23. Pie Charts

Exercise 23A

1. Question

The monthly income of a family is Rs. 28800. The monthly expenditure of the family on various items is given below.

Item	Rent	Food	Clothing	Education	Savings
Expenditure (in R.s)	8000	10800	5600	3600	800

Represent the above data by a pie chart.

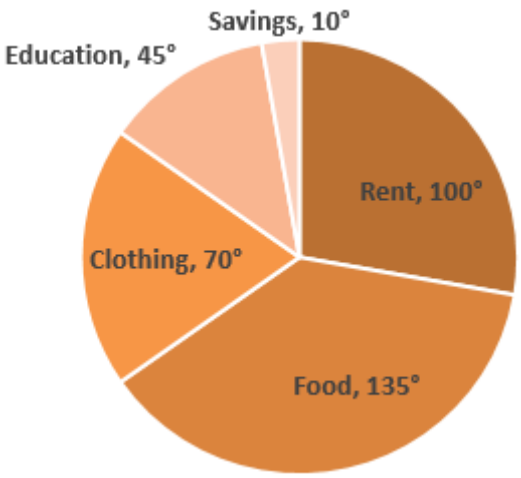
Answer

Total monthly income = Rs.28800.

Central Angle of Component = $\frac{\text{Value of Component}}{\text{Total Value}} \times 360^0$

Calculation of central angles

Item	Amount (in Rs.)	Central Angle
Rent	8000	$\frac{8000}{28800} \times 360° = 100^o$
Food	10800	$\frac{10800}{28800} \times 360° = 135^o$
Clothing	5600	$\frac{5600}{28800} \times 360° = 70^o$
Education	3600	$\frac{3600}{28800} \times 360° = 45^o$
Savings	800	$\frac{800}{28800} \times 360° = 10^o$



2. Question

There are 900 creatures in a zoo as per list given below:

Beast animals	Other land animals	Birds	Water animals	Reptiles
150	400	175	125	50

Represent the above data by a pie chart.

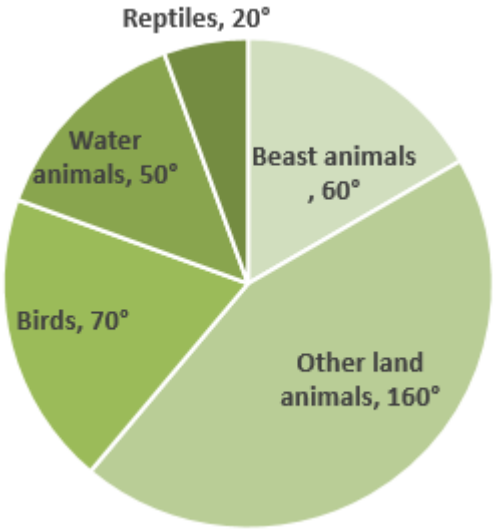
Answer

Total creatures = 900

Central Angle of Component = $\frac{\text{Value of Component}}{\text{Total Value}} \times 360^0$

Calculation of central angles

Creatures	No. of Creatures	Central Angle
Beast Animals	150	$\frac{150}{900} \times 360^\circ = 60^o$
Other Land Animals	400	$\frac{400}{900} \times 360^\circ = 160^o$
Birds	175	$\frac{175}{900} \times 360^\circ = 70^o$
Water Animals	125	$\frac{125}{900} \times 360^\circ = 50^o$
Reptiles	50	$\frac{50}{900} \times 360^\circ = 20^o$



3. Question

Various modes of transport used by 1260 students in a given school are given below:

School bus	Private bus	Bicycle	Rickshaw	On foot
350	245	210	175	280

Represent the above data by a pie chart.

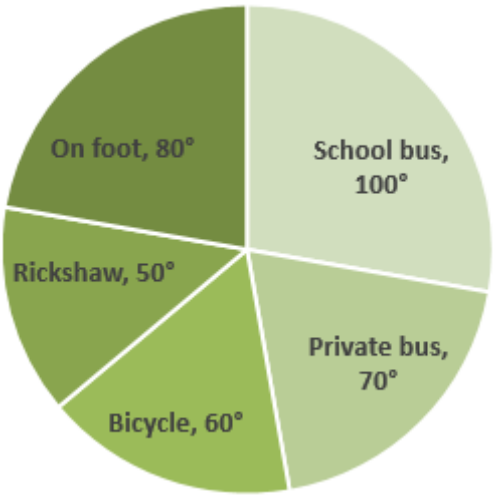
Answer

Total Students = 1260

Central Angle of Component = $\frac{\text{Value of Component}}{\text{Total Value}} \times 360^0$

Calculation of central angles

Mode of Transport	No of Students	Central Angle
School Bus	350	$\frac{350}{1260} \times 360^\circ = 100^o$
Private Bus	245	$\frac{245}{1260} \times 360^\circ = 70^o$
Bicycle	210	$\frac{210}{1260} \times 360^\circ = 60^o$
Rickshaw	175	$\frac{175}{1260} \times 360^\circ = 50^o$
On Foot	280	$\frac{280}{1260} \times 360^\circ = 80^o$



4. Question

The data given below shows number of hours spent by a school boy on different activities on a working day.

