out of 25 obtained in first unit test by 50 students of class $10^{th}$ in a school.**

**25, 20, 6, 17, 22, 12, 19, 10, 14, 23,**
**12, 22, 20, 18, 16, 25, 23, 17, 8, 19,**
**21, 14, 20, 10, 24, 12, 25, 22, 18, 11,**
**24, 9, 15, 16, 18, 20, 7, 20, 13, 25,**
**21, 17, 13, 8, 19, 18, 25, 16, 20, 24.**

**Answer the following questions from the given information.**

**1) What is called the collected numerical information ?**

**2) What is called each number given by the data ?**

**3) How many total students are getting 20 marks ?**

**4) How many total students are getting more than 20 marks ?**

**5) How many total students are getting less than 12 marks ?**

**6) How many students are obtaining out of marks ?**

**7) What are the minimum marks ?**

**8) What are the maximum marks ?**

**Ans : 1) The collected numerical information is called data.**

**2) Each number given by the data is called score.**

**3) There are 6 students which are getting 20 marks.**

**4) 15 students are getting more than 20 marks.**

**5) 8 students are getting less than 12 marks.**

**6) 5 students are obtaining out of marks.**

**7) The minimum marks are 6.**

**8) The maximum marks are 25.**

**17. The rates of circus ticket were Rs. 5, Rs 10, Rs. 15 and Rs. 20. 50 students in a class purchased these tickets. The rates of ticket are give below :**

**10, 10, 5, 15, 15, 5, 5, 5, 10, 10,**
**10, 10, 15, 15, 5, 10, 20, 15, 5, 10,**
**5, 10, 5, 10, 5, 5, 5, 10, 15, 15,**
**10, 10, 10, 20, 5, 10, 10, 10, 15, 5,**
**5, 5, 10, 15, 5, 10, 5, 15, 10, 10.**

