15 CHAPTER

Data Sufficiency and Data Analysis

DIRECTIONS (Qs. 1- 5) : Each of the questions below consists of a question and two statements numbered I and II given below it. You have to decide whether the data provided in the statements are sufficient to answer the questions. Read both the statements and:

Give answer (a) if the data in statement I alone are sufficient to answer the question, while the data in statement II alone are not sufficient to answer the question.
Give answer (b) if the data in statement II alone are sufficient to answer the question, while the data in statement I alone are not sufficient to answer the question.
Give answer (c) if the data either in statement I alone or in statement II alone in sufficient to answer the question.
Give answer (d) if the data even in both the statements I and II together are not sufficient to answer the question.
Give answer (e) if the data in both the statements I and II together are necessary to answer the question. **(SBI PO 2011)**

1. What is the height of a triangle?
   I. It is a right-angled triangle.
   II. The area of the triangle is 5 times its base.
2. How much time will Dinesh take to walk a 10 km distance?
   I. The ratio of the speeds at which Dinesh and Ranjay walk is 5 : 6.
   II. The average walking speed of Dinesh and Ranjay is known.
3. Is a two-digit integer 'x' divisible by 12?
   I. When 'x' is divided by 5, the remainder is 2.
   II. When 'x' is divided by 3, the remainder is 1.
4. Is the average of a, b and c equal to b?
   I. $b - a = c - b$
   II. a, b and c are positive integers.
5. What is the monthly income of Rahim?
   I. Total monthly income of Rahim and Suresh is ₹ 27000, which is 150% of their total monthly expenditure.
   II. The ratio of their monthly expenditures is 5 : 4.

DIRECTIONS (Qs. 6-10): In each of these questions, one question is given followed by data in three statements I, II and III. You have to study the question and the data in statements and decide the question can be answered with data in which of the statements and mark your answer accordingly.

(SBI Associates PO 2011)

6. What is the rate of interest pcpa?
   Statements:
   I. The difference between the compound interest and simple interest earned in two years on the amount invested is ₹100.
   II. The amount becomes ₹19,500 in three years on simple interest.
   III. The simple interest accrued in two years on the same amount at the same rate of interest is ₹3,000.
   (a) Only I and II (b) Only I and III
   (c) Only II and III (d) Only I and either II or III
   (e) None of these
7. What is the speed of the train in kmph?
   Statements :
   I. The train crosses an 'x' metre-long platform in 'n' seconds.
   II. The length of the train is 'y' metres.
   III. The train crosses a signal pole in 'm' seconds.
   (a) Any two of the three (b) Only II and III
   (c) Only I and III (d) All I, II and III
   (e) Either I and II or II and III
8. How many students passed in first class?
   Statements :
   I. 85% of the students who appeared in examination have passed either in first class or in second class.
   II. 750 students have passed in second class.
   III. The number of students who passed in first class is 28% of those passed in second class.
   (a) All I, II and III
   (b) Only I and III
   (c) Only II and III
   (d) Question cannot be answered even with information in all three statements.
   (e) None of these
9. What is the amount invested in Scheme 'B'?
   Statements :
   I. The amounts invested in Schemes 'A' and 'B' are in the ratio of 2 : 3.
   II. The amount invested in Scheme 'A' is 40% of the total amount invested.
   III. The amount invested in Scheme 'A' is ₹45,000.
   (a) Only I and II (b) Only I and III
   (c) Only II and III (d) All I, II and III
   (e) Only III and either I or II
10. What is the cost of flooring a rectangular hall?
    Statements :
    I. The length of the rectangle is 6 metres.
    II. The breadth of the rectangle is two-thirds of its length.
    III. The cost of flooring the area of 100 cm^2 is ₹45.
    (a) Only I and III
    (b) Only II and III
    (c) All I, II and III
    (d) Question cannot be answered even with data in all three statements.
    (e) None of these

DIRECTIONS (Qs. 11-15) : In each of the following questions, a question is followed by information given in three Statements I, II and III. You have to study the question along with the statements and decide the information given in which of the statement(s) is necessary to answer the question.

(IBPS Bank PO/MT 2013)

11. In how many days 10 women can finish the work?
    I. 10 men finish the work in 6 days.
    II. 10 women and 10 men finish the work in $3\frac{3}{7}$ days.
    III. If 10 men work 3 days and after that 10 women are deployed to work for men, the rest work is finished in 4 days.
    (a) I and II (b) Any two of three
    (c) I and III (d) II and III
    (e) None of these
12. What is the present age of Sabir?
    I. The present age of Sabir is half of his father's age.
    II. After five years the ratio of ages of Sabir and his father is 6 : 11.
    III. Sabir is younger to his brother by five years.
    (a) I and II (b) I and III
    (c) II and III (d) All of these
    (e) Cannot be determined
13. What is two digit number?
    I. The difference between the number and the number formed by interchanging the digit is 27.
    II. The difference between two digits is 3.
    III. The digit at unit's place is less than that at ten place by 3.
    (a) I and II (b) I and either II or III
    (c) I and III (d) All of these
    (e) None of these
14. What is the rate of interest percent per annum?
    I. An amount doubles itself in 5 yr on simple interest;
    II. Difference between the compound interest and the simple interest earned on a certain amount in two years is ₹ 400.
    III. Simple interest earned per annum is ₹ 2000.
    (a) Only I (b) II and III
    (c) Any two of three (d) I or II and III
    (e) Only I or II and III
15. What is the cost of flooring the rectangular hall?
    I. Length and the breadth of the hall are in the ratio of 3 : 2
    II. Length of the hall is 48 m and cost of flooring is ₹ 850 per sq m.
    III. Perimeter of the hall is 160 m and cost of flooring is ₹ 850 per sq m.
    (a) I and II (b) I and III
    (c) Only III (d) I and either II or III
    (e) Any two of the three

DIRECTIONS (Qs. 16-20) : Each of the questions below consists of a question and two statements numbered I and II given below it. You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statements and :

Give answer (a) if the data in statement **I alone** are sufficient to answer the question, while the data in statement II alone are not sufficient to answer the question.

Give answer (b) if the data in statement **II alone** are sufficient to answer the question, while the data in statement I alone are not sufficient to answer the question.

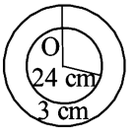
Give answer (c) if the data **either** in statement I alone or in statement II alone are sufficient to answer the question.

Give answer (d) if the data given in both the statements I and II together are not sufficient to answer the question, and

Give answer (e) if the data in both the statements I and II together are necessary to answer the question.

(SBI Management Executive 2014)

16. What will be the amount at the end of 2 years, if the interest is compounded yearly.
    I. The simple interest on the same sum for a period of 2 years is ₹400 at the same rate of 5% per annum.
    II. The difference between the simple interest and the compound interest for 2 years at the rate of 5% per annum is ₹100.
17. Find the average of five consecutive odd numbers.
    I. The difference of fifth number and the first number is 7.
    II. The sum of the first two numbers is 5 more than the fifth number.
18. Find the ratio of the area of the bigger circle and smaller circle.



    I. The radius of the smaller circle is 24 cm.
    II. The difference between the radii of bigger and the smaller circles is 3 cm.
19. What is the length of the train ?
    I. The train crosses a signal post in 9 seconds.
    II. If the train with speed x kmph crosses another train 100m long coming from the opposite direction at 60 kmph in 15 seconds.
20. Find the radius of the semi-circle.
    I. The area of semi-circle is equal to the area of the rectangle.
    II. The breadth of rectangle is 5 cm less than its length and its perimeter is 50 cm.

DIRECTIONS (Qs. 21-25) : Each of the questions below consists of a question and three statements denoted A, B and C are given below it. You have to study the questions and all the three statements and decide whether the question can be answered with any one or two of the statements or all the statements are required to answer the question.

(IBPS SO 2014)

21. What is R's share of profit in a joint venture?
    A. Q started business investing ₹ 80,000/-
    B. R joined him after 3 months.
    C. P joined after 4 months with a capital of ₹ 1,20,000 and got ₹ 6,000 as his share of profit.

(a) Only A and C are required
(b) Only B and C are required
(c) All A, B and C together are required
(d) Even with all A, B and C the answer cannot be arrived
(e) None of these

22. What is the area of a right angled triangle?
A. The perimeter of the triangle is 30 cm.
B. The ratio between the base and the height of the triangle is 5 : 12.
C. The area of the triangle is equal to the area of a rectangle of length 10 cms.
(a) Only B and C together are required
(b) Only A and B together are required
(c) Only either A or B and C together are required.
(d) Only A and C together are required
(e) None of these

23. What will be sum of two numbers?
A. Among the two numbers, the bigger number is greater than the smaller number by 6.
B. 40% of the smaller number is equal to 30% of the bigger number.
C. The ratio between half of the bigger number and $\frac{1}{3}$rd of the smaller number is 2 : 1.
(a) Only B and C together are necessary
(b) Only A and B together are necessary
(c) Out of A, B and C any two together are necessary
(d) All three A, B and C together are necessary
(e) None of these

24. How much profit did Mahesh earn on the cost price of an article by selling it?
A. He got 15% discount on the marked price at the time of purchase.
B. He sold it for ₹ 3060.
C. He earned 2% profit on the marked price.
(a) Only A and B both together are necessary.
(b) Only B and C both together are necessary.
(c) Only A or C and B together are necessary.
(d) Even A, B and C all together are not sufficient to answer the question.
(e) All three A, B and C together are necessary.

25. How much marks did Arun secure in English?
A. The average marks obtained by Arun in four subjects included English is 60.
B. The total marks obtained by him in English and Mathematics together is 170.
C. The total marks obtained by him in Mathematics and Science together is 180.
(a) All three A, B and C together are necessary.
(b) Only A and B together are necessary
(c) Only B and C together are necessary.
(d) Only A and C together are necessary.
(e) None of these

DIRECTIONS (Qs. 26-29) : In each of the following questions, a question and three statements following it have been given. You are required to study the question and statements and decide that the information given in which statement(s) is necessary to answer the question ?

(Corporation Bank SO 2014)

26. What is the principal?
I. The simple interest accrued on that sum at the rate of 12% per annum in 2 years is ₹ 360 less than the compound interest on the same sum at 12% per annum in 2 years.
II. The sum doubles itself in 10 years at 10% per annum rate of simple interest.
III. The compound interest on the sum in 2 years at the rate of 12% per annum is ₹ 6360.
(a) I or III (b) I and III
(c) I and II (d) II and III
(e) None of these

27. What will be the area of a 2 metre wide boundary around a rectangular field ?
I. The breadth of the field is one-fourth of its perimeter. Area of the field is 144 sq. metre.
II. The ratio of the length and breadth is respectively 3 : 2.
III. Area of the field is 216 sq. metre.
(a) I, II and III
(b) only I or II and III
(c) I and II
(d) Anyone of the three statements
(e) None of these

28. What are the marks obtained by Arnab in History ?
I. The average marks obtained by Arnab in History, Geography and Civics are 65.
II. Marks obtained by Arnab in Geography is 6 more than that obtained in History.
III. Marks obtained in Geography is as much more than that in Civics as the marks obtained in Civics is more than that in History.
(a) I and II (b) II and III
(c) I and III (d) I, II and III
(e) None of these

29. What is the speed of train ?
I. Train crosses a signal post in 15 seconds.
II. Train crosses a 250 metre long platform in 27 seconds.
III. Train crosses another train running in the same direction on a parallel track in 32 seconds.
(a) I and II (b) I and III
(c) II and III (d) Any two of the three
(e) None of these

DIRECTIONS (Qs. 30-34) : Each of the question below consists of a question and two statements marked A and B given below it. You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statements and give answer.

(a) if the data in statement A alone is sufficient to answer the question.
(b) if the data in statement B alone is sufficient to answer the question.
(c) if the data either in statement A alone or in statement B alone is sufficient to answer the question
(d) if the data given in both statements A and B together are not sufficient to answer the question.
(e) if the data in both statements A and B together are necessary to answer the question. **(IBPS SO 2015)**

30. What is the average age of children in the class?
A. Age of the teacher is as many yrs as the number of children.
B. Average age increased by 2 yr, if the teachers age is also included.

31. What is the average monthly income of a man if he saves ₹ 85000 during a year?
A. The average monthly expenditure for the first 4 months is ₹ 18000.
B. The average monthly expenditure for the next 8 months is ₹ 21000.

32. What is the salary of D, in a group of A, B, C, D, E and F whose average salary is ₹ 45000?
A. Total salaries of A and F is ₹ 88900.
B. Total salaries of B and C is ₹ 95200.

33. What is the temperature on Thursday?
A. Average temperature for Monday, Tuesday and Wednesday is 34°C.
B. Average temperature for Tuesday, Wednesday and Thursday is 38°C.

34. The average of 12 numbers is 18. Find the new average when
A. The average of first 10 numbers is 20.
B. Each number is multiplied by 6.

DIRECTIONS (Qs. 35-39) : In these questions, a question is given followed by information in three statements. You have to consider the information in all the three statements and decide the information in which of the statement(s) is not necessarily required to answer the question and therefore can be dispensed with. Indicate your answer accordingly.

(IBPS PO Main 2015)

35. How many students from Institute 'A' got placement?
I. Number of students studying in Institutes A & B are in the ratio of 3 : 4 respectively.
II. Number of students who got placement from Institute B is 120% of the number of students who got placement from Institute A.
III. 80% of the students studying in Institute B got placement.
(a) None of the statements can be dispensed with
(b) Only I
(c) Only II
(d) Anyone of the three
(e) Question cannot be answered even with the information in all three statements

36. What is the monthly income of Mr. X?
I. Mr. X spends 85% of his income on various items and remaining amount is saved.
II. Monthly saving of Mr. X are ₹ 4,500/.
III. Out of the total money spent by Mr. X in a month, one-fifth is spent on food and remaining amount of ₹ 20, 400 on other items.
(a) Only II
(b) Only III
(c) Only either II or III
(d) Question cannot be answered even with the information in all three statements
(e) None of these

37. What is Suchitra's present age?
I. Suchitra's present age is double the age of her son.
II. Ratio between present ages of Suchitra and her mother is 2 : 3 respectively.
III. Four years hence the ratio between Suchitra's age and her son's age will be 13 : 24 respectively.
(a) Only II (b) Only III
(c) Either I or II only (d) Either II or III only
(e) None of these

38. What is Neeta's share in the profit earned at the end of 2 years in a joint business run by Neeta, Seeta and Geeta?
I. Neeta invested ₹ 85,000/ to start the business.
II. Seeta and Geeta joined Neeta's business after six months investing amounts in the ratio of 3 : 5 respectively.
III. Total amount invested by Seeta and Geeta is ₹ 2.3 lakhs
(a) Only II
(b) Only III
(c) Only either II or III
(d) Information in all three statements is required for answering the question.
(e) Question cannot be answered even with the information in all three statements.

39. What is the labelled price of the article?
I. Cost price of the article is ₹ 500/.
II. Selling price after offering 5% discount on the labelled price is ₹ 608/.
III. Profit earned would have been 28% if no discount was offered.
(a) Only I (b) Only III
(c) Only II & III (d) Only I and III
(e) Only I and II

DIRECTIONS (Qs. 40-44) : Each of the questions below consists of a question and two statements numbered I and II given below it. You have to decide whether the data provided in the statements are sufficient to answer the question. Read the question and both the statements and -

Give answer (a) if the data in **statement I alone are sufficient** to answer the question, while the data in **statement II alone are not sufficient** to answer the question.
Give answer (b) if the data in **statement II alone are sufficient** to answer the question, while the data in **statement I alone are not sufficient** to answer the question.
Give answer (c) if the data **either in statement I alone or in statement II alone are sufficient** to answer the question.
Give answer (d) if the data even in both the **statements I and II together are not sufficient** to answer the question.
Give answer (e) if the data in both the statements I and II together are necessary to answer the question. **(SBI PO Main 2015)**

40. Train 'A' running at a certain speed crosses another train 'B' running at a certain speed in the opposite direction in 12 seconds. What is the length of train 'B'?
I. The length of both the trains together is 450 metres.
II. Train 'A' is slower than train 'B'.

41. Area of a rectangle is equal to the area of a right angled triangle. What is the length of the rectangle ?
I. The base of the triangle is 40 cms.
II. The height of the triangle is 50 cms.

42. What was the total compound interest on a sum after three years ?
I. The interest after one year was ₹ 100/- and the sum was ₹ 1,000/-.
II. The difference between simple and compound interest on a sum of ₹ 1,000/- at the end of two years was ₹ 10/-.

43. What is the two digit number where the digit at the unit place is smaller ?
I. The difference between the two digits is 5.
II. The sum of the two digits is 7.

44. What is the speed of the boat in still water ?
I. It takes 2 hours to cover distance between A and B downstream.
II. It takes 4 hours to cover distance between A and B upstreams.

DIRECTIONS (Qs. 45-49): In each of the given questions, one questions and two statements numbered I and II are given. You have to decide whether the data given in both statements are sufficient to answer the question or not. Read both the satements and give answer

(SBI Clerk 2016)

(a) if the data in statement I alone are sufficient to answer the question, while the data in statement II alone are not sufficient to answer the question.
(b) if the data in statement II alone are sufficient to answer the question, while the data in statement I alone are not sufficient to answer the question.
(c) if the data either in statement I alone or in statement II alone are sufficient to answer the question.
(d) if the data in both statements I and II together are not sufficient to answer the question.
(e) if the data in both the statements I and II together are necessary to answer the question.

45. By how many years is Rasika younger than her brother Sunil?
I. Ratio between Rasika's present age and Sunil's age after four years is 5 : 7 respectively.
II. Ratio between Rasika's age four years ago and Sunil's present age is 2 : 3 respectively.

46. What is the quantity of milk in 80 litres of mixture of milk and water?
I. If 8 litres of mixture is replaced by equal quantity of water the ratio of milk and water in the mixture becomes 27 : 13 respectively.
II. If 16 litres of mixture is replaced by equal quantity of milk, the ratio of milk and water in the mixture becomes 4 : 1 respectively.

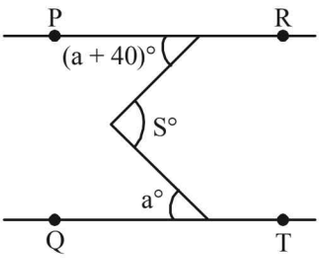
47. Neeraj invested certain amount in schemes A and B for 2 ears in the ratio of 3 : 5 respectively. The schemes A and B offer compound interest compound annually and simple interest respectively. What is the amount invested in scheme A?
I. Rate of interest offered by scheme A is 20% per annum and the rate of interest offered by scheme B is 25% less than that offered by scheme A.
II. Amount of interest accrued from scheme B is more than the amount of interest accrued from scheme A by ₹ 900.

48. Two friends X and Y start running towards each other at the same time from points A and B respectively and meet after 135 minutes. At what speed is X running?
I. Point B is 45 km away from point A and speed of X is 150% of the speed of Y.
II. Distance covered by Y was 18 km.

49. What is the cost of painting two adjacent walls of a hall having no door or window at ₹450 per m^2?
I. Length and breadth are in the ratio of 3 : 2 respectively.
II. Perimeter of the hall is 50 m and height is one-fourth of the perimeter.