Activity	School	Homework	Play	Sleep	Others	Total
Numbers of hours	7	4	2	8	3	24

Represent the above data by a pie chart.

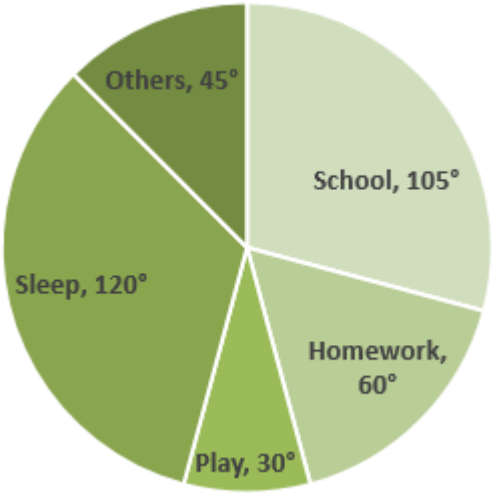
Answer

Total No. of Hours = 24

Central Angle of Component = $\frac{\text{Value of Component}}{\text{Total Value}} \times 360^0$

Calculation of central angles

Activity	No of Hours	Central Angle
School	7	$\frac{7}{24} \times 360^\circ = 105^o$
Homework	4	$\frac{4}{24} \times 360^\circ = 60^o$
Play	2	$\frac{2}{24} \times 360^\circ = 30^o$
Sleep	8	$\frac{8}{24} \times 360^\circ = 120^o$
Others	3	$\frac{3}{24} \times 360^\circ = 45^o$



5. Question

The data of religion-wise division of 1080 workers of a factory are given below:

Religion	Hindu	Muslim	Sikh	Christian
Number of workers	450	270	255	105

Represent the above data by a pie chart.

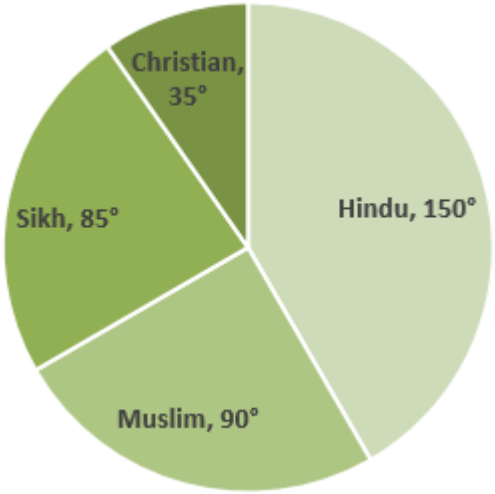
Answer

Total No. of Workers = 1080

Central Angle of Component = $\frac{\text{Value of Component}}{\text{Total Value}} \times 360^0$

Calculation of central angles

Religion	No. of Workers	Central Angle
Hindu	450	$\frac{450}{1080} \times 360^\circ = 150^o$
Muslim	270	$\frac{270}{1080} \times 360^\circ = 90^o$
Sikh	255	$\frac{255}{1080} \times 360^\circ = 85^o$
Christian	105	$\frac{105}{1080} \times 360^\circ = 35^o$



6. Question

The marks obtained by Sudhir in an examination are given below:

Subject	English	Hindi	Mathematics	Science	Social science
Marks obtained	105	75	150	120	90

Represent the above data by a pie chart.

