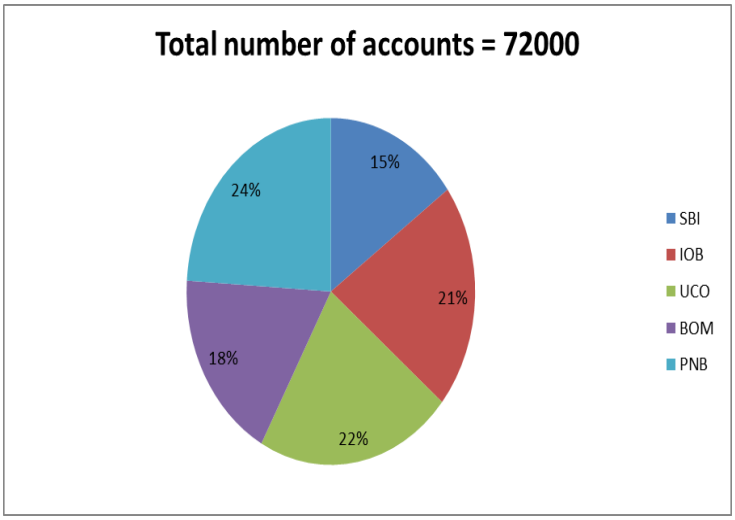
Directions (1-5): Study the following information carefully and answer the questions given below.

The given pie chart shows the total number of accounts (Saving and Current) in five different banks.



1) If the number of current accounts in SBI and PNB is 6000 and 9600 respectively, then find the average number of saving accounts in SBI and PNB?

a) 6240
b) 6250
c) 6260
d) 6270
e) 6230

2) Ratio of the number of saving to Current accounts in SBI and IOB is 4:5 and 3:4 respectively. What is the ratio of the number of Current accounts in SBI to IOB?

a) 25:36
b) 26:37
c) 12:19
d) 25:37
e) 23:36

3) If the number of current accounts in UCO is 7/12 of the total number of accounts in UCO, then find the difference between the number of saving and current accounts in UCO?

a) 2280
b) 2460
c) 2520
d) 2640
e) 2710

4) Total number of saving accounts in Indian Bank is the difference between the total number of accounts in PNB and SBI. If the ratio of the number of saving to current accounts in Indian Bank is 9:11, then find the total number of accounts in Indian Bank?

a) 14400
b) 14800
c) 14500
d) 14200
e) 14600

5) Find the average number of accounts in IOB, BOM and PNB?

a) 15110

b) 15130
c) 15120
d) 15140
e) 15150

Direction (6-10): Read the following information carefully and answer the questions based on it.

In four schools (A, B, C and D), there is a total number of boys and girls together is 7890 students. The number of boys in school B is 360 more than that of girls in school B and the number of boys in school A is 50% more than that of girls in school A) The number of girls in school C is 33.33% more than that of boys in school C which is 30% less than the number of boys in school B. The number of boys in school B is 75% of number of girls in school D which is 1000 more than the number of boys in school D. Number of boys in school B is 1200.

6) How many girls are there in school A?

a) 676
b) 756
c) 696
d) 636
e) None of these

7) Find the total number of students in school C?

a) 2060
b) 1860
c) 1960
d) 1760
e) None of these

8) Find the difference between the number of girl students in school B and D?

a) 960
b) 740
c) 790
d) 860
e) None of these

9) Number of girls in school D is approx. how much % of the total number of students in school A and C together?

a) 42%
b) 44%
c) 43%
d) 47%
e) 40%

10) Find the total number of girls in all schools together?

a) 4246
b) 4226
c) 4136
d) 4236
e) None of these

Directions (11-20): Following questions contain two statements as statement I and statement II. You have to determine which statement/s is/are necessary to answer the question and give answer as,

11)What is the quantity of milk in vessel A?

Statement I: Ratio of the mixture of milk and water in vessel A is 3:2 and the total quantity of the mixture of milk and water in vessel B is 90 liters.

Statement II: Ratio of the milk and water in the ratio of vessel B is 5:4. If the mixture of vessel A and B is mixed together, then the ratio of milk and water becomes in the final solution is 4:3.

A) The data in statement I alone is sufficient to answer the question, while the data in statement II alone is not sufficient to answer the question

B.The data in statement II alone is sufficient to answer the question, while the data in statement I alone is not sufficient to answer the question

C.The data either in statement I alone or in statement II alone is sufficient to answer the question

D.The data given in both statements I and II together are not sufficient to answer the question

E.The data given in both statements I and II together are necessary to answer the question

12) How many days B alone complete the work?

Statement I: A, B and C together can complete the work in 6 days and B and C together can complete the work in 8(4/7) days. Ratio of the efficiency of A to C is 1:2.

Statement II: A and B together can complete the work in 12 days and B and C together can complete the work in 20 days.

A) The data in statement I alone is sufficient to answer the question, while the data in statement II alone is not sufficient to answer the question

B.The data in statement II alone is sufficient to answer the question, while the data in statement I alone is not sufficient to answer the question

C.The data either in statement I alone or in statement II alone is sufficient to answer the question

D.The data given in both statements I and II together are not sufficient to answer the question

E.The data given in both statements I and II together are necessary to answer the question.

13)What is the present age of Arul?

Statement I: Six years hence, the ratio of the age of Arul to Bala is 5:3 and 4 years ago, the age of Soni is 25% more than the age of Bala at that time.

Statement II: Ratio of the age of Arul to Soni is 4:3 and the ratio of the age of Bala and Renu is 3:2. Difference between the age of Renu and Soni is 12 years.

A) The data in statement I alone is sufficient to answer the question, while the data in statement II alone is not sufficient to answer the question

B.The data in statement II alone is sufficient to answer the question, while the data in statement I alone is not sufficient to answer the question

C.The data either statement I alone or statement II alone is sufficient to answer the question

D.The data given in both statements I and II together are not sufficient to answer the question

E.The data given in both statements I and II together are necessary to answer the question.

14)What is the speed of the train?

Statement I: If the speed of the train is decreased by 5 kmph after covering 3/10 of the distance and 1/10 of the remaining distance is covered in 60 minutes after that it again started moving with its usual speed.

Statement II: If the speed of the train is increased by 33(1/3)%, then the time taken is 100 minutes less than the time it takes to cover the whole journey with the usual speed.

A) The data in statement I alone is sufficient to answer the question, while the data in statement II alone is not sufficient to answer the question

B.The data in statement II alone is sufficient to answer the question, while the data in statement I alone is not sufficient to answer the question

C.The data either in statement I alone or in statement II alone is sufficient to answer the question

D.The data given in both statements I and II together are not sufficient to answer the question

E.The data given in both statements I and II together are necessary to answer the question.

15)The speed of boat A in still water is what percent of the speed of boat B in still water?

Statement I: The speed of boat A in still water is 75% more than the speed of the stream and the speed of boat B in still water is 25% more than the speed of the stream.

Statement II: The total time taken by boat A to cover 150 km along with the stream and against the stream is 6 hours and the total time taken by boat B to cover 180 km along with stream and against the stream is 8 hours.

A) The data in statement I alone is sufficient to answer the question, while the data in statement II alone is not sufficient to answer the question

B.The data in statement II alone is sufficient to answer the question, while the data in statement I alone is not sufficient to answer the question

C.The data either in statement I alone or in statement II alone is sufficient to answer the question

D.The data given in both statements I and II together are not sufficient to answer the question

E.The data given in both statements I and II together are necessary to answer the question.

16)What is the curved surface area of the cone?

Statement I: The radius of the cone is 75% of the height of the cone and the slanting height of the cone is 15 cm.

Statement II: The radius of the cone is half of the side of the cube whose total surface area is 1176cm^2 and the height of the cone is 24 cm.

A) Only I is sufficient to answer the question

B.Only II is sufficient to answer the question

C.Either I or II is sufficient to answer the question

D.Both I and II are necessary to answer the question

E.The question can't be answered even with both I and II

17)If the total number of students in the class is 36, then find the number of girls in the class?

Statement I: Average weight of the class is 42 kg and the average weight of the boys and girls in the class is 45 kg and 38.25 kg respectively.

Statement II: Average weight of the boys in the class is 30 kg and the total weight obtained by the boys in the class is 600 kg.

A) The data in statement I alone is sufficient to answer the question, while the data in statement II alone is not sufficient to answer the question

B.The data in statement II alone is sufficient to answer the question, while the data in statement I alone is not sufficient to answer the question

C.The data either in statement I alone or in statement II alone is sufficient to answer the question

D.The data given in both statements I and II together are not sufficient to answer the question

E.The data given in both statements I and II together are necessary to answer the question.

18) Find the value of x?

Statement I: The ratio of the milk and water in the mixture of vessel A and vessel B is 2: 3 and 5: 4 respectively.

Statement II: 40 liters of milk from vessel A is mixed with x liters of mixture vessel B, then the mixture of milk and water ratio of vessel B becomes 7: 4.

A) The data in statement I alone is sufficient to answer the question, while the data in statement II alone is not sufficient to answer the question

B.The data in statement II alone is sufficient to answer the question, while the data in statement I alone is not sufficient to answer the question

C.The data either in statement I alone or in statement II alone is sufficient to answer the question

D.The data given in both statements I and II together are not sufficient to answer the question

E.The data given in both statements I and II together are necessary to answer the question.

19) A and B started the business. What is the profit share of B?

Statement I: The initial investment of A is 50% more than that of B and the ratio of the investment period of A and B is 2:3

Statement II: The difference between the initial investment of A and B is Rs.4000 and the sum of the profit share of A and B at the end of business is Rs.5000.

a) The data in statement I alone is sufficient to answer the question, while the data in statement II alone is not sufficient to answer the question

b) The data in statement II alone is sufficient to answer the question, while the data in statement I alone is not sufficient to answer the question

c) The data either in statement I alone or in statement II alone is sufficient to answer the question

d) The data given in both statements I and II together are not sufficient to answer the question

e) The data given in both statements I and II together are necessary to answer the question.

20) What is the speed of the car?

Statement I: Ratio of the speed of car and bike is 4:1 and the time taken by the bike to cover 180 km is 9 hours.

