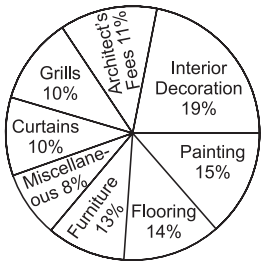
38 Pie Chart

EXERCISE – I

Ex 1. (*Questions 1 to 4*): *Study the following pie-chart carefully and answer the questions given below:*

(Bank P.O., 2011)

Cost Estimated by a Family in Renovation of their House



Total Estimated Cost = ₹ 120000

1. What is the difference in the amount estimated by the family on interior decoration and that on architect's fees ?

(*a*) ₹ 10000
(*b*) ₹ 9500
(*c*) ₹ 7200
(*d*) ₹ 9000
(*e*) None of these

2. Other than getting the discount of 12 % on the estimated cost of furniture and the actual miscellaneous expenditure being ₹ 10200 instead of the estimated one, the family's estimated cost is correct. What is the total amount spent by the family in renovating its house?

(*a*) ₹ 116728 (*b*) ₹ 115926
(*c*) ₹ 119500 (*d*) ₹ 116500
(*e*) None of these

3. What is the cost estimated by the family on painting and flooring together ?

(*a*) ₹ 36500 (*b*) ₹ 34800
(*c*) ₹ 36000 (*d*) ₹ 34500
(*e*) None of these

4. The family gets a discount on furniture and pays 12% less than the estimated cost on furniture. What is the amount spent on furniture ?

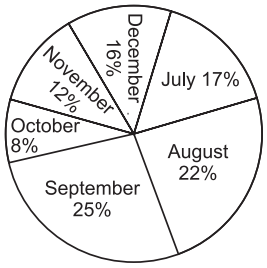
(*a*) ₹ 13200 (*b*) ₹ 14526
(*c*) ₹ 13526 (*d*) ₹ 13728
(*e*) None of these

Ex. (*Questions 5–9*): *Study the following pie-chart and table carefully and answer the questions given below:*

(Bank P.O., 2012)

Percentagewise Distribution of the Number of Mobile Phones Sold by a Shopkeeper During Six Months

Ratio of mobile phones sold of company A & company B



Total number of mobile phones sold = 45000

Month	Ratio (A : B)
July	8 : 7
August	4 : 5
September	3 : 2
October	7 : 5
November	7 : 8
December	7 : 9

5. What is the ratio of the number of mobile phones sold of Company B during July to those sold during December of the same company?

(*a*) 119 : 145 (*b*) 116 : 135
(*c*) 119 : 135 (*d*) 119 : 130
(*e*) None of these

6. If 35 % of the mobile phones sold by Company A during November were sold at a discount, how many mobile phones of Company A were sold without a discount, during that month?

(*a*) 882 (*b*) 1635
(*c*) 1638 (*d*) 885
(*e*) None of these

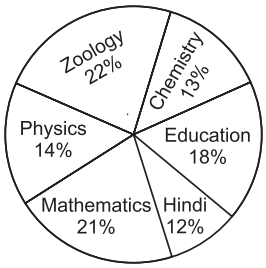
7. If the shopkeeper earned a profit of ₹ 433 on each mobile phone sold of Company *B* during October, what was his total profit earned on the mobile phones of that company during the same month ?
(*a*) ₹ 649900 (*b*) ₹ 645900
(*c*) ₹ 649400 (*d*) ₹ 649500
(*e*) None of these

8. The number of mobile phones sold of Company A during July is approximately what per cent of the number of mobile phones sold of Company A during December?
(*a*) 110 (*b*) 140
(*c*) 150 (*d*) 105
(*e*) 130

9. What is the total number of mobile phones sold of Company B during August and September together?
(*a*) 10000 (*b*) 15000
(*c*) 10500 (*d*) 9500
(*e*) None of these

Ex 3. (*Questions 10–14*): *Study the following pie-chart and the table given below it carefully to answer the questions given below*: **(Bank P.O., 2010)**

Percentage-wise distribution of lecturers in 6 different subjects in a university total number of lecturers : 1600



Ratio of male to female lectures

Lecturers	Males : Females
Mathematics	3 : 4
Education	5 : 3
Hindi	1 : 3
Chemistry	1 : 7
Physics	9 : 5
Zoology	7 : 9

10. Total number of lecturers (both male and female) in Hindi is approximately what per cent of the total number of female lectures in Mathematics and Chemistry together?
(*a*) 58 (*b*) 43
(*c*) 47 (*d*) 51
(*e*) 50

11. What is the difference between the total number of lecturers (both male and female) is Zoology and the total number of male lecturers in Chemistry and Education together?
(*a*) 192 (*b*) 182
(*c*) 146 (*d*) 136
(*e*) None of these

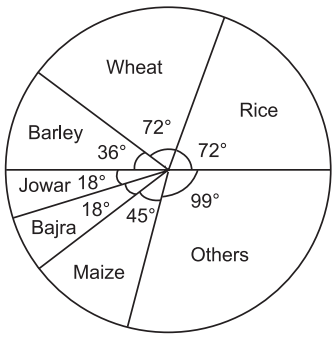
12. What is the difference between the number of female lecturers in Zoology and the number of male lecturers in Hindi?
(*a*) 156 (*b*) 160
(*c*) 150 (*d*) 153
(*e*) None of these

13. What is the total number of male lecturers in the university?
(*a*) 696 (*b*) 702
(*c*) 712 (*d*) 668
(*e*) None of these

14. What is the ratio of the number of female lecturers in Physics to the number of male lecturers in Mathematics ?
(*a*) 5 : 9 (*b*) 2 : 9
(*c*) 3 : 7 (*d*) 5 : 3
(*e*) None of these

Ex 4. (*Questions 15–19*): *The pie-chart shown below gives the distribution of land in a village under various food crops. Study the pie-chart carefully and answer the questions that follow:*

Distribution of areas (in acres) under various food crops



15. Which combination of three crops contribute to 50% of the total area under the food crops?
(*a*) Wheat, Barley and Jowar
(*b*) Rice, Wheat and Jowar

(*c*) Rice, Wheat and Barley
(*d*) Bajra, Maize and Rice

16. If the total area under jowar was 1.5 million acres, then what was the area (in million acres) under rice ?
(*a*) 6 (*b*) 7.5
(*c*) 9 (*d*) 4.5

17. If the production of wheat is 6 times that of barley, then what is the ratio between the yield per acre of wheat and barley?
(*a*) 3 : 2 (*b*) 3 : 1
(*c*) 12 : 1 (*d*) 2 : 3

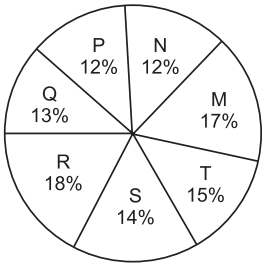
18. If the yield per acre of rice was 50% more than that of barley, then the production of barley is what percent of that of rice?
(*a*) 30% (*b*) $33\frac{1}{3}\%$
(*c*) 35% (*d*) 36%

