Chapter – 05

Data Handling

Exercises 5.1

Question 1. For which of these would you use a histogram to show the data?

(a) The number of letters for different areas in a postman's bag.

(b) The height of competitors in an athletics meet.

(c) The number of cassettes produced by 5 companies.

(d) The number of passengers boarding trains from 7:00 a.m. to 7:00 p.m. at a station.

Give reasons for each.

Answer:

while observing the given data we can conclude that data in (b) and (d) can be represented using a histogram.

Now, these data can be arranged in class intervals.

This is what is required to depict a histogram.

There should be no gap between two bars

(a) The number of letters for different areas in a postman's bag - This situation cannot be represented in histogram form as we cannot deduce the class interval.

(b) The height of competitors in an athletics meet - This situation can be represented by histogram, as the height of competitors will give continuous class intervals. (c) The number of cassettes produced by 5 companies - Now the number of cassettes in this situation can be in any amount and hence the class interval is not defined. (d) The number of

passengers boarding trains from 7:00 a.m. to 7:00 p.m. at a station - As the time is predefined from 7:00 am to 7:00 pm, the class interval for this period can be easily formed and thus can be represented by histogram.

Question 2. The shoppers who come to a departmental store are marked as: man (M), woman (W), boy (B) or girl (G). The following list gives the shoppers who came during the first hour in the morning:

W WW G B W W M G G M M W WWW G B M W B G G M W W M M W WW M W B W G M W WWW G W M M W W M W G W M G W M M B G G W

Make a frequency distribution table using tally marks. Draw a bar graph to illustrate it.

Answer: For drawing the frequency distribution table. Count the different attributes that are given. In the given question that is W, M, B, G and we will count them using tally marks.

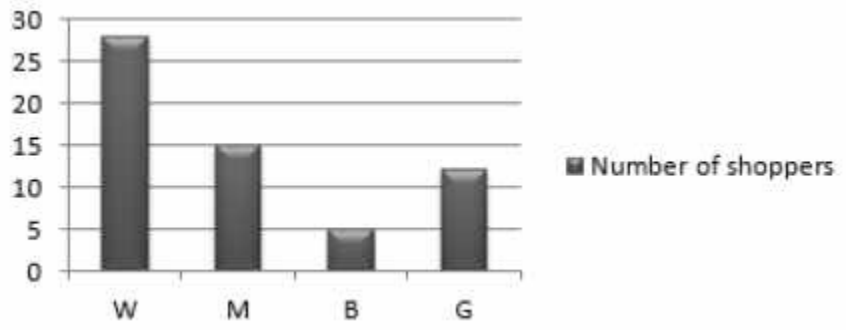
Tally marks are a quick way of keeping track of numbers in groups of five. One vertical line is made for each of the first four numbers; the fifth number is represented by a diagonal line across the previous four.

The frequency distribution table of the given data can be represented as:

Shopper	Tally marks	Number
W	𝍸 𝍸 𝍸 |||	28
M	𝍸 𝍸 𝍸	15
B	𝍸	5
G	𝍸 𝍸 ||	12

The bar graph of the given data:

Number of shoppers



Question 3. The weekly wages (in Rs) of 30 workers in a factory are.

830, 835, 890, 810, 835, 836, 869, 845, 898, 890, 820, 860, 832, 833, 855, 845, 804, 808, 812, 840, 885, 835, 835, 836, 878, 840, 868, 890, 806, 840

Using tally marks make a frequency table with intervals as 800–810, 810–820 and so on.

Answer: For frequency distribution table, we need to count the wages lying in a particular class interval. For example, for class interval 800 - 810. Count the number of wages lying between this range using tally marks, and for 800 - 810, 3 wages lie under it.

Tally marks are a quick way of keeping track of numbers in groups of five. One vertical line is made for each of the first four numbers; the fifth number is represented by a diagonal line across the previous four.

Frequency distribution table using the tally marks for the given data is:

Interval	**Tally marks**	**Frequency**
800-810	III	3
810-820	II	2
820-830	I	1
830-840	~~IIII~~III	9

840-850	~~IIII~~	5
850-860	I	1
860-870	III	3
870-880	I	1
880-890	I	1
890-900	IIII	4

Question 4. Draw a histogram for the frequency table made for the data in Question 3, and answer the following questions.