**Answer the following questions from the given information :**

**1) How many students are purchasing the rate of Rs. 5 ticket.**

**2) How many students are purchasing the rate of Rs.10 ticket.**

**3) How many students are purchasing the rate of Rs. 15 ticket.**

**4) How many students are purchasing the rate of Rs. 20 ticket.**

**5) Which tickets has the highest sell?**

**6) Which ticket has the least sell ?**

**7) Which ticket has sold more than 10 and less than 20.**

**8) Which ticket has sold more than 18.**

**Ans : 1) 17 students are purchasing the rate of 5 rupees ticket.**

**2) 21 students are purchasing the rate of 10 rupees ticket.**

**3) 10 students are purchasing the rate of 15 rupees ticket.**

**4) Only 2 students are purchasing the rate of 20 rupees ticket.**

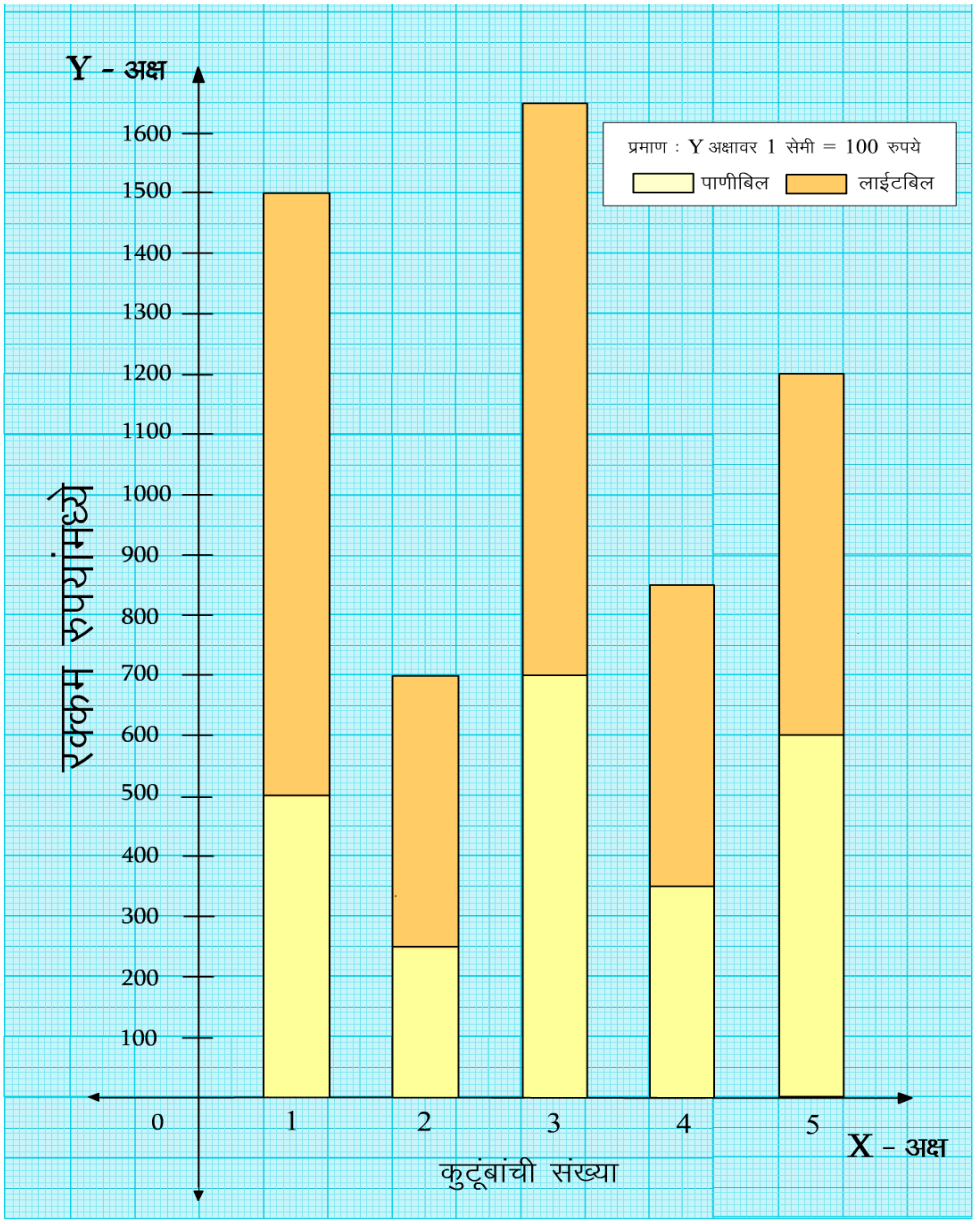
**5) 10 rupees ticket has the highest sell.**

