

Chapter - 25
Data handling - III

(Pictorial representation of Data as Pie-charts
or Circle graphs)

Exercise 25-1

Q.1 The number of hours, spent by a school boy on different activities in a working day, is given below

Activities :	sleep	School	Home	Play	others	Total
No. of hrs :	8	7	4	2	3	24

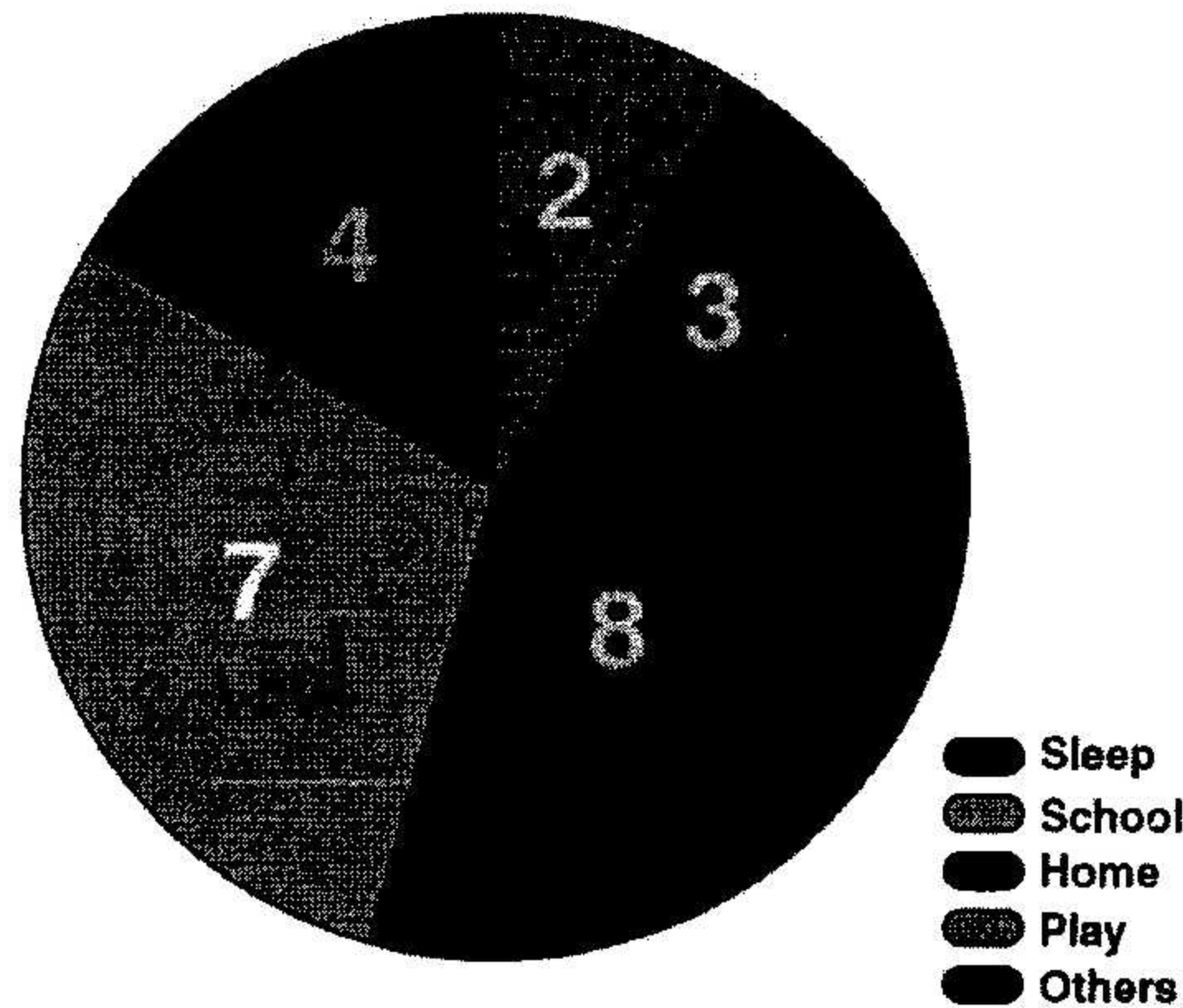
Present the information in the form of a pie-chart.

Sol: Total no. of hours = 24

$$\text{central angle} = \frac{\text{value of Component}}{24} \times 360^\circ$$

Activity	no. of hours	central angle.
sleep	8	$8/24 \times 360^\circ = 120^\circ$
School	7	$7/24 \times 360^\circ = 105^\circ$
Home	4	$4/24 \times 360^\circ = 60^\circ$
Play	2	$2/24 \times 360^\circ = 30^\circ$
others	3	$3/24 \times 360^\circ = 45^\circ$
Total	24	

Pie-chart is as follows:



Q.2 Employee of a Company have been Catagorised according to their religion as given below.

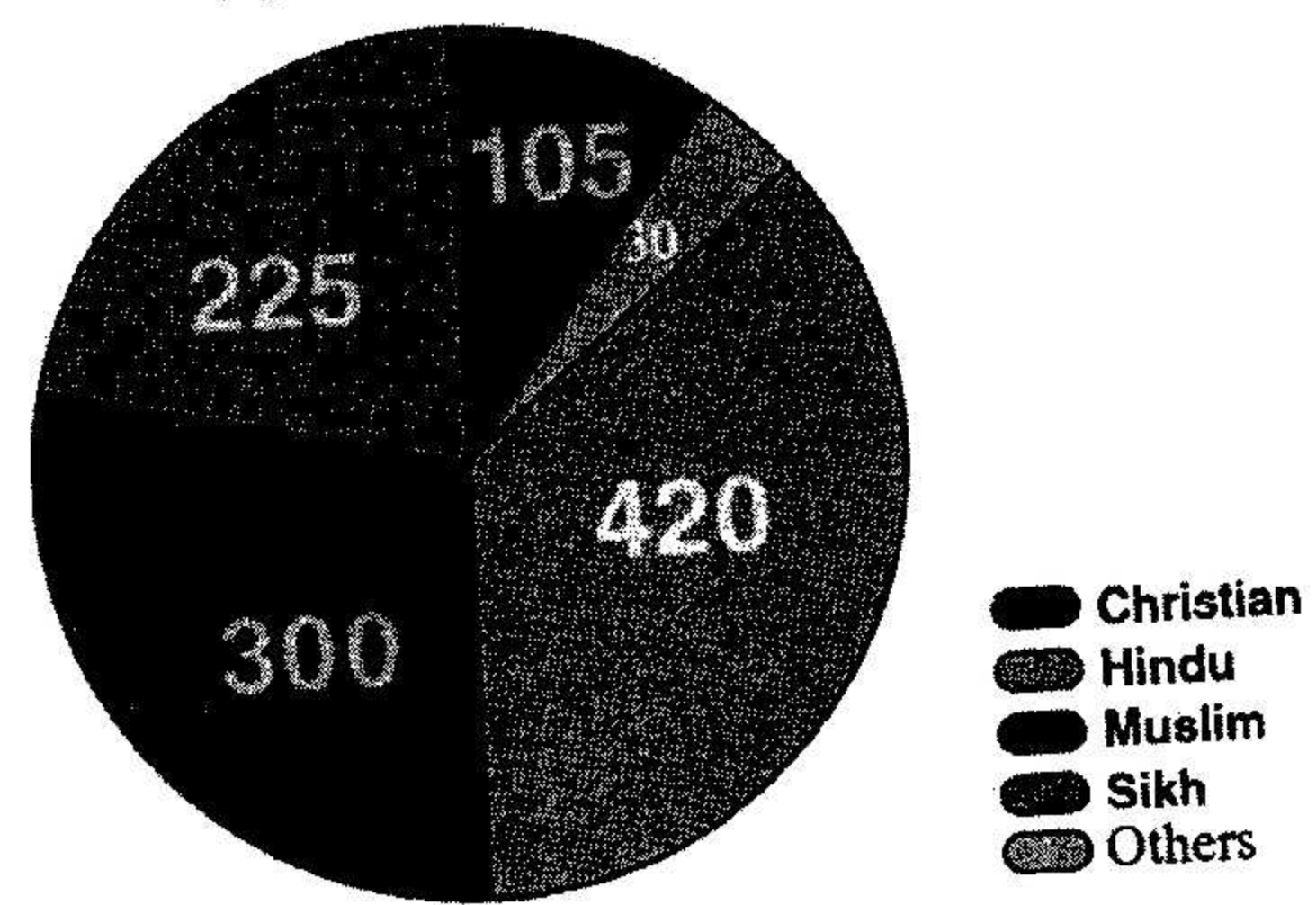
Religious	Hindu	Muslim	Sikh	Christian	Total
No. of workers	420	300	225	105	1080

Draw a pie-chart to represent the above information

Sol: Total workers = 1080
 central angle = $\frac{\text{Value of Component}}{\text{Total}} \times 360^\circ$

Religious	No. of workers	central Angle
Hindu	420	$420/1080 \times 360 = 144^\circ$
Muslim	300	$300/1080 \times 360 = 100^\circ$
Sikh	225	$225/1080 \times 360 = 75^\circ$
Christian	105	$105/1080 \times 360 = 35^\circ$
Others	30	$30/1080 \times 360 = 10^\circ$

Sol:

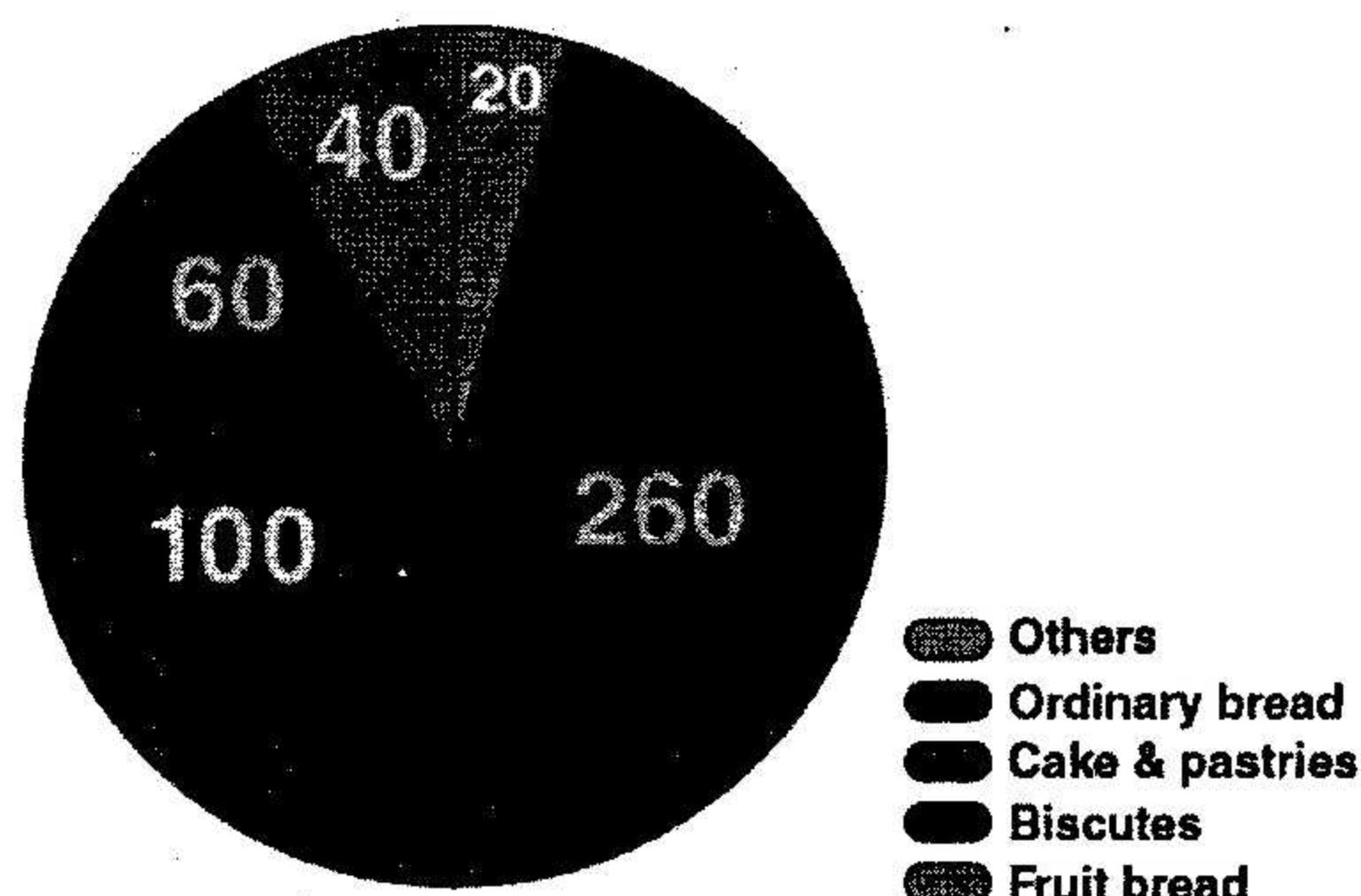


Q.3 In one day the sales (in rupees) of different items of a baker's shop are given below. Draw pie-chart.

Items	Ordinary bread	Fruit bread	Cakes & pastries	Biscuits	others
Sales in (Rs)	260	40	100	60	20

Sol: Total sale = Rs 480

Items	Sales	Central angle.
ordinary bread	260	$\frac{260}{480} \times 360^\circ = 195^\circ$
Fruit bread	40	$\frac{40}{480} \times 360^\circ = 30^\circ$
Cakes & pastries	100	$\frac{100}{480} \times 360 = 75^\circ$
Biscuits	60	$\frac{60}{480} \times 360 = 45^\circ$
others	20	$\frac{20}{480} \times 360 = 15^\circ$

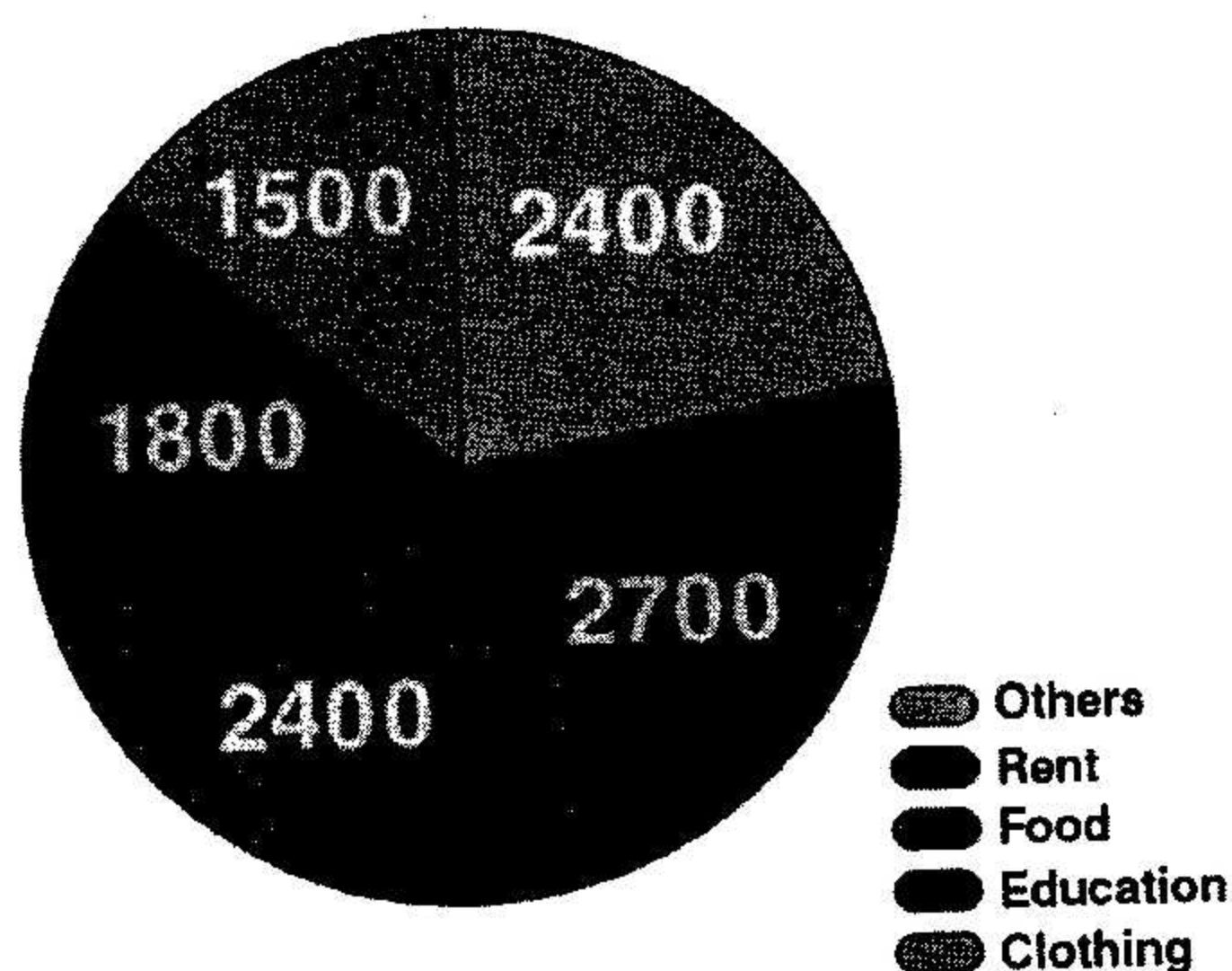


Q4 The following data shows the expenditures of a person on different items during a month. Represent the data by a pie-chart.

Items of expenditure	Rent	Education	Food	Clothing	Others.
Amount (Rs)	2700	1800	2400	1500	2400

Solution

Items of expenditure	Amount	Central angle
Rent	2700	$\frac{2700}{10800} \times 360^\circ = 90^\circ$
Education	1800	$\frac{1800}{10800} \times 360^\circ = 60^\circ$
Food	2400	$\frac{2400}{10800} \times 360^\circ = 80^\circ$
clothing	1500	$\frac{1500}{10800} \times 360^\circ = 50^\circ$
others	2400	$\frac{2400}{10800} \times 360^\circ = 80^\circ$