19. If the total area goes up by 5%, and the area under wheat production goes up by 12%, then what will be the angle for wheat in the new pie-chart?
(*a*) 62.4° (*b*) 76.8°
(*c*) 80.6° (*d*) 84.2°

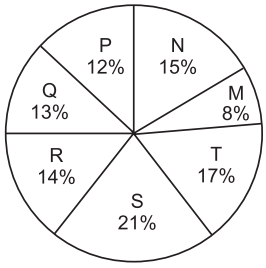
Ex 5. (*Questions 20–24*): *The following pie-charts show the distribution of students of graduate and post-graduate levels in 7 different Institutes : M, N, P, Q, R, S and T in a town. Study the pie-charts carefully and answer the questions given below:*

Distribution of students at graduate and post-graduate levels in seven institutes — *m, n, p, q, r, s* and *t*

Total Number of Students of Graduate Level = 27300



Total Number of Students of Post-Graduate Level = 24700



20. How many students of institutes *M* and *S* are studying at graduate level?
(*a*) 7516 (*b*) 8463
(*c*) 9127 (*d*) 9404

21. Total number of students studying at post-graduate level from institutes *N* and *P* is
(*a*) 5601 (*b*) 5944
(*c*) 6669 (*d*) 7004

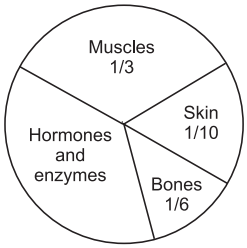
22. What is the total number of graduate and post-graduate level students in institute *R*?
(*a*) 8320 (*b*) 7916
(*c*) 9116 (*d*) 8372

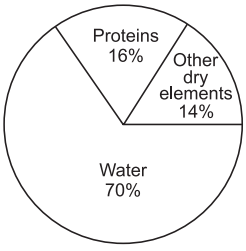
24. What is the ratio between the number of students studying at post-graduate and graduate levels respectively from institute *S*?
(*a*) 14 : 19 (*b*) 19 : 21
(*c*) 17 : 21 (*d*) 19 : 14

24. What is the ratio between the number of students studying at post-graduate level from institute *S* and the number of students studying at graduate level from institute *Q*?
(*a*) 13 : 19 (*b*) 21 : 13
(*c*) 13 : 8 (*d*) 19 : 13

Ex 6. (*Questions 25–29*): *Study the following pie-diagrams carefully and answer the questions given below:*

Percentage Composition of Human Body





25. In the human body, what part is made of neither bones nor skin ?
(*a*) $\frac{1}{40}$ (*b*) $\frac{3}{80}$
(*c*) $\frac{2}{5}$ (*d*) None of these

26. What is the ratio of the distribution of proteins in the muscles to that of the distribution of proteins in the bones?

(*a*) 1 : 18 (*b*) 1 : 2

(*c*) 2 : 1 (*d*) 18 : 1

27. What will be the quantity of water in the body of a person weighing 50 kg?

(*a*) 20 kg (*b*) 35 kg

(*c*) 41 kg (*d*) 42.5 kg

28. What percent of the total weight of human body is equivalent to the weight of the proteins in skin in human body?

(*a*) 0.016 (*b*) 1.6

(*c*) 0.16 (*d*) Data inadequate

29. To show the distribution of proteins and other dry elements in the human body, the arc of the circle should subtend at the centre an angle of

(*a*) 54° (*b*) 126°

(*c*) 108° (*d*) 252°

ANSWERS

1. (*e*)	**2.** (*e*)	**3.** (*b*)	**4.** (*d*)	**5.** (*c*)	**6.** (*c*)	**7.** (*d*)	**8.** (*e*)	**9.** (*a*)	**10.** (*d*)
11. (*c*)	**12.** (*c*)	**13.** (*a*)	**14.** (*a*)	**15.** (*c*)	**16.** (*a*)	**17.** (*b*)	**18.** (*b*)	**19.** (*b*)	**20.** (*b*)
21. (*c*)	**22.** (*d*)	**23.** (*d*)	**24.** (*d*)	**25.** (*d*)	**26.** (*c*)	**27.** (*b*)	**28.** (*b*)	**29.** (*c*)	

SOLUTIONS

1. Required difference

$$= ₹\left\{\frac{(19-11)}{100}\times 120000\right\} = ₹\left(\frac{8}{100}\times 120000\right)$$

$= ₹\ 9600.$

2. Estimated cost of furniture and miscellaneous expenditure

$$= ₹\left\{\frac{(13+8)}{100}\times 120000\right\} = ₹\left(\frac{21}{100}\times 120000\right)$$

$= ₹\ 25200.$

Actual cost of furniture

$$= ₹\left(\frac{88}{100}\times\frac{13}{100}\times 120000\right) = ₹\ 13728.$$

Actual cost of furniture and miscellaneous expenditure

$= ₹\ (13728 + 10200) = ₹\ 23928.$

Total amount spent in renovating the house

$= ₹\ (120000 - 25200 + 23928) = ₹\ 118728.$

3. Cost estimated on painting and flooring together

$$= ₹\left\{\frac{(15+14)}{100}\times 120000\right\} = ₹\left(\frac{29}{100}\times 120000\right)$$

$= ₹\ 34800.$

4. Amount spent on furniture

$$= ₹\left(\frac{88}{100}\times\frac{13}{100}\times 120000\right) = ₹\ 13728.$$

5. No. of mobile phones sold by B during July

$$= \left(45000\times\frac{17}{100}\times\frac{7}{15}\right) = 3570.$$

No. of mobile phones sold by B during December

$$= \left(45000\times\frac{16}{100}\times\frac{9}{16}\right) = 4050.$$

Required ratio $= \frac{3570}{4050} = \frac{119}{135} = 119 : 135.$

6. No. of mobile phones sold by A during November

$$= \left(45000\times\frac{12}{100}\times\frac{7}{15}\right) = 2520.$$

No. of phones sold by A in November without discount

$$= \left(2520\times\frac{65}{100}\right) = 1638.$$

7. No. of mobile phones sold by B during October

$$= \left(45000\times\frac{8}{100}\times\frac{5}{12}\right) = 1500.$$

Required profit = ₹ (1500 × 433) = ₹ 649500.

8. No. of mobile phones sold by A during July

$$= \left(45000\times\frac{17}{100}\times\frac{8}{15}\right) = 4080.$$

No. of mobile phones sold by A during December

$$= \left(45000\times\frac{16}{100}\times\frac{7}{16}\right) = 3150.$$

Let 4080 = x % of 3150.

Then, $\frac{x}{100}\times 3150 = 4080$

$$\Rightarrow\quad x = \left(\frac{4080\times 2}{63}\right) = 129.5 \simeq 130.$$

Required percentage = 130%.

9. Mobile phones of B sold during August

$$= \left(45000\times\frac{22}{100}\times\frac{5}{9}\right) = 5500.$$

Mobile phones of B sold during September

$$= \left(45000\times\frac{25}{100}\times\frac{2}{5}\right) = 4500.$$

Required number of phones sold = (5500 + 4500) = 10000.