**6) 20 rupees ticket has the least sell.**

**7) 5 rupees ticket has sold more than 10 and less than 20.**

**8) 10 rupees ticket has sold more than 18.**

**18. Observe the following graph and answer the questions.**



**1) State the type of the bar graph.**

**2) What is the total light bill of family 3?**

**3) Which family has the same water bill and light bill ?**

**4) Which family has the maximum light bill ?**

**5) Which family has the minimum water bill ?**

**6) What is the difference between the water bill of family 1 and family 4 ?**

**7) Which family has the minimum light bill ?**

**8) Which family has the maximum water bill ?**

**9) What is the difference between the light bill of family 2 and 3 ?**

**10) What is the total amount of water bill and light bill of family 4 ?**

**Ans : 1) The given graph is a subdivided bar graph.**

**2) The total light bill of family 3 is 700 rupees.**

**3) Family 5 has the same water bill and light bill.**

**4) Family 1 has the maximum light bill.**

**5) Family 2 has the minimum water bill .**

**6) The difference between the water bill of family 1 and family 4 is 150 rupees.**

**Water bill of family 1 - Water bill of family 4**

$\therefore 500 - 350 = 150$ **rupees.**

**7) Family 2 has the minimum light bill.**

**8) Family 4 has the maximum water bill.**

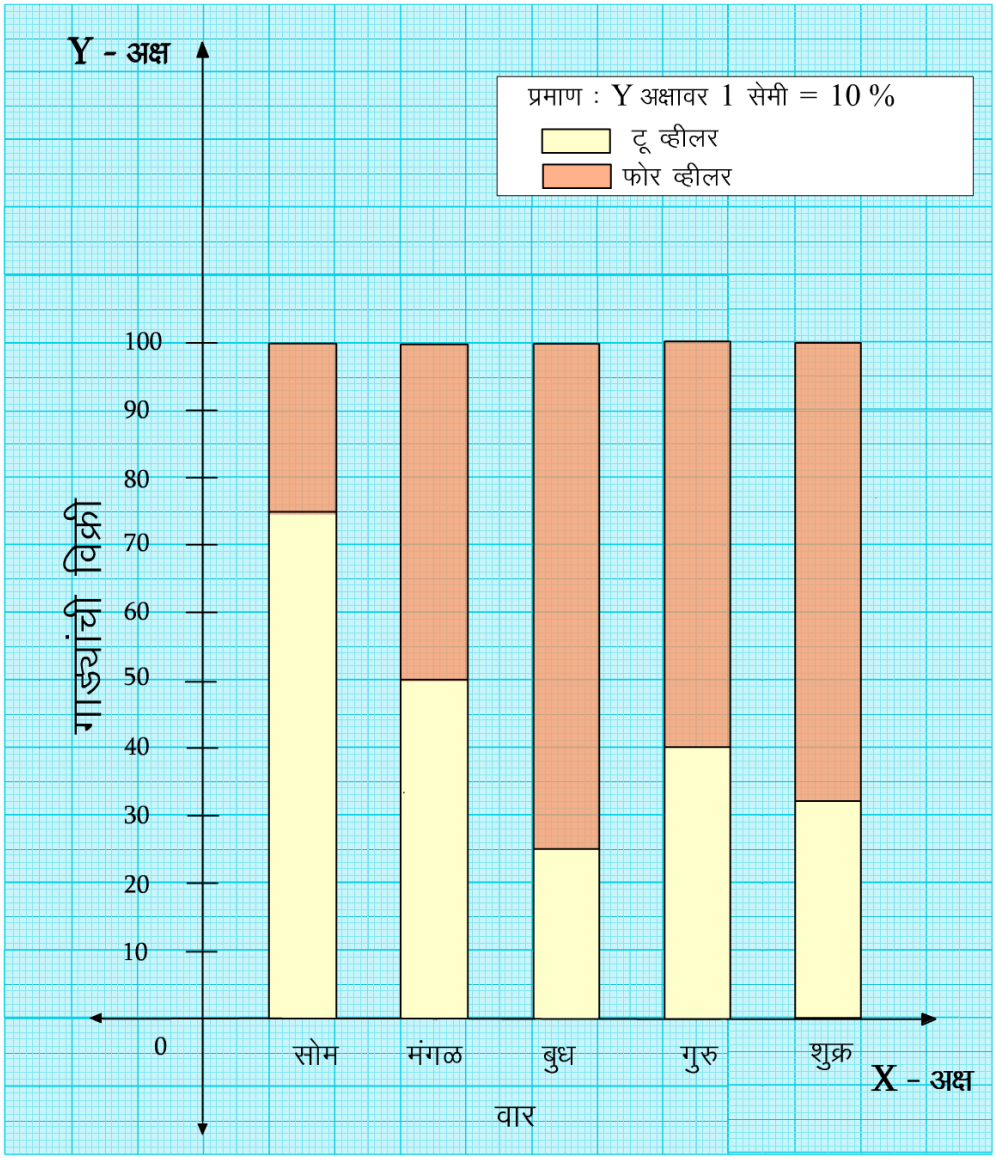
**9) The difference between the light bill of family 2 and 3 is 450 rupees.**