Statement II: The car covers one-third of the distance in 3 hours and 50% of the remaining distance in 4.5 hours and the rest of the distance in 2 hours and the speed of the bike is 20 kmph.

a) The data in statement I alone is sufficient to answer the question, while the data in statement II alone is not sufficient to answer the question

b) The data in statement II alone is sufficient to answer the question, while the data in statement I alone is not sufficient to answer the question

c) The data either in statement I alone or in statement II alone is sufficient to answer the question

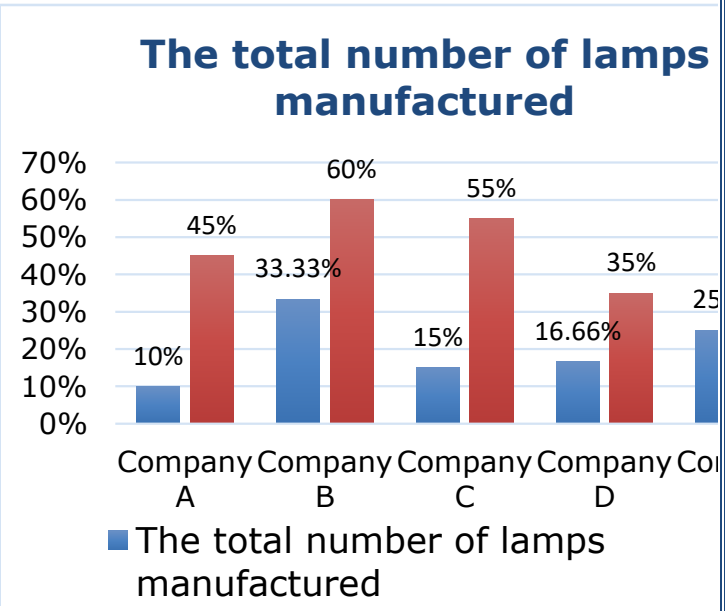
d) The data given in both statements I and II together are not sufficient to answer the question

e) The data given in both statements I and II together are necessary to answer the question.

Directions (21-25): Read the following information carefully and answer the questions.

The given bar graph shows the percentage distribution of the total number of lamps (halogen and fluorescent) manufactured in five different companies i.e. company A, company B, company C, company D and company E on Monday and also given the percentage of the total number of halogen lamps manufactured in five different companies.

Note: The total number of fluorescent lamps manufactured in company E is 720.



21) If the total number of halogen and fluorescent lamps manufactured by company A on Tuesday is 84 and 136 more than that of Monday in company A, then find the difference between the total number of lamps manufactured by company D on Monday and company A on Tuesday?

a) 100

b) 150

c) 180

d) 120

e) None of these

22) In company E, 87.5% of the lamps are sold out of which 370 are halogen lamps and then find the difference between the total number of halogen and fluorescent lamps unsold?

a) 40

b) 20

c) 50
d) 70
e) None of these

23) Find the difference between the average number of halogen lamps manufactured in companies A, C and E together and the average number of fluorescent lamps manufactured in companies A and C together?

a) 55
b) 70
c) 45
d) 60
e) None of these

24) In company B, 37.5% of the lamps are unsold out of which 350 are halogen lamps. If the selling price of a fluorescent lamp is Rs.99, then find the total amount earned on fluorescent lamps?

a) Rs.35420
b) Rs.37580
c) Rs.38610
d) Rs.32890
e) None of these

25) If the total number of lamps manufactured in company F is 8.33% more than that of company C in which 380 are halogen lamps, then the total number of fluorescent lamps manufactured in company C is what percentage of the total number of fluorescent lamps manufactured in company F?

a) 81%
b) 45%
c) 58%
d) 72%
e) None of these

Directions (26-30): Study the following information carefully and answer the questions given below.

The given table shows the total number of students and the percentage of girls from four different schools in two different years.

School	1999		2000	
	Total	% of girls	Total	% of girls
A	2100	40%	1800	45%
B	2700	55%	2400	35%
C	1000	70%	1500	40%
D	1400	25%	2200	60%

26) What is the difference between the number of boys from school A in 1999 and 2000 together and the number of girls from school C in both years together?

a) 920
b) 950
c) 980
d) 960
e) 940

27) If the number of girls from school E in 1999 is 550 which is 44% of the total number of students from school E in 1999 and the total number of students from school E in the year 2000 is 2400 and the ratio of the number of boys to girls from school E in the year 2000 is 5:3. What is the ratio of the number of boys in school

D in both years to the number of boys in school E in both years together?

a) 19:22
b) 10:11
c) 39:44
d) 19:24
e) None of these

28) 30% of the girls from school D in 1999 liked Physics. If the total number of students who like physics from school D in 1999 is 260, then find the number of boys who do not like Physics.

a) 895
b) 880
c) 890
d) 875
e) 885

29) Find the average number of girls from school A and B in both years together?

a) 1985.5
b) 1987.5
c) 1989.5
d) 1991.5
e) None of these

30) The number of boys from school C in both years is approximately what percent of the number of boys from school B in both years together?

a) 37%
b) 39%
c) 41%
d) 43%
e) 45%

Directions (31-40): Following questions have two quantities as Quantity I and Quantity II. You have to determine the relationship between them and give answer as,

31) **Quantity I:** If the ratio of the marked to cost price of the article is 5:4 and the shopkeeper offers a discount of Rs.300 while he gets the profit of 20%, then what is the cost price of the article?

Quantity II: If the profit earned by selling of the mobile for Rs.6600 is equal to the loss incurred when the same is sold for Rs.5200, then find the cost price of the mobile.

a) Quantity I > Quantity II
b) Quantity I ≥ Quantity II
c) Quantity II > Quantity I
d) Quantity II ≥ Quantity I
e) Quantity I = Quantity II or Relation cannot be established

32)**Quantity I:** A boat covers a certain distance downstream in 5 hours but takes 7 hours to return upstream to the starting point. If the speed of the stream is 4 km/hr. Find the distance that the boat covers upstream or downstream.

Quantity II: A man can row 15 kmph in still water and the river is running at 5 kmph. If the man takes 24 hours to row to a place and back, how far is the place?

a) Quantity I > Quantity II
b) Quantity I ≥ Quantity II

c) Quantity I ≤ Quantity II
d) Quantity I < Quantity II
e) Quantity I = Quantity II or Relationship cannot be established

33)Quantity I: Renu invests Rs.6000 in a compound interest scheme. If the total compound interest earned in 2 years is Rs.2640, then find the rate of interest per annum?
Quantity II: France invests Rs.4800 in a simple interest scheme at the rate of x% per annum for 3 years. If France received the interest of Rs.2592 after 3 years, then find the value of x?
a) Quantity I > Quantity II
b) Quantity I ≥ Quantity II
c) Quantity II > Quantity I
d) Quantity II ≥ Quantity I
e) Quantity I = Quantity II or Relation cannot be established

34) Quantity I: Time taken by a bike to cross a tunnel and a bridge is 36 seconds and 30 seconds respectively. If the length of the tunnel is 96 m more than that of the bridge, then in what time (in minutes) the bike will cover 4.32 km?
Quantity II: A and B together can finish a work in 5 hours and the efficiency of A is twice that of B. If A works with 5/3 of its original efficiency, then find the time (in hours) taken by A alone to complete the work?
a) Quantity I > Quantity II
b) Quantity I < Quantity II
c) Quantity I ≥ Quantity II
d) Quantity I ≤ Quantity II
e) Quantity I = Quantity II or relation cannot be determined

35) Quantity I: Ratio of the downstream speed to the upstream speed of a boat is 3: 2, then find the speed of the stream is what percent of the speed of the boat in still water?
Quantity II: Average of present ages of A, B and C is less than or equal to 25 and A is 5 years younger than C. If C's present age is 20% more than A's present age, then what is B's present age?
a) Quantity I > Quantity II
b) Quantity I < Quantity II
c) Quantity I ≥ Quantity II
d) Quantity I ≤ Quantity II
e) Quantity I = Quantity II or relation cannot be determined

36)Quantity I: A necklace was sold for Rs. 5500 with a profit of 10 %. If it were sold for Rs. 5900, then what would have been the percentage of profit?
Quantity II: A person bought two showcases for Rs. 5000 each. He sold one at a profit of 10 % and the other at a loss of 5 %. What would be his overall profit or loss percentage in the whole transaction?
a) Quantity I > Quantity II
b) Quantity I ≥ Quantity II
c) Quantity II > Quantity I
d) Quantity II ≥ Quantity I

e) Quantity I = Quantity II or Relation cannot be established

37)Quantity I: A bucket contains some quantity of milk and water in the ratio of 3: 2. If 15 litres of mixture is drawn out and replaced with water and the ratio of milk and water becomes 21: 29, then find the initial quantity of mixture?

Quantity II: How many litres of water should be added to a 150 litres mixture containing milk and water in the ratio of 2: 1, such that the resultant mixture has 40 % milk in it?

a) Quantity I > Quantity II
b) Quantity I ≥ Quantity II
c) Quantity II > Quantity I
d) Quantity II ≥ Quantity I
e) Quantity I = Quantity II or Relation cannot be established

38)Quantity I: If the side of the cube is equal to the radius of the circle whose perimeter is 88 cm, then find the surface area of the cube?

Quantity II: If the surface area of the sphere is 616 cm^2 and radius of the sphere to radius of the cone are in the ratio of 1: 2 and the slanting height of the cone is 32 cm, find the curved surface area of the cone?

a) Quantity I > Quantity II
b) Quantity I ≥ Quantity II
c) Quantity II > Quantity I
d) Quantity II ≥ Quantity I
e) Quantity I = Quantity II or Relation cannot be established

39)Quantity I: If the ratio of the present ages of Udhay to Geetha is 7:8 and after 16 years, the ratio of the ages of Udhay and Geetha becomes 11:12, then what is Geetha's age after 8 years?

Quantity II: After 7 years, the ratio of the ages of Warner, Virat and Kevin is 5:3:7. If the average ages of Warner, Kevin and Virat is 28 years, then what is the present age of Kevin?

a) Quantity I > Quantity II
b) Quantity I ≥ Quantity II
c) Quantity I = Quantity II
d) Quantity I < Quantity II
e) Quantity I ≤ Quantity II

40) Quantity I: A, B and C started the business with the investment of Rs.(x + 1000), Rs.2x and Rs.3x respectively. At the end of one year, the total profit of the business is Rs.14000 and A's profit share is Rs.4000, then find the value of x?

Quantity II: A and B started the business with the investment of Rs.5000 and Rs.6400 respectively. At the end of the year, the total profit of the business is Rs.2850, find the profit share of A?

a) Quantity I > Quantity II
b) Quantity I ≥ Quantity II
c) Quantity II > Quantity I
d) Quantity II ≥ Quantity I
e) Quantity I = Quantity II or Relation cannot be established

Direction (41-45): Study the following information carefully and answer the question given below.