50. Five men and five women are to be arranged in a row while seating in a party. **(SBI PO Main Exam 2017)**
Quantity I : Number of ways of arranging 5 men and 5 women such that no two men or women are adjacent to each other.
Quantity II : Number of ways of arranging 5 men and 5 women such that all men sit together.
(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 No relation

51. **Quantity I:** Value of 'a' if 's' is an acute angle and PR || QT. **(SBI PO Main Exam 2017)**



Quantity II : 25°
(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 No relation

52. There are 63 cards in a box numbered from 1 to 63. Every card is numbered with only 1 number.
(SBI PO Main Exam 2017)
Quantity I : Probability of picking up a card whose digits, if interchanged, result in a number which is 36 more than the number picked up.
Quantity II : Probability of picking up a card, the number printed on which is a multiple of 8 but not that of 16.
(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 No relation

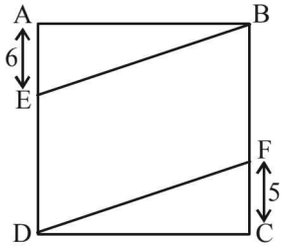
DIRECTIONS (Qs. 53) : Each of the following questions consists of 3 statements A, B and C. You have to determine that which of the following statement/statements are necessary to answer the questions:

(SBI PO Main Exam 2017)

53. If m and n are integers then is n completely divisible by 10?
A. The value of $\left(\frac{m}{10}+\frac{n}{10}\right)$ is an integer value.
B. The value of $\left(\frac{m}{7}+\frac{n}{10}\right)$ is an integer value.
C. value of n is greater than m.
(a) Any two of them
(b) A and B together
(c) Any of them
(d) All statements are required
(e) Data is not sufficient and it requires more information to answer the given question.

54. **Quantity I:** Area of quadrilateral BFDE, given ABCD is a rectangle having AB = 10 cm & BC = 12 cm.

(SBI PO Main Exam 2017)



Quantity II : 15cm²

(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 No relation

55. A, B and C entered into a partnership. A invested ₹ 3000 at the start. B invested $33\frac{1}{3}\%$ more than that invested by A and C invested the average of the investment made by A and B. After 4 months, A withdrew 40% of his amount, B doubled his amount and C increased his amount by 20%. After another 5 months, B got away from partnership and A doubled his amount while C maintained his amount. Profit at the end of year was ₹ 677000 and profit was shared in the ratio of their investment and time.

(SBI PO Main Exam 2017)

Quantity I: Profit earned by C.
Quantity II: Average of profit earned by A, B and C together.

(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 No relation

DIRECTIONS (Qs. 56-58) : Each of the following questions consist of 3 statements A,B and C. You have to determine that which of the following statement/statements are necessary to answer the questions:

(SBI PO Main Exam 2017)

56. A, B and C entered into a partnership. If the profit earned in the business is proportional to the investment and the period of investment then What is the profit of B if all of them invested the amount for one year and total profit is ₹ x.
A. A invested ₹ 1500 more than that of C.
B. A invested 2 times more than that of B. C invested 3 times more than that of A.
C. B invested 200 percent more than that of A and 100% less than that of C.
(a) Any two of them
(b) Either B or C alone
(c) Any of them
(d) All statements are required
(e) None of these

57. 6 men and 9 women and 5 children can do a work in 14 days. In how many days can 12 men and 3 women and 5 children do the same work?
A. 20 men and 30 women can do the same work in 5 days.
B. Work done by 2 men is equal to 3 women.
C. 6 children can do two-thirds of the same work in 28 days.
(a) Any one of them (b) Only C
(c) C and either A or B (d) Any two of them
(e) Only either A or B

58. Rajnish buys 30 books and 65 pens. If price of each book is more than price of each pen then what money does he have to pay for this?
A. At a profit of 20% he sells all the objects for ₹ 3828.
B. The CP of one book and one pen is ₹ 90.
C. The difference between sum and difference of buying price of one pen and one book is ₹ 28.
(a) Only A alone or B alone is sufficient
(b) B and C together are sufficient
(c) A alone or B and C together are sufficient
(d) All together are necessary
(e) All even together are not sufficient

DIRECTIONS (Qs. 59-62): The following questions are accompanied by three statements (A) or (I), (B) or (II), and (C) or (III). You have to determine which statement(s) is/are sufficient/ necessary to answer the questions.

(IBPS RRB Scale-I Main Exam 2017)

59. The ratio of the ages of Jasim and Abdula is 6 :11. Find out the ratio of their ages 5 years ago.
A. The difference of their ages is 35 years.
B. The difference of their ages after 5 years will be 35 years.
C. The sum of their ages is 119 years.
(a) Only A and C together are sufficient
(b) Anyone of A, B and C is sufficient
(c) Only A and B together are sufficient
(d) Any two of A, B and C are sufficient
(e) All together are necessary

60. What is the cost of painting the two adjacent walls of a rectangular hall which has no windows or doors?
I. The area of the base of hall is 124 sq. metres.
II. The breadth, length and the height of the hall are in the ratio of 3 : 4 : 5.
III. Area of one wall is 40 square metres.
(a) Only I (b) Only II
(c) Only III (d) Either I or III
(e) Data inadequate

61. 8 men and 6 women can complete a piece of work in 42 days. How many days will it take for 12 men and 9 women to complete the same work?
A. 6 men can complete the work in 84 days.
B. 7 women can complete the work in 126 days.
C. The amount of work done by a woman is four-sevenths of the work done by a man in one day.
(a) Any two of them
(b) Any of them
(c) Only C
(d) Either A or B only
(e) No need of any information

62. A train crosses another train in 20 sec. Find out the lengths of the trains.
A. Ratio between the lengths the of second train and first train is 4 : 5.
B. Ratio between the speed of first and second trains is 1 : 2.
C. The speed of first train is 36 km/hr.
(a) Only A and B together
(b) Only B and C together
(c) Only A and C together
(d) Can't be answered even after using all the information
(e) None of these

DIRECTIONS (Qs. 63-67) : In each of the given questions, one question and two statements numbered I and II are given. You have to decide whether the data given in both the statements are sufficient to answer the question or not. Read both the statements and give answer.

(IBPS RRB Scale- 2 & 3 2017 Main Exam)

(a) if the data in statement I alone are sufficient to answer the question, while the data in statement II alone are not sufficient to answer the question.
(b) if the data in statement II alone are sufficient to answer the question, while the data in statement I alone are not sufficient to answer the question.
(c) if the data either in statement I alone or in statement II alone are sufficient to answer the question.
(d) if the data in both statements I and II together are not sufficient to answer the question.
(e) if the data in both the statements I and II together are necessary to answer the question.

63. By how many years is Rakesh younger than his brother Sunil?
I. Ratio between Rakesh's present age and Sunil's age after four years is 5 : 7 respectively.
II. Ratio between Rakesh's age four years ago and Sunil's present age is 2 : 3 respectively.

64. What is the quantity of milk in 80 litres of mixture of milk and water ?
I. If 8 litres of mixture is replaced by equal quantity of water the ratio of milk and water in the mixture becomes 27 : 13 respectively.
II. If 16 litres of mixture is replaced by equal quantity of milk, the ratio of milk and water in the mixture becomes 4 : 1 respectively.

65. Neeraj invested certain amount in schemes A and B for 2 years in the ratio of 3 : 5 respectively. The schemes A and B offer compound interest compound annually and simple interest respectively. What is the amount invested in scheme A?
I. Rate of interest offered by scheme A is 20% per annum and the rate of interest offered by scheme B is 25% less than that offered by scheme A.
II. Amount of interest accrued from scheme B is more than the amount of interest accrued from scheme A by ₹ 900.

66. Two friends X and Y start running towards each other at the same time from points A and B respectively and meet after 135 minutes. At what speed is X running?
I. Point B is 45 km away from point A and speed of X is 150% of the speed of Y.
II. Distance covered by Y was 18 km.

67. What is the cost of painting two adjacent walls of a hall having no door or window at ₹ 450 per m^2 ?
I. Length and breadth are in the ratio of 3 : 2 respectively.
II. Perimeter of the hall is 50 m and height is one-fourth of the perimeter.

DIRECTIONS (Qs. 68-72): The following questions are accompanied by three statements (A), (B), and (C). You have to determine which statements(s) is/are sufficient/necessary to answer the questions.

(IBPS PO Mains 2017 Exam)

68. What is the value of a two-digit number in which digit at tens place is greater than digit at unit place?
A. The sum of the digits is 5.
B. The difference of the squares of the digits is 15.
C. The difference of their digits is 3.
(a) A and B together are sufficient
(b) B and C together are sufficient
(c) C and A together are sufficient
(d) Any one pair of A and B, B and C or C and A is sufficient
(e) A, B and C together are necessary

69. What is the rate of interest at which Binod has invested money?
A. The compound interest at this rate of ₹ 2500 in 2 yrs is equal to the simple interest in 3 yrs of ₹ 5150 at the same rate.
B. The total simple interest on an investment of ₹ 12000 for 3 yrs and ₹ 10000 for 5 yrs at this rate is ₹ 5160.
C. In 3 yrs ₹ 1500 at the same rate becomes ₹ 1725 by simple interest.
(a) Any of them (b) A and either B or C
(c) Only C (d) Only A and either B or C
(e) Any two of them

70. A person travels from X to Y and back again. How long will it take in travelling both the ways by bus?
A. It takes 21 hours in travelling from X to Y by train and returning by bus.
B. The distance between X and Y is 648 km.
C. A person can save 3 hours if he travels both the ways by train as compared to travelling by bus on the one side and returning by train.
(a) Only A and C together
(b) B and either A or C
(c) Any two of them
(d) All statements are necessary
(e) Question can't be answered even after using all the information

71. Find the number of days in which Q can do a job if P can do the same job in 8 days.
A. Q is 60% more efficient than P.
B. P and Q together can do the job in 10/3 days.
C. P is 75/2 % less efficient than Q.
(a) Only A is sufficient
(b) Only B is sufficient

(c) Either A or B is sufficient
(d) Any of them
(e) A and C together are sufficient

72. What will be the cost of fencing a rectangular plot?
A. Cost of fencing a circular plot whose area is 616 m^2 is ₹ 968.
B. Perimeter of the rectangular plot is 200 m.
C. Perimeter of the square whose length is equal to the breadth of the rectangular plot is 20 m.
(a) Only C
(b) A and C together
(c) A and B together
(d) A and either B or C
(e) Question can't be answered even after using all the information

DIRECTIONS (Qs. 73- 77) : There are two quantities named I and II given below. Based on the given information, you have to determine the relation between the two quantities. You should use the given data to answers the questions. Give answer :

(IBPS PO Mains 2017 Exam)

(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

73. **Quantity I:** Profit percent when an article of cost price ₹ 160 is sold for ₹ 184.
Quantity II: When a person buys an article whose marked price is ₹ 2400 for ₹ 2016, then percentage discount availed by him.

74. **Quantity I :** If the speed of the boat in the direction of current is 13 km/hr and the speed of the current is 4 km/hr. What is the speed of the boat against current.
Quantity II : The downstream speed and upstream speed of the boat is 13 km/hr and 3 km/hr respectively. What is the speed of the stream

75. **Quantity I:** Present age of A and B are in the ratio of 4 : 5 respectively. Five years hence the ratio of their ages becomes 5 : 6 respectively. What is A's present age?
Quantity II: If the average age of A, B and C are 24 years, and the average of B and C is 20, then the age of A:

76. If X is earning 40% more than Z and Y is earning 35% more than Z
Quantity I: If Z earning ₹ 17500, then X is earning
Quantity II : If Z earning ₹ 20000, then Y is earning

77. **Quantity I:** The speed of the stream is 3 km/hr. A boat goes 30 km upstream and comes back again to the starting point in 175 min. Then the speed of the boat in still water (in km/hr):
Quantity II: A man in a car travels a certain distance in 20 min. He observes that he crossed 8 bus stops. If distance between two bus stops are 1000m, then the speed at which the car is travelling (in km/hr)

DIRECTIONS (Qs. 78-82): Each of the questions below consists of a question and two statements numbered I and II given below it. You have to decide whether the data provided in the statements are sufficient to answer the questions.

(SBI Main 2017 Exam)

78. In a class of 180 students, how many girls scored over 70% in the Chemistry test?
I. Exactly 15 boys scored over 70% in the test.
II. 2/3 rd of the class scored over 70% in the test.
A. If the data in **statement I alone are sufficient** to answer the question, while the data in statement II alone are not sufficient to answer the question.
B. If the data in **statement II alone are sufficient** to answer the question, while the data in statement I alone are not sufficient to answer the question.
C. If the **data either in statement I alone or in statement II alone** are **sufficient** to answer the question.
D. If the data in **both the statements I and II together** are **not sufficient** to answer the question.
E. If the data in **both the statements I and II together** are **necessary** to answer the question.

79. What is the speed of the stream?
I. The ratio of speed in upstream to the speed in downstream is 2 : 3
II. The distance travelled in upstream in 2 hours by a man is more than distance travelled by him in downstream in 1 hour by 4km.
A. The data in Statement I alone are sufficient to answer the question, while the data in statement II alone are not sufficient to answer the question.
B. The data in statement II alone are sufficient to answer the question, while the data in statement I alone are not sufficient to answer the question.
C. The data either in statement I alone or in statement II alone are sufficient to answer the question.
D. The data even in both the statements I and II together II alone not sufficient to answer the question.
E. The data in both the statements I and II together are necessary to answer the question.

80. What is 4 th consecutive even number in a given series of even real numbers?
I. The sum of first two numbers is 34.
II. The sum of last two numbers is 42.
A. If the data in **statement I alone are sufficient** to answer the question, while the data in statement II alone are not sufficient to answer the question.
B. If the data in **statement II alone are sufficient** to answer the question, while the data in statement I alone are not sufficient to answer the question.
C. If the **data either in statement I alone or in statement II alone** are **sufficient** to answer the question.
D. If the data in **both the statements I and II together** are **not sufficient** to answer the question.
E. If the data in **both the statements I and II together** are **necessary** to answer the question.

81. The marks obtained by Rohit in English in his class-X final exams?
I. Rohit scored 42 marks in Chemistry which was 50% of the marks that he got in Hindi which is twice as much as mark obtained in English
II. Rohit's marks in English were 17% of the total marks he got in all the subjects together.

A. Data given in statement 1 alone are sufficient to answer the question whereas the data given in statement 2 alone are note sufficient to answer the question.
B. Data given in statement 2 alone are sufficient to answer the question whereas the data given in statement 1 alone are not sufficient to answer the question.
C. Data in either statement 1 alone or in statement 2 alone are sufficient to answer the question.
D. Data in both the statement 1 and 2 not sufficient to answer the question.
E. Data given in both the statement 1 and 2 are necessary to answer the question.

82. What is the ratio of the total number of girls to the total number of boys in a college?
I. There are 2000 students in the college out of which 40% are girls.
II. The ratio of the total number of boys to the total number of girls in the last year was 5 : 5.
A. The Statement A alone is sufficient to answer the question, but the Statement B alone is not sufficient.
B. The statements B alone is sufficient to answer the questions. But the Statements A alone is not sufficient.
C. Both Statements A and B together are needed to answer the question.
D. Either the statement A alone or statement B alone is sufficient to answer the questions.
E. You cannot get the answer from the statements A and B together, but need even more data.

83. Total number of Caps in a bag, which contains White and Black Cap only, is 16. What is the number of White Cap? **(SBI PO Mains-2018)**
(A) Probability of drawing a White Caps P(W) < 0.3750
(B) Probability of drawing two Black Caps P(B) < 1-P(W)
(C) Difference between no. of White Caps and Black Caps is 12.
(a) Only statement 'A' alone is sufficient to answer the question
(b) Both statement A and statement C are required to answer the question.
(c) Only statement 'C' alone is sufficient to answer the question
(d) Either statement A or statement C is sufficient to answer the question
(e) All three together are sufficient to answer the question

84. What is the speed of boat? **(SBI PO Mains-2018)**
(A) Sum of time taken by a boat in upstream and downstream is 18 hours to cover distance 180 km in each.
(B) Speed of boat in downstream is 30 km/h.
(C) Boat cover 90 km in 7 hr, while rowing in upstream
(a) Either A and B or B and C are sufficient to answer the question
(b) Either A and B or A and C are sufficient to answer the question
(c) Either A and C or B and C are sufficient to answer the question
(d) Any two statements are sufficient to answer the question
(e) Either only A or B and C together are sufficient to answer the question

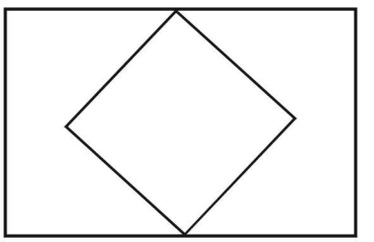
85. Is $x > y$ **(SBI PO Mains-2018)**
(A) $x^5 = y$
(B) $x < 0$
(C) $|y| > |x|$
(a) Either A and B or B and C are sufficient to answer the question
(b) Either A and B or A and C are sufficient to answer the question
(c) Either A and C or B and C are sufficient to answer the question
(d) Any two statements are sufficient to answer the question
(e) Only A and B are sufficient to answer the question

86. **Quantity I:** Unit digit of the number $\left[(4653)^{25}\right]^{27}$

Quantity II: Unit digit of the number $\left[(257)^{23}\right]^{22}$

(SBI PO Mains-2018)
(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 No relation

87. **Quantity I:** Area of square, given in figure, is 40% of the area of rectangle. Value of percent by which length of rectangle is more than breadth.



Quantity II: A pair of opposite sides of a square when increased by 15cm, the area of figure increased by 600 cm^2. Value of percent by which area increased.

(SBI PO Mains-2018)
(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 No relation

88. If L, M and N are natural number, then value of LM = M + N ?
(A) L + N = 8 + M
(B) $M^2 = \frac{N^2}{L+1}$
(C) M = L + 2

(SBI PO Mains-2018)

(a) Either A and B or B and C are sufficient to answer the question
(b) Either A and B or A and C are sufficient to answer the question
(c) Either A and C or B and C are sufficient to answer the question
(d) Any two statements are sufficient to answer the question
(e) Either only A or B and C together are sufficient to answer the question

89. What is the profit percent earned on selling 2 shirts and 1 watch?
A. Cost price of 3 shirts is equal to selling price of 4 watches. Profit earned on selling 2 watches is equal to the profit earned on selling 1 shirt. Profit earned on selling 8 watches is 50% of their cost price.
B. Profit earned on selling 4 shirts and 6 watches is 50% which is equal to 500% of the cost price of one watch.
C. Profit earned on selling 1 shirt is 100% of the cost price of 1 watch. **(SBI PO Mains-2018)**
(a) Either A or B and C are sufficient to answer the question
(b) Either A and B or A and C are sufficient to answer the question
(c) Either A and C or B and C are sufficient to answer the question
(d) A, B and C together are sufficient to answer the question
(e) Only statement A is sufficient to answer the question.

