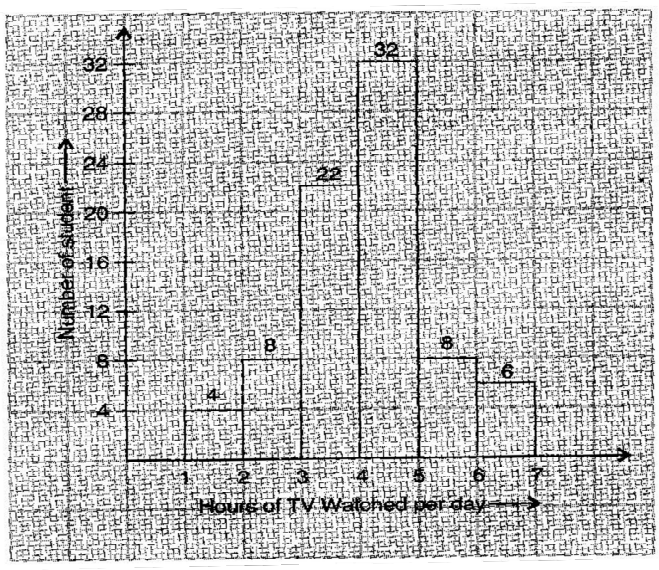
Class –VIII Mathematics (Ex. 5.1)
Questions

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 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 reason for each.
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 W W G B W W M G G M M W W W W G B M W B G G M W W M M W W W M W B W G M W W W W G W M M 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.
3. The weekly wages (in `) 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.
4. Draw a histogram for the frequency table made for the data in Question 3 and answer the following questions.
   (i) How many workers earn ` 850 and more?
   (ii) How many workers earn less than ` 850?
5. The number of hours for which students of a particular class watched television during holidays is shown through the given graph.
   We draw the histogram for above frequency table:
   Answer the following:
   (i) For how many hours did the maximum number of students watch T.V.?
   (ii) How many students watched TV for less than 4 hours?
   (iii) How many students spent more than 5 hours in watching TV?

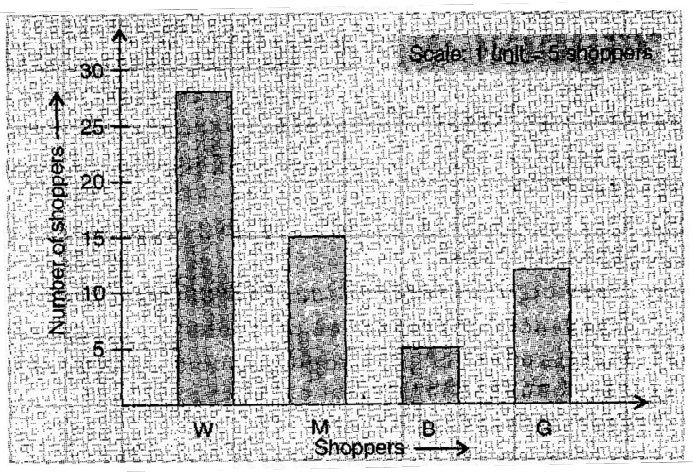


Class –VIII Mathematics (Ex. 5.1)
Answers

1. Since, Histogram is a graphical representation of data, if data represented in manner of class-interval.
   Therefore, for case (b) and (d), we would use a histogram to show the data, because in these cases, data can be divided into class-intervals.
   In case (b), a group of competitions having different heights in an athletics meet.
   In case (d), the number of passengers boarding trains in an interval of one hour at a station.
2. The frequency distribution table is as follows:

Shopper	Tally Marks	Number of shoppers
W	𝍸 𝍸 𝍸 𝍸 𝍸 III	28
M	𝍸 𝍸 𝍸	15
B	𝍸	5
G	𝍸 𝍸 II	12
	Total	60

The illustration of data by bar-graph is as follows:



