

25. Data Handling-III Pictoria Representaion of Data as Pie Charts

DATA HANDLING-III

Pictorial Representation of Data as Pie charts or Circle Graphs.

Ex:

① Given data :-

Activities	sleep	school	home	play	others	Total
No. of hours	8	7	4	2	3	24

Total no. of hours = 24 hrs.

These total no. of hours are to be represented on

a 360° circle.

Let the contribution of each hour on piechart be x° .

$\therefore$ Total no. of hours = 24 hrs.

$$\begin{aligned}\text{Total contribution} &= 24x^\circ \\ &\Rightarrow 360^\circ\end{aligned}$$

$$\text{L.H.S} = \text{R.H.S.}$$

$$24x = 360$$

$$x = \frac{360}{24}$$

$$\boxed{x = 15^\circ}$$

$\therefore$ Contribution of each hour spent on piechart is 15° .

$\therefore$ for

$$\text{sleeping} \Rightarrow 8x \Rightarrow 120^\circ$$

$$\text{school} \Rightarrow 7x \Rightarrow 105^\circ$$

$$\text{home} \Rightarrow 4x \Rightarrow 60^\circ$$

$$\text{play} \Rightarrow 2x \Rightarrow 30^\circ$$

$$\text{others} \Rightarrow 3x \Rightarrow 45^\circ$$



∴ The pie chart is given as



② Given data :-

Religion	Hindu	Muslim	Sikh	Christian	Total
No. of workers	420	300	225	105	1080

Total no. of workers = 1080

These total no. of workers are to be represented on a 360° circle.

Let the contribution of each worker be x° on the chart.

Total no. of workers = 1080.

Total angle contribution = Total no. of workers $\times$ contribution of each worker



$$\Rightarrow 1080 \times x$$

$$\therefore \text{Total angle contribution} = 1080x \quad \text{--- (1)}$$

$$\text{But total angle} = 360^\circ \quad \text{--- (2)}$$

$$(1) = (2)$$

$$1080x = 360$$

$$x = \frac{1}{3}$$

$$\therefore \text{Contribution of each worker on pie chart is } \frac{1}{3}^\circ$$

$$\therefore \text{Contribution of Hindu workers} = 420 \times x \\ = 420 \times \frac{1}{3}$$

$$\text{Contribution of Hindu workers} = 140^\circ$$

$$\text{Contribution of muslim workers} = \text{Total no. of workers} \times \text{Contribution of each worker}$$

$$\Rightarrow 300 \times \frac{1}{3}$$

$$\text{Contribution of muslim workers} = 100^\circ$$

$$\text{Similarly, Sikh workers} = 225 \times x \\ = 225 \times \frac{1}{3}$$

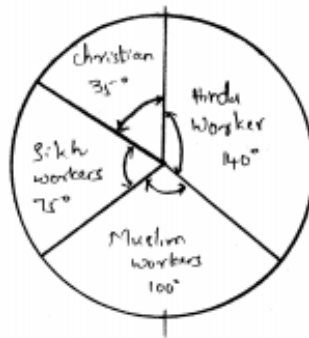
$$\text{Sikh workers} = 75^\circ$$

$$\text{Christian workers} = 105 \times x \\ = 105 \times \frac{1}{3}$$

$$\text{Christian workers} = 35^\circ$$



∴ The pie chart is given as



③ Given data

Items	Ordinary break	fruit bread	cakes & pastries	B. units	others	Total
Sales (Rs)	260	40	100	60	20	480.

Total value of sales in one day = 480 Rs

This total value is to be represented on a 360° circle

Let the contribution of each rupee on pie chart be x° .

Total value of sales = Rs. 480

∴ Total contribution of sales on pie chart

⇒ Total value $\times$ Contribution of each rupee

⇒ $480 \times x$

⇒ $480x$ — ①



$\therefore$ But total angle. $= 360^\circ \rightarrow$ ②

$$\therefore \text{①} = \text{②}$$

$$\Rightarrow 480x = 360$$

$$x = \frac{360}{480}$$

$$x = \frac{3}{4}$$

$\therefore$ Contribution of each rupee on pie chart $= \frac{3}{4}^\circ$

$\therefore$ Contribution of ordinary bread sales on pie chart

$\Rightarrow$ sales $\times$ contribution of each rupee

$$\Rightarrow 260 \times \frac{3}{4}$$

$$\Rightarrow 195^\circ$$

Similarly contribution of

$$\text{fruit bread} = \text{sales} \times x$$

$$= 40 \times \frac{3}{4}$$

$$= 30^\circ$$

$$\text{cakes \& pastries} = 100 \times x$$

$$= 100 \times \frac{3}{4}$$

$$= 75^\circ$$

$$\text{Biscuits} = \text{sales of Biscuits} \times x \text{ (rupee contribution)}$$