90. 8 men and 4 women together can complete a piece of work in 6 days. Work done by a man in one day is double the work done by a woman in one day. 8 men and 4 women started working and after 2 days, 4 men left and 4 new women joined the work.
Quantity I: More days required to complete the work
Quantity II: 5 days **(SBI PO Mains-2018)**
(a) Quantity I = Quantity II or No relation
(b) Quantity I ≥ Quantity II
(c) Quantity I < Quantity II
(d) Quantity I ≤ Quantity II
(e) Quantity I > Quantity II

91. John started from his home to his office. After 2 hours, his friend Ali started from office towards John's home. By the time John travelled one-fifth of the total distance, Ali had also travelled the same. Ali's speed is thrice of that of John's speed.
Quantity I: Difference in time (in hours) taken by John and Ali to reach their respective destinations.
Quantity II: 12 hours **(SBI PO Mains-2018)**
(a) Quantity I = Quantity II or No relation
(b) Quantity I ≤ Quantity II
(c) Quantity I ≥ Quantity II
(d) Quantity I < Quantity II
(e) Quantity I > Quantity II

92. A vessel contains 5 litres of Liquid A and 20 litres of Liquid B. 20% of the contents of the vessel are removed. To the remaining contents, x litres of Liquid A is added to reverse the ratio of Liquid A and Liquid B. Then y litres of Liquid B is added again to reverse the ratio of Liquid A and Liquid B.
Quantity I: Value of 'y'
Quantity II: Value of 'x' **(SBI PO Mains-2018)**
(a) Quantity I = Quantity II or No relation
(b) Quantity I ≤ Quantity II
(c) Quantity I ≥ Quantity II
(d) Quantity I < Quantity II
(e) Quantity I > Quantity II

DIRECTIONS (Qs. 93 & 94): Each question below is followed by two statements A and B. You have to determine whether the data given in the statement is sufficient for answering the question.

(SBI Clerk Main-2018)

Give answer:
(a) if the statement **A alone** is sufficient to answer the question, but the statement B alone is not sufficient.
(b) if the statement **B alone** is sufficient to answer the question, but the statement A alone is not sufficient.
(c) if both statements **A and B together** are needed to answer the question.
(d) if either the statements **A alone or** statement **B alone** is sufficient to answer the question
(e) if you **cannot get** the answer from the statements **A and B together,** but need even more data.

93. Triangle ABC has angle BAC equal to 90°. What is the measure of the angle ABC?
A. The angle ACB is 35°.
B. The angle CBA is 55°.

94. What is the rate p.c.p.a. on an amount of ₹ 6,000 deposited in a Bank?
A. The simple interest for four years is ₹ 3600.
B. The difference between the simple interest and compound interest is ₹ 894.0375.

DIRECTIONS (Qs. 95-99): In the following questions two statements (Quantity -I and Quantity -II) are given. You have to solve both the statements and give answer.

(SBI Clerk Main-2018)

(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

95. **Quantity I:** The age of teacher, if the average age of 36 students is 14. When teacher's age is included the average increases by 1.
Quantity II: The age of teacher, if the average age of 19 students is 35. When teacher's age is included the average increases by 0.5.

96. **Quantity I:** Profit Percentage, if Some articles were bought at 6 articles for ₹ 5 and sold at 5 articles for ₹ 6.
Quantity II: Profit Percentage, if 100 toys are bought at the rate of ₹ 350 and sold at the rate of ₹ 48 per dozen.

97. **Quantity I:** On selling 17 balls at ₹ 720, there is a loss equal to the cost price of 5 balls. The cost price of a ball is:
Quantity II: A man buys a cycle for ₹ 1400 and sells it at a loss of 15%. The selling price is:

98. **Quantity I:** A and B together can do a piece of work in 4 days. If A alone can do the same work in 6 days, then B alone can do the same work in?
Quantity II: A can do a piece of work in 4 hours; B and C together can do it in 3 hours, while A and C together can do it in 2 hours. How long will B alone take to do it?

99. **Quantity I:** A man on tour travels first 160 km at 64 km/hr and the next 160 km at 80 km/hr. The average speed of the tour is:
Quantity II: A went from P to Q with the speed of 60km/hr. and return back with the speed of 90km/hr. Find the average speed.

100. **Quantity I:** Train 'A' running at a speed of 25 m/sec crosses Train 'B' coming from opposite direction running at a speed of 15 m/sec in 12 seconds. Length of train 'A' is twice of train 'B'. Length of train 'A' is 'x'
Quantity II: 160 meters. **(SBI Clerk Pre-2018)**
(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 No relation

101. Average of three numbers k, c and d is 1 more than average of a, k and c. Average of a and d is 19.5
(SBI Clerk Pre-2018)
Quantity I: Number 'a'
Quantity II: 21
(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 No relation

102. **Quantity I:** A pipe alone can fill a cistern in 60 minutes. But due to leakage pipe filled only 80% of the cistern in 1 hour. 'x' is the capacity of cistern (in liters) if due to leakage 60 liter can be leaked out in 1 hour.
Quantity II: 250 liters **(SBI Clerk Pre-2018)**
(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 No relation

103. **Quantity I:** Ratio between speed of boat in still water to speed of stream is 3 : 2. Total time taken by a man to cover 72km in upstream and come back is 32 hours. 'x' is the downstream speed in kmph **(SBI Clerk Pre-2018)**
Quantity II: 9 kmph
(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 No relation

104. **Quantity I:** Area of a square is 361 cm^2 whose perimeter is equal to perimeter of a rectangle. Length of rectangle is 4 cm more than breadth of rectangle. 'x' is the area of rectangle
(SBI Clerk Pre-2018)
Quantity II: 357 cm^2
(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 No relation

105. **Quantity I.** $x^2 + x - 12 = 0$ **(SBI PO Pre-2018)**
Quantity II. $y^2 + 7y + 10 = 0$
(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 No relation

106. Raman's efficiency is 25% more than Sharan
(SBI PO Pre-2018)
Quantity I - Raman can do $\frac{5}{6}$th of total work in 'x' days
Quantity II - Sharan can do $\frac{4}{5}$ th of total work in 'y' days
(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 No relation

107. Sum of 8 consecutive even number is S_1.
Quantity I- Sum of second number and eighth number in S_1
Quantity II- Sum of third number and sixth number in S_1
(SBI PO Pre-2018)
(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 No relation

108. An article is sold at ₹ 3000 after allowing discount of 12.5% on Marked price. **(SBI PO Pre-2018)**
Quantity I- ₹ 1100
Quantity II- Marked price of article.
(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 No relation

109. If speed of boat is 500% more than the speed of a current.
Quantity I- If boat can travel a distance of 126 km in 6 hr, in downstream then 'x' is the speed of the boat in upstream (km/hr).
Quantity II- 15 km/hr **(SBI PO Pre-2018)**
(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 No relation

110. My school playground is rectangular in shape and there is a rectangular path just inside a rectangular field. Width of the path is 3 cm. If length of park is decreased by 6 cm then it becomes a square. Area of the rectangle is $2\frac{1}{4}$ times the area of the path.

From the above given information which of the following can be found out.

(i) Area of path
(ii) Length of the park
(iii) Sum of perimeter of the rectangular park and perimeter of the path (both external and internal perimeter)

(IBPS PO Main-2018)

(a) only (ii) (b) only (ii) and (iii)
(c) only (i) and (iii) (d) all of the above
(e) only (iii)

111. Rajan invests 40% of the amount invested by Gagan. Gagan withdraw whole amount from the business after 6 months. Ahmad joins the business with the investment of ₹x in a month after Gagan had withdrawn from the business. At the end of the year Rajan and Ahmad share same amount of profit.
If investment of Gagan is ₹ 1800 then which of the following may be the investment of the Ahmad.

(IBPS PO Main-2018)

(i) 1800 (ii) 5400 (iii) 2700 (iv) 7200 (v) 5000
(a) (i) and (iii) (b) only (iii)
(c) (i), (ii) and (iii) (d) (i), (ii), (iii) and (iv)
(e) (i), (ii) and (iv)

112. A certain number of men typist can type a complete book in five hours less than the time taken by some women typist. Work completed by one man in one hour is same as the work completed by one woman in one hour.
Which one of the following ratio of number of men to number of women can satisfy the above given condition

(IBPS PO Main-2018)

(i) 2:5 (ii) 10:3
(iii) 9:7 (iv) 10:7
(a) only (ii) (b) only (ii) and (iii)
(c) only (i) and (iii) (d) all of the above
(e) only (ii), (iii) and (iv)

113. Two numbers P and Q are given
What is P + Q ?

(i) LCM of P and Q is 36 times their HCF
(ii) The sum of LCM of P & Q and their HCF is 444.
(iii) $\frac{P}{10}+\frac{Q}{10}$ is an integer.
(iv) $P+Q>150$

Which of the given statements are redundant to find the answer of the question. **(IBPS PO Main-2018)**

(a) statement (ii) (b) statement (iii)
(c) statement (iv) (d) statement (i)
(e) Answer cannot be determined even after using all the statements.

DIRECTIONS (Qs. 114-115): There are three quantities provided in the questions. You have to find out the values of the quantities and compare them according to the given codes as follows

(IBPS PO Main-2018)

@ → >
& → <
* → ≥
$ → ≤
# → = (or relationship can't be established)

Example:
Quantity I: $2^3+3^3+4^3$
Quantity II: $6^2\times 2^2$
Quantity III: $6^3-2^3\times 3^2$

(a) @, $ (b) &, #
(c) $, # (d) &, *
(e) @, #

Quantity I < Quantity II = Quantity III
So, answer is (b)

114. **Quantity I:** $165\ m^5n^3\div\frac{55}{3}m^{-2}n^5\times 8m^{-5}n^8;\ m>0, n<0$
Quantity II: $210\ x^9y^9\div 35x^4y^2\div 3x^2y^4;\ x<0, y<0$
Quantity III: $68\ a^8b^{12}\times 5\ a^3b^{-4}\div 17a^6b,\ a>0, b<0$

(a) (@, &) (b) (#, @)
(c) ($, @) (d) (&, @)
(e) (*, #)

115. a, b, c and d are positive integers.

Quantity I: 'a' $\frac{(a+d)^2-(a-d)^2}{8ad(a+d)^2}=1$

Quantity II: 'b' $\frac{(b+d)^3-(b-d)^3}{(d^2+3b^2)^2}=\frac{1}{8d}$

Quantity III: 'c' $\frac{\sqrt{c+d}+\sqrt{c-d}}{\sqrt{c+d}-\sqrt{c-d}}$

(a) (@, &) (b) (#, @)
(c) ($, @) (d) (&, @)
(e) (*, #)

116. **Quantity I:** In a question paper probability of a question not being answered by three students is 0.5, 0.4, 0.7 respectively. Find the probability that at most two students will solve the question.
Quantity II: Dipak have 5 black balls & 7 white balls, in his bag. If three balls are drawn at random from bag, then find probability of getting at least 1 black ball.
Quantity III: Nirmal speaks the truth 4 out of 5 times, and Puja speaks the truth 6 out of 7 times. What is the probability that they will contradict each other in stating the same fact?

(a) (@, &) (b) (#, @)
(c) (@, @) (d) (&, a)
(e) (*, #)

DIRECTION (Qs. 117-121): In the given questions, two quantities are given, one as 'Quantity 1' and another as 'Quantity 2'. You have to determine relationship between two quantities and choose the appropriate option:

(IBPS Clerk Main-2019)

117. Wasim is twice as efficient as Yunus. Both can complete a work together in $7\frac{1}{2}$ days.
Quantity 1: Time taken by Yunus to complete the work alone.
Quantity 2: If Shashi is 50% more efficient than Wasim, then time taken by Shashi to complete the work alone.

(a) Quantity 1 > Quantity 2
(b) Quantity 1 ≥ Quantity 2
(c) Quantity 2 > Quantity 1
(d) Quantity 2 ≥ Quantity 1
(e) Quantity 1 = Quantity 2 or Relation cannot be established

118. One of the roots of $2x^2 + bx - 4 = 0$ is 2.
Quantity 1: Value of the other root.
Quantity 2: –0.5
(a) Quantity 1 > Quantity 2
(b) Quantity 1 ≥ Quantity 2
(c) Quantity 2 > Quantity 1
(d) Quantity 2 ≥ Quantity 1
(e) Quantity 1 = Quantity 2 or Relation cannot be established

119. Two dices are rolled simultaneously.
Quantity 1: Probability that the sum of the numbers that appeared is a multiple of 4.
Quantity 2: 1/3
(a) Quantity 1 > Quantity 2
(b) Quantity 1 ≥ Quantity 2
(c) Quantity 2 > Quantity 1
(d) Quantity 2 ≥ Quantity 1
(e) Quantity 1 = Quantity 2 or Relation cannot be established

120. Sum of height and diameter of the cylinder is 42 metre.
Quantity 1: Curved surface area of the cylinder whose respective ratio of height to diameter is 3 : 4
Quantity 2: Curved surface area of the cylinder if height of cylinder is 15 m.
(a) Quantity 1 > Quantity 2
(b) Quantity 1 ≥ Quantity 2
(c) Quantity 2 > Quantity 1
(d) Quantity 2 ≥ Quantity 1
(e) Quantity 1 = Quantity 2 or Relation cannot be established

121. Product of digits of a two digit number 'N' is 36
Quantity 1: N
Quantity 2: 132–N
(a) Quantity 1 > Quantity 2
(b) Quantity 1 ≥ Quantity 2
(c) Quantity 2 > Quantity 1
(d) Quantity 2 ≥ Quantity 1
(e) Quantity 1 = Quantity 2 or Relation cannot be established

DIRECTIONS (Qs. 122-126): The following questions are accompanied by two statements A and B. You have to determine which statements(s) is/are sufficient/necessary to answer the questions.

(a) Statement A alone is sufficient to answer the question but statement B alone is not sufficient to answer the questions.
(b) Statement B alone is sufficient to answer the question but statement A alone is not sufficient to answer the question.
(c) Both the statements taken together are necessary to answer the questions, but neither of the statements alone is sufficient to answer the question.
(d) Either statement A or statement B by itself is sufficient to answer the question.
(e) Statements A and B taken together are not sufficient to answer the question **(IBPS Clerk Main-2019)**

122. What is the value of rate of interest?
A. Janvi invested a sum of ₹ 8000 at simple interest for 3 years in scheme A of people choice bank which offers a certain rate of interest. Amount obtained from scheme A is equal to the amount obtained when ₹ 9000 is invested in scheme B for 2 years at C.I.
B. Rate of interest for scheme B is same as rate of interest for scheme A.

123. 4 men & 18 women can do a piece of work in 2.5 days, then in how many days 12 women can complete the same piece of work?
A. Ratio of efficiency of men to women is 3 : 2.
B. 6 men & 6 women can complete the same work in 4 days.

124. What will be speed of stream, if speed of boat in still water is 45 km/hr?
A. The time taken by boat to cover 240 km upstream is 4 hours more than time taken by boat to cover same distance in downstream.
B. Boat takes total 15 hours to cover 300 km in downstream and upstream.

125. What will be sum of two natural numbers P & Q?
A. P & Q both are multiple of 24, while P is 50% more than Q.
B. $\frac{P}{30}$ & $\frac{Q}{40}$ both are natural number.

126. There are (2a+16) students in a Coaching Institute with three streams, i.e. Engineering, Medical & Commerce. The ratio of students who take Engineering to Medical is 4 : 1. Find total number of students in Coaching Institute.
A. Total students who take Engineering are 8 more than total students who take Commerce and probability of selecting one student who take Medical is $\frac{1}{8}$.
B. Total Commerce students in class are 25% less than total Engineering students in the Coaching Institute.

DIRECTIONS (Qs. 127-131) : Given below are two quantities named A & B. Based on the given information, you have to determine the relation between the two quantities. You should use the given data and your knowledge of Mathematics to choose between the possible answers.

(IBPS Clerk Main-2019)

(a) Quantity A > Quantity B
(b) Quantity A < Quantity B
(c) Quantity A ≥ Quantity B
(d) Quantity A ≤ Quantity B
(e) Quantity A = Quantity B or No relation

127. **Quantity A :** Uday covers a certain distance of 24 km/hr and reaches 8 minutes late. If he covers the same distance at 20 km/hr then he becomes 20 minutes late. Find the distance
Quantity B : Vikas travelling by his car covers a certain distance. Had he travelled 6 km/hr faster, he would have taken 4 mintues less time but if he travels 6 km/hr slower than he takes 6 minutes more time. Find the distance.

128. **Quantity A :** P and Q together Q and R together and R and P together can complete a piece of work in 12, 15 and 24 days respectively. In how many days can Q finish the work alone?
Quantity B : S & T working alone can complete a work in 10 and 15 days respectively. They started together but after 5 days S left, in how many days will be total work be completed?

129. **Quantity A :** Ramu promises to sell the goods at 5% profit but he uses 10% less weight. Find the actual profit percentage earned by the Ramu.
Quantity B : Rohit sells 64 oranges for ₹ 2 at 40% loss. How many organges for a rupee should he sell to earn 20% profit?

130. **Quantity A :** Perimeter of the square if area of a square ground is 12100 square metres.
Quantity B : Perimeter of each square if the length of a square field is 250 metres and it is cut into four equal squares.

131. **Quantity A :** In how many different ways can the letters of the word VOLUME be arranged?
Quantity B : In how many different ways can the letters of the word SQUARE be arranged ?

DIRECTIONS (Qs.132-136): The following questions are accompanied by three statements (I), (II) and (III). You have to determine which statement(s) is/are sufficient/necessary to answer the questions.

(IBPS Clerk Main-2019)

132. What is the speed of a train?
I. The train crosses a signal pole in 9 secs.
II. The train crosses a platform of equal length in 27 secs.
III. Length of the train is 440 metres.
(a) I and III only
(b) II and III only
(c) I and II only
(d) III and either I or II only
(e) Any two of the three

133. A boat takes 4 hours to travel from point P to Q in still water. To find out upstream speed, which of the following information is/are required?
I. Distance between point P and Q
II. Time taken to travel downstream from Q to P
III. Speed of the stream of water.
(a) All are requried
(b) Any one pair of I and II or II and III or III and I
(c) Only I and II
(d) Only I and III or II and III
(e) Only I and III or I and II

134. What is the perimeter of a rectangular garden?
I. The area of the garden is 1200 sq. metres
II. The diagonal of the garden is 25 metres
III. The ratio between the length and the breadth of the garden is 4 : 3.
(a) All I, II and III together are required
(b) Any two of I, II and III are sufficient
(c) Only I and II are requried
(d) Only II and III are required
(e) None of these

135. What is the difference between two numbers P and Q?
I. P is 40 percent more than another number R.
II. Q is 40 per cent less than R.
III. The sum of Q and R is 92
(a) Only I and II are required
(b) Only I and III are required
(c) All I, II and III together are required
(d) Any two of I, II and III are required
(e) Even with all I, II and III together the answer cannot be arrived at

136. What is the area of the right-angled triangular garden?
I. Perimeter of the garden is y cm.
II. Length of the hypotenuse is x cm.
III. Perpendicular sides of the garden are in the ratio of 6 : 8
(a) Only I and III or only II and III
(b) All I, II and III
(c) Any two of the three
(d) Only I and III
(e) None of the above

DIRECTIONS (Qs. 137-140) : In these questions, a question is given followed by information in three statements. You have to consider the information in all the three statements and decide the information in which of the statement(s) is not necessarily required to answer the question and therefore can be dispensed with. Indicate your answer accordingly.