Direction (*Questions 10–29*):

Number of lecturers in various subjects are:

Chemistry $\rightarrow \left(\frac{13}{100}\times 1600\right)=208$;

Education $\rightarrow \left(\frac{18}{100}\times 1600\right)=288$;

Hindi $\rightarrow \left(\frac{12}{100}\times 1600\right)=192$;

Mathematics $\rightarrow \left(\frac{21}{100}\times 1600\right)=336$;

Physics $\rightarrow \left(\frac{14}{100}\times 1600\right)=224$;

Zoology $\rightarrow \left(\frac{22}{100}\times 1600\right)=352$.

Subjects	Number of males	Number of females
Chemistry	$\left(208\times\frac{1}{8}\right)=26$	(208 – 26) = 182
Education	$\left(288\times\frac{5}{8}\right)=180$	(288 – 180) = 108
Hindi	$\left(192\times\frac{1}{4}\right)=48$	(192 – 48) = 144
Mathematics	$\left(336\times\frac{3}{7}\right)=144$	(336 – 144) = 192
Physics	$\left(224\times\frac{9}{14}\right)=144$	(224 – 144) = 80
Zoology	$\left(352\times\frac{7}{16}\right)=154$	(352 – 154) = 198

10. Required % $= \left\{\frac{192}{192+182}\times 100\right\}\% = \left(\frac{192}{374}\times 100\right)\%$

$= \frac{9600}{187}\% = 51.3\% \simeq 51\%$.

11. Required difference = 352 – (26 + 180)

= 352 – 206 = 146.

12. Required difference = (198 – 48) = 150.

13. Total number of male lecturers in the university

= (26 + 180 + 48 + 144 + 144 + 154) = 696.

14. Required ratio = 80 : 144 = 5 : 9.

15. For 50% of the total area, the sum of the central angles must be 180°.

For the given combinations, the sum of the central angles are :

(*a*) (Wheat + Barley + Jowar)

$\rightarrow$ (72° + 36° + 18°) = 126°.

(*b*) (Rice + Wheat + Jowar)

$\rightarrow$ (72° + 72° + 18°) = 162°.

(*c*) (Rice + Wheat + Barley)

$\rightarrow$ (72° + 72° + 36°) = 180°.

16. Let the total area be A million acres. Then,

Area under Jowar $= \left(\frac{18}{360}\times A\right)=\frac{A}{20}$.

Area under Rice $= \left(\frac{72}{360}\times A\right)=\frac{A}{5}$.

$\frac{A}{20} = 1.5$ million acres $\Rightarrow A = (1.5\times 20)$

= .....

$\therefore$ Area under rice

$= \left(\frac{1}{5}\times 30\right)$ million acres = 6 million acres.

17. Area under wheat

$= \frac{72A}{360}=\frac{A}{5}$, Area under barley $= \frac{36A}{360}=\frac{A}{10}$.

Let the production of barley be y tons.

Then, production of wheat = $6y$ tons.

Yield of wheat per acre $= \frac{6y}{(A/5)}=\frac{30y}{A}$.

Yield of barley per acre $= \frac{y}{(A/10)}=\frac{10y}{A}$.

Required ratio $= \frac{30y}{A}:\frac{10y}{A}=3:1$.

18. Area under rice $= \frac{72A}{360}=\frac{A}{5}$,

Area under barley $= \frac{36A}{360}=\frac{A}{10}$.

Let the yield of barley per acre be x tons.

Then yield of rice per acre $= \frac{150x}{100}$ tons $= \frac{3x}{2}$ tons.

Required % $= \left\{\frac{\left(x\times\frac{A}{10}\right)}{\frac{3x}{2}\times\frac{A}{5}}\times 100\right\}\% = \frac{100}{3}\% = 33\frac{1}{3}\%$.

19. Let the total area be A acres.

Then, new total area $= \frac{105A}{100}=\frac{21A}{20}$.

Area under wheat $= \frac{72A}{360}=\frac{A}{5}$.

New area under wheat $= \left(\frac{112}{100}\times\frac{A}{5}\right)=\frac{28A}{125}$.

Angle for wheat

$= \left\{\frac{\left(\frac{28A}{125}\right)}{\left(\frac{21A}{20}\right)}\times 360^\circ\right\} = \left(\frac{28A}{125}\times\frac{20}{21A}\times 360\right)^\circ$

$= \left(\frac{384}{5}\right)^\circ = 76.8^\circ$.

20. Students of institute M at graduate level
$= 17\%$ of $27300 = 4641$.
Students of institute S at graduate level
$= 14\%$ of $27300 = 3822$.
$\therefore$ Total number of students at graduate level in institutes M and $S = 4641 + 3822 = 8463$.

21. Required number = (15% of 24700) + (12% of 24700)
$= 3705 + 2964 = 6669$.

22. Required number = (18% of 27300) + (14% of 24700)
$= 4914 + 3458 = 8372$.

23. Required ratio
$$= \frac{(21\% \text{ of } 24700)}{(14\% \text{ of } 27300)} = \frac{21 \times 24700}{14 \times 27300} = \frac{19}{14} = 19:14.$$

24. Required ratio
$$= \frac{(21\% \text{ of } 24700)}{(13\% \text{ of } 27300)} = \frac{21 \times 24700}{13 \times 27300} = \frac{19}{13} = 19:13.$$

25. Part of the body made of neither bones nor skin
$$= 1 - \left(\frac{1}{6} + \frac{1}{10}\right) = \frac{11}{15}.$$

26. Required ratio $= \dfrac{16\% \text{ of } \frac{1}{3}}{16\% \text{ of } \frac{1}{6}} = \frac{6}{3} = \frac{2}{1} = 2:1.$

27. Quantity of water in the body of a person weighing 50 kg = (70% of 50 kg) = 35 kg.

28. Let the body weight be x kg.
Then, Weight of skin protein in the body
$$= \left\{16\% \text{ of } \left(\frac{1}{10} \text{ of } x\right)\right\} \text{kg} = \left(\frac{16}{100} \times \frac{1}{10} \times x\right) \text{kg}$$
$$= \frac{2x}{125} \text{ kg}.$$
$\therefore$ Required percentage
$$= \left\{\left(\frac{2x}{125}\right) \times \frac{1}{x} \times 100\right\}\% = \frac{8}{5}\% = 1.6\%.$$

29. Percentage of proteins and other dry elements in the body
$= (16\% + 14\%) = 30\%$.
Required central angle $= \left(\dfrac{30}{100} \times 360\right)^{\circ} = 108^{\circ}$.

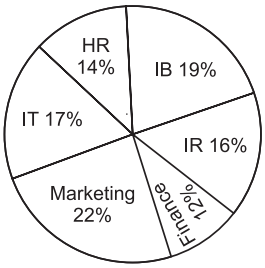
EXERCISE – II

Directions (*Questions 1-5*): *Study the pie-chart given below carefully and answer the questions that follow.*

(Bank P.O., 2009)

Percentage-wise break up of students in terms of specialization in M.B.A.

