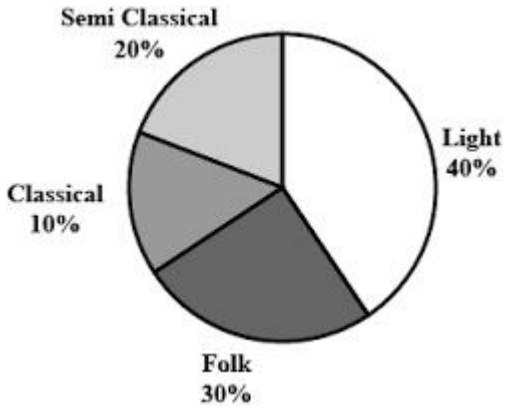
Data Handling

4 Chapter

EXERCISE 4.1

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 CDs, how many of each type would they make?



Ans: (i)

Number of people who are into classical music =10%

10% of pie chart =20 people

1% $\Rightarrow \frac{20}{10} \times 100$

and 100% $\Rightarrow \frac{20}{10} \times 100 \times \frac{100}{100}$

$\Rightarrow$200 people.

(ii)

Light chart represent maximum number as it is 40% of total. ∴ Light music is liked by max. people.

(iii)

Number of CD's of classical music $\Rightarrow \frac{10}{100} \times 1000(10\%)$

$=100$

Number of CD's of semi classical music $= \frac{20}{100} \times 1000(20\%)$

$=200$

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

Number of CD's of light music $= \frac{40}{100} \times 1000\ (40\%)$

$= 400$

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

Ans: (i) Winter got mist votes:150

(ii) to calculate central angle:

We must know total votes =90+120+150

=360

Summer ⇒90 votes ⇒ Central angles ⇒ $\frac{90}{360}$ ×360°

=90°

Rainy ⇒120 votes ⇒ Central angle = $\frac{120}{360}$ ×360°

=120°

Winter ⇒150 votes ⇒ Central angle ⇒$\frac{160}{360}$×360°

=150°

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**

Find the proportion of each sector.

For example, Blue is $\frac{18}{36} = \frac{1}{2}$ **; Green is** $\frac{9}{36} = \frac{1}{4}$ **and so on.**

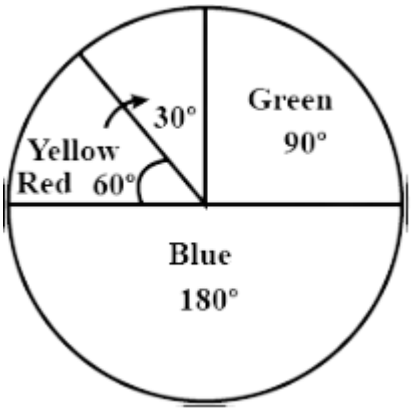
Use this to find the corresponding angles.

Ans: Central angle: Blue $\Rightarrow \frac{18}{36}\ 360^o = 180^o$

Green $\Rightarrow \frac{9}{36} \times 360^o = 90^o$

Red $\Rightarrow \frac{6}{36} \times 360^o = 60^o$

Yellow $\Rightarrow \frac{3}{36} \times 360^o = 30^o$

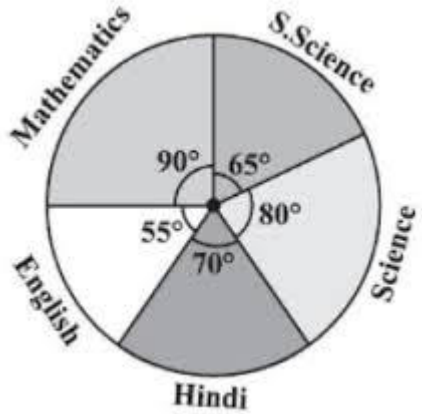


4: The adjoining pie chart gives the marks scored in an examination by a student in Hindi, English, Mathematics, Social Science and Science. If the total marks obtained by the students were 540, answer the following questions.

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



Ans: (i)

Total marks obtained =540

540° represents 360°

∴ The central angle for 105 marks:

$= \frac{150}{540} \times 360^\circ = 70^\circ$

Hindi's central angle is 70°

∴ Student scored 105 marks in Hindi

(ii)

Difference between central angles of Maths and Hindi

$\Rightarrow 90^o - 70^o \Rightarrow 20^o$

Marks for 20° central angles $= \frac{20}{160} \times 540^\circ = 30^\circ$

∴30 more marks were obtained by student in maths than in hindi

(iii)

Sum of central angles of social science and maths

$= 65^\circ + 90^\circ = 155^\circ$

Sum of central angles of Science and Hindi $= 80^\circ + 70^\circ = 150^\circ$

Sum of central angles for social Science and Mathematics > Science and

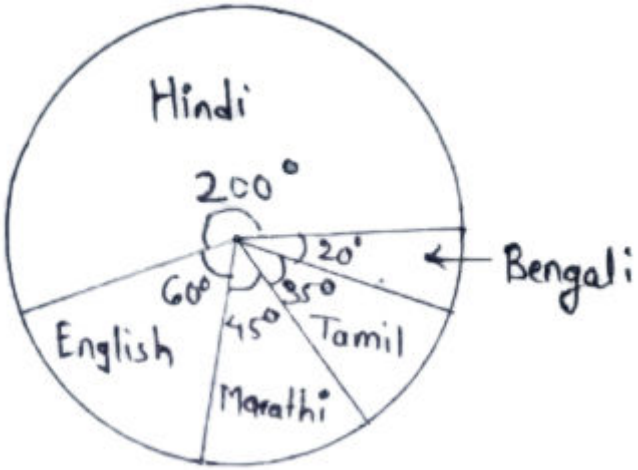
Hindi.