(SBI PO Main-2019)

137. How many students from Institute 'IIP' got placement?
I. Number of students studying in Institutes 'IIP' & 'IIR' are in the ratio of 4 : 5 respectively.
II. Number of students who got placement from Institute 'IIR' is 120% of the number of students who got placement from Institute 'IIP'.
III. 80% of the students studying in Institute 'IIR' got placement.
(a) None of the statements can be dispensed with
(b) Only I
(c) Only II
(d) Anyone of the three
(e) Question cannot be answered even with the information in all three statements

138. What is the monthly income of Deepali Sharma?
I. She spends 79% of her income on various items and remaining amount is saved.
II. Monthly saving of her are ₹ 6300/.
III. Out of the total money spent by her in a month, one-fifth is spent on food and remaining amount of ₹ 18960 on other items.
(a) Only II
(b) Only III
(c) Only either II or III
(d) Question cannot be answered even with the information in all three statements
(e) None of these

139. What is Krishna's present age?
I. Krishna's present age is double the age of his son.
II. Ratio between present ages of his and his father is 2 : 3 respectively.
III. Four years hence the ratio between Krishna's age and her daughter's age will be 13 : 24 respectively.
(a) Only II (b) Only III
(c) Either I or II only (d) Either II or III only
(e) None of these

140. Mr. Sudhir has purchased two adjacent plots, one is in rectangular shape and other is in square shape and combined them to make a single new plot. The breadth of the rectangular plot is equal to the side of the square plot and the cost of fencing of the new plot is ₹470 (₹5/m). Find the area of the new rectangular plot when length of previous rectangular plot is 20 m. **(SBI PO Main-2019)**

(a) $212\,m^2$ (b) $431\,m^2$
(c) $452.25\,m^2$ (d) $485\,m^2$
(e) $411.5\,m^2$

DIRECTIONS (Qs. 141-143): Each of the questions below consists of a question and two statements numbered I and II given below it. You have to decide whether the data provided in the statements are sufficient to answer the questions. Give answer,

(SBI PO Main-2019)

(a) If the data in Statement I alone are sufficient to answer the question, while the data in statement II alone are not sufficient to answer the question.
(b) If the data in statement II alone are sufficient to answer the question, while the data in statement I alone are not sufficient to answer the question.
(c) If the data either in statement I alone or in statement II alone are sufficient to answer the question.
(d) If the data even in both the statements I and II together II alone not sufficient to answer the question.
(e) If the data in both the statements I and II together are necessary to answer the question.

141. What is the speed of the stream?
I. The distance travelled in upstream in 3 hours by a man is more than distance travelled by him in downstream in 1 hour by 8 km.
II. The ratio of speed in upstream to the speed in downstream is 3 : 8

142. What is 3rd consecutive even number in a given series of even real numbers?
I. The sum of first two numbers is 46.
II. The sum of last two numbers is 54.

143. The marks obtained by Arka Pratap in English in his class-X final exams?
I. He scored 36 marks in Chemistry which was 45% of the marks that he got in Hindi which is twice as much as mark obtained in English
II. His marks in English were 21% of the total marks he got in all the subjects together.

144. Kalraju can complete a piece of work in 30 days. Efficiency of J. Murthy is _____ times the efficiency of Kalraju. Kalraju and Mithun together can complete the work in 20 days. If efficiency of Riyas is 1.5 times the efficiency of Mithun, number of days taken by J. Murthy and Riyas to complete the work is _____.
Which of the following option/options satisfy the given condition? **(SBI Clerk Main-2019)**
I. 1.5, 40/3
II. 2, 15
III. 3, 8
(a) Only I and II
(b) Only I and III
(c) Only II and III
(d) All I, II and III
(e) None of these

145. Arjun and Banita together can complete the work in 24 days. Arjun and Chahak together can complete a piece of work in 32 days and with the help of Dablu they can complete the work on 24 days. Efficiency of Banita is two times the efficiency of Dablu.
From the above statement which of the following can be determined. **(SBI Clerk Main-2019)**
(I) Arjun alone complete the work
(II) Chahak alone complete the work
(III) Chahak and Dablu together can complete the work
(IV) Banita alone complete the work
(a) All I, II, III and IV
(b) Only I and III
(c) Only II
(d) Only I, III and IV
(e) Cannot be determine

146. Two trains Taj mail and JP mail in the length of 350 m and 250 m respectively and crosses the pole in 21 seconds and 10 seconds respectively.
From the above statement which of the following can be determined. **(SBI Clerk Main-2019)**
(I) Time taken by train Taj mail crosses the train JP mail running in opposite direction
(II) Length of the bridge, If Train Taj mail crosses the bridge in 36 seconds
(III) Time taken by Train JP mail crosses a man running in same direction at the speed of 30 kmph.
(IV) Ratio of speed of train Taj mail to train JP mail
(a) All I, II, III and IV (b) Only II and IV
(c) All I, II and IV (d) Only II
(e) Cannot be determine

147. If the volume of the cuboid is 2016 cm^3 and the radius and height of the cone is equal to the breadth and length of the cuboid. The ratio of the length, breadth and height of the cuboid is 24:7:12.
From the above statement which of the following can be determined. **(SBI Clerk Main-2019)**
(I) Slanting height of the cone
(II) Diagonal of the cuboid
(III) Volume of the cone
(IV) Surface area of the cuboid
(a) All I, II, III and IV (b) Only I
(c) Only I and IV (d) Only IV
(e) Cannot be determine

148. There are total _____ employees in a office. Some employes work only in Hindi, some work only in English and some work on both 80% of the employees work in Hindi, 45% of the employees work in English. Number of employees who work in both the subjects is _____.
Which of the following option/options satisfy the given condition? **(SBI Clerk Main-2019)**
(a) 800, 200 (b) 1200, 400
(c) 1000, 200 (d) All of the above
(e) None of the above

DIRECTIONS (Qs.149-153): 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,

(SBI Clerk Main-2019)

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

149. What is the common ratio of the geometric progression?
Statement I: Sum of the infinite terms of the progression is 2.
Statement II: Sum of the first m terms of the progression is $2^m - 1/2^m$.

150. What is the area of the triangle ABC?
Statement I: ABC is an isosceles righ-tangled triangle.
Statement II: The length of the largest side of the triangle ABC is 15cm.

151. How many people watch English movies assuming that all people watch atleast one movie.
Statement I: Number of people watching Hindi movies only, is 100.
Statement II: Number of people watching English or Hindi or both movies is 300.

152. The traffic management system at the junction of four roads is to be finalized. What is the maximum time a car would be waiting at the junction?
Statement I: There are 30 cars per minute in east-west and west-east directions.
Statement II: There is no right or left turns allowed on any of the roads.

153. Anil, Brajesh and Champa invested ₹52000 in a business in ratio 6:3:4 respectively. What is the profit % earned by them after a year?
Statement I: Champa got ₹8000 as his share of profit.
Statement II: The difference in profits earned by Anil and Brajesh is ₹6000.

DIRECTIONS (Qs. 154-156) : There are three quantities provided in the questions. You have to find out the values of quantities and compare them according to the given questions.

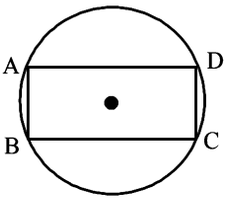
(SBI Clerk Main-2019)

Give answer :

(a) Quantity – I > Quantity – II > Quantity – III
(b) Quantity – I = Quantity – II > Quantity – III
(c) Quantity – I < Quantity – II > Quantity – III
(d) Quantity – I < Quantity – II < Quantity – III
(e) Relationship can't be established

154. The weight of P, Q, R and S are in the ratio of 9 : 7 : 4 : 5.
Quantity-I : Find the weight of P if total weight of P, Q and R is 225 kg.
Quantity-II: Find the weight of Q if total weight of Q, R and S is 180 kg.
Quantity-III: Find the weight of S if total weight of Q, R and S is 180 kg.

155.



Circular Region P

The area of the square inscribed in the circular region P is 98 sq. cm
Quantity-I: The area of the circular region P.
Quantity- II: The area of the circular region P outside the square.
Quantity-III: Perimeter of the circular region P.

156. Three friends Dipak, Sanjeet and Panas started a partnership business investing total money ₹ 22000 for 3 years. Dipak has invested ₹10000. Sanjeet's investment is the double of the Panas, investment. The average amount of profit earned per year is ₹2750.
Quantity-I: Amount received by the Panas as the share in the total profit at the end of 3 years.
Quantity-II: Amount received by the Sanjeet as the share in the total profit at the end of 18 months.
Quantity-III: Amount received by the Dipak as the share in the total profit at the end of one year.

DIRECTIONS (Qs. 157 - 162): Following questions have two quantities as Quantity I and Quantity II. You have to determine the relationship between them and give answer as,

(SBI Clerk Main-2019)

157. **Quantity I:** Tomy and Jacky can do a job in 8 days and 12 days respectively. If they work on alternate days with Tomy beginning, in how many days will the work be finished?
Quantity II: A sum of money is sufficient to pay Uday's wages for 21 days and Muday's wages for 20 days. It is then sufficient to pay the wages of both for
(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

158. **Quantity I:** Gopal sold two Air Purifier for ₹ 12900 each, neither losing nor gaining in the deal. If he sells one commodity at a gain of 29%, the other commodity is sold at a loss of
Quantity II: If the sales turnover of a company increases from ₹ 100 crore to ₹ 300 crore in 3 years, what is the compounded annual growth rate of sales (approximately) for the company?
(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

159. Doon Express can cross a man running in the direction of the train with the speed of 4 Km/h in 32.4 seconds. It can also cross a platform of length 740 m in 90 seconds. Time taken by the train to cross Moon Express of length _____ m coming from the opposite direction with the speed of 36 Km/h is _____ seconds.
Which of the following option/options satisfy the given condition? **(SBI Clerk Main-2019)**
I. 540, 40.5
II. 420, 36.3
III. 440, 36
(a) Only I and II (b) Only III
(c) Only I and III (d) All I, II and III
(e) None of these

160. A, B and C entered into a partnership with investment of ₹2P, ₹1.5P and ₹_____ respectively. After one year, A made his investment 1.5 times. After one more year, B doubled his investment. At the end of three years, they earned a total profit of ₹11,5000. 10% of the profit goes to a charity. Share of C in the profit is ₹_____.
Which of the following option/options satisfy the given condition? **(SBI Clerk Main-2019)**
(a) 3P, 45000 (b) 2P, 34500
(c) P, 21000 (d) Only (a) and (b)
(e) All of the above

161. A container contains 120 litres mixture of Alcohol and water which contains Alcohol and water in the ratio 7:3. _____ litres of the mixture is used in a party and 8 litre of Alcohol and 2 litres of water are added to the remaining mixture. Concentration of Alcohol in the final mixture is _____%.
Which of the following option/options satisfy the given condition? **(SBI Clerk Main-2019)**
I. 40, 78
II. 60, 84
III. 30, 71
(a) Only I and II
(b) Only II and III
(c) Only I and III
(d) Only III
(e) None of these

162. Pramod Das a shopkeeper marked the price of a shirt_____% above the cost price. He sold the shirt at a discount of 5% on the marked price. If selling price of the shirt is ₹912, percent profit earned by the shopkeeper is _____.
Which of the following option/options satisfy the given condition? **(SBI Clerk Main-2019)**
(a) 20, 14
(b) 25, 18.75
(c) 50, 42.5
(d) All of the above
(e) None of the above

DIRECTIONS (Qs. 163-167): Following questions contains two quantities as Quantity I and Quantity II. You have to determine the relationship between them.

(IBPS RRB PO Main-2019)

163. **Quantity I:** The sum of a number and its reciprocal is 2. What is the number?
Quantity II: 16 is multiplied to a number and 16 is added to the product. If the sum is divided by 6, it gives 8 times the original number. What is the number?
(a) Quantity I < Quantity II
(b) Quantity II ≤ Quantity I
(c) Quantity I = Quantity II or No relation can be established
(d) Quantity I ≤ Quantity II
(e) Quantity I > Quantity II

164. **Quantity I:** Ram alone can complete a work in 20 days. Shyam alone can complete the work in 30 days. Ram started the work and left after 10 days. How many days will it take for Shyam to complete the remaining work?
Quantity II: Aman is twice efficient as Biky. If Aman and Biky can complete a work in 10 days, find in how many days Aman alone can complete the work?
(a) Quantity I < Quantity II
(b) Quantity II ≤ Quantity I
(c) Quantity I > Quantity II
(d) Quantity I ≤ Quantity II
(e) Quantity II = Quantity I or No relation can be established

165. **Quantity I:** Boat Q travels to a point 48 km far and come back in 10 hours. The ratio of upstream and downstream speed is 2 : 3 . Find the speed of the boat in still water.
Quantity II: Speed of the boat P in still water is three times the speed of stream. Boat P sails to a point and come back to the starting point. The average speed of the boat in this journey is 16 km/hr. Find the speed of the boat in still water.
(a) Quantity I < Quantity II
(b) Quantity II ≤ Quantity I
(c) Quantity I > Quantity II
(d) Quantity I ≤ Quantity II
(e) Quantity I = Quantity II or No relation can be established

166. **Quantity I :** The ratio of radius of cylinder and cone is 3 : 2. The ratio of their heights is 5 : 8. Find the volume of the cylinder if the volume of the cone is $320cm^3$.
Quantity II : Find the volume of the cone if the radius and height of the cone are 18 cm and 7 cm respectively.
(a) Quantity I < Quantity II
(b) Quantity II < Quantity I
(c) Quantity II ≤ Quantity I
(d) Quantity I ≤ Quantity II
(e) Quantity I = Quantity II or No relation can be established

167. **Quantity I :** The ratio of present ages of Rahul and Vijay is 5 : 4. After 2 years, the ratio becomes 11 : 9. Find the sum of their ages
Quantity II : The average of present ages of two persons is 22. Find the sum of their ages 6 years ago.

(a) Quantity I < Quantity II
(b) Quantityt II < Quantity I
(c) Quantity II ≤ Quantity I
(d) Quantity I ≤ Quantity II
(e) Quantity I = Quantity II or No relation can be established

DIRECTIONS (Qs. 168-172) : Given below are two quantities named A & B. Based on the given information, you have to determine the relation between the two quantities. You should use the given data and your knowledge of Mathematics to choose between the possible answers.

(IBPS RRB Clerk Main-2019)

(a) If Quantity A > Quantity B
(b) If Quantity A < Quantity B
(c) If Quantity A ≤ Quantity B
(d) If Quantity A ≥ Quantity B
(e) If Quantity A = Quantity B or No relation possible

168. The cost price of a Mobile is ₹ 20000 and the selling price is ₹ 24000
Quantity A : Find the profit percent, if the discount percent is increased from 20% to 30%.
Quantity B: If the selling price is increased by 20% then find the profit percent.

169. Find the distance covered.
Quantity A : A person saves 120 minutes when he increases his speed from 20 km/hr to 30 km/hr to cover a certain distance.
Quantity B: If a person covers at a speed of 60 km/hr for 3 hours, then find the distance covered by him.

170. Find the sum.
Quantity A : If the compound interest for 2 years at 20% rate of interest is ₹ 1210.
Quantity B: The sum of money will produce ₹ 600 interest in 4 years at 6% simple interest.

171. Find the present age of X.
Quantity A : Four years before, the ratio of ages of X and Y was 5 : 6. Four years hence this ratio will become 6 : 7.
Quantity B: 6 years before the ratio of ages of X and Y was 2 : 3 and 6 years hence the ratio will become 3 : 4

172. **Quantity A :** In a test consisting of 100 questions, carrying one mark each. Aman answers 60 % of the first 50 questions correctly. What percent of the remaining questions does he need to answer correctly to score 75% on entire test?
Quantity B: The price of an article is reduced by 30% but the daily sale of the article is increased by 40%. The net effect on the daily sale receipts is-.

Answers & Explanations

1. (e) From statements I and II, since it is a right-angled triangle, $\text{Area} = \frac{1}{2} \times b \times h$

$\frac{1}{2} \times b \times h = 5b,\ h = 10$

2. (e) Combining I & II, we get speed of Dinesh and thus time can be calculated.
3. (b) From statement II, we find the negative answer since the number is not divisible by 3 then it can't be divisible by 12.
4. (a) From 1, we say a, b, c are in AP.
5. (d) Using both the statements, we can find separate expenditures of Rahim and Suresh but can't find their separate incomes.
6. (b) **From statement I,**
If the investment amount be ₹ P and rate of interest be R p.c.p.a. then

$$\text{Differenece} = P\left(\frac{R}{100}\right)^2 = \frac{PR^2}{10000} = 100 \quad ...(i)$$

From statement II,

$$\frac{PR_1 \times 3}{100} = 19500 - P \quad ...(ii)$$

From Statement III,

$$\frac{PR \times 2}{100} = 3000 \quad ...(iii)$$

Dividing equation (i) by (iii),

$$\frac{PR^2}{PR} = \frac{1000000}{150000} = \frac{20}{3}$$

$$\Rightarrow R = \frac{20}{3} \text{ p.c.p.a}$$

7. (e) **From Statement I and II**

$$\text{Speed of train} = \frac{x+y}{n} \text{ m/s}$$

From statement II and III

$$\text{Speed of train} = \frac{y}{m} \text{ m/s}$$

8. (c) Using statement II and III, 28% of 750 students will give our answer.
9. (e) **Using Statement I :**

$$\frac{A}{B} = \frac{2}{3}$$

Using Statement II :
A is 40% of total. So B is 60% of total amount invested.

$\frac{A}{B}=\frac{40}{60}=\frac{2}{3}$

Using statement III:

A = 45000

Putting the value of statement III in any of the statements I or II, we can find the amount invested in scheme B.

10. (c) Using statement I and II we can find the area of the rectangle and using statement III we can find the cost.

11. (b) From I and II, 10 women can finish the work in 1 day

$=\frac{7}{24}-\frac{1}{6}=\frac{7-4}{24}=\frac{1}{8}$

$\therefore$ 10 women can finish the work in 8 days.

From II and III,

Let 10 men can finish the work in x days and 10 women can finish the same work in y days.

Hence, $\frac{1}{x}+\frac{1}{y}=\frac{7}{24}$ ... (i)

and from III – II, $\frac{3}{x}+\frac{4}{y}=1$ ... (ii)

from (i) & (ii)

y = 8 days

Again from I and III $\frac{3}{6}+\frac{4}{y}=1\Rightarrow y=8$ days

12. (a) From I, Let present age of Sabir be x yr and age of his father be 2x yr.

From II, $\frac{x+5}{2x+5}=\frac{6}{11}\Rightarrow 12x+30=11x+55.$

x = 25 yr

From I and II, age of Sabir = 25 yrs.

Hence, only from I & II, age of Sabir and his father can be obtained.

13. (e) Let two digit number be 10x + y.

From I, either $x-y=\frac{27}{9}=3\Rightarrow y-x=\frac{27}{9}=3$

From II, $x-y=3\Rightarrow y-x=3$

From III, x – y = 3

Hence, Even by (I) + (II) + (III) we cannot obtain the number.

14. (e) From I, If P = 100

A = 200 and SI = 200 – 100 = 100

$\text{Rate}=\frac{SI\times 100}{P\times T}=\frac{100\times 100}{100\times 5}=20\%$

From II and III, $\text{Rate}=\frac{400\times 100}{2000\times 1}=20\%$

Hence, either I alone or II + III will be sufficient.

15. (e) From I and II.

Length = 3x = 48 m

$\therefore$ x = 16

Breadth = 2x = 32 m

Hence, Area of floor = 48 × 32

Cost of flooring = 48 × 32 × 850 = ₹ 1305600

From I and III, 2(l + b) = 160

$\Rightarrow 2(3x+2x)=160\Rightarrow 10x=160$

$\therefore$ x = 16

$\therefore$ Length = 3 × 16 = 48 m

Breadth = 2 × 16 = 32 m

Cost of flooring = (48 × 32) × 850 = ₹ 1305600

Similarly, from II and III, we can find l = 48 m and b = 32 m and Total cost of flooring = ₹ 1305600

16. (c) From statement I,

$P=\frac{S.I.\times 100}{R\times T}=\frac{400\times 100}{5\times 2}=₹ 4000$

Using,

$A=P\left(1+\frac{R}{100}\right)^{T}$, amount can be determined.