Total Number of students = 8000



1. What is the total number of students having specialisation in IR, Marketing and IT ?
(*a*) 4640
(*b*) 4080
(*c*) 4260
(*d*) 4400
(*e*) None of these

2. Students having IB as specialisation forms approximately what percent of students having Marketing as specialisation ?
(*a*) 116 (*b*) 86
(*c*) 124 (*d*) 74
(*e*) 66

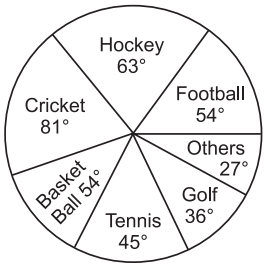
3. What is the total number of students having IB as specialisation ?
(*a*) 1520 (*b*) 1280
(*c*) 1360 (*d*) 1120
(*e*) None of these

4. What is the ratio of the students having Finance as specialisation to students having HR as specialisation?
(*a*) 11 : 19 (*b*) 18 : 13
(*c*) 6 : 7 (*d*) 4 : 7
(*e*) None of these

5. Students having IR as specialisation forms approximately what percent of students having HR as specialisation ?
(*a*) 87 (*b*) 106
(*c*) 76 (*d*) 62
(*e*) 114

Directions (*Questions 6–10*): *The circle-graph given below shows the spending of a state on various sports during a particular year. Study the graph carefully and answer the given questions.*

6. What percent of the total spendings is spent on Tennis ?
(*a*) $12\frac{1}{2}\%$
(*b*) $22\frac{1}{2}\%$
(*c*) 25%
(*d*) 45%



7. How much percent more is spent on Hockey than that on Golf ?
(*a*) 27% (*b*) 35%
(*c*) 37.5% (*d*) 75%

8. How much percent less is spent on Football than that on Cricket ?
(*a*) $22\frac{2}{9}\%$ (*b*) 27%
(*c*) $33\frac{1}{3}\%$ (*d*) $37\frac{1}{2}\%$

9. If the total amount spent on sports during the year was ₹ 2 crores, the amount spent on Cricket and Hockey together was

(*a*) ₹ 800000 (*b*) ₹ 8000000

(*c*) ₹ 12000000 (*d*) ₹ 16000000

10. If the total amount spent on sports during the year be ₹ 18000000, the amount spent on Basketball exceeds that on Tennis by

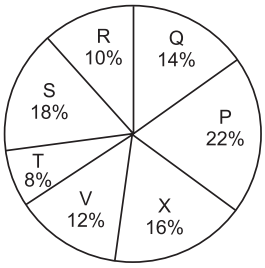
(*a*) ₹ 450000 (*b*) ₹ 460000

(*c*) ₹ 475000 (*d*) None of these

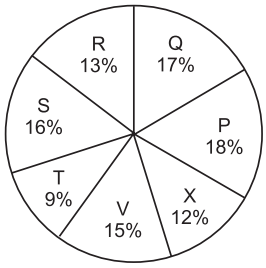
Directions (*Questions 11–15*): *Study the following pie-graphs carefully and answer the questions given below.*

Distribution of Candidates Enrolled For M.B.A. Entrance Examination And Those Who Passed In Different Institutes : P, Q, R, S, T, V and X.

Candidates Enrolled = 8550



Candidates Who Passed = 5700



11. What percentage of candidates passed the Exam from institute T out of the total number of candidates enrolled from the same institute ?

(*a*) 50% (*b*) 62.5%

(*c*) 75% (*d*) 80%

12. What is the ratio of candidates passed to the candidates enrolled from institute P ?

(*a*) 9 : 11 (*b*) 14 : 17

(*c*) 6 : 11 (*d*) 9 : 17

13. What is the percentage of candidates passed to the candidates enrolled for institutes Q and R together ?

(*a*) 68% (*b*) 83%

(*c*) 74% (*d*) 65%

14. Which institute has the highest percentage of candidates passed to the candidates enrolled ?

(*a*) Q (*b*) R

(*c*) V (*d*) T

15. The number of candidates passed from institutes *S* and *P* together exceeds the number of candidates enrolled from institutes *T* and *R* together by :

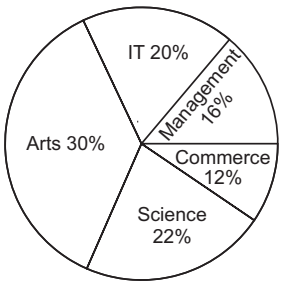
(*a*) 228 (*b*) 279

(*c*) 399 (*d*) 407

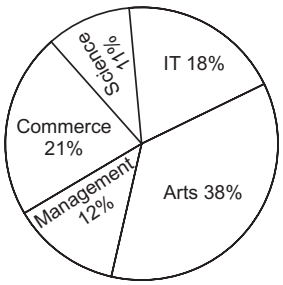
Directions (*Questions 16–20*): *Study the following pie-charts carefully and answer the questions that follow:*

(Bank P.O., 2009)

Percentage of Students Enrolled In Different Streams In a College Total Number of students = 3500



Percentage Break-up of Girls Enrolled In These Streams Out of The Total Students Total Number of Girls = 1500



16. What is the total number of boys enrolled in Management and IT together ?

(*a*) 1050 (*b*) 810

(*c*) 1120 (*d*) 980

(*e*) None of these

17. What is the ratio of the number of girls enrolled in Arts to the number of boys enrolled in Science ?

(*a*) 14 : 23 (*b*) 2 : 3

(*c*) 114 : 121 (*d*) 53 : 65

(*e*) None of these

18. What is the total number of girls enrolled in Science and Commerce together ?

(*a*) 450 (*b*) 495

(*c*) 345 (*d*) 480

(*e*) None of these

19. If 20% of the girls enrolled in Science change their stream to Management, then what will be the new number of Management students altogether ?

(*a*) 593 (*b*) 733

(*c*) 453 (*d*) 1003

(*e*) None of these

20. The number of girls enrolled in Arts, Science and Commerce forms what percent of total number of students in the College ?

(*a*) 25 (*b*) 40

(*c*) 60 (*d*) 75

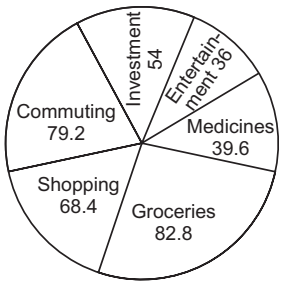
(*e*) None of these

Directions (*Questions 21–24*): *Study the following pie-chart carefully and answer the questions that follow:*

(Bank P.O., 2008)

Degreewise Break-up of Expenditure of a Family In a Month

Total Amount Spent In a Month = ₹ 45800.