**Light bill of family 3 - Light bill of family 2**

$\therefore 700 - 250 = 450$ **rupees**

**10) The total amount of water bill and light bill of family 4 is 850 rupees.**

## 19. Observe the following graph and answer the questions.




**1) State the type of the graph.**

**2) On Thursday which vehical have highest sell ?**

**3) On monday, which vehical have less sell ?**

**4) On which day is the same selling of both vehical ?**

**5) On which day is the lowest selling of two -wheeler ?**

**6) On which day is the highest selling of four- wheeler ?**

**7) On which day is the highest selling of two - wheeler ?**

**8) On which day is the lowest selling of four - wheeler ?**

**9) On Friday, what is the percentage of selling of four wheeler ?**

**10) On Thursday and Friday, what is the difference between the percentage of selling of two - wheeler vehical ?**

**Ans : 1) The given graph is a percentage bar graph.**

**2) On Thursday four wheeler have the highest sell.**

**3) On Monday four wheeler have the less sell.**

**4) The same selling of both vehicle is on Tuesday.**

**5) The lowest selling of two wheeler is on Wednesday**

**6) The highest selling of four wheeler is on Wednesday.**

**7) The highest selling of two wheeler is in Monday**

**8) The lowest selling of four wheeler is on Monday.**

**9) The percentage of selling of four wheeler is 68 on Friday.**

**10) The difference between the percentage of selling of two - wheeler is 8 on Thursday and Friday.**

**20. The marks out of 40 obtained in second semester in mathematics by 35 students of class $8^{th}$ are given in the**

**following frequency table. Complete the following activity to find mean of data.**

| Marks (Score) $x_i$ | Tally Marks | Number of Students (Frequency) $f_i$ | $f_i \times x_i$ |
|---|---|---|---|
| 14 | \|\| | 2 | 28 |
| 15 | \|\| | 2 | ..... |
| 16 | \|\|\| | 3 | ..... |
| 18 | 𝍸 | ☐ | ..... |
| 20 | \|\| | 2 | ..... |
| 22 | ☐ | 2 | ..... |
| 25 | \|\| | 2 | 50 |
| 30 | \|\|\| | 3 | ..... |
| 35 | \|\| | ☐ | ..... |
| 36 | \|\|\| | 3 | ..... |
| 38 | \|\| | 2 | ..... |
| 39 | ☐ | 4 | ..... |
| 40 | \|\|\| | ☐ | ..... |
| | | N = ☐ | $\sum f_i \times x_i$ = ☐ |

$$\text{Mean } (\overline{x}) = \frac{\sum f_i \times x_i}{N}$$

$$= \frac{\square}{\square}$$

$$= \frac{\square}{7} \qquad \text{..... (Dividing by 5)}$$

$$= \square$$

∴ The mean of the marks of students is .....

**Ans :**

| Marks (Score) $x_i$ | Tally Marks | Number of Students (Frequency) $f_i$ | $f_i \times x_i$ |
|---|---|---|---|
| 14 | \|\| | 2 | 28 |
| 15 | \|\| | 2 | 30 |
| 16 | \|\|\| | 3 | 48 |
| 18 | 𝍸 | 5 | 90 |
| 20 | \|\| | 2 | 40 |
| 22 | \|\| | 2 | 44 |
| 25 | \|\| | 2 | 50 |
| 30 | \|\|\| | 3 | 90 |
| 35 | \|\| | 2 | 70 |
| 36 | \|\|\| | 3 | 108 |
| 38 | \|\| | 2 | 76 |
| 39 | \|\|\| | 4 | 156 |
| 40 | \|\|\| | 3 | 120 |
| | | N = 35 | $\sum f_i \times x_i$ = 950 |