From statement II,

$\text{Difference}=\frac{PR^2}{(100)^2}$

We can find principal and hence amount.

Data either in statement I alone or in statement II alone are sufficient to answer the question.

17. (b) From II statement, we get result.

18. (e) From both the statements,

$r_1 = 24$ cm

$r_2 - r_1 = 3$ cm

$\Rightarrow \quad r_2 = r_1 + 3 = 24 + 3 = 27$ cm

$\therefore \quad \text{Required ratio}=\frac{\pi r_2^2}{\pi r_1^2}=\frac{r_2^2}{r_1^2}=\frac{27^2}{24^2}=\frac{81}{64}$

So data in both the statements together are necessary to answer the question.

19. (e) From both the statements,

If the length of the train be *y* metre,

$\text{Speed of train}=\frac{y}{9}\text{ m/sec}=\frac{y}{9}\times\frac{18}{5}=\frac{2y}{5}\text{ kmph}$

$\text{Again, }\left(\frac{5y}{9\times 18}+60\right)\times\frac{15}{60\times 60}=\frac{y+100}{1000}$

$\Rightarrow \quad \left(\frac{5y}{162}+60\right)\times\frac{15}{36}=\frac{y+100}{10}$ ... (i)

It is to be noted that when a train crosses a pole, the distance covered = length of the train, When it crosses another train,

Relative speed × time = sum of lengths of both trains.

Hence, from equation (i), we can determine length of train.

Length is (–ve) neglect that sign.

20. (e) From statement II,

length = *x* cm, breadth = (*x* – 5) cm

$\therefore \quad 2(x+x-5)=50 \quad \Rightarrow \quad 2x-5=25$

$\Rightarrow \quad 2x=25+5=30 \quad \Rightarrow \quad x = 15$ cm = length

$\therefore$ Breadth = 15 – 5 = 10cm

From statement I,

$$\frac{\pi r^2}{2} = 15 \times 10 \qquad \Rightarrow \quad \pi r^2 = 300$$

$$\Rightarrow \quad r = \sqrt{\frac{300}{\pi}}$$

This gives us value of radius.

21. (d) The question cannot be answered because R's share in investment is not given.

22. (b) A. $\text{Hypotenuse} = \sqrt{5^2 + 12^2} = \sqrt{25+144} = \sqrt{169} = 13$

Base : Height : Hypotenuse = 5 : 12 : 13

B. Base + Height + Hypotenuse = 30 cm

$$\therefore \text{Base} = \frac{5}{5+12+13} \times 30 = 5 \text{ cm}$$

$$\text{Height} = \frac{12}{5+12+13} \times 30 = 12 \text{ cm}$$

$$\text{Area} = \frac{1}{2} \times \text{base} \times \text{height} = \frac{1}{2} \times 5 \times 12 = 30 \text{ cm}^2$$

23. (b) A. $x - y = 6$

B. $0.4y = 0.3x$

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

C. $\frac{x}{2} : \frac{y}{3} = 2:1$

$$\frac{x}{y} \times \frac{3}{2} = \frac{2}{1} \Rightarrow \frac{x}{y} = \frac{4}{3}$$

B and C give the same expression and hence no need of C statement .

$$x = \frac{4}{3}y \Rightarrow x - y = 6$$

$$\frac{4}{3}y - y = 6 \Rightarrow \frac{y}{3} = 6$$

$$y = 18 \text{ and } x = \frac{4}{3} \times 18 = 24$$

24. (e) Let the marked price be ₹ x

A. cost price = $(1 - 0.15)x$ = ₹ $0.85x$

B. S.P. = ₹ 3060

C. Profit = 2% of x = $0.02x$

Profit% on marked Price

$$P\% = \frac{(SP - MP)}{MP}$$

$$2 = \frac{3060 - x}{100}$$

$1.02x = 3060$

MP, $x = 3000$

CP = $.85x = 2550$

Profit % on CP

$$P\% = \frac{SP - CP}{100} \times 100 = 20\%$$

25. (e) A. Total marks in 4 subjects including English $= 4 \times 60 = 240$

B. Total marks in English and Maths = 170

C. Total marks in Maths and Science = 180

The question can't be answered because nothing has been said about the marks in the fourth subject.

Also, there are four unknowns but only three equations can be formed with given data.

26. (a) From statement I.

$$\text{Difference} = \frac{P \times R^2}{10000}$$

$$\Rightarrow \quad 360 = \frac{P \times 12 \times 12}{10000}$$

$$\Rightarrow \quad P = \frac{360 \times 10000}{12 \times 12} = ₹\ 25000$$

From statement II,

Interest = 2P – P = ₹ P = Principal

$$\text{Principal} = \frac{\text{S.I.} \times 100}{\text{Time} \times \text{Rate}} = \frac{P \times 100}{10 \times 10} = P$$

From statement III,

$$\text{C.I.} = P\left[\left(1 + \frac{\text{Rate}}{100}\right)^{\text{Time}} - 1\right]$$

$$\Rightarrow \quad 6360 = P\left[\left(1 + \frac{12}{100}\right)^2 - 1\right]$$

$$\Rightarrow \quad 6360 = P\left[\left(\frac{28}{25}\right)^2 - 1\right]$$

$$\Rightarrow \quad 6360 = P\left[\left(\frac{784 - 625}{625}\right)\right] = \frac{P \times 159}{625}$$

$$\Rightarrow \quad P = \frac{6360 \times 625}{159} = ₹ 25000$$

So information given in statement I or III is sufficient to answer the question

Note : You need not calculate during exam. You are required to examine whether requirements of a formula are satisfied or not.

27. (b) From statement I,

If Length = x metre and breadth = y metre, then

$$y = \frac{1 \times 2}{4}(x + y) \qquad \Rightarrow \quad 2y = x + y \Rightarrow y = x$$

$$\therefore \quad x^2 = 144 \qquad \Rightarrow \quad x = \sqrt{144} = 12 \text{ metre}$$

Area of field = $(16)^2 - (12)^2 = 256 - 144 = 112$ sq. metre

From statements II and III,

Length = $3x$ metre

Breadth = $2x$ metre

$$\therefore \quad 3x \times 2x = 216$$

$$\Rightarrow \quad x^2 = \frac{216}{3 \times 2} = 36$$

$$\Rightarrow \quad x = 6$$

$\therefore$ Length = 18 metre, Breadth = 12 metre
Area of the field with boundary
$= (18 + 2 \times 2)(12 + 2 \times 2)$
$= 22 \times 16 = 352$ sq. metre
$\therefore$ Area of boundary = 352 – 216 = 136 sq. m.

28. (d) From statement I,
$H + G + C = 65 \times 3 = 195$ ...(i)
From statement II,
$G = H + 6$
From statement III,
$G - C = C - H \Rightarrow 2C = G + H$
$\Rightarrow 2C = H + 6 + H = 2H + 6 \Rightarrow C = H + 3$
$\therefore H + G + C = 195$
$\Rightarrow H + H + 6 + H + 3 = 195$
$\Rightarrow 3H = 195 - 9 = 186$
$\Rightarrow H = \frac{186}{3} = 62$

29. (a) From statements I and II,
We can say that train crosses 250 m in (27–15) seconds
$\therefore$ speed $= \frac{250}{12} = 20.83$ m/s.

30. (d) Let the number of children be x ...(i)
From statement A we get, teacher's age = x
From statement B we get, Average age of (x + 1) persons = (x + 2)
$\therefore$ Teacher's age $= (x + 2)(x + 1) = x^2$
$= x^2 + 3x + 2 - x^2 = 3x + 2$ ...(ii)
From (i) and (ii) also we cannot find the average age of the children.

31. (e) Savings of the man = ₹ 85000 ...(i)
From statement A we get
Monthly expenditure of the man for the first 4 months
From statement B we get
= ₹ (18000 × 4) = ₹ 72000 ...(ii)
= Monthly expenditure of the man for the next 8 months
= ₹ (21000 × 8) = ₹ 168000 ...(iii)
From (i), (ii) and (iii), we can find the income and his average monthly income.

32. (d) $A + B + C + D + E + F = (45000 \times 6) = 270000$ ...(i)
From statement A, we get
$A + F = 88900$ ...(ii)
From statement B, we get
$B + C = 95200$ ...(iii)
From (i), (ii) and (iii) also we cannot find D, because the salary of E is not given.

33. (d) From A
Monday + Tuesday + Wednesday = $34^\circ \times 3 = 102^\circ$
From B
Tuesday + Wednesday + Thursday = $38^\circ \times 3 = 114^\circ$
Here, statment A and statment B together are not sufficient to answer the question.

34. (b) From statement A, we get
Sum of the first 10 numbers = 10 × 20 = 200 ...(i)
Statement A is not sufficient to get the required answer.
From statement B, we get new average
= (18 × 6) = 108 ...(ii)
Statement B alone is sufficient to get the required answer.

35. (e) From statement I,
Let the number of students in the intitutes A and B be $3x$ and $4x$ respectively. However we get no conclusive answer by using data given in all the statements.

36. (c) From statements I and II, Let Mr. X's monthly income = ₹ x. Then
$\frac{15 \times x}{100} = 4500$
$\Rightarrow x = \frac{4500 \times 100}{15} =$ ₹ 30000
From statements I and III,
$x \times \frac{4}{5} \times \frac{85}{100} = 20400$
$\Rightarrow x = \frac{20400 \times 5 \times 100}{4 \times 85} =$ ₹ 30000

37. (a) From Statements I and III, Let Suchitra's son's present age be x years.
$\therefore$ Suchitra's present age = $2x$ years
After 4 years,
$\frac{2x + 4}{x + 4} = \frac{13}{24}$
We can get the required answer by this relation.
So statement II is not required.

38. (d) From all three statements, Seeta's investment
$= ₹ \left(\frac{3}{8} \times 2.5\right)$ lakh = ₹ 93750
Geeta's investment = ₹ 156250
Ratio of Neeta's, Seeta's and Geeta's profit
$= 85000 \times 24 : 93750 \times 18 : 156250 \times 18$
We can get the share of Neeta if total profit is given.
So data given in all three statements is required to answer the question.

39. (d) Let the marked price of the article be ₹ x.
From statement II.
$\frac{95 \times x}{100} = 608 \quad \Rightarrow x = \frac{608 \times 100}{95} =$ ₹ 640
From statements I and III,
Marked price $= \frac{128 \times 500}{100} =$ ₹ 640
So statement II is sufficient to give the answer.

40. (d) Let S_1 and S_2 be the speed of train A and B respectively
Time taken by both the trains in crossing each other.
$\frac{450}{S_1 + S_2} = 12, \; S_1 + S_2 = 37.5$
S_1 and S_2 can have so many values. Both statement I and II are not sufficient to find speed of train B.

41. (d) Area of rectangle = Area of triangle.
From the information given in both the statements, we can find area of triangle or area of rectangle. For finding length, breadth is required, which is not known.

42. (c) From the statement I.

$$r = \frac{100 \times 100}{1000} = 10\%$$

Thus we have,
$P = ₹\,1000$, $r = 10\%$, $t = 3$ years
Hence, C.I. can be determined
From the statement II.

$$\text{S.I.} = \frac{1000 \times r \times 2}{100} = 20\text{r}$$

$$\text{C.I.} = 1000\left[\left(1+\frac{\text{r}}{100}\right)^2 - 1\right]$$

$$\therefore \text{C.I.} - \text{S.I.} = 1000\left[\frac{200\text{r} + \text{r}^2}{10000}\right] - 20\text{r}$$

$\Rightarrow 2000r + r^2 - 200r = 100 \quad \Rightarrow \quad r = 10$
Hence, C.I. can be determined

43. (e) Let the unit's digit be x and ten's digit be y and $x < y$.
$\therefore$ Number $= 10y + x$
From statement I,
$y - x = 5$ ... (i)
From statement II,
$y + x = 7$ ... (ii)
From (i) and (ii), x, y can be calculated and two digit number can be found.

44. (d) Let the distance between A and B be z km.
Again, let speed of boat in still water be x kmph and that of stream be y kmph.
$\therefore$ Rate downstream $= (x + y)$ kmph
Rate upstream $= (x - y)$ kmph
From statement I,

$$\frac{z}{x+y} = 2 \quad \text{... (i)}$$

From statement II,

$$\frac{z}{x-y} = 4 \quad \text{... (ii)}$$

we have two equations and three variables, therefore both equations are not sufficient.

45. (e) Rasika's present age : (Sunil's [present + 4)
$= 5 : 7$ ...(i)
Rasika's age – 4 : Sunil's present age
$= 2 : 3$ ...(ii)

$$\frac{\text{R}}{\text{S}+4} = \frac{5}{7}$$

$7\text{R} = 55 + 20$
$7\text{R} - 5\text{S} = 20$ ...(i)

$$\frac{\text{R}-4}{\text{S}} = \frac{2}{3}$$

$3\text{R} - 12 = 2\text{S}$
$3\text{R} = 2\text{S} + 12$ ...(ii)
By solving Eqs.(i) and (ii), we get
$\text{R} = 20$
and $\text{S} = 24$
$\therefore$ Rasika is 4 years younger than her brother Sunil.

46. (c) By statement – I
M : W = 27 : 13
So, in 80 litres of mixture contain

$$\text{Quantity of milk} = \frac{27}{40} \times 80 = 54 \text{ litres}$$

$$\text{Water} = \frac{13}{40} \times 80 = 26 \text{ litres}$$

By statement - II
If 16 litres of mixture replaced by equal quantity of milk. then in new mixture.

$$\text{Quantity of milk} = \frac{4}{5} \times 80 = 64 \text{ litres}$$

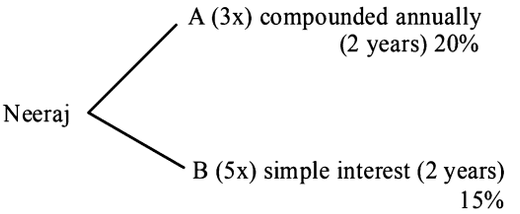
$$\text{Quantity of water} = \frac{1}{5} \times 80 = 16 \text{ litres}$$

Again by statement -I Before mixing water.
Milk is litres and water is 18 litres
Statement - II before mixing milk 48 litres and water is 16 litres
Ratio of milk to water in mixture. = 3 : 1

$$\text{Quantity of milk} = \frac{3}{4} \times 80 = 60 \text{ litres}$$

Concept Ratio of milk to water is always same in the mixture. It doesn't depend on Quantity of mixture drawn.

47. (e)



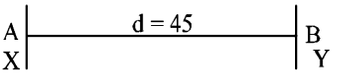
$$= \frac{5\text{x} \times 15 \times 2}{100} - \left\{3\text{x}\left(1+\frac{20}{100}\right)^2 - 3\text{x}\right\} = 900$$

$$= \frac{3\text{x}}{2} - \left\{3\text{x} \times \frac{36}{25} - 3\text{x}\right\} = 900 = \frac{3\text{x}}{2} - \left\{\frac{108\text{x} - 75\text{x}}{25}\right\} = 900$$

$$\frac{75\text{x} - 66\text{x}}{50} = 900 = 9\text{x} = 900 \times 50 = ₹\,5000$$

Amount invested in scheme A $= 3 \times 5000 = 15000$

48. (e)



Total time taken = 2 h 15 min
Let speed of y be S km/h

Speed of x be 1.5 S km/h.

$$\text{Total time taken} = \frac{\text{Total distance}}{\text{Total speed}}$$

$$2\frac{1}{4} = \frac{45}{2.5\,S} \Rightarrow \frac{9}{4} = \frac{45}{2.5\,S} \Rightarrow S = \frac{45}{2.5} \times \frac{4}{9}$$

$$\therefore \text{Speed of } x = 1.5\,S = 1.5 \times \frac{45}{25} \times \frac{4}{9} = 12 \text{ km/h}$$

49. (e) 22.5 15

Length : Breadth = 3 : 2

$\downarrow$

3x : 2x

$$\text{Height} = 50 \times \frac{1}{4} = 12.5$$

Perimeter = $2(3x + 2x) = 50 \Rightarrow x = 5$

So, area of two any adjacant walls

$= b \times h + l \times h = h(l + b)$

Total cost of painting on wall = $12.5 \times 25 \times 450$

= ₹ 140625

50. (b) Here, For quantity I →

First the different no. of ways to arrange 5 men or 5 women = 5!

Now,

_M_M_M_M_M

No. of ways of arranging 5 men and 5 women such that no two women or men sit together = $2 \times 5! \times 5!$

For quantity II →

No. of ways of arranging 5 men and 5 women such that all men sit together → $6! \times 5!$

∵ $2 \times 5! \times 5! < 6! \times 5!$

So, Quantity I < Quantity II

51. (b) For quantity I →

Since S is an acute angle means < 90°

∴ $(a + 40) + a < 90$

$(2a + 40) < 90$

$2a < 50$

$a < 25°$

For quantity II → 25°

∴ Quantity I < Quantity II

52. (a) For Quantity I →

Let required no. = 10x + y

∴ $10y + x = 10x + y + 36$

$9y - 9x = 36$

$y - x = 4$

∴ unit digit of the no. should be 4 more than the ten's digit of the number.

∴ such possible numbers from 1 to 63 are = 04, 15, 26, 37, 48, 59

∴ Required probability = $\frac{6}{63}$

For quantity II →

Possible numbers from 1 to 63 = 8, 24, 40, 56

Required probability = $\frac{4}{63}$

∴ Quantity I > Quantity II

53. (b) From A → m + n = 10 × k (let k is an integer value)

From B → 10m + 7n = 70 × 1 (Let ℓ is an integer value)

From C → n > m

From A and B

$$\begin{array}{rcl} 10m + 10n & = & 100k \\ 10m + 7n & = & 70\ell \\ \hline 10n - 7n & = & 100k - 70\ell \\ 3n & = & 100k - 70\ell \end{array}$$

3n = 10(10k–71) : Hence n is divisible by 10. Thus option A and B together are needed to solve the question.

54. (a) Area of quadrilateral BFDE = Area of rectangle ABCD – Area of ΔABE – Area of ΔDCF

$= 120 - 30 - 25 = 65$

55. (a) Ratio of Investment of A, B and C

$(3000 \times 4 + 1800 \times 5 + 3600 \times 3)$

$: (4000 \times 4 + 8000 \times 5)$

$: (14000 + 33600)$

31800 : 56000 : 47600

159 : 280 : 238

$$\text{Profit of C} = \frac{238}{677} \times 6770000 \quad C = 238000$$

Average of profit earned by $(A + B + C) \approx 225666$

56. (b) We can get ratio of investment from either statement B alone or C alone so profit of B can be determined from option (b).

57. (d) From A and C we can determine the value ratio of efficiency between men, women and children from A & B we can also determine the value of ratio of men, women and children. We can calculate the answer from B and C.

58. (c) From A : Profit = 20% and

S.P. = 3828.

∴ $\text{Total price} = \frac{3828 \times 100}{120}$

From C : $(x + y) - (x - y) = 28$

$y = 14$

And $x + y = 90$ (From B)

$x = 76$

∴ A alone or B and C together are sufficient.

59. (b) According to question

Ratio of the ages of Jasim and Abdula = 6 : 11

From (A):

$11x - 6x = 35$

So, we can find out ratio of their age 5 years ago.