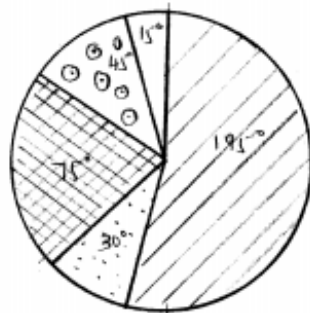
$$= 60 \times \frac{3}{4}$$

$$\text{Biscuits} = 45^\circ$$



$$\begin{aligned}
 \text{Others} &= \text{sale value for others} \times \text{super. value} \\
 &= 20 \times 96 \\
 &= 20 \times \frac{3}{4} \\
 \text{others} &= 15^\circ
 \end{aligned}$$

∴ The pie chart is given by



- ordinary bread
- cakes & pastries
- fruit bread.
- Biscuits.
- others.

④ Given data

items	Rent	Education	food	clothing	others.
Amount of expenditure (Rs)	2700	1800	2400	1500	2400

Total amount of expenditure

$$\begin{aligned}
 &\Rightarrow 2700 + 1800 + 2400 + 1500 + 2400 \\
 &\Rightarrow 1,08,00 \\
 &\Rightarrow \text{Rs } 10,800
 \end{aligned}$$



∴ Total amount of expenditure = 10,800 Rs

Let This amount is to be represented on a pie chart.

Let the contribution of each rupee on pie chart be x° .

$$\begin{aligned}\therefore \text{Total Contribution of expenditure} &= \text{Total expenditure} \times \text{contribution of each rupee} \\ &\Rightarrow 10,800 \times x\end{aligned}$$

∴ But total angle = 360°

$$\therefore 10800x = 360$$

$$x = \frac{360}{10800}$$

$$x = \frac{1}{30}^\circ$$

Contribution of each rupee on pie chart = $\frac{1}{30}^\circ$.

∴ Contribution of expenditures

$$\text{Rent} = 2700 \times x$$

$$= 2700 \times \frac{1}{30}$$

$$\text{Rent} = 90^\circ$$

$$\text{Education} = 1800 \times x$$

$$= 1800 \times \frac{1}{30}$$

$$\text{Education} = 60^\circ$$



$$\begin{aligned}\text{food} &= 2400 \times x \\ &= 2400 \times \frac{1}{30}\end{aligned}$$

$$\text{food} = 80^\circ$$

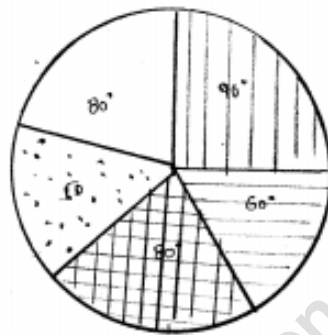
$$\begin{aligned}\text{clothing} &= 1500 \times x \\ &= 1500 \times \frac{1}{30}\end{aligned}$$

$$\text{clothing} = 50^\circ$$

$$\begin{aligned}\text{others} &= 2400 \times x \\ &= 2400 \times \frac{1}{30}\end{aligned}$$

$$\text{others} = 80^\circ$$

$\therefore$ The pie chart is given as.



-  - Rent
-  - Education
-  - food
-  - clothing
-  - others



⑤ Given data

Categories	Cultivators	Agri labourers	industry workers	commercial workers	Others
% of workers	40	25	12.5	10	12.5

$$\begin{aligned}\text{Total \% of worker} &= 40 + 25 + 12.5 + 12.5 + 10 \\ &= 100\%\end{aligned}$$

This 100% should be represented on a pie chart.

Let the contribution of 1% on pie chart be x° .

$$\begin{aligned}\therefore \text{Total contribution} &= \text{Total \%} \times \text{contribution of 1\%} \\ &= 100 \times x \\ &= 100x \quad \text{--- (1)}\end{aligned}$$

$$\therefore \text{But total angle} = 360^\circ \quad \text{--- (2)}$$

$$\therefore 100x = 360 \quad \left[\because (1) = (2) \right]$$

$$\boxed{x = 3.6^\circ}$$

$\therefore$ Contribution of 1% on pie chart is 3.6° .