$$\text{Mean } (\overline{x}) = \frac{\sum f_i \times x_i}{N}$$

$$= \frac{950}{35}$$

$$= \frac{190}{7} \quad \text{..... (Dividing by 5)}$$

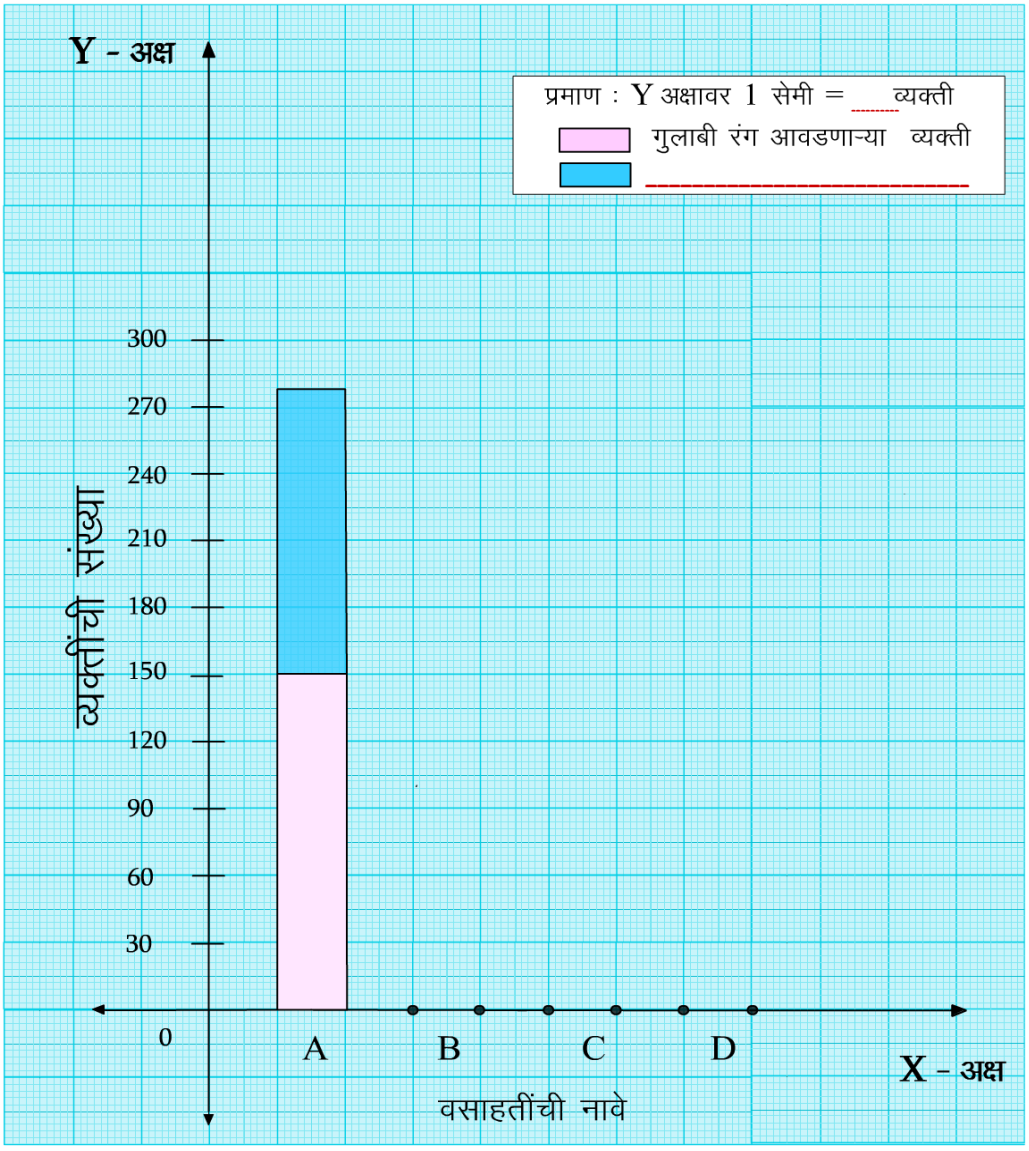
$$= 27.14$$

∴ **The mean of the marks of students is 27.14.**

**21. The following data is collected in a survey of peoples of four colonies who like the colours. Complete the following activity to draw a subdivided bar graph.**

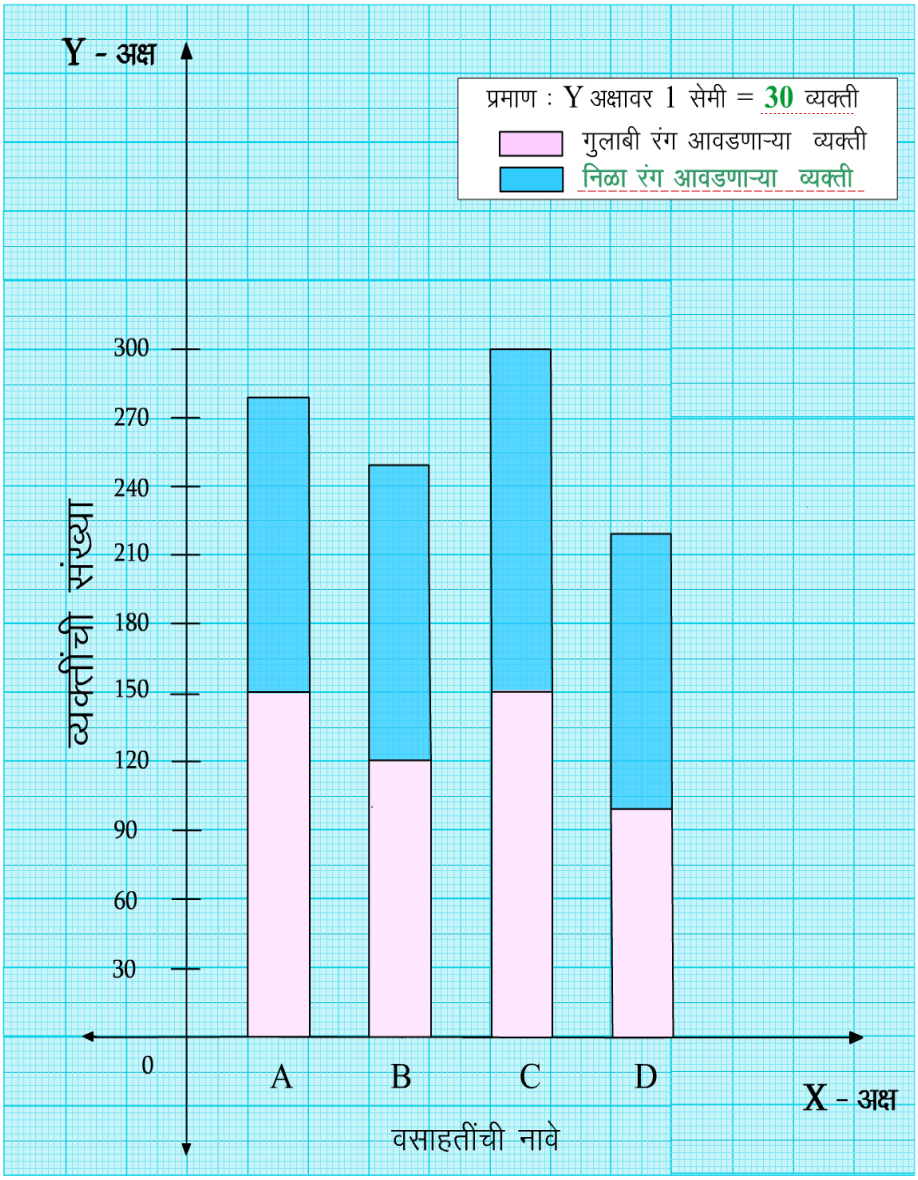
| Name of colony / Peoples | A | B | C | D |
|---|---|---|---|---|
| Peoples who like pink color | 150 | 120 | 150 | 100 |
| Peoples who like blue color | 130 | 130 | ☐ | 120 |
| Total | 280 | ☐ | 300 | ☐ |