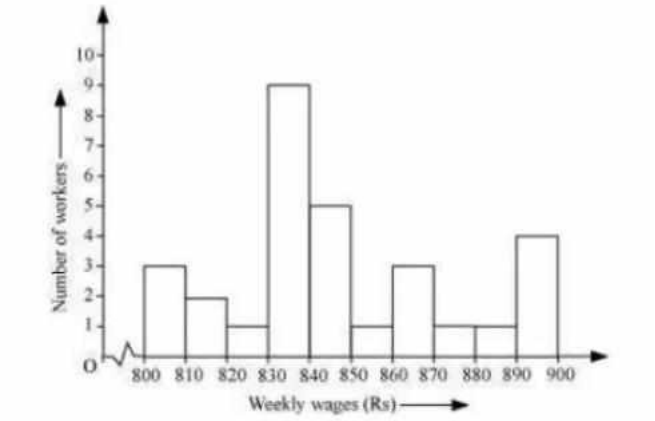
(i) Which group has the maximum number of workers?

(ii) How many workers earn Rs 850 and more?

(iii) How many workers earn less than Rs 850?

Answer:

The histogram for the above given frequency table is:



(i) The group earning Rs. 830-840 per week has the maximum number of workers

(ii) The workers who earn more than Rs 850 fall under the group of 850-860 or 860-870 or 870-880 or 880-890.

Therefore, there are total 10 workers who are earning Rs. 850 or more.

(iii) The workers who earn less than Rs 850 fall under the group of 800-810 or 810-820 or 820-830 or 830-840 or 840-850. Therefore, there are total20 workers who are earning less than Rs. 850.

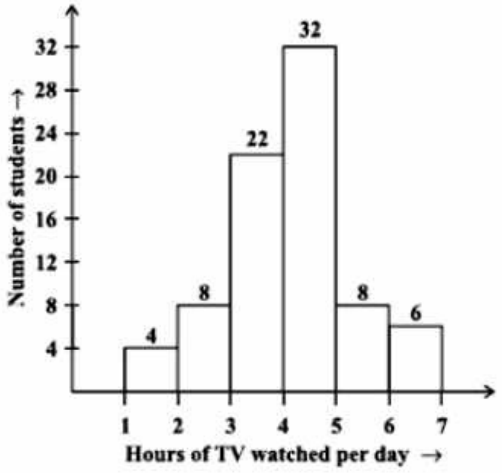
Question 5. The number of hours for which students of a particular class watched television during holidays is shown through the given graph.

Answer the following.

(i) For how many hours did the maximum number of student's watch TV?

(ii) How many students watched TV for less than 4 hours?

(iii) How many students spent more than 5 hours in watching TV?



Answer:

(i) From the given graph it can be observed that most of the students watched TV for 4 to 5 hours.

(ii) As per the graph, there were 34 students who watched TV for less than 4 hours.

(iii) The students who watched TV for more than 5 hours were 14 students, according to the given graph.

Exercises 5.2

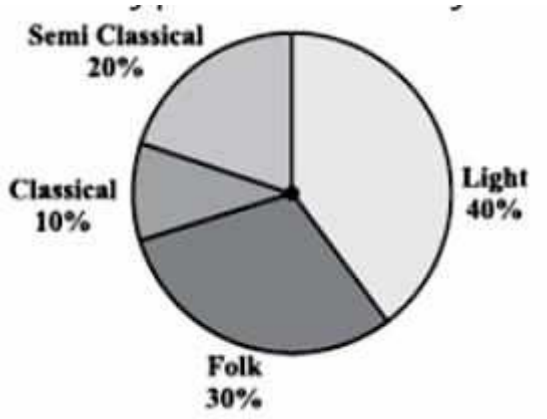
Question 1. A survey was made to find the type of music that a certain group of young people liked in a city. Adjoining pie chart shows the findings of this survey.

From this pie chart answer the following:

(i) If 20 people liked classical music, how many young people were surveyed?

(ii) Which type of music is liked by the maximum number of people?

(iii) If a cassette company were to make 1000 CD's, how many of each type would they make?



Answer:

(i) As per the pie chart 10% people like classical music.

This 10% shows 20 people.

So,

10 % of total people = 20

Total people $= \frac{20}{10\%} = \frac{20\times100}{10} = 200$

Hence, Total of 200 people were surveyed.

(ii) According to the pie chart 40% people like the light music and it is greater than any other type of music.

So Light music is liked by maximum number of people.