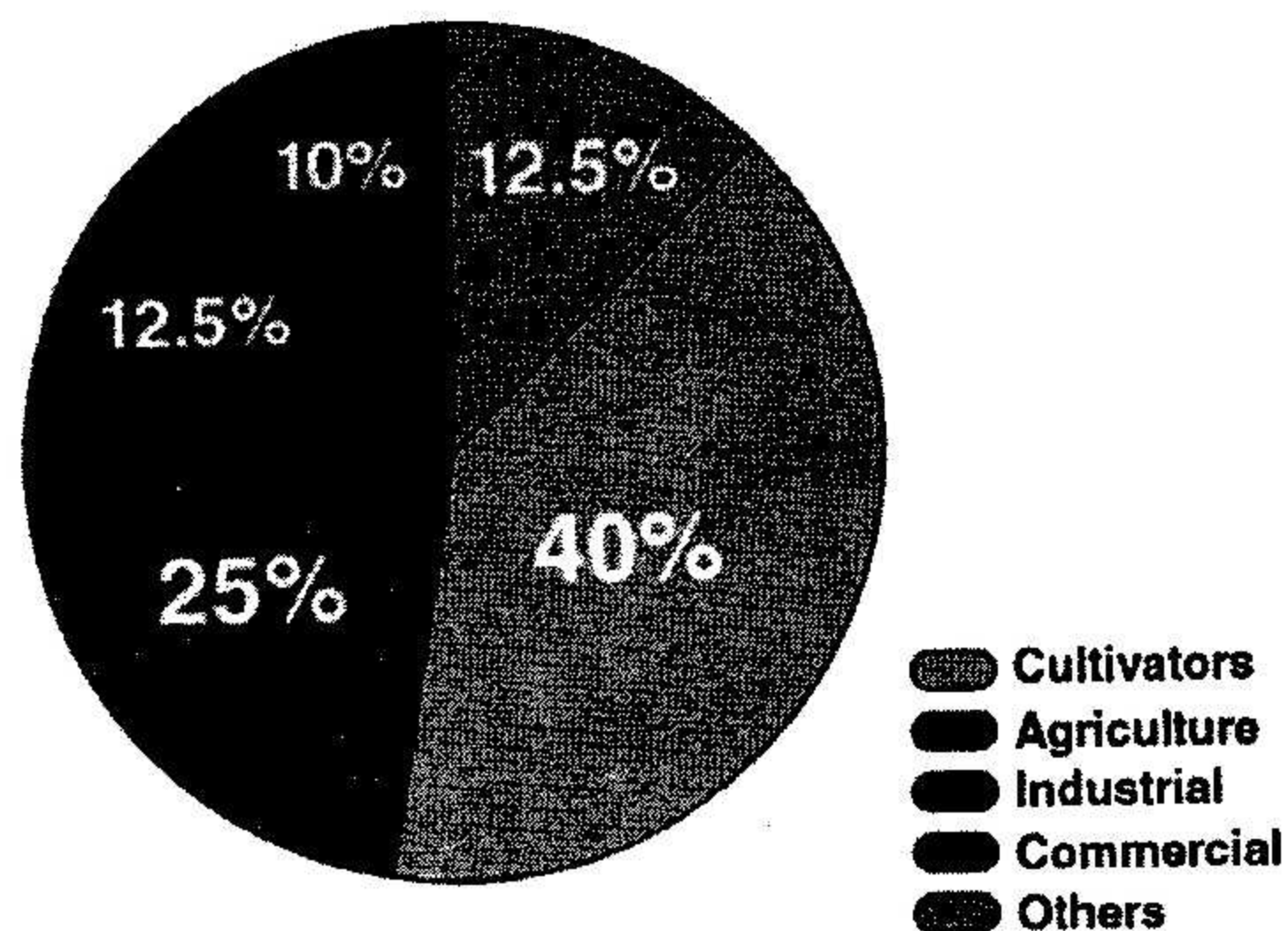
Q.5 The percentage of various categories of workers in a state are given in the following table.

Categories	Cultivators	Agriculture labourers	Ind. work.	Comm. workers	others.
% of	40	25	12.5	10	12.5

Present the information in the form of a pie-chart

Solution: Here Total % of workers = 100%.

Categories	% of	central angle.
Cultivators.	40	$40/100 \times 360^\circ = 144$
Agriculture lab.	25	$25/100 \times 360^\circ = 90^\circ$
Indust. workers	12.5	$12.5/100 \times 360^\circ = 45$
Comm. workers	10	$10/100 \times 360^\circ = 36^\circ$
Others	12.5	$12.5/100 \times 360^\circ = 45$



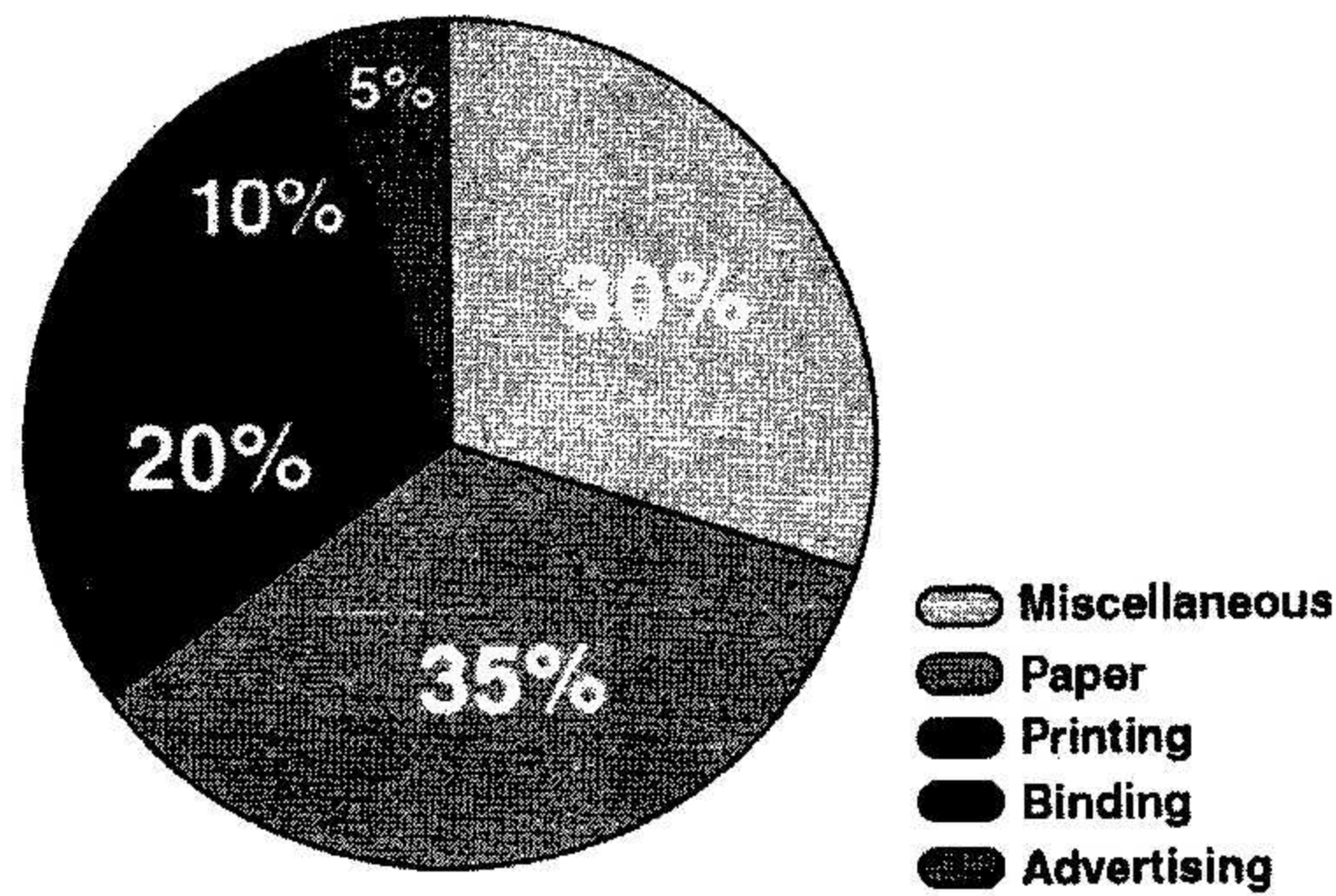
Q6 The following table shows the expenditure incurred by a publisher in publishing a book.

Items :	Papers	Printing	Binding	Advertising	Miscell.
Exp. (%) :	35%	20%	10%	5%	30%

Represent the above data in form of pie-chart

Sol: Total expenditure = 100%.

Items	Expenditure (%)	central angle.
Papers	35%	$35/100 \times 360 = 126^\circ$
Printing	20%	$20/100 \times 360 = 72$
Binding	10%	$10/100 \times 360 = 36$
Advertising	5%	$5/100 \times 360 = 18$
Miscell.	30%	$30/100 \times 360 = 108^\circ$

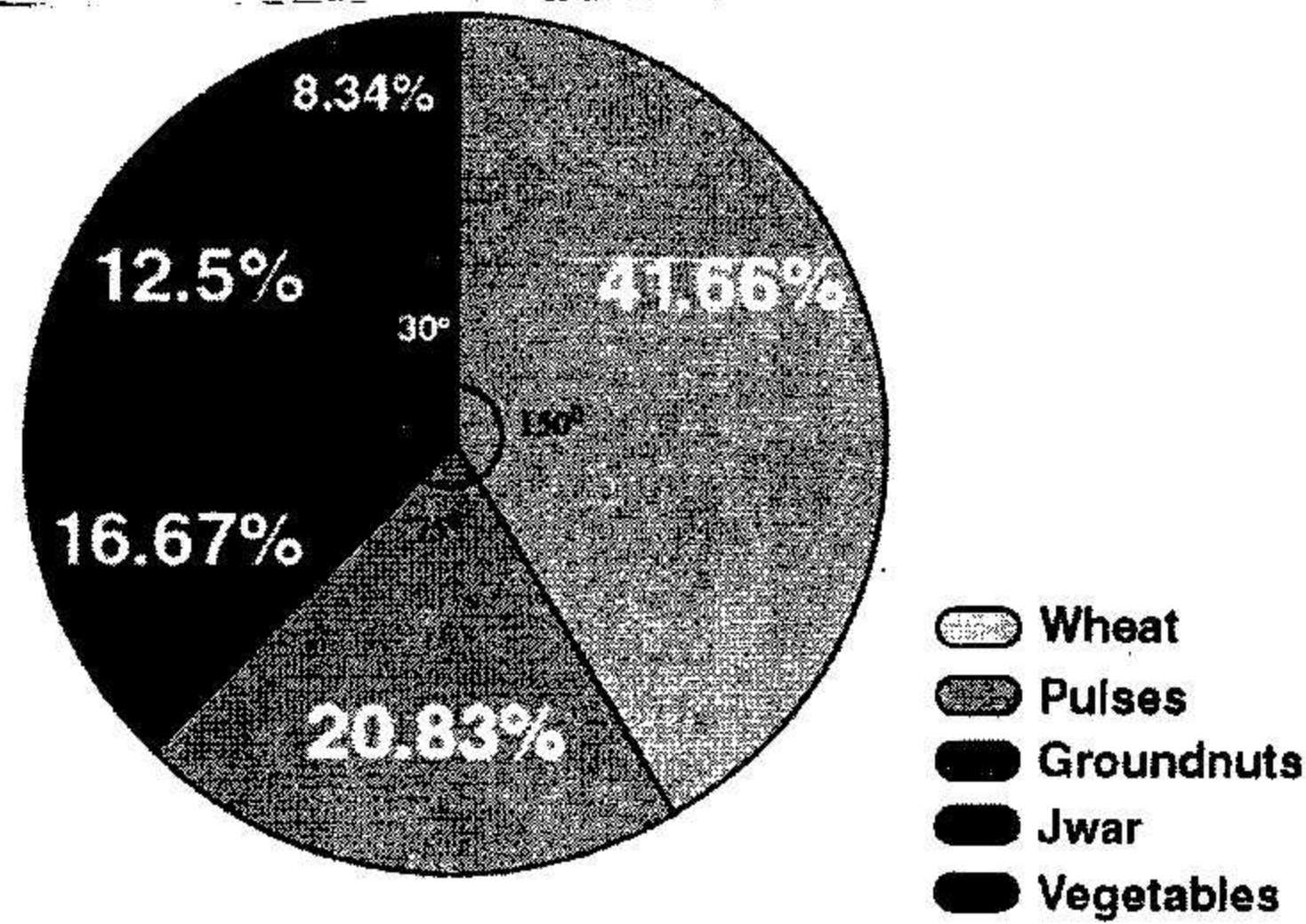


Q.7 Percentage of the different products of a village in a particular district are given below. Draw a pie-chart representing this information.