From (B):

$(11x + 5) - (6x + 5) = 35$

So, We can find out ratio of their age 5 years ago.

From (C):

$11x + 6x = 119$

So, we can also find out ratio of their age 5 years ago.

60. (e) Cost price per unit is not given;

So, Data is not sufficient to answer.

61. (e) According to question.

$$8\,M + 6\,W = \frac{1}{42}$$

$$1.5\,(8M + 6W) = 1.5 \times \frac{1}{42}$$

$$12\,M + 9\,W = \frac{1}{28}$$

So, work will be completed in 28 days.

$\therefore$ No information is required to answer.

62. (d) Direction of movement of the trains are not given.
So, Data is not sufficient to answer.

63. (e) Rakesh's present age : (Sunil's present age + 4)
$= 5 : 7$ ...(i)
Rakesh's age –4 : Sunil's present age $= 2 : 3$ ...(ii)

$$\frac{R}{S+4} = \frac{5}{7}$$

$7R = 55 + 20$
$7R - 5S = 20$ ...(i)

$$\frac{R-4}{S} = \frac{2}{3}$$

$3R - 12 = 2S$
$3R = 2S + 12$ ...(ii)
By solving Eqs. (i) and (ii), we get
$R = 20$
and $S = 24$

$\therefore$ Rakesh is 4 years younger than his brother Sunil.

64. (c) **By Statement – I**
$M : W = 27 : 13$
So, in 80 litres of mixture contain

$$\text{Quantity of milk} = \frac{27}{40} \times 80 = 54 \text{ litres}$$

$$\text{Water} = \frac{13}{40} \times 80 = 26 \text{ litres}$$

By Statement – II
If 16 litres of mixture replaced by equal quantity of milk. Then in new mixture

$$\text{Quantity of milk} = \frac{4}{5} \times 80 = 64 \text{ litres}$$

$$\text{Quantity of Water} = \frac{1}{5} \times 80 = 16 \text{ litres}$$

Again by statement – I
Before mixing water,
Milk is 54 litres and water is 18 litres
Statement – II Before mixing milk
Milk is 48 litres and water is 16 litres
Ratio of milk of water in mixture, = 3 : 1

$$\text{Quantity of milk} = \frac{3}{4} \times 80 = 60 \text{ litres}$$

Concept Ratio of milk to water is always same in the mixture. It doesn't depend on quantity of mixture drawn.

65. (e) Neeraj → A (3x) compounded annually (2 years) 20%
Neeraj → B (5x) Simple interest (2 years) 20%

$$\Rightarrow \frac{5x \times 15 \times 2}{100} - \left\{3x\left(1 + \frac{20}{100}\right)^2 - 3x\right\} - 900$$

$$\Rightarrow \frac{3x}{2} - \left\{3x \times \frac{36}{25} - 3x\right\} = 900$$

$$= \frac{3x}{2} - \left\{\frac{108x - 75x}{25}\right\} = 900$$

$$\Rightarrow \frac{75x - 66x}{50} = 900 \Rightarrow 9x = 900 \times 50$$

$\therefore x$ ₹ 5000
Amount invested in scheme
$A = 3 \times 5000 = 15000$

66. (a) A ——— d = 45 ——— B
X Y
Total time taken = 2h 15 min
Let speed of y be S km/h
Speed of x be 1.5 S km/h

$$\text{Total time taken} = \frac{\text{Total distance}}{\text{Total speed}}$$

$$2\frac{1}{4} = \frac{45}{2.5S} \Rightarrow \frac{9}{4} = \frac{45}{2.5\,S}$$

$$\Rightarrow S = \frac{45}{2.5} \times \frac{4}{9}$$

$\therefore$ Speed of $x = 1.5\,S = 1.5 \times \frac{45}{25} \times \frac{4}{9} = 12 \text{ km/h}$

67. (e) Length : Breadth = 22.5 : 15 = 3 : 2 = 3x.2x

$$\text{Height} = 50 \times \frac{1}{4} = 12.5$$

Perimeter $= 2(3x + 2x) = 50$
$\Rightarrow x = 5$
So, area of two any adjacent walls = b × h + l × h
= h (l + b)
Total cost of painting on wall = 12.5 × 25 × 450
= ₹ 140625

68. (d) From A, $x + y = 5$
From B, $x^2 - y^2 = 15$
From C, $x - y = 3$
To determine the no. any two statements are necessary.

69. (a) Let the rate of interest be r%

A. $2500\left[\left(1+\frac{r}{100}\right)^2-1\right]=5150\times r\times\frac{3}{100}$

B. $12000\times r\times\frac{3}{100}+10000\times r\times\frac{5}{100}=5160$

C. $r=\frac{1725-1500}{3\times1500}\times100=5\%$

Hence, any one of them is sufficient.

70. (a) From statement (A) and (C),
The person will take (21 – 3) = 18 hrs, if he travels both ways by train. So it takes $\left(\frac{18}{2}=9\right)$ hrs if he travels one way by train. Hence, he will take (9 + 3) = 12 hrs if he travels one way by bus.
So, required time = 12 × 2 = 24 hrs.

71. (d) Since each statement provides data related to another one so any of the three statements is sufficient.

72. (c) Statement (A) gives the cost of fencing one metre of the plot.
Combining this with statement (B), total cost of fencing can be determined.

73. (b) Quantity - I
C.P. = 160
S.P. = 184
Profit = 184 – 160 = 24

$\text{Profit }\% = \frac{24}{160}\times100$

∴ Profit % = 15%
Quantity - II
M.P. = 2400
S.P. = 2016
Discount = 2400 – 2016 = 384

$\text{Discount }\% = \frac{384}{2400}\times100$

Discount % = 16%
∴ Quantity-I < Quantity-II

74. (e) Quantity I = Quantity II or No relation can be estabilshed
Explanation :
Quantity I = 13 – 4 – 4 = 5 kmph
Quantity II = (13 – 3)/2 = 5km/hr

75. (b) Quantity - I < Quantity - II
Quantity - I
Let the present ages of A and B be 4x and 5x.

$\frac{4x+5}{5x+5}=\frac{5}{6}$

∴ x = 5
∴ A's present age = 20 yrs
Quantity - II
Average age of A, B and C = 24 years
Total = 24 × 3 = 72 years
Average age of B and C = 20 years
Total age of B and C = 20 × 2 = 40
Age of A = 72 – 40 = 32 years

76. (b) Quantity 1 < Quantity II
Explanation :
X = (100 + 40)/100 × 17500 = 24500
Y = (100 + 35)/100 × 20000 = 27000

77. (e) Explanation :
Quantity - I
Let speed of the Boat = x
Speed of the stream = 3 km/hr

$\frac{30}{x-3}+\frac{30}{x+3}=\frac{175}{60}$

$\frac{60x}{x^2-9}=\frac{35}{12}$

$7x^2-144x-63=0$
$7x^2-147x+3x-63=0$
∴ x = 21
Quantity - II
Bus stops = 8
Distance between bus stops = 1 km
Total distance = 1 × 7 = 7 km
Let speed of car = x
Time = 20 min

$\frac{7}{20}\times\frac{60}{1}=21\text{ km}$

Hence, Quantity - II = Qunatity - I

78. (e) From II: it is clear that out of 180 students, 120 students scored over 70% In the test.
From I: 15 boys scored over 70%.
Hence using both the statements, number of girls who scored over 70% = 120–15 = 105.

79. (e) From statement I,
Given: The ratio of speed in upstream to the speed in downstream is 2 : 3
Let speed in upstream be 2x km/hr and speed in downstream be 3x km/hr.
Since x is not known, so speed of the stream cannot be obtained.
Thus, the data in Statement I alone are not sufficient to answer the question
From statement II,
Given: The distance travelled in upstream in 2 hours by a man is more than distance travelled by him in downstream in 1 hour by 4km.
⇒ distance travelled in upstream – distance travelled in downstream = 4 km
(2 × speed in downstream – 1 × speed in upstream) = 4 km
∵ Speed in upstream and downstream is not known, so speed of the stream cannot be found using these data.
Thus, the data in Statement II alone are not sufficient to answer the question
Combining I and II,
Speed in upstream = 2x
Speed in downstream = 3x
(2 × speed in downstream – 1 × speed in upstream) = 4 km

$\Rightarrow$ $(2 \times 3x - 1 \times 2x) = 4km$

$\Rightarrow$ $6x - 2x = 4$

$\Rightarrow$ $x = 1$ km/hr

$\therefore$ Speed in upstream and downstream are 2 km/hr and 3 km/hr respectively.

Speed of the stream = ½ (speed in downstream – speed in upsteam)

$= 1/2\,(3-2)$

$= 1/2$ km/hr

80. (c) From I: $x+(x+2) = 34$ i.e. $x = 16$, hence, fourth consecutive even number is $(x+6) = 22$.

From II: $x+4+(x+6) = 42$ i.e. $x = 16$, hence, fourth consecutive even number is $(x+6) = 22$.

81. (a) From statement 1,

Marks in English = 1/2 Hindi

Marks in chemistry = 50% of Hindi

Hindi $= 42 \times 2$

English $= 1/2 \times 42 \times 2 = 42$

In statement 2 total marks is not given

82. (a) Our aim is to calculate the ratio of the total number of girls to the total number of boys in a college.

From statement A,

There are 2000 students in the college out of which 40% are girls.

$\Rightarrow$ Number of girls $= \frac{40}{100} \times 2000 = 800$

Thus, number of boys $= 2000 - 800 = 1200$

Ratio of number of boys to the total number of girls in a college = 1200 : 800

$\Rightarrow$ Ratio of number of boys to the total number of girls in a college = 3 : 2

So, statement A is sufficient to reach at the solution.

From statement B,

The ratio of the total number of boys to the total number of girls in the last year was 5 : 5.

Here, only last year ratio is given but this data is not sufficient to calculate ratio of number of girls to the total number of boys in a college.

So, Statement B alone is not sufficient to reach at the solution.

83. (b) Let number of White and Black Caps is W and B respectively

$W + B = 16$

(A) $\rightarrow P(W) < 0.3750$

$P(W) < \frac{6}{16}$

So it explains that P should be 1, 2, 3, 4 or 5

(B) $\rightarrow$ We cannot conclude anything from this statement

(C) $\rightarrow$ Now difference of W and B is given = 12

But we don't know which one is greater.

So,

By using (A) and (C) together we can answer the question.

84. (d) Let speed of boat and stream be x and y respectively

(A) $\rightarrow \frac{180}{(x+y)} + \frac{180}{(x-y)} = 18$

(B) $\rightarrow x + y = 30$ km/hr

(C) $\rightarrow x - y = \frac{90}{7}$ km/hr

By using any two statements we can give answer.

85. (e) From statement (A)

$x^5 = y$

we can conclude that sign of both x and y is same.

If x is positive, then y is greater than x.

If x is negative, then y is less than x.

We can't answer question from statement (A) alone.

From statement (B)

$x < 0$

Nothing can be concluded.

From statement (C)

$|y| > |x|$

There are 4 cases:

(i) When y is positive and x is negative, then $y>x$.

(ii) When x is positive and y is negative, then $x>y$.

(iii) Again if both are positive than $y>x$

(iv) If both are negative than $y< x$.

From statement (A) and (B)

$x < 0$

Hence $y < x$.

And we can answer question.

From statement (B) and (C)

We only know that x is negative and nothing about sign of y. Hence it can't be answered.

From statement (A) and (C)

We also can't answer.

Statement (A) and (B) are sufficient to answer the question.

86. (b) **Quantity I** $\rightarrow \left[(4653)^{25}\right]^{27}$

Unit digit $\rightarrow (4653)^{675}$

Number whose last digit is '3' has last digit change in a sequence

$1 \rightarrow 3$

$2 \rightarrow 9$

$3 \rightarrow 7$

$4 \rightarrow 1$

$5 \rightarrow 3$

And so on

For $\frac{675}{4} = 168\frac{3}{4}$, $\rightarrow$ So, last digit $\rightarrow 7$

Quantity II — $\left[(257)^{23}\right]^{22}$

$\Rightarrow (257)^{506}$

For $7 \rightarrow$

$1 \rightarrow 7$

$2 \rightarrow 9$

$3 \rightarrow 3$

$4 \rightarrow 1$

$5 \rightarrow 7$

For $\frac{506}{4} = 126\frac{2}{4}$

Hence, last digit is $\rightarrow 9$.

Quantity I < Quantity II

87. (b) **Quantity I:**
Let length of rectangle = P
Breadth of rectangle = Q
Diameter of square = Q
Now,

$$P \times Q \times \frac{40}{100} = \frac{1}{2} \times Q \times Q$$

$$4P = 5Q$$

$$\% \Rightarrow \left(\frac{P-Q}{Q}\right)\times 100 = \left(\frac{5Q-4Q}{5Q}\right)\times 100$$

$$= \frac{Q}{5Q}\times 100 = 20\%$$

Quantity II:
Square get change into the rectangle.
By increasing 15 cm in two opposite sides, Area increased → 600

$$\text{Side} \rightarrow \frac{600}{15} = 40 \text{ cm}$$

Area of square = 40 × 40 = 1600 square cm.

$$\%\text{ by which area increased} \rightarrow \frac{600}{1600} \times 100 = 37.5\%$$

Quantity I < Quantity II

88. (d) LM = M + N
From statement (A)
L + N = M + 8
N = (8 + M – L)
From Question
LM = 8 + M – L + M = 8 + 2M – L
It can't be solved further.
From statement (B)

$$M^2 = \frac{N^2}{L+1}$$

$$M = \frac{N}{\sqrt{L+1}}$$

Now using the information from question

$$L\left(\frac{N}{(L+1)^2}\right) = N + \frac{N}{(L+1)^{1/2}}$$

On solving we will get L = 3.
Put this value in equation:

$$M = \frac{N}{(L+1)^{1/2}}$$

$$M = \frac{N}{2}$$

Put this value and L = 3 in equation given in question
3N/2 = N + N/2
Hence we can't solve it further.
From statement (C)
M = L + 2
And it can't be solved further.
Using information from statement (B) and (C) we can calculate M= 5
and N = 10. Hence question can be answered.
Similarly, we can answer question using statement (A) and (C) as there are three equations and three variable. (third equation given in the question can be used)
Or from statement (A) and (B).
Hence question can be answered from any two statements.

89. (e) **From A →** Let selling price of 4 watches = 12x

$$\text{Cost price of 4 watches} = 12x \times \frac{2}{3} = 8x$$

Profit earned on 4 watches = 12x – 8x = 4x
Cost price of 3 shirts = 12x
Profit earned on selling 2 watches = 2x
Profit earned on selling 1 watch = x
Profit earned on selling 1 shirt = 2x
Profit earned on selling 2 shirts = 4x

$$\text{Required profit percentage} = \frac{x+4x}{2x+8x} \times 100 = 50\%$$

From B → Let selling price of 2 shirts and 6 watches be 12x and 18y respectively.
If profit % is 50, we can calculate total profit i.e.

$$\frac{1}{3}(12x + 18y) = 4x + 6y.$$

This profit is equal to 500 % of CP of 1 watch.
But we don't know CP of a watch, hence we can't calculate further.
From C → Let cost price of watch is 'a' and cost price of shirt is 'b'
Therefore, selling price of a shirt is b + a. We can't calculate further.
Now combining the statement B and C
b + a = 6x

$$\frac{500}{100}(a) = 5a = 4x + 6y$$

We can't solve it further, as we don't know whether profit or loss earned on selling the watch.
Statement **'A'** alone is sufficient to answer the question, but statement **'B'** alone is not sufficient to answer the questions.

90. (a) **Quantity I:**
1 man = 2 women
∴ 8 men + 4 women = 20 women
4 men + 8 women = 16 women

$$\text{20 women's 2 days' work} = \frac{2}{6} = \frac{1}{3}\text{ part}$$

$$\text{Remaining work} = 1 - \frac{1}{3} = \frac{2}{3}$$

∵ 20 women complete 1 work in 6 days

$$\therefore \text{ 16 women will do } \frac{2}{3} \text{ work in } \frac{20\times 6}{16} \times \frac{2}{3}$$

= 5 days
Quantity II: 5 days
⇒ Quantity I = Quantity II

91. (d) Let the speed of John be x kmph. Distance travelled by John in 2 hours = 2x km.

Suppose John takes 't' hours to travel $\frac{1}{5}$th of the distance d km.

Ali would take (t–2) hours to travel $\frac{1}{5}$th of the distance d km.

As Ali's speed is thrice that of John's speed.

$\frac{t-2}{t}=\frac{1}{3}\Rightarrow t=3$

$\frac{1}{5}$th of the distance d = 3x km.

d =15x km

Time taken by John to cover 15x km = $\frac{15x}{x}$ = 15 hours

Time taken by Ali to cover 15x km = $\frac{15x}{3x}$ = 5 hours.

∴ Difference in the time = 10 hours.

Quantity I : Difference in the time = 10 hours.

Quantity II : 12 hours

Quantity I < Quantity II

92. (e) After 20% of the contents of the vessel are removed,

Remaining contents = $\frac{80}{100}$ × (25) = 20 litres.

Ratio of Liquid A and Liquid B in it = 1 : 4.

∴ It contains $\frac{4}{5}$ × (20) = 16 litres of Liquid B and 4 litres of Liquid A.

To reverse the ratio, 4 litres of Liquid A must be made 60 litres.

∴ x = 60 litres of Liquid A must be added.

To reverse this ratio again 16 litres of Liquid B must be made 4(64) = 256 litres.

∴ y = 256 – 16 = 240 litres of Liquid B must be added.

Quantity I: 'y' = 240 litres

Quantity II: 'x' = 60 litres

Quantity I > Quantity II

93. (d) From statement A

∠ABC = 180° – (∠BAC + ∠ACB)

= 180° – (90° + 35°) = 55°

From statement B, ∠ABC = 55°

94. (a) Principal = 6000

A. S.I = 3600

T = 4 years

Rate = $\frac{3600\times100}{6000\times4}$ = 15%

B. CI – SI = ₹894.0375

So, we can find rate from statement A, but statement B is not sufficient.

95. (a) I. A = *a* + or – nd

14 + (37*1) =14 + 37 = 51yrs.

II. 35 + (20*0.5) = 35 + 10 = 45yrs.

96. (a) I. If the no of article bought is LCM of 6 and 5 is 30

CP of 30 articles = 5/6×30 = ₹ 25

SP of 30 articles = 6/5×30 = ₹ 36

Profit 36 – 25 = 11

Profit percentage = 11/25 × 100 = 44%

II. CP of 1 toy = 350/100 = 3.50

SP of 1toy = 48/12 = 4.

Profit = 4 – 3.5 = 0.5.

Profit percentage (0.5/3.5) × 100 = 14 2/7%

97. (c) I. C.P. of 12 balls = S.P. of 17 balls = ₹ 720.

CP of 1 ball = 720/12 = ₹ 60.

II. SP = 85% of 1400 = 85/100 × 1400 = ₹ 1190.

98. (e) I. B work = 1/4 – 1/6 = 2/24 ⇒ 12 days

II. A's 1hr work 1/4 .

(B + C's) 1 hr work 1/3.

(A + C's) 1hr work 1/2.

(A + B + C) 1hr work = 1/4 + 1/3 = 7/12.

B's work = 7/12 – 1/2 = 1/12

12hours.

99. (c) I. Total time taken = (160/64 + 160/80) = 9/2hrs

Then avg speed = 320/(9/2)

= 320 × 2/9 = 71.11km/hr.