21. What is the amount spent by the family on commuting ?

(*a*) ₹ 10076 (*b*) ₹ 10534

(*c*) ₹ 6870 (*d*) ₹ 8702

(*e*) None of these

22. What is the ratio of the amount spent by the family on Medicine to the amount spent on Groceries ?

(*a*) 1 : 2 (*b*) 13 : 21

(*c*) 3 : 5 (*d*) 11 : 23

(*e*) None of these

23. What is the total amount spent by the family on Entertainment and Shopping together?

(*a*) ₹ 9618 (*b*) ₹ 13282

(*c*) ₹ 13740 (*d*) ₹ 11908

(*e*) None of these

24. The total amount spent by the family on Groceries, Entertainment and Investments together forms approximately what percent of the amount spent on Commuting ?

(*a*) 209 (*b*) 76

(*c*) 154 (*d*) 42

(*e*) 218

ANSWERS

1. (*d*)	**2.** (*b*)	**3.** (*a*)	**4.** (*c*)	**5.** (*e*)	**6.** (*a*)	**7.** (*d*)	**8.** (*c*)	**9.** (*b*)	**10.** (*d*)
11. (*c*)	**12.** (*c*)	**13.** (*b*)	**14.** (*b*)	**15.** (*c*)	**16.** (*b*)	**17.** (*c*)	**18.** (*d*)	**19.** (*a*)	**20.** (*e*)
21. (*a*)	**22.** (*d*)	**23.** (*b*)	**24.** (*e*)						

SOLUTIONS

Questions (1–5):

Number of students in various specialisations:

$IB \rightarrow \left(\frac{19}{100}\times 8000\right) = 1520$; $IR \rightarrow \left(\frac{16}{100}\times 8000\right) = 1280$;

Finance $\rightarrow \left(\frac{12}{100}\times 8000\right) = 960$;

Marketing $\rightarrow \left(\frac{22}{100}\times 8000\right) = 1760$;

$IT \rightarrow \left(\frac{17}{100}\times 8000\right) = 1360$; $HR \rightarrow \left(\frac{14}{100}\times 8000\right) = 1120$.

1. Required number of students = (1280 + 1760 + 1360) = 4400.

2. Required percentage $= \left(\frac{1520}{1760}\times 100\right)\% = \frac{950}{11}\%$

$= 86.36\% \simeq 86\%$ (approx.)

3. Number of those having *IB* as specialisation = 1520.

4. Required ratio = Finance : $HR = \frac{960}{1120} = \frac{6}{7} = 6:7$.

5. Required percentage $= \left(\frac{1280}{1120}\times 100\right)\% = \frac{800}{7}\%$

$= 114.28\% \simeq 114\%$ (approx.)

Questions (6–10):

Percentage of amount spent on various sports:

Football $\rightarrow \left(\frac{54}{360}\times 100\right)\% = 15\%$;

Hockey $\rightarrow \left(\frac{63}{360}\times 100\right)\% = 17.5\%$;

Cricket $\rightarrow \left(\frac{81}{360}\times 100\right)\% = 22.5\%$;

Basketball $\rightarrow \left(\frac{54}{360}\times 100\right)\% = 15\%$;

Tennis $\rightarrow \left(\frac{45}{360}\times 100\right)\% = 12.5\%$;

Golf $\rightarrow \left(\frac{36}{360}\times 100\right)\% = 10\%$;

Others $\rightarrow \left(\frac{27}{360}\times 100\right)\% = 7.5\%$.

6. Percentage of money spent on Tennis = $12\frac{1}{2}\%$.

7. Let the total amount spent be ₹ 100. Then,
Money spent on Hockey = ₹ 17.50
and that on Golf = ₹ 10.
Difference = ₹ (17.50 – 10) = ₹ 7.50.

Required % = $\left(\frac{15}{2\times 10}\times 100\right)\% = 75\%$.

8. Let the total amount spent be ₹ 100. Then,
Money spent on Football = ₹ 15
and that on Cricket = ₹ 22.50.

Difference = ₹ (22.50 – 15) = ₹ 7.50 = ₹ $\frac{15}{2}$.

Required % = $\left(\frac{15}{2}\times\frac{2}{45}\times 100\right)\% = 33\frac{1}{3}\%$.

9. Total amount spent on sports = ₹ 20000000.

Amount spent on Cricket and Hockey

= (22.5 + 17.5)% = 40%

= ₹ $\left(20000000\times\frac{40}{100}\right)$ = ₹ 8000000.

10. (Amount spent on Basketball) – (Amount spent on Tennis)

= (15 – 12.5)% of ₹ 18000000

= ₹ $\left(\frac{2.5}{100}\times 18000000\right) =$ ₹ 450000.

Questions (11–15):

Candidates enrolled in:

P $\rightarrow \left(\frac{22}{100}\times 8550\right) = 1881$; $Q \rightarrow \left(\frac{14}{100}\times 8550\right) = 1197$;

R $\rightarrow \left(\frac{10}{100}\times 8550\right) = 855$;

S $\rightarrow \left(\frac{18}{100}\times 8550\right) = 1539$; $T \rightarrow \left(\frac{8}{100}\times 8550\right) = 684$;

V $\rightarrow \left(\frac{12}{100}\times 8550\right) = 1026$;

X $\rightarrow \left(\frac{16}{100}\times 8550\right) = 1368$.

Candidates passed in

P $\rightarrow \left(\frac{18}{100}\times 5700\right) = 1026$, $Q \rightarrow \left(\frac{17}{100}\times 5700\right) = 969$;

R $\rightarrow \left(\frac{13}{100}\times 5700\right) = 741$;

S $\rightarrow \left(\frac{16}{100}\times 5700\right) = 912$, $T \rightarrow \left(\frac{9}{100}\times 5700\right) = 513$;

V $\rightarrow \left(\frac{15}{100}\times 5700\right) = 855$;

X $\rightarrow \left(\frac{12}{100}\times 5700\right) = 684$.

11. Required pass percentage = $\left(\frac{513}{684}\times 100\right)\% = 75\%$.

12. Required ratio = $\frac{1026}{1881} = \frac{114}{209} = \frac{6}{11} = 6:11$.

13. Required percentage for Q and R

$= \left\{\frac{(969+741)}{(1197+855)}\times 100\right\}\%$

$= \left(\frac{1710}{2052}\times 100\right)\% = \frac{250}{3}\% = 83\%$ (nearly).

14. Required percentage :

$P \rightarrow \left(\frac{1026}{1881}\times 100\right)\% = 54.6\%$;

$Q \rightarrow \left(\frac{969}{1197}\times 100\right)\% = 80.95\%$;

$R \rightarrow \left(\frac{741}{855}\times 100\right)\% = 86.7\%$;

$S \rightarrow \left(\frac{912}{1539}\times 100\right)\% = 59.25\%$;

$T \rightarrow \left(\frac{513}{684}\times 100\right)\% = 75\%$,

$V \rightarrow \left(\frac{855}{1026}\times 100\right)\% = 83.33\%$;

$X \rightarrow \left(\frac{684}{1368}\times 100\right)\% = 50\%$.

This is highest for the institute R.

15. (Candidates passed from S and P) – (Candidates enrolled from T and R)

= (912 + 1026) – (684 + 855)

= (1938 – 1539) = 399.