Items	wheat	Pulses	Juar	Ground nuts	Vegetables	Total
%	$125/3$	$125/6$	$25/2$	$50/3$	$25/3$	100

Sol! Here, Total % = 100%

Items	%	central angle.
wheat	$125/3$	$\frac{125/3}{100} \times 360^\circ = 150^\circ$
Pulses	$125/6$	$\frac{125/6}{100} \times 360^\circ = 75^\circ$
Juar	$25/2$	$\frac{25/2}{100} \times 360^\circ = 45^\circ$
Ground nuts	$50/3$	$\frac{50/3}{100} \times 360^\circ = 60^\circ$
Vegetables	$25/3$	$\frac{25/3}{100} \times 360^\circ = 30^\circ$

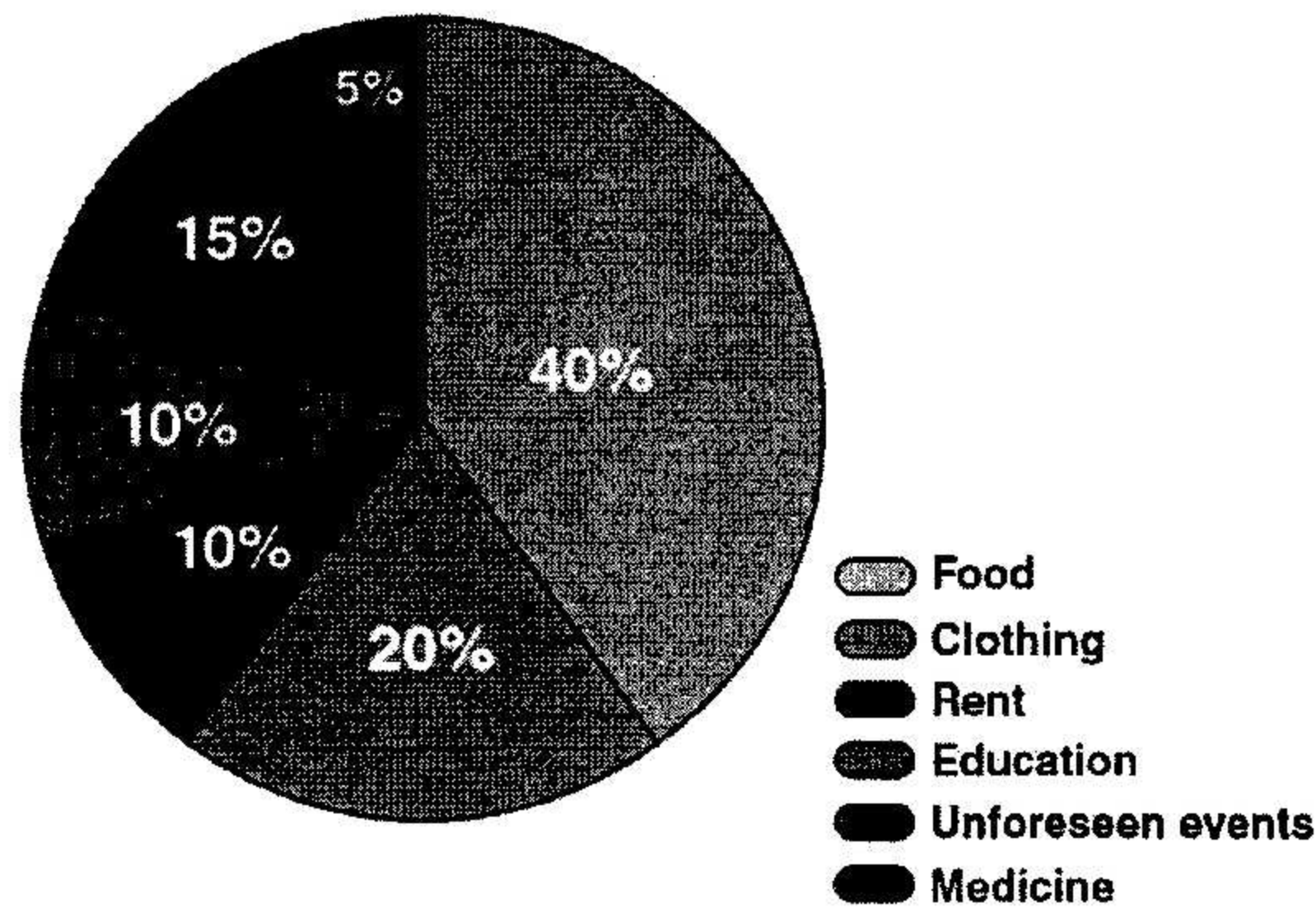


Q.8 Draw a pie diagram for the following data of expenditure pattern in a family.

Items	Food	clothing	Rent	Edu.	unforeseen events	Medicine
Expenditure (%)	40%	20%	10%	10%	15%	5%

Solution: here, Total % = 100%.

Items	Expenditure (%)	central angle,
Food	40%	$40/100 \times 360 = 144^\circ$
clothing	20%	$20/100 \times 360 = 72^\circ$
Rent	10%	$10/100 \times 360 = 36^\circ$
Education	10%	$10/100 \times 360 = 36^\circ$
unforeseen events	15%	$15/100 \times 360 = 54^\circ$
Medicines	5%	$5/100 \times 360 = 18^\circ$

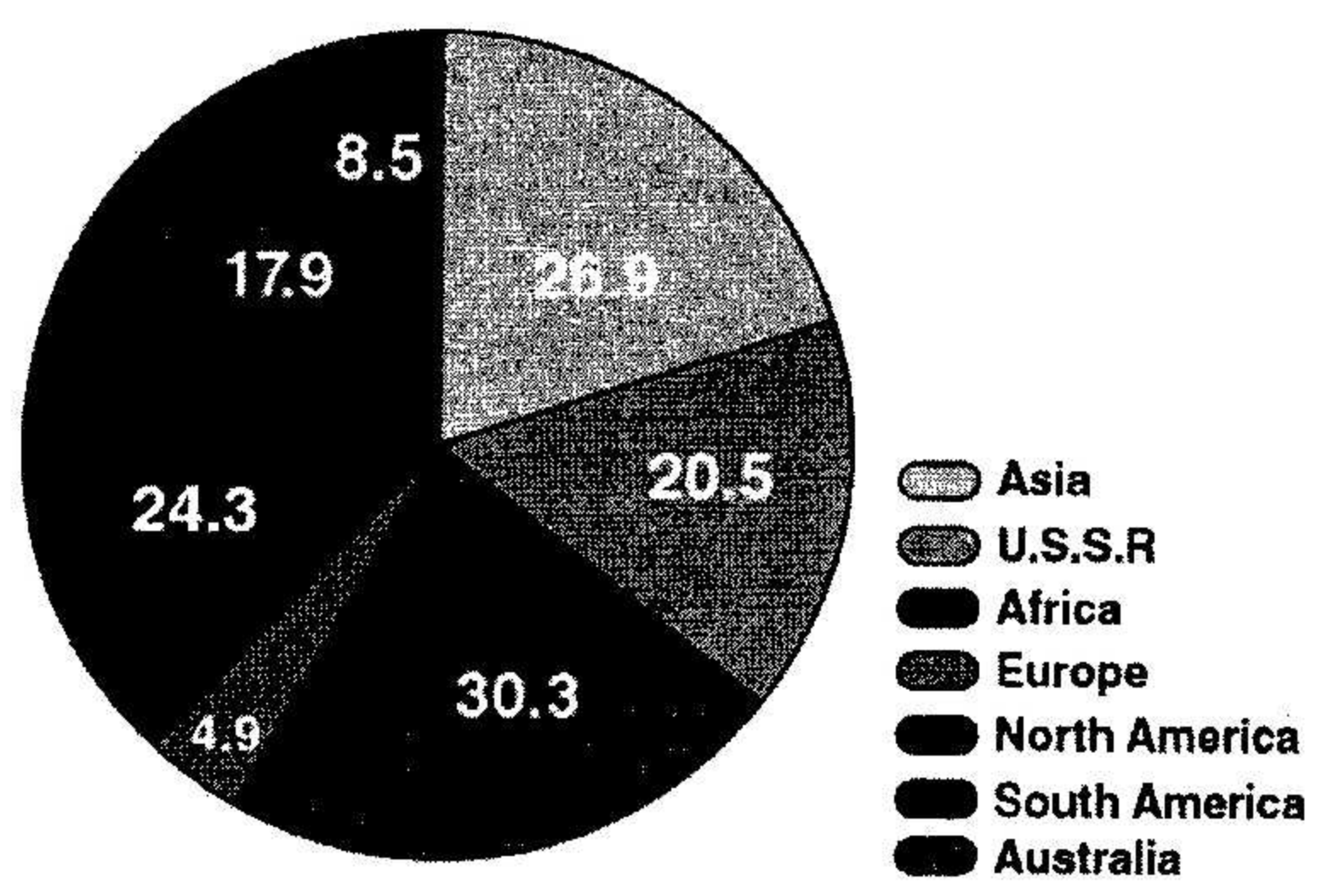


Q.9 Draw a pie diagram of the areas of continents of the world given in the following table.