(iii)

Total number of CD's = 1000Number of CD's for different music are as follows:

a) Semi Classical

= 1000 x 20%

= 200

b) Classical music

= 1000 x 10%

= 100

c) Folk music:

= 1000 x 30%

= 300

d) Light music:

= 1000 x 40%

= 400

Question 2. A group of 360 people were asked to vote for their favourite season from the three seasons rainy, winter and summer.

(i) Which season got the most votes?

(ii) Find the central angle of each sector.

(iii) Draw a pie chart to show this information.

Season	No. of votes
Summer 	90
Rainy 	120
Winter 	150

Answer:

(i) Winter got the most number of votes as observed in the graph.

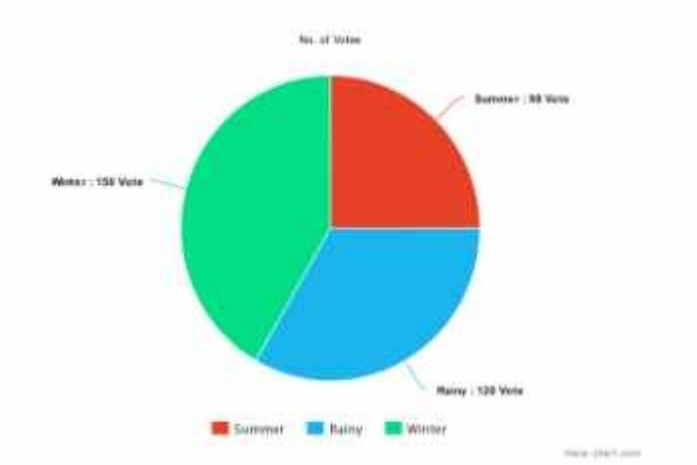
(ii) Central Angle can be calculated as follows:

Total number of votes:

90 +120 +150 = 360

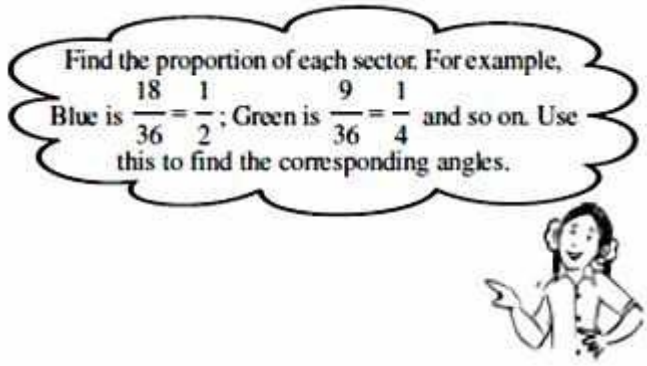
Season	**Number of votes**	**In fraction**	**Central angle**
Summer	90	$\frac{90}{360}$	$\frac{90}{360} \times 360 = 90°$
Rainy	120	$\frac{120}{360}$	$\frac{120}{360} \times 360 = 120°$
Winter	150	$\frac{150}{360}$	$\frac{150}{360} \times 360 = 150°$

(iii) The pie chart for the given data is:



Question 3. Draw a pie chart showing the following information. The table shows the colours preferred by a group of people.

Colours	Number of people
Blue	18
Green	9
Red	6
Yellow	3
Total	36



Answer:

The central angle for each angle can be calculated as:

Colours	**Number of people**	**In fraction**	**Central angle**
Blue	18	$\frac{18}{36}$	$\frac{18}{36} \times 360 = 180°$
Green	9	$\frac{9}{36}$	$\frac{9}{36} \times 360 = 90°$
Red	6	$\frac{6}{36}$	$\frac{6}{36} \times 360 = 60°$
Yellow	3	$\frac{3}{36}$	$\frac{3}{36} \times 360 = 30°$

Pie chart of the above data:

Question 4. The adjoining pie chart gives the marks scored in an examination by a student in Hindi, English, Mathematics, Social Science and Science. If the total marks obtained by the students were 540, answer the following questions.

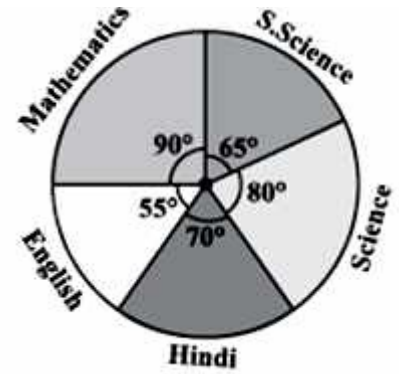
(i) In which subject did the student score 105 marks?