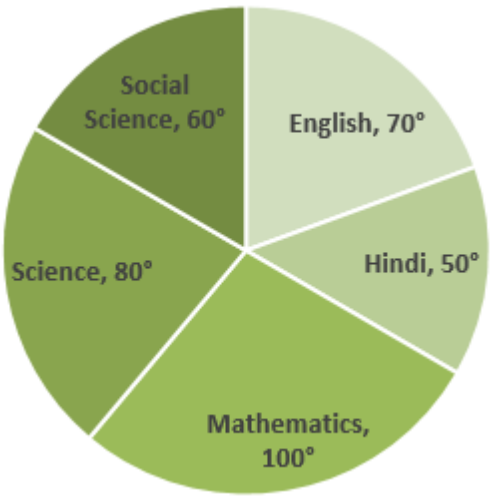
Answer

Total Marks = (105 + 75 + 150 + 120 + 90) = 540

Central Angle of Component = $\frac{\text{Value of Component}}{\text{Total Value}} \times 360^0$

Calculation of central angles

Subject	Marks Obtained	Central Angle
English	105	$\frac{105}{540}\times 360^\circ = 70^o$
Hindi	75	$\frac{75}{540}\times 360^\circ = 50^o$
Mathematics	150	$\frac{150}{540}\times 360^\circ = 100^o$
Science	120	$\frac{120}{540}\times 360^\circ = 80^o$
Social Science	90	$\frac{90}{540}\times 360^\circ = 60^o$



7. Question

The following table gives the number of different fruits kept in a hamper.

Types of fruit	Mangoes	Apples	Oranges	Coconuts	Pomergrantes
Number	26	30	21	5	8

Represent the above data by a pie chart.

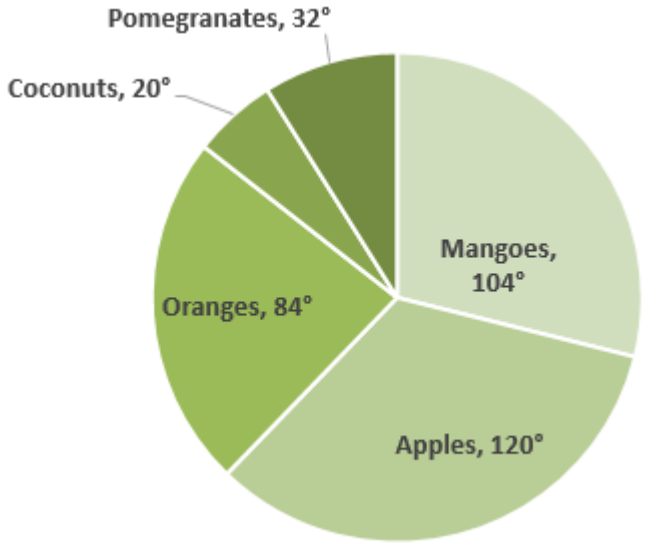
Answer

Total No. of Fruits = (26 + 30 + 21 + 5 + 8) = 90

Central Angle of Component = $\frac{\text{Value of Component}}{\text{Total Value}} \times 360^0$

Calculation of central angles

Fruit	No of Fruits	Central Angle
Mangoes	26	$\frac{26}{90}\times 360^\circ = 104^o$
Apples	30	$\frac{30}{90}\times 360^\circ = 120^o$
Oranges	21	$\frac{21}{90}\times 360^\circ = 84^o$
Coconuts	5	$\frac{5}{90}\times 360^\circ = 20^o$
Pomegranates	8	$\frac{8}{90}\times 360^\circ = 32^o$



8. Question

The following data shows the agricultural production in India during a certain year.

Food grain	Rice	Wheat	Coarse cereals	Pulses
Production (in millions of tons)	57	76	38	19

Draw a pie chart to represent the above data.

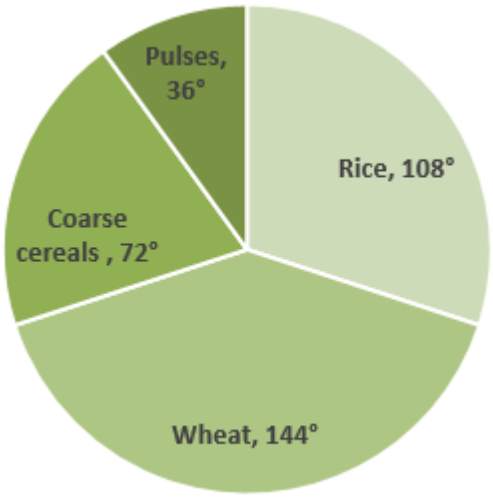
Answer

Total Production = (57 + 76 + 38 + 19) = 190

Central Angle of Component = $\frac{\text{Value of Component}}{\text{Total Value}} \times 360^0$

Calculation of central angles

Food grain	Production (in million tons)	Central Angle
Rice	57	$\frac{57}{190}\times 360^\circ = 108^o$
Wheat	76	$\frac{76}{190}\times 360^\circ = 144^o$
Coarse Cereals	38	$\frac{38}{190}\times 360^\circ = 72^o$
Pulses	19	$\frac{19}{190}\times 360^\circ = 36^o$



9. Question

Given below is the result of an annual examination of a class, showing the percentage of students in each category.

