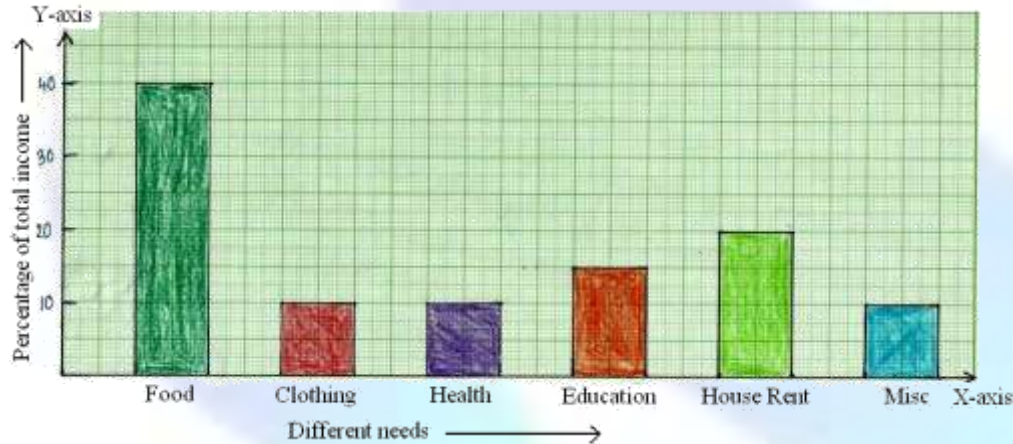


1. The percentage of total income spent under various heads by a family is given below.

Different Heads	Food	clothing	Education	House Rent	Miscellaneous
% Age of Total Number	40%	10%	10%	20%	5%

Represent the above data in the form of bar graph.

Ans.

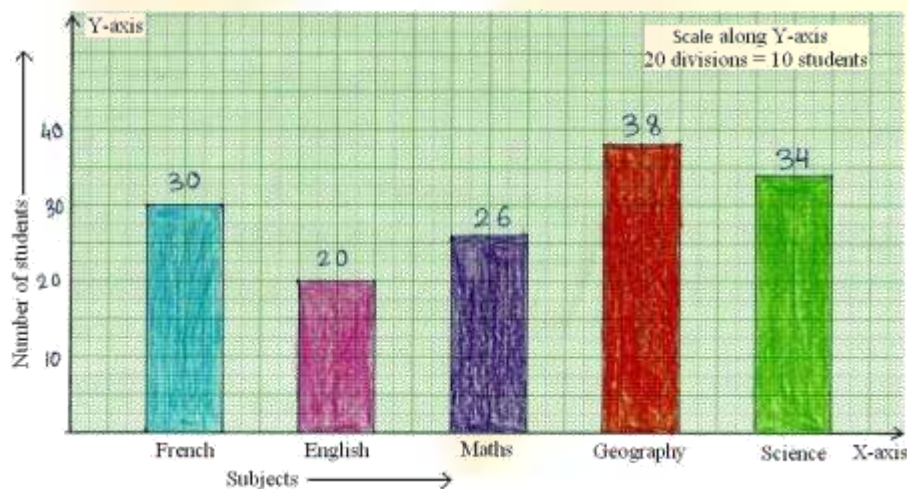


2. 150 students of class VI have popular school subjects as given below:

Subject	French	English		Maths	Geography	Science
No. of Students	30	20		26	38	34

Draw the column graph/bar graph representing the above data.