Out of total number of students in a class 32% of students only play cricket and 24% of students only play basket ball and 16% of students play only badminton. The ratio of students who play only badminton to the students who play only basket ball and badminton and the students who play only badminton to the students who play only cricket and badminton is 3: 1 and 4: 1 respectively. The number of students who play all the game and none of the game is 3 and 13 respectively. The number of students who play only cricket and basket ball is 25% of the students who play only cricket

41) Find the total number of students who play cricket and basket ball.

a) 113
b) 138
c) 118
d) 108
e) 148

42) The number of students who play all the game is what percentage of students who play only cricket?

a) 12.5%
b) 6.25%
c) 25%
d) 37.5%
e) 18.75%

43) Find the ratio of total number of students who play only badminton and play only basket ball and badminton to the number of students who doesn't play any game.

a) 17: 11
b) 16: 11
c) 32: 13
d) 15: 13
e) 24: 11

44) Find the average number of students who play only one game.

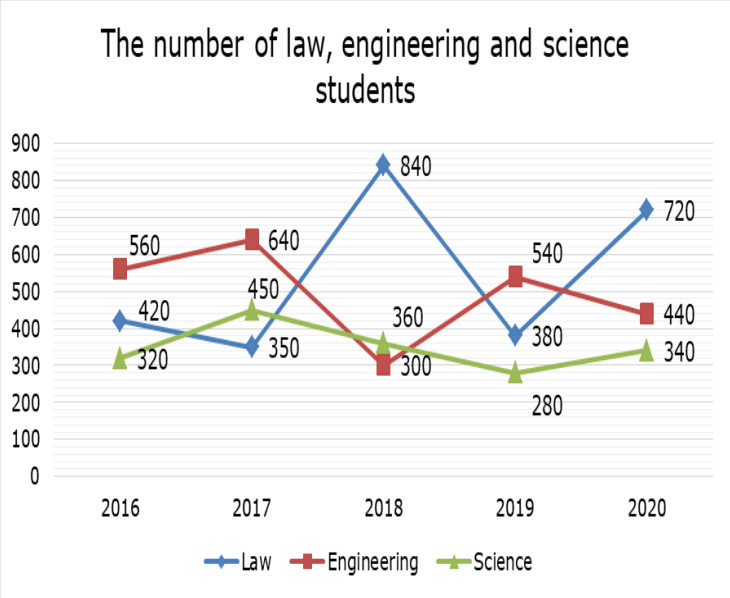
a) 48
b) 24
c) 60
d) 36
e) 72

45) Find the total number of students in the class.

a) 130
b) 120
c) 140
d) 170
e) 150

Directions (46-50): Read the following information carefully and answer the questions.

The given line graph shows the number of students in three different majors i.e. law, engineering and science in five different years 2016, 2017, 2018, 2019 and 2020 from Mumbai.



46) The number of engineering and science students in the year 2018 is what percentage of the number of law, engineering and science students in the year 2019?

a) 30%

b) 55%

c) 40%

d) 15%

e) None of these

47) Find the difference between the average number of law students in the years 2018 and 2020 together and the average number of engineering students in the years 2017 and 2019 together?

a) 170

b) 110

c) 150

d) 190

e) None of these

48) If the average number of law students in the years 2019 and 2021 is 415 and 66.66% of the number of law students in the year 2021 is boys. Then find the number of girls law students in the year 2021?

a) 150

b) 120

c) 180

d) 100

e) None of these

49) Find the ratio of the number of law, engineering and science students in the year 2018 to the number of engineering students in the years 2016 and 2020 together?

a) 5:6

b) 4:7

c) 3:2

d) 9:5

e) None of these

50) In the year 2018, the number of architecture and science students is 780 and then the number of architecture students is how much percentage more/less than the number of engineering students?

a) 25% less

b) 40% more

c) 15% less

d) 30% more

e) None of these

Direction (51-55): Read the following information carefully and answer the questions based on it

There are four companies – P, Q, R and S. Employees are working in two different shifts – Shift 1 and Shift 2

Shift 1: Number of employees in company R is half of the company Q which is 80 less than the number of employees in company P. Number of employees in company S is 50% of company P

Shift 2: Number of employees in company P in the shift – 2 is 350% more than employees in company R in the shift – 1. The respective ratio of the number of employees in Q and S is 6:5 and their difference is 30. Number of students in R is 97.5 less than the average number of employees in shift -2 which is 197.5.

51) Find the total number of employees in all the companies together is what % of the employees in the shift – 1?

a) 241.67%
b) 232.67%
c) 229.67%
d) 231.67%
e) None of these

52) Total number of employees in company Q is how much % more or less than that of company R?

a) 88.88%
b) 88.33%
c) 87.88%
d) 85.33%
e) None of these

53) If the ratio of the Male and female employees in company P is 11:13, then find the difference between the male and female employees in company P?

a) 75
b) 80
c) 60
d) 40
e) None of these

54) If the total number of female employees in company S is 150, then find the respective ratio of the male and female employees in company S?

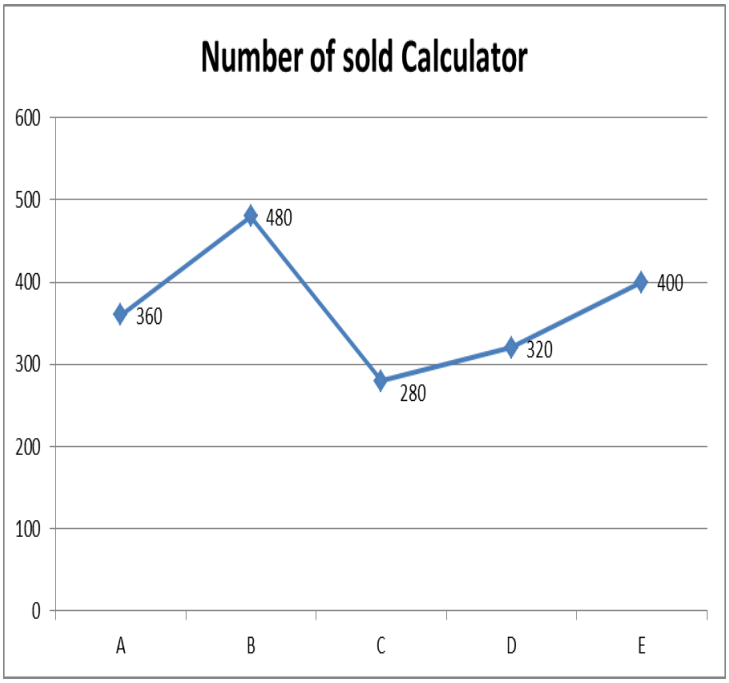
a) 5:6
b) 3:4
c) 4:5
d) 7:5
e) None of these

55) If 30% and 40% of the employees of company R in shift -1 and shift – 2 respectively get the promotion, then find the number of employees in company R who did not get the promotion?

a) 126
b) 116
c) 96
d) 106
e) None of these

Directions (56-60): Study the following information carefully and answer the questions given below.

The given line graph shows the number of calculators sold out of total calculators in five different shops.



The given table shows the percentage of unsold calculators out of the total number of calculators in the five different shops.

Shops	% of unsold calculator
A	10%
B	20%
C	30%
D	20%
E	20%

56) Total number of calculators in D is what percent of the number of the sold calculators in B?

a) 77.77%

b) 80.80%

c) 83.33%

d) 86.66%

e) 88.88%

57) Find the average number of unsold calculators in all the shops together?

a) 90

b) 92

c) 94

d) 88

e) 86

58) The number of unsold calculators in F is the average number of the sold calculators in C and E together. If the ratio of the number of the sold calculators in F to A is 7:9, then find the total number of calculators in F?

a) 580

b) 590

c) 600

d) 610

e) 620

59) What is the difference between the total number of calculators in B and E?

a) 120

b) 80

c) 100

d) 150

e) 170

60) Find the average number of sold calculators in all the shops together?

a) 368

b) 370

c) 372
d) 366
e) 374

61) A started the business with an initial investment of Rs.7000. After few months, B joined the business with 20% more than the initial investment of A) If at the end of the year, the total profit is Rs.11200 in which profit share of A is 7000. Then find the investment time period of B?
a) 6
b) 4
c) 10
d) 8
e) None of these

62) The sum of the cost price of Radio and TV is Rs.7800. The shopkeeper sold the Radio at 20% profit and TV at 25% loss. If the selling price of the TV and Radio is equal, then find the cost price of the Radio?
a) Rs.3600
b) Rs.3200
c) Rs.3000
d) Rs.2800
e) Rs.2500

63) Rahul spends 12% of the salary on transport, 20% on shopping, 40% on house rent and 50% of the remaining on education fee. Now he left with him is Rs.2800. Find Rahul's salary?
a) Rs.30000
b) Rs.20000
c) Rs.40000
d) Rs.50000
e) None of these

64) The difference of two numbers is 800. On dividing the larger number by the smaller number, we get 3 as quotient and 0 as remainder. What is the smaller number?
a) 400
b) 600
c) 800
d) 200
e) None of these

65) The ratio of the speed of boat in still water to stream is 3:1. If the difference between the distances covered by boat along with stream and against stream in 4 hours is 40 km, what is the speed of the downstream?
a) 24 kmph
b) 40 kmph
c) 20 kmph
d) 60 kmph
e) None of these

66)Pipe A and B together can fill a tank in 6 hours and Pipe C alone fills the tank in 15 hours. If Pipe A, B and C together can opened simultaneously and after 3 hours pipe C closed, in how many hours A and B together can fill the remaining tank?
a) 7/4 hours
b) 5/3 hours
c) 9/5 hours

d) 8/5 hours
e) None of these

67) If the simple interest of the sum for 4 years is Rs.2880 and the same sum invests in compound interest scheme at the rate of 10% per annum for 2 years. If the compound amount received after 2 years is Rs.5808, then find the rate of interest offered by simple interest?
a) 10%
b) 12%
c) 15%
d) 18%
e) None of these

68) The ratio of the income of Vinod to Nithish is 8: 9 and the savings of Vinod and Nithish is in the ratio of 4: 5. If the expenditure of Nithish is Rs.6000 more than that of the expenditure of Vinod, then find the income of Nithish?
a) Rs.4500
b) Rs.5400
c) Rs.3600
d) Rs.2700
e) Cannot be determined

69)If the car increases the speed by 20 kmph, then it will take 3 hours less to cover the distance between A and B and if the car decreases the speed by 20 kmph, then it takes 4.5 hours more to cover the same distance, then find the distance between the A and B?
a) 900 km
b) 1200 km
c) 1500 km
d) 1800 km
e) None of these

70)Pipe A can fill the tank in 12 hours and pipe B and A together can fill the tank in 8 hours. If the efficiency of pipe B to C is 3:2 and pipe D and C together can fill the tank in 12 hours, in how many hours pipe A and D together can fill the tank?
a) 5(1/5) days
b) 6(1/5) days
c) 9(1/5) days
d) 8(1/5) days
e) 7(1/5) days

71)Vessel A, B and C contains mixture of milk and water in the ratio of 5:4, 3:2 and 6:5. If 36 liters, 40 liters and 44 liters mixture of vessel A, B and C respectively are mixed, then what is the ratio of the milk to water in the final solution?
a) 15: 11
b) 17: 13
c) 19: 17
d) 11: 9
e) None of these