$\therefore$ Contribution of

$$\begin{aligned}\rightarrow \text{Cultivators} &= \% \text{ of workers} \times x \\ &= 40 \times x \\ &= 144^\circ\end{aligned}$$



Agricultural labourers

$$\Rightarrow \% \text{ of workers} \times x$$

$$\Rightarrow 25 \times 3.6$$

$$\Rightarrow 90^\circ$$

Industrial workers $\Rightarrow \% \text{ of workers} \times x$

$$\Rightarrow 12.5 \times 3.6$$

$$\Rightarrow 45^\circ$$

Commercial workers $\Rightarrow \% \text{ of workers} \times x$

$$\Rightarrow 10 \times 3.6$$

$$\Rightarrow 36^\circ$$

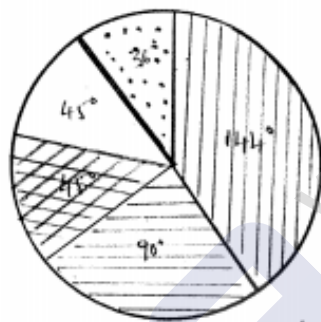
others

$$\Rightarrow \% \text{ of workers} \times x$$

$$\Rightarrow 12.5 \times 3.6$$

$$\Rightarrow 45^\circ$$

$\therefore$ The pie chart is given by.



cultivators



agricultural workers



industrial workers



others



commercial workers



⑥ Given data.

Items	Paper	Printing	Binding	Advertising	Miscellaneous
Expenditure (%)	35%	20%	10%	5%	30%

Total Expenditure 100% to be represented on a pie chart.

Let 1% expenditure be contribution on pie chart

be x° .

$$\therefore \text{Total contribution} = \text{Total Expenditure} \times \text{Contribution of 1\% expenditure}$$

$$\Rightarrow 100 \times x$$

$$\text{Total angle} = 360^\circ$$

$$\therefore 100x = 360$$

$$\boxed{x = 3.6^\circ}$$

Contribution of 1% Expenditure is 3.6° on pie chart.

$\therefore$ Contribution of

$$\begin{aligned} \text{Paper expenditure} &= 35 \times x \\ &= 35 \times 3.6 \\ &= 126^\circ \end{aligned}$$

$$\begin{aligned} \text{Printing expenditure} &= 20 \times x \\ &= 72^\circ \end{aligned}$$

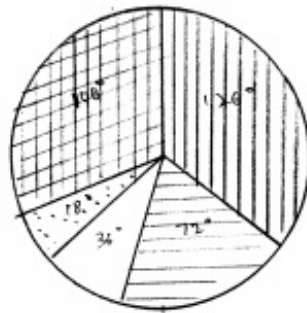


$$\text{Binding expenditure} = 10 \times x \\ = 36^\circ$$

$$\text{Advertising expenditure} = 5 \times x \\ = 18^\circ$$

$$\text{Miscellaneous} = 20 \times x \\ = 108^\circ$$

∴ The given pie chart is :-



-  - paper expenditure
-  - printing
-  - miscellaneous
-  - Advertising
-  - Binding

⑦ Given data

Items	Wheat	pulses	Jaunari	Groundnuts	vegetables	Total
%	$\frac{125}{3}$	$\frac{125}{6}$	$\frac{25}{2}$	$\frac{50}{3}$	$\frac{25}{3}$	100



100% should be represented on a pie chart
 x° be contribution of each % on pie chart
 $\therefore$ Total contribution $= 100\% \times x$
 $= 100x$

But total angle $= 360^\circ$

$$\therefore 100x = 360$$

$$x = 3.6$$

Contribution of 1% on pie chart is 3.6°

$\therefore$ Contribution of

$$\begin{aligned}\text{wheat} &= \frac{125}{3} \times x \\ &= \frac{125}{3} \times 3.6\end{aligned}$$

$$\text{wheat} = 150^\circ$$

$$\begin{aligned}\text{pulses} &= \frac{125}{6} \times x \\ &= \frac{125}{6} \times 3.6 \\ &= 75^\circ\end{aligned}$$

$$\begin{aligned}\text{Jawar} &= \frac{25}{2} \times x \\ &= 45^\circ\end{aligned}$$

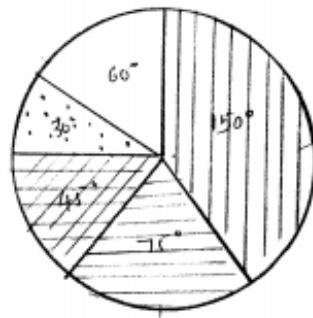
$$\begin{aligned}\text{Groundnuts} &= \frac{50}{3} \times x \\ &= \frac{50}{3} \times 3.6 \\ &= 60^\circ\end{aligned}$$



$$\text{Vegetables} = \frac{25}{3} \times 3.6$$

$$= 30^\circ$$

$\therefore$ The pie chart is given as.