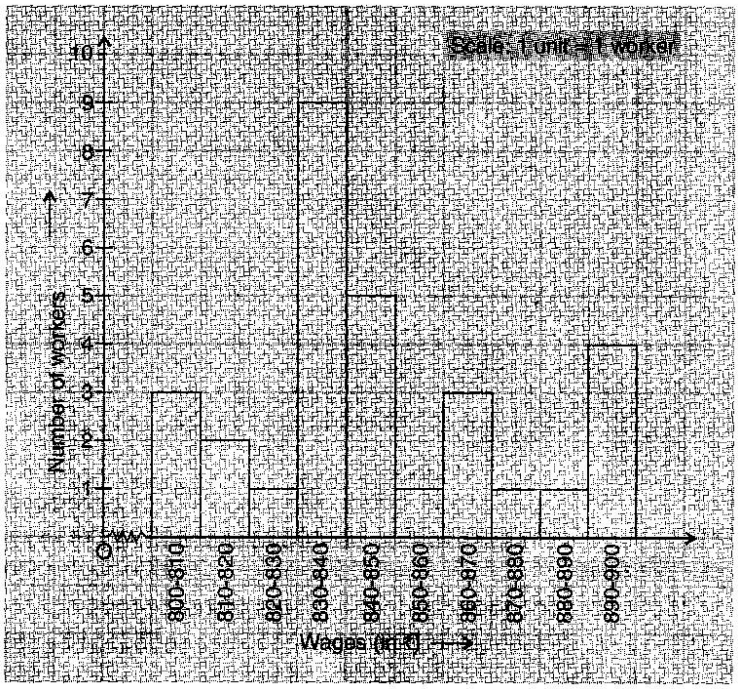
3. The representation of data by frequency distribution table using tally marks is as follows:

Class Intervals	Tally Marks	Frequency
800–810	III	3
810–820	II	2
820–830	I	1
830–840	𝍸 IIII	9
840–850	𝍸	5
850–860	I	1
860–870	III	3
870–880	I	1
880–890	I	1
890–900	IIII	4
	Total	30

4. (i) 830 – 840 group has the maximum number of workers.

(ii) 10 workers can earn more than ` 850.

(iii) 20 workers earn less than ` 850.



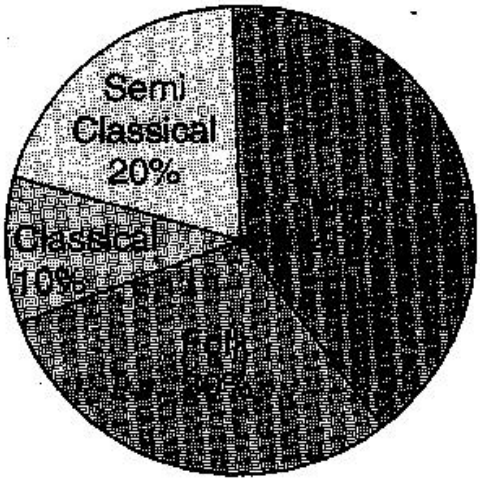
5. (i) The maximum number of students watched T.V. for 4 – 5 hours.

(ii) 34 students watched T.V. for less than 4 hours.

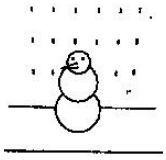
(iii) 14 students spent more than 5 hours in watching T.V.

Class –VIII Mathematics (Ex. 5.2)
Questions

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?



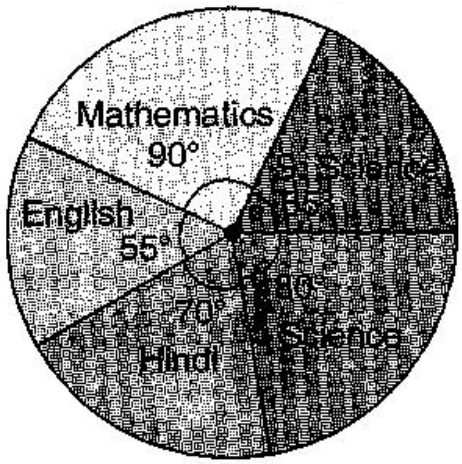
2. A group of 360 people were asked to vote for their favourite season from the three seasons rainy, winter and summer.
   (i) Which season got the most votes?
   (ii) Find the central angle of each sector.
   (iii) Draw a pie chart to show this information.

Season	No. of votes
Summer 	90
Rainy 	120
Winter 	150

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

Colours	No. of people
Blue	18
Green	9
Red	6
Yellow	3
Total	**36**

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)

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**
No. of students	40	12	9	7	4	72

Class –VIII Mathematics (Ex. 5.2)
Answers

1. (i) 10% represents 100 people.

Therefore 20% represents = $\frac{100\times 20}{10}$ = 200 people

Hence, 200 people were surveyed.

(ii) Light music is liked by the maximum number of people.