72)Hari invests Rs.8000 in simple interest in a certain scheme for 4 years and received the total amount of Rs.13760. If the rate of interest is increased by 2%, then what will be the total amount at the end of two years?
a) Rs.11600
b) Rs.12000

c) Rs.11500
d) Rs.11200
e) Rs.12400

73)The ratio of present age of Amir and Abi is 4 : x. 6 years ago the age of Amir and the age of Abi 5 years hence is in the ratio of 2 : 5. After 10 years, the sum of their ages is 56 years. Find the value of x?
a) 7
b) 5
c) 4
d) 6
e) None of these

74)Hari invests Rs.8000 in simple interest in a certain scheme for 4 years and received the total amount of Rs.13760. If the rate of interest is increased by 2%, then what will be the total amount at the end of two years?
a) Rs.11600
b) Rs.12000
c) Rs.11500
d) Rs.11200
e) Rs.12400

75)A can contains a mixture of two liquids A and B in the ratio 5: 3. When 4 liters of mixture are drawn off and the can is filled with liquid B, the ratio of A and B becomes 5: 7. How many liters of liquid A was contained by the can initially?
a) 6
b) 7.5
c) 8
d) 4.5
e) None of these

76)A alone completes the work in 30 days and the efficiency of A is 300% more than the efficiency of B. If A, B and C together can complete the work in 16 days and they are get the total wages of Rs.27000, then what is the wages of C?
a) Rs.9000
b) Rs.12000
c) Rs.10000
d) Rs.6000
e) None of these

77)Ratio of the radius of the cone to height of the cone is 7:9 and the height of the cone is equal to the height of the cylinder. If volume of the cone is 3696 cm^3 and the radius of the cylinder is half of the radius of the cone, then find the volume of the cylinder?
a) 2824 cm^3
b) 2696 cm^3
c) 2456 cm^3
d) 2772 cm^3
e) None of these

78)A, B and C entered into a partnership by investing Rs. 20000, Rs. 30000 and Rs. 40000 respectively. After 5 months, A invested Rs. 5000 more but C withdraw Rs. 10000. Find the share of B, if the total profit at the end of the year is Rs. 125400?
a)Rs. 55800

b) Rs. 58600
c) Rs. 46400
d) Rs. 43200
e) None of these

79)A boat can row at 40 kmph in still water. If the river is flowing at 5 kmph, the boat takes 12 hours to go against stream, in how much time, the boat will take to cover three-fourth of the distance with stream?
a) 7 hours
b) 8 hours
c) 6 hours
d) 9 hours
e) 5 hours

80)Abishek can do a piece of work in 20 days. He works alone for 9 days and Yuva alone finishes the remaining work in 22 days. Find the number of days taken by both of them to complete the work?
a) 16 ½ days
b) 15 3/8 days
c) 13 1/3 days
d) 14 2/5 days
e) None of these

81)The average score of 50 students of a class is 72. If the last five students are removed, the average drops by 4 marks. If these five marks are consecutive integers, then find the least score?
a)118
b) 106
c) 124
d) 112
e) None of these

82)The ratio of the length of train A to B is 3:2 and the ratio of the speed of train A to B is 3:2. If train A crosses train B running in the opposite direction in 36 seconds, then find the difference between the length of train A and B?
a) 100 m
b) 150 m
c) 120 m
d) 200 m
e) Cannot be determined

83)If the sum of the length and breadth of the rectangle is 28 cm and the perimeter of the square is equal to the perimeter of the rectangle and the length of the rectangle is 2 cm more than the side of the square. Find the area of the rectangle?
a) 168 cm^2
b) 176 cm^2
c) 192 cm^2
d) 216 cm^2
e) None of these

84)The ratio of the ages of Ram to Anil is 4:5 and the ratio of the present age of Anil to Manu is 3:4. If the average ages of Ram, Anil and Manu together is one year less than the present age of Tinu and Tinu is 12 years elder than Ram, then find the present age of Manu?
a) 60 years

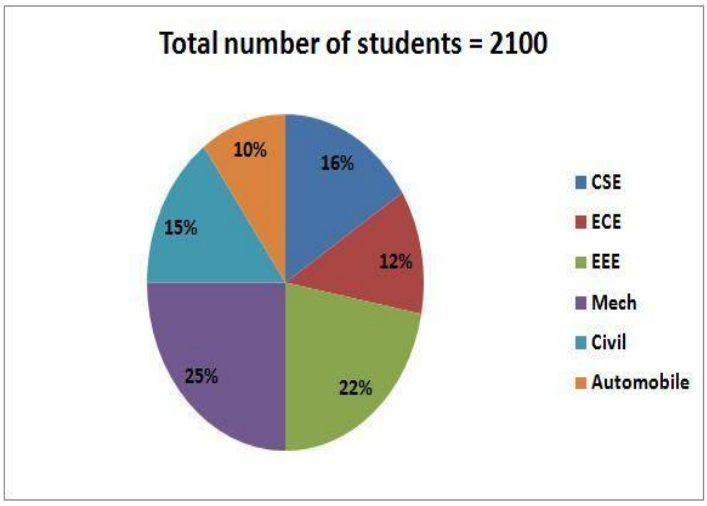
b) 48 years
c) 72 years
d) 56 years
e) None of these

85)If the shopkeeper sold the mobile is Rs.15000 and then he gets some loss. If he sold the same mobile at Rs.19200 and then he gets profit is double of loss. Find the cost price of the mobile?

a) Rs.16000
b) Rs.18000
c) Rs.17500
d) Rs.15500
e) None of these

Directions (86-90): Study the following information carefully and answer the questions given below.

The given pie chart shows the number of students in six different departments in college A in 2019.



The given table shows the number of boys to girls in six different departments.

Departments	Boys : Girls
CSE	3: 5
Mech	3: 2
ECE	3: 1
EEE	7: 4
Civil	11: 4
Automobile	4: 1

86)What is the difference between the number of girls who studied in CSE, Civil and Automobile departments together and the number of boys who studied in ECE, EEE and Mech together?

a) 462
b) 428
c) 375
d) 472
e) None of these

87)What is the ratio of the number of boys who studied in Automobile and Mech department together to the number of girls who studied in EEE and CSE together?

a) 23:11
b) 23:17
c) 21:19
d) 23:18
e) None of these

88) If 33 1/3% of the boys in EEE are coming from Chennai and 66 2/3% of boys who in Civil are coming from Chennai, then what is the difference between the numbers of boys are coming from Chennai in EEE and Civil?

a) 58
b) 61

c) 56
d) 51
e) None of these

89)What is the average number of girls who studied in ECE, EEE and Mech together?
a) 141
b) 142
c) 143
d) 144
e) None of these

90)The number of boys who studied in CSE and Civil together is what percent more than the number of girls who studied in EEE and Automobile together?
a) 55%
b) 40%
c) 65%
d) 70%
e) None of these

Directions (91-95): Read the following information carefully and answer the questions.
The given missing table shows the number of five different dry fruits packets i.e. cashews, dates, walnuts, raisins and almonds sold in four different months (January, February, March and April).

Months	Cashews	Dates	Walnuts	Raisins	Almond
January	152	-	124	216	-
February	256	145	-	64	180
March	-	210	175	136	-
April	120	96	84	-	240

91) If the number of dates and almond packets sold in January is 18% of the number of five different dry fruits packets sold in January and the ratio of the number of dates and almond packets sold in January is 5:4 and then find the number of dates packets sold in January?
a) 64
b) 62
c) 60
d) 66
e) None of these

92) If the average number of walnuts packets sold in February and June is 225 and the number of walnuts packets sold in January, February, March and April together is 525 and then find the number of walnuts packets sold in June?
a) 308
b) 342
c) 375
d) 354
e) None of these

93) Find the ratio of the difference between the number of dates and walnuts packets sold in

March to the difference between the number of dates packets sold in February and April?

a) 4:3

b) 5:7

c) 12:11

d) 17:15

e) None of these

94) If the number of raisin packets sold in April is 7/20 of the number of raisin packets sold in four different months and then find the number of five different dry fruit packets sold in April?

a) 736

b) 782

c) 755

d) 764

e) None of these

95) The number of raisin packets sold in January is how much percentage more than the number of dates and walnuts packets sold in April?

a) 25%

b) 10%

c) 20%

d) 45%

e) None of these

Directions (96-100): What value should come in the place of (?) in the following questions?

96. 160% of 440 + 80% of? = 16 * √2916

a) 280

b) 300

c) 200

d) 340

e) 360

97) 25% of 45% of 5/17of 3/19 of 25840=?

a) 125

b) 135

c) 115

d) 153

e) 123

98) 180% of 110 + √1681 * 5 - ? =70% of 160

a) 291

b) 288

c) 296

d) 299

e) 285

99) 3075/15 + 13^2 - 25% of 940 = ? – 20% of 625

a) 264

b) 323

c) 373

d) 424

e) 271

100) √3364 + ∛12167 + (140 ÷ 35) × 12 = ?

a) 155

b) 167

c) 129

d) 143

e) None of these

Directions (101-105): What approximate value should come in place of (?) in the following questions?

101. (444.212 ÷36.99 x 4.012) x 23.987 = ? x 5.87

a) 184

b) 166

c) 148

d) 216

e) 192

102) 136.10 ÷ 7.908 + 648.121 ÷ 17.91 –√1090 =?

a) 18

b) 25

c) 20

d) 15

e) 30

103) ?% of (13429.94 - 11350.10) = 7.23^2 + 9.09^2

a) 6.25

b) 8.50

c) 12.25

d) 13.50

e) 9

104) $[(288.38)^2 \div 23.86 \times 36.13] \div 18.18 = \sqrt{(?)}$

a) 6312^2

b) 3456

c) 6912^2

d) 6885

e) 6912

105) (402.82 * 3 * 4.12) ÷ 3.82 = 124.8 + ?

a) 950

b) 1084

c).972

d) 1500

e) 575

Directions (106-110): What value should come in place of (?) in the following questions?

106) 7, 21, 105, ?, 8085, 105105

a) 210

b) 315

c) 525

d) 735

e) 630

107) 19, 9.5, 4.75, 2.375, 1.1875, ?

a) 0.52656

b) 0.59375

c) 0.24635

d) 0.54863

e) None of these

108) 25200, 3600, 600, 120, 30, 10, 5, ?

a) 5

b) 1

c) 6

d) 7

e) None of these

109) 156, 182, 210, ?, 272, 306

a) 220

b) 240

c) 200

d) 260

e) 280

110) 125, 148, 174, 203, 235, ?

a) 260

b) 250

c) 270

d) 280

e) 290

Directions (111-115): Find out the wrong number in the following number series.