-  — wheat
-  — pulses
-  — jawar
-  — vegetables
-  — grains

(B) Given data

Items	food	clothing	rent	Education	Unforeseen events	medicine
Expenditure (%)	40%	20%	10%	10%	15%	5%

$$\text{Total \%} = 100\%$$

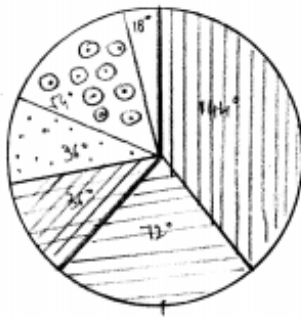
100% is to be represented on a pie chart.

Let x° be the contribution of each % on pie chart.

$$\therefore \text{Total Contribution} = \text{Total \%} \times x$$

$$= 100\% \times x$$

∴ The given pie chart is given by



- food expenses
- clothing
- rent expenses
- education
- Unforeseen events
- medicine

⑨ Given data

Continents	Asia	USSR	Africa	Europe	N. Amer	S. America	Austr
Area (km ²)	26.9	20.5	30.3	4.9	24.3	17.9	8.5

$$\text{Total area} = 26.9 + 20.5 + 30.3 + 4.9 + 24.3 + 17.9 + 8.5$$

$$\text{Total area} = 133.3 \text{ km}^2 \text{ (million km}^2\text{)}$$

Total area to be represented on pie chart

Let x° be contribution of 1 km² area

on pie chart

$$\begin{aligned} \therefore \text{Total p contribution} &= \text{Total area} \times \text{contribution of 1 km}^2 \text{ area} \\ &= 133.3 \times x^\circ \\ &= 133.3x^\circ \end{aligned}$$



But total angle $= 360^\circ$

$$\therefore 133.3x = 360$$

$$x = \frac{3600}{1333}$$

$\therefore$ Contribution of each square million km is $\frac{3600}{1333}$

$\therefore$ Contribution of

$$\begin{aligned}\text{Asia} &= 26.9x \\ &= 26.9 \times \frac{3600}{1333}\end{aligned}$$

$$\text{Asia} = 72.64^\circ$$

$$\begin{aligned}\text{USSR} &= 20.5 \times \frac{3600}{1333} \\ &= 55.36^\circ\end{aligned}$$

$$\text{Africa} = 30.3 \times \frac{3600}{1333}$$

$$\text{Africa} = 81.83^\circ$$

$$\begin{aligned}\text{Europe} &= 4.9 \times \frac{3600}{1333} \\ &= 13.23^\circ\end{aligned}$$

$$\begin{aligned}\text{North America} &= 24.3 \times \frac{3600}{1333} \\ &= 65.62^\circ\end{aligned}$$



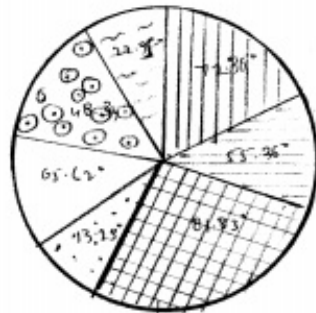
$$\text{South America} = 17.9 \times \frac{3600}{1333}$$

$$= 48.34^\circ$$

$$\text{Australia} = 8.5 \times \frac{3600}{1333}$$

$$= 22.95^\circ$$

The pie chart is given as:-



- Asia
- USSR
- Africa
- Europe
- North America
- South America
- Australia

⑩ Given data

Items	Cement	Timber	Bricks	Labour	Steel	Miscellaneous
Expenditure (in 1000Rs)	60	30	45	75	45	45

$$\text{Total Expenditure} = 60 + 30 + 45 + 75 + 45 + 45$$

$$= \text{Rs } 300,000$$



Rs 300 thousand to be represented on a pie chart

let x° be contribution of each ~~100~~ thousand

Rupree on pie chart.

$$\therefore \text{Total contribution} = 300 \times x^\circ$$

$$\text{But total angle} = 360^\circ$$

$$\therefore 300 \times x^\circ = 360^\circ$$

$$\boxed{x = 1.2^\circ}$$

$\therefore$ The contribution of each thousand rupee on pie chart is 1.2° .