(iii) CD's of classical music = $\frac{10\times 1000}{100}$ = 100

CD's of semi-classical music = $\frac{20\times 1000}{100}$ = 200

CD's of light music = $\frac{40\times 1000}{100}$ = 400

CD's of folk music = $\frac{30\times 1000}{100}$ = 300

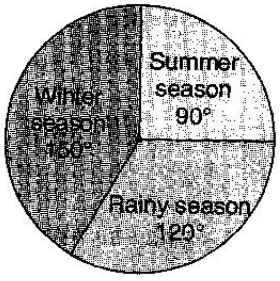
2. (i) Winter season got the most votes.

(ii) Central angle of summer season = $\frac{90^\circ\times 360^\circ}{360^\circ}=90^\circ$

Central angle of rainy season = $\frac{120^\circ\times 360^\circ}{360^\circ}=120^\circ$

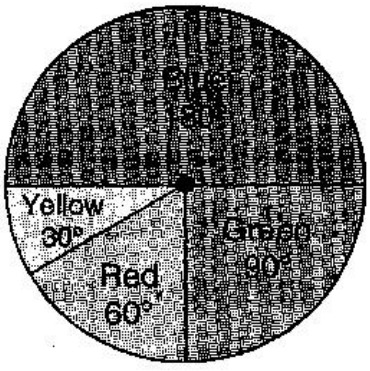
Central angle of winter season = $\frac{150^\circ\times 360^\circ}{360^\circ}=150^\circ$

(iii)



3. Here, central angle = 360° and total number of people = 36

Colours	No. of people	In fraction	Central angles
Blue	18	$\frac{18}{36}=\frac{1}{2}$	$\frac{1}{2}\times 360^\circ=180^\circ$
Green	9	$\frac{9}{36}=\frac{1}{4}$	$\frac{1}{4}\times 360^\circ=90^\circ$
Red	6	$\frac{6}{36}=\frac{1}{6}$	$\frac{1}{6}\times 360^\circ=60^\circ$
Yellow	3	$\frac{3}{36}=\frac{1}{12}$	$\frac{1}{12}\times 360^\circ=30^\circ$



4. Sol.

Subject	Central Angle	Marks obtained
Mathematics	90°	$\frac{90^\circ}{360^\circ}\times 540 = 135$
Social Science	65°	$\frac{65^\circ}{360^\circ}\times 540 = 97.5$
Science	80°	$\frac{80^\circ}{360^\circ}\times 540 = 120$
Hindi	70°	$\frac{70^\circ}{360^\circ}\times 540 = 105$
English	55°	$\frac{55^\circ}{360^\circ}\times 540 = 82.5$

(i) The student scored 105 marks in Hindi.

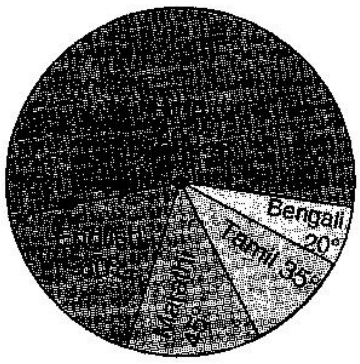
(ii) Marks obtained in Mathematics = 135
Marks obtained in Hindi = 105
Difference = 135 – 105 = 30
Thus, 30 more marks were obtained by the student in Mathematics than in Hindi.

(iii) The sum of marks in Social Science and Mathematics = 97.5 + 135 = 232.5
The sum of marks in Science and Hindi = 120 + 105 = 225
Yes, the sum of the marks in Social Science and Mathematics is more than that in Science and Hindi.

5. Sol.

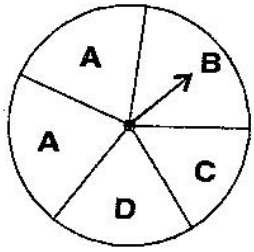
Language	No. of students	In fraction	Central Angle
Hindi	40	$\frac{40}{72}=\frac{5}{9}$	$\frac{5}{9}\times 360^\circ = 200^\circ$
English	12	$\frac{12}{72}=\frac{1}{6}$	$\frac{1}{6}\times 360^\circ = 60^\circ$
Marathi	9	$\frac{9}{72}=\frac{1}{8}$	$\frac{1}{8}\times 360^\circ = 45^\circ$
Tamil	7	$\frac{7}{72}=\frac{7}{72}$	$\frac{7}{72}\times 360^\circ = 35^\circ$
Bengali	4	$\frac{4}{72}=\frac{1}{18}$	$\frac{1}{18}\times 360^\circ = 20^\circ$
Total	72		