Continents	Asia	USSR	Africa	Europe	NA	SA	Aust - ali
Area (in million sq. km)	26.9	20.5	30.3	4.9	24.3	17.9	8.5

Sol: Here, total area = 133.3 Million sq. km.
 so,
 central angle = $\frac{\text{Component value}}{133.3} \times 360^\circ$

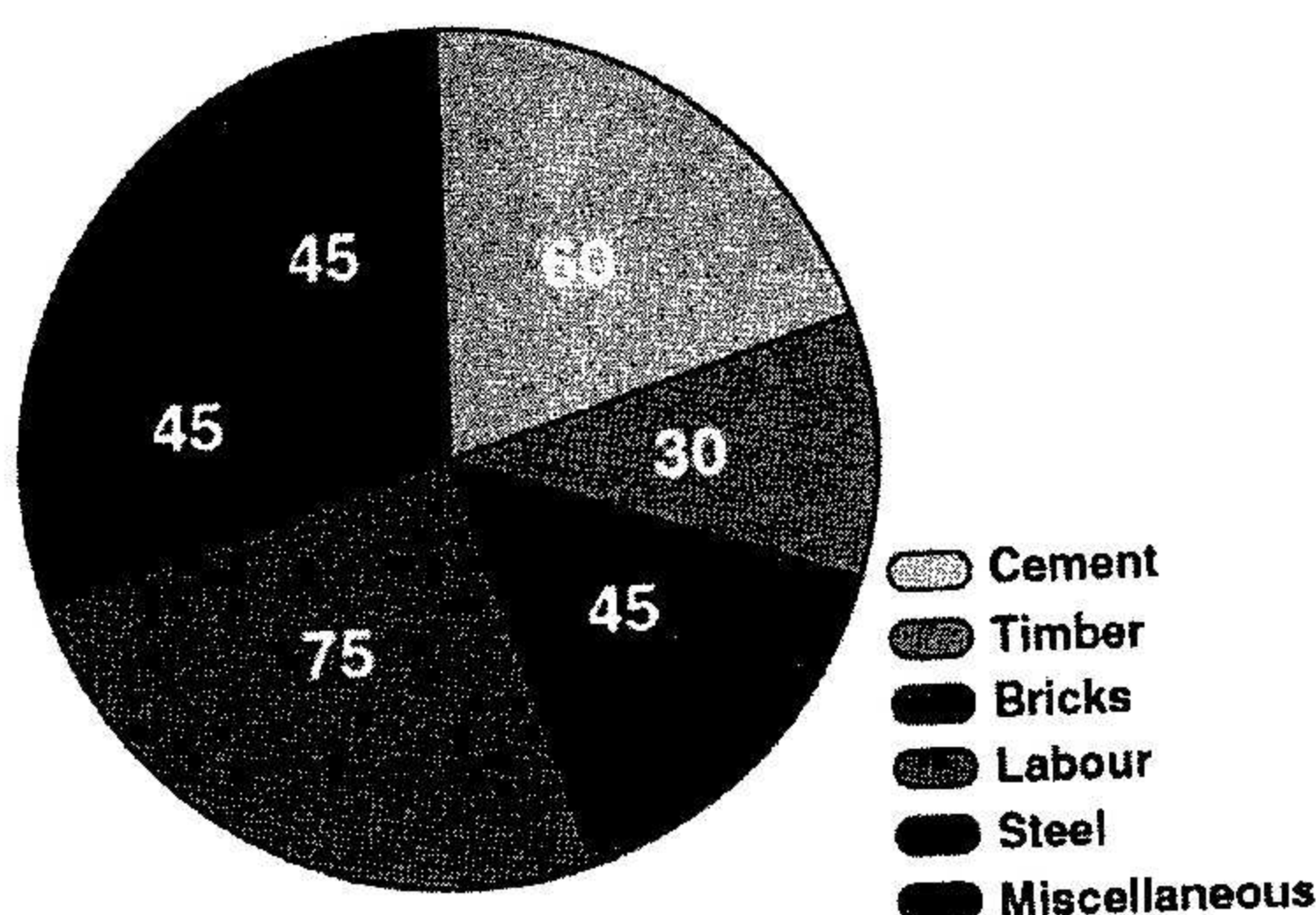
Continents	Area (in millions sq. km)	central angle.
Asia	26.9	72.6°
USSR	20.5	55.4°
Africa	30.3	81.8°
Europe	4.9	13.2°
North America	24.3	65.6°
South America	17.9	48.3°
Australia	8.5	23°



Q.10 The following data gives the amount spent on the construction of a house. Draw a pie-diagram.

Items	Cement	Timber	Bricks	labour	steel	Miscell.
Expenditure (In Rupees)	60	30	45	75	45	45

<u>Sol:</u>	Items	Exp. (In Th. rupees)	central angle
	Cement	60	$\frac{60}{300} \times 360^\circ = 72^\circ$
	Timber	30	$\frac{30}{300} \times 360 = 36^\circ$
	Bricks	45	$\frac{45}{300} \times 360 = 54$
	labour	75	$\frac{75}{300} \times 360^\circ = 90^\circ$
	Steel	45	$\frac{45}{300} \times 360 = 54$
	Miscell.	45	$\frac{45}{300} \times 360^\circ = 54$

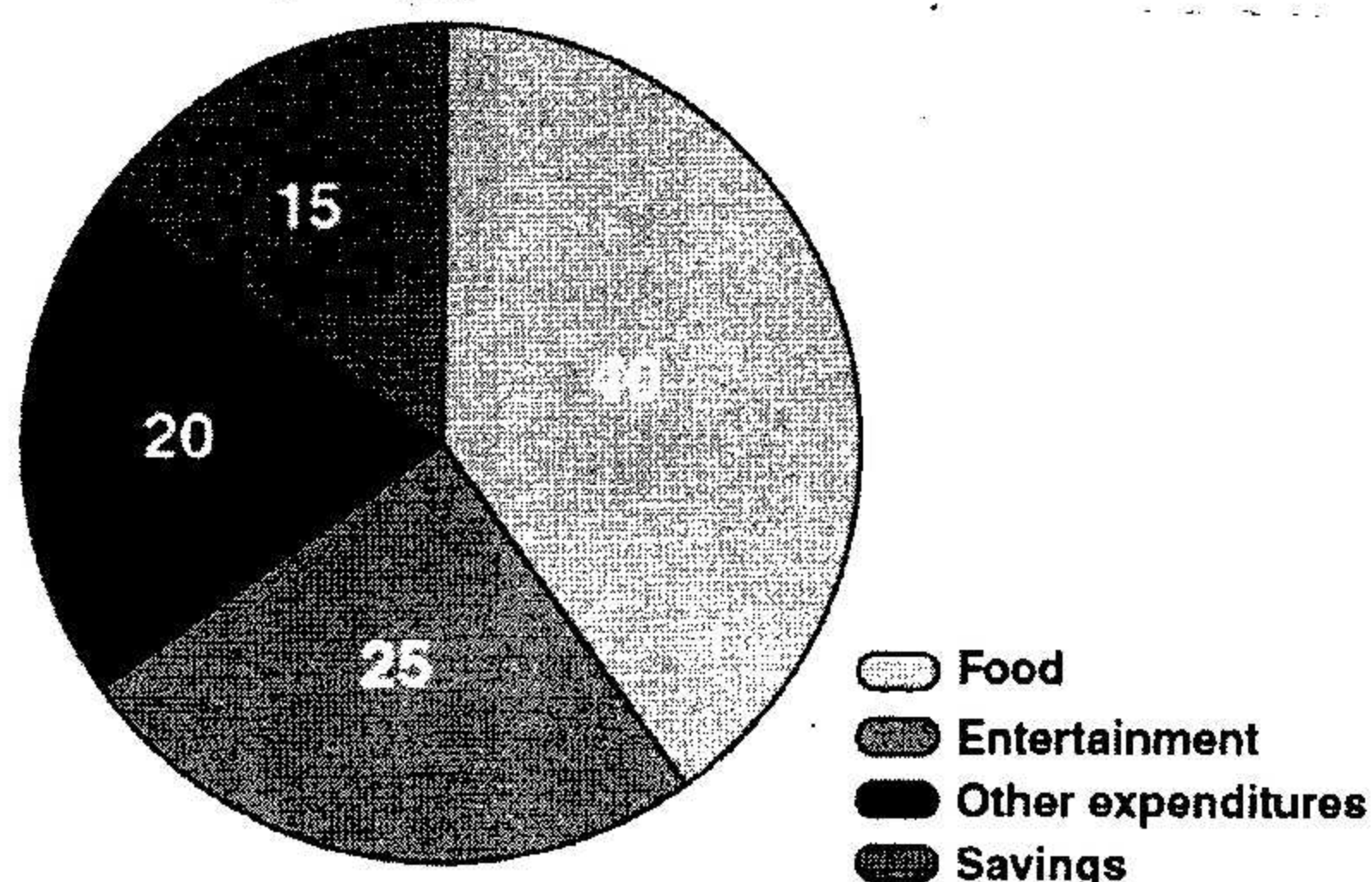


Q11 The following table shows how a student spends his pocket money during the course of a month. Represent it by a pie-diagram.

Items	Food	Entertainment	Other Expend.	Savings.
Expenditure	40%	25%	20%	15%

Solution: Here, Total expenditure = 100%.