$\therefore$ The contribution of

$$\text{Cement} = ~~60 \times~~ 60 \times x$$

$$= 72^\circ$$

$$\text{Timber} = 30 \times x$$

$$= 36^\circ$$

$$\text{Bricks} = 45 \times x$$

$$= 54^\circ$$

$$\text{Labour} = 75 \times x$$

$$= 90^\circ$$

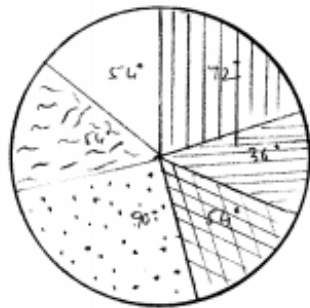
$$\text{Steel} = 45 \times x$$

$$= 54^\circ$$



$$\begin{aligned}\text{Miscellaneous} &= 45 \times 1.2 \\ &= 45 \times 1.2 \\ &= 54^\circ\end{aligned}$$

The pie chart is given by.



-  - Cement
-  - Timber
-  - Bricks
-  - Labour
-  - Steel
-  - miscellaneous.

(ii) Given data

Areas	food	Entertainment	Other expenditure	savings
Expenditure (%)	40	25	20	15

$$\text{Total Expenditure} = 100\%$$

Let x° be contribution of 1% Expenditure on pie chart.



$\therefore$ Total contribution on pie chart = 100%

But total angle = 360°

$$\therefore 100\% = 360^\circ$$

$$x = 3.6^\circ$$

$\therefore$ Contribution of each % on pie chart is 3.6°

$\therefore$ Contribution of

$$\text{food} = 40\% \times x$$

$$= 40 \times 3.6$$

$$= 144^\circ$$

$$\text{Entertainment} = 25\% \times x$$

$$= 25 \times 3.6$$

$$= 90^\circ$$

$$\text{other expenditure} = 20\% \times x$$

$$= 20 \times 3.6$$

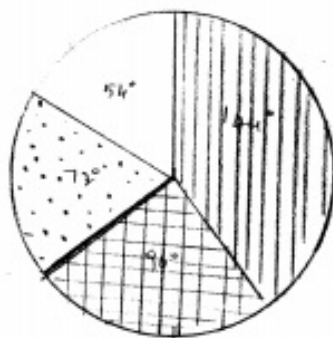
$$= 72^\circ$$

$$\text{Savings} = 15\% \times x$$

$$= 15 \times 3.6$$

$$= 54^\circ$$

The pie chart is given as:-



- food

- Entertainment

- other exp.

- Savings



⑬ Given data

Printing	Paper	Binding charges	Advertiser's emol	Royalty	Miscellaneous
30%	15%	15%	20%	10%	15%

Total % = 105%

105% is to be contributed on a pie chart.

Let 1% contribution on pie chart be x° .

$\therefore$ Total contribution = $(105\% \times x^\circ)$

But total angle = 360° .

$$105x^\circ = 360^\circ$$

$$\boxed{x = \frac{24^\circ}{7}}$$

Contribution of 1% on pie chart is $\frac{24^\circ}{7}$.

$\therefore$ Contribution of

$$\begin{aligned}\text{Printing} &= 30 \times x^\circ \\ &= 30 \times \frac{24}{7} \\ &= 102.85^\circ\end{aligned}$$

$$\begin{aligned}\text{paper} &= 15 \times x^\circ \\ &= 51.42^\circ\end{aligned}$$



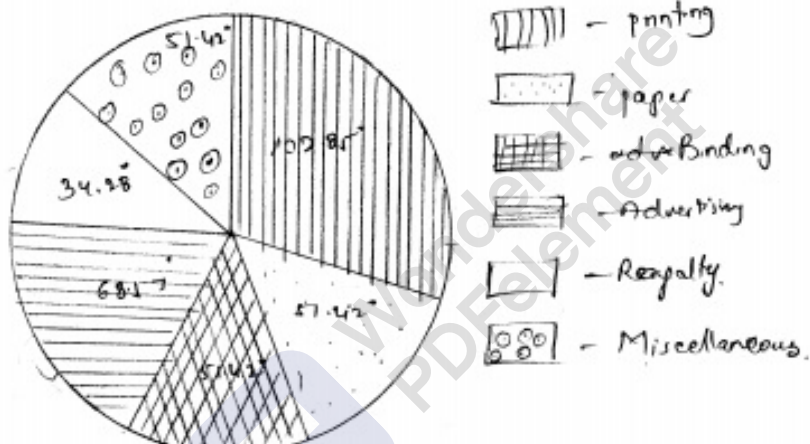
$$\begin{aligned}\text{Binding charges} &= 15 \times x^\circ \\ &= 15 \times \frac{24}{7} \\ &= 51.42^\circ\end{aligned}$$

$$\begin{aligned}\text{Advertisement} &= 20 \times x^\circ \\ &= 68.57^\circ\end{aligned}$$

$$\begin{aligned}\text{Royalty} &= 10 \times x^\circ \\ &= 34.28^\circ\end{aligned}$$

$$\begin{aligned}\text{Miscellaneous} &= 15 \times x^\circ \\ &= 15 \times \frac{24}{7} \\ &= 51.42^\circ\end{aligned}$$

∴ The pie chart is given as.