111. 65, 110, 201, 338, 521, 720

a) 338

B.110

C.521

D.720

E.201

112) 12, 14, 5, 25, 10, 44

a) 10

b) 14

c) 5

d) 44

e) 25

113) 12, 13, 15, 19, 45, 165

a) 165

b) 13

c) 45

d) 19

e) 15

114) 1, 513, 852, 1072, 1197, 1261

a) 1197

b) 1261

c) 1072

d) 852

e) 513

115) 21, 22, 46, 143, 568, 2845

a) 22

b) 143

c) 46

d) 568

e) 2845

Directions (116-120): Following question contains two equations as I and II. You have to solve both equations and determine the relationship between them and give an answer as,

116)

I) $x^2 - 18x = 144$

II) $y^2 + 9y = 90$

a) x > y

b) x ≥ y

c) x = y or relationship can't be determined.

d) x < y

e) x ≤ y

117)

I) $x^2 + 36x + 243 = 0$

II) $y^2 + 11y + 18 = 0$

a) x > y

b) x ≥ y

c) x = y or relationship can't be determined

d) x < y

e) x ≤ y

118)

I) $x^2 – 13x – 14 = 0$

II) $y^2 + 8y + 12 = 0$

a) x < y

b) x ≥ y

c) x = y or relationship cannot be determined.

d) x > y

e) x ≤ y

119)

I) $2x^2 – 30x + 108 = 0$

II) $y^2 – 11y + 30 = 0$

a) x > y

b) x ≥ y

c) x = y or relationship cannot be determined.

d) x < y

e) x ≤ y

120)

I) $x^2 – 27x + 182 = 0$

II) $y^2 – 12y – 189 = 0$

a) x = y or relationship cannot be determined.

b) x ≥ y

c) x > y

d) x < y

e) x ≤ y

Answers with Explanation

1) Answer: A

Number of accounts in SBI = 15/100 * 72000 = 10800

Number of accounts in PNB = 24/100 * 72000 = 17280

Number of saving accounts in SBI = 10800 – 6000 = 4800

Number of saving accounts in PNB = 17280 – 9600 = 7680

Required average = (4800 + 7680)/2

= 6240

2) Answer: A

Number of current accounts in SBI = 5/9 * (15/100 * 72000) = 6000

Number of current accounts in IOB = 4/7 * (21/100 * 72000) = 8640

Required Ratio = 6000:8640

= 25:36

3) Answer: D

Required difference = 2/12 * (22/100 * 72000) = 2640

4) Answer: A

Total number of accounts in Indian bank = 20/9 * ((24 – 15)/100 * 72000)

= 14400

5) Answer: C

Required average = (21 + 18 + 24)/300 * 72000

= 15120

Directions (6-10):

Number of boys in school B = 1200

Number of girls in school B = 1200 – 360 = 840

Number of girls in school D = 1200/75 x 100 = 1600

Number of boys in school D = 1600 – 1000 = 600

Number of boys in school C = 70% of 1200 = 840

Number of girls in school C = 4/3 x 840 = 1120

Number of students in school A = 7890 – (1200 + 840 + 840 + 1120 + 600 + 1600) = 1690

Ratio of number of boys and girls in school A = 3:2

Number of boys in school A = 3/5 x 1690 = 1014

Number of girls in school A = 2/5 x 1690 = 676

School	Boys	Girls	Total
A	1014	676	1690
B	1200	840	2040
C	840	1120	1960
D	600	1600	2200

6) Answer: A

According to the question,

Number of girls in school A = 676

Hence, the answer is option A

7) Answer: C

Total number of students in school C = 1960

Hence, the answer is option C

8) Answer: E

Number of girls in school B = 840

Number of girls in school D = 1600

Required difference = 1600 – 840 = 760

Hence, the answer is option E

9) Answer: B

Number of girls in school D = 1600

Total number of students in school (A + C) = 1690 + 1960 = 3650

Required % = 1600/3650 x 100 = 44%

Hence, the answer is option B.

10) Answer: D

Total number of girls in all schools together = 676 + 840 + 1120 + 1600 = 4236

Hence, the answer is option D

11) Answer: E

From Statement I,

Ratio of the mixture of milk and water in vessel A is 3:2 and the total quantity of the mixture of milk and water in vessel B is 90 liters.

So, Statement I alone is not sufficient to the answer the question.

From Statement II,

Ratio of the milk and water in the ratio of vessel B is 5:4. If the mixture of vessel A and B is mixed together, then the ratio of milk and water becomes in the final solution is 4:3.

So, Statement II alone is not sufficient to the answer the question.

From Statement I and II,

Milk in vessel B = 5/9 * 90 = 50 liters

Water in vessel B = 4/9 * 90 = 40 liters

(50 + 3x/5)/(40 + 2x/5) = 4/3

160 + 8x/5 = 150 + 9x/5

x/5 = 10

x = 50

Milk in vessel A = 3 * 50/5 = 30 liters

12) Answer: A

From statement I,

A + B + C = 1/6

B + C = 7/60

Time ratio of A and C = 2:1

A alone complete the work = 1/6 – 7/60 = 1/20

C alone complete the work = ½ * 20 = 10 days

B alone complete the work = 7/60 – 1/10 = 1/60= 60 days

So, Statement I alone is sufficient to the answer the question.

From statement II,

A and B together can complete the work in 12 days and B and C together can complete the work in 20 days.

So, Statement II alone is not sufficient to the answer the question.

13) Answer: D

From statement I,

(A + 6)/(B + 6) = 5/3

(S – 4)/(B – 4) = 125/100

Soni's age 4 years ago = 5x

Bala's age 4 years ago = 4x

Bala's age after 6 years = 4x + 4 + 6 = 4x + 10

So, Statement I alone is not sufficient to answer the question.

From statement II,

A/S = 4/3

B/R = 3/2

So, Statement II alone is not sufficient to answer the question.

14) Answer: E

From statement I,

Distance = x

Speed = s

Remaining distance = 7x/10

(7x/10 * 1/10)/(s – 5) = 1

So, statement I alone is not sufficient to answer the question.

From statement II,

Distance = x (in Km)

Speed = s (in Kmph)

x/s – x/(s * 4/3) = 100/60

So, Statement II alone is not sufficient to answer the question.

From statement I and II,

7x/100 = s – 5

x/s – 3x/4s = 5/3

x/4s = 5/3

x = 5/3 * 4s

(20s/3) * 7/100 = s – 5

140s = 300s – 1500

s = 9.375 kmph

Both statements are necessary to answer the question.

15) Answer: A

From statement I,

Speed of the boat A = 175/100 * Speed of the stream

The ratio of the speed of the boat A and speed of the stream = 7:4

Speed of the boat B = 125/100 * speed of the stream

The ratio of the speed of boat B and stream = 5:4

The ratio of the speed of boat A, B and stream = 7:5:4

Required percentage = 7/5 * 100 = 140%

So, Statement I alone is sufficient to answer the question.

From statement II,

Let the speed of boat A = x

Speed of the stream = y

Speed of boat B = z

150/(x + y) + 150/(x – y) = 6

180/(z + y) + 180/(z – y) = 8

So, Statement II alone is not sufficient to answer the question.

16) Answer: C

From statement I,

The radius of the cone is 75% of the height of the cone and the slanting height of the cone is 15 cm.

Radius r =75/100 * h

r/h = 3/4

$l = \sqrt{(3k)^2 + (4k)^2}$

l= 5k

5k = 15

k = 3

CSA of cone = 22/7 * 9 * 15

CSA of cone =424.28

So, Statement I alone is sufficient to answer the question.

From statement II,

$6a * a = 1176\ cm^2$

a = 14

Radius of the cone = 14/2 = 7 cm

Height of the cone = 24 cm

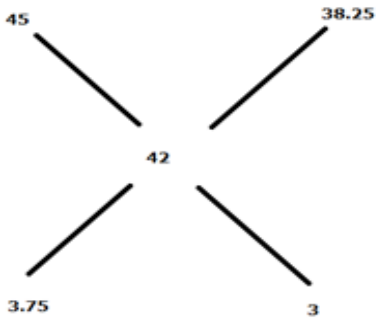
Slanting height of the cone = $\sqrt{7^2 + 24^2}$ = 25 cm

CSA of cone = 22/7 * 25 * 7 = 550 cm

So, Statement II alone is sufficient to answer the question.

17) Answer: C

From statement I,



= 5: 4

Number of girls in the class = 4/9 * 36 = 16

So, Statement I alone is sufficient to answer the question.

From statement II,

Number of boys in the class = x

Total weight of the boys = 600 kg

Average weight of the boys = 30 kg

30 * x = 600

x = 20

Number of girls in the class = 36 – 20 = 16

So, Statement II alone is sufficient to answer the question.

18) Answer: E

From statement I,

Milk and water ratio in vessel A = 2: 3

Milk and water ratio in vessel B = 5: 4

So, Statement I alone is not sufficient to answer the question.

From statement II,

40 liters of milk from vessel A is mixed with x liters of mixture vessel B, then the mixture of milk and water ratio of vessel B becomes 7: 4.

So, Statement II alone is not sufficient to answer the question.

From Statement I and II,

Milk in vessel A = 40

$$\frac{\frac{5x}{9} + 40}{\frac{4x}{9}} = \frac{7}{4}$$

20x + 360 * 4 = 28x

8x = 360 * 4

x = 180 liters

Both statements are necessary to answer the question.

19) Answer: E

From statement I,

The initial investment of A is 50% more than that of B and the ratio of the investment period of A and B is 2:3

So, Statement I alone is not sufficient to answer the question.

From statement II,

The difference between the initial investment of A and B is Rs.4000 and the sum of the profit share of A and B at the end of business is Rs.5000.

So, Statement II alone is not sufficient to answer the question.

From Statement I and II,

Profit share ratio of A and B = 150y*2x : 100y*3x = 1:1

Profit share of B = ½ * 5000 = Rs.2500

Both Statements are necessary to answer the question.

20) Answer: A

From statement I,

Speed of bike = 180/90 = 20 kmph

Speed of car = 20 * 4/1 = 80 kmph

So, Statement I alone is sufficient to answer the question.

From statement II,

The car covers one-third of the distance in 3 hours and 50% of the remaining distance in 4.5 hours and the rest of the distance in 2 hours and the speed of the bike is 20 kmph.

So, Statement II alone is not sufficient to answer the question.

