

Quantitative Aptitude

Caselet Data Interpretations

Level-1

Q1 Read the following information carefully and answer the question.

There are 600 students in a coaching institute. Out of the total number of students, 15% are enrolled in Mathematics coaching and the number of students enrolled in English coaching is same as the number of students enrolled in Mathematics coaching. Number of students enrolled for chemistry coaching is 30 more than the number of students enrolled in English coaching. Number of students enrolled in Physics coaching is 48 more than the number of students enrolled in chemistry coaching. Rests of the students are enrolled in Biology coaching.

Find the difference between the number of students enrolled in English and Physics coaching together and the number of students enrolled in Chemistry and Biology coaching together.

- (A) 4 (B) 5
(C) 6 (D) 2
(E) None of these

Q2 Read the following information carefully and answer the question.

There are 600 students in a coaching institute. Out of the total number of students, 15% are enrolled in Mathematics coaching and the number of students enrolled in English coaching is same as the number of students enrolled in Mathematics coaching. Number of students enrolled for chemistry coaching is 30 more than

the number of students enrolled in English coaching. Number of students enrolled in Physics coaching is 48 more than the number of students enrolled in chemistry coaching. Rests of the students are enrolled in Biology coaching.

Number of students enrolled in Chemistry coaching is how much percent of the total number of students enrolled in Physics and Biology coaching together?

- (A) 56% (B) 34%
(C) 40% (D) 67%
(E) None of these

Q3 Read the following information carefully and answer the question.

There are 600 students in a coaching institute. Out of the total number of students, 15% are enrolled in Mathematics coaching and the number of students enrolled in English coaching is the same as the number of students enrolled in Mathematics coaching. Number of students enrolled for chemistry coaching is 30 more than the number of students enrolled in English coaching. Number of students enrolled in Physics coaching is 48 more than the number of students enrolled in chemistry coaching. Rests of the students are enrolled in Biology coaching.

Find the respective ratio between the number of students enrolled in Physics coaching and the number of students enrolled in Chemistry coaching.



- (A) 7 : 9 (B) 3 : 5
 (C) 7 : 5 (D) 9 : 5
 (E) None of these

Q4 Read the following information carefully and answer the question.

There are 600 students in a coaching institute. Out of the total number of students, 15% are enrolled in Mathematics coaching and the number of students enrolled in English coaching is the same as the number of students enrolled in Mathematics coaching. Number of students enrolled for chemistry coaching is 30 more than the number of students enrolled in English coaching. Number of students enrolled in Physics coaching is 48 more than the number of students enrolled in chemistry coaching. The Rest of the students are enrolled in Biology coaching.

If 30% of the students enrolled in Mathematics coaching and 60% of the students enrolled in English coaching are females; then find the total number of males enrolled in both Mathematics and English coaching together.

- (A) 87 (B) 89
 (C) 99 (D) 80
 (E) None of these

Q5 Read the following information carefully and answer the question.

There are 600 students in a coaching institute. Out of the total number of students, 15% are enrolled in Mathematics coaching and the number of students enrolled in English coaching is the same as the number of students enrolled in Mathematics coaching. Number of students enrolled for chemistry coaching is 30 more than the number of students enrolled in English coaching. Number of students enrolled in Physics coaching is 48 more than the number of

students enrolled in chemistry coaching. The Rest of the students are enrolled in Biology coaching.

If the ratio of male students and female students in Physics coaching is 5 : 2, then find the difference between the number of male students and female students in Physics coaching.

- (A) 67 (B) 52
 (C) 72 (D) 80
 (E) None of these

Q6 In a school, the number of total students is 810. 250 students like only cricket, 220 like only football, 15 students like all the three games. Ratio of the total number of students who like cricket and football to the total number of students who like cricket and hockey is 12:17. The number of students who like only football and cricket is 3 times the total number of students who play all the games. Also, the ratio between the number of students who play only football to the number of students who play only hockey is 44:29. Then answer the given questions.

Total number of students who play more than one game but less than three games is what percent less than the number of students who play only cricket?

- (A) 15% (B) 18%
 (C) 28% (D) 27%
 (E) 17%

Q7 In a school, the number of total students is 810. 250 students like only cricket, 220 like only football, 15 students like all the three games. Ratio of the total number of students who like cricket and football to the total number of students who like cricket and hockey is 12:17. The number of students who like only football and cricket is 3 times the total number of students



who play all the games. Also, the ratio between the number of students who play only football to the number of students who play only hockey is 44:29. Then answer the given questions.

What is the ratio of the number of cricket players to Hockey players?

- (A) 76:59 (B) 49:76
(C) 79:76 (D) 56:79
(E) 27:43

- Q8** In a school, the number of total students is 810. 250 students like only cricket, 220 like only football, 15 students like all the three games. Ratio of the total number of students who like cricket and football to the total number of students who like cricket and hockey is 12:17. The number of students who like only football and cricket is 3 times the total number of students who play all the games. Also, the ratio between the number of students who play only football to the number of students who play only hockey is 44:29. Then answer the given questions.

What is the total number of players who are males if 30% are females ?

- (A) 352 (B) 652
(C) 532 (D) 632
(E) 567

- Q9** In a school, the number of total students is 810. 250 students like only cricket, 220 like only football, 15 students like all the three games. Ratio of the total number of students who like cricket and football to the total number of students who like cricket and hockey is 12:17. The number of students who like only football and cricket is 3 times the total number of students who play all the games. Also, the ratio between the number of students who play only football to the number of students who play only hockey is 44:29. Then answer the given questions.

What is the total number of students who play football and hockey only?

- (A) 55 (B) 78
(C) 84 (D) 65
(E) 75

Directions (10-14) Read the following passage and answer the given questions.

Directions: Study the following data carefully and answer the questions given below.

Three friends Aman, Baman, and Chaman are studying in the same class. Each of them takes five subjects English, Hindi, Science, History and Art. The college conducted the half yearly examination and the college decided the maximum marks for each subject is 150. The average marks obtained by Aman in all subjects is 100. The percentage of marks obtained by Aman in English, Hindi, Science and History are 60%, 80%, 90% and 50% respectively. Baman scored average marks in all subjects 95. The marks obtained by Baman in Hindi, Science, History and Art are 115, 125, 80, and 70 respectively. The marks obtain in science by Chaman is 80. The average marks obtained by Chaman in the first three subjects English, Hindi, and Sciences is 60 and the last three subjects Science, history and Art is 110.

- Q10** What is the ratio of marks obtained by Aman in Art to the marks obtained by Baman in English?

- (A) 15: 17 (B) 16: 17
(C) 8: 9 (D) 11: 12
(E) None of these

- Q11** If Chaman scored in history 40 marks more than the marks scored by Baman in History, then find the percentage of marks obtained by Chaman in History.



- (A) 60% (B) 80%
 (C) 90% (D) 100%
 (E) None of these

Q12 If Chaman scored in history 40 marks more than the marks scored by Baman in History then what is the ratio of marks obtained by Baman in Hindi to the marks obtained by Chaman in Art?

- (A) 23: 26 (B) 21: 23
 (C) 22: 27 (D) 12: 17
 (E) 10: 13

Q13 If Marks obtained by Chaman in Hindi is 60, then what is the ratio of marks obtained by Chaman and Aman in English?

- (A) 4: 7 (B) 3: 5
 (C) 2: 7 (D) 4: 9
 (E) None of these

Q14 What is the average marks obtained by Aman, Baman, and Chaman in Science?

- (A) 120.15 (B) 124.25
 (C) 128.56 (D) 113.33
 (E) 141.23

Directions (15-19) Read the following passage and answer the given questions.

Read the given information carefully and answer the following questions.

A, B, C, and D started a business in partnership. A invested Rs. 5000 for the whole period whereas the average of initial investment for all four is Rs. 5975. The investment made by D is 25% more than B and the ratio of investment made by B to that of C is 10: 9. The time period for which B invested his amount is $\frac{2}{3}$ rd of that of A. The sum of the time period for which C & D invested is equal to the total time period for

which A & B invested and the profit share of C is $\frac{18}{79}$ th of the total profit at the end of the year.

Q15 Find the ratio of the period of investment of C to that of D?

- (A) 1: 1 (B) 1: 2
 (C) 2: 3 (D) 3: 2
 (E) 4: 3

Q16 The difference between the investment of D & C, is what percent of the difference between the investment of B & D?

- (A) 125% (B) 100%
 (C) 150% (D) 140%
 (E) 160%

Q17 If at the end of the business term, the total profit is Rs. 15,800, then find the difference between the profit share of A & D.

- (A) Rs 800 (B) Rs 1200
 (C) Rs 1000 (D) Rs 1500
 (E) None of these

Q18 The profit share of B is what percent of the profit share of A?

- (A) 80% (B) 60%
 (C) 75% (D) 100%
 (E) 65%

Q19 Investment of C & D together is approximately what percent of the total investment of all the four?

- (A) 45% (B) 48%
 (C) 50% (D) 52%
 (E) 54%

Directions (20-24) Read the following passage and answer the given questions.

Directions: Read the data carefully and answer the questions.



There are three colleges A, B, and C offering 3 courses ECE, CS, and ME.

College A: The number of students in CS is 20% more than ME and the number of students in ECE is 50% more than ME.

College B: The number of students in CS is 50 more than the ME and the number of students in ECE is 20 more than CS. The average number of total students in college B is 180.

College C: The number of students in ME is 40% less than in the ECE and the number of students in CS is 60 more than in the ME. The number of students in ME is 150.

Note: The total number of students in ME in all colleges together is 600.

Q20 How many students are in college C?

- (A) 590 (B) 600
(C) 610 (D) 650
(E) None of these

Q21 If 20% of students of the ECE course from College B shifted to the CS course in College C, then what is the difference between the total number of students in CS in College C now and the number of students in ECE College C?

- (A) 2 (B) 5
(C) 40 (D) 25
(E) 50

Q22 The number of students in CS in college B is what percent more/less than the number of students in ME in college C?

- (A) $90\frac{1}{3}\%$ (B) $93\frac{1}{3}\%$
(C) $75\frac{1}{2}\%$ (D) 25%
(E) 50%

Q23 What is the ratio of the total number of students in ME & ECE together in college

A to the total number of students in CS & ME together in college B?

- (A) 155:86 (B) 55:6
(C) 125:81 (D) 105:52
(E) None of these

Q24 Total students in college C are what percent of total students in college B? (approx.)

- (A) 80.25% (B) 87.85%
(C) 95.31% (D) 99.95%
(E) 105%

Q25 Direction : Read the data given below carefully and answer the following questions.

During a survey, it is found that people like either of three OS phones Android, Mac, and Windows. A person can minimum like one phone and maximum all the three phones.

Total people who like Android phone is 240 out of which 25% also like Windows but not Mac. Total people who like all the three phones is 50 which 20 more than the total people who like only Windows. Total people who like only Android is 3 times of the total people who like only windows.

Total people who like more than one phone is 170 and ratio of total people who like Mac to those who like windows is 3: 4.

How many people like exactly one phone?

- (A) 105 (B) 115
(C) 150 (D) 130
(E) None of these

Q26 Direction : Read the data given below carefully and answer the following questions.

During a survey, it is found that people like either of three OS phones Android, Mac, and Windows. A person can minimum like one phone and maximum all the three phones.



Total people who like Android phone is 240 out of which 25% also like Windows but not Mac. Total people who like all the three phones is 50 which 20 more than the total people who like only Windows. Total people who like only Android is 3 times of the total people who like only windows.

Total people who like more than one phone is 170 and ratio of total people who like Mac to those who like windows is 3: 4.

Total number of people who like all the three phones is what percent of total number of people of who like exactly two phones?

- (A) $41\frac{2}{3}\%$
- (B) $33\frac{1}{3}\%$
- (C) $46\frac{2}{3}\%$
- (D) $23\frac{2}{9}\%$
- (E) None of these

Q27 Direction : Read the data given below carefully and answer the following questions.

During a survey, it is found that people like either of three OS phones Android, Mac, and Windows. A person can minimum like one phone and maximum all the three phones.

Total people who like Android phone is 240 out of which 25% also like Windows but not Mac. Total people who like all the three phones is 50 which 20 more than the total people who like only Windows. Total people who like only Android is 3 times of the total people who like only windows.

Total people who like more than one phone is 170 and ratio of total people who like Mac to those who like windows is 3: 4.

What is the ratio of total number of people who like Windows phones to the average of number of people who like Android phones and number of people who like Mac phones?

- (A) 8: 9
- (B) 7: 8
- (C) 5: 7
- (D) 4: 9
- (E) None of these

Q28 Direction : Read the data given below carefully and answer the following questions.

During a survey, it is found that people like either of three OS phones Android, Mac, and Windows. A person can minimum like one phone and maximum all the three phones.

Total people who like Android phone is 240 out of which 25% also like Windows but not Mac. Total people who like all the three phones is 50 which 20 more than the total people who like only Windows. Total people who like only Android is 3 times of the total people who like only windows.

Total people who like more than one phone is 170 and ratio of total people who like Mac to those who like windows is 3: 4.

What is the total number of people who like Mac phones along with atleast one more phone?

- (A) 120
- (B) 90
- (C) 110
- (D) 140
- (E) 70

Q29 Direction : Read the data given below carefully and answer the following questions.

During a survey, it is found that people like either of three OS phones Android, Mac, and Windows. A person can minimum like one phone and maximum all the three phones.

Total people who like Android phone is 240 out of which 25% also like Windows but not Mac. Total people who like all the three phones is 50 which 20 more than the total people who like only Windows. Total people who like only Android is 3 times of the total people who like only windows.



Total people who like more than one phone is 170 and ratio of total people who like Mac to those who like windows is 3: 4.

What percent of total number of people involved in the survey like Mac phones?

- (A) 30% (B) 60%
(C) 20% (D) 50%
(E) 40%

Q30 Read the given information carefully and answer the following question.

Deepak, Hitesh, Subham and Vimal are four friends. Income of Vimal, Subham and Deepak are in the ratio of 6 : 3 : 4. Income of Hitesh is equal to the average income of Deepak and Vimal. Deepak spent the same amount as the amount spent by Hitesh and the expenditure of Subham and that of Vimal are equal. Deepak saves Rs 6000 more than the amount saved by Subham. Savings of Hitesh and his expenditure are in the ratio of 1 : 1 Savings of Vimal is equal to the income of Deepak.

Find the difference between the total income of Deepak and Subham together and the total income of Hitesh and Vimal together.

- (A) 68000 (B) 98000
(C) 48000 (D) 58000
(E) 50000

Q31 Read the given information carefully and answer the following question.

Deepak, Hitesh, Subham and Vimal are four friends. Income of Vimal, Subham and Deepak are in the ratio of 6 : 3 : 4. Income of Hitesh is equal to the average income of Deepak and Vimal. Deepak spent the same amount as the amount spent by Hitesh and the expenditure of Subham and that of Vimal are equal. Deepak saves Rs 6000 more than the amount saved by Subham. Savings of Hitesh and his

expenditure are in the ratio of 1 : 1 Savings of Vimal is equal to the income of Deepak.

If Hitesh's monthly income increases by 50% and his monthly expenditure increases by 20%, then by how much percent does his monthly savings increase?

- (A) 60% (B) 70%
(C) 80% (D) 90%
(E) None of these

Q32 Read the given information carefully and answer the following question.

Deepak, Hitesh, Subham and Vimal are four friends. Income of Vimal, Subham and Deepak are in the ratio of 6 : 3 : 4. Income of Hitesh is equal to the average income of Deepak and Vimal. Deepak spent the same amount as the amount spent by Hitesh and the expenditure of Subham and that of Vimal are equal. Deepak saves Rs 6000 more than the amount saved by Subham. Savings of Hitesh and his expenditure are in the ratio of 1 : 1 Savings of Vimal is equal to the income of Deepak.

Total savings of Hitesh and Subham together is how much percent more/less than the income of Deepak?

- (A) 12.5% more (B) 17.5% more
(C) 12.5% less (D) 17.5% less
(E) None of these

Q33 Read the given information carefully and answer the following question.

Deepak, Hitesh, Subham and Vimal are four friends. Income of Vimal, Subham and Deepak are in the ratio of 6 : 3 : 4. Income of Hitesh is equal to the average income of Deepak and Vimal. Deepak spent the same amount as the amount spent by Hitesh and the expenditure of Subham and that of Vimal are equal. Deepak saves Rs 6000 more than the amount



saved by Subham. Savings of Hitesh and his expenditure are in the ratio of 1 : 1 Savings of Vimal is equal to the income of Deepak.

What is the average savings of Hitesh, Subham and Vimal?

- (A) 34000 (B) 42000
(C) 30000 (D) 45000
(E) 20000

Q34 Read the given information carefully and answer the following question.

Deepak, Hitesh, Subham and Vimal are four friends. Income of Vimal, Subham and Deepak are in the ratio of 6 : 3 : 4. Income of Hitesh is equal to the average income of Deepak and

Vimal. Deepak spent the same amount as the amount spent by Hitesh and the expenditure of Subham and that of Vimal are equal. Deepak saves Rs 6000 more than the amount saved by Subham. Savings of Hitesh and his expenditure are in the ratio of 1 : 1 Savings of Vimal is equal to the income of Deepak.

What is the respective ratio of the sum of monthly income and expenditure of Deepak and the sum of monthly income and expenditure of Vimal?

- (A) 15 : 16 (B) 13 : 19
(C) 13 : 16 (D) 13 : 23
(E) None of these



Level-2

Q1 Study the passage given below and answer the following questions

In a school, there are 330 students. Each student studies at least one subject amongst Physics, Chemistry and Maths. Students studying only Chemistry and Physics together are 25% of students studying only Physics. Students studying Maths are equal to students studying only Chemistry. Students studying only Maths are 175% of students studying only Physics. Students studying all three subjects together are equal to students studying only Chemistry and Physics together. Students studying Maths and Physics together are equal to students studying only Physics. Students studying only Chemistry and Maths together are equal to students studying only Physics and Maths together and Students studying only Chemistry are 140.

Find the average number of students studying only Physics and only Maths?

- (A) 75 (B) 85
(C) 55 (D) 65
(E) 60

Q2 Study the passage given below and answer the following questions.

In a school, there are 330 students. Each student studies at least one subject amongst Physics, Chemistry and Maths. Students studying only Chemistry and Physics together are 25% of students studying only Physics. Students studying Maths are equal to students studying only Chemistry. Students studying only Maths are 175% of students studying only Physics. Students studying all three subjects together are equal to students studying only

Chemistry and Physics together. Students studying Maths and Physics together are equal to students studying only Physics. Students studying only Chemistry and Maths together are equal to students studying only Physics and Maths together and Students studying only Chemistry are 140.

Find the number of students who study Physics ?

- (A) 100 (B) 95
(C) 90 (D) 70
(E) 60

Q3 Study the passage given below and answer the following questions.

In a school, there are 330 students. Each student studies at least one subject amongst Physics, Chemistry and Maths. Students studying only Chemistry and Physics together are 25% of students studying only Physics. Students studying Maths are equal to students studying only Chemistry. Students studying only Maths are 175% of students studying only Physics. Students studying all three subjects together are equal to students studying only Chemistry and Physics together. Students studying Maths and Physics together are equal to students studying only Physics. Students studying only Chemistry and Maths together are equal to students studying only Physics and Maths together and Students studying only Chemistry are 140.

Students studying Chemistry and Maths together are what percent of students studying only Physics?

- (A) 100% (B) 125%
(C) 200% (D) 175%



(E) 150%

- Q4** Study the passage given below and answer the following questions.

In a school, there are 330 students. Each student studies at least one subject amongst Physics, Chemistry and Maths. Students studying only Chemistry and Physics together are 25% of students studying only Physics. Students studying Maths are equal to students studying only Chemistry. Students studying only Maths are 175% of students studying only Physics. Students studying all three subjects together are equal to students studying only Chemistry and Physics together. Students studying Maths and Physics together are equal to students studying only Physics. Students studying only Chemistry and Maths together are equal to students studying only Physics and Maths together and Students studying only Chemistry are 140.

Students studying only Chemistry are what percent of students studying only Maths?

- (A) 175% (B) 200%
(C) 100% (D) 150%
(E) 125%

- Q5** Study the passage given below and answer the following questions.

In a school, there are 330 students. Each student studies at least one subject amongst Physics, Chemistry and Maths. Students studying only Chemistry and Physics together are 25% of students studying only Physics. Students studying Maths are equal to students studying only Chemistry. Students studying only Maths are 175% of students studying only Physics. Students studying all three subjects together are equal to students studying only Chemistry and Physics together. Students

studying Maths and Physics together are equal to students studying only Physics. Students studying only Chemistry and Maths together are equal to students studying only Physics and Maths together and Students studying only Chemistry are 140.

Students studying only Physics and Chemistry together are how much more or less than students studying only Physics and Maths together?

- (A) 23 (B) 30
(C) 25 (D) 20
(E) 10

- Q6** Read the following information carefully to answer the question given below.

1200 persons visited four different shopping malls viz. D-Mart, V-Mart, Big Bazaar, and Reliance Mart. Out of them, 40% are females and rests are males. 25% of the males visited V-Mart and $\frac{3}{20}$ of males visited Reliance Mart. The number of males who visited Big Bazaar is 50% less than the number of males who visited D-Mart. The number of females who visited Big Bazaar is 25% less than the number of males who visited V-Mart. The number of females who visited D-Mart is 21 more than the number of males who visited Big Bazaar. Remaining females either visited Reliance Mart and V-Mart and their respective ratio is 7: 5.

Find the difference between the total number of persons who visited Big Bazaar and V-Mart shopping malls together and the number of males who visited the same shopping malls.

- (A) 240 (B) 220
(C) 210 (D) 290
(E) 300

- Q7** Read the following information carefully to answer the question given below.



1200 persons visited four different shopping malls viz. D-Mart, V-Mart, Big Bazaar, and Reliance Mart. Out of them, 40% are females and rests are males. 25% of the males visited V-Mart and $\frac{3}{20}$ of males visited Reliance Mart. The number of males who visited Big Bazaar is 50% less than the number of males who visited D-Mart. The number of females who visited Big Bazaar is 25% less than the number of males who visited V-Mart. The number of females who visited D-Mart is 21 more than the number of males who visited Big Bazaar. Remaining females either visited Reliance Mart and V-Mart and their respective ratio is 7: 5.

Find the ratio between the total number of females who visited Big Bazaar and Reliance Mart together and the number of males who visited D-Mart.

- (A) 1 : 6 (B) 7 : 6
(C) 5 : 6 (D) 5 : 9
(E) none of these

Q8 Read the following information carefully to answer the question given below.

1200 persons visited four different shopping malls viz. D-Mart, V-Mart, Big Bazaar, and Reliance Mart. Out of them, 40% are females and rests are males. 25% of the males visited V-Mart and $\frac{3}{20}$ of males visited Reliance Mart. The number of males who visited Big Bazaar is 50% less than the number of males who visited D-Mart. The number of females who visited Big Bazaar is 25% less than the number of males who visited V-Mart. The number of females who visited D-Mart is 21 more than the number of males who visited Big Bazaar. Remaining females either visited Reliance Mart and V-Mart and their respective ratio is 7: 5.

Total number of females visiting to Big Bazaar and D-Mart is how much percent of the total number of females?

- (A) 67.5 (B) 55.5
(C) 62.5 (D) 45.5
(E) 75.2

Q9 Read the following information carefully to answer the question given below.

1200 persons visited four different shopping malls viz. D-Mart, V-Mart, Big Bazaar, and Reliance Mart. Out of them, 40% are females and the rest are males. 25% of the males visited V-Mart and $\frac{3}{20}$ of males visited Reliance Mart. The number of males who visited Big Bazaar is 50% less than the number of males who visited D-Mart. The number of females who visited Big Bazaar is 25% less than the number of males who visited V-Mart. The number of females who visited D-Mart is 21 more than the number of males who visited Big Bazaar. Remaining females either visited Reliance Mart and V-Mart and their respective ratio is 7: 5.

Find the difference between the average of the number of males visiting Big Bazaar and Reliance Mart and the average of the number of females visiting V-Mart and D-Mart.

- (A) 10 (B) 8
(C) 6 (D) 12
(E) 15

Q10 Read the following table carefully and answer the questions given below.

The following table shows total no. of laptop sold by five different shops and ratio of Dell laptop to HP laptop sold by each shop.



Shop	Total no. of laptop	Dell : HP
P	950	11:8
Q	850	8:9
R	1080	5:7
S	980	9:5
T	1150	12:11

Find the ratio between no. of Dell laptop sold by shop P and R together to no. of HP laptop sold by shop Q and S together.

- (A) 5:8 (B) 4:5
(C) 5:4 (D) 5:9
(E) none of these

Directions (11-13) Read the following passage and answer the given questions.

Read the following information carefully and answer the questions given below.

In society of Maharashtra, some people like three different types of dance i.e. Kathak, Bollywood & Classical. People who like only Kathak and only Bollywood are in the ratio of 4:3 respectively and people who like all the three types of dance is 15.

People who like only Classical is 50 and people who like Kathak is 140. People who like both Kathak & Classical is 20 and people who like both Bollywood & Classical is 50% more than the people who like both Kathak & Classical. People who like both Kathak & Bollywood is average of people who like both Kathak & Classical and like both Bollywood & Classical.

Q11

Find the total number of people who like Bollywood dance is what percent of total number of people like only Classical dance?

- (A) 180% (B) 210%
(C) 150% (D) 260%
(E) 280%

Q12 Find the total number of people who like at most one type of dance.

- (A) 125 (B) 100
(C) 90 (D) 175
(E) 190

Q13 Find the respective ratio of total number of people who like both Kathak & Classical to that of Bollywood and Kathak dance.

- (A) 4:5
(B) 4:7
(C) 6:5
(D) 2:5
(E) None of these

Directions (14-18) Read the following passage and answer the given questions.

In a dancing class, there are 3 types of dance forms i.e. Rock, Folk, and Jazz. The total number of students in the class is 360 who like either only one or more dance forms. The total number of students who like only two dance forms is 54 and the number of students who like all three dance forms is 6. The ratio of the number of students who like only Rock and Folk but not Jazz and the number of students who like only Folk and Jazz but not Rock is 3: 2. The ratio between the number of students who like only Rock and Jazz but not Folk and the number of students who like only Folk and Jazz but not Rock is 2:1. The ratio between the number of



students who like only Rock and the number of students who like only Jazz is 5: 3 and the ratio between the number of students who like only Folk and the number of students who like only Jazz is 3: 2.

Q14 If $\frac{3}{4}th$ of the number of students who like only rock dance are males then find the number of females who like only Rock dance.....

- (A) 20 (B) 40
(C) 50 (D) 30
(E) 21

Q15 The number of students who like only Folk and Jazz but not rock are what percentage of the number of students who like only Folk dance?

- (A) $11\frac{1}{9}\%$ (B) $6\frac{1}{4}\%$
(C) $17\frac{1}{2}\%$ (D) $9\frac{1}{11}\%$
(E) 10%

Q16 Find the difference between the number of students who like only Jazz dance and the number of students who like Rock dance.

- (A) 60 (B) 72
(C) 88 (D) 96
(E) 100

Q17 What is the ratio between the number of students who like only Folk dance and the number of students who like Rock and Folk dance but not Jazz dance?

- (A) 5: 3 (B) 4: 1
(C) 6: 1 (D) 9: 2
(E) 10: 7

Q18 The number of students who like only Folk dance is what percentage of the number

of students who like only Jazz and Rock dance but not Folk dance?

- (A) 250% (B) 300%
(C) 50% (D) 450%
(E) None of these

Q19 Directions: Study the given information carefully to answer the questions.

Every year, a survey of random 10000 people is conducted by the Government of South - Africa (GSA).

GSA found that in the year 2017, 2018, 2019, 2020 and 2021 the percentage of people affected by AIDS were 30%, 40%, 30%, 20% and 45% respectively. GSA also found that every year out of the affected people 60% were drug-addicts, 10% were patients treated in unauthorized health centers and 30% were prostitutes. The number of patients, drug-addicts and prostitutes were in the ratio 20 : 11 : 9, every year. Find the ratio of the number of patients affected by AIDS in the year 2017 to that affected by AIDS in the year 2020.

- (A) 5 : 3 (B) 2 : 3
(C) 3 : 2 (D) 3 : 5
(E) None of these

Q20 Directions: Study the given information carefully to answer the questions.

Every year, a survey of random 10000 people is conducted by the Government of South - Africa (GSA).

GSA found that in the year 2017, 2018, 2019, 2020 and 2021 the percentage of people affected by AIDS were 30%, 40%, 30%, 20% and 45% respectively. GSA also found that every year out of the affected people 60% were drug-addicts, 10% were patients treated in unauthorized health centers and 30% were prostitutes. The



number of patients, drug-addicts and prostitutes were in the ratio 20 : 11 : 9, every year. In the year 2019, find the number of patients affected by AIDS?

- (A) 700 (B) 600
(C) 500 (D) 400
(E) None of these

Q21 Directions: Study the given information carefully to answer the questions.

Every year, a survey of random 10000 people is conducted by the Government of South - Africa (GSA).

GSA found that in the year 2017, 2018, 2019, 2020 and 2021 the percentage of people affected by AIDS were 30%, 40%, 30%, 20% and 45% respectively. GSA also found that every year out of the affected people 60% were drug-addicts, 10% were patients treated in unauthorized health centers and 30% were prostitutes. The number of patients, drug-addicts and prostitutes were in the ratio 20 : 11 : 9, every year. What is the difference in the number of drug-addicts affected and not affected by AIDS in the year 2018?

- (A) 2000 (B) 2050
(C) 2100 (D) 2150
(E) None of these

Q22 Directions: Study the given information carefully to answer the questions.

Every year, a survey of random 10000 people is conducted by the Government of South - Africa (GSA).

GSA found that in the year 2017, 2018, 2019, 2020 and 2021 the percentage of people affected by AIDS were 30%, 40%, 30%, 20% and 45% respectively. GSA also found that every year out of the affected people 60% were drug-addicts, 10% were patients treated in unauthorized

health centers and 30% were prostitutes. The number of patients, drug-addicts and prostitutes were in the ratio 20 : 11 : 9, every year. Which year had the maximum number of drug-addicts not affected by AIDS ?