Pie chart at above given data is as follows



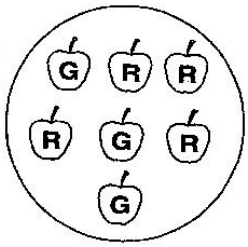
Class –VIII Mathematics (Ex. 5.3)
Questions

1. List the outcomes you can see in these experiments.
   (a) Spinning a wheel (b) Tossing two coins together



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

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 alongside)



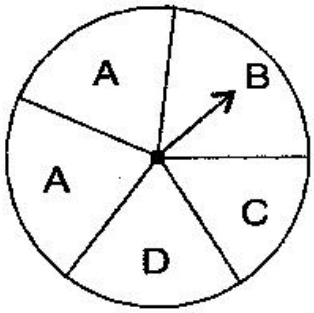
4. Numbers 1 to 10 are written on ten separate slips (one number on one slip), kept in a box and mixed well. One slip is chosen from the box without looking into it. What is the probability of:
   (i) getting a number 6.
   (ii) getting a number less than 6.
   (iii) getting a number greater than 6.
   (iv) getting a 1-digit number.

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 a none-blue sector?

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

Class –VIII Mathematics (Ex. 5.3)
Answers

1. (a) There are four letters A, B, C and D in a spinning wheel. So there are 4 outcomes.
   (b) When two coins are tossed together. There are four possible outcomes HH, HT, TH, TT.
   (Here HT means head on first coin and tail on second coin and so on.)
2. (i) (a) Outcomes of event of getting a prime number are 2, 3 and 5.
   (b) Outcomes of event of not getting a prime number are 1, 4 and 6.
   (ii) (a) Outcomes of event of getting a number greater than 5 is 6.
   (b) Outcomes of event of not getting a number greater than 5 are 1, 2, 3, 4 and 5.
3. (a) In a spinning wheel, there are five pointers A, A, B, C, D. So there are five outcomes. Pointer stops at D which is one outcome.



   So the probability of the pointer stopping on D = $\frac{1}{5}$

   (b) There are 4 aces in a deck of 52 playing cards. So, there are four events of getting an ace.

   So, probability of getting an ace = $\frac{4}{42} = \frac{1}{4}$

   (c) Total number of apples = 7
   Number of red apples = 4

   Probability of getting red apple = $\frac{4}{7}$

4. (i) Outcome of getting a number 6 from ten separate slips is one.

   Therefore, probability of getting a number 6 = $\frac{1}{10}$

   (ii) Numbers less than 6 are 1, 2, 3, 4 and 5 which are five. So there are 5 outcomes.

   Therefore, probability of getting a number less than 6 = $\frac{5}{10} = \frac{1}{2}$

   (iii) Number greater than 6 out of ten that are 7, 8, 9, 10. So there are 4 possible outcomes.

   Therefore, probability of getting a number greater than 6 = $\frac{4}{10} = \frac{2}{5}$

   (iv) One digit numbers are 1, 2, 3, 4, 5, 6, 7, 8, 9 out of ten.

   Therefore, probability of getting a 1-digit number = $\frac{9}{10}$

5. There are five sectors. Three sectors are green out of five sectors.

   Therefore, probability of getting a green sector = $\frac{3}{5}$

   There is one blue sector out of five sectors.
   Non-blue sectors = 5 – 1 = 4 sectors

Therefore, probability of getting a non-blue sector = $\frac{4}{5}$

6. When a die is thrown, there are total six outcomes, i.e., 1, 2, 3, 4, 5 and 6.

(i) (a) 2, 3, 5 are prime numbers. So there are 3 outcomes out of 6.

Therefore, probability of getting a prime number = $\frac{3}{6} = \frac{1}{2}$

(b) 1, 4, 6 are not the prime numbers. So there are 3 outcomes out of 6.

Therefore, probability of getting a prime number = $\frac{3}{6} = \frac{1}{2}$

(ii) (a) Only 6 is greater than 5. So there is one outcome out of 6.

Therefore, probability of getting a number greater than 5 = $\frac{1}{6}$

(b) Numbers not greater than 5 are 1, 2, 3, 4 and 5. So there are 5 outcomes out of 6.

Therefore, probability of not getting a number greater than 5 = $\frac{5}{6}$