Directions (21-25):

Let the total number of lamps manufactured in five different companies =100X

The total number of lamps manufactured in company E=25X

The total number of Fluorescent lamps manufactured in company E=25X*3/5=15X

The total number of lamps manufactured in five different companies=100*720/15=4800

Name	The total number of lamps manufactured	The total number of halogen lamps manufactured	The total number of fluorescent lamps manufactured
Company A	4800*1/10=480	480*45/100=216	264
Company B	4800*1/3=1600	1600*60/100=960	640
Company C	4800*3/20=720	720*55/100=396	324
Company D	4800*1/6=800	800*35/100=280	520
Company E	4800*1/4=1200	1200*40/100=480	720

21) Answer: A

The total number of lamps manufactured in company A on Tuesday=480+84+136=700

Required difference=800-700=100

22) Answer: D

The total number of lamps manufactured in company E=1200

The total number of halogen lamps manufactured in company E=480

The total number of fluorescent lamps manufactured in company E=720

The total number of lamps sold in company E=1200/8*7=1050

The total number of halogen lamps sold in company E=370

The total number of fluorescent lamps sold in company E=1050-370=680

The total number of halogen lamps unsold in company E=480-370=110

The total number of fluorescent lamps unsold in company E=720-680=40

Required difference=110-40=70

23) Answer: B

The total number of halogen lamps manufactured in companies A, C and E =216+396+480=1092

The average number of halogen lamps manufactured in companies A, C and E=1092/3 =364

The total number of fluorescent lamps manufactured in companies A and C=264+324=588

The average number of fluorescent lamps manufactured in companies A and C=588/2 =294

Required difference=364-294=70

24) Answer: C

The total number of lamps manufactured in company B=1600

The total number of lamps unsold in company B=1600/8*3=600

The total number of lamps sold in company B=1600-600=1000

The total number of fluorescent lamps unsold in company B=600-350=250

The total number of fluorescent lamps sold in company B=640-250=390

The total amount earned on fluorescent lamps in company B=390*99=Rs.38610

25) Answer: A

The total number of lamps manufactured in company C=720

The total number of fluorescent lamps manufactured in company C=324

The total number of lamps manufactured in company F=720/12*13=780

The total number of fluorescent lamps manufactured in company F=780-380=400

Required percentage=324/400*100=81%

26) Answer: B

Number of boys from school A in 1999 = 2100 * 60/100 = 1260

Number of boys from school A in 2000 = 1800 * 55/100 = 990

Number of girls from school C in 1999 = 1000 * 70/100 = 700

Number of girls from school C in 2000 = 1500 * 40/100 = 600

Difference = (1260 + 990) – (700 + 600)

= 950

27) Answer: E

Number of boys in 1999 from school E = 550 * 56/44 = 700

Number of boys in 2000 from school E = 5/8 * 2400 = 1500

Number of boys in D from school 1999 = 1400 * 75/100 = 1050

Number of boys in D from school 2000 = 2200 * 40/100 = 880

Required ratio = (880 + 1050):(700 + 1500)

= 1930:2200

= 193:220

28) Answer: A

Number of boys from school D in 1999 = 1400 * 75/100 = 1050

Number of girls from school D in 1999 = 1400 * 25/100 = 350

Number of girls who likes physics D in 1999 = 350 * 30/100 = 105

Number of boys who likes physics D in 1999 = 260 – 105 = 155

Number of boys who do not like physics D in 1999 = 1050 – 155 = 895

29) Answer: B

Number of girls from school A in 1999 = 2100 * 40/100 = 840

Number of girls from school A in 2000 = 1800 * 45/100 = 810

Number of girls from school B in 1999 = 2700 * 55/100 = 1485

Number of girls from school B in 2000 = 2400 * 35/100 = 840

Required average = ((840 + 810) + (1485 + 840))/2

= 1987.5

30) Answer: D

Number of boys from school C = 1000 * 30/100 + 1500 * 60/100 = 1200

Number of boys from school B = 2700 * 45/100 + 2400 * 65/100 = 2775

Required % = 1200/2775 * 100

= 43%

31) Answer: A

From quantity I,

MP = 5x

CP = 4x

5x – 300 = 4x * 120/100

0.2x = 300

x = 1500

CP of article = 4 * 1500 = Rs.6000

From quantity II,

SP – CP = CP – SP

6600 – CP = CP – 5200

2CP = 11800

CP = Rs.5900

Quantity I > quantity II

32) Answer: D

Quantity I:

Let speed of boat in still water is = x km/hr

And speed of stream = 4 km/hr

Now (x + 4) x 5 = (x - 4) x 7

= x = 24 km/hr

Distance = (24 + 4) x 5 = 140 km

Quantity II:

= D/20 + D/10= 24

= D = 160 Km

Hence Quantity II > Quantity I

33) Answer: A

From quantity I,

$CI = P * (1 + R/100)^n – P$

$2640 = 6000 * (1 + R/100)^2 – 6000$

$2640 / 6000 = (1 + R/100)^2 – 1$

$1 + 132/300 = (1 + R/100)^2$

$(12/10)^2 = (1 + R/100)^2$

120 = 100 + R

R = 20%

From quantity II,

SI = P * N * R/100

2592 = 4800 * 3 * R/100

R = 18%

Quantity I > quantity II

34) Answer: E

Quantity I:

Let the length of bridge = ‘d’ m

So, the length of tunnel = (d + 96) m

Also let the speed of bike = ‘x’ m/s

So,

d/x = 30

d = 30x ----------(1)

And,

(d + 96)/x= 36

From equation (1):

30x + 96 = 36x

x = 16 m/s

So, time taken by bike to cover 4.32 km

=(4.32 * 1000)/16= 270 seconds = 4.5 minutes

Quantity II:

Let time taken by A alone to finish the work = ‘t’ hours

So, time taken by B alone to finish the work = ‘2t’ hours

(1/t) + (1/2t) = 1/5

3/2t = 1/5

t = 7.5

Time taken by A alone finish the work with its original efficiency = 7.5 hours

So, time taken by A alone to finish the work with 5/3 of its original efficiency = 7.5 * (3/5) = 4.5 hours

Hence, Quantity I = Quantity II

35) Answer: C

Quantity I:

Let speed of boat in still water = a

And speed of stream = b

So,

(a + b)/ (a – b) = 3/2

2a + 2b = 3a – 3b

a = 5b

So, the speed of the stream is 20% of the speed of the boat in still water.

Quantity II:

Let present ages of A, B and C are 'a', 'b' and 'c' years, respectively.

So,

(a + b + c)/3 ≤ 25

a + b + c ≤ 75

Since A is 5 years younger than C and C's present age is 20% more than A's present age.

So, A's present age = (5/20) * 100 = 25 years

And C's present age = 25 + 5 = 30 years

So, B's present age = b ≤ 75 – 25 – 30

B's present age ≤ 20.

Hence, Quantity I ≥ Quantity II

36) Answer: A

Quantity I:

According to the question,

(110/100) * CP = 5500

CP = 5500 * (10/11) = Rs. 5000

SP = 5900

Profit % = (Profit/CP) * 100

= > (900/5000) * 100

= > 18 %

Quantity II:

According to the question,

CP1= 5000, Profit = 10 %

SP1 = 5000 * (110/100) = 5500

CP2 = 5000, Loss = 5 %

SP2 = 5000 × (95/100) = 4750

Total selling price = S.P1 + S.P2 = 5500 + 4750 = 10250

Total cost price = 5000 + 5000 = 10000

Profit % = (250/10000) * 100 = 2.5 %

Quantity I > Quantity II

37) Answer: C

Quantity I:

Total quantity of mixture = 15 litres

Water = 15 * (2/5) = 6 lit, Milk = 15 * (3/5) = 9 lit

Given,

= > (3x - 9)/(2x – 6 + 15) = 21/29

= > 87x – 261 = 42x + 189

= > 45x = 450

= > x = 10

Initial quantity of milk = 5x = 50 litres

Quantity II:

Total mixture = 150 litres

Milk = 100 lit, water = 50 lit

According to the question,

100/(50 + x) = 40/60

150 = 50 + x

x = 100 litres

Quantity I < Quantity II

38) Answer: C

From quantity I,

2 * 22/7 * r = 88

Radius of the circle = 14 cm

Side of the cube = 14 cm

Surface area of the cube = $6a^2$ = 6 * 14 * 14 = 1176 cm^2

From quantity II,

SA of sphere = 4 * 22/7 * r * r

4 * 22/7 * r * r = 616

Radius of the sphere = 7 cm

Radius of the cone = 2/1 * 7 = 14 cm

CSA of cone = πrl

= 22/7 * 14 * 32 = 1408 cm^2

Quantity I < quantity II

39) Answer: D

From quantity I,

(7x + 16)/(8x + 16) = 11/12

88x + 176 = 84x + 192

4x = 16

x = 4

Age of Geetha after 8 years = 8 * 4 + 8 = 40 years

From quantity II,

5x + 3x + 7x = 28 * 3 + 21

15x = 105

x = 7

Present age of Kevin = 7 * 7 – 7 = 42 years

Quantity I< quantity II

40) Answer: C

From quantity I,

Ratio of the Profit share of A, B and C = (x + 1000) * 12:(2x * 12):(3x * 12)

= x + 1000:2x:3x

(x + 1000)/(6x + 1000) = 4000/14000

12x + 2000 = 7x + 7000

x = 1000

From quantity II,

Profit share of A and B = 5000 * 12:6400 * 12

= 25:32

Profit share of A = 25/57 * 2850 = 1250

Quantity I<quantity II

Direction (41-45):

Let the total number of students in the class is 100x

Then,

Number of students only play cricket = 32/100 * 100x = 32x

Number of students only play basket ball = 24/100 * 100x = 24x

Number of students only play badminton = 16/100 * 100x = 16x

The ratio of students who play only badminton to the students who play only basket ball and badminton = 3: 1

Number of students who play only basket ball and badminton = 16x/3 * 1 = 16x/3

The ratio of students who only play badminton to the students who play only badminton and cricket = 4: 1

Number of students who play only badminton and cricket = 16x/4 * 1 = 4x

The number of students who play only cricket and basket ball = 25% * 32x = 8x

100x = 32x + 24x + 16x + 16x/3 + 4x + 8x + 3 + 13

100x = 84x + 16x/3 + 16

100x – 268x/3 = 16

x = 1.5

Total number of student = 100 * 1.5 = 150

Number of students who play only cricket = 32 * 1.5 = 48

Number of students who play only basket ball = 24 * 1.5 = 36

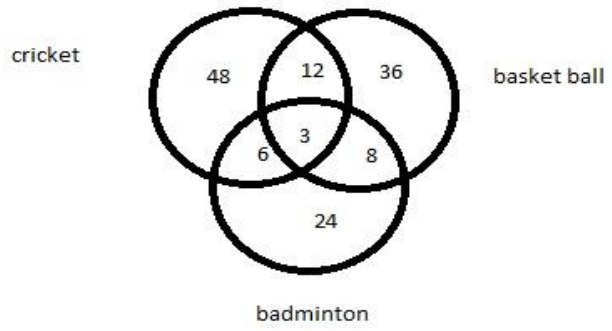
Number of students who play only badminton = 16 * 1.5 = 24