Ans. Take the subjects along x-axis, and the number of students along y-axis

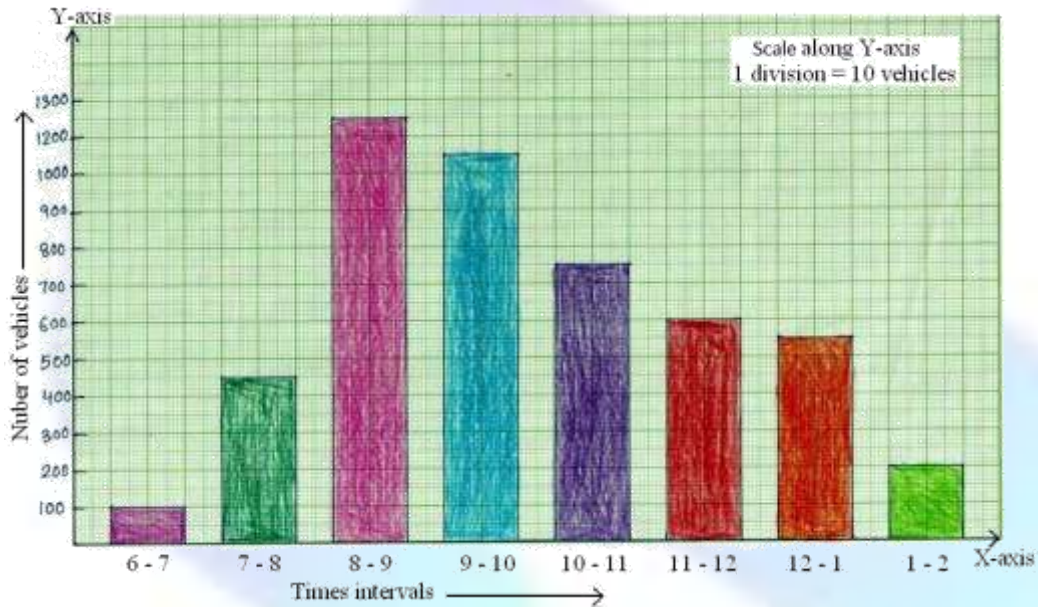


Bar graph gives the information of favorite subjects of 150 students.

3. The vehicular traffic at a busy road crossing in a particular place was recorded on a particular day from 6am to 2 pm and the data was rounded off to the nearest tens.

Time in hours	6 - 7	7 - 8	8 - 9	9 - 10	10 - 11	11 - 12	12 - 1	1 - 2
No. of Vehicles	100	450	1250	1050	750	600	550	200

Ans.



Bar graph gives the information of number of vehicles passing through the crossing during different intervals of time.

4. Weights of 6 boys in a group are 63, 57, 39, 41, 45, 45. Find the mean weight.

Ans. Number of observations = 6

Sum of all the observations = $63 + 57 + 39 + 41 + 45 + 45 = 290$

Therefore, arithmetic mean = $\frac{290}{6} = 48.3$

5. A die is thrown 20 times and the following scores were recorded 6, 3, 2, 4, 5, 5, 6, 1, 3, 3, 5, 6, 6, 1, 3, 3, 5, 6, 6, 2. Prepare the frequency table of scores on the upper face of the die and find the mean score.

Ans.

Number on the upper dace of die	Number of times it occurs (frequency)	$f_i x_i$
1	2	$1 \times 2 = 2$
2	3	$2 \times 2 = 4$
3	5	$3 \times 5 = 15$
4	1	$4 \times 1 = 4$
5	4	$5 \times 4 = 20$
6	6	$6 \times 6 = 36$

Therefore, mean of the data $= \frac{\Sigma(f_i x_i)}{\Sigma f_i} = \frac{(2+4+15+4+20+36)}{20} = \frac{81}{20}$

$= 4.05$

6. If the mean of the following distribution is 9, find the value of p.

X	4	6	p + 7	10	15
f	5	10	10	7	8

Ans. Calculation of mean

x_i	f_i	$x_i f_i$
4	5	20
6	10	60
p + 7	10	10(p + 7)
10	7	70
15	8	120

$\Sigma f_i = 5 + 10 + 10 + 7 + 8 = 40$

$\Sigma f_i x_i = 270 + 10(p + 7)$

Mean $= \frac{\Sigma(f_i x_i)}{\Sigma f_i}$

$9 = \frac{\{270 + 10(p + 7)\}}{40}$

$\Rightarrow 270 + 10p + 70 = 9 \times 40$

$\Rightarrow 340 + 10p = 360$

$\Rightarrow 10p = 360 - 340$

$\Rightarrow 10p = 20$

$\Rightarrow p = \frac{20}{10}$

$\Rightarrow p = 2$

7. The following table shows the number of plants in 20 houses in a group

Number of plants	0 - 2	2 - 4	4 - 6	6 - 8	8 - 10	10 - 12	12 - 14
Number of Houses	1	2	2	4	6	2	3