- (A) 2017 (B) 2018
(C) 2020 (D) 2019
(E) None of these

Q23 Directions: Study the given information carefully to answer the questions.

Every year, a survey of random 10000 people is conducted by the Government of South - Africa (GSA).

GSA found that in the year 2017, 2018, 2019, 2020 and 2021 the percentage of people affected by AIDS were 30%, 40%, 30%, 20% and 45% respectively. GSA also found that every year out of the affected people 60% were drug-addicts, 10% were patients treated in unauthorized health centers and 30% were prostitutes. The number of patients, drug-addicts and prostitutes were in the ratio 20 : 11 : 9, every year. In the year 2021, find the number of prostitutes who were not affected by AIDS.

- (A) 900 (B) 1800
(C) 2700 (D) 450
(E) None of these

Q24 Directions: Study the following information carefully and answer the questions given below.

In a school consisting of 2800 children, the ratio of girls to boys is 4 : 3 respectively. All the children have taken different hobby classes viz. Singing, dancing, painting and cooking. 20% of the boys take painting classes. The number of girls taking dancing classes is five-fourth of the number of boys taking the same. One-fourth of the girls take cooking classes. The total number of students taking cooking



classes is 700. Two-fifth of the boys take singing classes and the remaining boys take dancing classes. Girls taking singing classes are twice the number of boys taking the same. The remaining girls painting classes.

The number of boys taking cooking classes is what percent of the total number of children in the school?

- (A) None of these (B) 8.43%
(C) 10.71% (D) 12.61%
(E) 9.68%

Q25 Directions: Study the following information carefully and answer the questions given below.

In a school consisting of 2800 children, the ratio of girls to boys is 4 : 3 respectively. All the children have taken different hobby classes viz. Singing, dancing, painting and cooking. 20% of the boys take painting classes. The number of girls taking dancing classes is five-fourth of the number of boys taking the same. One-fourth of the girls take cooking classes. The total number of students taking cooking classes is 700. Two-fifth of the boys take singing classes and the remaining boys take dancing classes. Girls taking singing classes are twice the number of boys taking the same. The remaining girls painting classes.

The number of girls taking cooking classes is what percent of the total number of children in the school ?

- (A) None of these (B) 26%
(C) 6% (D) 20%
(E) 14%

Q26 Directions: Study the following information carefully and answer the questions given below.

In a school consisting of 2800 children, the ratio of girls to boys is 4 : 3 respectively. All the children have taken different hobby classes viz.

Singing, dancing, painting and cooking. 20% of the boys take painting classes. The number of girls taking dancing classes is five-fourth of the number of boys taking the same. One-fourth of the girls take cooking classes. The total number of students taking cooking

classes is 700. Two-fifth of the boys take singing classes and the remaining boys take dancing classes. Girls taking singing classes are twice the number of boys taking the same. The remaining girls painting classes.

What is the number of girls taking painting classes ?

- (A) None of these (B) 28
(C) 125 (D) 15
(E) 116

Q27 Directions: Study the following information carefully and answer the questions given below.

In a school consisting of 2800 children, the ratio of girls to boys is 4 : 3 respectively. All the children have taken different hobby classes viz. Singing, dancing, painting and cooking. 20% of the boys take painting classes. The number of girls taking dancing classes is five-fourth of the number of boys taking the same. One-fourth of the girls take cooking classes. The total number of students taking cooking

classes is 700. Two-fifth of the boys take singing classes and the remaining boys take dancing classes. Girls taking singing classes are twice the number of boys taking the same. The remaining girls painting classes.

What is the respective ratio of boys taking painting classes to the boys taking singing classes ?

- (A) None of these (B) 3 : 4
(C) 6 : 5 (D) 2 : 1
(E) 4 : 3



- Q28** Directions: Study the following information carefully and answer the questions given below. In a school consisting of 2800 children, the ratio of girls to boys is 4 : 3 respectively. All the children have taken different hobby classes viz. Singing, dancing, painting and cooking. 20% of the boys take painting classes. The number of girls taking dancing classes is five-fourth of the number of boys taking the same. One-fourth of the girls take cooking classes. The total number of students taking cooking classes is 700. Two-fifth of the boys take singing classes and the remaining boys take dancing classes. Girls taking singing classes are twice the number of boys taking the same. The remaining girls painting classes. What is the total number of children taking dancing classes ?
- (A) None of these (B) 405
(C) 390 (D) 445
(E) 325

Directions (29-33) Read the following passage and answer the given questions.

The data given about the number of articles sold by X, Y, and Z in three different years 2016 to 2018. Total number of articles sold by X, Y and Z in 2018 is 430. The total number of articles sold in all three years by Y is 390 and that by Z is 158. Articles sold by Z in 2017 and 2018 are in the ratio of 6: 11. The ratio of articles sold by X and Z in 2016 is 7: 8. The number of articles sold by Z in 2016 is 20 more than the article sold by it in 2017. The number of articles sold by Y in 2018 is 5 times the number of articles sold by X in 2016. The number of articles sold by Y and Z in 2016 is 25:28. In 2017 X sold double the number of articles sold by it in previous years.

Q29

Find the total number of articles sold by X in a given three years.

- (A) 226 (B) 266
(C) 286 (D) 306
(E) 316

- Q30** What is the ratio of the number of articles sold by X in the year 2018 and the number of articles sold by Y in the year 2017?
- (A) 119: 95 (B) 11: 5
(C) 121: 94 (D) 118: 97
(E) None of these

- Q31** What is the difference between the number of articles sold by X in 2016 and the number of articles sold by Z in 2018?
- (A) 17 (B) 15
(C) 21 (D) 8
(E) 7

- Q32** What is the difference between the total number of articles sold by X and Z in the given three years?
- (A) 80 (B) 100
(C) 108 (D) 118
(E) 125

- Q33** What is the total number of articles sold by X, Y, and Z in the year 2017?
- (A) 201 (B) 205
(C) 229 (D) 239
(E) 245

- Q34** Study the information given below and answer the following questions:

Below data is given regarding number of mobiles and laptops repaired by a shop in three months July, August, and September. The ratio of number of mobiles to laptops repaired by the shop in three months together is 1: 1 and



number of laptops repaired in September is $83\frac{1}{3}$ % of total laptop and mobiles repaired by the shop in September. The number of laptops repaired in July and August are thrice and twice of the number of mobiles repaired in September respectively and number of mobile repaired in July is equal to number of laptops repaired in September. The number of mobiles repaired in July is 10 more than that of in August.

The number of laptops repaired in July and August together is what percentage of the number of mobiles repaired in August and September together?

- (A) 100% (B) 150%
(C) 50% (D) 80%
(E) None of these

Q35 Study the information given below and answer the following questions:

Below data is given regarding number of mobiles and laptops repaired by a shop in three months July, August, and September. The ratio of number of mobiles to laptops repaired by the shop in three months together is 1: 1 and number of laptops repaired in September is $83\frac{1}{3}$ % of total laptop and mobiles repaired by the shop in September. The number of laptops repaired in July and August are thrice and twice of the number of mobiles repaired in September respectively and number of mobile repaired in July is equal to number of laptops repaired in September. The number of mobiles repaired in July is 10 more than that of in August.

The number of laptops repaired in September is what percentage more or less than the number of mobiles repaired in August

- (A) 25% (B) 40%
(C) 80% (D) 35%

(E) None of these

Q36 Study the information given below and answer the following questions:

Below data is given regarding number of mobiles and laptops repaired by a shop in three months July, August, and September. The ratio of number of mobiles to laptops repaired by the shop in three months together is 1: 1 and number of laptops repaired in September is $83\frac{1}{3}$ % of total laptop and mobiles repaired by the shop in September. The number of laptops repaired in July and August are thrice and twice of the number of mobiles repaired in September respectively and number of mobile repaired in July is equal to number of laptops repaired in September. The number of mobiles repaired in July is 10 more than that of in August.

What is the average number of laptops repaired in July and September together?

- (A) 40 (B) 35
(C) 45 (D) 30
(E) 50

Q37 Study the following information carefully to answer the questions that follow:

The Cost price of a cup is Rs.180 and the ratio of cost price of cups, plates and table is 9:10:12 respectively. Marked price of plates is 166.66% of the cost price of the cup. Profits made on cups are 11.11% of the cost price of the cups and loss made on table is equal to 22.22% of the cost price of the cups. The marked price of cups, plates and table is 2:3:3 respectively. Selling price of the plates is 37.5% of the sum of the marked price of cups, plates and table. Selling price of cups, plates and tables are in the ratio of 2:3:2.



If the marked price of plates are increased by 66.66% and the selling price of the plate also changes and the total quantity of plates sold is 50 plates, then find the total profit generated by seller by selling the plates if no discount was given.

- (A) 12000 (B) 18000
(C) 15000 (D) 10000
(E) 13000

Q38 Study the following information carefully to answer the questions that follow:

The Cost price of a cup is Rs.180 and the ratio of cost price of cups, plates and table is 9:10:12 respectively. Marked price of plates is 166.66% of the cost price of the cup. Profits made on cups are 11.11% of the cost price of the cups and loss made on table is equal to 22.22% of the cost price of the cups. The marked price of cups, plates and table is 2:3:3 respectively. Selling price of the plates is 37.5% of the sum of the marked price of cups, plates and table. Selling price of cups, plates and tables are in the ratio of 2:3:2.

The cost price of a glass is Rs. $(x+50)$ and the profit made on selling per glass 6.66%. If the marked price of the glass is equal to the selling price of the cup and the discount given on the glass is 20%, then find the value of x .

- (A) 120 (B) 100
(C) 150 (D) 180
(E) 200

Q39 Study the following information carefully to answer the questions that follow:

The Cost price of a cup is Rs.180 and the ratio of cost price of cups, plates and table is 9:10:12 respectively. Marked price of plates is 166.66% of the cost price of the cup. Profits made on cups are 11.11% of the cost price of the cups

and loss made on table is equal to 22.22% of the cost price of the cups. The marked price of cups, plates and table is 2:3:3 respectively. Selling price of the plates is 37.5% of the sum of the marked price of cups, plates and table. Selling price of cups, plates and tables are in the ratio of 2:3:2.

What is the difference between the sum of the cost price of cups and plates together and the sum of the selling price of cups and plates together?

- (A) 150 (B) 180
(C) 120 (D) 100
(E) 170

Q40 Study the following information carefully to answer the questions that follow:

The Cost price of a cup is Rs.180 and the ratio of cost price of cups, plates and table is 9:10:12 respectively. Marked price of plates is 166.66% of the cost price of the cup. Profits made on cups are 11.11% of the cost price of the cups and loss made on table is equal to 22.22% of the cost price of the cups. The marked price of cups, plates and table is 2:3:3 respectively. Selling price of the plates is 37.5% of the sum of the marked price of cups, plates and table. Selling price of cups, plates and tables are in the ratio of 2:3:2.

What is the ratio of the marked price of the cups and plates together and the marked price of the plates and table together?

- (A) 2:1 (B) 1:1
(C) 1:2 (D) 3:2
(E) 5:6

Q41 Study the following information carefully to answer the questions that follow:

The Cost price of a cup is Rs.180 and the ratio of cost price of cups, plates and table is 9:10:12



respectively. Marked price of plates is 166.66% of the cost price of the cup. Profits made on cups are 11.11% of the cost price of the cups and loss made on table is equal to 22.22% of the cost price of the cups. The marked price of cups, plates and table is 2:3:3 respectively. Selling price of the plates is 37.5% of the sum of the marked price of cups, plates and table. Selling price of cups, plates and tables are in the ratio of 2:3:2.

What is the sum of the average of the profit made on cups and plates together and the average of the profits made on plates and loss made on tables?

- (A) 120 (B) 150
(C) 130 (D) 180
(E) 160

Directions (42-44) Read the following passage and answer the given questions.

Direction: Study the information carefully and answer the questions.

The data is given about 3 companies on Monday to Friday in a week.

On Monday and Tuesday A produced 20% and 25% respectively of the total production done by it on all five days. The ratio of production by A on Friday and Thursday is 1:2. On Wednesday A produced 60 less than Friday. On Monday A produced 60 more than Friday.

B produced a total of 2400 products on all five days and C produced $\frac{2}{3}$ rd of the total production by B on all five days. Out of the total production of B, it produced 15% of the total production each on Thursday and Friday. On Wednesday B produced 960 products. On Monday and Tuesday, the production of B is the ratio of 1:2. Out of the total production of C, it produced 12% of the total production each on

Tuesday and Wednesday. The sum of production of C on Thursday and Friday is 816 and the ratio of production of C on Thursday and Friday is 1:2.

Q42 Find the total production of A on Tuesday and B on Friday.
(A) 450 (B) 500
(C) 600 (D) 660
(E) None of these

Q43 What is the ratio of the production of A on Friday and Monday together and the Production of C on Friday and Monday together?
(A) 105: 226 (B) 105: 236
(C) 105: 247 (D) 21: 37
(E) 105: 206

Q44 The production of B on Tuesday is what percent more than on Friday?
(A) 20% (B) $33\frac{1}{3}\%$
(C) 25% (D) $16\frac{2}{3}\%$
(E) None of these



Level-3

Q1 There was a football tournament of three teams, A, B & C and each team played two matches.

There are some patterns of each match;

- (i) Each team get two points for scoring a goal to opponent team.
- (ii) Each team get one point extra scoring goal outside from D area.
- (iii) Each team get penalty of one point if it conceded any goal. Goal conceded means goal is scored by opponent team.
- (iv) Only three players from each team scored goal.

Match of team A to B: B is winner in this match and B gets four points. Team A scored two goals in match against B. No player scored goal outside from D area.

Match of team A to C: C has zero points in this match. Only one player from team A scored goal outside from D area. A has secured four points from this match.

Match of team B to C : B gets six points from the match and team C scored one goal more than B. . Only one player from team B scored goal outside from D area.

If rank three team received Rs. 60000 as prize money and ratio of prize money of rank one, rank two and rank three is 8 : 5 : 3, then which of following combination is correct.

- (A) Prize money of team B gets > 150000 Rs.
- (B) Difference between prize money received by team A & B is equal to prize money received by team C
- (C) None of these
- (D) (a) and (b) both
- (E) Prize money of team C gets > 130000 Rs.

Q2 There was a football tournament of three teams, A, B & C and each team played two matches.

There are some patterns of each match;

- (i) Each team get two points for scoring a goal to opponent team.
- (ii) Each team get one point extra scoring goal outside from D area.
- (iii) Each team get penalty of one point if it conceded any goal. Goal conceded means goal is scored by opponent team.
- (iv) Only three players from each team scored goal.

Match of team A to B: B is winner in this match and B gets four points. Team A scored two goals in match against B. No player scored goal outside from D area.

Match of team A to C: C has zero points in this match. Only one player from team A scored goal outside from D area. A has secured four points from this match.

Match of team B to C : B gets six points from the match and team C scored one goal more than B. . Only one player from team B scored goal outside from D area.

Team B won the tournament by how much points as compare to team C?

- (A) 1
- (B) 2
- (C) 3
- (D) 4
- (E) 5

Q3 There was a football tournament of three teams, A, B & C and each team played two matches.

There are some patterns of each match;

- (i) Each team get two points for scoring a goal to opponent team.



(ii) Each team get one point extra scoring goal outside from D area.

(iii) Each team get penalty of one point if it conceded any goal. Goal conceded means goal is scored by opponent team.

(iv) Only three players from each team scored goal.

Match of team A to B: B is winner in this match and B gets four points. Team A scored two goals in match against B. No player scored goal outside from D area.

Match of team A to C: C has zero points in this match. Only one player from team A scored goal outside from D area. A has secured four points from this match.

Match of team B to C : B gets six points from the match and team C scored one goal more than B. . Only one player from team B scored goal outside from D area.

Total points gets by team A is what percent less than total scored gets by team B?

- (A) 30% (B) 25%
(C) 50% (D) 65%
(E) 60%

Q4 There was a football tournament of three teams, A, B & C and each team played two matches.

There are some patterns of each match;

(i) Each team get two points for scoring a goal to opponent team.

(ii) Each team get one point extra scoring goal outside from D area.

(iii) Each team get penalty of one point if it conceded any goal. Goal conceded means goal is scored by opponent team.

(iv) Only three players from each team scored goal.

Match of team A to B: B is winner in this match and B gets four points. Team A scored two goals in match against B. No player scored goal outside from D area.

Match of team A to C: C has zero points in this match. Only one player from team A scored goal outside from D area. A has secured four points from this match.

Match of team B to C : B gets six points from the match and team C scored one goal more than B. . Only one player from team B scored goal outside from D area.

What is sum of maximum goal scored by a single player in each match?

- (A) 11 (B) 12
(C) 13 (D) 15
(E) 17

Q5 Read the following information carefully and answer the questions given below.

A bag contains total _____ A_____ balls of three different colour i.e. red blue & black. Total black balls are 7 and ratio of red to blue balls is 5:2 respectively. Probability of two black balls taken from the bag is $\frac{1}{10}$. A vessel contains _____

B_____ liters mixture of milk and water in the ratio of total blue balls to total black balls. If 8 liters of milk is removed and 6 liters of water is added, then the ratio of milk to water in the resultant mixture become 1:2 respectively. If again $18\frac{2}{11}\%$ of the initial mixture was taken out and $\frac{X}{25} - 2$

liters of milk and (X+24) liters of water was added in the mixture, then the ratio of milk to total final quantity of the mixture is equal to probability of two red balls taken from the bag. If $(B-X) \div (A-8)=Z$, then find the value of Z.

- (A) 12 (B) 2
(C) 9 (D) 15



(E) 5

- Q6** Read the following information carefully and answer the questions given below.

A bag contains total _____ A_____ balls of three different colour i.e. red blue & black. Total black balls are 7 and ratio of red to blue balls is 5:2 respectively. Probability of two black balls taken from the bag is $\frac{1}{10}$. A vessel contains _____ B_____ liters mixture of milk and water in the ratio of total blue balls to total black balls. If 8 liters of milk is removed and 6 liters of water is added, then the ratio of milk to water in the resultant mixture become 1:2 respectively. If again $18\frac{2}{11}\%$ of the initial mixture was taken out and $(\frac{X}{25} - 2)$

liters of milk and $(X+24)$ liters of water was added in the mixture, then the ratio of milk to total final quantity of the mixture is equal to probability of two red balls taken from the bag. If 8 liters of milk and 14 liters of water are drawn from the initial quantity of milk and water respectively, then remaining quantity of milk is what percent of remaining quantity of mixture?

- (A) 40.40% (B) 36.36%
(C) 45.36% (D) 33.33%
(E) 52.35%

- Q7** Read the following information carefully and answer the questions given below.

A bag contains total _____ A_____ balls of three different colour i.e. red blue & black. Total black balls are 7 and ratio of red to blue balls is 5:2 respectively. Probability of two black balls taken from the bag is $\frac{1}{10}$. A vessel contains _____ B_____ liters mixture of milk and water in the ratio of total blue balls to total black balls. If 8 liters of milk is removed and 6 liters of water is added, then the ratio of milk to water in the resultant mixture become 1:2 respectively. If

again $18\frac{2}{11}\%$ of the initial mixture was taken out and $(\frac{X}{25} - 2)$

liters of milk and $(X+24)$ liters of water was added in the mixture, then the ratio of milk to total final quantity of the mixture is equal to probability of two red balls taken from the bag. If three balls are taken from the bag, then find the probability of at least two balls are of blue colour.

- (A) $\frac{51}{665}$
(B) $\frac{52}{665}$
(C) $\frac{53}{665}$
(D) $\frac{53}{664}$

(E) none of these

- Q8** Read the following information carefully and answer the questions given below.

A bag contains total _____ A_____ balls of three different colours ,i.e. red blue & black. The Total number black balls are of 7 and ratio of red to blue balls is 5:2 respectively. Probability of two black balls taken from the bag is $\frac{1}{10}$. A vessel contains _____ B_____ liters mixture of milk and water in the ratio of total blue balls to total black balls. If 8 liters of milk is removed and 6 liters of water is added, then the ratio of milk to water in the resultant mixture become 1:2 respectively. If again $18\frac{2}{11}\%$ of the initial mixture was taken out and $X-2$

liters of milk and $(X+24)$ liters of water was added in the mixture, then the ratio of milk to the total final quantity of the mixture was equal to the probability of two red balls taken from the bag.

Find the value of A.

- (A) 21 (B) 25
(C) 28 (D) 30
(E) 35



Directions (9-10) Read the following passage and answer the given questions.

Mr. Daya manufactures and sells a single product at a fixed price in a niche market. The selling price of each unit is Rs. 20. On the other hand, the cost, in rupees, of producing x units is $120 + bx + cx^2$, where b and c are some constants. Mr. Daya noticed that doubling the daily production from 10 to 20 units increases the daily production cost by 33.33%. However, an increase in daily production from 20 to 30 units results in an increase of only 50% in the daily production cost. Assume that demand is unlimited and that Mr. Daya can sell as much as he can produce. His objective is to maximize the profit.

- Q9** How many units should Mr. Daya produce daily?
- (A) 54 (B) 55
(C) 56 (D) 57
(E) 59
- Q10** What is the maximum daily profit, in rupees, that Mr. Daya can realize from his business?
- (A) Rs 541 (B) Rs 600
(C) Rs 620 (D) Rs 661
(E) None of these

Directions (11-14) Read the following passage and answer the given questions.

Directions: Read the following information carefully and answer the questions given below. Mr. Madan started a start-up Prep Company in the city of Hyderabad. The company has five departments IT, Finance, HR, Sells, and Content. There are a total of 540 employees in the IT department which is 25% of the total employees in the company. One-third of the total number

of employees of the company work in the Finance department. The number of employees working in the HR department is $16\frac{2}{3}\%$ less than the number of employees working in the sales department and the number of employees working in the content department is $33\frac{1}{3}\%$ more than the number of employees in the sales department.

- Q11** What is the ratio of the number of employees working in the IT department and sales department?
- (A) 3: 2 (B) 3: 1
(C) 2: 1 (D) 6: 5
(E) None of these
- Q12** The number of employees working in the IT department is what percent more than the number of employees working in the content department?
- (A) 125% (B) 145%
(C) 100% (D) 75%
(E) 25%
- Q13** If the ratio of male employees to female employees in the HR and content department is 1:3 and 5:3 respectively, then what is the ratio of male employees in the HR department and male employees in the content department?
- (A) 1: 1 (B) 1: 2
(C) 1: 3 (D) 2: 3
(E) None of these.
- Q14** What is the ratio of the total number of employees in the HR and content departments together to the total number of employees in the IT and Finance departments together?
- (A) 3: 8 (B) 5: 32
(C) 5: 28 (D) 3: 7



(E) None of these

Q15 Directions: Read the data given below carefully and answer the following questions.

Three persons Rahul, Riti, and Ritesh went on a shop to buy pen, pencils, and markers. Total items purchased by Rahul is 50 and total markers purchased by all the three persons together is also 50. Ratio of pens to pencils purchased by Rahul is 1: 2 while ratio of markers purchased by Riti to Ritesh is 3: 1. Rahul purchased total 14 markers which is 70% of total pens purchased by Ritesh.

Total items purchased by Ritesh is 55 and total pencils purchased by Riti is 4 more than total pencils purchased by Ritesh. Total pens purchased by all the three persons together is half of the total pencils purchased by all the three persons together.

If Rakesh purchased 8 more pens than Rahul, 14 more pencils than Ritesh and 3 more markers than Riti, then how many items are purchased by Rakesh?

- (A) 75 (B) 100
(C) 80 (D) 90
(E) None of these

Q16 Directions: Read the data given below carefully and answer the following questions.

Three persons Rahul, Riti, and Ritesh went on a shop to buy pen, pencils, and markers. Total items purchased by Rahul is 50 and total markers purchased by all the three persons together is also 50. Ratio of pens to pencils purchased by Rahul is 1: 2 while ratio of markers purchased by Riti to Ritesh is 3: 1. Rahul purchased total 14 markers which is 70% of total pens purchased by Ritesh.

Total items purchased by Ritesh is 55 and total pencils purchased by Riti is 4 more than total pencils purchased by Ritesh. Total pens purchased by all the three persons together is half of the total pencils purchased by all the three persons together.

Number of pencils purchased by Ritesh is what percent of total number of pencils purchased by all the three persons together?

- (A) 32.5% (B) 35%
(C) 27.5% (D) 42.5%
(E) None of these

Q17 Directions: Read the data given below carefully and answer the following questions.

Three persons Rahul, Riti, and Ritesh went on a shop to buy pen, pencils, and markers. Total items purchased by Rahul is 50 and total markers purchased by all the three persons together is also 50. Ratio of pens to pencils purchased by Rahul is 1: 2 while ratio of markers purchased by Riti to Ritesh is 3: 1. Rahul purchased total 14 markers which is 70% of total pens purchased by Ritesh.

Total items purchased by Ritesh is 55 and total pencils purchased by Riti is 4 more than total pencils purchased by Ritesh. Total pens purchased by all the three persons together is half of the total pencils purchased by all the three persons together.

What is the average of number of pens purchased by Rahul, number of pencils purchased by Riti, and number of markers purchased by Ritesh?

- (A) 21 (B) 16
(C) 15 (D) 19
(E) 17



Q18 Directions: Read the data given below carefully and answer the following questions.

Three persons Rahul, Riti, and Ritesh went on a shop to buy pen, pencils, and markers. Total items purchased by Rahul is 50 and total markers purchased by all the three persons together is also 50. Ratio of pens to pencils purchased by Rahul is 1: 2 while ratio of markers purchased by Riti to Ritesh is 3: 1. Rahul purchased total 14 markers which is 70% of total pens purchased by Ritesh.

Total items purchased by Ritesh is 55 and total pencils purchased by Riti is 4 more than total pencils purchased by Ritesh. Total pens purchased by all the three persons together is half of the total pencils purchased by all the three persons together.

What is the ratio of total number of pens purchased by all the three persons together to the total number of all the three items purchased by Riti?

- (A) 5: 7 (B) 7: 12
(C) 8: 13 (D) 6: 11
(E) None of these

Q19 Directions: Read the data given below carefully and answer the following questions.

Three persons Rahul, Riti, and Ritesh went on a shop to buy pen, pencils, and markers. Total items purchased by Rahul is 50 and total markers purchased by all the three persons together is also 50. Ratio of pens to pencils purchased by Rahul is 1: 2 while ratio of markers purchased by Riti to Ritesh is 3: 1. Rahul purchased total 14 markers which is 70% of total pens purchased by Ritesh.

Total items purchased by Ritesh is 55 and total pencils purchased by Riti is 4 more than total

pencils purchased by Ritesh. Total pens purchased by all the three persons together is half of the total pencils purchased by all the three persons together.

What is the total number of items (pens, pencils, and markers together) purchased by all the three persons together?

- (A) 150 (B) 170
(C) 140 (D) 210
(E) None of these

Q20 Directions: Mahesh has a certain amount with him, out of which, 20% he invests in mutual fund, 15% he spent on shopping and 25% on rent and food. Out of remaining amount, he invested $41\left(\frac{2}{3}\right)\%$ in scheme A for 2 years which offers 20% of annual compound interest and remaining in scheme B for 2 years that offers 20% simple rate of interest. If total amount of interest received from both the schemes together is Rs.2500 more than the amount spent on shopping. From the interest he obtained from scheme B he purchased some tables and some chairs. Total units (both chair and table) purchased by him is 16 and probability of selecting 2 chairs at random is $\frac{11}{20}$. From the interest received from scheme A he purchased another item X at $16\left(\frac{2}{3}\right)\%$ discount.

If from the interest received from scheme A, Mahesh started a business with Sunil who invested Rs.9000 and after 4 years from the start of business, Mahesh withdraws Rs.7000 and total profit amount from the business at the end of 7 years is Rs.21250, then what is the profit amount received from Sunil?

- (A) Rs.10500 (B) Rs.11250
(C) Rs.9250 (D) Rs.12750
(E) Rs.13853



Q21 Directions: Mahesh has a certain amount with him, out of which, 20% he invests in mutual fund, 15% he spent on shopping and 25% on rent and food. Out of remaining amount, he invested $41\left(\frac{2}{3}\right)\%$ in scheme A for 2 years which offers 20% of annual compound interest and remaining in scheme B for 2 years that offers 20% simple rate of interest. If total amount of interest received from both the schemes together is Rs.2500 more than the amount spent on shopping. From the interest he obtained from scheme B he purchased some tables and some chairs. Total units (both chair and table) purchased by him is 16 and probability of selecting 2 chairs at random is $\frac{11}{20}$. From the interest received from scheme A he purchased another item X at $16\left(\frac{2}{3}\right)\%$ discount.

If marked up per cent on item X was 32% and shopkeeper sold the same item to another customer Suresh at 15% profit, then what is the discount per cent offered by shopkeeper to Suresh on that item?

- (A) $12\left(\frac{29}{33}\right)\%$
 (B) $15\left(\frac{2}{3}\right)\%$
 (C) $8\left(\frac{9}{11}\right)\%$
 (D) $16\left(\frac{4}{9}\right)\%$
 (E) $17\frac{4}{7}\%$

Q22 Directions: Study the following information carefully and answer the related questions.

Three friends P, Q and R work in same company and the average of their monthly income is Rs.28000.

In May, Monthly savings of P, Q and R are in the ratio 12: 8: 9 respectively. Monthly expenditure of P is Rs.1000 more than monthly expenditure of R and the monthly income of R is equal to monthly expenditure of Q. The difference between monthly income of Q and R is Rs.8000.

In June, P starts a business by investing 60% of his income and after (A) months Q and R joined him with Rs.1200 and Rs.5000 respectively more than the investment of P. Then, after next (B) months, P invested Rs.3200 more and Q withdrew Rs.2000 then after next 4 months, P and Q left. At the end of 20 months, the ratio of profit received by P, Q and R is 752: 430: 763 respectively.