(14) Given data.

Items	wheat	Rice	Tea
production (metric tons)	3260	1840	900

$$\begin{aligned}\text{Total production} &= 3260 + 1840 + 900 \\ &= 6000 \text{ Ton}^3.\end{aligned}$$

This total production is to be represented on a pie chart.

Let contribution of 1 metric ton on pie chart be x° .

$$\text{Total contribution} = 6000x^\circ.$$

$$\text{But total angle} = 360^\circ$$

$$6000x^\circ = 360^\circ.$$

$$x^\circ = \frac{360}{6000}$$

$$\boxed{x = 0.06^\circ}$$

$\therefore$ Contribution of each metric ton on pie chart is 0.06° .

$\therefore$ Contribution of

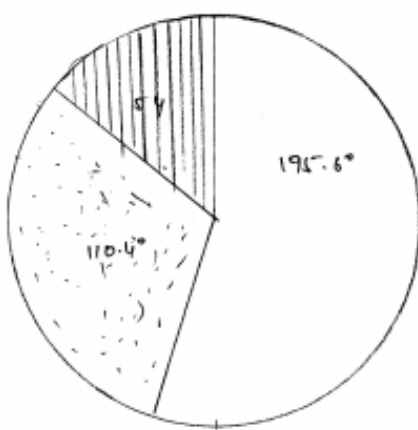
$$\begin{aligned}\text{wheat} &= 3260 \times x \\ &= 3260 \times 0.06 \\ &= 195.6^\circ.\end{aligned}$$



$$\begin{aligned}\text{Rice} &= 1840 \times x \\ &= 1840 \times 0.06 \\ &= 110.4^\circ \\ &= 110.4^\circ\end{aligned}$$

$$\begin{aligned}\text{Tea} &= 900 \times x \\ &= 900 \times 0.06 \\ &= 54\end{aligned}$$

The pie chart is given as.



-  - wheat
-  - rice
-  - tea.



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(16) Given

percentages 12.6%, 18.2%, 17.5%, 20.3%, 2.8%,
4.2%, 9.8%, 14.7%

Total percentage = 100.1%

This percentage is to be represented by on a pie chart.

∴ let x° be contribution of each % on pie chart

∴ Total contribution = $100.1 \times x^\circ$

But total angle = 360°

$$\therefore 100.1x^\circ = 360^\circ$$

$$x^\circ = \frac{360}{100.1}$$

$$x^\circ = \frac{3600}{1001}$$

∴ Contribution of each % on pie chart is $\frac{3600}{1001}^\circ$

∴ Contribution of

$$12.6\% \Rightarrow 45.31^\circ$$

$$18.2\% = 18.2 \times \frac{3600}{1001}$$

$$= 65.45^\circ$$

$$17.5\% = 17.5 \times \frac{3600}{1001}$$

$$= 62.68^\circ$$



$$20.3\% = 20.3 \times \frac{3600}{100}$$
$$= 73.08^\circ$$

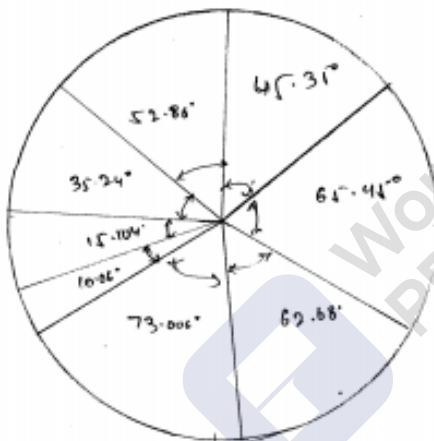
$$2.8\% = 2.8 \times \frac{3600}{100}$$
$$= 10.08^\circ$$

$$4.2\% = 4.2 \times \frac{3600}{100}$$
$$= 15.12^\circ$$

$$9.8\% = 9.8 \times \frac{3600}{100}$$
$$= 35.28^\circ$$

$$14.7\% = 14.7 \times \frac{3600}{100}$$
$$= 52.92^\circ$$

The pie chart is given as





(16) Given data

Items	food	clothing	rent	education	fuel	Medicine
Expenditure (Rs)	1600	200	600	150	100	80
					Miscellaneous	
					270	

Total expenditure = 3000 Rs.