(Hint: for 540 marks, the central angle = 360°. So, for 105 marks, what is the central angle?)

(ii) How many more marks were obtained by the student in Mathematics than in Hindi?

(iii) Examine whether the sum of the marks obtained in Social Science and Mathematics is more than that in Science and Hindi.

(Hint: Just study the central angles).



Answer:

(i) Total marks obtained by the student are 540.

Hence, 540 marks represents 360°

Now,

Central angle for 105 marks =

$$\text{Central Angle for 105 marks} = \frac{105}{\text{Total Marks}} \times 360°$$

$$\text{Central Angle for 105 marks} = \frac{105}{540} \times 360°$$

Central Angle for 105 marks = 70°

Hindi has its central angle as 70°

Hence, students score 105 marks in Hindi.

(ii) Angle made by Mathematics = 90°

$$\text{Marks obtained by student in Mathematics} = \frac{90°}{360°} \times 540$$

$$\text{Marks obtained by student in Mathematics} = 135 \text{ marks}$$

Angle made by = 70°

Marks obtained by student in Hindi $= \frac{70°}{360°} \times 540$

Marks obtained by student in Hindi $= 105$ marks

So the difference of marks $= 135 - 105 = 30$ marks

(iii)

Total of Angles of Social Science and Math = 65°+90°=155°

Total of Angles of Science and Hindi = 80°+70°=150°

It is clear that sum of marks obtained in Social Science and Math is more than that in Science and Hindi, So Answer is Yes!

Question 5. The number of students in a hostel, speaking different languages is given below. Display the data in a pie chart.

Language	Hindi	English	Marathi	Tamil	Bengali	Total
Number of students	40	12	9	7	4	72

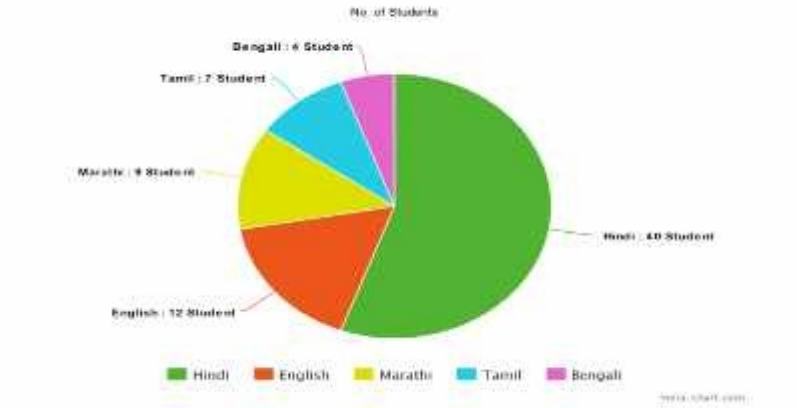
Answer:

The given data can be represented in the form of a pie chart as:

We'll find the Central angles for respective languages in the Pi Chart.

Language	Hindi	English	Marathi	Tamil	Bengali	Total
Number of students	40	12	9	7	4	72

Central Angle	$\frac{40}{72} \times 360 = 200$	$\frac{12}{72} \times 360 = 60°$	$\frac{9}{72} \times 360 = 45°$	$\frac{7}{72} \times 360 = 35°$	$\frac{4}{72} \times 360 = 20°$



Exercises 5.3

Question 1. List the outcomes you can see in these experiments.

(a) Spinning a wheel

(b) Tossing two coins together

Answer:

(a)

The List of outcomes in spinning a wheel are as follows:

A, A, B, C, D

but the outcomes cannot repeat itself, so the outcomes are A, B, C, D

(b) There will be following outcomes of Head and Tail if two coins are tossed together:

HH, HT, TH, TT

Question 2. When a die is thrown, list the outcomes of an event of getting

(i) (a) a prime number

(b) not a prime number

(ii) (a) a number greater than 5

(b) a number not greater than 5

Answer:

List of events when a die is thrown are as follows:

1, 2, 3, 4, 5, 6

(i) (a) List of Prime Numbers: 2, 3, 5

(b) List of Non-prime numbers: 1, 4, 6

(ii) (a) List of Number >5: 6

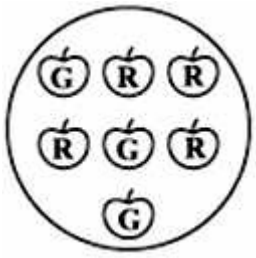
(b) List of Number Not greater than 5: 1, 2, 3, 4, 5

Question 3. Find the.