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**

Ans:

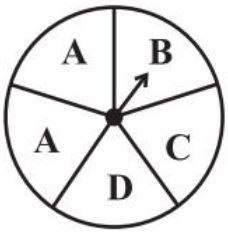
Language	No.ofstudents	Centralangle
Hindi	40	$\frac{40}{72}\times360^{o}=200^{0}$
English	12	$\frac{12}{72}\times360^{o}=60^{o}$
Marathi	9	$\frac{9}{72}\times360^{o}=45^{o}$
Tamil	7	$\frac{7}{72}\times360^{o}=35^{o}$
Bengali	4	$\frac{4}{72}\times360^{o}=20^{o}$



EXERCISE 4.2

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

(a) Spinning a wheel **(b) Tossing two coins together**



Ans: (a) There are four letters A, B, C and D in the spinning wheel. So there are 4 outcomes.
(b) When two coins are tossed together. There are four possible outcomesHH, HT, TH, TT. (Here HT means head on first coin and tail on second coin and so on.)

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

Ans: Possible outcomes: 1,2,3,4,5,6

(i) (a) Prime numbers: 2,3,5

It represents the outcomes of Prime numbers

(b) Not a prime number: 1,4,6

It represent the outcomes of not a prime numbers.

(ii) (a) Number greater than 5:

Only when 6 comes

(b) Number not greater than 5:

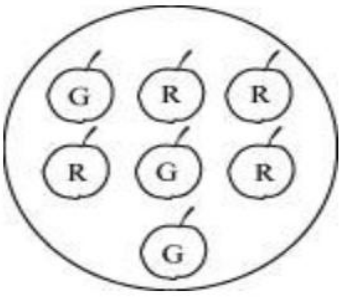
Only when outcomes: 1,2,3,4 and 5

3: Find the.

(a) Probability of the pointer stopping on D in ?

(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)



Ans: (i) 

The pointer can stop at one of the following regions.

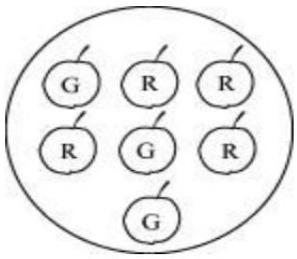
A, A, B, C, D

Out of these 5 cases, it is possible only in 1 case that the pointer will stop at region D**.**

Therefore, probability that the pointer will stop at region D = $\frac{1}{5}$

(ii) There are 52 cards in a deck of cards and there are 4 ace cards in 1 deck of cards.

Probability of getting an ace card = $\frac{4}{52}$ = $\frac{1}{13}$

(iii) 

There are a total of 7 apples, out of which, 4 are red and 3 are green.

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

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?

Ans: (i) Total slips: 10

Probability of getting a number 6 $\Rightarrow \frac{4}{10}$

(ii) Numbers less than 6:1,2,3,4,5

Probability $\Rightarrow \frac{5}{10} = \frac{1}{2}$

(iii) Number greater than 6 are 7,8,9,10

Probability $\Rightarrow 6 \Rightarrow \frac{4}{10} = \frac{2}{5}$

(iv) Single digit: 1,2,3,4,5,6,7,8,9

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

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 non-blue sector?

Ans: Step 1: Calculate the total number of sectors It is given that the number of

Green sector g = 3

Blue sector b = 1

Red sector r = 1

Hence the total number of sectors in the spinning wheel,

t=g+b+r

=3+1+1

= 5 sectors

Step 2: Calculate the probability of green sectors

Probability of green sector,

$P(g) = \frac{g}{t}\left[\text{ Probability } = \frac{\text{Number of favourable outc omes}}{\text{Total number of outcomes}}\right]$

$= \frac{3}{5}$

Step 3: Calculate the probability of non-blue sectors

Total number of non-blue sector

t_b g+r

=3+1

=4

Therefore, the probability of non-blue sector

$P(t_b) = \frac{t_b}{t}$ [Probability $= \frac{\text{Number of favourable outc omes}}{\text{Total number of outcomes}}$]

Hence, the required probabilities $\frac{3}{5}$ are $\frac{4}{5}$

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

Ans: (i) (a) Out of 6 possible outcomes, a prime number can be obtained in three cases. Therefore, probability of getting a prime number = $\frac{3}{6} = \frac{1}{2}$

(b) Out of 6 possible outcomes, a prime number may not be obtained in three cases.

Therefore, probability of getting not a prime number = $\frac{3}{6} = \frac{1}{2}$

(ii) (a) Out of 6 possible outcomes, a number greater than 5 can be obtained in only 1 case.

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

(b) Out of 6 possible outcomes, a number not greater than 5 can be obtained in 5 cases.

Therefore, probability of getting a number not greater than 5 = $\frac{1}{6}$