## Ans :


Y - अक्ष
प्रमाण : Y अक्षावर 1 सेमी = ____ व्यक्ती
गुलाबी रंग आवडणाऱ्या व्यक्ती
300
270
240
210
180
150
120
90
60
30
0
व्यक्तींची संख्या
A
B
C
D
X - अक्ष
वसाहतींची नावे

| Name of colony / Peoples | A | B | C | D |
|---|---|---|---|---|
| Peoples who like pink color | 150 | 120 | 150 | 100 |
| Peoples who like blue color | 130 | 130 | 150 | 120 |
| Total | 280 | 250 | 300 | 220 |

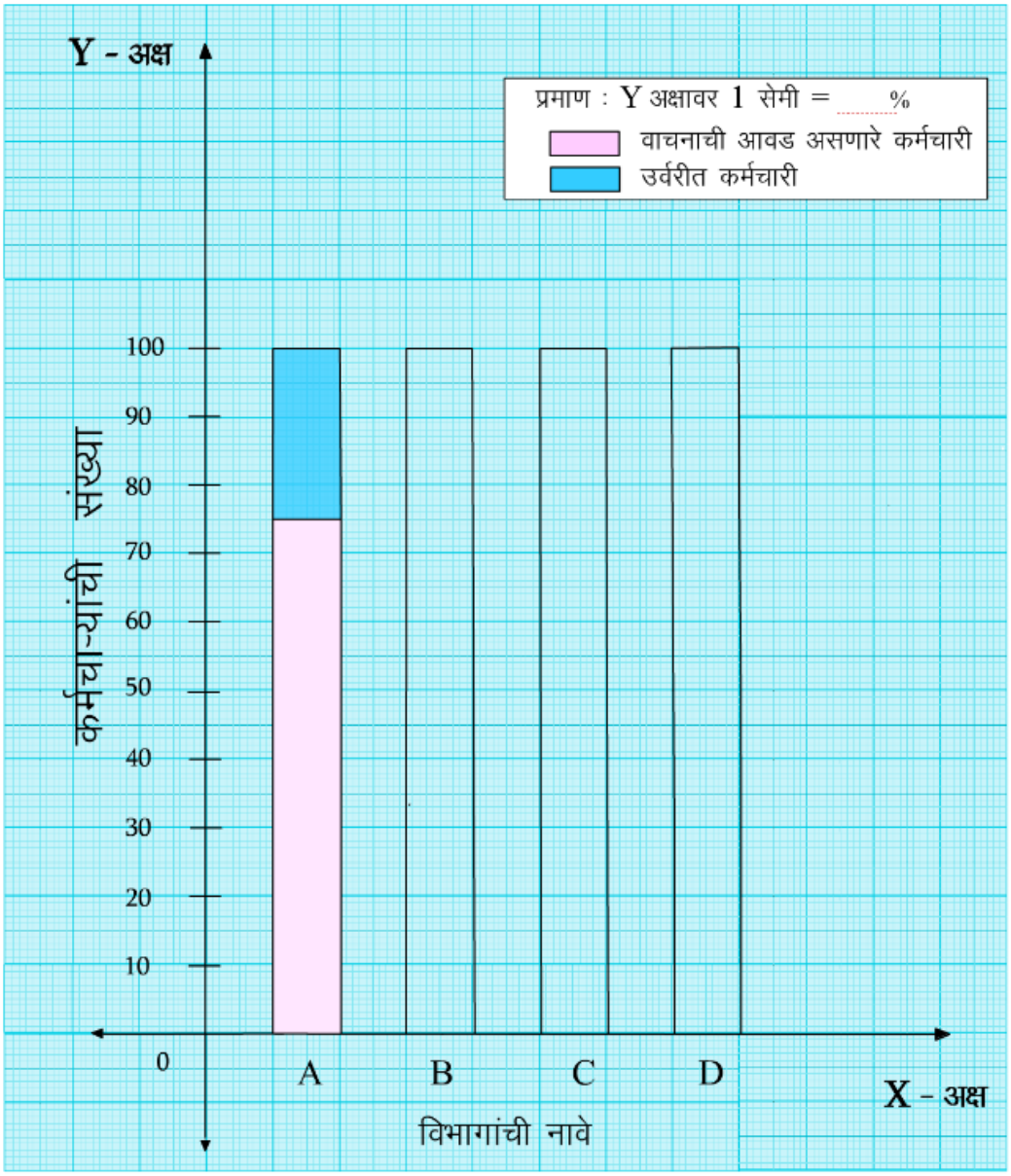
# Graph :