A. Probability of the pointer stopping on D in (Question 1-(a))?

B. Probability of getting an ace from a well shuffled deck of 52 playing cards?

C. Probability of getting a red apple. (See figure below)



Answer:

A. Total number of events = 5

No. of favourable outcome = 1

Hence, probability of favourable outcome

$$= \frac{\text{Favourable outcomes}}{\text{total outcomes}}$$

$$= \frac{1}{5}$$

B. Total Number of events = 52

Number of Favourable outcomes = 4 (As we know that there are 4 aces in a pack of cards)

Probability of favourable outcome:

$$= \frac{\text{Fovourable outcomes}}{\text{total outcomes}}$$

$$= \frac{4}{52}$$

$$= \frac{1}{13}$$

C. Total number of events = 7

Number of Favourable outcomes = 4

Probability of favourable outcomes:

$$= \frac{\text{Favourable outcomes}}{\text{total outcomes}}$$

$= \frac{4}{7}$

Question 4. Numbers 1 to 10 are written on ten separate slips (one number on one slip), kept ina box and mixed well. One slip is chosen from the box without looking into it. What is the probability of?

(i) getting a number 6?

(ii) getting a number less than 6?

(iii) getting a number greater than 6?

(iv) getting a 1-digit number?

Answer: Total number of events = 10

Number of favourable events for getting number 6 = 1

Now,

Probability of getting a 6:

$= \frac{\text{Favourable outcomes}}{\text{total outcomes}}$

$= \frac{1}{10}$

Probability of getting number less than 6:

$= \frac{\text{Favourable outcomes}}{\text{total outcomes}}$

$= \frac{5}{10}$

$= \frac{1}{2}$

Probability of getting number greater than 6:

$$= \frac{\text{Favourable outcomes}}{\text{total outcomes}}$$

$$= \frac{4}{10}$$

$$= \frac{2}{5}$$

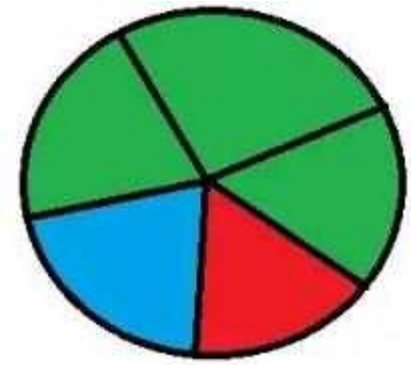
Probability of getting a one-digit number:

$$= \frac{\text{Favourable outcomes}}{\text{total outcomes}}$$

$$= \frac{9}{10}$$

Question 5. If you have a spinning wheel with 3 green sectors, 1 blue sector and 1 red sector, what is the probability of getting a green sector? What is the probability of getting anon blue sector?

Answer:



Total number of events = 5 (because there are total 5 sectors)

Probability of getting a green sector:

$$= \frac{\text{Favourable outcomes}}{\text{total outcomes}}$$

$$= \frac{3}{5}$$

Now,

Probability of getting a non-blue sector:

=1- (Probability of getting Blue Sector)

$= 1 - \frac{1}{5}$

$= \frac{5-1}{5}$

$= \frac{4}{5}$

Question 6. Find the probabilities of the events given in Question 2.

Answer: In throwing a die, possible outcomes of the number appearing on top face = 1, 2, 3, 4, 5, 6

Prime numbers in the outcomes = 2, 3, 5

Non-prime numbers in the outcomes = 1, 4, 6

Numbers greater than 5 = 6

Numbers not greater than 5(including 5) = 1, 2, 3, 4, 5

Probability of getting a prime number:

$= \frac{\text{Favourable outcomes}}{\text{total outcomes}}$

$= \frac{3}{6}$

$= \frac{1}{2}$

Probability of getting a non-prime number:

$= \frac{\text{Favourable outcomes}}{\text{total outcomes}}$

$= \frac{3}{6}$

$$= \frac{1}{2}$$

Probability of getting number greater than 5:

$$= \frac{\text{Favourable outcomes}}{\text{total outcomes}}$$

$$= \frac{1}{6}$$

Probability of getting a number not greater than 5:

$$= \frac{\text{Favourable outcomes}}{\text{total outcomes}}$$

$$= \frac{5}{6}$$