Number of students who play only basket ball and badminton = 16 * 1.5/3 = 8

Number of students who play only badminton and cricket = 4 * 1.5 = 6

The number of students who play only cricket and basket ball = 8 * 1.5 = 12

The number of students who doesn't play any game = 13



41) Answer: A

Number of students who play cricket and basket ball = 48 + 12 + 6 + 3 + 36+ 8= 113

42) Answer: B

Required % = 3/48 * 100 = 6.25%

43) Answer: C

Required ratio = (24 + 8): 13 = 32: 13

44) Answer: D

Required average = (48 + 36 + 24)/3 = 36

45) Answer: E

Total number of students = 48 + 36 + 24 + 12+ 6 + 8 +3 + 13 = 150

46) Answer: B

The number of engineering and science students in the year 2018=300+360=660

The number of law, engineering and science students in the year 2019 =380+540+280 =1200

Required percentage=(660/1200)* 100=55%

47) Answer: D

The number of law students in the years 2018 and 2020=840+720=1560

The average number of law students in the years 2018 and 2020=1560/2=780

The number of engineering students in the years 2017 and 2019=640+540=1180

The average number of engineering students in the years 2017 and 2019=1180/2=590

Required difference=780-590=190

48) Answer: A

The number of law students in the year 2019=380

The number of law students in the year 2021=415*2-380=450

The number of girls law students in the year 2021=450 * 33.33/ 100=150

49) Answer: C

The number of law, engineering and science students in the year 2018=840+300+360 =1500

The number of engineering students in the year 2016 and 2020=560+440=1000

Required ratio=1500:1000=3:2

50) Answer: B

The number of architecture students in the year 2018=780-360=420

Required percentage=(420-300) / 300 * 100 = 120/300 * 100 = 40% = 40% more

Direction (51-55):

Shift - 1

Let the number of employees in Q = 2a

So, number of employees in R = 1/2 x 2a = a

Number of employees in company P = 2a + 80

Number of employees in company S = 1/2 x (2a + 80)

Shift – 2

Number of employees in company P = 450% x a = 4.5a

Respective ratio of number of employees in Q and S is 6:5 and their difference is 30

So, number of employees in company Q = 30 x 6 = 180

Number of employees in company S = 5 x 30 = 150

Number of employees in company R = 197.5 – 97.5 = 100

So, 4.5a + 180 + 100 + 150 = 197.5 x 4 = 790

4.5a = 360

So, the value of a = 80

Now we can find the data for all the companies

Company	Shift - 1	Shift - 2	Total
P	240	360	600
Q	160	180	340
R	80	100	180
S	120	150	270
Total	600	790	1390

51) Answer: D

According to the question,

Total number of employees in all the companies together = 1390

Number of employees in the shift – 1 = 600

Required % = 1390/600 x 100 = 231.67%

Hence, the answer is option D

52) Answer: A

Total number of employees in company Q = 160 + 180 = 340

Total number of employees in company R = 80 + 100 = 180

Required % change = (340 – 180)/180 x 100 = 88.88%

Hence, the answer is option A

53) Answer: E

Total number of employees in company P = 600

Number of male employees = 11/24 x 600 = 275

Number of female employees = 13/24 x 600 = 325

Required difference = 325 – 275 = 50

Hence, the answer is option E

54) Answer: C

Number of female employees in company S = 150

So, the number of male employees in company S = 270 – 150 = 120

Required ratio = 120:150 = 4:5

Hence, the answer is option C

55) Answer: B

Total number of employees those did not got promotion in company R = 70% of 80 + 60% of 100 = 56 + 60 = 116

Hence, the answer is option B

56) Answer: C

Total number of calculator in D = 100/80 * 320 = 400

Required % = 400/480 * 100

= 83.33%

57) Answer: B

Unsold calculator in A = 360 * 10/90 = 40

Unsold calculator in B = 480 * 20/80 = 120

Unsold calculator in C = 280 * 30/70 = 120

Unsold calculator in D = 320 * 20/80 = 80

Unsold calculator in E = 400 * 20/80 = 100

Required average = (40 + 120 + 120 + 80 + 100)/5

= 460/5 = 92

58) Answer: E

Number of unsold calculator in F = (280 + 400)/2 = 340

Number of sold calculator in F = 7/9 * 360 = 280

Required total = 340 + 280 = 620

Answer: C

Unsold calculator in B = 480 * 20/80 = 120

Unsold calculator in E = 400 * 20/80 = 100

Required difference = (480 + 120) – (100 + 400) = 100

59) Answer: A

Required average = (360 + 480 + 280 + 320 + 400)/5

= 1840/5 = 368

60) Answer: A

A and B invested in the business,

7000*12:7000*120/100*(12-x)

10:(12-x)

10/(22-x) =7000/11200

10/(22-x) =5/8

80 = 110 -5x

x=6

The investment time period of B =(12-x)=12-6= 6

61) Answer: C

CP of Radio = R

CP of TV = T

SP of Radio = R * 120/100 = 6R/5

SP of TV= T * 75/100 = 3T/4

If, the selling price of the TV and Radio is equal

6R/5 =3T/4

R/T = 5/8

5x+ 8x = 7800

x=600

Cost price of the Radio = 5x= 3000

62) Answer: B

Salary =100x

Transport + Shopping + House rent = 12x + 20x + 40x = 72x

Remaining = 100x – 72x = 28x

28x * 50/100 = 2800

x = 200

Salary = 100 * 200 = 20000

63) Answer: A

Let the smallest number be x.

Then larger number = x + 800

=> x + 800 = 3x + 0 => x = 400

64) Answer: C

Speed of boat = 3x

Speed of stream = x

Distance covered by along with stream = (3x + x) * 4 = 16x

Distance covered by against stream = (3x – x) * 4 = 8x

16x – 8x = 40

8x = 40

x = 5

Downstream speed = 3x + x = 4 * 5 = 20 kmph

65) Answer: C

(3 + x)/6 + 3/15 = 1

(3 + x)/6 = 4/5

3 + x = 24/5

x = 24/5 – 3 = 9/5 hours

66) Answer: C

Compound interest for two years = x + y + (xy)/100

= 10 + 10 + (10 * 10)/100 = 21%

Amount = (100 + 21)% = 121% = 5808

Sum = 5808/121 * 100 = 4800

P = 4800

SI = (P * N * R)/100

2880 = 4800 * R * 4/100

R = 15%

67) Answer: E

Income of Vinod = 8x

Income of Nithish = 9x

Savings of Vinod = 4y

Savings of Nithish = 5y

Expenditure of Vinod = 8x – 4y

Expenditure of Nithish = 9x – 5y

(9x – 5y) – (8x – 4y) = 6000

x – Y = 6000

We cannot find the answer.

68) Answer: D

Distance = x

Initial Speed of car = y

((x/y) – x/(y + 20)) = 3

$20x/(y^2 + 20y) = 3$

x/(y – 20) – x/y = 4.5

$20x/(y^2 – 20y) = 4.5$

$3y^2 + 60y = 4.5y^2 – 90y$

3y + 60 = 4.5y – 90

1.5y = 150

y = 100 kmph

20x/(100 * 100 + 20 * 100) = 3

x = 1800 km

69) Answer: E

A = 1/12

B + A = 1/8

B = 1/8 – 1/12

= 1/24

Time ratio of B to C = 2:3

C alone filled the tank = 3/2 * 24 = 36 hours

D = 1/12 – 1/36

= 1/18

A + D = 1/18 + 1/12

= (2 + 3)/36 = 5/36

Required time = 7(1/5) days

70) Answer: B

Milk in vessel A = 5/9 * 36 = 20 liters

Water in vessel A = 4/9 * 36 = 16 liters

Milk in vessel B = 3/5 * 40 = 24 liters

Water in vessel B = 2/5 * 40 = 16 liters

Milk in vessel C = 6/11 * 44 = 24 liters

Water in vessel C = 5/11 * 44 = 20 liters

Required ratio = (20 + 24 + 24):(16 + 16 + 20)

= 68: 52

= 17: 13

71) Answer: D

SI = P * N * R/100

13760 – 8000 = 8000 * 4 * R/100

R = 18%

SI = 8000 * 20 * 2/100 = 3200

Total amount = 3200 + 8000 = 11200

72) Answer: B

The ratio of present age of Amir and Abi = 4 : x

6 years ago, the age of Amir and the age of Abi,

5 years hence is in the ratio = 2 : 5 (2y, 5y)

Present age of Amir and Abi = 2y + 6, 5y – 5

After 10 years, the sum of their ages = 56 years

Given,

2y + 6 + 5y – 5 + 20 = 56

7y + 21 = 56

7y = 35

y = 5

Present age of Amir and Abi = 16 and 20

The ratio of present ages of Amir and Abi = 16 : 20 = 4 : 5

So, x = 5

73) Answer: D

SI = P * N * R/100

13760 – 8000 = 8000 * 4 * R/100

R = 18%

SI = 8000 * 20 * 2/100 = 3200

Total amount = 3200 + 8000 = 11200

74) Answer: B

Let the can contains 5x and 3x of mixtures A and B respectively.

Quantity of A in mixture left = 5x – 5 * 4/8 = (5x – 5/2) liters

Quantity of B in mixture left = 3x – 3 * 4/8 = (3x – 3/2) liters

=> (5x – 5/2)/ [(3x – 3/2) + 4] = 5/7

=> (10x – 5)/(6x + 5) = 5/7

=> 70x – 35 = 30x + 25

=> x = 3/2

The can initially has 5x = 5 * 3/2 = 7.5 liters of liquid A

75) Answer: A

A = 1/30

Efficiency of A and B = 400:100 = 4:1

Time ratio of A and B = 1:4

B alone complete the work = 4 * 30 = 120 days

C alone complete the work = 1/16 – 1/30 – 1/120

=(30 – 16 – 4)/480

= 1/48

Ratio of work done by A, B and C = 1/30:1/120:1/48

= 16:4:10

= 8:2:5

C's wage = 5/15 * 27000 = Rs.9000

76) Answer: D

3696 = 1/3 * 22/7 * 7x * 7x * 9x

x = 2

Radius of the cone = 7 * 2 = 14 cm

Radius of the cylinder = 14/2 = 7 cm

Height of the cone = 9 * 2 = 18 cm

Volume of the cylinder = 22/7 * 7 * 7 * 18 = 2772 cm^3

77) Answer: D

The share of A, B and C,

= > [20000 * 5 + 25000 * 7] : [30000 * 12] : [40000 * 5 + 30000 * 7]

= > [100000 + 175000] : [360000] : [200000 + 210000]

= > 275000 : 360000 : 410000

= > 55 : 72 : 82

Total profit = 209's = 125400

1's = 600

The share of B = Rs. 43200

78) Answer: A

Speed of upstream = 40 – 5 = 35 kmph

Distance = 35 * 12 = 420 km

Three-fourth of the distance = 420 * ¾ = 315 km

Required time = 315/(40 + 5) = 7 hours

80) Answer: C

Abishek's one day work = (1/20)

Abishek's 9 day work = 9/20

Remaining work = 1 – 9/20 = 11/20

(11/20) * Yuva's whole work = 22

Yuva's whole work = 22 * (20/11) = 40 days

(Abishek + Yuva)'s one day work = (1/20) + (1/40) = 3/40

The number of days taken by both of them to complete the work

= > 40/3 = 13 1/3 days

81) Answer: B

The average score of 50 students = 72

Total score of 50 students = 50 * 72 = 3600

If the last five students are removed, the average drops by 4 marks.