In July, R invested Rs.2800 more than Q at (C)% rate of compound interest for two years and Q invested 35% of his monthly income at 15% rate of simple interest for (D) years. P invested 65% of his monthly income at 25% rate of compound interest for 2 years. The total simple interest received by Q is equal to the sum of compound interest received by R and P.

In August, P, Q and R bought a sofa, table and chair respectively from a shop at total Rs.5418.8. The cost price of sofa, table and chair are in the ratio 35: 29: 32 respectively. Shopkeeper marked the chair at 35% above its cost price, sofa at 40% above its cost price and table at 20% above its cost price. 18% discount is given on the marked price of table and it is sold at Rs.1426.8. Profit earned on sofa is Rs.406. The profit earned by shopkeeper on chair is Rs.(E).

If numerical value of C is equal to the numerical value of $\frac{5A^2}{B}$, then what will be the difference between the numerical values of C and D?

- (A) 20.06 (B) 18.16
 (C) 16.44 (D) 14.86
 (E) 19.55

Q23 Directions: Study the following information carefully and answer the related questions.

Three friends P, Q and R work in same company and the average of their monthly income is Rs.28000.



In May, Monthly savings of P, Q and R are in the ratio 12: 8: 9 respectively. Monthly expenditure of P is Rs.1000 more than monthly expenditure of R and the monthly income of R is equal to monthly expenditure of Q. The difference between monthly income of Q and R is Rs.8000. In June, P starts a business by investing 60% of his income and after (A) months Q and R joined him with Rs.1200 and Rs.5000 respectively more than the investment of P. Then, after next (B) months, P invested Rs.3200 more and Q withdrew Rs.2000 then after next 4 months, P and Q left. At the end of 20 months, the ratio of profit received by P, Q and R is 752: 430: 763 respectively.

In July, R invested Rs.2800 more than Q at (C)% rate of compound interest for two years and Q invested 35% of his monthly income at 15% rate of simple interest for (D) years. P invested 65% of his monthly income at 25% rate of compound interest for 2 years. The total simple interest received by Q is equal to the sum of compound interest received by R and P.

In August, P, Q and R bought a sofa, table and chair respectively from a shop at total Rs.5418.8. The cost price of sofa, table and chair are in the ratio 35: 29: 32 respectively. Shopkeeper marked the chair at 35% above its cost price, sofa at 40% above its cost price and table at 20% above its cost price. 18% discount is given on the marked price of table and it is sold at Rs.1426.8. Profit earned on sofa is Rs.406. The profit earned by shopkeeper on chair is Rs.(E).

If numerical value of E is increased by 50% and the marked price and cost price of chair remains same, then total discount given on marked price of chair is approximately what percent of total discount given on marked price of sofa?

- (A) 70% (B) 67%
(C) 83% (D) 91%
(E) 75%

Q24 Directions: Study the following information carefully and answer the related questions.

Three friends P, Q and R work in same company and the average of their monthly income is Rs.28000.

In May, Monthly savings of P, Q and R are in the ratio 12: 8: 9 respectively. Monthly expenditure of P is Rs.1000 more than monthly expenditure of R and the monthly income of R is equal to monthly expenditure of Q. The difference between monthly income of Q and R is Rs.8000. In June, P starts a business by investing 60% of his income and after (A) months Q and R joined him with Rs.1200 and Rs.5000 respectively more than the investment of P. Then, after next (B) months, P invested Rs.3200 more and Q withdrew Rs.2000 then after next 4 months, P and Q left. At the end of 20 months, the ratio of profit received by P, Q and R is 752: 430: 763 respectively.

In July, R invested Rs.2800 more than Q at (C)% rate of compound interest for two years and Q invested 35% of his monthly income at 15% rate of simple interest for (D) years. P invested 65% of his monthly income at 25% rate of compound interest for 2 years. The total simple interest received by Q is equal to the sum of compound interest received by R and P.

In August, P, Q and R bought a sofa, table and chair respectively from a shop at total Rs.5418.8. The cost price of sofa, table and chair are in the ratio 35: 29: 32 respectively. Shopkeeper marked the chair at 35% above its cost price, sofa at 40% above its cost price and table at 20% above its cost price. 18% discount is given on



the marked price of table and it is sold at Rs.1426.8. Profit earned on sofa is Rs.406. The profit earned by shopkeeper on chair is Rs.(E).

If the numerical values of C is 20, then what is the simple interest received by P if he invested 20% of his monthly income at 28% rate of interest for D years?

- (A) Rs.12876.24 (B) Rs.13405.55
(C) Rs.14012.25 (D) Rs.15303.68
(E) Rs.10003.68

Q25 Directions: Study the following information carefully and answer the related questions.

Three friends P, Q and R work in same company and the average of their monthly income is Rs.28000.

In May, Monthly savings of P, Q and R are in the ratio 12: 8: 9 respectively. Monthly expenditure of P is Rs.1000 more than monthly expenditure of R and the monthly income of R is equal to monthly expenditure of Q. The difference between monthly income of Q and R is Rs.8000. In June, P starts a business by investing 60% of his income and after (A) months Q and R joined him with Rs.1200 and Rs.5000 respectively more than the investment of P. Then, after next (B) months, P invested Rs.3200 more and Q withdrew Rs.2000 then after next 4 months, P and Q left. At the end of 20 months, the ratio of profit received by P, Q and R is 752: 430: 763 respectively.

In July, R invested Rs.2800 more than Q at (C)% rate of compound interest for two years and Q invested 35% of his monthly income at 15% rate of simple interest for (D) years. P invested 65% of his monthly income at 25% rate of compound interest for 2 years. The total simple interest received by Q is equal to the sum of compound interest received by R and P.

In August, P, Q and R bought a sofa, table and chair respectively from a shop at total Rs.5418.8. The cost price of sofa, table and chair are in the ratio 35: 29: 32 respectively. Shopkeeper marked the chair at 35% above its cost price, sofa at 40% above its cost price and table at 20% above its cost price. 18% discount is given on the marked price of table and it is sold at Rs.1426.8. Profit earned on sofa is Rs.406. The profit earned by shopkeeper on chair is Rs.(E).

What is the difference between total profit/loss% incurred on selling sofa and total profit/loss% incurred on selling table?

- (A) 23.2% (B) 21.6%
(C) 19.4% (D) 17.5%
(E) 20%

Q26 Directions: Study the following information carefully and answer the related questions.

A salesman sold a total of 20 bedsheets and 12 blankets to shopkeepers A and B. Number of blankets bought A is 50% less than the number of bedsheets bought by him. B bought 5 blankets from the salesman. The salesman sold each bedsheet at Rs.400 and each blanket at Rs. Y. A marked each blanket and each bedsheet at 40% and 50% above their respective cost prices. B sold 3 bedsheets at 12% profit and the rest at 8% profit. B allowed a discount of Rs.75 on each blanket and marked each blanket at 30% above its cost price. A allowed two successive discounts of 10% each on each blanket. A and B together earned Rs.722.1 as profit on blankets.

If A earned a total of Rs.870.1 as profit on bedsheets and blankets together, then what percent discount did he give on the marked price of each bedsheet?

- (A) 28 (B) 20



- (C) 18
(E) 32
- (D) 24

Q27 Directions: Study the following information carefully and answer the related questions.

A salesman sold a total of 20 bedsheets and 12 blankets to shopkeepers A and B. Number of blankets bought A is 50% less than the number of bedsheets bought by him. B bought 5 blankets from the salesman. The salesman sold each bedsheet at Rs.400 and each blanket at Rs. Y. A marked each blanket and each bedsheet at 40% and 50% above their respective cost prices. B sold 3 bedsheets at 12% profit and the rest at 8% profit. B allowed a discount of Rs.75 on each blanket and marked each blanket at 30% above its cost price. A allowed two successive discounts of 10% each on each blanket. A and B together earned Rs.722.1 as profit on blankets.

If B marked each bedsheet at 44% above their cost prices, then how much discount did he allow on the marked price of each bedsheet sold at 12% profit?

- (A) Rs.108
(C) Rs.132
(E) Rs.150
- (B) Rs.120
(D) Rs.128

Q28 Directions: Study the following information and answer the questions:

Preeti, Piyu and Priya started a business by investing Rs. 14000, Rs. 20000 and Rs. 16000 respectively and after 6 months Preeti and Priya invested again in the ratio of 4: 5. After 1 year, Piyush joined the business with an initial investment of Rs. 40000 and at that time Piyu and Priya invested in the ratio of 6: 5 and further 6 more months, Preeti, Piyu, Priya and Piyush again invested in the ratio of 2: 4: 2: 1. After 2 years, Piyush and Priya withdraw Rs. 10000 and

Rs. 12000 respectively and further 6 more months, Preeti invested $14\left(\frac{2}{7}\right)\%$ of her initial investment, Piyu and Priya invested 25% of their initial investments and Piyush invested 20% of his initial investment. They invested the whole amount for three years and the profit earned in the business is proportional to the investment and the period of investment.

After 1 year, the investment by Piyu is Rs. 6000 less than the investment by Priya after 6 months and investment by Preeti after 1.5 years is 20% less than the investment by Piyu after 2.5 years which is equal to $16\left(\frac{2}{3}\right)\%$ of the investment by Priya after 6 months. If at the end of three years, the total profit earned by them is Rs. 224400, then what is the difference between share of profit earned by Preeti and Piyush together and the share of profit earned by Priya and Piyu together?

- (A) 45840
(C) 45340
(E) 40000
- (B) 45880
(D) 45540

Q29 Directions: Study the following information and answer the questions:

Preeti, Piyu and Priya started a business by investing Rs. 14000, Rs. 20000 and Rs. 16000 respectively and after 6 months Preeti and Priya invested again in the ratio of 4: 5. After 1 year, Piyush joined the business with an initial investment of Rs. 40000 and at that time Piyu and Priya invested in the ratio of 6: 5 and further 6 more months, Preeti, Piyu, Priya and Piyush again invested in the ratio of 2: 4: 2: 1. After 2 years, Piyush and Priya withdraw Rs. 10000 and Rs. 12000 respectively and further 6 more months, Preeti invested $14\left(\frac{2}{7}\right)\%$ of her initial investment, Piyu and Priya invested 25% of their initial investments and Piyush invested 20% of



his initial investment. They invested the whole amount for three years and the profit earned in the business is proportional to the investment and the period of investment.

After 6 months, the difference between the investment by Priya and Preeti is Rs. 2000 and after 1 year, investment by Piyush is Rs. 4000 more than the investment by Piyu. Investment by Piyu after 1.5 years is $14\left(\frac{2}{7}\right)\%$ more than the initial investment by Preeti. What is the ratio of share of profit of Preeti, Piyu, Priya and Piyush?

- (A) 105: 317: 270: 116
- (B) 155: 317: 200: 166
- (C) 150: 307: 270: 160
- (D) 150: 317: 270: 160
- (E) 150: 317: 210: 260

Q30 Directions: Study the following information and answer the questions:

Preeti, Piyu and Priya started a business by investing Rs. 14000, Rs. 20000 and Rs. 16000 respectively and after 6 months Preeti and Priya invested again in the ratio of 4: 5. After 1 year, Piyush joined the business with an initial investment of Rs. 40000 and at that time Piyu and Priya invested in the ratio of 6: 5 and further 6 more months, Preeti, Piyu, Priya and Piyush again invested in the ratio of 2: 4: 2: 1. After 2 years, Piyush and Priya withdraw Rs. 10000 and Rs. 12000 respectively and further 6 more months, Preeti invested $14\left(\frac{2}{7}\right)\%$ of her initial investment, Piyu and Priya invested 25% of their initial investments and Piyush invested 20% of his initial investment. They invested the whole amount for three years and the profit earned in the business is proportional to the investment and the period of investment.

The investment by Preeti after 6 months is Rs. 2000 more than her initial investment and

investment by Priya after 1 year is 62.5% of the investment by Preeti after 6 months from start of the business. Piyush's initial investment is Rs. 28000 more than the investment by Priya after 1.5 years, then the share of profit of Piyu is what percentage more or less than the share of profit of Priya?

- (A) $2\left(\frac{4}{5}\right)\%$
- (B) $4\left(\frac{3}{7}\right)\%$
- (C) $2\left(\frac{7}{9}\right)\%$
- (D) $3\left(\frac{3}{5}\right)\%$
- (E) $3\frac{4}{5}\%$

Q31 Directions: Study the data carefully and answer the following questions.

The efficiency of Sheela is 40% less than Jeet and efficiency of Kirti is 40% more than Amar. Kirti and Amar together can complete 80% of the work in 14 days. One-third part of work is done by Ira and Diya together in 4 days. Jeet is 20% more efficient than Diya and Ira alone can complete $\frac{7}{8}$ th part of work in 18 days. $\frac{9}{25}$ th part of work is done by Gaurav and Seeta together in $\frac{18}{5}$ days. Seeta is $33\left(\frac{1}{3}\right)\%$ more efficient than Geeta and Gaurav alone can complete $\frac{7}{10}$ th part of the work in 9 days. Time taken by Neha to complete the whole work is 4 days less than the time taken by Geeta to complete the whole work.

Geeta and Sheela together can complete how much percentage of the work in 3 days?

- (A) 25%
- (B) 20%
- (C) 16.66%
- (D) 12.5%
- (E) 25%

Q32 Directions: Study the data carefully and answer the following questions.

The efficiency of Sheela is 40% less than Jeet and efficiency of Kirti is 40% more than Amar.



Kirti and Amar together can complete 80% of the work in 14 days. One-third part of work is done by Ira and Diya together in 4 days. Jeet is 20% more efficient than Diya and Ira alone can complete $\frac{7}{8}$ th part of work in 18 days. $\frac{9}{25}$ th part of work is done by Gaurav and Seeta together in $\frac{18}{5}$ days. Seeta is $33\left(\frac{1}{3}\right)\%$ more efficient than Geeta and Gaurav alone can complete $\frac{7}{10}$ th part of the work in 9 days. Time taken by Neha to complete the whole work is 4 days less than the time taken by Geeta to complete the whole work.

The part of work done by Neha and Amar in 6 days is ____.

- (A) $\frac{1}{2}$
- (B) $\frac{1}{3}$
- (C) $\frac{1}{4}$
- (D) $\frac{1}{5}$
- (E) 2

Q33 Directions: Study the data carefully and answer the following questions.

The efficiency of Sheela is 40% less than Jeet and efficiency of Kirti is 40% more than Amar. Kirti and Amar together can complete 80% of the work in 14 days. One-third part of work is done by Ira and Diya together in 4 days. Jeet is 20% more efficient than Diya and Ira alone can complete $\frac{7}{8}$ th part of work in 18 days. $\frac{9}{25}$ th part of work is done by Gaurav and Seeta together in $\frac{18}{5}$ days. Seeta is $33\left(\frac{1}{3}\right)\%$ more efficient than Geeta and Gaurav alone can complete $\frac{7}{10}$ th part of the work in 9 days. Time taken by Neha to complete the whole work is 4 days less than the time taken by Geeta to complete the whole work.

The time taken by Amar, Sheela, and Neha together to complete 20% of the work is how many more or less than the time taken by

Geeta and Kirti together to complete 30% of the work?

- (A) 1 day
- (B) 5 days
- (C) 3 days
- (D) 4 days
- (E) 2 days



Answer Key

Level-1

Q1 (C)
Q2 (C)
Q3 (C)
Q4 (C)
Q5 (C)
Q6 (C)
Q7 (A)
Q8 (E)
Q9 (D)
Q10 (B)
Q11 (B)
Q12 (A)
Q13 (D)
Q14 (D)
Q15 (A)
Q16 (D)
Q17 (C)

Q18 (A)
Q19 (E)
Q20 (C)
Q21 (A)
Q22 (B)
Q23 (A)
Q24 (C)
Q25 (D)
Q26 (A)
Q27 (A)
Q28 (C)
Q29 (E)
Q30 (C)
Q31 (C)
Q32 (C)
Q33 (C)
Q34 (C)



Level-2

Q1 (C)
Q2 (C)
Q3 (A)
Q4 (B)
Q5 (D)
Q6 (C)
Q7 (C)
Q8 (C)
Q9 (C)
Q10 (C)
Q11 (D)
Q12 (E)
Q13 (A)
Q14 (D)
Q15 (A)
Q16 (D)
Q17 (C)
Q18 (D)
Q19 (C)
Q20 (E)
Q21 (B)
Q22 (C)

Q23 (A)
Q24 (C)
Q25 (E)
Q26 (D)
Q27 (A)
Q28 (B)
Q29 (B)
Q30 (A)
Q31 (A)
Q32 (C)
Q33 (C)
Q34 (A)
Q35 (A)
Q36 (A)
Q37 (C)
Q38 (B)
Q39 (C)
Q40 (E)
Q41 (C)
Q42 (D)
Q43 (B)
Q44 (B)



Level-3

Q1 (D)
Q2 (B)
Q3 (C)
Q4 (D)
Q5 (B)
Q6 (B)
Q7 (C)
Q8 (A)
Q9 (D)
Q10 (A)
Q11 (A)
Q12 (A)
Q13 (B)
Q14 (D)
Q15 (D)
Q16 (A)
Q17 (E)

Q18 (C)
Q19 (B)
Q20 (B)
Q21 (A)
Q22 (B)
Q23 (A)
Q24 (D)
Q25 (B)
Q26 (A)
Q27 (D)
Q28 (A)
Q29 (D)
Q30 (C)
Q31 (D)
Q32 (C)
Q33 (C)



Hints & Solutions

Level-1

Q1 Text Solution:

Number of students enrolled in Mathematics coaching = $15\% \times 600 = 90$

Number of students enrolled in English coaching = 90

Number of students enrolled in Chemistry coaching = $90 + 30 = 120$

Number of students enrolled in Physics coaching = $120 + 48 = 168$

Number of students enrolled in Biology coaching

$$= 600 - (90 + 90 + 120 + 168) = 132$$

Number of students enrolled in English and Physics coaching together = $90 + 168 = 258$

Number of students enrolled in Chemistry and Biology coaching together = $120 + 132 = 252$

$$\text{Required difference} = 258 - 252 = 6$$

Option '6' is the correct answer.

Q2 Text Solution:

Number of students enrolled in Mathematics coaching = $15\% \times 600 = 90$

Number of students enrolled in English coaching = 90

Number of students enrolled in Chemistry coaching = $90 + 30 = 120$

Number of students enrolled in Physics coaching = $120 + 48 = 168$

Number of students enrolled in Biology coaching

$$= 600 - (90 + 90 + 120 + 168) = 132$$

Number of students enrolled in Chemistry coaching = 120

Total number of students enrolled in Physics and Biology coaching together = $168 + 132 = 300$

$$\text{Required percent} = \frac{120}{300} \times 100 = 40\%$$

Option '40 %' is the correct answer.

Q3 Text Solution:

Number of students enrolled in Mathematics coaching = $15\% \times 600 = 90$

Number of students enrolled in English coaching = 90

Number of students enrolled in Chemistry coaching = $90 + 30 = 120$

Number of students enrolled in Physics coaching = $120 + 48 = 168$

Number of students enrolled in Biology coaching

$$= 600 - (90 + 90 + 120 + 168) = 132$$

$$\text{Required ratio} = 168 : 120 = 7 : 5$$

Option '7 : 5' is the correct answer.

Q4 Text Solution:

Number of students enrolled in Mathematics coaching = $15\% \times 600 = 90$

Number of students enrolled in English coaching = 90

Number of students enrolled in Chemistry coaching = $90 + 30 = 120$

Number of students enrolled in Physics coaching = $120 + 48 = 168$

Number of students enrolled in Biology coaching

$$= 600 - (90 + 90 + 120 + 168) = 132$$

Number of male students enrolled in Mathematics coaching

$$= 90 \times \frac{100-30}{100} = 63$$

Number of male students enrolled in English coaching = $90 \times \frac{100-60}{100} = 36$

$$\text{Required number} = 63 + 36 = 99$$

Option '99' is the correct answer.



Q5 Text Solution:

Number of students enrolled in Mathematics coaching = $15\% \times 600 = 90$

Number of students enrolled in English coaching = 90

Number of students enrolled in Chemistry coaching = $90 + 30 = 120$

Number of students enrolled in Physics coaching = $120 + 48 = 168$

Number of students enrolled in Biology coaching

$$= 600 - (90 + 90 + 120 + 168) = 132$$

$$\text{Required difference} = \frac{5-2}{5+2} \times 168 = 72$$

Option '72' is the correct answer.

Q6 Text Solution:

Let's First find all the data .

The total no. of students who play only cricket= 250.....(i)

The total no. of students who play only football= 220.....(ii)

The total no. of students who play all three games i.e cricket, Football and Hockey = 15(iii)

Also given the ratio of Students Plays Only Football to Only Hockey =44:29.....(iv)

From equation (ii),

We can say, The total no. of students who play only hockey= 145.

The number of students plays only Football and Cricket = 3 times the number of students plays all three games.

So ,The total no. of students who play only cricket and Football= 45

So, The total number of students plays football and cricket =45+15 = 60.....(v)

And the ratio of Students play football and cricket and

the ratio of Students play Cricket and Hockey = 12: 17

Thus , Number of Students plays cricket and Hockey = 85using equation (v)

The total no. of students who play only Football and Hockey = 65

Total number of students who play more than one game but less than three games =45+65+70 =180

the number of students who play only cricket = 250

number of students who play more than one game but less than three games is what percent more than the number of students who play only cricket

$$= 70/250 \times 100$$

$$= 28\%$$

Q7 Text Solution:

Let's First find all the data .

The total no. of students who play only cricket= 250.....(i)

The total no. of students who play only football= 220.....(ii)

The total no. of students who play all three games i.e cricket, Football and Hockey = 15(iii)

Also given the ratio of Students Plays Only Football to Only Hockey =44:29.....(iv)

From equation (ii),

We can say, The total no. of students who play only hockey= 145.

The number of students plays only Football and Cricket = 3 times the number of students plays all three games.

So ,The total no. of students who play only cricket and Football= 45

So, The total number of students plays football and cricket =45+15 = 60.....(v)

And the ratio of Students play football and cricket and

the ratio of Students play Cricket and Hockey = 12: 17



Thus , Number of Students plays cricket and Hockey = 85using equation (v)

The total no. of students who play only Football and Hockey = 65

Total Cricket Players = $250 + 45 + 15 + 70 = 380$

Total Hockey Players = $145 + 65 + 15 + 70 = 295$

Ratio = $380:295 = 76 : 59$

Q8 Text Solution:

Let's First find all the data .

The total no. of students who play only cricket= 250.....(i)

The total no. of students who play only football= 220.....(ii)

The total no. of students who play all three games i.e cricket, Football and Hockey = 15(iii)

Also given the ratio of Students Plays Only Football to Only Hockey = $44:29$(iv)

From equation (ii),

We can say, The total no. of students who play only hockey= 145.

The number of students plays only Football and Cricket = 3 times the number of students plays all three games.

So ,The total no. of students who play only cricket and Football= 45

So, The total number of students plays football and cricket = $45 + 15 = 60$(v)

And the ratio of Students play football and cricket and

the ratio of Students play Cricket and Hockey = 12: 17

Thus , Number of Students plays cricket and Hockey = 85using equation (v)

The total no. of students who play only Football and Hockey = 65

Female = 30% , so Male= 70%

So , 70 % of 810 = 567

Q9 Text Solution:

Let's First find all the data .

The total no. of students who play only cricket= 250.....(i)

The total no. of students who play only football= 220.....(ii)

The total no. of students who play all three games i.e cricket, Football and Hockey = 15(iii)

Also given the ratio of Students Plays Only Football to Only Hockey = $44:29$(iv)

From equation (ii),

We can say, The total no. of students who play only hockey= 145.

The number of students plays only Football and Cricket = 3 times the number of students plays all three games.

So ,The total no. of students who play only cricket and Football= 45

So, The total number of students plays football and cricket = $45 + 15 = 60$(v)

And the ratio of Students play football and cricket and

the ratio of Students play Cricket and Hockey = 12: 17

Thus , Number of Students plays cricket and Hockey = 85using equation (v)

The total no. of students who play only Football and Hockey = 65

[already Calculated]

Q10. Text Solution:

	English	Hindi	Science	History	Art
Aman	90	120	135	75	
Baman		115	125	80	70
Chaman			80		

The average marks obtained by Aman in all subjects = 90

Total marks of Aman = $5 \times 100 = 500$



Marks obtained by Aman in Art = $500 - 420 = 80$
 Total marks obtained by Baman $5 \times 95 = 475$
 Marks obtained by Baman in English = $475 - 115 - 125 - 80 - 70 = 85$
 Total marks obtained by Chaman
 $5 \times 80 = 400$

	English	Hindi	Science	History	Art
Aman	90	120	135	75	80
Baman	85	115	125	80	70
Chaman	40	60	80	120	130

Required ratio = $80: 85 = 16: 17$

Q11. Text Solution:

	English	Hindi	Science	History	Art
Aman	90	120	135	75	
Baman		115	125	80	70
Chaman			80		

The average marks obtained by Aman in all subjects = 90

Total marks of Aman = $5 \times 100 = 500$

Marks obtained by Aman in Art = $500 - 420 = 80$

Total marks obtained by Baman $5 \times 95 = 475$

Marks obtained by Baman in English = $475 - 115 - 125 - 80 - 70 = 85$

Total marks obtained by Chaman
 $5 \times 80 = 400$

	English	Hindi	Science	History	Art
Aman	90	120	135	75	80
Baman	85	115	125	80	70
Chaman	40	60	80	120	130

Marks scored by Chaman in history = $80 + 40 = 120$

Percentage of marks scored by Chaman in history = $\frac{120}{150} \times 100 = 80\%$

Q12. Text Solution:

	English	Hindi	Science	History	Art
Aman	90	120	135	75	
Baman		115	125	80	70
Chaman			80		

The average marks obtained by Aman in all subjects = 90

Total marks of Aman = $5 \times 100 = 500$

Marks obtained by Aman in Art = $500 - 420 = 80$

Total marks obtained by Baman $5 \times 95 = 475$

Marks obtained by Baman in English = $475 - 115 - 125 - 80 - 70 = 85$

Total marks obtained by Chaman
 $5 \times 80 = 400$

	English	Hindi	Science	History	Art
Aman	90	120	135	75	80
Baman	85	115	125	80	70
Chaman	40	60	80	120	130

Marks obtained by Chaman in Art = $3 \times 110 - 80 - 120 = 130$

Required ratio = $115: 130 = 23: 26$

Q13. Text Solution:

	English	Hindi	Science	History	Art
Aman	90	120	135	75	
Baman		115	125	80	70
Chaman			80		

The average marks obtained by Aman in all subjects = 90

Total marks of Aman = $5 \times 100 = 500$



Marks obtained by Aman in Art = $500 - 420 = 80$
 Total marks obtained by Baman $5 \times 95 = 475$
 Marks obtained by Baman in English = $475 - 115 - 125 - 80 - 70 = 85$
 Total marks obtained by Chaman $5 \times 80 = 400$

	English	Hindi	Science	History	Art
Aman	90	120	135	75	80
Baman	85	115	125	80	70
Chaman	40	60	80	120	130

Marks obtained by Chaman in English = $3 \times 60 - 80 - 60 = 40$
 Required ratio = $40 : 90 = 4 : 9$

Q14. Text Solution:

	English	Hindi	Science	History	Art
Aman	90	120	135	75	
Baman		115	125	80	70
Chaman			80		

The average marks obtained by Aman in all subjects = 90
 Total marks of Aman = $5 \times 100 = 500$
 Marks obtained by Aman in Art = $500 - 420 = 80$
 Total marks obtained by Baman $5 \times 95 = 475$
 Marks obtained by Baman in English = $475 - 115 - 125 - 80 - 70 = 85$
 Total marks obtained by Chaman $5 \times 80 = 400$

	English	Hindi	Science	History	Art
Aman	90	120	135	75	80
Baman	85	115	125	80	70
Chaman	40	60	80	120	130

$$\text{Required average} = \frac{135 + 125 + 80}{3} = \frac{340}{3} = 113.33$$

Q15. Text Solution:

The total amount invested by all four initially = $Rs. 5975 \times 4 = Rs. 23,900$

Let the amount invested by B & C initially be Rs. $10x$ & $9x$ respectively.

Amount invested by D initially = $10x \times 1.25 = 12.5x$

According to the questions,

$$23900 = 5000 + 10x + 9x + 12.5x$$

$$31.5x = 23900 - 5000$$

$$31.5x = 18900$$

$$\Rightarrow x = 600$$

Amount invested by B initially = Rs. 6000

Amount invested by C initially = Rs. 5400

Amount invested by D initially = Rs. 7500

Period of investment for A = 12 months

Period of investment for B = $12 \times \frac{2}{3} = 8$ months

Let the period of investment for C be x months.

Then, period of investment for D = $(20 - x)$ months

Now,

$$A : B : C : D = 5000 \times 12 : 6000 \times 8 :$$

$$5400x : 7500 \times (20 - x)$$

$$= 200 : 160 : 18x : (500 - 25x)$$

$$\frac{18x}{200 + 160 + 18x + (500 - 25x)} = \frac{18}{79}$$

$$\frac{18x}{860 - 7x} = \frac{18}{79}$$

$$\Rightarrow x = 10$$

Required ratio = $10 : 10 = 1 : 1$

Q16. Text Solution:

The total amount invested by all four initially = $Rs. 5975 \times 4 = Rs. 23,900$

Let the amount invested by B & C initially be Rs. $10x$ & $9x$ respectively.

Amount invested by D initially = $10x \times 1.25 = 12.5x$

According to the questions,



$$23900 = 5000 + 10x + 9x + 12.5x$$

$$31.5x = 23900 - 5000$$

$$31.5x = 18900$$

$$\Rightarrow x = 600$$

Amount invested by B initially = Rs. 6000

Amount invested by C initially = Rs. 5400

Amount invested by D initially = Rs. 7500

Period of investment for A = 12 months

Period of investment for B = $12 \times \frac{2}{3} = 8$ months

Let the period of investment for C be x months.