II. (2 × 60 × 90)/150 = 72km/hr.

100. (a) **Quantity I:**

Length of train 'A' = *x*

Length of train 'B' = 0.5*x*

ATQ

x + 0.5*x* = 12 × (25 + 15)

1.5*x* = 480

x = 320 meters

Quantity II: 160 meters

Quantity I > Quantity II

101. (b) Let average of *a*, *k* and *c* be *x*

a + *k* + *c* = 3*x*

And *k* + *c* + *d* = 3*x* + 3

⇒ *d* – *a* = 3

And, *d* + *a* = 39

d = 21 and *a* = 18

Quantity I:

a = 18

Quantity II: 21

Quantity II > Quantity I

102. (a) **Quantity I:** Due to leakage only 80% of the cistern is filled this means 20% of tank is leaked out by leakage which is equal to 60 liters

20% = 60

100% = 300 liters

Capacity of tank = *x* = 300 liters

Quantity II: 250 liters

Quantity I > Quantity II

103. (a) **Quantity I:**

Let speed of boat in still water and speed of stream be 3*x* and 2*x* respectively

ATQ,

⇒ $32=\frac{72}{5x}+\frac{72}{x}$ ⇒ $x = 2.7$

Downstream speed = 3*x* + 2*x* = 5*x*

$= 5 \times 2.7 = 13.5$ kmph

Quantity II: 9 kmph

Quantity I > Quantity II

104. (e) **Quantity I:**

Side of square $= \sqrt{361} = 19$ cm

Let length of rectangle be x and breadth of rectangle be $(x - 4)$ cm

ATQ,

$$(x + x - 4) = \frac{4 \times 19}{2} = 38$$

$x = 21$

Area of rectangle $= 21 \times 17 = 357\text{cm}^2$

Quantity II: 357cm^2

Quantity I = Quantity II

105. (e) **Quantity I.** $x^2 + x - 12 = 0$

$x^2 + 4x - 3x - 12 = 0$

$x(x + 4) - 3(x + 4) = 0$

$(x - 3)(x + 4) = 0$

$x = 3, -4$

Quantity II. $y^2 + 7y + 10 = 0$

$y^2 + 2y + 5y + 10 = 0$

$y(y + 2) + 5(y + 2) = 0$

$(y + 2)(y + 5) = 0$

$y = -5, -2$

No relation

106. (b) Raman's efficiency = 5

Sharan's efficiency = 4

Let total work = 60

Quantity I: Raman can do $\frac{5}{6}$ of work in $\rightarrow \frac{50}{5} = 10$ d

Quantity II: Sharan can do $\frac{4}{5}$ of work in $\rightarrow \frac{48}{4} = 12$ d

Quantity II > Quantity I

107. (a) Let numbers be

$x, x + 2, x + 4, x + 6, x + 8, x + 10, x + 12, x + 14$

Quantity I $\rightarrow x + 2 + x + 14 = 2x + 16$

Quantity II $\rightarrow x + 4 + x + 10 = 2x + 14$

Quantity I > Quantity II

108. (b) SP = 3000

Let, MP = x

Quantity I = 1100

Quantity II

$$x \times \frac{7}{8} = 3000$$

$$x = \frac{3000 \times 8}{7}$$

$$x = \frac{24000}{7}$$

Quantity II > Quantity I

109. (e) **Quantity I :**

Let speed of current = x

speed of boat = x + 5x

downstream speed = 7x

$$\frac{126}{7x} = 6$$

$x = 3$

Upstream speed = 6x – x

$= 5x = 15$ km/hr

Quantity I = Quantity II

110. (d) Let width of the field = x cm

So, length of the field will be = (x + 6) cm

So, $\frac{9}{4} \times$ (Area of path) = Area of the field

$$\Rightarrow \frac{9}{4}\left[(x+6)\times 3+(x-6)\times 3\right]\times 2 = x(x+6)$$

From this equation, we can find out the value of x and hence all values can be find out.

111. (c) Let Ahmad invested for t days

Rajan	Gagan	Ahmad
900×12	1800×6	xt

And, $900 \times 12 = xt$

Here, x will depend on t and value of t can be maximum 6 months and minimum 1 month

On putting t = 6

X = 1800

Putting t = 4

x = 2700

Putting t = 2

x = 5400

112. (e) Let x men typist do the typing in (n – 5) days

And y women typist do the typing in n days

So, $x(n - 5) = y(n)$

From option (i)

Let x = 2p

And y = 5p

$2p(n - 5) = 5p(n)$

$2n - 10 = 5n$

$n = -\frac{10}{3}$ not possible

From option (ii),

$10p(n - 5) = 3p(n)$

$10n - 50 = 3n$

$7n = 50$

$n = \frac{50}{7}$ it is possible.

From option (iii)

$9p(n - 5) = 7p(n)$

$9n - 45 = 7n$

$2n = 45$

$n = \frac{45}{2}$ possible

From option (iv)

$10p(n - 5) = 7p(n)$

$10n - 50 = 7n$

$n = \frac{50}{3}$ possible

So, (ii), (iii) and (iv) are possible.

113. (e) From (i) & (ii),
Let, HCF be x
then LCM is 36x
$36x + x = 444$

$x = \frac{444}{37} = 12$

From (iii), P + Q = 10K
Let, P = 12a & Q = 12b
Then P + Q = 12 (a + b), where a & b are coprime.
Also, a × b = 36
Possible values of a and b are (4, 9) or (1, 36)
Sum of P + Q = 12 (4 + 9) = 132
or P + Q = 12 (1 + 36) = 444
So, question can't be answered even after including all the statements.

114. (b) **Quantity I:** $\frac{165\times 3}{55}\times 8.\ m^{5+2-5}.\ n^{3-5+8} = 72.\ m^2.n^6$

If m > 0, n < 0, then Quantity I > 0

Quantity II: $\frac{210}{35\times 3}\ x^{9-4-2}\ y^{9-2-4} = 2x^3y^3$

If x < 0, y < 0, then quantity II > 0

Quantity III: $\frac{68\times 5}{17}\ a^{8+3-6}.\ b^{(12-4-1)} = 20a^5b^7$

If a > 0, b < 0, then Quantity III < 0.
∴ Relation between Quantity I and Quantity II can't be established but
Quantity II > Quantity III
∴ #, @ is our correct answer.
Quantity I, Quantity II > Quantity III

115. (d) **Quantity I:** $\frac{(a+d)^2-(a-d)^2}{8ad(a+d)^2} = 1$

$$\frac{a^2+d^2+2ad-\left(a^2+d^2-2ad\right)}{8a.d(a+d)^2} = 1$$

$$\frac{4a.d}{8ad(a+d)^2} = 1$$

$$\frac{1}{2} = (a+d)^2$$

$$a = \frac{1}{\sqrt{2}} - d$$

Quantity II: $\frac{(b+d)^3-(b-d)^3}{\left(d^2+3b^2\right)^2} = \frac{1}{8d}$

$$\frac{b^3+d^3+3b^2d+3d^2b-\left(b^3-d^3-3b^2d+3bd^2\right)}{\left(d^2+3b^2\right)^2} = \frac{1}{8d}$$

$$\frac{2d^3+6b^2d}{\left(d^2+3b^2\right)^2} = \frac{1}{8d}$$

$$\frac{2d\left(d^2+3b^2\right)}{\left(d^2+3b^2\right)^2} = \frac{1}{8d}$$

$16d^2 = (d^2 + 3b^2)$

$b = \sqrt{5}d$

Quantity III: $\frac{\sqrt{c+d}+\sqrt{c-d}}{\sqrt{c+d}-\sqrt{c-d}} = 2$

$$\sqrt{c+d}+\sqrt{c-d} = 2\left(\sqrt{c+d}-\sqrt{c-d}\right)$$

$3\sqrt{c-d} = \sqrt{c+d}$
$9(c - d) = (c + d)$
$8c = 10d$

$c = \frac{10d}{8} = 1.25d$

Quantity I < Quantity II > Quantity III

116. (c) **Quantity I:** Probability of at most two students will solve the question
= 1 – probability of all three students will solve the question
= 1 – (0.5) × (0.6) × (0.3) = 1 – 0.09 = 0.91
Quantity II: Total balls = 5 + 7 = 12
Probability of getting at least 1 black ball
= 1 – probability of no black ball.

$= 1 - \frac{7}{44} = \frac{37}{44} \approx 0.84$

Quantity III: P (Nirmal speak truth) = $\frac{4}{5}$
P (Puja speak truth) = $\frac{6}{7}$
Required probability

$= \frac{4}{5}\times\frac{1}{7}+\frac{1}{5}\times\frac{6}{7} = \frac{10}{35} = \frac{2}{7} \approx 0.28$

Quantity I > Quantity II > Quantity III

117. (a) Efficiency ratio of Wasim and Yunus = 2: 1
Quantity 1: Time taken by Yunus

$= \frac{3}{1} \times \frac{15}{2} = \frac{45}{2}$ days

Quantity 2: Efficiency of Shashi = $2 \times \frac{3}{2} = 3$

∴ Time taken by Shashi = $\frac{45}{2} \times \frac{1}{3} = \frac{15}{2}$ days
Quantity 1 > Quantity 2

118. (c) Quantity 1: Let roots are a_1, a_2 then a_1a_2

$= -\frac{4}{2} = -2$

$\Rightarrow$ $a_2 = -1$ ($\because$ $a_1 = 2$)
Quantity 2: –0.5
$\Rightarrow$ Quantity 2 > Quantity 1

119. (c) **Quantity 1:**
Favorable cases
= (1, 3), (2, 2), (3, 1), (2, 6), (6, 2), (6, 6) = 6

$\therefore$ Required prob. = $\frac{6}{36}=\frac{1}{6}$

Quantity 2: $\frac{1}{3}$

Quantity 2 > Quantity 1

120. (a) D + h = 42 m.
Quantity 1 : 7x = 42
x = 6
r = 12 m
h = 18 m
Curved surface area of cylinder = $2\pi \times 18 \times 12$
$= 2\pi \times 216\ m^2$
Quantity 2:
h = 15m

Radius = $\frac{42-15}{2}$ = 13.5 m

Curved surface area of cylinder = $2\pi \times 13.5 \times 15$
$= 2\pi \times 202.5\ m^2$
Quantity 1 > Quantity 2

121. (e) There will be three numbers 94, 66 and 49 whose product of digits is 36
So if we take 94 then
Quantity 1 > Quantity 2
And if we take 49 then,
Quantity 2 > Quantity 1
and if we take 66, then Quantity 1 = Quantity 2
So no relation can be established.

122. (c) Let rate of interest for both scheme be R%
So,

Amount after 3 years = $8000 + \frac{8000 \times 3R}{100}$

$= 8000\ (1 + \frac{3R}{100}) = 80\ (100 + 3R)$

and $80\ (100 + 3R) = 9000\ (1 + \frac{R}{100})^2$

(from this R can be calculated)
We don't have to solve complete question
We can see that R can be calculated from

$$80\ (100 + 3R) = 9000\left(1+\frac{R}{100}\right)^2$$

Both the statements taken together are necessary to answer the questions

123. (d) **From A:** One man = $\frac{3}{2}$ women

Total work = $\left(\frac{3}{2}\times 4+18\right) \times 2.5$ = 60 units
So, 12 women can complete the work

$= \frac{60}{12} = 5$ days

From B:
(4m + 18w) × 2.5 = (6m+ 6w)4
14m = 21w
One man = 1.5 women
Total work = (4 × 1.5 + 18) × 2.5 = 60 units
So, 12 women can complete the work

$= \frac{60}{12} = 5$ days

So, Either statement A or statement B alone is sufficient to give answer of the question.

124. (d) **From A:** Let speed of stream be 'y' km/hr

$$\frac{240}{45-y}=4+\frac{240}{45+y}$$

y = 15 km/hr
From B:
Let speed of stream be 'a' km/hr

$$\frac{300}{45+a}+\frac{300}{45-a}=15$$

a = 15 km/hr
So. Either statement A or statement B alone is sufficient to give answer of the question.

125. (e) **Form A:**
Given, P & Q both are integer and both are multiple of 24 and P is 50% more than Q
So, P & Q can be (72, 48) , (216 , 144) and so on .....
So, data A alone is not sufficient to give answer of the question
From B:

Given, $\frac{P}{30}\ \&\ \frac{Q}{40}$ both are natural number

But, we can not calculate the value of P & Q
From A & B:
P & Q can be (720, 480) , (2160 , 1440) and so on .....
So, Statements A and B taken together are not sufficient to answer the question

126. (a) Let students who take Engineering and Medical be 4b & b respectively
Total students who take Commerce
= (2a + 16) – (4b + b) = (2a + 16 – 5b)
From A:
4b – (2a + 16 – 5b) = 8
– 2a + 9b = 24 ... (i)

Also, $\frac{b}{(2a+16)}=\frac{1}{8}$

–2a + 8b = 16 ... (ii)
b = 8
Total students in Coaching Institute = 64
From B:

$(2a + 16 - 5b) \times \frac{75}{100} = 4b$ ... (i)

6a + 48 – 15b = 16b
31b = 6a + 48

$b = \frac{6a+48}{31}$

So, statement A alone is sufficient to answer the question but statement B alone is not sufficient to answer the question.

127. (a) **Quantity A:**

Let the distance = x km

According to the given conditions.

$$\frac{x}{24}-\frac{8}{60}=\frac{x}{20}-\frac{20}{60}$$

$$\frac{x}{24}-\frac{x}{20}=-\frac{20}{60}+\frac{8}{60}$$

$$\frac{5x-6x}{120}=\frac{-20+8}{60}$$

$$\frac{x}{120}=\frac{12}{60}$$

x = 24 km

Distance = 24 km

Quantity B :

Let the distance = y km and speed = s km/hr

According to the given onditions.

$y/s - y/(s+6) = 4/60$

$$\frac{y(s+6)-y(s)}{s(s+6)}=\frac{1}{15}$$

$$\frac{ys+6y-ys}{s(s+6)}=\frac{1}{15}$$

$\Rightarrow 6y/[s \times (s+6)] = \frac{1}{15}$

$\Rightarrow y = [s \times (s+6)]/90$ ...(1)

and

$$\frac{y}{(s-6)}-\frac{y}{s}=\frac{6}{60}$$

$$\frac{6y}{[s\times(s-6)]}=\frac{1}{10}$$

$\Rightarrow y = [s \times (s-6)]/60]$ ...(2)

From equations 1 and 2

$[s(s+6)]/90 = [s(s-6)]/60$

$\Rightarrow 2s + 12 = 3s - 18$

$\Rightarrow s = 30$ km/hr

From equation 2

$y = [30 \times 24]/60 = 12$ km

$\therefore$ Distance = 12 km

$\therefore$ Quantity B < Quantity A

128. (a) **Quantity A :**

Let total units of work = 120 units (LCM of 12, 15 and 24)

$\Rightarrow$ Efficiency of P and Q together $= \frac{120}{12} = 10$

$\Rightarrow$ Efficiency of Q and R together $= \frac{120}{15} = 8$

$\Rightarrow$ Efficiency of R and P together $= \frac{120}{24} = 5$

$\Rightarrow$ Efficiency of P, Q and R together $= \frac{(10+8+5)}{2}$

$= \frac{23}{2}$ days

$\Rightarrow$ Efficiency of Q $= \frac{23}{2} - 5 = \frac{13}{2}$

$\Rightarrow$ Time taken by Q to finish the work alone

$= \frac{120\times 2}{13}$ days

$= \frac{240}{13}$ days

Quantity B :

Let total units of work = 30 units (LCM of 10 and 15)

$\Rightarrow$ Efficiency of S $= \frac{30}{10} = 3$

$\Rightarrow$ Efficiency of T $= \frac{60}{15} = 2$

Since S left after 5 days.

Unit of work left after 5 days = $30 - 5 \times (3+2) = 5$ units

$\Rightarrow$ Time taken by T to finish the remaining work

$= \frac{5}{2} = 2.5$ days

$\Rightarrow$ Total time to finish the whole work = 5 + 2.5 days = 7.5 days

$\therefore$ Quantity A > Quantity B

129. (a) **Quantity A :**

Suppose the cost price of 1000 gm goods is ₹ 1000;

Since he sells the goods at 5% profit ;

$\therefore$ Selling price of 1000 gm goods = ₹ 1050

But he uses 10% less weight that means he gives 900 gm goods for ₹ 1050;

$\therefore$ Actual selling price of 1000 gm goods

$= (1050/900) \times 1000 =$ ₹ 1166.67

$\therefore$ Actual profit earned by the Ramu

$= \left(\frac{1166.67-1000}{1000}\right)\times 100 = 16.67\%$

Quantity B :

Since Rohit sells 64 oranges for ₹ 2

$\therefore$ Selling price of 1 orange $= ₹\frac{2}{64} = \frac{1}{32}$

He suffers a loss of 40%

$\therefore$ Cost price of 1 orange $= (1/32)/0.6 =$ ₹ (1/19.2)

Selling price of 1 orange for earning 20% profit

$= (1/19.2) \times 1.2 =$ ₹ 1/16

$\therefore$ He should sell 16 oranges for ₹1 to earn 20% profit.

$\therefore$ Quantity A > Quantity B

130. (b) **Quantity A,**

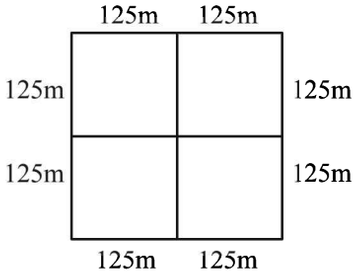
Area of square ground = (Side of the ground)^2 = 12100 metres square

(Side of the ground)^2 = 12100 metres square

Side of the ground = 110 metres

Perimeter of a square = $4 \times 110 = 440$ metre

Quantity B,
The field is square. So, its every side will be 250 metres it is divided into 4 parts.



Perimeter of each square = 125 × 4 = 500 metres
∴ Quantity A is less than Quantity B

131. (e) Solving for **Quantity A**
The word VOLUME consist 6 distinct letters
Number of arrangement = 6! = 6 × 5 × 4 × 3 × 2 × 1 = 720
Solving for **Quantity B**
The word SQUARE consist of 6 letters
Number of arrangement possible = 6!
= (6 × 5 × 4 × 3 × 2 × 1) = 720
∴ Quantity A = Quantity B

132. (d) Let s m/sec be the speed of the train and l meter be length of the train.

From I, $s = \frac{l}{9}$

From II, $s = \frac{l}{27}$

From II, l = 40 cm
∴ III and either I or II only

133. (b) Let distance = d
Speed in still water = x
Speed of current = y

$\therefore \frac{d}{x} = 4$

From I, d given

II. $\frac{d}{x+y}$ = given

C, y = given
So, any pair of I and II or II and III or III and A is sufficient.

134. (b) From I, $x \times y = 1200$ sq m

II, $d = \sqrt{x^2 + y^2} = 25$ m

III, $x : y = 4 : 3$
From any of these two statements, we can determined the value of length and breadth, hence, we can find parimeter

135. (c) From I, $P = \frac{40R}{100} + R = \frac{140R}{100}$

II, $Q = R - \frac{40R}{100} = \frac{60R}{100}$

III, Q + R = 92
To find (P – Q) all statements are necessary

136. (a) From III, $b : h = 6 : 8$
From I, Perimeter = y cm
II, hypotenuse = x cm
From I and III or II and III, we can determine the area of the garden.