Items	Expenditure	Central Angle.
Food	40%	$\frac{40}{100} \times 360 = 144^\circ$
Entertainment	25%	$\frac{25}{100} \times 360 = 90^\circ$
Other expend	20%	$\frac{20}{100} \times 360 = 72^\circ$
Savings	15%	$\frac{15}{100} \times 360 = 54^\circ$



Q.12 Represent the following data by a pie diagram

Items of expenditure	Expenditure.	
	Family A	Family B
Food	4000	6400
clothing	2500	480
Rent	1500	3200
Education	400	1000
Miscellaneous	1600	600
Total	10000	16000

Solution Central Angle for family A = $\frac{\text{Component}}{\text{Total}} \times 360^\circ$

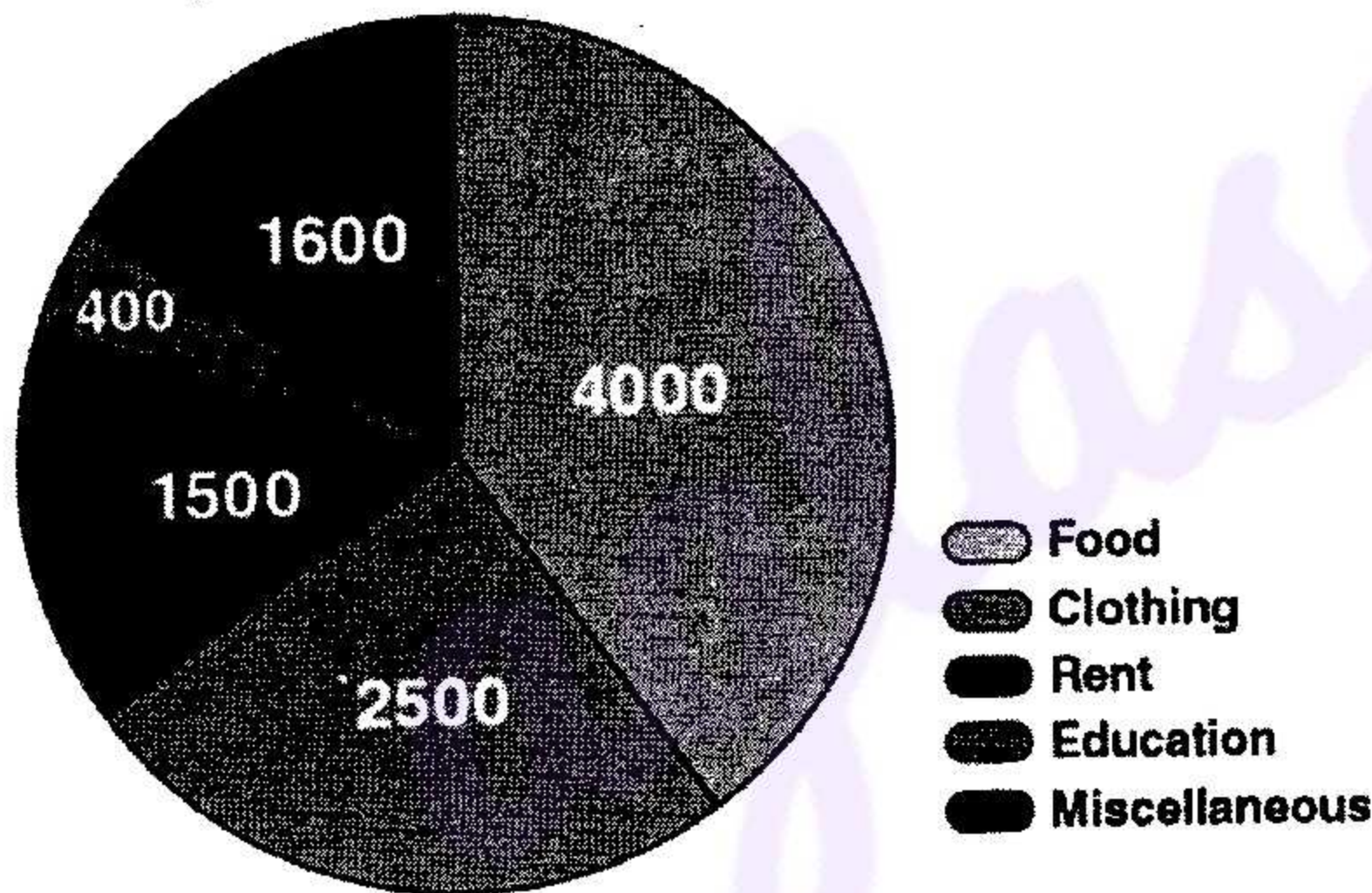
$$= \frac{\text{Component}}{10000} \times 360^\circ$$

central angle for family B = $\frac{\text{Component}}{16000} \times 360^\circ$

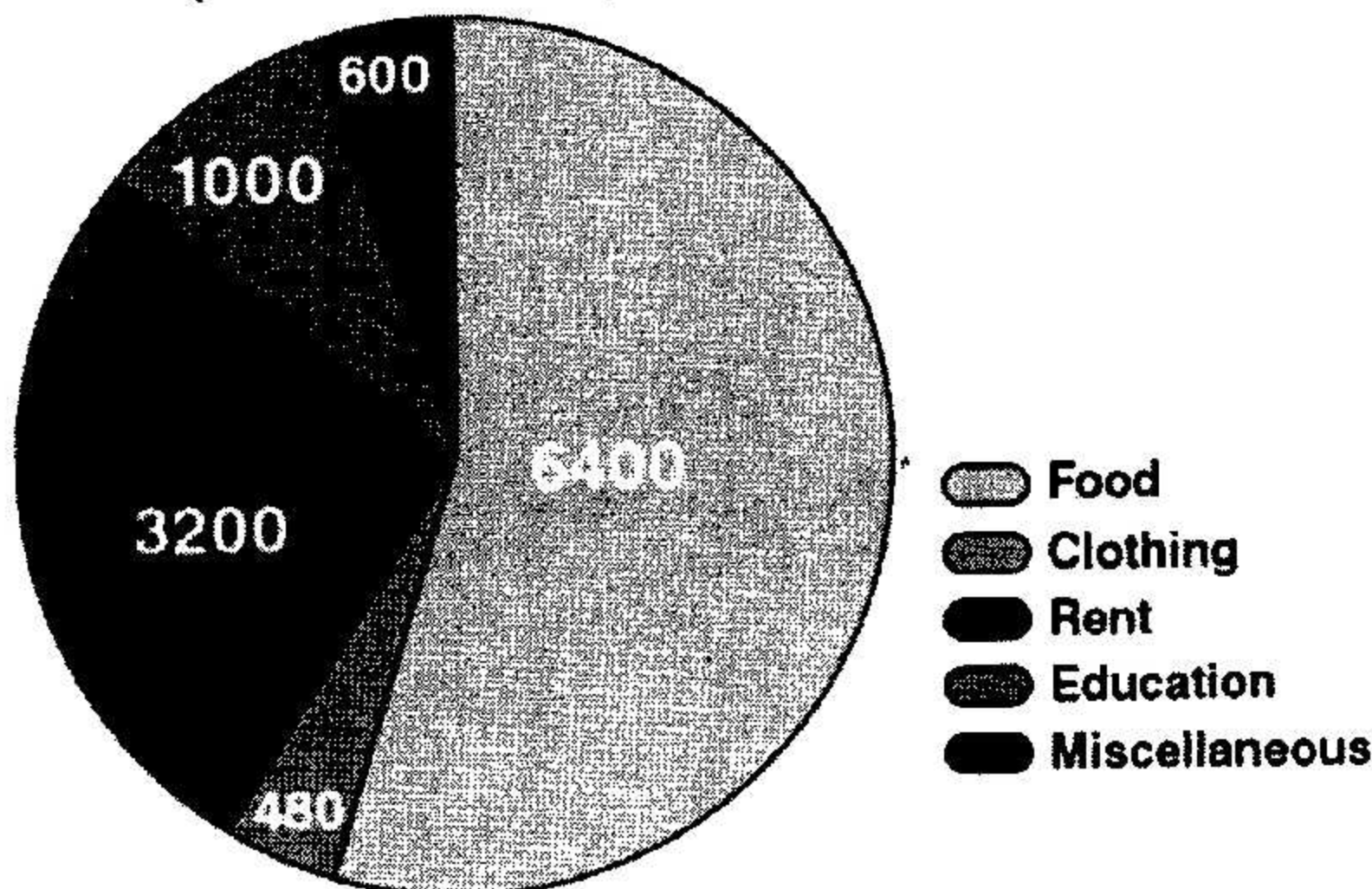
Sol.

Items	Family A	Family B	Central Angle family A	Central Angle family B
Food	4000	6400	144°	197.3°
Clothing	2500	480	90°	14.8°
Rent	1500	3200	54°	98.6°
Education	400	1000	14.4°	30.8°
Miscellaneous	1600	600	57.6°	18.5°

Expenditure of Family A



Expenditure of Family B



Q13 Following data gives the break up of the cost of production of a book.