Y - अक्ष
प्रमाण : Y अक्षावर 1 सेमी = 30 व्यक्ती
गुलाबी रंग आवडणाऱ्या व्यक्ती
निळा रंग आवडणाऱ्या व्यक्ती
300
270
240
210
180
150
120
90
60
30
0
व्यक्तींची संख्या
A
B
C
D
X - अक्ष
वसाहतींची नावे

**22. In the following frequency table the information of employees of four divisions in a office who like reading is given.**

**Complete the following activity to draw a percentage bar graph :**

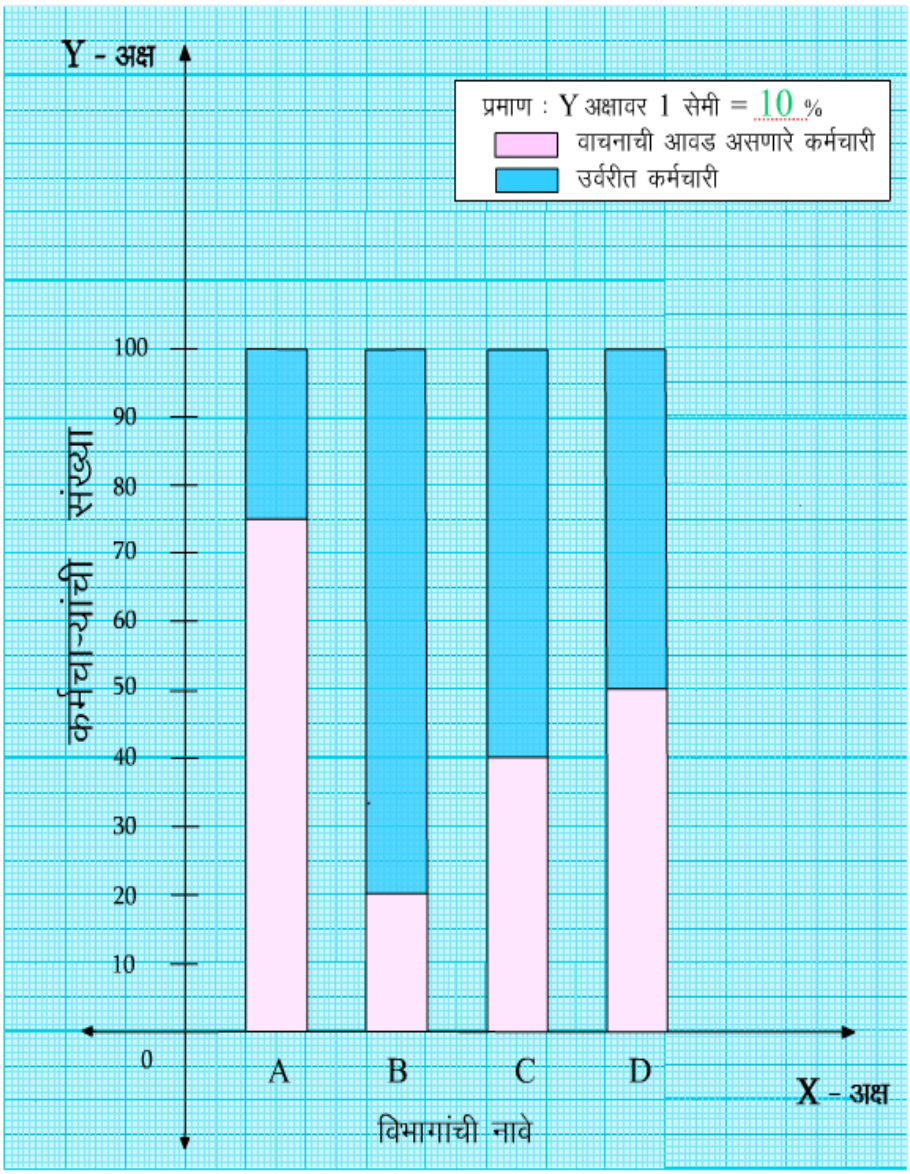
| Division | A | B | C | D |
|---|---|---|---|---|
| Total employees | 80 | 100 | 90 | 70 |
| Employees who like reading | 60 | ..... | 36 | 35 |
| Percentage of employees who like reading | $\frac{60}{80} \times 100$ $= \square$ | $\frac{\square}{100} \times 100$ $= 20$ | $\frac{36}{90} \times \square$ $= \square$ | $\frac{35}{\square} \times 100$ $= \square$ |