This total expenditure is to be represented on a pie chart.

Let contribution of each rupee be x° on pie chart.

Total contribution = $3000x^\circ$.

But total angle = 360° .

$$\therefore 3000x^\circ = 360^\circ$$

$$x = \frac{3}{25}^\circ$$

The contribution of each rupee on pie chart is $\frac{3}{25}^\circ$.

$\therefore$ The contribution of food

$$\begin{aligned} &= 1600 \times x^\circ \\ &= 1600 \times \frac{3}{25} \\ &= 192^\circ \end{aligned}$$



$$\begin{aligned}\text{Clothing} &= 200 \times x^{\circ} \\ &= 200 \times \frac{3}{25} \\ &= 24^{\circ}\end{aligned}$$

$$\begin{aligned}\text{Rent} &= 600 \times x^{\circ} \\ &= 600 \times \frac{3}{25} \\ &= 72^{\circ}\end{aligned}$$

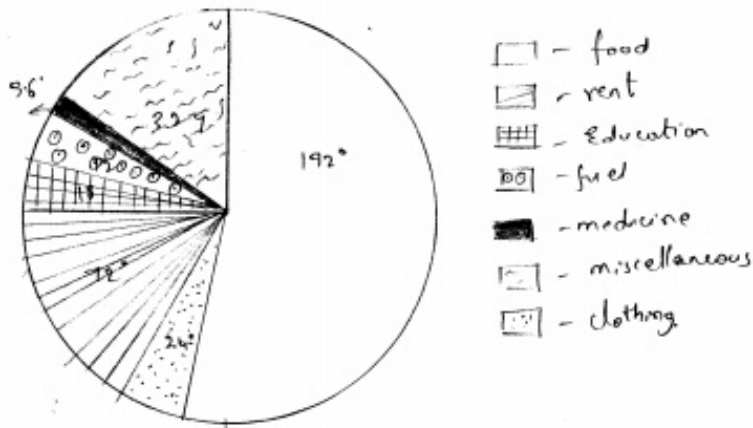
$$\begin{aligned}\text{Education} &= 150 \times x^{\circ} \\ &= 150 \times \frac{3}{25} \\ &= 18^{\circ}\end{aligned}$$

$$\begin{aligned}\text{fuel} &= 100 \times x^{\circ} \\ &= 100 \times \frac{3}{25} \\ &= 12^{\circ}\end{aligned}$$

$$\begin{aligned}\text{Medicine} &= 80 \times x^{\circ} \\ &= 80 \times \frac{3}{25} \\ &= 9.6^{\circ}\end{aligned}$$

$$\begin{aligned}\text{Miscellaneous} &= 270 \times x^{\circ} \\ &= 270 \times \frac{3}{25} \\ &= 32.4^{\circ}\end{aligned}$$

The per cent's given as



(17) Given data

Agriculture - irrigation & power	small industries	Transport	Sound service	miscellaneous
14%	29%	17%	16%	8%

Total % = 100% is to be represented on pie chart

let x be contribution of each % on pie chart

$$\therefore \text{Total contribution} = 100\% \times x \\ = 100x$$

But total angle = 360

$$\therefore 100x = 360$$

$$x = 3.6$$



Contribution of

agriculture $= 14\% \times 36^\circ$
 $= 14 \times 36$
 $= 50.4^\circ$

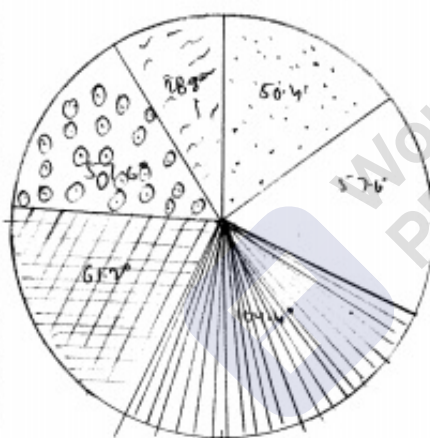
irrigation $= 16\% \times 36^\circ$
 $= 57.6^\circ$

small industries $= 29\% \times 36^\circ$
 $= 104.4^\circ$

transport $= 17\% \times 36^\circ$
 $= 17 \times 36$
 $= 61.2^\circ$

social service $= 16\% \times 36^\circ$
 $= 57.6^\circ$

miscellaneous $= 8\% \times 36^\circ$
 $= 8 \times 36$
 $= 28.8^\circ$



- agriculture
- irrigation
- small industries
- transport
- social service
- miscellaneous