Printing	Paper	Binding charge	Advert.	Royalty	Miscell.
30%	15%	15%	20%	10%	15%

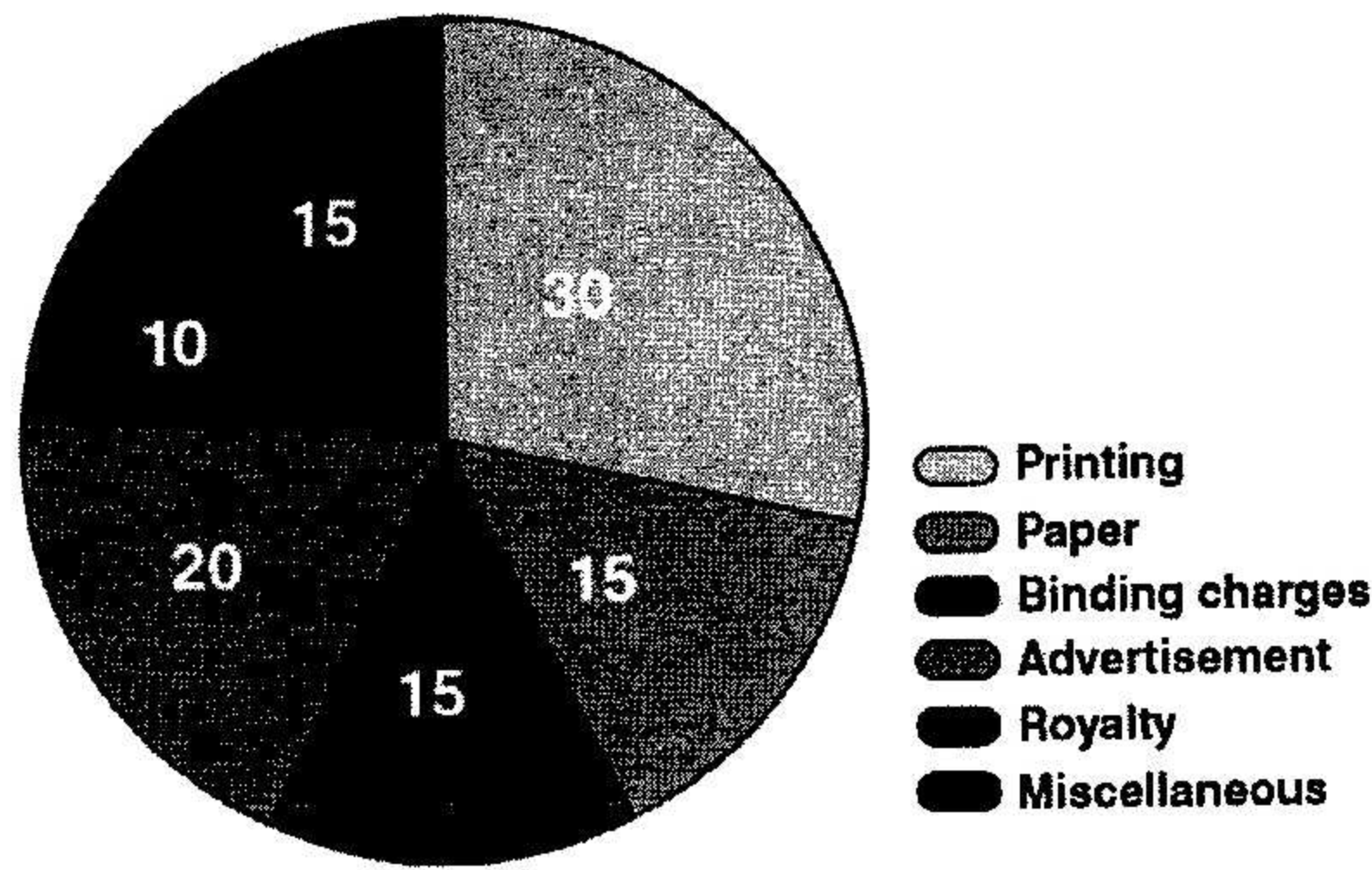
Draw a pie-diagram depicting the above information

Solution:

Items	Expenditure	central angle.
Printing	30%	102.9°
Paper	15%	51.4°
Binding charges	15%	51.4°
Advertisement	20%	68.6°
Royalty	10%	34.3°
Miscellaneous	15%	51.4°

Here total cost of production of book = 105%.

So, central angle = $\frac{\text{Component value}}{105} \times 360^\circ$

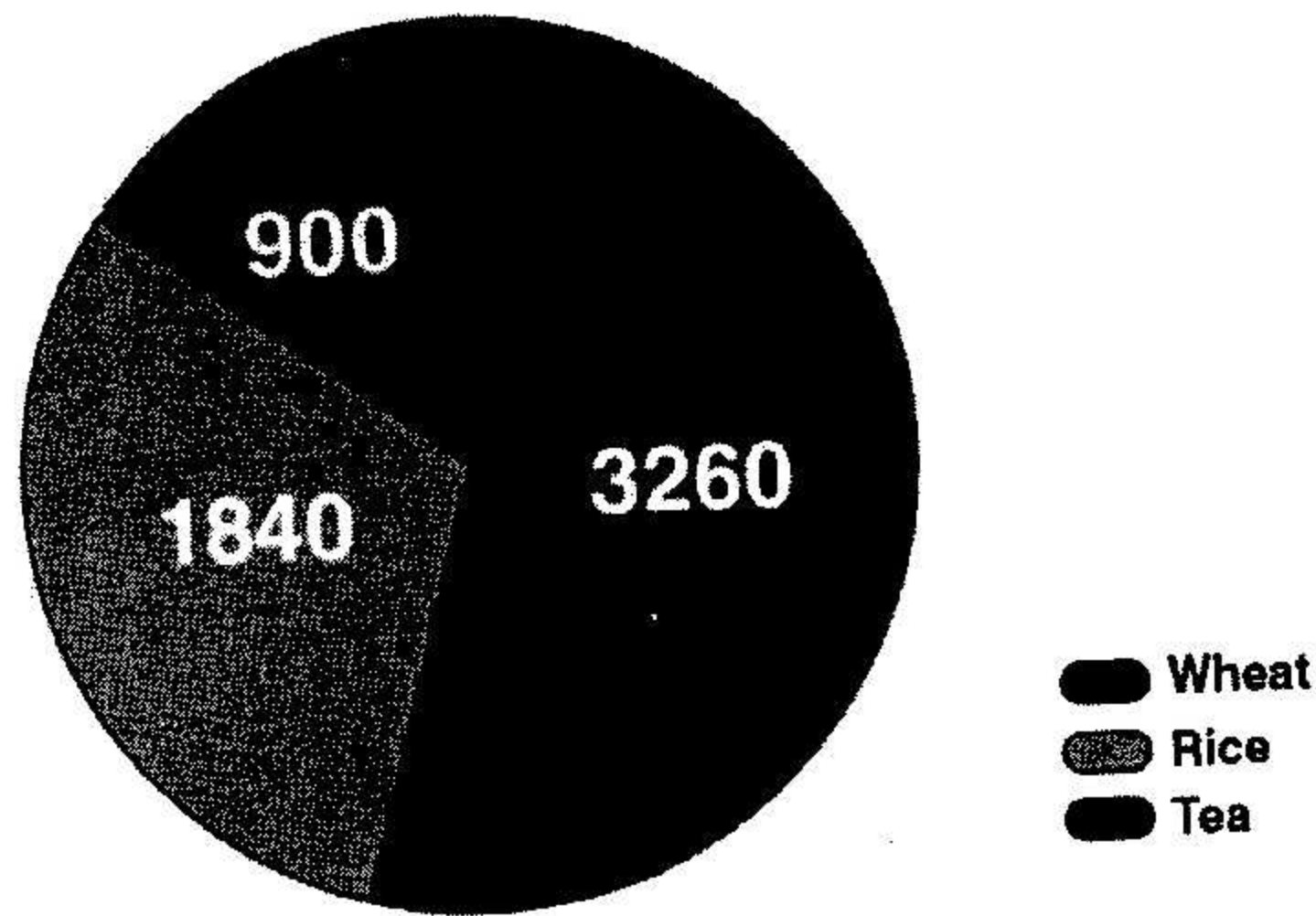


Q.14 Represent the Following data with the help of pie - diagram.

Items	wheat	Rice	Tea
Production (in metric tonnes)	3260	1840	900

Sol: Total cost of production = $3260 + 1840 + 900$
= 6000 metric tonnes.

Items	Production	Central angle
wheat	3260	$\frac{3260}{6000} \times 360 = 195.6$
Rice	1840	$\frac{1840}{6000} \times 360 = 110.4$
Tea	900	$\frac{900}{6000} \times 360 = 54$

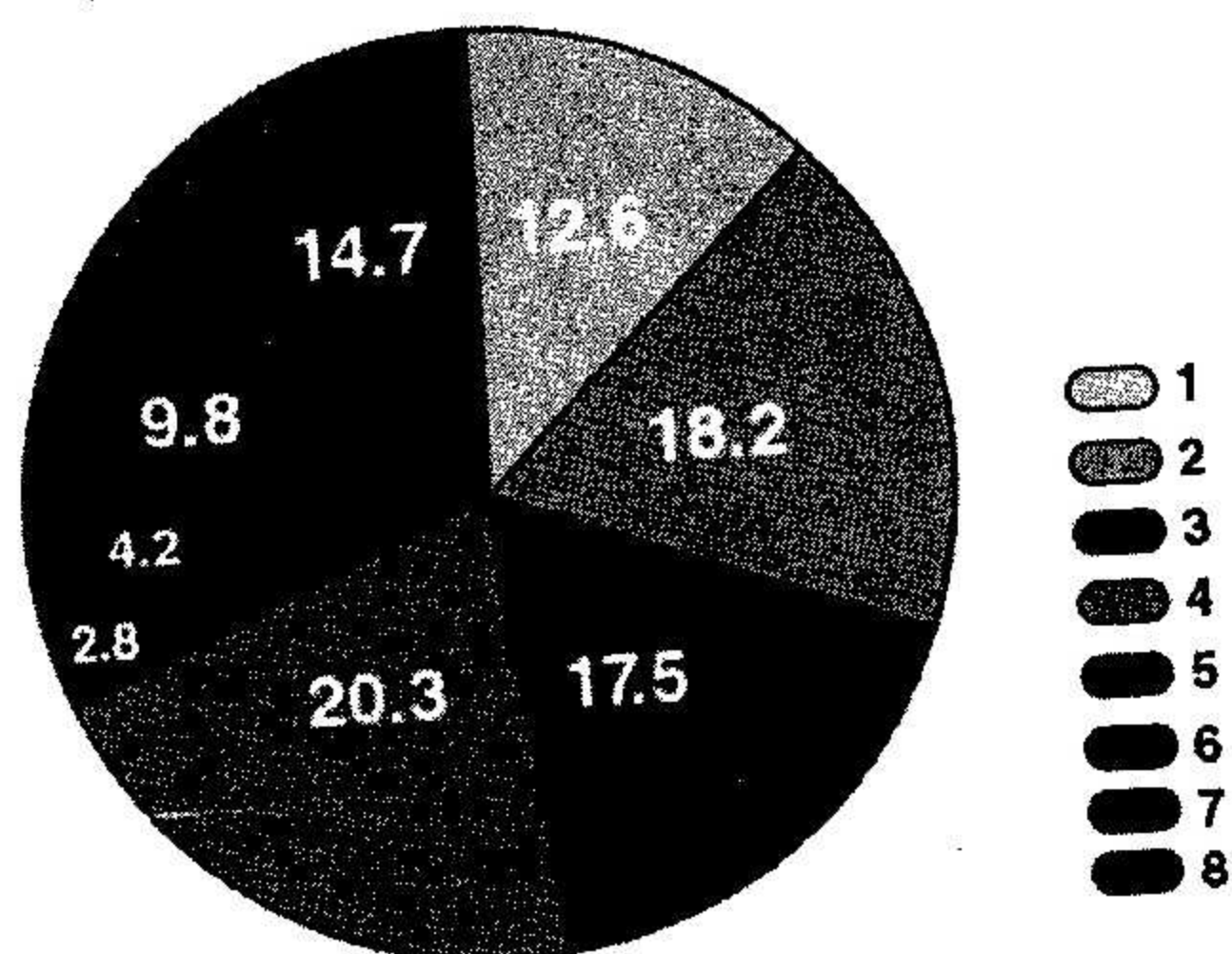


Q.15 : Draw a Pie-chart representing the relative frequencies (expressed as percentage) of the eight classes as given below

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

Solution : Here, Total amount = 100.1 %.