Then, period of investment for D = (20 - x) months

Now,

$$A : B : C : D = 5000 \times 12 : 6000 \times 8 :$$

$$5400x : 7500 \times (20 - x)$$

$$= 200 : 160 : 18x : (500 - 25x)$$

$$\frac{18x}{200 + 160 + 18x + (500 - 25x)} = \frac{18}{79}$$

$$\frac{18x}{860 - 7x} = \frac{18}{79}$$

$$\Rightarrow x = 10$$

Required %

$$= \frac{(7500 - 5400)}{(7500 - 6000)} \times 100 = \frac{2100}{1500} \times 100 = 140\%$$

Q17. Text Solution:

The total amount invested by all four initially

$$= \text{Rs. } 5975 \times 4 = \text{Rs. } 23,900$$

Let the amount invested by B & C initially be Rs. 10x & 9x respectively.

$$\text{Amount invested by D initially} = 10x \times 1.25 = 12.5x$$

According to the questions,

$$23900 = 5000 + 10x + 9x + 12.5x$$

$$31.5x = 23900 - 5000$$

$$31.5x = 18900$$

$$\Rightarrow x = 600$$

Amount invested by B initially = Rs. 6000

Amount invested by C initially = Rs. 5400

Amount invested by D initially = Rs. 7500

Period of investment for A = 12 months

Period of investment for B = $12 \times \frac{2}{3} = 8$

months

Let the period of investment for C be x months.

Then, period of investment for D = (20 - x) months

Now,

$$A : B : C : D = 5000 \times 12 : 6000 \times 8 :$$

$$5400x : 7500 \times (20 - x)$$

$$= 200 : 160 : 18x : (500 - 25x)$$

$$\frac{18x}{200 + 160 + 18x + (500 - 25x)} = \frac{18}{79}$$

$$\frac{18x}{860 - 7x} = \frac{18}{79}$$

$$\Rightarrow x = 10$$

$$A : B : C : D = 5000 \times 12 : 6000 \times 8 :$$

$$: 5400 \times 10 : 7500 \times 10$$

$$= 20 : 16 : 18 : 25$$

$$\text{Required difference} = \frac{15800 \times 5}{79} = \text{Rs } 1000$$

Q18. Text Solution:

The total amount invested by all four initially

$$= \text{Rs. } 5975 \times 4 = \text{Rs. } 23,900$$

Let the amount invested by B & C initially be Rs. 10x & 9x respectively.

$$\text{Amount invested by D initially} = 10x \times 1.25 = 12.5x$$

According to the questions,

$$23900 = 5000 + 10x + 9x + 12.5x$$

$$31.5x = 23900 - 5000$$

$$31.5x = 18900$$

$$\Rightarrow x = 600$$

Amount invested by B initially = Rs. 6000

Amount invested by C initially = Rs. 5400

Amount invested by D initially = Rs. 7500

Period of investment for A = 12 months

Period of investment for B = $12 \times \frac{2}{3} = 8$ months

Let the period of investment for C be x months.

Then, period of investment for D = (20 - x) months

Now,

$$A : B : C : D = 5000 \times 12 : 6000 \times 8 :$$

$$5400x : 7500 \times (20 - x)$$



$$= 200 : 160 : 18x : (500 - 25x)$$

$$\frac{18x}{200 + 160 + 18x + (500 - 25x)} = \frac{18}{79}$$

$$\frac{18x}{860 - 7x} = \frac{18}{79}$$

$$\Rightarrow x = 10$$

$$A : B : C : D = 5000 \times 12 : 6000 \times 8$$

$$: 5400 \times 10 : 7500 \times 10$$

$$= 20 : 16 : 18 : 25$$

$$\text{Required difference} = \frac{15800 \times 5}{79} = \text{Rs } 1000$$

$$\text{Required \%} = \frac{16}{20} \times 100 = 80\%$$

Q19. Text Solution:

The total amount invested by all four initially
 $= \text{Rs. } 5975 \times 4 = \text{Rs. } 23,900$

Let the amount invested by B & C initially be Rs.
 $10x$ & $9x$ respectively.

Amount invested by D initially
 $= 10x \times 1.25 = 12.5x$

According to the questions,

$$23900 = 5000 + 10x + 9x + 12.5x$$

$$31.5x = 23900 - 5000$$

$$31.5x = 18900$$

$$\Rightarrow x = 600$$

Amount invested by B initially = Rs. 6000

Amount invested by C initially = Rs. 5400

Amount invested by D initially = Rs. 7500

Period of investment for A = 12 months

Period of investment for B $= 12 \times \frac{2}{3} = 8$
 months

Let the period of investment for C be x months.

Then, period of investment for D $= (20 - x)$
 months

Now,

$$A : B : C : D = 5000 \times 12 : 6000 \times 8 :$$

$$5400x : 7500 \times (20 - x)$$

$$= 200 : 160 : 18x : (500 - 25x)$$

$$\frac{18x}{200 + 160 + 18x + (500 - 25x)} = \frac{18}{79}$$

$$\frac{18x}{860 - 7x} = \frac{18}{79}$$

$$\Rightarrow x = 10$$

$$\text{Required \%} = \frac{(5400 + 7500)}{23900} \times 100 \approx 54\%$$

Q20. Text Solution:

College B:

The number of students in CS = ME + 50

The number of students in ECE = CS + 20 = ME
 $+50 + 20 = \text{ME} + 70$

$$\text{CS} + \text{ME} + \text{ECE} = 180 \times 3 = 540$$

$$\text{ME} + 50 + \text{ME} + \text{ME} + 70 = 540$$

$$3\text{ME} = 540 - 120$$

$$\text{ME} = \frac{420}{3} = 140$$

The number of students in ECE = $140 + 70 = 210$

The number of students in CS = $140 + 50 = 190$

College C:

The number of students in ME = 60% of ECE

The number of students in ME = 150.

The number of students in CS = $150 + 60 = 210$

The number of students in ECE =
 $\frac{100}{60} \times 150 = 250$

The total number of students in ME in all
 colleges together = 600.

College A:

The number of students in ME in college A = 600
 $- 150 - 140 = 310$

The number of students in CS = 120% of 310 =
 372

The number of students in ECE = 150% of 310 =
 465

	ECE	CS	ME
College A	465	372	310
College B	210	290	140
College C	250	210	150

Total number of students in college C = $250 +$
 $210 + 150 = 610$

Q21. Text Solution:

College B:

The number of students in CS = ME + 50

The number of students in ECE = CS + 20 = ME
 $+50 + 20 = \text{ME} + 70$



$$CS + ME + ECE = 180 \times 3 = 540$$

$$ME + 50 + ME + ME + 70 = 540$$

$$3ME = 540 - 120$$

$$ME = \frac{420}{3} = 140$$

$$\text{The number of students in ECE} = 140 + 70 = 210$$

$$\text{The number of students in CS} = 140 + 50 = 190$$

College C:

$$\text{The number of students in ME} = 60\% \text{ of ECE}$$

$$\text{The number of students in ME} = 150.$$

$$\text{The number of students in CS} = 150 + 60 = 210$$

$$\text{The number of students in ECE} =$$

$$\frac{100}{60} \times 150 = 250$$

The total number of students in ME in all colleges together = 600.

College A:

$$\text{The number of students in ME in college A} = 600$$

$$- 150 - 140 = 310$$

$$\text{The number of students in CS} = 120\% \text{ of } 310 = 372$$

$$\text{The number of students in ECE} = 150\% \text{ of } 310 = 465$$

	ECE	CS	ME
College A	465	372	310
College B	210	290	140
College C	250	210	150

$$\text{Required difference} = (210 + 20\% \text{ of } 210) - 250 = 252 - 250 = 2$$

Q22. Text Solution:

College B:

$$\text{The number of students in CS} = ME + 50$$

$$\text{The number of students in ECE} = CS + 20 = ME + 50 + 20 = ME + 70$$

$$CS + ME + ECE = 180 \times 3 = 540$$

$$ME + 50 + ME + ME + 70 = 540$$

$$3ME = 540 - 120$$

$$ME = \frac{420}{3} = 140$$

$$\text{The number of students in ECE} = 140 + 70 = 210$$

$$\text{The number of students in CS} = 140 + 50 = 190$$

College C:

$$\text{The number of students in ME} = 60\% \text{ of ECE}$$

$$\text{The number of students in ME} = 150.$$

$$\text{The number of students in CS} = 150 + 60 = 210$$

$$\text{The number of students in ECE} = \frac{100}{60} \times 150 = 250$$

The total number of students in ME in all colleges together = 600.

College A:

$$\text{The number of students in ME in college A} = 600 - 150 - 140 = 310$$

$$\text{The number of students in CS} = 120\% \text{ of } 310 = 372$$

$$\text{The number of students in ECE} = 150\% \text{ of } 310 = 465$$

	ECE	CS	ME
College A	465	372	310
College B	210	290	140
College C	250	210	150

$$\text{Required\%} = \frac{290 - 150}{150} \times 100 = 93\frac{1}{3}\%$$

Q23. Text Solution:

College B:

$$\text{The number of students in CS} = ME + 50$$

$$\text{The number of students in ECE} = CS + 20 = ME + 50 + 20 = ME + 70$$

$$CS + ME + ECE = 180 \times 3 = 540$$

$$ME + 50 + ME + ME + 70 = 540$$

$$3ME = 540 - 120$$

$$ME = \frac{420}{3} = 140$$

$$\text{The number of students in ECE} = 140 + 70 = 210$$

$$\text{The number of students in CS} = 140 + 50 = 190$$

College C:

$$\text{The number of students in ME} = 60\% \text{ of ECE}$$

$$\text{The number of students in ME} = 150.$$

$$\text{The number of students in CS} = 150 + 60 = 210$$



The number of students in ECE = $\frac{100}{60} \times 150 = 250$

The total number of students in ME in all colleges together = 600.

College A:

The number of students in ME in college A = 600 - 150 - 140 = 310

The number of students in CS = 120% of 310 = 372

The number of students in ECE = 150% of 310 = 465

	ECE	CS	ME
College A	465	372	310
College B	210	290	140
College C	250	210	150

The total number of students in ME & ECE together in college A: The total number of students in CS & ME together in college B = (310 + 465):(290 + 140) = 775:430 = 155:86

Q24. Text Solution:

College B:

The number of students in CS = ME + 50

The number of students in ECE = CS + 20 = ME + 50 + 20 = ME + 70

CS + ME + ECE = $180 \times 3 = 540$

ME + 50 + ME + ME + 70 = 540

3ME = 540 - 120

ME = $\frac{420}{3} = 140$

The number of students in ECE = 140 + 70 = 210

The number of students in CS = 140 + 50 = 190

College C:

The number of students in ME = 60% of ECE

The number of students in ME = 150.

The number of students in CS = 150 + 60 = 210

The number of students in ECE = $\frac{100}{60} \times 150 = 250$

The total number of students in ME in all colleges together = 600.

College A:

The number of students in ME in college A = 600 - 150 - 140 = 310

The number of students in CS = 120% of 310 = 372

The number of students in ECE = 150% of 310 = 465

	ECE	CS	ME
College A	465	372	310
College B	210	290	140
College C	250	210	150

Required % $\frac{610}{640} \times 100 = 95.31$

Q25 Text Solution:

Total people who like Android phone = 240

Total people who like both Android and windows phones but not Mac = 25% of 240 = 60

Total people who like all the three phones = 50

Total people who like only Windows = 50 - 20 = 30

Total people who like only Android = $3 \times 30 = 90$

Total people who like both Android and Mac phones but not windows = 240 - 90 - 60 - 50 = 40

Total people who like more than one phone = 170

Total people who like both Mac and windows phones but not Android = 170 - 40 - 50 - 60 = 20

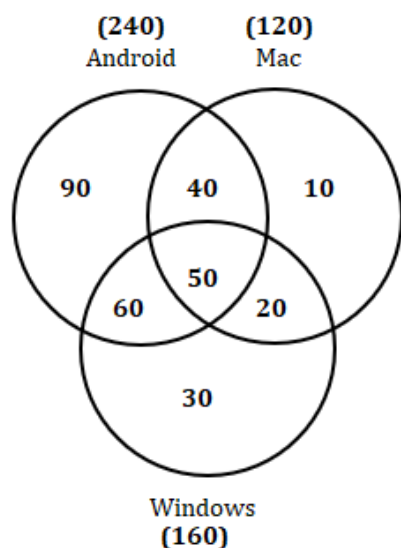
Total people who like windows phone = 60 + 50 + 20 + 30 = 160

Total people who like Mac phone = $160 \times \frac{3}{4} = 120$

Total people who like only Mac = 120 - 40 - 50 - 20 = 10

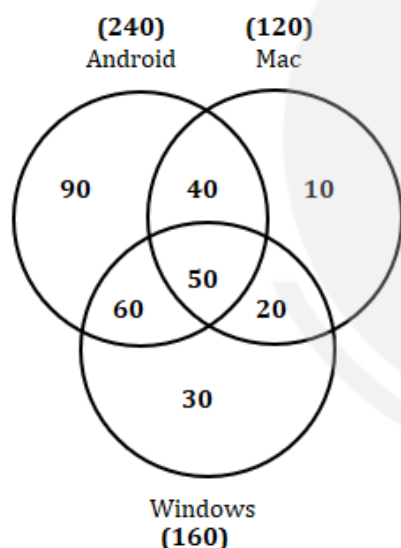


Below given is the venn diagram for above data:



Total number of people who like exactly one phone = $90 + 10 + 30 = 130$

Q26 Text Solution:



Total number of people who like all the three phones = 50

Total number of people of who like exactly two phones = $40 + 60 + 20 = 120$

Required percent = $\frac{50}{120} \times 100 = 41\frac{2}{3}\%$

Q27 Text Solution:

Total people who like Android phone = 240

Total people who like both Android and windows phones but not Mac = 25% of 240 = 60

Total people who like all the three phones = 50

Total people who like only Windows = $50 - 20 = 30$

Total people who like only Android = $3 \times 30 = 90$

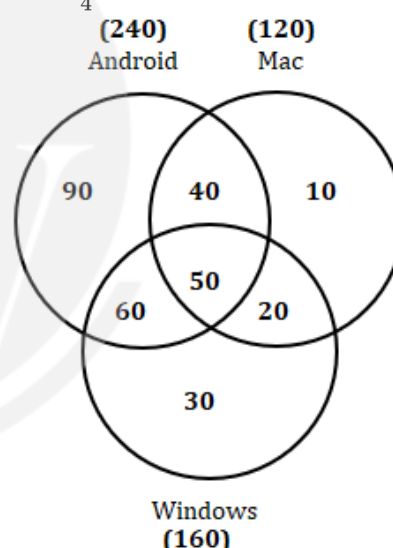
Total people who like both Android and Mac phones but not windows = $240 - 90 - 60 - 50 = 40$

Total people who like more than one phone = 170

Total people who like both Mac and windows phones but not Android = $170 - 40 - 50 - 60 = 20$

Total people who like windows phone = $60 + 50 + 20 + 30 = 160$

Total people who like Mac phone = $160 \times \frac{3}{4} = 120$



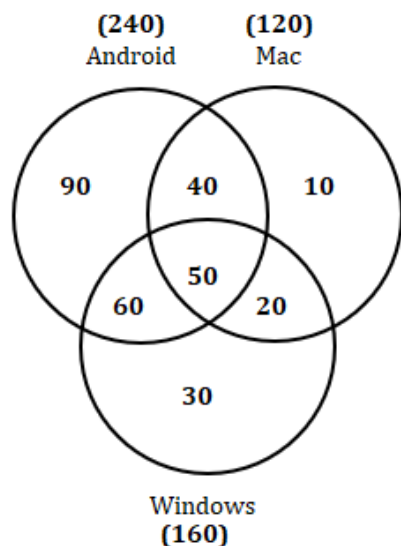
Total number of people who like Windows phones = 160

Total number of people who like Android phones = 240

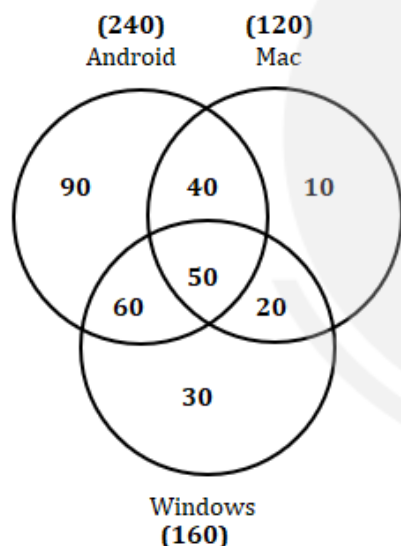
Total number of people who like Mac phones = 120

Required ratio = $160 : \frac{240+120}{2} = 160 : 180 = 8 : 9$



Q28 Text Solution:

Total number of people who like Mac phones along with atleast one more phone = $40 + 50 + 20 = 110$

Q29 Text Solution:

Total number of people involved in the survey = $90 + 40 + 10 + 60 + 50 + 20 + 30 = 300$

Total number of people who like Mac phones = 120

Required percent = $\frac{120}{300} \times 100 = 40\%$

Q30 Text Solution:

Let the income of Vimal, Subham and Deepak be Rs $6x$, Rs $3x$ and Rs $4x$ respectively.

$$\text{Income of Hitesh} = \frac{4x+6x}{2} = \text{Rs } 5x$$

$$\text{Savings of Vimal} = 4x$$

$$\text{Expenditure of Vimal} = 6x - 4x = 2x$$

$$\text{Savings of Subham} = 3x - 2x = x$$

$$\text{Expenditure of Deepak} = 4x - (x + 6000) = 3x - 6000$$

$$\text{Expenditure of Hitesh} = 3x - 6000$$

$$\text{Savings of Hitesh} = 5x - (3x - 6000) = 2x + 6000$$

$$3x - 6000 = 2x + 6000$$

$$x = 12000$$

The difference between the total income of Deepak and Subham together and the total income of Hitesh and Vimal together = $(5x + 6x) - 7x$

$$= 11x - 7x = 4x$$

$$= 4 \times 12000 = \text{Rs } 48000$$

Q31 Text Solution:

Let the income of Vimal, Subham and Deepak be Rs $6x$, Rs $3x$ and Rs $4x$ respectively.

$$\text{Income of Hitesh} = \frac{4x+6x}{2} = \text{Rs } 5x$$

$$\text{Savings of Vimal} = 4x$$

$$\text{Expenditure of Vimal} = 6x - 4x = 2x$$

$$\text{Savings of Subham} = 3x - 2x = x$$

$$\text{Expenditure of Deepak} = 4x - (x + 6000) = 3x - 6000$$

$$\text{Expenditure of Hitesh} = 3x - 6000$$

$$\text{Savings of Hitesh} = 5x - (3x - 6000) = 2x + 6000$$

$$3x - 6000 = 2x + 6000$$

$$3x - 6000 = 2x + 6000$$

$$x = 12000$$

$$\text{New monthly income of Hitesh} = \frac{150}{100} \times 60000 = \text{Rs } 90000$$

$$\text{New monthly expenditure of Hitesh} = \frac{120}{100} \times 30000 = \text{Rs } 36000$$

$$\text{New monthly savings of Hitesh} = 90000 - 36000 = \text{Rs } 54000$$

$$\text{Required percent} = \frac{54000 - 30000}{30000} \times 100$$



$$= \frac{24000}{30000} \times 100 = 80\%$$

Option '80%' is the correct answer.

Q32 Text Solution:

Let the income of Vimal, Subham and Deepak be Rs $6x$, Rs $3x$ and Rs $4x$ respectively.

$$\text{Income of Hitesh} = \frac{4x+6x}{2} = \text{Rs } 5x$$

$$\text{Savings of Vimal} = 4x$$

$$\text{Expenditure of Vimal} = 6x - 4x = 2x$$

$$\text{Savings of Subham} = 3x - 2x = x$$

$$\text{Expenditure of Deepak}$$

$$= 4x - (x + 6000) = 3x - 6000$$

$$\text{Savings of Hitesh} =$$

$$5x - (3x - 6000) = 2x + 6000$$

$$\text{Expenditure of Hitesh} = 3x - 6000$$

$$3x - 6000 = 2x + 6000$$

$$x = 12000$$

Total savings of Hitesh and Subham together =

$$30000 + 12000 = \text{Rs } 42000$$

$$\text{Income of Deepak} = \text{Rs } 48000$$

$$\text{Required percent} = \frac{48000 - 42000}{48000} \times 100$$

$$= \frac{6000}{48000} \times 100 = 12.5\% \text{ less}$$

Option '12.5% less' is the correct answer.

Q33 Text Solution:

Let the income of Vimal, Subham and Deepak be Rs $6x$, Rs $3x$ and Rs $4x$ respectively.

$$\text{Income of Hitesh} = \frac{4x+6x}{2} = \text{Rs } 5x$$

$$\text{Savings of Vimal} = 4x$$

$$\text{Expenditure of Vimal} = 6x - 4x = 2x$$

$$\text{Savings of Subham} = 3x - 2x = x$$

$$\text{Expenditure of Deepak}$$

$$= 4x - (x + 6000) = 3x - 6000$$

$$\text{Expenditure of Hitesh} = 3x - 6000$$

$$\text{Savings of Hitesh} =$$

$$5x - (3x - 6000) = 2x + 6000$$

$$3x - 6000 = 2x + 6000$$

$$x = 12000$$

$$\text{Required average} = \frac{30000+12000+48000}{3} = \text{Rs}$$

$$30000$$

Option '30000' is the correct answer.

Q34 Text Solution:

Let the income of Vimal, Subham and Deepak be Rs $6x$, Rs $3x$ and Rs $4x$ respectively.

$$\text{Income of Hitesh} = \frac{4x+6x}{2} = \text{Rs } 5x$$

$$\text{Savings of Vimal} = 4x$$

$$\text{Expenditure of Vimal} = 6x - 4x = 2x$$

$$\text{Savings of Subham} = 3x - 2x = x$$

$$\text{Expenditure of Deepak}$$

$$= 4x - (x + 6000) = 3x - 6000$$

$$\text{Expenditure of Hitesh} = 3x - 6000$$

$$\text{Savings of Hitesh} =$$

$$5x - (3x - 6000) = 2x + 6000$$

$$3x - 6000 = 2x + 6000$$

$$x = 12000$$

Sum of monthly income and expenditure of

$$\text{Deepak} = 48000 + 30000 = 78000$$

Sum of monthly income and expenditure of

$$\text{Vimal} = 72000 + 24000 = 96000$$

$$\text{Required ratio} = 78000 : 96000 = 13 : 16$$

Option '13 : 16' is the correct answer.



Level-2

Q1 Text Solution:

Let number of students only Physics be $4x$

So, the number of students studying only Chemistry and Physics together
 $= 4x \times \frac{25}{100} = x$

Let students studying Maths = y

So, students studying only Chemistry = y

Now, students studying only Maths
 $= 4x \times \frac{175}{100} = 7x$

Students studying all three subjects = x

Students studying Maths and Physics together
 $= 4x - x = 3x$

Now, Students studying only Chemistry and Maths together = $3x$

ATQ, $y = 140$

And $y = 7x + 3x + 3x + x$

$y = 14x$

$\Rightarrow 14x = 140$ and $x = 10$.

Average number of students studying only Physics and only Maths = $\frac{(40+70)}{2} = 55$

Q2 Text Solution:

Let number of students only Physics be $4x$

So, the number of students studying only Chemistry and Physics together
 $= 4x \times \frac{25}{100} = x$

Let students studying Maths = y

So, students studying only Chemistry = y

Now, students studying only Maths
 $= 4x \times \frac{175}{100} = 7x$

Students studying all three subjects = x

Students studying Maths and Physics together
 $= 4x - x = 3x$

Now, Students studying only Chemistry and Maths together = $3x$

ATQ, $y = 140$

And $y = 7x + 3x + 3x + x$

$y = 14x$

$\Rightarrow 14x = 140$ and $x = 10$.

Number of students who studies Physics
 $= 40 + 30 + 10 + 10 = 90$

Q3 Text Solution:

Let number of students only Physics be $4x$

So, the number of students studying only Chemistry and Physics together
 $= 4x \times \frac{25}{100} = x$

Let students studying Maths = y

So, students studying only Chemistry = y

Now, students studying only Maths
 $= 4x \times \frac{175}{100} = 7x$

Students studying all three subjects = x

Students studying Maths and Physics together
 $= 4x - x = 3x$

Now, Students studying only Chemistry and Maths together = $3x$

ATQ, $y = 140$

And $y = 7x + 3x + 3x + x$

$y = 14x$

$\Rightarrow 14x = 140$ and $x = 10$.

Required Percentage = $\frac{40}{40} \times 100 = 100\%$

Q4 Text Solution:

Let number of students only Physics be $4x$

So, the number of students studying only Chemistry and Physics together
 $= 4x \times \frac{25}{100} = x$

Let students studying Maths = y

So, students studying only Chemistry = y

Now, students studying only Maths
 $= 4x \times \frac{175}{100} = 7x$

Students studying all three subjects = x

Students studying Maths and Physics together
 $= 4x - x = 3x$



Now, Students studying only Chemistry and Maths together = $3x$

ATQ, $y = 140$

And $y = 7x + 3x + 3x + x$

$y = 14x$

$\Rightarrow 14x = 140$ and $x = 10$.

Required Percentage = $\frac{140}{70} \times 100 = 200\%$

Q5 Text Solution:

Let number of students only Physics be $4x$

So, the number of students studying only Chemistry and Physics together

$$= 4x \times \frac{25}{100} = x$$

Let students studying Maths = y

So, students studying only Chemistry = y

Now, students studying only Maths

$$= 4x \times \frac{175}{100} = 7x$$

Students studying all three subjects = x

Students studying Maths and Physics together

$$= 4x - x = 3x$$

Now, Students studying only Chemistry and Maths together = $3x$

ATQ, $y = 140$

And $y = 7x + 3x + 3x + x$

$y = 14x$

$\Rightarrow 14x = 140$ and $x = 10$.

Required Difference = $30 - 10 = 20$

Q6 Text Solution:

$$\text{Number of females} = 1200 \times \frac{40}{100} = 480$$

$$\text{Number of males} = 1200 - 480 = 720$$

$$\text{Number of males who visited V-Mart} = 720 \times \frac{25}{100} = 180$$

$$\text{Number of males who visited Reliance Mart} = 720 \times \frac{3}{20} = 108$$

$$\text{Number of females who visited Big Bazaar} = 180 \times \frac{75}{100} = 135$$

Let the number of males who visited D-Mart = $2x$

So, the number of males who visited Big Bazaar

$$= 2x - x = x$$

$$(2x + x) = 720 - (180 + 108)$$

$$x = 144$$

The number of females who visited D-Mart

$$= 144 + 21 = 165$$

Total number of females who visited either

Reliance Mart or V-Mart

$$= 480 - (165 + 135) = 180$$

Number of females who visited Reliance Mart

$$= 180 \times \frac{7}{12} = 105$$

Number of females who visited V-Mart =

$$180 - 105 = 75$$

Shopping Malls	Males	Females	Total Persons
D-Mart	288	165	453
V-Mart	180	75	255
Big Bazaar	144	135	279
Reliance Mart	108	105	213
Total	720	480	1200

$$\text{Required difference} = (279 + 255) - (144 + 180)$$

$$= 534 - 324 = 210$$

Option '210' is the correct answer.

Q7 Text Solution:

$$\text{Number of females} = 1200 \times \frac{40}{100} = 480$$

$$\text{Number of males} = 1200 - 480 = 720$$

Number of males who visited V-Mart =

$$720 \times \frac{25}{100} = 180$$

Number of males who visited Reliance Mart =

$$720 \times \frac{3}{20} = 108$$

Number of females who visited Big Bazaar =

$$180 \times \frac{75}{100} = 135$$

Let the number of males who visited D-Mart =

$$2x$$

So, the number of males who visited Big Bazaar

$$= 2x - x = x$$

$$(2x + x) = 720 - (180 + 108)$$

$$x = 144$$

The number of females who visited D-Mart

$$= 144 + 21 = 165$$

Total number of females who visited either

Reliance Mart or V-Mart

$$= 480 - (165 + 135) = 180$$



Number of females who visited Reliance Mart
 $= 180 \times \frac{7}{12} = 105$

Number of females who visited V-Mart =
 $180 - 105 = 75$

Shopping Malls	Males	Females	Total Persons
D-Mart	288	165	453
V-Mart	180	75	255
Big Bazaar	144	135	279
Reliance Mart	108	105	213
Total	720	480	1200

Required ratio = $(135 + 105) : 288$

$= 240 : 288 = 5 : 6$

Option '5 : 6' is the correct answer.

Q8 Text Solution:

Number of females = $1200 \times \frac{40}{100} = 480$

Number of males = $1200 - 480 = 720$

Number of males who visited V-Mart =
 $720 \times \frac{25}{100} = 180$

Number of males who visited Reliance Mart =
 $720 \times \frac{3}{20} = 108$

Number of females who visited Big Bazaar =
 $180 \times \frac{75}{100} = 135$

Let the number of males who visited D-Mart =
 $2x$

So, the number of males who visited Big Bazaar
 $= 2x - x = x$

$(2x + x) = 720 - (180 + 108)$

$x = 144$

The number of females who visited D-Mart
 $= 144 + 21 = 165$

Total number of females who visited either
 Reliance Mart or V-Mart
 $= 480 - (165 + 135) = 180$

Number of females who visited Reliance Mart
 $= 180 \times \frac{7}{12} = 105$

Number of females who visited V-Mart =
 $180 - 105 = 75$

Shopping Malls	Males	Females	Total Persons
D-Mart	288	165	453
V-Mart	180	75	255
Big Bazaar	144	135	279
Reliance Mart	108	105	213
Total	720	480	1200

Required percent = $\frac{135+165}{480} \times 100$
 $= 62.5$

Option '62.5' is the correct answer.