Y - अक्ष
प्रमाण : Y अक्षावर 1 सेमी = ....%
वाचनाची आवड असणारे कर्मचारी
उर्वरीत कर्मचारी
कर्मचाऱ्यांची संख्या
100
90
80
70
60
50
40
30
20
10
0
A
B
C
D
X - अक्ष
विभागांची नावे

**Ans :**

| Division | A | B | C | D |
|---|---|---|---|---|
| Total employees | 80 | 100 | 90 | 70 |
| Employees who like reading | 60 | $\boxed{20}$ | 36 | 35 |
| Percentage of employees who like reading | $\frac{60}{80} \times 100$ $= \boxed{75}$ | $\frac{\boxed{20}}{100} \times 100$ $= 20$ | $\frac{36}{90} \times \boxed{100}$ $= \boxed{40}$ | $\frac{35}{\boxed{70}} \times \boxed{100}$ $= \boxed{50}$ |

## Graph :


Y - अक्ष
प्रमाण : Y अक्षावर 1 सेमी = 10 %
वाचनाची आवड असणारे कर्मचारी
उर्वरीत कर्मचारी
कर्मचाऱ्यांची संख्या
100
90
80
70
60
50
40
30
20
10
0
A
B
C
D
X - अक्ष
विभागांची नावे

**23. Match the following pair.**

| Group 'A' | Group 'B' |
|---|---|
| 1) Mean | (a) $x_i$ |
| 2) Score | (b) $f_i$ |
| 3) Frequency | (c) $\overline{x}$ |
| 4) Sum | (d) $\Sigma$ |

**Ans :**

| Group 'A' | Group 'B' |
|---|---|
| 1) Mean | (c) $\overline{x}$ |
| 2) Score | (a) $x_i$ |
| 3) Frequency | (b) $f_i$ |
| 4) Sum | (d) $\Sigma$ |

**24. Write the following statement true or false.**

**1. The collecting information regarding certain problem or situation, analysing this information and after interpretation drawing conclusion about it, is a seperate branch of knowledge. This branch is known as 'Statistics'.**

**Ans : True**

**2. To find the mean of numerical data, multiply all the numbers in the data.**

**Ans : False, To find the mean of numerical data, add all the numbers in the data.**

**3. To prepare frequency table, write the scores in the first column, in desending order.**

**Ans : False, To prepare frequency table, write the scores in the first column, in ascending order.**

**4. The primary information is collected with some purpose which is called a frequency.**

**Ans : False, The primary information is collected with some purpose which is called a raw data.**

**5. The number of times a particular number occurs in a data is called the frequency.**

**Ans : True.**

**6. In subdivided bar graph the information of only one constituents is shown by a single bar.**

**Ans : False, In subdivided bar graph the information of two or more constituents is shown by parts of a single bar.**

**7. Percentage bar graph is a specific type of subdivided bar graph.**

**Ans : True.**

*****