Amount	Central angle
12.6	45.3°
18.2	65.5°
17.5	62.9°
20.3	73
2.8	10.1°
4.2	15.1°
9.8	35.2°
14.7	52.9°



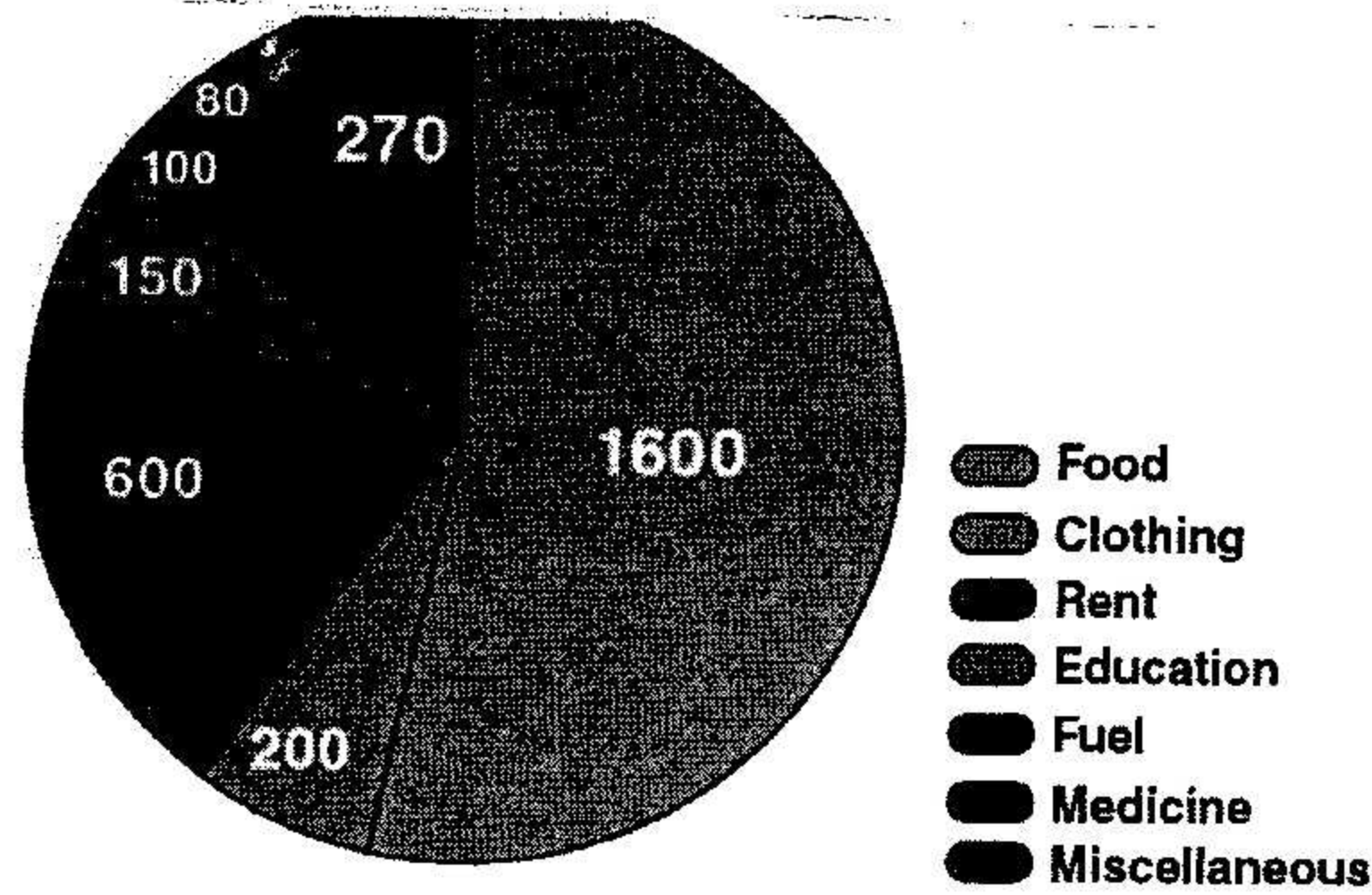
Q.16 Following is the break up of the expenditure of a family on different items of consumption.

Items	Food	clothing	Rent	Edu.	Fuel.	Medicine	Miscell.
Expenditure	1600	200	600	150	100	80	270

Draw a pie-chart to represent above data.

Sol Total expenditure = 3000 Rs.

Items	Expenditure	Central angle
Food	1600	$\frac{1600}{3000} \times 360^\circ = 192^\circ$
clothing	200	$\frac{200}{3000} \times 360^\circ = 24^\circ$
Rent	600	$\frac{600}{3000} \times 360^\circ = 72^\circ$
Education	150	$\frac{150}{3000} \times 360^\circ = 18^\circ$
Fuel	100	$\frac{100}{3000} \times 360^\circ = 12^\circ$
Medicine	80	$\frac{80}{3000} \times 360^\circ = 9.6^\circ$
Miscellaneous	270	$\frac{270}{3000} \times 360^\circ = 32.4^\circ$



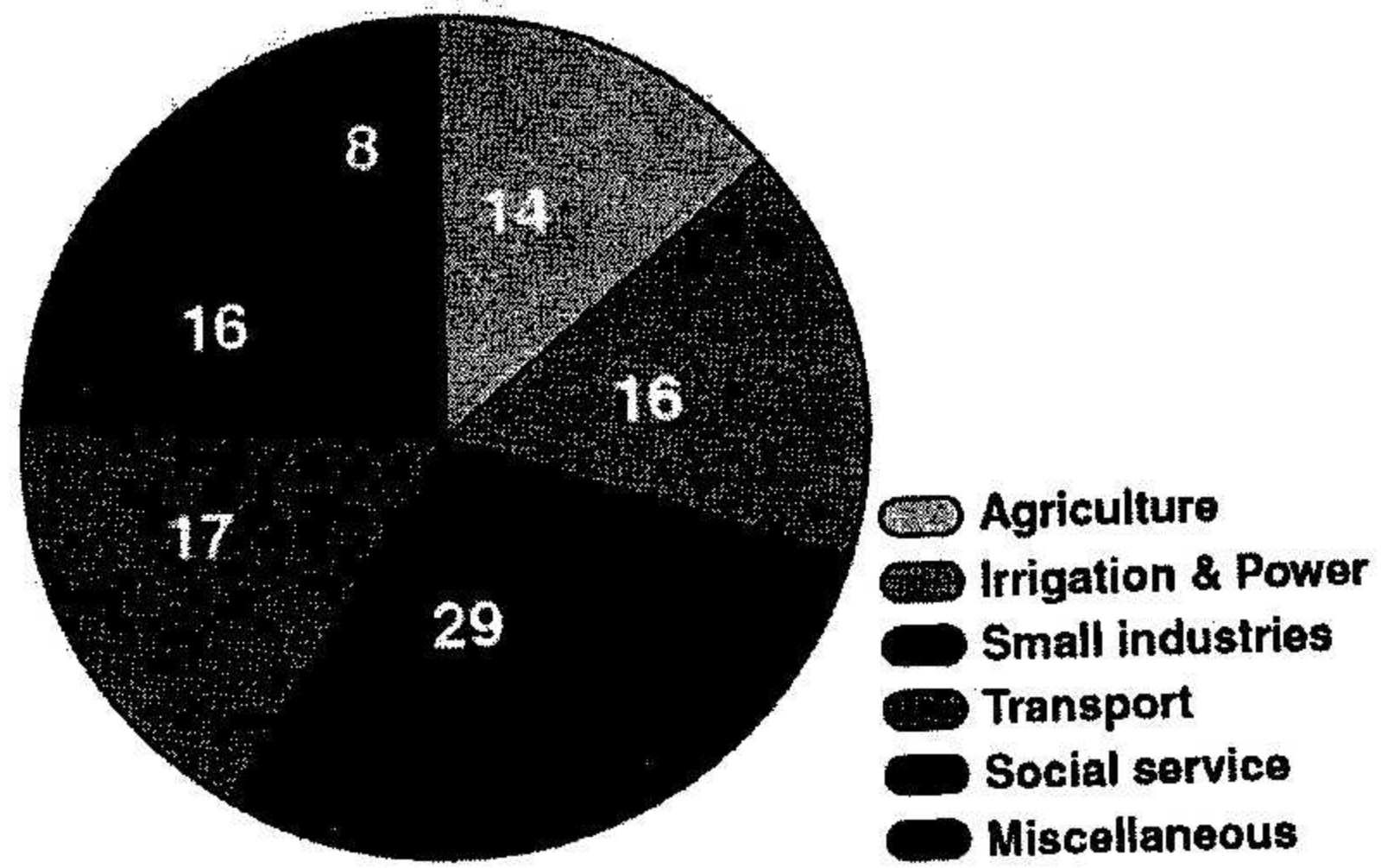
Q.17 Draw a pie diagram for the following data of the investment pattern in a five years plan.

Agriculture	14%
Irrigation & power	16%
Small Ind.	29%
Transport	17%
Social Service	16%
Miscellaneous	8%

Sol: Total Investment = 100%.

Central angle.

Agriculture	14%	$14/100 \times 360^\circ = 50.4^\circ$
Irrigation & power	16%	$16/100 \times 360^\circ = 57.6^\circ$
Small Ind.	29%	$29/100 \times 360^\circ = 104.4^\circ$
Transport	17%	$17/100 \times 360^\circ = 61.2^\circ$
Social Service	16%	$16/100 \times 360^\circ = 57.6^\circ$
Miscellaneous	8%	$8/100 \times 360^\circ = 28.8^\circ$



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