Q9 Text Solution:

Number of females = $1200 \times \frac{40}{100} = 480$

Number of males = $1200 - 480 = 720$

Number of males who visited V-Mart =
 $720 \times \frac{25}{100} = 180$

Number of males who visited Reliance Mart =
 $720 \times \frac{3}{20} = 108$

Number of females who visited Big Bazaar =
 $180 \times \frac{75}{100} = 135$

Let the number of males who visited D-Mart =
 $2x$

So, the number of males who visited Big Bazaar
 $= 2x - x = x$

$(2x + x) = 720 - (180 + 108)$

$x = 144$

The number of females who visited D-Mart
 $= 144 + 21 = 165$

Total number of females who visited either
 Reliance Mart or V-Mart
 $= 480 - (165 + 135) = 180$

Number of females who visited Reliance Mart
 $= 180 \times \frac{7}{12} = 105$

Number of females who visited V-Mart =
 $180 - 105 = 75$

Shopping Malls	Males	Females	Total Persons
D-Mart	288	165	453
V-Mart	180	75	255
Big Bazaar	144	135	279
Reliance Mart	108	105	213
Total	720	480	1200

Required difference = $\frac{144+108}{2} - \frac{75+165}{2}$
 $= 126 - 120 = 6$

Option '6' is the correct answer.

Q10 Text Solution:

reqd ratio=
 $950 \times \frac{11}{19} + 1080 \times \frac{5}{12} : 850 \times \frac{9}{17} + 980$
 $\times \frac{5}{14}$



$$=550+45= : 450+350$$

$$=1000 : 800= 5 : 4$$

Q11. Text Solution:

People who like only Kathak and only Bollywood be $4x$ & $3x$ respectively.

People who like only Classical=50

People who like all the three types of dance=15

People who like both Kathak & Classical = 20

People who like both Bollywood & Classical = 20
 $\times 150/100 = 30$

People who like both Kathak & Bollywood =
 $20/2 + 30/2 = 25$

$$4x + 15 + 20 + 25 = 140$$

$$4x = 80$$

$$x = 20$$

People who like only kathak and only Bollywood is 80 & 60 respectively.

$$\text{So, Req. \%} = 25+15+30+60 = 130/50 \times 100 = 260\%$$

Q12. Text Solution:

Total number of people who like at most one music = $80 + 60 + 50 = 190$

Q13. Text Solution:

$$\text{Req. ratio} = 20 : 25 = 4:5$$

Q14. Text Solution:

Let the number of students who like only Rock and Jazz but not Flok and the number of students who like only Flok and Jazz but not Rock be $3x$ and $2x$ respectively.

And,

The number of students who like only Rock and Jazz but not Flok and the number of students who like only Flok and Jazz but not Rock be $4x$ and $2x$.

ATQ,

$$3x + 2x + 4x = 54$$

$$9x = 54$$

$$x = 6$$

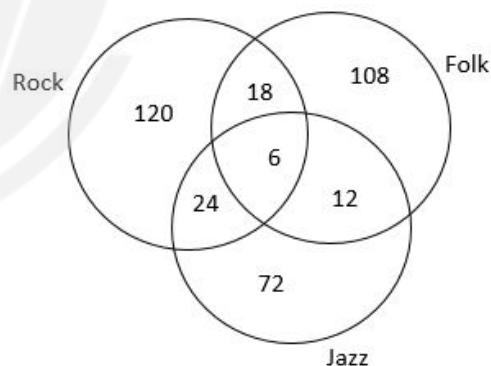
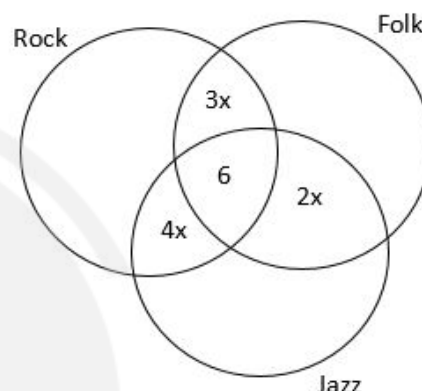
The ratio among the number of students who like only Rock, and the number of students who like only Jazz, and the number of students who like only Flok = 10: 6: 9

Total number of students who like only Rock, only Jazz, and Only Flok = $360 - 54 - 6 = 300$

$$\text{only Rock} = \frac{10}{25} \times 300 = 120$$

$$\text{only Jazz} = \frac{6}{25} \times 300 = 72$$

$$\text{only flok} = \frac{9}{25} \times 300 = 108$$



The number of females who like only Rock dance = $\left(1 - \frac{3}{4}\right) \times 120 = 30$

Q15. Text Solution:

Let the number of students who like only Rock and Jazz but not Flok and the number of



students who like only Flok and Jazz but not Rock be $3x$ and $2x$ respectively.

And,

The number of students who like only Rock and Jazz but not Flok and the number of students who like only Flok and Jazz but not Rock be $4x$ and $2x$.

ATQ,

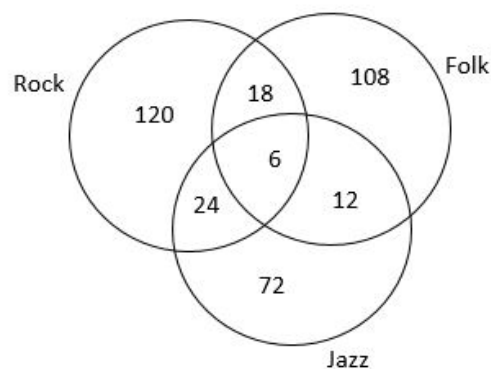
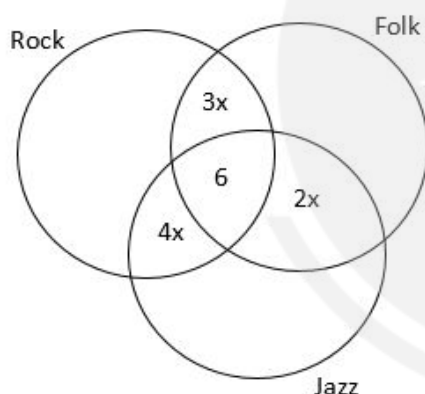
$$3x + 2x + 4x = 54$$

$$9x = 54$$

$$x = 6$$

The ratio among the number of students who like only Rock, and the number of students who like only Jazz, and the ratio between the number of students who like only Flok = 10: 6: 9

Total number of students who like only Rock, only Jazz, and Only Flok = $360 - 54 - 6 = 300$



$$\text{Required \%} = \frac{12}{108} \times 100 = 11\frac{1}{9}\%$$

Q16. Text Solution:

Let the number of students who like only Rock and Jazz but not Flok and the number of students who like only Flok and Jazz but not Rock be $3x$ and $2x$ respectively.

And,

The number of students who like only Rock and Jazz but not Flok and the number of students who like only Flok and Jazz but not Rock be $4x$ and $2x$.

ATQ,

$$3x + 2x + 4x = 54$$

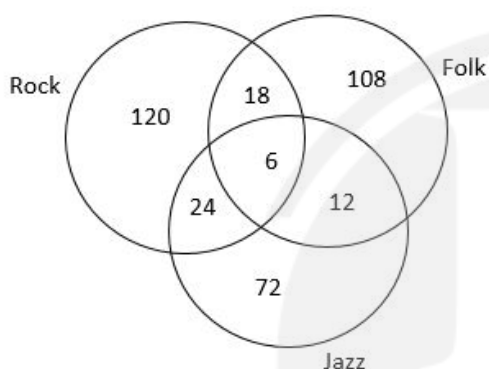
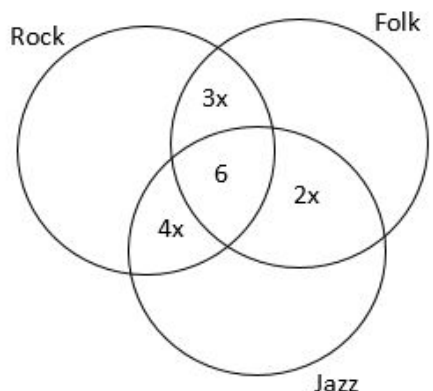
$$9x = 54$$

$$x = 6$$

The ratio among the number of students who like only Rock, and the number of students who like only Jazz, and the number of students who like only Flok = 10: 6: 9

Total number of students who like only Rock, only Jazz and Only Flok = $360 - 54 - 6 = 300$





$$\text{Required difference} = 120 + 18 + 24 + 6 - 72 = 96$$

Q17. Text Solution:

Let the number of students who like only Rock and Jazz but not Folk and the number of students who like only Folk and Jazz but not Rock be $3x$ and $2x$ respectively.

And,

The number of students who like only Rock and Jazz but not Folk and the number of students who like only Folk and Jazz but not Rock be $4x$ and $2x$.

ATQ,

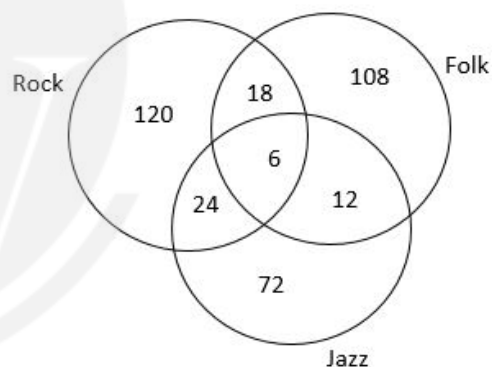
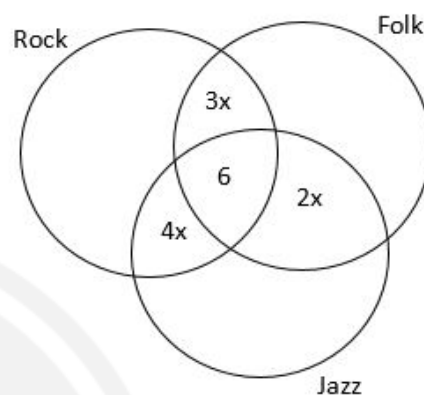
$$3x + 2x + 4x = 54$$

$$9x = 54$$

$$x = 6$$

The ratio among the number of students who like only Rock, and the number of students who like only Jazz, and the number of students who like only Folk = $10 : 6 : 9$

Total number of students who like only Rock, only Jazz, and Only Folk = $360 - 54 - 6 = 300$



$$\text{Required ratio} = 108 : 18 = 6 : 1$$

Q18. Text Solution:

Let the number of students who like only Rock and Jazz but not Folk and the number of students who like only Folk and Jazz but not Rock be $3x$ and $2x$ respectively.

And,



The number of students who like only Rock and Jazz but not Folk and the number of students who like only Folk and Jazz but not Rock be $4x$ and $2x$.

ATQ,

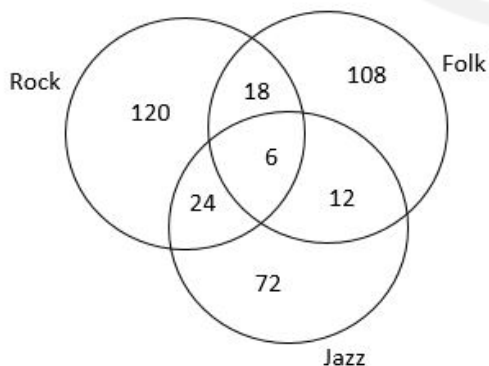
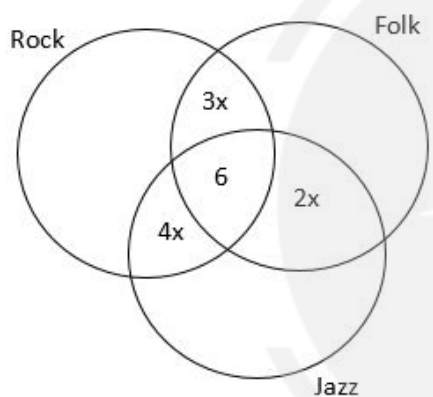
$$3x + 2x + 4x = 54$$

$$9x = 54$$

$$x = 6$$

The ratio among the number of students who like only Rock, and the number of students who like only Jazz, and the ratio between the number of students who like only Folk = 10: 6: 9

Total number of students who like only Rock, only Jazz, and Only Folk = $360 - 54 - 6 = 300$



$$\text{Required percentage} = \frac{108}{24} \times 100 = 450\%$$

Q19 Text Solution:

The number of patients affected by AIDS in the year 2017

$$= 10\% \text{ of } 30\% \text{ of } 10000$$

$$= 0.1 \times 0.3 \times 10000$$

$$= 300$$

The number of patients affected by AIDS in the year 2020

$$= 10\% \text{ of } 20\% \text{ of } 10000$$

$$= 0.1 \times 0.2 \times 10000$$

$$= 200$$

The required ratio = 300 : 200

$$= 3 : 2$$

Q20 Text Solution:

In the year 2019, 30% of the population was affected by AIDS out of which 10% were patients.

\therefore The number of patients affected by AIDS in the year 2019

$$= 10\% \text{ of } 30\% \text{ of } 10000$$

$$= \frac{10}{100} \times \frac{30}{100} \times 10000 = 0.1 \times 0.3 \times 10000 = 300$$

Q21 Text Solution:

The number of patients, drug-addicts and prostitutes were in the ratio 20 : 11 : 9 in each year.

Let the common factor be x .

Also, every year 10000 people were surveyed.

$$\therefore 20x + 11x + 9x = 10000$$

$$\therefore x = 250$$

\therefore The total number of patients, drug-addicts and prostitutes was 5000, 2750 and 2250 respectively.

Total population of students for each year = 2750

In the year 2018, the numbers of drug-addicts affected by AIDS

$$= 60\% \text{ of } 40\% \text{ of } 10000$$

$$= 0.6 \times 0.4 \times 10000$$



= 2400 drug-addicts

∴ The number of drug-addicts not affected by AIDS

= 2750 - 2400

= 350

∴ Difference between the two = 2400 - 350 = 2050

Q22 Text Solution:

Total number of peoples = 10000

The number of peoples affected by AIDS in the year 2017

= 60% of 30% of 10000 = 1800

∴ The number of peoples not affected by AIDS = 2750 - 1800

= 950

The number of peoples affected by AIDS in the year 2018

= 60% of 40% of 10000

= 2400

∴ The number of peoples not affected by AIDS = 2750 - 2400

= 350

The number of peoples affected by AIDS in the year 2019

= 60% of 30% of 10000

= 1800

∴ The number of peoples not affected by AIDS = 2750 - 1800

= 950

The number of peoples affected by AIDS in the year 2020

= 60% of 20% of 10000

= 1200

∴ The number of peoples not affected by AIDS = 2750 - 1200

= 1550

The number of peoples affected by AIDS in the year 2021

= 60% of 45% of 10000

= 2700

∴ The number of peoples not affected by AIDS = 2750 - 2700 = 50

Thus, 2020 had the maximum number of peoples not affected by AIDS.

Q23 Text Solution:

The number of patients, drug-addicts and prostitutes were in the ratio 20 : 11 : 9 in each year.

Let the common factor be x.

Also, every year 10000 people were surveyed.

∴ $20x + 11x + 9x = 10000$

∴ $x = 250$

∴ The total number of patients, drug-addicts and prostitutes was 5000, 2750 and 2250 respectively.

Now, in the year 2021, 45% of the total population was affected by AIDS.

45% of 10000 = 4500

Out of the 4500 affected people,

30% were prostitutes.

30% of 4500 = 1350

Hence, the numbers of prostitutes who were not affected by AIDS in the year 2021 = 2250 - 1350 = 900

Q24 Text Solution:

According to the given information,

Number of girls = $2800 \times \frac{4}{7} = 1600$

Number of boys = $2800 - 1600 = 1200$

Number of boys in painting class = $1200 \times \frac{20}{100} = 240$

Number of girls in cooking class = $1600 \times \frac{1}{4} = 400$

Number of boys in cooking class = $700 - 400 = 300$

Number of boys in singing class = $1200 \times \frac{2}{5} = 480$



Number of girls in singing class
 $= 2 \times 480 = 960$

Number of boys in dancing class
 $= 1200 - (240 + 300 + 480) = 180$

Number of girls in dancing = $180 \times 5 / 4 = 225$

Number of girls in painting class
 $= 1600 - (400 + 960 + 225) = 15$

Hobby	Girls	Boys
Singing	960	480
Dancing	225	180
Painting	15	240
Cooking	400	300
Total	1600	1200

required percentage = $\frac{300 \times 100}{2800} = 10.71\%$

Q25 Text Solution:

According to the given information,

Number of girls = $2800 \times 4/7 = 1600$

Number of boys = $2800 - 1600 = 1200$

Number of boys in painting class
 $= 1200 \times 20/100 = 240$

Number of girls in cooking class
 $= 1600 \times 1/4 = 400$

Number of boys in cooking class
 $= 700 - 400 = 300$

Number of boys in singing class
 $= 1200 \times 2/5 = 480$

Number of girls in singing class
 $= 2 \times 480 = 960$

Number of boys in dancing class
 $= 1200 - (240 + 300 + 480) = 180$

Number of girls in dancing = $180 \times 5 / 4 = 225$

Number of girls in painting class
 $= 1600 - (400 + 960 + 225) = 15$

Hobby	Girls	Boys
Singing	960	480
Dancing	225	180
Painting	15	240
Cooking	400	300
Total	1600	1200

required percentage = $\frac{400 \times 100}{2800} = 14\%(\text{approx})$

Q26 Text Solution:

According to the given information,

Number of girls = $2800 \times 4/7 = 1600$

Number of boys = $2800 - 1600 = 1200$

Number of boys in painting class
 $= 1200 \times 20/100 = 240$

Number of girls in cooking class
 $= 1600 \times 1/4 = 400$

Number of boys in cooking class
 $= 700 - 400 = 300$

Number of boys in singing class
 $= 1200 \times 2/5 = 480$

Number of girls in singing class
 $= 2 \times 480 = 960$

Number of boys in dancing class
 $= 1200 - (240 + 300 + 480) = 180$

Number of girls in dancing = $180 \times 5 / 4 = 225$

Number of girls in painting class
 $= 1600 - (400 + 960 + 225) = 15$

Hobby	Girls	Boys
Singing	960	480
Dancing	225	180
Painting	15	240
Cooking	400	300
Total	1600	1200

Required number of girls = 15

Q27 Text Solution:

According to the given information,

Number of girls = $2800 \times 4/7 = 1600$

Number of boys = $2800 - 1600 = 1200$

Number of boys in painting class
 $= 1200 \times 20/100 = 240$

Number of girls in cooking class
 $= 1600 \times 1/4 = 400$

Number of boys in cooking class
 $= 700 - 400 = 300$

Number of boys in singing class
 $= 1200 \times 2/5 = 480$



Number of girls in singing class
 $= 2 \times 480 = 960$

Number of boys in dancing class
 $= 1200 - (240 + 300 + 480) = 180$

Number of girls in dancing = $180 \times 5 / 4 = 225$

Number of girls in painting class
 $= 1600 - (400 + 960 + 225) = 15$

Hobby	Girls	Boys
Singing	960	480
Dancing	225	180
Painting	15	240
Cooking	400	300
Total	1600	1200

required ratio = $240 : 480 = 1 : 2$

Q28 Text Solution:

According to the given information,

Number of girls = $2800 \times 4/7 = 1600$

Number of boys = $2800 - 1600 = 1200$

Number of boys in painting class
 $= 1200 \times 20/100 = 240$

Number of girls in cooking class
 $= 1600 \times 1/4 = 400$

Number of boys in cooking class
 $= 700 - 400 = 300$

Number of boys in singing class
 $= 1200 \times 2/5 = 480$

Number of girls in singing class
 $= 2 \times 480 = 960$

Number of boys in dancing class
 $= 1200 - (240 + 300 + 480) = 180$

Number of girls in dancing = $180 \times 5 / 4 = 225$

Number of girls in painting class
 $= 1600 - (400 + 960 + 225) = 15$

Hobby	Girls	Boys
Singing	960	480
Dancing	225	180
Painting	15	240
Cooking	400	300
Total	1600	1200

Required number of children
 $= 225 + 180 = 405$

Q29. Text Solution:

	X	Y	Z	Total
2016	7m	25T	8m or 28T	
2017	14m		6k	
2018		35m	11k	430
Total		390	158	

$8m = 28T$

$M = 3.5T$

$28T - 6k = 20 \dots\dots\dots I$

$28T + 17k = 158 \dots\dots\dots II$

From eq. I and II

$23k = 138$

$k = 6$

$28T = 20 + 36$

$T = 2$

And, $M = 3.5T = 7$

	X	Y	Z	Total
2016	49	50	56	
2017	98		36	
2018		245	66	430
Total		390	158	

	X	Y	Z	Total
2016	49	50	56	155
2017	98	95	36	229
2018	119	245	66	430
Total	266	390	158	

The total number of articles sold by X in a given three years = 266

Q30. Text Solution:

	X	Y	Z	Total
--	---	---	---	-------



2016	7m	25T	8m or 28T	
2017	14m		6k	
2018		35m	11k	430
Total		390	158	

$$8m = 28T$$

$$M = 3.5T$$

$$28T - 6k = 20 \dots\dots\dots I$$

$$28T + 17k = 158 \dots\dots\dots II$$

From eq. I and II

$$23k = 138$$

$$k = 6$$

$$28T = 20 + 36$$

$$T = 2$$

$$\text{And, } M = 3.5T = 7$$

	X	Y	Z	Total
2016	49	50	56	
2017	98		36	
2018		245	66	430
Total		390	158	

	X	Y	Z	Total
2016	49	50	56	155
2017	98	95	36	229
2018	119	245	66	430
Total	266	390	158	

Required ratio = 119: 95

Q31. Text Solution:

	X	Y	Z	Total
2016	7m	25T	8m or 28T	
2017	14m		6k	
2018		35m	11k	430
Total		390	158	

$$8m = 28T$$

$$M = 3.5T$$

$$28T - 6k = 20 \dots\dots\dots I$$

$$28T + 17k = 158 \dots\dots\dots II$$

From eq. I and II

$$23k = 138$$

$$k = 6$$

$$28T = 20 + 36$$

$$T = 2$$

$$\text{And, } M = 3.5T = 7$$

	X	Y	Z	Total
2016	49	50	56	
2017	98		36	
2018		245	66	430
Total		390	158	

	X	Y	Z	Total
2016	49	50	56	155
2017	98	95	36	229
2018	119	245	66	430
Total	266	390	158	

Required difference = 66 - 49 = 17

Q32. Text Solution:

	X	Y	Z	Total
2016	7m	25T	8m or 28T	
2017	14m		6k	
2018		35m	11k	430
Total		390	158	

$$8m = 28T$$

$$M = 3.5T$$

$$28T - 6k = 20 \dots\dots\dots I$$

$$28T + 17k = 158 \dots\dots\dots II$$

From eq. I and II

$$23k = 138$$

$$k = 6$$



$$28T = 20 + 36$$

$$T = 2$$

$$\text{And, } M = 3.5T = 7$$

	X	Y	Z	Total
2016	49	50	56	
2017	98		36	
2018		245	66	430
Total		390	158	

	X	Y	Z	Total
2016	49	50	56	155
2017	98	95	36	229
2018	119	245	66	430
Total	266	390	158	

$$\text{Required difference} = 266 - 158 = 108$$

Q33. Text Solution:

	X	Y	Z	Total
2016	7m	25T	8m or 28T	
2017	14m		6k	
2018		35m	11k	430
Total		390	158	

$$8m = 28T$$

$$M = 3.5T$$

$$28T - 6k = 20 \dots\dots\dots I$$

$$28T + 17k = 158 \dots\dots\dots II$$

From eq.I and II

$$23k = 138$$

$$k = 6$$

$$28T = 20 + 36$$

$$T = 2$$

$$\text{And, } M = 3.5T = 7$$

	X	Y	Z	Total
2016	49	50	56	
2017	98		36	

2018		245	66	430
Total		390	158	

	X	Y	Z	Total
2016	49	50	56	155
2017	98	95	36	229
2018	119	245	66	430
Total	266	390	158	

The total number of articles sold by X, Y, and Z in the year 2017 = 229

Q34 Text Solution:

Let number of mobiles and laptops repaired in September are x and $5x$ respectively and number of laptops repaired in July and August are $3x$ and $2x$ respectively.

The number of mobile repaired in July = $5x$

And number of mobile repaired in August = $5x - 10$

$$\frac{5x + 5x - 10 + x}{3x + 2x + 5x} = \frac{1}{1}$$

$$11x - 10 = 10x$$

$$x = 10$$

So, number of mobiles repaired in July = 50

Number of mobiles repaired in August = 40

Number of mobiles repaired in September = 10

Number of Laptops repaired in July = 30

Number of Laptops repaired in August = 20

Number of Laptops repaired in September = 50

$$\text{Required \%} = \frac{30 + 20}{40 + 10} \times 100 = 100\%$$

Q35 Text Solution:

Let number of mobiles and laptops repaired in September are x and $5x$ respectively and number of laptops repaired in July and August are $3x$ and $2x$ respectively.

The number of mobile repaired in July = $5x$

And number of mobile repaired in August = $5x - 10$

$$\frac{5x + 5x - 10 + x}{3x + 2x + 5x} = \frac{1}{1}$$



$$\Rightarrow 11x - 10 = 10x$$

$$\Rightarrow x = 10$$

So, number of mobiles repaired in July = 50

Number of mobiles repaired in August = 40

Number of mobiles repaired in September = 10

Number of Laptops repaired in July = 30

Number of Laptops repaired in August = 20

Number of Laptops repaired in September = 50

$$\text{Required \%} = \frac{50 - 40}{40} \times 100 = 25\%$$

Q36 Text Solution:

Let number of mobiles and laptops repaired in September are x and $5x$ respectively and number of laptops repaired in July and August are $3x$ and $2x$ respectively.

The number of mobile repaired in July = $5x$

And number of mobile repaired in August = $5x - 10$

$$\frac{5x + 5x - 10 + x}{3x + 2x + 5x} = \frac{1}{1}$$

$$11x - 10 = 10x$$

$$x = 10$$

So, number of mobiles repaired in July = 50

Number of mobiles repaired in August = 40

Number of mobiles repaired in September = 10

Number of Laptops repaired in July = 30

Number of Laptops repaired in August = 20

Number of Laptops repaired in September = 50

$$\text{Required average} = \frac{30 + 50}{2} = 40$$

Q37 Text Solution:

Cost Price of Cups : Plates : Tables

$$= 9 : 10 : 12$$

$$\Rightarrow \text{Rs } 180 : \text{Plates} : \text{Table} = 9 : 10 : 12$$

$$\Rightarrow \text{Cost of Plates} = \text{Rs } 200 \text{ and Tables} = \text{Rs } 240$$

$$= \text{Rs } 240$$

$$\text{Marked price of plates} = 166.66\% \text{ of Rs } 180 = \text{Rs } 300$$

$$\text{Profit made of cup} = \left(\frac{1}{9}\right)180 = \text{Rs } 20$$

$$\text{Loss on tables} = \left(\frac{2}{9}\right)180 = \text{Rs } 40$$

$$\text{Marked price of cups : plates : tables} = 2 : 3 : 3$$

$$\Rightarrow \text{Cups} : 300 : \text{Table} = 2 : 3 : 3$$

$$\Rightarrow \text{Marked price of cups}$$

$$= \text{Rs } 200 \text{ and tables} = \text{Rs } 300$$

$$\text{Selling Price of plates}$$

$$= \left(\frac{3}{8}\right)[300 + 300 + 200] = \text{Rs } 300$$

$$\text{Selling price if cups : plates : tables} = 2 : 3 : 2$$

$$\Rightarrow \text{Cups} : 300 : \text{tables} = 2 : 3 : 2$$

$$\text{Selling price of cups}$$

$$= \text{Rs } 200 \text{ and tables} = \text{Rs } 200$$

AS per question;

$$\text{Marked of plates} = \left(\frac{5}{3}\right)300 = \text{Rs } 500$$

$$\text{Selling price of plates}$$

$$= \text{Marked price of plates} = \text{Rs } 500$$

$$\text{Profit} = \text{Rs } 500 - 200 = \text{Rs } 300$$

$$\text{Total amount generated}$$

$$= \text{Rs } 300 \times 50 = \text{Rs } 15000$$

Q38 Text Solution:

(Cost Price of Cups : Plates : Tables = 9:10:12)

$$\Rightarrow \text{Rs } 180 : \text{Plates} : \text{Table} = 9 : 10 : 12$$

$$= \text{Cost of Plates} = \text{Rs } 200 \text{ and Tables} = \text{Rs } 240$$

$$\text{Marked price of plates}$$

$$= 166.66\% \text{ of Rs } 180 = \text{Rs } 300$$

$$\text{Profit made of cup} = \left(\frac{1}{9}\right)180 = \text{Rs } 20$$

$$\text{Loss on tables} = \left(\frac{2}{9}\right)180 = \text{Rs } 40$$

$$\text{Marked price of cups : plates : tables}$$

$$= 2 : 3 : 3$$

$$\Rightarrow \text{Cups} : 300 : \text{Table} = 2 : 3 : 3$$

$$\Rightarrow \text{Marked price of cups}$$

$$= \text{Rs } 200 \text{ and tables} = \text{Rs } 300$$

$$\text{Selling Price of plates}$$

$$= \left(\frac{3}{8}\right)[300 + 300 + 200] = \text{Rs } 300$$

$$\text{Selling price if cups : plates : tables} = 2 : 3 : 2$$

$$\Rightarrow \text{Cups} : 300 : \text{tables} = 2 : 3 : 2$$

$$\text{Selling price of cups}$$

$$= \text{Rs } 200 \text{ and tables} = \text{Rs } 200$$

$$\text{Marked price of glass} = \text{Rs } 200$$

$$\text{Selling price of glass} = 0.8(200) = \text{Rs } 160$$

$$\Rightarrow (x + 50) + \left(\frac{1}{15}\right)(x + 50) = 160$$



$$\Rightarrow \left(\frac{16}{15}\right)(x + 50) = 160$$

$$\Rightarrow x + 50 = 150$$

$$\Rightarrow x = 100$$

Q39 Text Solution:

Cost Price of Cups : Plates : Tables = 9:10:12

= Rs 180 : Plates : Table = 9:10:12

= Cost of Plates = Rs 200 and Tables = Rs 240

Marked price of plates
= 166.66% of Rs 180 = Rs 300

Profit made of cup = $\left(\frac{1}{9}\right)180 = Rs\ 20$

Loss on tables = $\left(\frac{2}{9}\right)180 = Rs\ 40$

Marked price of cups : plates : tables
= 2 : 3 : 3

\Rightarrow Cups : 300 : Table = 2 : 3 : 3

\Rightarrow Marked price of cups
= Rs 200 and tables = Rs 300

Selling Price of plates
= $\left(\frac{3}{8}\right)[300 + 300 + 200] = Rs\ 300$

Selling price if cups : plates : tables = 2 : 3 : 2

\Rightarrow Cups : 300 : tables = 2 : 3 : 2

Selling price of cups
= Rs 200 and tables = Rs 200

Required difference =
 $(200 + 300) - (180 + 200) = 120$

Q40 Text Solution:

Cost Price of Cups : Plates : Tables = 9:10:12

= Rs 180 : Plate : Table = 9:10:12

\Rightarrow Cost or Plates = Rs 200 and Tables
= Rs 240

Marked price of plates
= 166.66% of Rs 180 = Rs 300

Profit made of cup = $\left(\frac{1}{9}\right)180 = Rs\ 20$

Loss on tables = $\left(\frac{2}{9}\right)180 = Rs\ 40$

Marked price of cups : plates : tables
= 2 : 3 : 3

\Rightarrow Cups : 300 : Table = 2 : 3 : 3

\Rightarrow Marked price of cups
= Rs 200 and tables = Rs 300

Selling Price of plates
= $\left(\frac{3}{8}\right)[300 + 300 + 200] = Rs\ 300$

Selling price if cups : plates : tables = 2 : 3 : 2

\Rightarrow Cups : 300 : tables = 2 : 3 : 2

Selling price of cups
= Rs 200 and tables = Rs 200

Required ratio
= $(200 + 300) : (300 + 300) = 500 : 600$
= 5 : 6

Q41 Text Solution:

Cost Price of Cups : Plates : Tables = 9:10:12

= Rs 180 : Plates : Table = 9:10:12

\Rightarrow Cost or Plates = Rs 200 and Tables
= Rs 240

Marked price of plates
= 166.66% of Rs 180 = Rs 300

Profit made of cup = $\left(\frac{1}{9}\right)180 = Rs\ 20$

Loss on tables = $\left(\frac{2}{9}\right)180 = Rs\ 40$

Marked price of cups : plates : tables
= 2 : 3 : 3

\Rightarrow Cups : 300 : Table = 2 : 3 : 3

\Rightarrow Marked price of cups
= Rs 200 and tables = Rs 300

Selling Price of plates
= $\left(\frac{3}{8}\right)[300 + 300 + 200] = Rs\ 300$

Selling price if cups : plates : tables = 2 : 3 : 2

\Rightarrow Cups : 300 : tables = 2 : 3 : 2

Selling price of cups
= Rs 200 and tables = Rs 200

Profit made on cups
= Rs 200 - 180 = Rs 20

Profit made of plates
= Rs 300 - 200 = Rs 100

Loss made of tables
= Rs 200 - 240 = Rs 40

Required sum = $\frac{(20+100)}{2} + \frac{(100+40)}{2} = 130$

Q42. Text Solution:

Total	Mo	Tu	We	Th	Frid
	nd	es	dn	urs	ay



		ay	d	esd	da
		a	ay	y	
A		20%	25%	k-60	2k
		= k + 60			k
B	2400	m	2m	960	15%
					15%
C	$2400 \times \frac{2}{3} = 1600$		12%	n	2n

20% of the total production of A = $k + 60$

(i)

55% of the total production of A = $k - 60 + 2k + k$

55% of the total production of A = $4k - 60$

From (i) and (ii),

$$\frac{4}{11} = \frac{k+60}{4k-60}$$

$$16k - 240 = 11k + 660$$

$$5k = 900$$

$$k = 180$$

20% of the total production of A = $180 + 60$

20% of the total production of A = 240

The total production of A = 1200

The total production of B on Monday and Tuesday = $2400 - 960 - 360 - 360 = 720$

The production of C on Thursday = $\frac{1}{3} \times 816 = 272$

The production of C on Friday = $\frac{2}{3} \times 816 = 544$

		M	Tu	W	Th
		on	es	ed	ur
		d	d	ne	sd
		a	a	sd	y
		y	y	ay	

	1	2	3		
A	2	4	0	120	360
	0	0	0		180
B	2	4	4	96	360
	0	0	0		
C	1	4	19	192	272
	6	0	2		544
	0	0			

The total production of A on Tuesday and B on Friday = $300 + 360 = 660$

Q43. Text Solution:

	Total	Mo nd ay	Tu es da y	We dne sda y	Thu rsd ay	Fri d ay
A		20%	25%	k-60	2k	k
		= k + 60				
B	2400	m	2m	960	15%	15%
C	$2400 \times \frac{2}{3} = 1600$		12%	12%	n	2n

20% of the total production of A = $k + 60$

55% of the total production of A = $k - 60 + 2k + k$

55% of the total production of A = $4k - 60$

From I and II,



$$\frac{4}{11} = \frac{k+60}{4k-60}$$

$$16k - 240 = 11k + 660$$

$$5k = 900$$

$$k = 180$$

$$20\% \text{ of the total production of A} = 180 + 60$$

$$20\% \text{ of the total production of A} = 240$$

$$\text{The total production of A} = 1200$$

$$\text{The total production of B on Monday and Tuesday} = 2400 - 960 - 360 - 360 = 720$$

$$\text{The production of C on Thursday} = \frac{1}{3} \times 816 = 272$$

$$\text{The production of C on Friday} = \frac{2}{3} \times 816 = 544$$

	Total	Monday	Tuesday	Wednesday	Thursday	Friday
A	1200	240	300	120	360	180
B	2400	240	480	960	360	360
C	1600	400	192	192	272	544

The ratio of the production of A on Friday and Monday together and the Production of C on Friday and Monday together $= (180 + 240) : (544 + 400) = 420 : 944 = 105 : 236$

Q44. Text Solution:

	Total	Monday	Tuesday	Wednesday	Thursday	Friday
A		20% = k + 60	25% = k - 60		2k	k
B	2400	m	2m	960	15%	15%

	2400		12%		n	2n
C	$\times \frac{2}{3}$					
	= 1600					

$$20\% \text{ of the total production of A} = k + 60 \text{I}$$

$$55\% \text{ of the total production of A} = k - 60 + 2k + k$$

$$55\% \text{ of the total production of A} = 4k - 60 \text{II}$$

From I and II,

$$\frac{4}{11} = \frac{k+60}{4k-60}$$

$$16k - 240 = 11k + 660$$

$$5k = 900$$

$$k = 180$$

$$20\% \text{ of the total production of A} = 180 + 60$$

$$20\% \text{ of the total production of A} = 240$$

$$\text{The total production of A} = 1200$$

$$\text{The total production of B on Monday and Tuesday} = 2400 - 960 - 360 - 360 = 720$$

$$\text{The production of C on Thursday} = \frac{1}{3} \times 816 = 272$$

$$\text{The production of C on Friday} = \frac{2}{3} \times 816 = 544$$

	Total	Monday	Tuesday	Wednesday	Thursday	Friday
A	1200	240	300	120	360	180
B	2400	240	480	960	360	360
C	1600	400	192	192	272	544

$$\text{Required \%} = \frac{480 - 360}{360} \times 100 = 33\frac{1}{3}\%$$



Level-3

Q1 Text Solution:**For match of team A to B:**

Given total goal score by team A = 2

So, total point team A should get = $2 \times 2 = 4$

So, if team A scored two goals against team B so, team B conceded two goals.

So, actual point gets in this match = $4 + 2 = 6 =$ team B scored three goals against team A

Now when team B scored three goals against team A, so team A concede three goals.

So, actual point scored by team A = $4 - 3 = 1$

Teams points get goal scored

A 1 2

B 4 3

For match of team A to C:

Actual points scored by team A = $4 + 1 = 5$ (here point 1 because one player scored goal outside from D area)

But given team A has secured four points from this match, it means team C scored one goal against team A.

So, team C actual scored = 2

But he conceded two goals so team C point = $2 - 2 = 0$

Teams points get goal scored

A 4 2

B 0 1

For match of team B to C :

Let goal scored by team B = x

So, goal score by team C = $x + 1$

Given, one player from team B scored goals outside from D area.

So, total point scored by team B = $2x + 1$

According to question,

$$2x + 1 - (x + 1) \times 1 = 6$$

$$x = 6$$

Total goals scored by team C = $6 + 1 = 7$

So, total point scored by team C = $7 \times 2 - 6 = 8$

Teams points get goals scored

B 6 6

C 8 7

Teams total goals scored total points gets in

In tournament tournament

A 4 5

B 9 10

C 8 8

According to table

Rank third of team A

Rank second will be team C

And rank first will be team B

So, team A gets Rs.60000

So, $3 = 60000$ Rs.

$1 = 20000$ Rs.

Team B gets = $8 \times 20000 = 160000$ Rs.

Team C gets = $5 \times 20000 = 100000$ Rs.

So, (a) and (b) both right.

Q2 Text Solution:**For match of team A to B:**

Given total goal score by team A = 2

So, total point team A should get = $2 \times 2 = 4$

So, if team A scored two goals against team B so, team B conceded two goals.

So, actual point gets in this match = $4 + 2 = 6 =$ team B scored three goals against team A

Now when team B scored three goals against team A, so team A concede three goals.

So, actual point scored by team A = $4 - 3 = 1$

Teams points get goal scored

A 1 2

B 4 3

For match of team A to C:

Actual points scored by team A = $4 + 1 = 5$ (here point 1 because one player scored goal outside



from D area)

But given team A has secured four points from this match, it means team C scored one goal against team A.

So, team C actual scored = 2

But he conceded two goals so team C point = $2 - 2 = 0$

Teams points get goal scored

A 4 2

B 0 1

For match of team B to C :

Let goal scored by team B = x

So, goal score by team C = $x + 1$

Given, one player from team B scored goals outside from D area.

So, total point scored by team B = $2x + 1$

According to question,

$$2x + 1 - (x + 1) \times 1 = 6$$

$$x = 6$$

Total goals scored by team C = $6 + 1 = 7$

So, total point scored by team C = $7 \times 2 - 6 = 8$

Teams points get goals scored

B 6 6

C 8 7

Teams total goals scored total points gets in In tournament tournament

A 4 5

B 9 10

C 8 8

From the table its clearly show team B won the tournament by two points as compare to team C.

Q3 Text Solution:

For match of team A to B:

Given total goal score by team A = 2

So, total point team A should get = $2 \times 2 = 4$

So, if team A scored two goals against team B so, team B conceded two goals.

So, actual point gets in this match = $4 + 2 = 6 =$

team B scored three goals against team A

Now when team B scored three goals against team A, so team A concede three goals.

So, actual point scored by team A = $4 - 3 = 1$

Teams points get goal scored

A 1 2

B 4 3

For match of team A to C:

Actual points scored by team A = $4 + 1 = 5$ (here point 1 because one player scored goal outside from D area)

But given team A has secured four points from this match, it means team C scored one goal against team A.

So, team C actual scored = 2

But he conceded two goals so team C point = $2 - 2 = 0$

Teams points get goal scored

A 4 2

B 0 1

For match of team B to C :

Let goal scored by team B = x

So, goal score by team C = $x + 1$

Given, one player from team B scored goals outside from D area.

So, total point scored by team B = $2x + 1$

According to question,

$$2x + 1 - (x + 1) \times 1 = 6$$

$$x = 6$$

Total goals scored by team C = $6 + 1 = 7$

So, total point scored by team C = $7 \times 2 - 6 = 8$

Teams points get goals scored

B 6 6

C 8 7

Teams total goals scored total points gets in In tournament tournament

A 4 5

B 9 10



C 8 8

From the table

$$\text{Required percentage} = \frac{10 - 5}{10} \times 100 = 50\%$$

Q4 Text Solution:**For match of team A to B:**

Given total goal score by team A = 2

So, total point team A should get = $2 \times 2 = 4$

So, if team A scored two goals against team B

so, team B conceded two goals.

So, actual point gets in this match = $4 + 2 = 6 =$

team B scored three goals against team A

Now when team B scored three goals against team A, so team A concede three goals.

So, actual point scored by team A = $4 - 3 = 1$

Teams points get goal scored

A 1 2

B 4 3

For match of team A to C:Actual points scored by team A = $4 + 1 = 5$ (here point 1 because one player scored goal outside from D area)

But given team A has secured four points from this match, it means team C scored one goal against team A.

So, team C actual scored = 2

But he conceded two goals so team C point = $2 - 2 = 0$

Teams points get goal scored

A 4 2

B 0 1

For match of team B to C :

Let goal scored by team B = x

So, goal score by team C = $x + 1$

Given, one player from team B scored goals outside from D area.

So, total point scored by team B = $2x + 1$

According to question,

$$2x + 1 - (x + 1) \times 1 = 6$$

$$x = 6$$

Total goals scored by team C = $6 + 1 = 7$ So, total point scored by team C = $7 \times 2 - 6 = 8$

Teams points get goals scored

B 6 6

C 8 7

Teams total goals scored total points gets in

In tournament tournament

A 4 5

B 9 10

C 8 8

Let in each team three players X, Y & Z score goals

For maximum sum of goal, player X & Y from each team

Score minimum goal which is equal to one goal

So, player Z from each team scored maximum number of goals

$$= (4 - 2 \times 1) + (9 - 2 \times 1) + (8 - 2 \times 1)$$

$$= 2 + 7 + 6$$

$$= 15$$

Q5 Text Solution:Let red and blue balls be $5x$ and $2x$ respectively.

$$\text{Total balls} = A = \frac{{}^7C_2}{AC_2} = \frac{1}{10}$$

$$A = 21$$

$$\text{Red balls} = (21 - 7) \times \frac{5}{7} = 10$$

$$\text{Blue balls} = (21 - 7) \times \frac{2}{7} = 4$$

Let quantity of milk and water is $4a$ and $7a$ respectively

$$= \frac{4a - 8}{7a + 6} = \frac{1}{2}$$

$$8a - 16 = 7a + 6$$

$$a = 22$$

Total quantity of mixture = $B = (7a + 4a) = 11a$

$$= 11 \times 22 = 242 \text{ liters}$$

Probability of two red balls taken from the bag

$$\frac{{}^{10}C_2}{{}^{21}C_2} = \frac{\frac{10 \times 9}{2}}{\frac{21 \times 20}{2}} = \frac{3}{14}$$

 $18 \frac{2}{11}\%$ of the mixture is taken out, so:

Remaining quantity of milk = $4 \times 22 - (4 \times 22)$
 $\times \frac{2}{11} = 72$ liters

Remaining quantity of water = $7 \times 22 - (7 \times 22)$
 $\times \frac{2}{11}$
 $= 126$ liters

According to question,

$$\frac{72 + \left(\frac{x}{25} - 2\right)}{126 + (x + 24)} = \frac{3}{14}$$

$$1008 + \frac{14x}{25} - 28 = 378 + 3x + 72$$

$$61x = 13250$$

$$x = 217$$

$$(B - X) \div (A - 8) = Z$$

$$(242 - 217) \div (21 - 8) = Z$$

$$Z = \frac{25}{13}$$

$$Z = 1.92$$

$$Z \approx 2$$

Q6 Text Solution:

Let red and blue balls be $5x$ and $2x$ respectively.

$$\text{Total balls} = A = \frac{{}^7C_2}{AC_2} = \frac{1}{10}$$

$$A = 21$$

$$\text{Red balls} = (21 - 7) \times \frac{5}{7} = 10$$

$$\text{Blue balls} = (21 - 7) \times \frac{2}{7} = 4$$

Let quantity of milk and water is $4a$ and $7a$ respectively

$$= \frac{4a - 8}{7a + 6} = \frac{1}{2}$$

$$8a - 16 = 7a + 6$$

$$a = 22$$

$$\text{Total quantity of mixture} = B = (7a + 4a) = 11a$$

$$= 11 \times 22 = 242 \text{ liters}$$

Probability of two red balls taken from the bag

$$\frac{{}^{10}C_2}{{}^{21}C_2} = \frac{\frac{10 \times 9}{2}}{\frac{21 \times 20}{2}} = \frac{3}{14}$$

$18\frac{2}{11}\%$ of the mixture is taken out, so:

Remaining quantity of milk = $4 \times 22 - (4 \times 22)$

$$\times \frac{2}{11} = 72 \text{ liters}$$

Remaining quantity of water = $7 \times 22 - (7 \times 22)$

$$\times \frac{2}{11}$$

$$= 126 \text{ liters}$$

According to question,

$$\frac{72 + \left(\frac{x}{25} - 2\right)}{126 + (x + 24)} = \frac{3}{14}$$

$$1008 + \frac{14x}{25} - 28 = 378 + 3x + 72$$

$$61x = 13250$$

$$x = 217$$

$$\text{Quantity of milk} = 88 - 8 = 80$$

$$\text{Quantity of water} = 154 - 14 = 140$$

$$\text{Required percentage} = \frac{80}{140 + 80} \times 100 = 36.36\%$$

Q7 Text Solution:

Let red and blue balls be $5x$ and $2x$ respectively.

$$\text{Total balls} = A = \frac{{}^7C_2}{AC_2} = \frac{1}{10}$$

$$A = 21$$

$$\text{Red balls} = (21 - 7) \times \frac{5}{7} = 10$$

$$\text{Blue balls} = (21 - 7) \times \frac{2}{7} = 4$$

Let quantity of milk and water is $4a$ and $7a$ respectively

$$= \frac{4a - 8}{7a + 6} = \frac{1}{2}$$

$$8a - 16 = 7a + 6$$

$$a = 22$$

$$\text{Total quantity of mixture} = B = (7a + 4a) = 11a$$

$$= 11 \times 22 = 242 \text{ liters}$$

Probability of two red balls taken from the bag

$$\frac{{}^{10}C_2}{{}^{21}C_2} = \frac{\frac{10 \times 9}{2}}{\frac{21 \times 20}{2}} = \frac{3}{14}$$

$18\frac{2}{11}\%$ of the mixture is taken out, so:

Remaining quantity of milk = $4 \times 22 - (4 \times 22)$

$$\times \frac{2}{11} = 72 \text{ liters}$$

Remaining quantity of water = $7 \times 22 - (7 \times 22)$

$$\times \frac{2}{11}$$

$$= 126 \text{ liters}$$

According to question,

$$\frac{72 + \left(\frac{x}{25} - 2\right)}{126 + (x + 24)} = \frac{3}{14}$$

$$1008 + \frac{14x}{25} - 28 = 378 + 3x + 72$$

$$61x = 13250$$

$$x = 217$$

$$\text{probability} \frac{{}^4C_2 \times {}^{17}C_1}{{}^{21}C_3} + \frac{{}^4C_3}{{}^{21}C_3}$$



$$= \frac{6 \times 17}{7 \times 10 \times 19} + \frac{4}{7 \times 10 \times 19}$$

$$= \frac{102 + 4}{1330} = \frac{53}{665}$$

Q8 Text Solution:

Let red and blue balls be $5x$ and $2x$ respectively.

$$\text{Total balls} = A = \frac{{}^7C_2}{AC_2} = \frac{1}{10}$$

$$A = 21$$

$$\text{Red balls} = (21 - 7) \times \frac{5}{7} = 10$$

$$\text{Blue balls} = (21 - 7) \times \frac{2}{7} = 4$$

Let quantity of milk and water is $4a$ and $7a$ respectively

$$= \frac{4a - 8}{7a + 6} = \frac{1}{2}$$

$$8a - 16 = 7a + 6$$

$$a = 22$$

$$\text{Total quantity of mixture} = B = (7a + 4a) = 11a$$

$$= 11 \times 22 = 242 \text{ liters}$$

Probability of two red balls taken from the bag

$$\frac{{}^{10}C_2}{{}^{21}C_2} = \frac{\frac{10 \times 9}{2}}{\frac{21 \times 20}{2}} = \frac{3}{14}$$

$18\frac{2}{11}\%$ of the mixture is taken out, so:

$$\text{Remaining quantity of milk} = 4 \times 22 - (4 \times 22) \times \frac{2}{11} = 72 \text{ liters}$$

$$\text{Remaining quantity of water} = 7 \times 22 - (7 \times 22) \times \frac{2}{11}$$

$$= 126 \text{ liters}$$

According to question,

$$\frac{72 + \left(\frac{x}{25} - 2\right)}{126 + (x + 24)} = \frac{3}{14}$$

$$1008 + \frac{14x}{25} - 28 = 378 + 3x + 72$$

$$61x = 13250$$

$$x = 217$$

$$\text{Value of } A = 21$$

Q9. Text Solution:

The cost function $C(x) = 120 + bx + cx^2$

$$C(10) = 120 + 10b + 100c$$

$$C(20) = 120 + 20b + 400c$$

$$C(30) = 120 + 30b + 900c$$

By conditions,

$$\frac{1}{3} \times C(10) = C(20) - C(10)$$

$$\therefore C(20) = \frac{4}{3} \times C(10)$$

$$\therefore 120 + 20b + 400c = 160 + 40b/3 + 400c/3$$

$$\therefore \frac{20b}{3} + \frac{800c}{3} = 40$$

$$\therefore 20b + 800c = 120 \quad \dots (i)$$

Also,

$$\frac{1}{2} \times C(20) = C(30) - C(20)$$

$$\therefore \frac{3}{2} \times C(20) = C(30)$$

$$\therefore 180 + 30b + 600c = C(30) = 120 + 30b + 900c$$

$$\therefore c = \frac{1}{5}$$

$$\therefore b = -3 \dots \{\text{from (i)}\}$$

Profit for x units is $20x - C(x)$

$$P(x) = 20x - 120 + 3x - \frac{x^2}{5}$$

$$= -120 + 23x - \frac{x^2}{5}$$

$$\text{The derivative of } P(x) = P'(x) = 23 - \frac{2x}{5}$$

For maximization of profit $P'(x) = 0$ and $P''(x) < 0$,

$$P''(x) = -0.4$$

When $P'(x)$ is zero,

$$23 - \frac{2x}{5} = 0$$

$$\therefore x = 57.5$$

Q10. Text Solution:

The cost function $C(x) = 120 + bx + cx^2$

$$C(10) = 120 + 10b + 100c$$

$$C(20) = 120 + 20b + 400c$$

$$C(30) = 120 + 30b + 900c$$

By conditions,

$$\frac{1}{3} \times C(10) = C(20) - C(10)$$

$$\therefore C(20) = \frac{4}{3} \times C(10)$$

$$\therefore 120 + 20b + 400c = 160 + 40b/3 + 400c/3$$

$$\therefore \frac{20b}{3} + \frac{800c}{3} = 40$$

$$\therefore 20b + 800c = 120 \quad \dots (i)$$

Also,

$$\frac{1}{2} \times C(20) = C(30) - C(20)$$

$$\therefore \frac{3}{2} \times C(20) = C(30)$$

$$\therefore 180 + 30b + 600c = C(30) = 120 + 30b + 900c$$

$$\therefore c = \frac{1}{5}$$

$$\therefore b = -3 \dots \{\text{from (i)}\}$$

Profit for x units is $20x - C(x)$



$$P(x) = 20x - 120 + 3x - \frac{x^2}{5}$$

$$= -120 + 23x - \frac{x^2}{5}$$

$$\text{The derivative of } P(x) = P'(x) = 23 - \frac{2x}{5}$$

For maximization of profit $P'(x) = 0$ and $P''(x) < 0$,
 $P''(x) = -0.4$

When $P'(x)$ is zero,

$$23 - \frac{2x}{5} = 0$$

$$\therefore x = 57.5$$

Profit =

$$-120 + 23x - \frac{x^2}{5} = -120 + 1311 -$$

$$650 = 541$$

Q11. Text Solution:

The total number of employees in the IT department = 540

The total number of employees in the company
 $= \frac{540}{25} \times 100 = 2160$

The number of employees in the finance department = $\frac{1}{3} \times 2160 = 720$

Total number of employees in HR, Sells and Content department = $2160 - 540 - 720 = 900$

Let the number of employees working in the sales department be x .

The number of employees working in the HR department = $\frac{5x}{6}$

The number of employees working in the content department = $x + \frac{x}{3} = \frac{2x}{3}$

$$x + \frac{5x}{6} + \frac{2x}{3} = 900$$

$$\frac{6x+5x+4x}{6} = 900$$

$$\frac{15x}{6} = 900$$

$$x = 360$$

The number of employees working in the sales department = 360

The number of employees working in the HR department = $\frac{5x}{6} = \frac{5}{6} \times 360 = 300$

The number of employees working in the content department = $\frac{2 \times 360}{3} = 240$

The ratio of the number of employees working in the IT department and sales department = $540 : 360 = 3:2$

Q12. Text Solution:

The total number of employees in the IT department = 540

The total number of employees in the company
 $= \frac{540}{25} \times 100 = 2160$

The number of employees in the finance department = $\frac{1}{3} \times 2160 = 720$

Total number of employees in HR, Sells and Content department = $2160 - 540 - 720 = 900$

Let the number of employees working in the sales department be x .

The number of employees working in the HR department = $\frac{5x}{6}$

The number of employees working in the content department = $x + \frac{x}{3} = \frac{2x}{3}$

$$x + \frac{5x}{6} + \frac{2x}{3} = 900$$

$$\frac{6x+5x+4x}{6} = 900$$

$$\frac{15x}{6} = 900$$

$$x = 360$$

The number of employees working in the sales department = 360

The number of employees working in the HR department = $\frac{5x}{6} = \frac{5}{6} \times 360 = 300$

The number of employees working in the content department = $\frac{2 \times 360}{3} = 240$

$$\text{Required } \% = \frac{540-240}{240} \times 100 = \frac{300}{240} \times 100 = 125\%$$

Q13. Text Solution:

The total number of employees in the IT department = 540

The total number of employees in the company
 $= \frac{540}{25} \times 100 = 2160$

The number of employees in the finance department = $\frac{1}{3} \times 2160 = 720$



Total number of employees in HR, Sells and Content department = $2160 - 540 - 720 = 900$

Let the number of employees working in the sales department be x .

The number of employees working in the HR department = $\frac{5x}{6}$

The number of employees working in the content department = $x + \frac{x}{3} = \frac{2x}{3}$

$$x + \frac{5x}{6} + \frac{2x}{3} = 900$$

$$\frac{6x+5x+4x}{6} = 900$$

$$\frac{15x}{6} = 900$$

$$x = 360$$

The number of employees working in the sales department = 360

The number of employees working in the HR department = $\frac{5x}{6} = \frac{5}{6} \times 360 = 300$

The number of employees working in the content department = $\frac{2 \times 360}{3} = 240$

$$\text{Required \%} = \frac{540-240}{240} \times 100 = \frac{300}{240} \times 100 = 125\%$$

The number of male employees in the HR department = $300 \times \frac{1}{4} = 75$

The number of male employees in the content department = $240 \times \frac{5}{8} = 150$

Required ratio = 75: 150 = 1: 2

Q14. Text Solution:

The total number of employees in the IT department = 540

The total number of employees in the company = $\frac{540}{25} \times 100 = 2160$

The number of employees in the finance department = $\frac{1}{3} \times 2160 = 720$

Total number of employees in HR, Sells and Content department = $2160 - 540 - 720 = 900$

Let the number of employees working in the sales department be x .