Questions (16–20):

Number of students enrolled in various streams:

IT $\rightarrow \left(\frac{20}{100}\times 3500\right) = 700$;

Arts $\rightarrow \left(\frac{30}{100}\times 3500\right) = 1050$;

Science $\rightarrow \left(\frac{22}{100}\times 3500\right) = 770$;

Commerce $\rightarrow \left(\frac{12}{100}\times 3500\right) = 420$;

Management $\rightarrow \left(\frac{16}{100}\times 3500\right) = 560$.

Number of girls enrolled in various streams :

IT $\rightarrow \left(\frac{18}{100}\times 1500\right) = 270$,

Arts $\rightarrow \left(\frac{38}{100}\times 1500\right) = 570$;

Science $\rightarrow \left(\frac{11}{100}\times 1500\right) = 165$;

Commerce $\rightarrow \left(\frac{21}{100}\times 1500\right) = 315$;

$$\text{Management} \rightarrow \left(\frac{12}{100}\times 1500\right) = 180.$$

16. Total number of boys enrolled in Management and *IT* together
= (560 – 180) + (700 – 270)
= (380 + 430) = 810.

17. (Number of girls enrolled in Arts): (Number of boys enrolled in Science)
= 570 : (770 – 165) = 570 : 605
$= \frac{570}{605} = \frac{114}{121} = 114:121.$

18. Total number of girls enrolled in Science and Commerce together
= (165 + 315) = 480.

19. Number of Management students already enrolled = 560.
$\text{New required number} = 560 + \left(\frac{20}{100}\times 165\right)$
$= (560 + 33) = 593.$

20. Number of girls enrolled in Arts, Science and Commerce
= (570 + 165 + 315) = 1050.
$\text{Required percentage} = \left(\frac{1050}{3500}\times 100\right)\% = 30\%.$

Questions (21–24):
Percentage Break-up of expenditure is:

$$\text{Investments} \rightarrow \left(\frac{54}{360}\times 100\right)\% = 15\%;$$

$$\text{Commuting} \rightarrow \left(\frac{79.2}{360}\times 100\right)\% = 22\%;$$

$$\text{Shopping} \rightarrow \left(\frac{68.4}{360}\times 100\right)\% = 19\%;$$

$$\text{Groceries} \rightarrow \left(\frac{82.8}{360}\times 100\right)\% = 23\%;$$

$$\text{Medicines} \rightarrow \left(\frac{39.6}{360}\times 100\right)\% = 11\%,$$

$$\text{Entertainment} \rightarrow \left(\frac{36}{360}\times 100\right)\% = 10\%.$$

21. Amount spent on Commuting = ₹ $\left(45800 \times \frac{22}{100}\right)$
= ₹ 10076.

22. (Amount spent on Medicine) : (Amount spent on Groceries)
$= ₹\left(45800\times\frac{11}{100}\right) : ₹\left(45800\times\frac{23}{100}\right) = 11:23.$

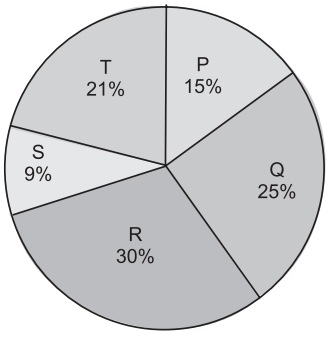
23. Amount spent on Entertainment and Shopping
$= ₹\left\{45800\times\frac{(10+19)}{100}\right\} = ₹\left(45800\times\frac{29}{100}\right)$
= ₹ 13282.

24. Amount spent on Groceries, Entertainment and Investments
$= ₹\left\{45800\times\frac{(23+10+15)}{100}\right\} = ₹\left(45800\times\frac{48}{100}\right)$
Amount spent on Commuting = ₹ $\left(45800\times\frac{22}{100}\right)$.
$\text{Required \%} = \left\{\frac{45800\times\frac{48}{100}}{45800\times\frac{22}{100}}\times 100\right\}\% = \frac{2400}{11}\%$
= 218.18% ≃ 218%.

EXERCISE – III

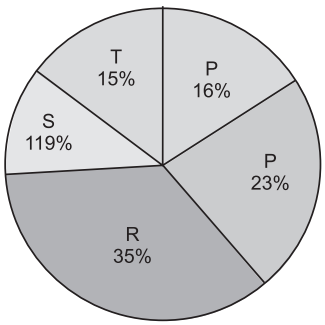
Directions (*Questions 1-5*): *Refer to the pie-charts and answer the given questions.*

Distribution of total number of Dell Laptops Sold by 5 Stores



Total Number : 2400

Distribution of Number of Laptops (both Dell and Lenovo) Sold by 5 Stores in 2011



Total Number : 4500

1. What is the average number of Dell Laptops sold by stores P, R and S together?
[IBPS—RRB (Officer's Gr. "B' Exam, 2015]
(*a*) 424 (*b*) 432
(*c*) 428 (*d*) 454

2. What is the central angle corresponding to number of Dell laptops sold by store S?
[IBPS—RRB (Officer's Gr. "B' Exam, 2015]
(*a*) 29.4° (*b*) 38.6°
(*c*) 36.2° (*d*) 32.4°

3. Number of Dell laptops sold by store Q is approximately what percent of the number of the number of laptops (both Dell and Lenovo) sold by store R?
[IBPS—RRB (Officer's Gr. "B' Exam, 2015]
(*a*) 28% (*b*) 45%
(*c*) 50% (*d*) 38%

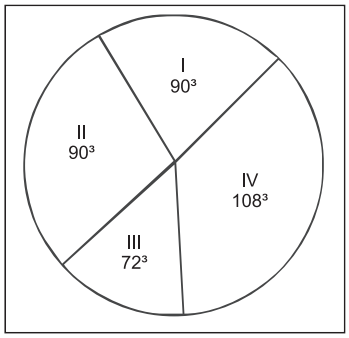
4. What is the difference between number of laptops (both Dell and Lenovo) sold by store Q and total number of Lenovo laptops sold by store R and S together?
[IBPS—RRB (Officer's Gr. "B' Exam, 2015]
(*a*) 185 (*b*) 99
(*c*) 91 (*d*) 119

5. Number of Dell laptops sold by store T is what percent more than the number of laptops sold by store P?
[IBPS—RRB (Officer's Gr. "B' Exam, 2015]
(*a*) 30% (*b*) 45%
(*c*) 40% (*d*) 42.5%

Directions (*Questions 6–9*): *Study the pie chart and answer the given questions.*

The total expenditure of a company for a particular month is ₹ 60000. The various heads of expenditure I to IV are indicated in a pie chart given below. These heads are:

I. Raw materials
II. Conveyance
III. Electricity
IV. Overhead expenses



6. Total expenditure on conveyance is
[SSC—CHSL (10+2) Exam, 2015]
(*a*) ₹ 12,000 (*b*) ₹ 15,000
(*c*) ₹ 20,000 (*d*) ₹ 10,000

7. What percentage of total expenditure is on electricity?
[SSC—CHSL (10+2) Exam, 2015]
(*a*) 23% (*b*) 25%
(*c*) 30% (*d*) 20%