So,

The average score of 45 students = 68

Total score of 45 students = 45 * 68 = 3060

x + (x + 1) + (x + 2) + (x + 3) + (x + 4) = 540

5x + 10 = 540

5x = 530

x = 106

Least score = 106

82) Answer: E

Length of train A = 3x

Length of train B = 2x

Speed of train A = 3y

Speed of train B = 2y

(3x + 2x) = (3y + 2y) * 5/18 * 36

5x = 50y

x = 10y

We cannot find the answer.

83) Answer: C

Length +breadth= 28 cm

Perimeter of rectangle = 2(Length +breadth)=28 * 2 = 56 cm

Perimeter of the square = 56 cm

Side of the square = 14 cm

Length of the rectangle = 14 + 2 = 16 cm

Breadth of the rectangle = 28 – 16 = 12 cm

Area of the rectangle = 16 * 12 = 192 cm^2

84) Answer: A

Ratio of the ages of Ram, Anil and Manu = 12:15:20

Present age of Tinu = (12x + 15x + 20x)/3 + 1 = 47x/3 + 1

= (47x + 3)/3

[47x + 3/3] – 12x = 12

47x + 3 – 36x = 36

11x = 33

x = 3

Manu = 20 * 3 = 60 years

85) Answer: E

CP of the mobile = x

2 * (x – 15000) = (19200 – x)

2x – 30000 = 19200 – x

3x = 49200

x = 16400

Directions (86-90):

Departments	Total number of students	Boys	Girls
CSE	336	126	210
ECE	252	189	63
EEE	462	294	168
Mech	525	315	210
Civil	315	231	84
Automobile	210	168	42

86) Answer: A

The number of girls who studied in CSE, Civil and Automobile = 210 + 84 + 42 = 336

The number of boys who studied in ECE, EEE and Mech together = 189 + 294 + 315 = 798

Required difference = 798 – 336 = 462

87) Answer: D

Required ratio = (168 + 315): (168 + 210)

= 483: 378

= 23: 18

88) Answer: C

Number of boys from Chennai in EEE = 33.33/100 * 294 = 98

Number of boys from Chennai in Civil = 66.66/100 * 231 = 154

Required difference = 154 – 98 = 56

89) Answer: E

Required average = (63 + 168 + 210)/3

= 147

90) Answer: D

Required percentage = ((126 + 231)– (168 + 42))/(168 + 42) * 100

= ((357 – 210)/210) * 100

= 14700/210

= 70%

91) Answer: C

The number of cashews, walnuts and raisins packets sold in January=152+124+216 =492

The number of dates and almond packets sold in January=492*18/(100-18)=492*18/82 =108

The number of dates packets sold in January=108*5/9=60

92) Answer: A

The number of walnuts packets sold in February=525-124-175-84=142

The number of walnuts packets sold in June=225*2-142=308

93) Answer: B

The difference between the number of dates and walnuts packets sold in March=210-175=35

The difference between the number of dates packets sold in February and April=145-96=49

Required ratio=35:49=5:7

94) Answer: D

The number of raisin packets sold in January, February and March=216+64+136=416

The number of raisin packets sold in April=416*7/(20-7)=416*7/13=224

The number of five different dry fruits sold in April=120+96+84+224+240=764

95) Answer: C

The number of dates and walnuts packets sold in April=84+96=180

Required percentage=(216-180) / 180 * 100 = 36/180 * 100 = 20%

96) Answer: C

160% of 440 + 80% of? = 16 * √2916

704 + 4/5 *? = 864

? = 200

97) Answer: B

25/100*45/100*5/17*3/19*25840=?

¼*9/20*5/17*3/19*25840=?

9*5*3*1=?

135=?

98) Answer: A

180% of 110 + √1681 * 5 - ? =70% of 160

198 + 205 - ? =112

?=291

99) Answer: A

3075/15 + 13^2 -25% of 940 = x- 20% of 625

205 + 169 - 940/4 = x - 125

x = 205 + 169 - 235 + 125

x = 499 - 235

x = 264

100) Answer: C

√3364 + ∛12167 + (140 ÷ 35) × 12 = x

58 + 23 + (140/35)*12 = x

x = 58 + 23 + 48 = 129

101) Answer: E

(444.212 ÷ 36.99 x 4.012) x 23.987 = ? x 5.87

=> (444 ÷ 37 x 4) x 24 = ? x 6

=> (12 x 4) x 24 = ? x 6

=> 48 x 24 = ? x 6

=> ? = 48 x 24/6

=> ? = 192

102) Answer: C

136.10 ÷ 7.908 + 648.121 ÷ 17.91 –√1090 =?

136 ÷ 8 + 648 ÷ 18 - √1089 = ?

17 + 36 – 33=?

20=?

103) Answer: A

?% of (13429.94 - 11350.10) = 7.23² + 9.09²

?% of (13430 - 11350) = 7² + 9²

?/100× 2080 = 130

? = 13000/2080

? = 6.25

104) Answer: C

[(288.38)² ÷ 23.86 × 36.13] ÷ 18.18 = √(?)

[(288)²÷24×36]÷18=√(?)

[82944÷24×36]÷18=√(?)

[3456×36] ÷18=√(?)

3456×2=√(?)

√(?)=6912

?=6912²

105) Answer: B

(402.82 * 3 * 4.12) ÷ 3.82 = 124.8 + ?

=> (403 * 3 * 4) ÷ 4 = 125 + ?

=> 4836 ÷ 4 = 125 + ?

=> 1209 – 125 = ? = 1084

106) Answer: D

7 * 3 = 21

21 * 5 = 105

105 * 7 = **735**

735 * 11 = 8085

8085 * 13 = 105105

107) Answer: B

19÷2=9.5,

9.5÷2=4.75,

4.75÷2=2.375,

2.375÷2=1.1875,

1.1875÷2=**0.59375.**

108) Answer: A

25200/7=3600,

3600/6=600,

600/5=120,

120/4=30,

30/3=10,

10/2=5,

5/1=**5**

109) Answer: B

12 * 13=156

13 * 14=182

14 * 15=210

15 * 16=**240**

16 * 17=272

17 * 18=306

110) Answer: C

125 + 23 = 148

148 + 26 = 174

174 + 29 = 203

203 + 32 = 235

235 + 35 = **270**

111) Answer: D

65 + (45 * 1) + 0= 110

110 + (45 * 2) + 1 = 201

201 + (45 * 3) + 2 = 338

338 + (45 * 4) + 3 = 521

521 + (45 * 5) + 4 = **750**

112) Answer: A

12 + (1 * 2) = 14

14 - (3 * 3) = 5

5 + (5 * 4) = 25

25 - (7 * 5) = **-10**

-10 + (9 * 6) = 44

113) Answer: D

12 + 1 = 13

13 + (2 * 1) = 15

15 + (3 * 2 * 1) = **21**

21 + (4 * 2 * 3 * 1) = 45

45 + (5 * 4 * 3 * 2 * 1) = 165

114) Answer: D

1 + 8^3 = 513

513 + 7^3 = **856**

856 + 6^3 = 1072

1072 + 5^3 = 1197

1197 + 4^3 = 1261

The wrong term is 852

115) Answer: B

21 * 1 + 1 = 22

22 * 2 + 2 =46

46 * 3 + 3 = **141**

141 * 4 + 4 = 568

568 * 5 + 5 = 2845

The wrong term is, 143

116) Answer: C

x^2 - 18x = 144

x^2 - 18x – 144 = 0

x^2 – 24x + 6x – 144 = 0

x(x – 24) + 6(x – 24) = 0

(x + 6)(x – 24) = 0

x = -6, 24

y^2 + 9y = 90

y^2 + 9y – 90 = 0

y^2 + 15y – 6y – 90 = 0

y(y + 15) – 6(y + 15) = 0

(y – 6) (y + 15) = 0

y = 6, -15

Relationship between x and y cannot be established.

117) Answer: E

x^2 + 36x + 243 = 0

x^2 + 27x + 9y + 243 = 0

x(x + 27) + 9(x + 27) = 0

(x + 9)(x + 27) = 0

x = -9, -27

y^2 + 11y + 18 = 0

$y^2 + 9y + 2y + 18 = 0$

$y(y + 9) + 2(y + 9) = 0$

$(y + 2)(y + 9) = 0$

$y = -2, -9$

$y \geq x$

118) Answer: D

$x^2 – 13x – 14 = 0$

$x^2 – 14x + x – 14 = 0$

$x(x – 14) + 1(x – 14) = 0$

$(x + 1)(x – 14) = 0$

$x = -1, 14$

$y^2 + 8y + 12 = 0$

$y^2 + 6y + 2y + 12 = 0$

$y(y + 6) + 2(y + 6) = 0$

$(y + 2)(y + 6) = 0$

$y = -2, -6$

x > y

119) Answer: B

$2x^2 – 30x + 108 = 0$

$\div 2 => x^2 – 15x + 54 = 0$

$x^2 – 9x – 6x + 54 = 0$

$(x - 9)(x - 6) = 0$

$x = 9, 6$

$y^2 – 11y + 30 = 0$

$y^2 – 6y – 5y + 30 = 0$

$y(y – 6) – 5(y – 6) = 0$

$(y – 5)(y – 6) = 0$

$y = 5, 6$

$x \geq y$

120) Answer: A

$x^2 – 27x + 182 = 0$

$x^2 – 13x – 14x + 182 = 0$

$x(x – 13) – 14(x – 13) = 0$

$(x – 14)(x – 13) = 0$

$x = 14, 13$

$y^2 – 12y – 189 = 0$

$y^2 – 21y + 9y – 189 = 0$

$y(y – 21) + 9(y – 21) = 0$

$(y + 9)(y – 21) = 0$

$y = 21, -9$

Relationship between x and y cannot be established.