The number of employees working in the HR department = $\frac{5x}{6}$

The number of employees working in the content department = $x + \frac{x}{3} = \frac{2x}{3}$

$$x + \frac{5x}{6} + \frac{2x}{3} = 900$$

$$\frac{6x+5x+4x}{6} = 900$$

$$\frac{15x}{6} = 900$$

$$x = 360$$

The number of employees working in the sales department = 360

The number of employees working in the HR department = $\frac{5x}{6} = \frac{5}{6} \times 360 = 300$

The number of employees working in the content department = $\frac{2 \times 360}{3} = 240$

$$\text{Required \%} = \frac{540-240}{240} \times 100 = \frac{300}{240} \times 100 = 125\%$$

The total number of employees in the HR and content departments together = $300 + 240 = 540$

The total number of employees in the IT and Finance departments together = $540 + 720 = 1260$

Required ratio = 540: 1260 = 6: 14 = 3: 7

Q15 Text Solution:

Total items purchased by Rahul = 50

Total markers purchased by all the three persons together = 50

Total markers purchased by Rahul = 14

Total pens and pencils together purchased by Rahul = $50 - 14 = 36$

Total pens purchased by Rahul = $36 \times \frac{1}{3} = 12$

Total pencils purchased by Rahul = $36 \times \frac{2}{3} = 24$

Total markers purchased by Riti and Ritesh together = $50 - 14 = 36$

Total markers purchased by Riti = $36 \times \frac{3}{4} = 27$

Total markers purchased by Ritesh = $36 \times \frac{1}{4} = 9$

Total pens purchased by Ritesh = $14 \times \frac{100}{70} = 20$

Total items purchased by Ritesh = 55

Total pencils purchased by Ritesh = $55 - 20 - 9 = 26$



Total pencils purchased by Riti = $26 + 4 = 30$

Total pencils purchased by all the three persons together = $24 + 30 + 26 = 80$

Total pens purchased by all the three persons together = $\frac{80}{2} = 40$

Total pens purchased by Riti = $40 - 12 - 20 = 8$

Persons	Pen	Pencils	Markers	Total
Rahul	12	24	14	50
Riti	8	30	27	65
Ritesh	20	26	9	55
Total	40	80	50	

Total pens purchased by Rakesh = $12 + 8 = 20$

Total pencils purchased by Rakesh = $24 + 16 = 40$

Total markers purchased by Rakesh = $27 + 3 = 30$

Total items purchased by Rakesh = $20 + 40 + 30 = 90$

Q16 Text Solution:

Total items purchased by Rahul = 50

Total markers purchased by all the three persons together = 50

Total markers purchased by Rahul = 14

Total pens and pencils together purchased by Rahul = $50 - 14 = 36$

Total pens purchased by Rahul = $36 \times \frac{1}{3} = 12$

Total pencils purchased by Rahul = $36 \times \frac{2}{3} = 24$

Total markers purchased by Riti and Ritesh together = $50 - 14 = 36$

Total markers purchased by Riti = $36 \times \frac{3}{4} = 27$

Total markers purchased by Ritesh = $36 \times \frac{1}{4} = 9$

Total pens purchased by Ritesh = $14 \times \frac{100}{70} = 20$

Total items purchased by Ritesh = 55

Total pencils purchased by Ritesh = $55 - 20 - 9 = 26$

Total pencils purchased by Riti = $26 + 4 = 30$

Total pencils purchased by all the three persons together = $24 + 30 + 26 = 80$

Total pens purchased by all the three persons together = $\frac{80}{2} = 40$

Total pens purchased by Riti = $40 - 12 - 20 = 8$

Persons	Pen	Pencils	Markers	Total
Rahul	12	24	14	50
Riti	8	30	27	65
Ritesh	20	26	9	55
Total	40	80	50	

Number of pencils purchased by Ritesh = 26

Total number of pencils purchased by all the three persons together = 80

Required percent = $\frac{26}{80} \times 100 = 32.5\%$

Q17 Text Solution:

Total items purchased by Rahul = 50

Total markers purchased by all the three persons together = 50

Total markers purchased by Rahul = 14

Total pens and pencils together purchased by Rahul = $50 - 14 = 36$

Total pens purchased by Rahul = $36 \times \frac{1}{3} = 12$

Total pencils purchased by Rahul = $36 \times \frac{2}{3} = 24$

Total markers purchased by Riti and Ritesh together = $50 - 14 = 36$

Total markers purchased by Riti = $36 \times \frac{3}{4} = 27$

Total markers purchased by Ritesh = $36 \times \frac{1}{4} = 9$

Total pens purchased by Ritesh = $14 \times \frac{100}{70} = 20$

Total items purchased by Ritesh = 55

Total pencils purchased by Ritesh = $55 - 20 - 9 = 26$

Total pencils purchased by Riti = $26 + 4 = 30$

Total pencils purchased by all the three persons together = $24 + 30 + 26 = 80$

Total pens purchased by all the three persons together = $\frac{80}{2} = 40$

Total pens purchased by Riti = $40 - 12 - 20 = 8$

Persons	Pen	Pencils	Markers	Total
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Rahul	12	24	14	50
Riti	8	30	27	65
Ritesh	20	26	9	55
Total	40	80	50	

Number of pens purchased by Rahul = 12

Number of pencils purchased by Riti = 30

Number of markers purchased by Ritesh = 9

Required average =

$$\frac{12+30+9}{3} = \frac{51}{3} = 17$$

Q18 Text Solution:

Total items purchased by Rahul = 50

Total markers purchased by all the three persons together = 50

Total markers purchased by Rahul = 14

Total pens and pencils together purchased by Rahul = 50 - 14 = 36

Total pens purchased by Rahul = $36 \times \frac{1}{3} = 12$

Total pencils purchased by Rahul = $36 \times \frac{2}{3} = 24$

Total markers purchased by Riti and Ritesh together = 50 - 14 = 36

Total markers purchased by Riti = $36 \times \frac{3}{4} = 27$

Total markers purchased by Ritesh = $36 \times \frac{1}{4} = 9$

Total pens purchased by Ritesh = $14 \times \frac{100}{70} = 20$

Total items purchased by Ritesh = 55

Total pencils purchased by Ritesh = 55 - 20 - 9 = 26

Total pencils purchased by Riti = 26 + 4 = 30

Total pencils purchased by all the three persons together = 24 + 30 + 26 = 80

Total pens purchased by all the three persons together = 80 = 40

Total pens purchased by Riti = 40 - 12 - 20 = 8

Persons	Pen	Pencils	Markers	Total
Rahul	12	24	14	50
Riti	8	30	27	65
Ritesh	20	26	9	55
Total	40	80	50	

Total number of pens purchased by all the three persons together = 40

Total number of all the three items purchased by Riti = 65

Required ratio = 40: 65 = 8: 13

Q19 Text Solution:

Total items purchased by Rahul = 50

Total markers purchased by all the three persons together = 50

Total markers purchased by Rahul = 14

Total pens and pencils together purchased by Rahul = 50 - 14 = 36

Total pens purchased by Rahul = $36 \times \frac{1}{3} = 12$

Total pencils purchased by Rahul = $36 \times \frac{2}{3} = 24$

Total markers purchased by Riti and Ritesh together = 50 - 14 = 36

Total markers purchased by Riti = $36 \times \frac{3}{4} = 27$

Total markers purchased by Ritesh = $36 \times \frac{1}{4} = 9$

Total pens purchased by Ritesh = $14 \times \frac{100}{70} = 20$

Total items purchased by Ritesh = 55

Total pencils purchased by Ritesh = 55 - 20 - 9 = 26

Total pencils purchased by Riti = 26 + 4 = 30

Total pencils purchased by all the three persons together = 24 + 30 + 26 = 80

Total pens purchased by all the three persons together = $\frac{80}{2} = 40$

Total pens purchased by Riti = 40 - 12 - 20 = 8

Persons	Pen	Pencils	Markers	Total
Rahul	12	24	14	50
Riti	8	30	27	65
Ritesh	20	26	9	55
Total	40	80	50	

Total number of items purchased by Rahul = 50

Total number of items purchased by Riti = 65

Total number of items purchased by Ritesh = 55

Required number of items = 50 + 65 + 55 = 170



Q20 Text Solution:

Let the amount with Mahesh = $100x$

Amount invested in mutual funds = 20% of $100x$
 $= 20x$

Amount spent on shopping = 15% of $100x = 15x$

Amount spent of food and rent = 25% of $100x = 25x$

Remaining amount = $100x - (20x + 15x + 25x) = 40x$

Amount invested in scheme A = $41\left(\frac{2}{3}\right)\%$ of $40x = \left(\frac{50x}{3}\right)$

Amount invested in scheme B = $40x - \left(\frac{50x}{3}\right) = \left(\frac{70x}{3}\right)$

Amount of interest from scheme A = $\left(\frac{50x}{3}\right) \times [(1.2)^2 - 1] = \left(\frac{50x}{3}\right) \times 0.44 = \left(\frac{22x}{3}\right)$

Amount of interest from scheme B = $\frac{\left[\left(\frac{70x}{3}\right) \times 20 \times 2\right]}{100} = \left(\frac{28x}{3}\right)$

Total interest received = $\left(\frac{22x}{3}\right) + \left(\frac{28x}{3}\right) = \left(\frac{50x}{3}\right)$

According to question-

$$\left(\frac{50x}{3}\right) - 15x = 2500$$

$$\left(\frac{5x}{3}\right) = 2500$$

$$x = 1500$$

Amount of interest from scheme A = $\left(\frac{22x}{3}\right) =$
 Rs.11000

Amount of interest from scheme B = $\left(\frac{28x}{3}\right) =$
 Rs.14000

Let number of chairs and tables purchased by him is 'a' and '16 - a' respectively.

Probability of selecting 2 chairs at random =

$$\frac{{}^a C_2}{{}^{16} C_2} = \frac{11}{20}$$

$$\frac{\left[\frac{a(a-1)}{2}\right]}{120} = \frac{11}{20}$$

$$a(a-1) = 11 \times 12 = 12 \times (12-1)$$

$$a = 12$$

Number of chairs purchased by him = $a = 12$

Number of tables purchased by him = $(16 - a) =$

4

From the interest received from scheme A, he purchased another item X at $16\left(\frac{2}{3}\right)\%$ discount.

So, selling price of item X = Rs.11000

Marked price of item X = $11000 \times \left(\frac{100}{83.33}\right) =$
 Rs.13200

Invested capital of Mahesh = Rs.11000

Invested capital of Sunil = Rs.9000

Ratio of their profit = $(11000 \times 4 + 4000 \times 3):$
 $(9000 \times 7) = 56:63 = 8:9$

Profit amount received from Sunil = $21250 \times \left(\frac{9}{17}\right)$
 = Rs.11250

Q21 Text Solution:

Let the amount with Mahesh = $100x$

Amount invested in mutual funds = 20% of $100x$
 $= 20x$

Amount spent on shopping = 15% of $100x = 15x$

Amount spent of food and rent = 25% of $100x = 25x$

Remaining amount = $100x - (20x + 15x + 25x) = 40x$

Amount invested in scheme A = $41\left(\frac{2}{3}\right)\%$ of $40x = \left(\frac{50x}{3}\right)$

Amount invested in scheme B = $40x - \left(\frac{50x}{3}\right) = \left(\frac{70x}{3}\right)$

Amount of interest from scheme A = $\left(\frac{50x}{3}\right) \times [(1.2)^2 - 1] = \left(\frac{50x}{3}\right) \times 0.44 = \left(\frac{22x}{3}\right)$

Amount of interest from scheme B = $\frac{\left[\left(\frac{70x}{3}\right) \times 20 \times 2\right]}{100} = \left(\frac{28x}{3}\right)$

Total interest received = $\left(\frac{22x}{3}\right) + \left(\frac{28x}{3}\right) = \left(\frac{50x}{3}\right)$

According to question-

$$\left(\frac{50x}{3}\right) - 15x = 2500$$

$$\left(\frac{5x}{3}\right) = 2500$$

$$x = 1500$$

Amount of interest from scheme A = $\left(\frac{22x}{3}\right) =$
 Rs.11000



Amount of interest from scheme B = $\left(\frac{28x}{3}\right) =$
Rs.14000

Let number of chairs and tables purchased by him is 'a' and '16 - a' respectively.

Probability of selecting 2 chairs at random =

$$\frac{{}^aC_2}{{}^{16}C_2} = \frac{11}{20}$$

$$\frac{\left[\frac{a(a-1)}{2}\right]}{120} = \frac{11}{20}$$

$$a(a-1) = 11 \times 12 = 12 \times (12-1)$$

$$a = 12$$

Number of chairs purchased by him = a = 12

Number of tables purchased by him = (16 - a) =
4

From the interest received from scheme A he purchased another item X at $16\left(\frac{2}{3}\right)\%$ discount.

So, selling price of item X = Rs.11000

Marked price of item X = $11000 \times \left(\frac{100}{83.33}\right) =$
Rs.13200

Selling price of item X when sold to Mahesh =
Rs.11000

Marked price of item X = Rs.13200

Cost price of item X = $13200 \times \left(\frac{100}{132}\right) =$ Rs.10000

Selling price of item X when sold to Suresh =
115% of 10000 = Rs.11500

Amount of Discount offered = 13200 - 11500 =
Rs.1700

Per cent of discount offered = $\left(\frac{1700}{13200}\right) \times 100 =$
 $12\left(\frac{29}{33}\right)\%$

Q22 Text Solution:

Three friends P, Q and R work in same company and the average of their monthly income is Rs.28000.

Total monthly income = $3 \times 28000 = 84000$

Let monthly income of P, Q and R are p, q, r respectively.

Then, $p + q + r = 84000$

In May:

Let 12a, 8a and 9a are monthly savings of P, Q and R respectively.

Monthly income of R is equal to monthly expenditure of Q, i.e.,

Monthly expenditure of Q = $q - 8a = r$

$$q - r = 8a$$

The difference between monthly income of Q and R is Rs.8000. Then,

$$q - r = 8000 = 8a$$

$$a = 1000$$

Now, monthly savings of P = $12a = 12 \times 1000 =$
12000

Monthly savings of Q = $8a = 8 \times 1000 = 8000$

Monthly savings of R = $9a = 9 \times 1000 = 9000$

Now, $q = 8000 + r$

Monthly expenditure of P is Rs.1000 more than monthly expenditure of R. so,

$$p - 12000 = 1000 + r - 9000$$

$$p = 4000 + r$$

$$\text{Then, } 4000 + r + 8000 + r + r = 84000$$

$$r = 24000$$

$$\text{And, } p = 4000 + 24000 = 28000$$

$$\text{And, } q = 8000 + 24000 = 32000$$

In June:

P's initial investment = 60% of 28000 = 16800

Q's initial investment = 16800 + 1200 = 18000

R's initial investment = 16800 + 5000 = 21800

Then, product of investment and period of investment for P

$$= (16800 \times A + (16800 + 3200) \times (B + 4))$$

$$= 16800A + 20000B + 80000$$

Product of investment and period of investment for Q

$$= (18000 \times B + (18000 - 2000) \times 4)$$

$$= 18000B + 64000$$

And, product of investment and period of investment for R

$$= 21800 \times (20 - A)$$

$$= 436000 - 21800A$$



Then, profit ratio, P: Q: R = (16800A + 20000B + 80000): (18000B + 64000): (436000 - 21800A)
= (84A + 100B + 400): (90B + 320): (2180 - 109A)

And also, profit ratio, P, Q, R = 752: 430: 763

(90B + 320): (2180 - 109A) = 430: 763

$$B = \frac{69324 - 4687A}{6867}$$

Now, (84A + 100B + 400): (2180 - 109A) = 752: 763

$$(84A + 100 \times \left(\frac{69324 - 4687A}{6867} \right) + 400) : (2180 - 109A) = 752: 763$$

A = 6 months

$$\text{And, } B = \frac{69324 - 4687 \times 6}{6867} = 6 \text{ months}$$

In July:

For P:

Sum = 65% of 28000 = 18200

Rate = 25%, time = 2 years

$$\text{Then, CI} = 18200 \times \left(\left(1 + \left(\frac{25}{100} \right) \right)^2 - 1 \right) = 10237.5$$

For Q:

Q invested 35% of his monthly income at 15% rate of simple interest for (D) years.

Then, sum = 35% of 32000 = 11200

Rate = 15%

Time = D years

$$SI = 11200 \times 15 \times \frac{D}{100} = 1680D$$

For R:

Sum = 2800 + 11200 = 14000

Rate = C%, time = 2 years

$$\text{Then, CI} = 14000 \times \left(\left(1 + \left(\frac{C}{100} \right) \right)^2 - 1 \right)$$

It is given that, the total simple interest received by Q is equal to the sum of compound interest received by R and P. Then,

$$1680D = 10237.5 + 14000 \times \left(\left(1 + \left(\frac{C}{100} \right) \right)^2 - 1 \right)$$

In August:

Total selling price = Rs.5418.8

Let 35p, 29p and 32p are cost price of sofa, table and chair respectively.

Shopkeeper marked the chair at 35% above its cost price, sofa at 40% above its marked price and table at 20% above its cost price. Then,

Marked price of sofa = 140% of 35p = 49p

Marked price of table = 120% of 29p = 34.8p

Marked price of chair = 135% of 32p = 43.2p

18% discount is given on the marked price of table and it is sold at Rs.1426.8. Then,

Selling price of table = 1426.8 = 82% of 34.8p
p = 50

Then, cost price of sofa = 35 × 50 = 1750

Cost price of table = 29 × 50 = 1450

Cost price of chair = 32 × 50 = 1600

And, marked price of sofa = 49 × 50 = 2450

Marked price of table = 34.8 × 50 = 1740

Marked price of chair = 43.2 × 50 = 2160

Profit earned on sofa is Rs.406. Then,

Selling price of sofa = 1750 + 406 = 2156

Now, selling price of chair = 5418.8 - 2156 - 1426.8 = 1836

Then, E = 1836 - 1600 = 236

A = B = 6

$$\text{Then, } C = \frac{5A^2}{B} = 5 \times 6 \times \frac{6}{6} = 30$$

$$\text{Now, } 1680D = 10237.5 + 14000 \times \left(\left(1 + \left(\frac{30}{100} \right) \right)^2 - 1 \right)$$

D = 11.84

Then, the difference between the numerical values of C and D

$$= C - D$$

$$= 30 - 11.84$$

$$= 18.16$$

Q23 Text Solution:

Three friends P, Q and R work in same company and the average of their monthly income is Rs.28000.

Total monthly income = 3 × 28000 = 84000



Let monthly income of P, Q and R are p, q, r respectively.

$$\text{Then, } p + q + r = 84000$$

In May:

Let 12a, 8a and 9a are monthly savings of P, Q and R respectively.

Monthly income of R is equal to monthly expenditure of Q, i.e.,

$$\text{Monthly expenditure of Q} = q - 8a = r$$

$$q - r = 8a$$

The difference between monthly income of Q and R is Rs.8000. Then,

$$q - r = 8000 = 8a$$

$$a = 1000$$

$$\text{Now, monthly savings of P} = 12a = 12 \times 1000 = 12000$$

$$\text{Monthly savings of Q} = 8a = 8 \times 1000 = 8000$$

$$\text{Monthly savings of R} = 9a = 9 \times 1000 = 9000$$

$$\text{Now, } q = 8000 + r$$

Monthly expenditure of P is Rs.1000 more than monthly expenditure of R. so,

$$p - 12000 = 1000 + r - 9000$$

$$p = 4000 + r$$

$$\text{Then, } 4000 + r + 8000 + r + r = 84000$$

$$r = 24000$$

$$\text{And, } p = 4000 + 24000 = 28000$$

$$\text{And, } q = 8000 + 24000 = 32000$$

In June:

$$\text{P's initial investment} = 60\% \text{ of } 28000 = 16800$$

$$\text{Q's initial investment} = 16800 + 1200 = 18000$$

$$\text{R's initial investment} = 16800 + 5000 = 21800$$

Then, product of investment and period of investment for P

$$= (16800 \times A + (16800 + 3200) \times (B + 4))$$

$$= 16800A + 20000B + 80000$$

Product of investment and period of investment for Q

$$= (18000 \times B + (18000 - 2000) \times 4)$$

$$= 18000B + 64000$$

And, product of investment and period of investment for R

$$= 21800 \times (20 - A)$$

$$= 436000 - 21800A$$

$$\text{Then, profit ratio, P: Q: R} = (16800A + 20000B + 80000) : (18000B + 64000) : (436000 - 21800A)$$

$$= (84A + 100B + 400) : (90B + 320) : (2180 - 109A)$$

And also, profit ratio, P, Q, R = 752: 430: 763

$$(90B + 320) : (2180 - 109A) = 430 : 763$$

$$B = \frac{69324 - 4687A}{6867}$$

$$\text{Now, } (84A + 100B + 400) : (2180 - 109A) = 752 : 763$$

$$(84A + 100 \times \left(\frac{69324 - 4687A}{6867} \right) + 400) : (2180 - 109A) = 752 : 763$$

$$A = 6 \text{ months}$$

$$\text{And, } B = \frac{69324 - 4687 \times 6}{6867} = 6 \text{ months}$$

In July:

For P:

$$\text{Sum} = 65\% \text{ of } 28000 = 18200$$

$$\text{Rate} = 25\%, \text{ time} = 2 \text{ years}$$

$$\text{Then, CI} = 18200 \times \left(\left(1 + \left(\frac{25}{100} \right) \right)^2 - 1 \right) = 10237.5$$

For Q:

Q invested 35% of his monthly income at 15% rate of simple interest for (D) years.

$$\text{Then, sum} = 35\% \text{ of } 32000 = 11200$$

$$\text{Rate} = 15\%$$

$$\text{Time} = D \text{ years}$$

$$\text{SI} = 11200 \times 15 \times \frac{D}{100} = 1680D$$

For R:

$$\text{Sum} = 2800 + 11200 = 14000$$

$$\text{Rate} = C\%, \text{ time} = 2 \text{ years}$$

$$\text{Then, CI} = 14000 \times \left(\left(1 + \left(\frac{C}{100} \right) \right)^2 - 1 \right)$$

It is given that, the total simple interest received by Q is equal to the sum of compound interest received by R and P. Then,



$$1680D = 10237.5 + 14000 \times \left(\left(1 + \left(\frac{C}{100} \right) \right)^2 - 1 \right)$$

In August:

Total selling price = Rs.5418.8

Let 35p, 29p and 32p are cost price of sofa, table and chair respectively.

Shopkeeper marked the chair at 35% above its cost price, sofa at 40% above its marked price and table at 20% above its cost price. Then,

Marked price of sofa = 140% of 35p = 49p

Marked price of table = 120% of 29p = 34.8p

Marked price of chair = 135% of 32p = 43.2p

18% discount is given on the marked price of table and it is sold at Rs.1426.8. Then,

Selling price of table = 1426.8 = 82% of 34.8p

p = 50

Then, cost price of sofa = 35 × 50 = 1750

Cost price of table = 29 × 50 = 1450

Cost price of chair = 32 × 50 = 1600

And, marked price of sofa = 49 × 50 = 2450

Marked price of table = 34.8 × 50 = 1740

Marked price of chair = 43.2 × 50 = 2160

Profit earned on sofa is Rs.406. Then,

Selling price of sofa = 1750 + 406 = 2156

Now, selling price of chair = 5418.8 - 2156 - 1426.8 = 1836

Then, E = 1836 - 1600 = 236

New value of E = 150% of 236 = 354

Then, new selling price of chair = 1600 + 354 = 1954

Then, discount given on marked price of chair = 2160 - 1954 = 206

And, discount given on marked price of sofa = 2450 - 2156 = 294

Percentage = $\left(\frac{206}{294} \right) \times 100 = 70\%$ (approx.)

Q24 Text Solution:

Three friends P, Q and R work in same company and the average of their monthly income is

Rs.28000.

Total monthly income = 3 × 28000 = 84000

Let monthly income of P, Q and R are p, q, r respectively.

Then, p + q + r = 84000

In May:

Let 12a, 8a and 9a are monthly savings of P, Q and R respectively.

Monthly income of R is equal to monthly expenditure of Q, i.e.,

Monthly expenditure of Q = q - 8a = r

q - r = 8a

The difference between monthly income of Q and R is Rs.8000. Then,

q - r = 8000 = 8a

a = 1000

Now, monthly savings of P = 12a = 12 × 1000 = 12000

Monthly savings of Q = 8a = 8 × 1000 = 8000

Monthly savings of R = 9a = 9 × 1000 = 9000

Now, q = 8000 + r

Monthly expenditure of P is Rs.1000 more than monthly expenditure of R. so,

p - 12000 = 1000 + r - 9000

p = 4000 + r

Then, 4000 + r + 8000 + r + r = 84000

r = 24000

And, p = 4000 + 24000 = 28000

And, q = 8000 + 24000 = 32000

In June:

P's initial investment = 60% of 28000 = 16800

Q's initial investment = 16800 + 1200 = 18000

R's initial investment = 16800 + 5000 = 21800

Then, product of investment and period of investment for P

= (16800 × A + (16800 + 3200) × (B + 4))

= 16800A + 20000B + 80000

Product of investment and period of investment for Q



$$= (18000 \times B + (18000 - 2000) \times 4)$$

$$= 18000B + 64000$$

And, product of investment and period of investment for R

$$= 21800 \times (20 - A)$$

$$= 436000 - 21800A$$

$$\text{Then, profit ratio, P: Q: R} = (16800A + 20000B + 80000) : (18000B + 64000) : (436000 - 21800A)$$

$$= (84A + 100B + 400) : (90B + 320) : (2180 - 109A)$$

And also, profit ratio, P, Q, R = 752: 430: 763

$$(90B + 320) : (2180 - 109A) = 430 : 763$$

$$B = \frac{69324 - 4687A}{6867}$$

$$\text{Now, } (84A + 100B + 400) : (2180 - 109A) = 752 : 763$$

$$(84A + 100 \times \left(\frac{69324 - 4687A}{6867} \right) + 400) : (2180 - 109A) = 752 : 763$$

$$A = 6 \text{ months}$$

$$\text{And, } B = \frac{69324 - 4687 \times 6}{6867} = 6 \text{ months}$$

In July:

For P:

$$\text{Sum} = 65\% \text{ of } 28000 = 18200$$

$$\text{Rate} = 25\%, \text{ time} = 2 \text{ years}$$

$$\text{Then, CI} = 18200 \times \left(\left(1 + \left(\frac{25}{100} \right) \right)^2 - 1 \right) = 10237.5$$

For Q:

Q invested 35% of his monthly income at 15% rate of simple interest for (D) years.

$$\text{Then, sum} = 35\% \text{ of } 32000 = 11200$$

$$\text{Rate} = 15\%$$

$$\text{Time} = D \text{ years}$$

$$\text{SI} = 11200 \times 15 \times \frac{D}{100} = 1680D$$

For R:

$$\text{Sum} = 2800 + 11200 = 14000$$

$$\text{Rate} = C\%, \text{ time} = 2 \text{ years}$$

$$\text{Then, CI} = 14000 \times \left(\left(1 + \left(\frac{C}{100} \right) \right)^2 - 1 \right)$$

It is given that, the total simple interest received by Q is equal to the sum of compound interest received by R and P. Then,

$$1680D = 10237.5 + 14000 \times \left(\left(1 + \left(\frac{C}{100} \right) \right)^2 - 1 \right)$$

In August:

$$\text{Total selling price} = \text{Rs.} 5418.8$$

Let 35p, 29p and 32p are cost price of sofa, table and chair respectively.

Shopkeeper marked the chair at 35% above its cost price, sofa at 40% above its marked price and table at 20% above its cost price. Then,

$$\text{Marked price of sofa} = 140\% \text{ of } 35p = 49p$$

$$\text{Marked price of table} = 120\% \text{ of } 29p = 34.8p$$

$$\text{Marked price of chair} = 135\% \text{ of } 32p = 43.2p$$

18% discount is given on the marked price of table and it is sold at Rs.1426.8. Then,

$$\text{Selling price of table} = 1426.8 = 82\% \text{ of } 34.8p$$

$$p = 50$$

$$\text{Then, cost price of sofa} = 35 \times 50 = 1750$$

$$\text{Cost price of table} = 29 \times 50 = 1450$$

$$\text{Cost price of chair} = 32 \times 50 = 1600$$

$$\text{And, marked price of sofa} = 49 \times 50 = 2450$$

$$\text{Marked price of table} = 34.8 \times 50 = 1740$$

$$\text{Marked price of chair} = 43.2 \times 50 = 2160$$

Profit earned on sofa is Rs.406. Then,

$$\text{Selling price of sofa} = 1750 + 406 = 2156$$

$$\text{Now, selling price of chair} = 5418.8 - 2156 - 1426.8 = 1836$$

$$\text{Then, } E = 1836 - 1600 = 236$$

$$C = 20$$

$$\text{Then, } 1680D = 10237.5 + 14000 \times \left(\left(1 + \left(\frac{20}{100} \right) \right)^2 - 1 \right)$$

$$D = 9.76 \text{ years}$$

$$\text{Then, sum} = 20\% \text{ of } p = 20\% \text{ of } 28000 = 5600$$

$$\text{Time} = D = 9.76 \text{ years}$$

$$\text{Rate} = 28\%$$

$$\text{Then, SI} = 5600 \times 28 \times \frac{9.76}{100} = \text{Rs.} 15303.68$$

Q25 Text Solution:



Three friends P, Q and R work in same company and the average of their monthly income is Rs.28000.

$$\text{Total monthly income} = 3 \times 28000 = 84000$$

Let monthly income of P, Q and R are p, q, r respectively.

$$\text{Then, } p + q + r = 84000$$

In May:

Let 12a, 8a and 9a are monthly savings of P, Q and R respectively.

Monthly income of R is equal to monthly expenditure of Q, i.e.,

$$\text{Monthly expenditure of Q} = q - 8a = r$$

$$q - r = 8a$$

The difference between monthly income of Q and R is Rs.8000. Then,

$$q - r = 8000 = 8a$$

$$a = 1000$$

$$\text{Now, monthly savings of P} = 12a = 12 \times 1000 = 12000$$

$$\text{Monthly savings of Q} = 8a = 8 \times 1000 = 8000$$

$$\text{Monthly savings of R} = 9a = 9 \times 1000 = 9000$$

$$\text{Now, } q = 8000 + r$$

Monthly expenditure of P is Rs.1000 more than monthly expenditure of R. so,

$$p - 12000 = 1000 + r - 9000$$

$$p = 4000 + r$$

$$\text{Then, } 4000 + r + 8000 + r + r = 84000$$

$$r = 24000$$

$$\text{And, } p = 4000 + 24000 = 28000$$

$$\text{And, } q = 8000 + 24000 = 32000$$

In June:

$$\text{P's initial investment} = 60\% \text{ of } 28000 = 16800$$

$$\text{Q's initial investment} = 16800 + 1200 = 18000$$

$$\text{R's initial investment} = 16800 + 5000 = 21800$$

Then, product of investment and period of investment for P

$$= (16800 \times A + (16800 + 3200) \times (B + 4))$$

$$= 16800A + 20000B + 80000$$

Product of investment and period of investment for Q

$$= (18000 \times B + (18000 - 2000) \times 4)$$

$$= 18000B + 64000$$

And, product of investment and period of investment for R

$$= 21800 \times (20 - A)$$

$$= 436000 - 21800A$$

$$\text{Then, profit ratio, P: Q: R} = (16800A + 20000B + 80000) : (18000B + 64000) : (436000 - 21800A)$$

$$= (84A + 100B + 400) : (90B + 320) : (2180 - 109A)$$

$$\text{And also, profit ratio, P, Q, R} = 752 : 430 : 763$$

$$(90B + 320) : (2180 - 109A) = 430 : 763$$

$$B = \frac{69324 - 4687A}{6867}$$

$$\text{Now, } (84A + 100B + 400) : (2180 - 109A) = 752 : 763$$

$$(84A + 100 \times \left(\frac{69324 - 4687A}{6867} \right) + 400) : (2180 - 109A) = 752 : 763$$

$$A = 6 \text{ months}$$

$$\text{And, } B = \frac{69324 - 4687 \times 6}{6867} = 6 \text{ months}$$

In July:

For P:

$$\text{Sum} = 65\% \text{ of } 28000 = 18200$$

$$\text{Rate} = 25\%, \text{ time} = 2 \text{ years}$$

$$\text{Then, CI} = 18200 \times \left(\left(1 + \left(\frac{25}{100} \right) \right)^2 - 1 \right) = 10237.5$$

For Q:

Q invested 35% of his monthly income at 15% rate of simple interest for (D) years.

$$\text{Then, sum} = 35\% \text{ of } 32000 = 11200$$

$$\text{Rate} = 15\%$$

$$\text{Time} = D \text{ years}$$

$$\text{SI} = 11200 \times 15 \times \frac{D}{100} = 1680D$$

For R:

$$\text{Sum} = 2800 + 11200 = 14000$$

$$\text{Rate} = C\%, \text{ time} = 2 \text{ years}$$

$$\text{Then, CI} = 14000 \times \left(\left(1 + \left(\frac{C}{100} \right) \right)^2 - 1 \right)$$



It is given that, the total simple interest received by Q is equal to the sum of compound interest received by R and P. Then,

$$1680D = 10237.5 + 14000 \times \left(\left(1 + \left(\frac{C}{100} \right) \right)^2 - 1 \right)$$

In August:

Total selling price = Rs.5418.8

Let 35p, 29p and 32p are cost price of sofa, table and chair respectively.