Find the mean number of plants per house

Ans. We have

Number of plant	Number of Houses (f_i)	Class Mark (x_i)	$f_i x_i$
0 - 2	1	1	$1 \times 1 = 1$
2 - 4	2	3	$2 \times 3 = 6$
4 - 6	2	5	$2 \times 5 = 10$
6 - 8	4	7	$4 \times 7 = 28$
8 - 10	6	9	$6 \times 9 = 54$
10 - 12	2	11	$2 \times 11 = 22$
12 - 14	3	13	$3 \times 13 = 39$

$$\sum f_i = 1 + 2 + 2 + 4 + 6 + 2 + 3 = 20$$

$$\sum f_i x_i = 1 + 6 + 10 + 28 + 54 + 22 + 39 = 160$$

$$\text{Therefore, mean} = \frac{\sum (f_i x_i)}{\sum f_i} = \frac{160}{20} = 8 \text{ plants}$$

8. Find the mean weight of 50 girls from the following table.

Weight in kg	40	42	34	36	46
No. of girls	6	6	15	14	7

Ans. Mean = $\frac{(f_1 x_1 + f_2 x_2 + f_3 x_3 + f_4 x_4 + f_5 x_5)}{f_1 + f_2 + f_3 + f_4 + f_5}$

$$= \frac{(40 \times 6 + 42 \times 6 + 34 \times 15 + 36 \times 14 + 46 \times 7)}{(6 + 6 + 15 + 14 + 7)}$$
$$= \frac{(240 + 252 + 510 + 504 + 322)}{50} = \frac{1828}{50}$$
$$= 36.56$$

9. If the mean of the following frequency distributions is 9, find the value of 'a'. Write the tally marks also.

Variable (x_i)	4	6	8	10	12	15
Frequency (f_i)	8	9	17	a	8	4

Ans. Frequency distribution table.

Variable (x_i)	Tally Marks	Frequency (f_i)	$f_i x_i$
4	III	8	32
6	IIII	9	54
8		17	136
10		a	10a
12	III	8	96
15		4	60
		$\Sigma f_i = 46 + a$	$\Sigma f_i x_i = 378 + 10a$

$$\text{Mean} = \frac{\Sigma(f_i x_i)}{\Sigma f_i}$$

But given mean = 9

$$\text{So, we have } \frac{378+10a}{(46+a)} = 9$$

$$378 + 10a = 9(46 + a)$$

$$378 + 10a = 414 + 9a$$

$$10a - 9a = 414 - 378$$

$$a = 36$$

10. Find the mode of the given set of number

2, 2, 3, 5, 4, 3, 2, 3, 3, 5

Ans. Arranging the number with same values together, we get

2, 2, 2, 3, 3, 3, 3, 4, 5, 5

We observe that 3 occurs maximum number of times, i.e., four.

Therefore, mode of this data is 3.

11. The data 3, 4, 1, 5, 4, 2 has no mode because no number occurs more number of times than any other number.

Ans. A data may have more than one mode

12. The data 2, 5, 1, 3, 5, 7, 6, 3, 8 have two modes 3 and 5.

Ans. Therefore, each is repeated two times which is maximum.

13. The height of 50 plants in a garden are given below.

Height (cm)	10	25	30	40	45
Number plants	13	15	12	8	2

Find the mode of the data.

Ans. The frequency of 25 is maximum.

So, the mode of this data is 15.

14. Find the median of the data 25, 37, 47, 18, 19, 26, 36

Ans. Arranging the data in ascending order, we get 18, 19, 25, 26, 36, 37, 47

Here, the number of observations is odd, i.e., 7.

Therefore, median = $\left(n + \frac{1}{2}\right)^{\text{th}}$ observation.

$$= \left(7 + \frac{1}{2}\right)^{\text{th}} \text{ observation.}$$

$$= \left(\frac{8}{2}\right)^{\text{th}} \text{ observation}$$

$$= 4^{\text{th}} \text{ observation.}$$

4th observation is 26

Therefore, median of the data is 26.

15. Find the median of the data 24, 33, 30, 22, 21, 25, 34, 27.

Ans. Here, the number of observations is even, i.e., 8.

Arranging the data in ascending order, we get 21, 22, 24, 25, 27, 30, 33, 34

Therefore, median = $\{(n/2)^{\text{th}} \text{ observation} + (n + 1/2)^{\text{th}} \text{ observation}\}/2$

$$= \left(\frac{8}{2}\right)^{\text{th}} \text{ observation} + \left(\frac{8}{2} + 1\right)^{\text{th}} \text{ observation}$$

$$= 4^{\text{th}} \text{ observation} + (4 + 1)^{\text{th}} \text{ observation}$$

$$= \frac{\{25+27\}}{2}$$

$$= \frac{52}{2}$$

$$= 26$$

Therefore, the median of the given data is 26.