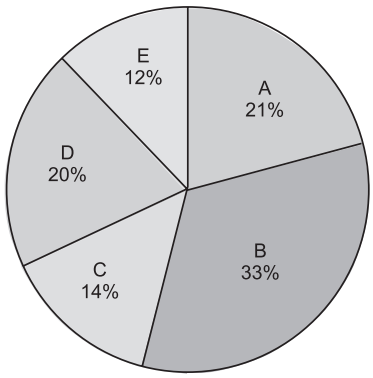
8. What is the amount spent on overhead expenses?
[SSC—CHSL (10+2) Exam, 2015]
(*a*) ₹ 12,000 (*b*) ₹ 15,000
(*c*) ₹ 18,000 (*d*) ₹ 10,000

9. What percentage of total expenditure is on raw materials?
[SSC—CHSL (10+2) Exam, 2015]
(*a*) 25% (*b*) 30%
(*c*) 60% (*d*) 23%

Directions (*Questions 10-14*): *Refer to the pie charts and answer the given questions.*

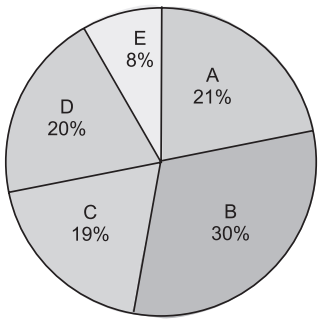
Distribution of total number of members (both male and female) in 5 health clubs in 2011

Total number : 6300



Distribution of total number of male members in 5 health clubs in 2011

Total number: 3600



10. What is the central angle corresponding to number of male and female in health club D and E?
[RBI Gr. 'B' (Phase—I) Exam, 2015]
(*a*) 115.2° (*b*) 125.5°
(*c*) 210.25° (*d*) 155.5°

11. What is the average number of female members in health clubs A, B and C?
[RBI Gr. 'B' (Phase—I) Exam, 2015]
(*a*) 564 (*b*) 572
(*c*) 568 (*d*) 548

12. Number of male members in health clubs, A and C is what percentage less than the number of both

male and female members of health club B and C in 2011? [RBI Gr. 'B' (Phase—I) Exam, 2015]

(*a*) 69 (*b*) 51.36

(*c*) 72 (*d*) 42.21

13. What is the central angle corresponding to number of both male and female in health club B? [RBI Gr. 'B' (Phase—I) Exam, 2015]

(*a*) 118.8° (*b*) 112.6°

(*c*) 124.8° (*d*) 116.4°

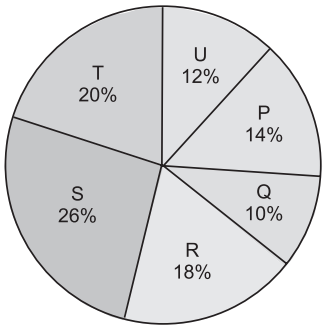
14. Number of female members in health club E is what percent less than number of male members in health club B? [RBI Gr. 'B' (Phase—I) Exam, 2015]

(*a*) $56\frac{2}{3}$ (*b*) $54\frac{1}{2}$

(*c*) $60\frac{2}{3}$ (*d*) $64\frac{1}{3}$

Directions (*Questions 15–19*): *Refer to the pie-chart and the table carefully and answer the given questions.*

Distribution of total number of cellular phones (both Nokia and Samsung) sold by six stores in October



Total number: 11200

Ratio of the number of Nokia cellular phones sold to that of Samsung cellular phones sold

Store	Ratio
P	4 : 3
Q	3 : 1
R	5 : 4
S	7 : 6
T	1 : 4
U	11 : 10

15. What is the average of Nokia cellular phones sold by store P, R, S and T together? [IBPS—Bank Spl. Officer (IT) Exam, 2015]

(*a*) 1008 (*b*) 1048

(*c*) 984 (*d*) 1006

16. The number of Nokia cellular phones sold by store R is what per cent more than that of Samsung cellular phones sold by store P and Q together? [IBPS—Bank Spl. Officer (IT) Exam, 2015]

(*a*) $23\frac{1}{17}\%$ (*b*) $19\frac{5}{17}\%$

(*c*) $18\frac{3}{17}\%$ (*d*) $20\frac{3}{17}\%$

17. What is the central angles corresponding to the total number of cellular phones (both Nokia and Samsung) sold by store S? [IBPS—Bank Spl. Officer (IT) Exam, 2015]

(*a*) 99.2° (*b*) 93.6°

(*c*) 105.6° (*d*) 97.4°

18. What is the ratio of the number of Nokia cellular phones sold by store S to the Samsung cellular phones sold by store T and U together? [IBPS—Bank Spl. Officer (IT) Exam, 2015]

(*a*) 43 : 72 (*b*) 49 : 76

(*c*) 43 : 76 (*d*) 49 : 72

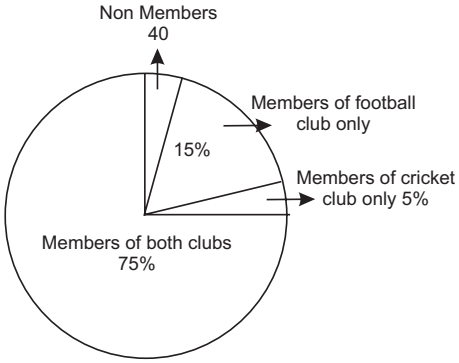
19. The total number of cellular phones (both Nokia and Samsung) sold by store Q increased by 15% from October to November and the same of cellular phones sold by store T increased by 5% from October to November. What was the total number of cellular phones sold by store Q and T together in November? [IBPS—Bank Spl. Officer (IT) Exam, 2015]

(*a*) 3540 (*b*) 3720

(*c*) 3640 (*d*) 3420

Directions (*Questions 20–23*): *Study the Pie chart carefully and answer the questions.*

Student of a College



20. Percentage of students who are not members of any club is [SSC—CHSL (10 + 2) Exam, 2015]

(*a*) 5% (*b*) 8%

(*c*) 10% (*d*) 6%

21. Number of students who are members of cricket club only [SSC—CHSL (10 + 2) Exam, 2015]

(*a*) 35 (*b*) 40

(*c*) 42 (*d*) 41

22. Ratio of members of cricket club only and football club only respectively is [SSC—CHSL (10 + 2) Exam, 2015]

(*a*) 1 : 3 (*b*) 2 : 1

(*c*) 1 : 2 (*d*) 3 : 1

23. The number of students who are members of both the clubs is [SSC—CHSL (10 + 2) Exam, 2015]

(*a*) 500 (*b*) 650

(*c*) 550 (*d*) 600

ANSWERS

1. (*b*)	**2.** (*d*)	**3.** (*d*)	**4.** (*b*)	**5.** (*c*)	**6.** (*b*)	**7.** (*d*)	**8.** (*c*)	**9.** (*a*)	**10.** (*a*)
11. (*a*)	**12.** (*b*)	**13.** (*a*)	**14.** (*a*)	**15.** (*a*)	**16.** (*d*)	**17.** (*b*)	**18.** (*b*)	**19.** (*c*)	**20.** (*a*)
21. (*b*)	**22.** (*a*)	**23.** (*d*)							