Shopkeeper marked the chair at 35% above its cost price, sofa at 40% above its marked price and table at 20% above its cost price. Then,

Marked price of sofa = 140% of 35p = 49p

Marked price of table = 120% of 29p = 34.8p

Marked price of chair = 135% of 32p = 43.2p

18% discount is given on the marked price of table and it is sold at Rs.1426.8. Then,

Selling price of table = 1426.8 = 82% of 34.8p

p = 50

Then, cost price of sofa = 35 × 50 = 1750

Cost price of table = 29 × 50 = 1450

Cost price of chair = 32 × 50 = 1600

And, marked price of sofa = 49 × 50 = 2450

Marked price of table = 34.8 × 50 = 1740

Marked price of chair = 43.2 × 50 = 2160

Profit earned on sofa is Rs.406. Then,

Selling price of sofa = 1750 + 406 = 2156

Now, selling price of chair = 5418.8 - 2156 - 1426.8 = 1836

Then, E = 1836 - 1600 = 236

Cost price of sofa = 1750

Profit earned on sofa = 406

Profit% = $\left(\frac{406}{1750} \right) \times 100 = 23.2\%$

Cost price of table = 1450

Selling price of table = 1426.8

Loss = 1450 - 1426.8 = 23.2

Loss% = $\left(\frac{23.2}{1450} \right) \times 100 = 1.6\%$

Difference = 23.2 - 1.6 = 21.6%

Q26 Text Solution:

B bought 5 blankets from the salesman.

A salesman sold a total of 20 bedsheets and 12 blankets to shopkeepers A and B.

Then, the number of blankets bought by A = 12 - 5 = 7

The number of blankets bought A is 50% less than the number of bedsheets bought by him.

Then,

Number of bedsheets bought by A = $7 \times \frac{100}{100 - 50} = 14$

Number of bedsheets bought by B = 20 - 14 = 6

The salesman sold each bedsheet at Rs.400 and each blanket at Rs. Y.

The total cost price of blankets for A = 7Y

Total cost price of bedsheets for A = 14 × 400 = 5600

Total cost price of blankets for B = 5Y

Total cost price of bedsheets for B = 6 × 400 = 2400

A marked each blanket and each bedsheet at 40% and 50% above their respective cost prices.

MP of each blanket for A = (100 + 40)% of Y = 1.4Y

MP of each bedsheet for A = (100 + 50)% of 400 = 600

B sold 3 bedsheets at 12% profit and rest at 8% profit.

Total SP of bedsheets sold at 12% profit by B = (100 + 12)% of 3 × 400 = 1344

Total SP of bedsheets sold at 8% profit by B = (100 + 8)% of (6 - 3) × 400 = 1296

Total SP of bedsheets for B = 1344 + 1296 = 2640

B allowed a discount of Rs.75 on each blanket and marked each blanket at 30% above its cost price.

MP of each blanket for B = (100 + 30)% of Y = 1.3Y



SP of each blanket for B = $1.3Y - 75$

Total SP of blankets sold by B = $5(1.3Y - 75)$

A allowed two successive discounts of 10% each on each blanket. Then,

Equivalent discount for two successive discount of 10% each given on blanket by A = $(10 + 10 - 10 \times \frac{10}{100})\% = 19\%$

Total SP of blankets sold by A = $(100 - 19)\%$ of $1.4Y \times 7 = 7.938Y$

A and B together earned Rs.722.1 as profit on blankets.

Then, total profit on blankets = total SP of blankets - total CP of blankets

$$722.1 = (5(1.3Y - 75) + 7.938Y) - 12Y$$

$$2.438Y = 1097.1$$

$$Y = 450$$

Then, SP of each blanket sold by B = $1.3 \times 450 - 75 = 510$

Total SP of blankets sold by B = $5 \times 510 = 2550$

Total SP of blankets sold by A = $7.938 \times 450 = 3572.1$

SP of each blanket sold by A = 510.3

Total CP of blankets for A = $7 \times 450 = 3150$

Total CP of blankets for B = $5 \times 450 = 2250$

Profit earned by A on blankets = $3572.1 - 3150 = 422.1$

Then, profit earned by A on bedsheets = $870.1 - 422.1 = 448$

Profit earned on each bedsheet by A = $\frac{448}{14} = 32$

So, SP of each bedsheet for A = $400 + 32 = 432$

Let d% discount given by A on MP of each bedsheet. Then,

$$432 = (100 - d)\% \text{ of } 600$$

$$72 = 100 - d$$

$$d = 28$$

Q27 Text Solution:

B bought 5 blankets from the salesman.

A salesman sold a total of 20 bedsheets and 12 blankets to shopkeepers A and B.

Then, the number of blankets bought by A = $12 - 5 = 7$

The number of blankets bought A is 50% less than the number of bedsheets bought by him.

Then,

Number of bedsheets bought by A = $7 \times \frac{100}{100 - 50} = 14$

Number of bedsheets bought by B = $20 - 14 = 6$

The salesman sold each bedsheet at Rs.400 and each blanket at Rs. Y.

The total cost price of blankets for A = 7Y

Total cost price of bedsheets for A = $14 \times 400 = 5600$

Total cost price of blankets for B = 5Y

Total cost price of bedsheets for B = $6 \times 400 = 2400$

A marked each blanket and each bedsheet at 40% and 50% above their respective cost prices.

MP of each blanket for A = $(100 + 40)\%$ of Y = 1.4Y

MP of each bedsheet for A = $(100 + 50)\%$ of 400 = 600

B sold 3 bedsheets at 12% profit and rest at 8% profit.

Total SP of bedsheets sold at 12% profit by B = $(100 + 12)\%$ of $3 \times 400 = 1344$

Total SP of bedsheets sold at 8% profit by B = $(100 + 8)\%$ of $(6 - 3) \times 400 = 1296$

Total SP of bedsheets for B = $1344 + 1296 = 2640$

B allowed a discount of Rs.75 on each blanket and marked each blanket at 30% above its cost price.

MP of each blanket for B = $(100 + 30)\%$ of Y = 1.3Y

SP of each blanket for B = $1.3Y - 75$

Total SP of blankets sold by B = $5(1.3Y - 75)$

A allowed two successive discounts of 10% each on each blanket. Then,



Equivalent discount for two successive discount of 10% each given on blanket by A = $(10 + 10 - 10 \times \frac{10}{100})\% = 19\%$

Total SP of blankets sold by A = $(100 - 19)\%$ of $1.4Y \times 7 = 7.938Y$

A and B together earned Rs.722.1 as profit on blankets.

Then, total profit on blankets = total SP of blankets - total CP of blankets

$$722.1 = (5(1.3Y - 75) + 7.938Y) - 12Y$$

$$2.438Y = 1097.1$$

$$Y = 450$$

Then, SP of each blanket sold by B = $1.3 \times 450 - 75 = 510$

Total SP of blankets sold by B = $5 \times 510 = 2550$

Total SP of blankets sold by A = $7.938 \times 450 = 3572.1$

SP of each blanket sold by A = 510.3

Total CP of blankets for A = $7 \times 450 = 3150$

Total CP of blankets for B = $5 \times 450 = 2250$

SP of each bedsheet sold 12% profit by B = $\frac{1344}{3} = 448$

MP of each bedsheet for B = $(100 + 44)\%$ of 400 = 576

Therefore, discount given by B on each bedsheet sold at 12% profit = $576 - 448 = \text{Rs.}128$

Q28 Text Solution:

Initial investment by Preeti, Piyu and Priya are Rs. 14000, Rs. 20000 and Rs. 16000 respectively.

After 6 months,

Investment by Preeti and Priya are Rs. $4x$ and Rs. $5x$ respectively.

After 1 year,

Piyush's initial investment = Rs. 40000

And, investment by Piyu and Priya Rs. $6y$ and Rs. $5y$ respectively.

After 1.5 years,

Investment by Preeti, Piyu, Priya and Piyush are Rs. $2z$, Rs. $4z$, Rs. $2z$ and Rs. z respectively

After 2 years,

Amount withdrawn by Piyush and Priya are Rs. 10000 and Rs. 12000 respectively.

After 2.5 years,

Investment by Preeti = $\frac{1}{7} \times 14000 = \text{Rs.} 2000$

Investment by Piyu = $\frac{25}{100} \times 20000 = \text{Rs.} 5000$

Investment by Priya = $\frac{25}{100} \times 16000 = \text{Rs.} 4000$

Investment by Piyush = $\frac{20}{100} \times 40000 = \text{Rs.} 8000$

Ratio of profit of Preeti, Piyu, Priya and Piyush

$$= [14000 \times 6 + (14000 + 4x) \times 12 + (14000 + 4x + 2z) \times 12 + (14000 + 4x + 2z + 2000) \times 6]$$

$$: [20000 \times 12 + (20000 + 6y) \times 6 + (20000 + 6y + 4z) \times 12 + (20000 + 6y + 4z + 5000) \times 6]$$

$$: [16000 \times 6 + (16000 + 5x) \times 6 + (16000 + 5x + 5y) \times 6 + (16000 + 5x + 5y + 2z) \times 6 + (16000 + 5x + 5y + 2z - 12000) \times 6 + (16000 + 5x + 5y + 2z - 12000 + 4000) \times 6]$$

$$: [40000 \times 6 + (40000 + z) \times 6 + (40000 + z - 10000) \times 6 + (40000 + z - 10000 + 8000) \times 6]$$

$$= (86000 + 20x + 6z) : (125000 + 24y + 12z) : (76000 + 25x + 20y + 6z) : (148000 + 3z)$$

$$= (86000 + 20x + 6z) : (125000 + 24y + 12z) : (76000 + 25x + 20y + 6z) : (148000 + 3z)$$

The investment by Preeti after 6 months is Rs. 2000 more than her initial investment

$$\Rightarrow 4x = 2000 + 14000$$

$$\Rightarrow x = \frac{16000}{4}$$

$$\Rightarrow x = 4000$$

The investment by Priya after 1 year is 62.5% of the investment by Preeti after 6 months from start of the business.

$$\Rightarrow 5y = \frac{62.5}{100} \times 4x$$

$$\Rightarrow y = \frac{1}{5} \times \frac{62.5}{100} \times 4 \times 4000$$

$$\Rightarrow y = 2000$$

Piyush's initial investment is Rs. 28000 more than the investment by Priya after 1.5 years

$$\Rightarrow 40000 = 28000 + 2z$$

$$\Rightarrow 2z = 12000$$

$$\Rightarrow z = 6000$$

Ratio of profit of Preeti, Piyu, Priya and Piyush



$$= (86000 + 20x + 6z) : (125000 + 24y + 12z) : (76000 + 25x + 20y + 6z) : (148000 + 3z)$$

After 1 year, the investment by Piyu is Rs. 6000 less than the investment by Priya after 6 months.

$$\Rightarrow 6y = 5x - 6000 \text{ ---(1)}$$

The investment by Preeti after 1.5 years is 20% less than the investment by Piyu after 2.5 years

$$\Rightarrow 2z = \frac{80}{100} \times 5000$$

$$\Rightarrow z = 2000$$

The investment by Piyu after 2.5 years which is equal to $16\left(\frac{2}{3}\right)\%$ of the investment by Priya after 6 months.

$$\Rightarrow 5000 = \frac{1}{6} \times 5x$$

$$\Rightarrow x = 6000$$

Putting value of x in equation (1), we get

$$\Rightarrow 6y = 5 \times 6000 - 6000$$

$$\Rightarrow y = 4000$$

Ratio of profit of Preeti, Piyu, Priya and Piyush

$$= (86000 + 20x + 6z) : (125000 + 24y + 12z) : (76000 + 25x + 20y + 6z) : (148000 + 3z)$$

$$= (86000 + 20 \times 6000 + 6 \times 2000) : (125000 + 24 \times 4000 + 12 \times 2000) : (76000 + 25 \times 6000 + 20 \times 4000 + 6 \times 2000) : (148000 + 3 \times 2000)$$

$$= 218000 : 245000 : 318000 : 154000$$

$$= 218 : 245 : 318 : 154$$

$$\text{So, share of profit earned by Preeti} = 224400 \times \frac{218}{935} = 52320$$

$$\text{Share of profit earned by Piyu} = 224400 \times \frac{245}{935} = 58800$$

$$\text{Share of profit earned by Priya} = 224400 \times \frac{318}{935} = 76320$$

$$\text{Share of profit earned by Piyush} = 224400 \times \frac{154}{935} = 36960$$

$$\text{So, required difference} = 58800 + 76320 - 52320 - 36960 = 45840$$

Q29 Text Solution:

Initial investment by Preeti, Piyu and Priya are Rs. 14000, Rs. 20000 and Rs. 16000 respectively.

After 6 months,

Investment by Preeti and Priya are Rs. 4x and Rs. 5x respectively.

After 1 year,

Piyush's initial investment = Rs. 40000

And, investment by Piyu and Priya Rs. 6y and Rs. 5y respectively.

After 1.5 years,

Investment by Preeti, Piyu, Priya and Piyush are Rs. 2z, Rs. 4z, Rs. 2z and Rs. z respectively

After 2 years,

Amount withdrawn by Piyush and Priya are Rs. 10000 and Rs. 12000 respectively.

After 2.5 years,

$$\text{Investment by Preeti} = \frac{1}{7} \times 14000 = \text{Rs. } 2000$$

$$\text{Investment by Piyu} = \frac{25}{100} \times 20000 = \text{Rs. } 5000$$

$$\text{Investment by Priya} = \frac{25}{100} \times 16000 = \text{Rs. } 4000$$

$$\text{Investment by Piyush} = \frac{20}{100} \times 40000 = \text{Rs. } 8000$$

$$\text{Ratio of profit of Preeti, Piyu, Priya and Piyush} = [14000 \times 6 + (14000 + 4x) \times 12 + (14000 + 4x + 2z) \times 12 + (14000 + 4x + 2z + 2000) \times 6]$$

$$: [20000 \times 12 + (20000 + 6y) \times 6 + (20000 + 6y + 4z) \times 12 + (20000 + 6y + 4z + 5000) \times 6]$$

$$: [16000 \times 6 + (16000 + 5x) \times 6 + (16000 + 5x + 5y) \times 6 + (16000 + 5x + 5y + 2z) \times 6 + (16000 + 5x + 5y + 2z - 12000) \times 6 + (16000 + 5x + 5y + 2z - 12000 + 4000) \times 6]$$

$$: [40000 \times 6 + (40000 + z) \times 6 + (40000 + z - 10000) \times 6 + (40000 + z - 10000 + 8000) \times 6]$$

$$= (86000 + 20x + 6z) : (125000 + 24y + 12z) : (76000 + 25x + 20y + 6z) : (148000 + 3z)$$

The investment by Preeti after 6 months is Rs. 2000 more than her initial investment

$$\Rightarrow 4x = 2000 + 14000$$

$$\Rightarrow x = \frac{16000}{4}$$

$$\Rightarrow x = 4000$$



The investment by Priya after 1 year is 62.5% of the investment by Preeti after 6 months from start of the business.

$$\Rightarrow 5y = \frac{62.5}{100} \times 4x$$

$$\Rightarrow y = \frac{1}{5} \times \frac{62.5}{100} \times 4 \times 4000$$

$$\Rightarrow y = 2000$$

Piyush's initial investment is Rs. 28000 more than the investment by Priya after 1.5 years

$$\Rightarrow 40000 = 28000 + 2z$$

$$\Rightarrow 2z = 12000$$

$$\Rightarrow z = 6000$$

Ratio of profit of Preeti, Piyu, Priya and Piyush

$$= (86000 + 20x + 6z) : (125000 + 24y + 12z) : (76000 + 25x + 20y + 6z) : (148000 + 3z)$$

After 6 months, the difference between the investment by Priya and Preeti is Rs. 2000

$$\Rightarrow 5x - 4x = 2000$$

$$\Rightarrow x = 2000$$

after 1 year, investment by Piyush is Rs. 4000 more than the investment by Piyu.

$$\Rightarrow 40000 = 4000 + 6y$$

$$\Rightarrow y = 6000$$

Investment by Piyu after 1.5 years is $14\left(\frac{2}{7}\right)\%$ more than the initial investment by Preeti.

$$4z = \left(1 + \frac{1}{7}\right) \times 14000$$

$$\Rightarrow z = 4000$$

Ratio of profit of Preeti, Piyu, Priya and Piyush

$$= (86000 + 20x + 6z) : (125000 + 24y + 12z) : (76000 + 25x + 20y + 6z) : (148000 + 3z)$$

$$= (86000 + 20 \times 2000 + 6 \times 4000) : (125000 + 24 \times 6000 + 12 \times 4000) : (76000 + 25 \times 2000 + 20 \times 6000 + 6 \times 4000) : (148000 + 3 \times 4000)$$

$$= 150000 : 317000 : 270000 : 160000$$

$$= 150 : 317 : 270 : 160$$

Q30 Text Solution:

Initial investment by Preeti, Piyu and Priya are Rs. 14000, Rs. 20000 and Rs. 16000 respectively.

After 6 months,

Investment by Preeti and Priya are Rs. $4x$ and Rs. $5x$ respectively.

After 1 year,

Piyush's initial investment = Rs. 40000

And, investment by Piyu and Priya Rs. $6y$ and Rs. $5y$ respectively.

After 1.5 years,

Investment by Preeti, Piyu, Priya and Piyush are Rs. $2z$, Rs. $4z$, Rs. $2z$ and Rs. z respectively

After 2 years,

Amount withdrawn by Piyush and Priya are Rs. 10000 and Rs. 12000 respectively.

After 2.5 years,

$$\text{Investment by Preeti} = \frac{1}{7} \times 14000 = \text{Rs. } 2000$$

$$\text{Investment by Piyu} = \frac{25}{100} \times 20000 = \text{Rs. } 5000$$

$$\text{Investment by Priya} = \frac{25}{100} \times 16000 = \text{Rs. } 4000$$

$$\text{Investment by Piyush} = \frac{20}{100} \times 40000 = \text{Rs. } 8000$$

Ratio of profit of Preeti, Piyu, Priya and Piyush

$$= [14000 \times 6 + (14000 + 4x) \times 12 + (14000 + 4x + 2z) \times 12 + (14000 + 4x + 2z + 2000) \times 6]$$

$$: [20000 \times 12 + (20000 + 6y) \times 6 + (20000 + 6y + 4z) \times 12 + (20000 + 6y + 4z + 5000) \times 6]$$

$$: [16000 \times 6 + (16000 + 5x) \times 6 + (16000 + 5x + 5y) \times 6 + (16000 + 5x + 5y + 2z) \times 6 + (16000 + 5x + 5y + 2z - 12000) \times 6 + (16000 + 5x + 5y + 2z - 12000 + 4000) \times 6]$$

$$: [40000 \times 6 + (40000 + z) \times 6 + (40000 + z - 10000) \times 6 + (40000 + z - 10000 + 8000) \times 6]$$

$$= (86000 + 20x + 6z) : (125000 + 24y + 12z) : (76000 + 25x + 20y + 6z) : (148000 + 3z)$$

$$= (86000 + 20x + 6z) : (125000 + 24y + 12z) : (76000 + 25x + 20y + 6z) : (148000 + 3z)$$

The investment by Preeti after 6 months is Rs. 2000 more than her initial investment

$$\Rightarrow 4x = 2000 + 14000$$

$$\Rightarrow x = \frac{16000}{4}$$

$$\Rightarrow x = 4000$$

The investment by Priya after 1 year is 62.5% of the investment by Preeti after 6 months from start of the business.

$$\Rightarrow 5y = \frac{62.5}{100} \times 4x$$



$$\Rightarrow y = \frac{1}{5} \times \frac{62.5}{100} \times 4 \times 4000$$

$$\Rightarrow y = 2000$$

Piyush's initial investment is Rs. 28000 more than the investment by Priya after 1.5 years

$$\Rightarrow 40000 = 28000 + 2z$$

$$\Rightarrow 2z = 12000$$

$$\Rightarrow z = 6000$$

$$\begin{aligned} &\text{Ratio of profit of Preeti, Piyu, Priya and Piyush} \\ &= (86000 + 20x + 6z) : (125000 + 24y + 12z) : \\ &(76000 + 25x + 20y + 6z) : (148000 + 3z) \\ &= (86000 + 20 \times 4000 + 6 \times 6000) : (125000 + 24 \\ &\times 2000 + 12 \times 6000) : (76000 + 25 \times 4000 + 20 \times \\ &2000 + 6 \times 6000) : (148000 + 3 \times 6000) \\ &= 202000 : 245000 : 252000 : 166000 \\ &= 202 : 245 : 252 : 166 \end{aligned}$$

Let total profit is Rs. 865T

So, share of profit of Priya = 252 and share of profit of Piyu = 245

$$\begin{aligned} &\text{Hence,} \quad \text{required} \quad \% \quad = \\ &\frac{252 - 245}{252} \times 100 = \frac{700}{252} = \frac{25}{9} = 2\left(\frac{7}{9}\right) \% \end{aligned}$$

Q31 Text Solution:

The efficiency of Sheela is 40% less than Jeet and efficiency of Kirti is 40% more than Amar.

Ratio of efficiency of Sheela and Jeet = 60: 100 = 3: 5

Ratio of efficiency of Kirti and Amar = 140: 100 = 7: 5

Kirti and Amar together can complete 80% of the work in 14 days.

Let, Kirti and Amar alone can complete the whole work in 5y days and 7y days respectively.

$$\frac{1}{5y} + \frac{1}{7y} = \frac{80}{100} \times \frac{1}{14} = \frac{2}{35}$$

$$\Rightarrow y = 6$$

Ira and Diya together can complete the whole work in = $3 \times 4 = 12$ days

Jeet alone can complete the whole work in = d days

Diya alone can complete the whole work in = $d \times \frac{120}{100} = \frac{6d}{5}$ days

Hence, Ira alone can complete the whole work in = $\frac{8}{7} \times 18 = \frac{144}{7}$ days

$$\frac{1}{\frac{1}{12} - \frac{5}{6d}} = \frac{144}{7}$$

$$\Rightarrow d = 24$$

Gaurav and Seeta together can complete the whole work in = $\frac{25}{9} \times \frac{18}{5} = 10$ days

Let, Geeta alone can complete the whole work in = t days

Seeta alone can complete the whole work in = $t \times \frac{3}{4} = \frac{3t}{4}$ days

Gaurav alone can complete the whole work in = $\frac{10}{7} \times 9 = \frac{90}{7}$ days

$$\frac{1}{\frac{1}{10} - \frac{4}{3t}} = \frac{90}{7}$$

$$\Rightarrow t = 60 \text{ days}$$

Neha alone can complete the whole work in = $60 - 4 = 56$ days

So,

Time taken by Sheela to complete the whole work = $\left(24 \times \frac{5}{3}\right) = 40$ days

Time taken by Jeet to complete the whole work = 24 days

Time taken by Kirti to complete the whole work = $(5 \times 6) = 30$ days

Time taken by Amar to complete the whole work = $(7 \times 6) = 42$ days

Time taken by Ira to complete the whole work = $\frac{144}{7}$ days

Time taken by Diya to complete the whole work = $\left(\frac{6}{5} \times 24\right) = \frac{144}{5}$ days

Time taken by Gaurav to complete the whole work = $\frac{90}{7}$ days

Time taken by Seeta to complete the whole work = $\left(\frac{3}{4} \times 60\right) = 45$ days

Time taken by Geeta to complete the whole work = 60 days



Time taken by Neha to complete the whole work = 56 days

Percentage of work completed by Geeta and Sheela together in 3 days = $3 \times \left(\frac{1}{60} + \frac{1}{40}\right) \times 100 = 12.5\%$

Q32 Text Solution:

The efficiency of Sheela is 40% less than Jeet and efficiency of Kirti is 40% more than Amar.

Ratio of efficiency of Sheela and Jeet = 60: 100 = 3: 5

Ratio of efficiency of Kirti and Amar = 140: 100 = 7: 5

Kirti and Amar together can complete 80% of the work in 14 days.

Let, Kirti and Amar alone can complete the whole work in 5y days and 7y days respectively.

$$\frac{1}{5y} + \frac{1}{7y} = \frac{80}{100} \times \frac{1}{14} = \frac{2}{35}$$

$$\Rightarrow y = 6$$

Ira and Diya together can complete the whole work in = $3 \times 4 = 12$ days

Jeet alone can complete the whole work in = d days

Diya alone can complete the whole work in = $d \times \frac{120}{100} = \frac{6d}{5}$ days

Hence, Ira alone can complete the whole work in = $\frac{8}{7} \times 18 = \frac{144}{7}$ days

$$\frac{1}{\frac{1}{12} - \frac{5}{6d}} = \frac{144}{7}$$

$$\Rightarrow d = 24$$

Gaurav and Seeta together can complete the whole work in = $\frac{25}{9} \times \frac{18}{5} = 10$ days

Let, Geeta alone can complete the whole work in = t days

Seeta alone can complete the whole work in = $t \times \frac{3}{4} = \frac{3t}{4}$ days

Gaurav alone can complete the whole work in = $\frac{10}{7} \times 9 = \frac{90}{7}$ days

$$\frac{1}{\frac{1}{10} - \frac{4}{3t}} = \frac{90}{7}$$

$\Rightarrow t = 60$ days

Neha alone can complete the whole work in = $60 - 4 = 56$ days

So,

Time taken by Sheela to complete the whole work = $\left(24 \times \frac{5}{3}\right) = 40$ days

Time taken by Jeet to complete the whole work = 24 days

Time taken by Kirti to complete the whole work = $(5 \times 6) = 30$ days

Time taken by Amar to complete the whole work = $(7 \times 6) = 42$ days

Time taken by Ira to complete the whole work = $\frac{144}{7}$ days

Time taken by Diya to complete the whole work = $\left(\frac{6}{5} \times 24\right) = \frac{144}{5}$ days

Time taken by Gaurav to complete the whole work = $\frac{90}{7}$ days

Time taken by Seeta to complete the whole work = $\left(\frac{3}{4} \times 60\right) = 45$ days

Time taken by Geeta to complete the whole work = 60 days

Time taken by Neha to complete the whole work = 56 days

The part of work done by Neha and Amar in 6 days = $6 \times \left(\frac{1}{56} + \frac{1}{42}\right) = \frac{1}{4}$

Q33 Text Solution:

The efficiency of Sheela is 40% less than Jeet and efficiency of Kirti is 40% more than Amar.

Ratio of efficiency of Sheela and Jeet = 60: 100 = 3: 5

Ratio of efficiency of Kirti and Amar = 140: 100 = 7: 5

Kirti and Amar together can complete 80% of the work in 14 days.

Let, Kirti and Amar alone can complete the whole work in 5y days and 7y days respectively.

$$\frac{1}{5y} + \frac{1}{7y} = \frac{80}{100} \times \frac{1}{14} = \frac{2}{35}$$



$$\Rightarrow y = 6$$

Ira and Diya together can complete the whole work in $= 3 \times 4 = 12$ days

Jeet alone can complete the whole work in $= d$ days

Diya alone can complete the whole work in $= d \times \frac{120}{100} = \frac{6d}{5}$ days

Hence, Ira alone can complete the whole work in $= \frac{8}{7} \times 18 = \frac{144}{7}$ days

$$\frac{1}{\frac{1}{12} - \frac{5}{6d}} = \frac{144}{7}$$

$$\Rightarrow d = 24$$

Gaurav and Seeta together can complete the whole work in $= \frac{25}{9} \times \frac{18}{5} = 10$ days

Let, Geeta alone can complete the whole work in $= t$ days

Seeta alone can complete the whole work in $= t \times \frac{3}{4} = \frac{3t}{4}$ days

Gaurav alone can complete the whole work in $= \frac{10}{7} \times 9 = \frac{90}{7}$ days

$$\frac{1}{\frac{1}{10} - \frac{4}{3t}} = \frac{90}{7}$$

$$\Rightarrow t = 60 \text{ days}$$

Neha alone can complete the whole work in $= 60 - 4 = 56$ days

So,

Time taken by Sheela to complete the whole work $= \left(24 \times \frac{5}{3}\right) = 40$ days

Time taken by Jeet to complete the whole work $= 24$ days

Time taken by Kirti to complete the whole work $= (5 \times 6) = 30$ days

Time taken by Amar to complete the whole work $= (7 \times 6) = 42$ days

Time taken by Ira to complete the whole work $= \frac{144}{7}$ days

Time taken by Diya to complete the whole work $= \left(\frac{6}{5} \times 24\right) = \frac{144}{5}$ days

Time taken by Gaurav to complete the whole work $= \frac{90}{7}$ days

Time taken by Seeta to complete the whole work $= \left(\frac{3}{4} \times 60\right) = 45$ days

Time taken by Geeta to complete the whole work $= 60$ days

Time taken by Neha to complete the whole work $= 56$ days

The time taken by Amar, Sheela, and Neha together to complete 20% of the work $= \frac{20}{100} \times \frac{1}{\frac{1}{42} + \frac{1}{40} + \frac{1}{56}} = \frac{20}{100} \times 15 = 3$ days

The time taken by Geeta and Kirti together to complete 30% of the work $= \frac{30}{100} \times \frac{1}{\frac{1}{60} + \frac{1}{30}} = 6$ days

days

So, required difference $= 6 - 3 = 3$ days