① Given data

angles of pie chart.

steel = 45° , labour = 100°

Timber = 100° , cement = 75°

Brick = 50°

Total angle = 370°

Expenditure incurred on cement is Rs 112500

i.e. for 75° cost incurred is 112500

$$\therefore \text{Total cost} = \frac{370}{75} \times 112500$$

$$\text{Total cost} = 55,500 \text{ Rs}$$

Expenditure incurred on labour

$$= \frac{100}{370} \times \text{Total cost}$$

$$= \frac{100}{370} \times 55,500$$

$$= 15,000 \text{ Rs.}$$

$\therefore$ Expenditure incurred on labour is Rs 15,000



② Given angles of pie chart

Maize - 30°

wheat - 120° , Gram - 50° , Rice - 60° , sugar - 100° .

Given total production = 81,000 tonnes.

i.e. total production $\propto 360^\circ \rightarrow 81,000$ tonnes

$$\therefore 1^\circ \rightarrow \frac{81,000}{360^\circ}$$

$$\therefore \text{production of wheat} = 120 \times \frac{81,000}{360} \\ = 27,000 \text{ tonnes.}$$

$$\text{production of sugar} = 100 \times \frac{81,000}{360} \\ = 22,500 \text{ tonnes.}$$

$$\text{production rice} = 60 \times \frac{81,000}{360} \\ = 13,500 \text{ Tonnes}$$

$$\text{production of maize} = 30 \times \frac{81,000}{360} \\ = 6,750 \text{ Tonnes}$$

$$\text{production of gram} = 50 \times \frac{81,000}{360} \\ = 11,250 \text{ Tonnes.}$$



③

Given

no. of students = 1000
for science

per angles for

$$\text{Science} = 100^\circ$$

$$\text{Arts} = 120^\circ$$

$$\text{Commerce} = 65^\circ$$

$$\text{Law} = 45^\circ$$

$$\text{Education} = 95^\circ$$

$$\therefore \text{no. of students for science} \Rightarrow 100^\circ \text{ for } 1000$$

$$100^\circ \rightarrow 1000$$

$$\text{total no. of students} \rightarrow 360^\circ$$

$$100^\circ \rightarrow 1000$$

$$360^\circ \rightarrow x$$

$$\therefore x = \frac{360 \times 1000}{100}$$

$$[x = 3600]$$

$$\text{Total no. of students} = 3600$$

$$\begin{aligned} \text{no. of students of arts} &= \frac{120}{360} \times 3600 \\ &= 1200 \end{aligned}$$

$$\begin{aligned} \text{ratio of students in science \& arts} &= \frac{\text{no. of science students}}{\text{no. of arts students}} \\ &= \frac{1000}{1200} \\ &= (5/6) \end{aligned}$$

$$\text{ratio of science \& arts students} = 5:6$$



(4) Given total marks = 440.

Given angles of pie chart

$$\text{maths} = 108^\circ$$

$$\text{science} = 81^\circ$$

$$\text{English} = 72^\circ$$

$$\text{Hindi} = 54^\circ$$

$$\text{Social science} = 45^\circ$$

$$\text{Total marks} = 360^\circ \rightarrow 440$$

$$\begin{aligned} \text{marks in maths} &= \frac{108}{360} \times 440 \\ &= 132 \end{aligned}$$

$$\begin{aligned} \text{marks in science} &= \frac{81}{360} \times 440 \\ &= 99 \end{aligned}$$

$$\begin{aligned} \text{marks in English} &= \frac{72}{360} \times 440 \\ &= 88 \end{aligned}$$

$$\begin{aligned} \text{marks in Hindi} &= \frac{54}{360} \times 440 \\ &= 66 \end{aligned}$$

$$\begin{aligned} \text{marks in Social} &= \frac{45}{360} \times 440 \\ &= 55 \end{aligned}$$



①

Given

students scored in maths = 135

per cent angles

Maths = 90°

Hindi = 60°

Science = 76°

social = 72°

English = 62°

$$\text{Maths score} = \frac{90}{360} \times \text{Total marks} = 135$$

$$\therefore \text{Total marks} = 135 \times 4 \\ = 540$$

$$\therefore \text{Total marks scored} = 540$$

$$\text{Marks in science} = \frac{76}{360} \times 540 \\ = 114$$

$$\text{marks in social} = \frac{72}{360} \times 540 \\ = 108$$

$$\text{marks in English} = \frac{62}{360} \times 540 \\ = 93$$

$$\text{marks in Hindi} = \frac{60}{360} \times 540 \\ = 90$$