SOLUTIONS

1. Percent of Dell Laptops sold by P, R and S together
= 15% + 30% + 9% = 54%
Total Dell Laptops sold by, P, R and S together

$$= 2400 \times \frac{54}{100} = 1296$$

$$\therefore \text{ Average } = \frac{1296}{3} = 432$$

2. Dell laptops sold by store S = 9%
Central angle corresponding to number of Dell Laptops sold by store S.

$$= \frac{9}{100} \times 360 = 32.4\%$$

3. Percent of Dell Laptops sold by Store Q = 25%
Total number of Dell laptops sold by store Q

$$= 2400 \times \frac{25}{100} = 600$$

Percent of Dell Laptops Dell and Lenovo Sold by store R = 35
Number of laptops (Dell and Lenovo) sold by store R

$$= 4500 \times \frac{35}{100} = 1575$$

$$\text{Required percentage } = \frac{600}{1575} \times 100 = 38.095 \approx 38\%$$

4. Percent of laptops (Dell and Lenovo) sold by store Q = 23%
Number of laptops (Dell and Lenovo) sold by store Q.

$$= 4500 \times \frac{23}{100} = 45 \times 23 = 1035$$

Percent of Laptops (Dell and Lenovo) sold by R and S together = 35% + 11% = 46%
Now, total number of laptops (Lenovo and Dell) sold by R and S together

$$= 4500 \times \frac{46}{100} = 2070$$

Percent of laptops sold by R and S together
= 30% + 9% = 39%
Number of Dell laptops sold by R and S together

$$= 2400 \times \frac{39}{100} = 936$$

Number of Lenovo laptops = 2070 – 936 = 1134
= 2070 – 850 = 1220
Required difference = 1134 – 1034 = 99

5. Number of Dell laptops sold by store

$$T = 2400 \times \frac{21}{100} = 504$$

$$\text{Number of laptops sold by store P} = 2400 \times \frac{15}{100} = 360$$

$$\text{Required percentage } = \frac{504 - 360}{360} \times 100 = 40\%$$

6. Corresponding angle for conveyance = 90°
$\because$ 360° ≡ ₹ 60000

$$\therefore \text{ Total expenditure on conveyance } = \frac{90}{360} \times 6000$$

= ₹ 15000

7. Corresponding angle for expenditure on electricity = 72°
$\because$ 360° ≡ 100%

$$\therefore \text{ Total expenditure on electricity } = \frac{72}{360} \times 100 = 20\%$$

8. Corresponding angle for overhead expenses = 108°
$\because$ 360° = ₹ 60000
Amount spent on Overhead expenses

$$= \frac{108}{360} \times 60000 = ₹\ 18000$$

9. Corresponding angle for raw materials = 90°
$\because$ 360° ≡ 100%

$$\text{Percentage of raw material } = \frac{90}{360} \times 100 = 25\%$$

10. Percentage of male and female members in health club D and E = 20% + 12% = 32%
The central angles corresponding to number of male and female in health club D and E.

$$= 360 \times 32\% = \frac{260 \times 32}{100} = 115.2°$$

11. The number of female members in health clubs A, B and C

$$\frac{6300 \times 68}{100} - \frac{3600 \times 72}{100} = 4284 - 2592 = 1692$$

Average number of female number in health cube A, B and C $= \frac{1692}{3} = 564$

12. Number of male members in health clubs A and C

$$= \frac{3600 \times 40}{100} = 1440$$

Number of male and female members in health clubs B and C = 6300 × 47% = 2961

Number of male members in health club A and C percent less than the number of both male and female members of health club B and C = $\frac{2961-1440}{2961} \times 100 = 51.36\%$

13. Percentage of both male and female members in health club B = 33%

The central angles corresponding to number of male and female in health club B = $\frac{360}{100} \times 33 = 118.8°$

14. Number of male and female members in Health club E = $6300 \times \frac{12}{100} = 756$

Number of male members in health club

E = $\frac{2600 \times 8}{100}$ 288

Number of female members in health club

E = 756 − 288 = 468

The number of male members in health club B

= $\frac{3600 \times 30}{100} = 1080$

Required less percentage = $\frac{1080-468}{1080} \times 100$

= $\frac{612}{1080} \times 100 = 56\frac{2}{3}$

Solution (15 to 23)

Store	Nokia cellular Phones	Samsung Cellular Phones	Total number of cellular phone
P	896	672	1568
Q	840	280	1120
R	1120	896	2016
S	1568	1344	2912
T	448	1792	2240
U	704	640	1344

15. Total Nokia Phone sold by stores P, R, S and T = 896 + 1120 + 1568 = 448 = 4032

∵ Required average = $\frac{4032}{4} = 1008$

16. Number of Nokia phones sold by Store R = 1120

Number of Samsung phones sold by store P and Q together = 672 + 280 = 952

∵ Required percentage = $\frac{1120-952}{952} \times 100$

= $\frac{16800}{952}\% = \frac{300}{17}\% = 17\frac{11}{17}\%$ more

17. Percentage of caller phones (both Nokia and Samsung) sold by Store S = 26%

Required central angle = $\frac{26}{100} \times 360 = 93.6°$

18. Number of Nokia phones sold by Store S = 1568

Number of Samsung phones sold by Store T and U together = 1792 + 640 = 2432

∵ Required Ratio = $\frac{1568}{2432} = \frac{49}{76} = 49:76$

19. Number of cellular phones (both Nokia and Samsung) sold by store Q in October = $11200 \times \frac{10}{100} = 1120$

∵ Number of cellular phones (both Nokia and Samsung) sold by store Q in November = $1120 \times \frac{115}{100} = 1288$

Number of cellular phones (both Nokia and Samsung) sold by Store T in October = $11200 \times \frac{20}{100} = 2240$

∵ Number of cellular phones (both Nokia and Samsung) sold by Store T in Number = $2240 \times \frac{105}{100} = 2352$

∵ Total number of cellular phones (both Nokia and Samsung) sold by Q and T Together in November

= 1288 + 2352 = 3640

20. Percentage of students who are members of any club = 75 + 15 + 5 = 95%

Percentage of students who are not members of any club = 100 − 95% = 5%

21. Number of students who are not members of any club = 40 = 5%

Percentage of members of cricket club only = 5%

Number of members of cricket club only = 40

22. Percentage of member of cricket club only = 5%

Percentage of member of football club only = 15%

Required ratio

= 5 : 15 = 1 : 3

23. Let total number of students of a college be x

Non members students = 40

∴ 5% of x = 40

$\Rightarrow \frac{x \times 5}{100} = 40$

$\Rightarrow x = \frac{100 \times 40}{5} = 800$

Percentage of members of both club = 75%

Number of members of both club = $\frac{75 \times 800}{100} = 75 \times 8 = 600$