First division	Second division	Third division	Failed
25%	45%	20%	10%

Represent the above data by a pie chart.

Answer

Total Students = (25 + 45 + 20 + 10) = 100

Central Angle of Component = $\frac{\text{Value of Component}}{\text{Total Value}} \times 360^0$

Calculation of central angles

Category	Students (in percentage)	Central Angle
First Division	25	$\frac{25}{100}\times 360^\circ = 90^\circ$
Second Division	45	$\frac{45}{100}\times 360^\circ = 162^\circ$
First Division	20	$\frac{20}{100}\times 360^\circ = 72^\circ$
Failed	10	$\frac{10}{100}\times 360^\circ = 36^\circ$

10. Question

The following table shows the percentages of buyers of four different brands of bathing soaps.

Brand	A	B	C	D
Percentage of buyers	20%	40%	25%	15%

Represent the above data by a pie chart.

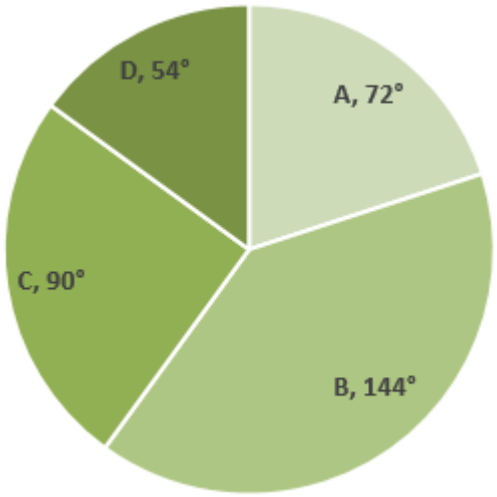
Answer

Total Students = (20 + 40 + 25 + 15) = 100

Central Angle of Component = $\frac{\text{Value of Component}}{\text{Total Value}} \times 360^0$

Calculation of central angles

Brand	Percentage of Buyers	Central Angle
A	20	$\frac{20}{100}\times 360^\circ = 72^o$
B	40	$\frac{40}{100}\times 360^\circ = 144^o$
C	25	$\frac{25}{100}\times 360^\circ = 90^o$
D	15	$\frac{15}{100}\times 360^\circ = 54^o$



Exercise 23B

1. Question

A man's monthly salary is Rs. 24000 and his monthly expenses on travel are Rs. 2500. The central angle of the sector representing travel expenses in the pie chart would be

A. 30°

B. $37\frac{1}{2}^{\circ}$

C. 45°

D. 60°

Answer

Monthly Salary = Rs.24000

Expense on Travel = Rs.2500

Central Angle of Component = $\frac{\text{Value of Component}}{\text{Total Value}} \times 360^0$

$= \frac{2500}{24000} \times 360°$

= 37.5°

2. Question

If 35% of the people residing in a locality are Sikhs then the central angle of the sector representing the Sikh community in the pie chart would be

A. 108°

B. 115°

C. 126°

D. 135°

Answer

Total People residing in locality = 100%

Sikh People residing in same locality = 35%

Central Angle of Component = $\frac{\text{Value of Component}}{\text{Total Value}} \times 360^0$

$= \frac{35}{100} \times 360°$

= 126°

So, Central angle of sector for Sikh community will be 126°.

3. Question

If in the pie chart representing the number of students opting for different streams of study out of a total strength of 1650 students, the central angle of the sector representing arts students is 48° then what is the number of students who opted for arts stream?

A. 220

B. 240

C. 275

D. 320

Answer

Total No. of Students = 1650

Central Angle of sector representing Arts Student = 48^o

Let x be the no. of students opted for Arts Stream

Central Angle of Component = $\frac{\text{Value of Component}}{\text{Total Value}} \times 360^0$

$48 = \frac{x}{1650} \times 360°$

$X = \frac{48 \times 1650}{360}$

= 220

So, No. of Students opted for Arts Stream = 220.

4. Question

In the pie chart representing the percentage of students having interest in reading various kinds of books, the central angle of the sector representing students reading novels is 81°. What is the percentage of students interested in reading novels?

A. 15%

B. 18%

C. $22\frac{1}{2}\%$

D. $27\frac{1}{2}\%$

Answer

Angel of sector for Students reading novel = 81°.

Percentage of Students interested in reading no

= $=\frac{\text{Angle of sector}}{360} \times 100^0$

= $\frac{81}{360} \times 100$

= 22.5%