137. (e) From statement I,
Let the number of students in the institutes 'IIP' and IIR be $4x$ and $5x$ respectively. However we get no conclusive answer by using data given in all the statements.

138. (c) From statements I and II, Let Sharma's monthly income = ₹ x. Then

$\frac{21 \times x}{100} = 6300$

$\Rightarrow x = \frac{6300 \times 100}{21} = ₹\ 30000$

From statements I and III,

$x \times \frac{4}{5} \times \frac{79}{100} = 18960$

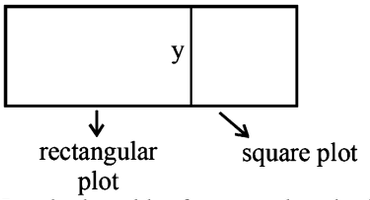
$\Rightarrow x = \frac{18960 \times 5 \times 100}{4 \times 79} = ₹ 30000$

139. (a) From Statements I and III, Let Krishna's son's present age be x years.
∴ Krishna's present age = $2x$ years
After 4 years,

$\frac{2x+4}{x+4} = \frac{13}{24}$

We can get the required answer by this relation.
So statement II is not required.

140. (c)



Let the breadth of rectangular plot be y m and length = 20m
ATQ,
40 + y + 3y = 470/5
⇒ 40 + 4y = 94
⇒ 4y = 54 ⇒ y = 13.5m
Area of new plot
= (20 + 13.5) × 13.5
= 452.5 m^2

141. (e) From statement I,
Given: The distance travelled in upstream in 3 hours by a man is more than distance travelled by him in downstream in 1 hour by 8km.
⇒ distance travelled in upstream – distance travelled in downstream = 8 km
(3 × speed in upstream –1 × speed in downstream) = 8 km
∵ Speed in upstream and downstream is not known, so speed of the stream cannot be found using these data.

Thus, the data in Statement I alone are not sufficient to answer the question

From statement II,

Given: The ratio of speed in upstream to the speed in downstream is 3 : 8

Let speed in upstream be 3x km/hr and speed in downstream be 8x km/hr.

Since x is not known, so speed of the stream cannot be obtained.

Thus, the data in Statement II alone are not sufficient to answer the question

Combining I and II,

Speed in upstream = 3x

Speed in downstream = 8x

(3 × speed in upstream – 1 × speed in downstream) = 8 km

$\Rightarrow$ $(3 \times 3x - 1 \times 8x) = 8\text{km} \Rightarrow x = 8$ km/hr

$\therefore$ Speed in upstream and downstream are 24 km/hr and 64 km/hr respectively.

Speed of the stream = ½ (speed in downstream – speed in upstream)

= 1/2 (64 – 24) = 20 km/hr

142. (c) From I: x+(x+2) = 46 i.e. x = 22, hence, third consecutive even number is (x+ 4) = 22 + 4 = 26

From II: x+4+(x+6) = 54 i.e. x = 22, hence, fourth consecutive even number is (x+ 4) = 22 + 4 = 26

143. (a) From statement 1,

Marks in English = 1/2 Hindi

Marks in chemistry = 45% of Hindi

$$\text{Hindi} = 36 \times \frac{100}{45} = 80$$

$$\text{English} = \frac{1}{2} \times 80 = 40$$

In statement II total marks is not given

144. (b) 1/Kalraju = 1/30

$$1/\text{Kalraju} + 1/\text{Mithun} = \frac{1}{20}$$

$$\Rightarrow 1/30 + 1/\text{Mithun} = \frac{1}{20} \Rightarrow 1/\text{Mithun} = \frac{1}{20} - \frac{1}{30}$$

$$\Rightarrow 1/\text{Mithun} = (3-2)/60 \Rightarrow 1/\text{Mithun} = \frac{1}{60}$$

1/Riyas = 1.5/60

$$\Rightarrow 1/\text{Riyas} = \frac{1}{40}$$

Let, required time = t days

(I) $1/\text{J. Murthy} = \frac{1.5}{30} = \frac{1}{20}$

$$t \times \left(\frac{1}{20} + \frac{1}{40}\right) = 1$$

$$\Rightarrow t \times \frac{(2+1)}{40} = 1 \Rightarrow t = \frac{40}{3} \text{ days} = \frac{40}{3}$$

$\Rightarrow$ Satisfies the given condition.

(II) $1/\text{J. Murthy} = \frac{2}{30} = \frac{1}{15}$

$$t \times \left(\frac{1}{15} + \frac{1}{40}\right) = 1$$

$$\Rightarrow t \times \left(\frac{8+3}{120}\right) = 1 \Rightarrow t = \frac{120}{11} \text{ days} \neq 4/3$$

$\Rightarrow$ Doesn't satisfy the given condition.

(III) $1/\text{J. Murthy} = \frac{3}{30} = \frac{1}{10}$

$$t \times \left(\frac{1}{10} + \frac{1}{40}\right) = 1$$

$$\Rightarrow t \times \frac{4+1}{40} = 1 \Rightarrow t = \frac{40}{5}$$

$\Rightarrow t = 8$ days = 8

= Satisfies the given condition.

145. (a) Work done by Arjun, Banita in one day,

$$\text{Arjun} + \text{Banita} = \frac{1}{24}$$

Work done by Arjun, Chahak in one day,

$$\text{Chahak} + \text{Arjun} = \frac{1}{32}$$

Work done by Arjun, Chahak, Dablu in one day,

$$\text{Arjun} + \text{Chahak} + \text{Dablu} = \frac{1}{24}$$

Work done by Dablu in one day,

$$\frac{1}{32} + \text{Dablu} = \frac{1}{24}$$

$$\text{Dablu} = \frac{1}{24} - \frac{1}{32} = \frac{1}{96}$$

Dablu can complete the work in 96 days.

Work done by Banita in one day,

Banita = 2 Dablu

$$\text{Banita} = \frac{2}{96}$$

$$\text{Banita} = \frac{1}{48}$$

Banita can complete the work in 48 days.

Work done byArjun in one day,

$$\text{Arjun} + \text{Banita} = \frac{1}{24}$$

$$\text{Arjun} = \frac{1}{24} - \frac{1}{48}$$

$$\text{Arjun} = \frac{1}{48}$$

Arjun can complete the work in 48 days.

Work done by Chahak in one day,

$$\text{Chahak} + \text{Arjun} = \frac{1}{32}$$

$$\text{Chahak} = \frac{1}{32} - \frac{1}{48}$$

$$\text{Chahak} = \frac{1}{96}$$

Chahak can complete the work in 96 days.
Work done by Chahak, Dablu in one day,

$$\text{Chahak + Dablu} = \frac{1}{96} + \frac{1}{96} = \frac{2}{96} = \frac{1}{48}$$

Chahak and Dablu can complete the work in 48 days.

146. (a) $350 = \text{speed of train Taj Mail} \times \frac{5}{18} \times 21$

Speed of train Taj Mail = 60 kmph

$$250 = \text{speed of train JP Mail} \times \frac{5}{18} \times 10$$

Speed of train JP Mail = 90 kmph

(i) $350 + 250 = (60 + 90) \times \frac{5}{18} \times \text{required time}$

Required time = 14.4 seconds

(ii) $350 + \text{length of the bridge} = 60 \times \frac{5}{18} \times 36$

Length of the bridge = 250 m

(iii) $250 = (90 - 30) \times \frac{5}{18} \times \text{Required time}$

Required time = 15 seconds

(iv) Ratio of the speed of train Taj Mail to JP Mail = 60 : 90 = 2:3

147. (a) $24x \times 7x \times 12x = 2016$
$x = 1$ cm
Breadth of the cuboid = $7 \times 1 = 7$ cm
Length of the cuboid = $24 \times 1 = 24$ cm
Height of the cuboid = $12 \times 1 = 12$ cm

$$\text{Diagonals of the cuboid} = \sqrt{7^2 + 24^2 + 12^2} = \sqrt{769} \text{ cm}$$

Surface area of the cuboid
$= 2 \times (24 \times 7 + 7 \times 12 + 24 \times 12) = 1080$
Height of the cone = 24 cm
Radius of the cone = 7 cm

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

Volume of the cone = $1/3 \times 22/7 \times 7 \times 7 \times 24$
$= 1232 \text{ cm}^3$

148. (a) According to question
Employees (Hindi) = 80%
Employees (English) = 45%
Employees (Hindi and English) = $(80 + 45) - 100$
$= 125 - 100 = 25\%$

(a) $\text{Students (Hindi and English)} = \frac{25}{100} \times 800 = 200$

= Satisfies the given condition

(b) $\text{Students (Hindi and English)} = \frac{25}{100} \times 1200$

$= 300 \neq 400$
= Doesn't satisfy the given condition.

(c) $\text{Studnets (Hindi and English)} = \frac{25}{100} \times 1000$

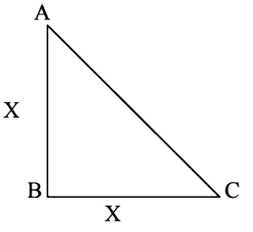
$= 250 \neq 200$ = Doesn't satisfy the given condition.

149. (a) From statement II
$S_m = 1 - 1/2^m$
$S_m - 1 = 1 - 1/2^{m-1}$
$\Rightarrow t_m = (1 - 1/2^{m-1}) - (1 - 1/2^m) = 1/2^m$
$\Rightarrow$ Common ratio = 1 / 2
From statement I:
$a / 1 - r = 2$

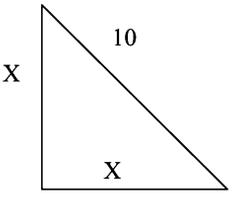
$$\Rightarrow a = 2(1 - r) \quad \Rightarrow r = \left(\frac{2 - a}{2}\right)$$

We cannot have the value of r. So only statement I, alone give the answer.

150. (e) **Statement I:**
Here ΔABC is a isosceles right-angle triangle with AB = BC = X cm
Area = $1/2\ x^2$; but we don't know the length of x. So area cannot be found out by I.



Statement II: We have only one length = 15 cm. So we can't find the area from II, alone



Combining I and II:

$$\text{Area} = 1/2x^2 \text{ and } 2x^2 = 15^2 \Rightarrow x^2 = \frac{225}{2}$$

$\Rightarrow$ Area = 56.25 sq. units
$\Rightarrow$ So, I and II, combined solve this problem.

151. (d) Statement I: Gives no information about $n(E)$ or $n(E \cap H)$
Statement II: Gives $n(E \cup H)$ but we cannot count $n(E)$
From both I and II we get $n(E \cup H) = n(E) + [n(H) - n(E \cap H)]$
or $300 = n(E) + 100$
$\Rightarrow n(E) = 200$
Hence, from both statements is necessary to give the answer.

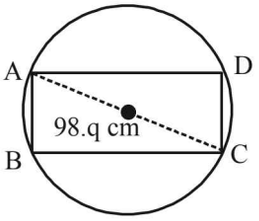
152. (d) Statement I provide the car load for onset of roads. No data is given for the other set.
Statement II only defines the logic for movement of traffic but no data on the time it would take to wait on each road.

153. (c) From Statement I, Champa got 8000 so $4x = 8000$
So $x = 2000$
So total profit = $6x + 3x + 4x = 13x$
$= 13 \times 2000 = 26{,}000$
So profit% = $26000/52000 \times 100 = 50\%$
From II, $6x - 3x = 6000$
So $x = 2000$
Further same as in I.

154. (a) Let the weight of P, Q, R and S are 9x, 7x, 4x and 5x respectively.

Quantity – I : Total weight of P, Q and R = 225 kg
$9x + 7x + 4x = 225$
$20x = 225$
$x = 11.25$
$\therefore$ Weight of P = $9x = 101.25$ kg
Quantity – II : Total weight of Q, R and S = 180 kg.
$7x + 4x + 5x = 180$
$16x = 180$
$x = 11.25$
$\therefore$ Weight of Q = $7x = 78.75$ kg.
Quantity III :
Weight of S = $5x$
$= 5 \times 11.25 = 56.25$ kg
Hence, Quantity – I > Quantity – II > Quantity – III

155. (a) From the question,



Area of the square = 98 sq. cm
$\therefore$ Side of the square = AB = AC

$\sqrt{98} = 7\sqrt{2}$ = cm

In ABC, $AC = \sqrt{(AB)^2 + (BC)^2}$
From the question,

$AC = \sqrt{(7\sqrt{2})^2 + (7\sqrt{2})^2}$

$= \sqrt{196} = 14$
Diameter of the circle AC = 14 cm
Quantity – I : Area of the circular region P

$= \pi\left(\frac{14}{2}\right)^2 = 154$ sq. cm

Quantity – II : Area of the circular region P outside the square ABCD = 154 – 98 = 56 sq. cm
Quantity – III : Perimeter of the circular region P
$= \pi(14) = 44$ cm
So, Quantity – I > Quantity – II > Quantity – III.

156. (b) From question Dipak's investment = ₹1000
Let Panas's investment is ₹ x
Sanjeet's investment is ₹ 2x
Then, $10000 + 2x + x = 22{,}000$
$3x = 12000$ $x = 4000$
$\therefore$ Panas's investment = ₹ 4000
Sanjeet's investment = ₹ 8000
and Dipak's investment = ₹ 10000
Ratio of investment = 4000 : 8000 : 10000 = 2 : 4 : 5.
Quantity – I : Profit received by Panas in 3 years

$= \frac{2}{(2+4+5)} \times 2750 \times 3 =$ ₹ 1500

Quantity II : Profit received by Snajeet in 18 months.

$= \frac{4}{(2+4+5)} \times 2750 \times 1.5 =$ ₹ 1500

Quantity III : Profit received by Dipak in 1 year

$= \frac{5}{(2+4+5)} \times 2700 =$ ₹ 1250.

$\therefore$ Quantity I = Quantity II > Quantity III

157. (d) **Quantity I:**
Assume units of work done = 24 [LCM (8, 12)]

Units of work done by Tomy in a day = $\frac{24}{8} = 3$

Units of work done by Jacky in a day = $\frac{24}{12} = 2$

2 days units done = 3 + 2 = 5
8 days units done = 20
9 days units done = 23
On 10^{th} day work to be done = 24 – 23 = 1 unit
On 10^{th} days as Jacky working, time required = ½ day.
Total time = 9 ½ days.
Quantity II:
Let the total amount be ₹ x

Udya's wage per day is $\frac{x}{21}$

Muday's wage per day is $\frac{x}{20}$

When working together wage paid per day to them is

$\frac{x}{20} + \frac{x}{21} = \frac{x \times 41}{420}$

Number of days = $\frac{x \times 420}{x \times 41} = 10.24$ days

Hence, Quantity I < Quantity II

158. (a) **Quantity I:**

$SP = \frac{129}{100} \times CP_1 =$ ₹ 12900; $CP_1 = 10000$

CP of Air Purifier = $12900 \times 2 - 10000 = 15800$
He sold the Air purifier for ₹12900

$\text{Loss} = \frac{(15800 - 12900)}{15800} \times 100$

$= \frac{2900}{15800} \times 100 = 18.35\%$

Quantity II:
Suppose the initial turnover is x and the compounded annual growth rate is r. Then we have

$3x = x\left(\frac{1+r}{100}\right)^3$ or $\left(\frac{1+r}{100}\right) = \sqrt[3]{3} = 1.4422$

Or r = 44.22%

Hence, Quantity I < Quantity II

159. (c) Let, length of train Doon Express be l metres

And speed of train Doon Express be s Km/h.

$$l = (s-4) \times \frac{5}{18} \times 32.4$$

$\Rightarrow l = (s-4) \times 9$

$\Rightarrow l = 9s - 36$ ...(i)

$$l + 740 = s \times \frac{5}{18} \times 90$$

$\Rightarrow l + 740 = 25s$

$\Rightarrow l = 25s - 740$ ...(ii)

From (i) and (ii)

$9s - 36 = 25s - 740$

$\Rightarrow 25s - 9s = 740 - 36$

$\Rightarrow 16s = 704$

$$\Rightarrow s = \frac{704}{16}$$

$\Rightarrow s = 44$ Km/h

From (i)

$l = 9 \times 44 - 36$

$\Rightarrow l = 396 - 36$

$\Rightarrow l = 360$ m

Let, required time taken = t seconds

(I) $(360 + 540) = (44 + 36) \times 5/18 \times t$

$\Rightarrow 900 = 80 \times 5/18 \times t$

$$\Rightarrow t = \frac{900}{80} \times \frac{18}{5}$$

$\Rightarrow t = 40.5$ seconds $= 40.5$

$\Rightarrow$ Satisfies the given condition.

(II) $$(360 + 420) = (44 + 36) \times \frac{5}{18} \times t$$

$$\Rightarrow 780 = 80 \times \frac{5}{18} \times t$$

$$\Rightarrow t = \frac{780}{80} \times \frac{18}{5}$$

$\Rightarrow t = 35.1$ seconds $\neq 36.3$

= Doesn't satisfy the given condition.

(III) $$(360 + 440) = (44 + 36) \times \frac{5}{18} \times t$$

$$\Rightarrow 800 = 80 \times \frac{5}{18} \times t$$

$$\Rightarrow t = \frac{800}{80} \times \frac{18}{5}$$

$\Rightarrow t = 36$ seconds $= 36$

= Satisfies the given condition.

160. (d)

(a) Ratio of shares in the profit:

$A : B : C = (2P + 3P \times 2) : (1.5P \times 2 + 3P) : (3P \times 3)$

$= 8P : 6P : 9P$

$= 8:6:9$

$$\text{Share of C in the profit} = \frac{9}{(8+6+9)} \times 115000$$

$$= \frac{9}{23} \times 115000$$

$= ₹45000 = 45000$

= Satisfies the given condition.

(b) Ratio of shares in the profit:

$A : B : C = (2P + 3P \times 2) : (1.5P \times 2 + 3P) : (2P \times 3)$

$= 8P : 6P : 6P$

$= 4:3:3$

$$\text{Share of C in the profit} = \frac{3}{(4+3+3)} \times 115000$$

$$= \frac{3}{10} \times 115000$$

$= ₹34500 = 34500$

= Satisfies the given condition.

(c) Ratio of shares in the profit:

$A : B : C = (2P + 3P \times 2) : (1.5P \times 2 + 3P) : (P \times 3)$

$= 8P : 6P : 3P$

$= 8:6:3$

$$\text{Share of C in the profit} = \frac{3}{(8+6+3)} \times 115000$$

$$= \frac{3}{17} \times 115000$$

$= ₹20294.117 \neq 21000$

= Doesn't satisfy the given condition.

161. (d) Amount of Alcohol in the initial mixture

$$= \frac{7}{10} \times 120 = 84 \text{ litres}$$

Amount of water in the initial mixture

$$= \frac{3}{10} \times 120 = 36 \text{ litres}$$

(I) $$\text{Amount of Alcohol in the final mixture} = \frac{84-7}{10 \times 40 + 8}$$

$= 84 - 28 + 8 = 64$ litres

$$\text{Amount of water in the final mixture} = \frac{36-3}{10 \times 40 + 2}$$

$= 36 - 12 + 2 = 26$ litres

$$\text{Concentration of Alcohol} = \frac{64}{(64+26)} \times 100$$

$= \frac{64}{90} \times 100$

$= 71.11\% \neq 78$

= Doesn't satisfy the given condition.

(II) Amount of Alcohol in the final mixture

$= 84 - \frac{7}{10} \times 60 + 8$

$= 84 - 42 + 8$

= 50 litres

Amount of water in the final mixture $= 36 - \frac{3}{10} \times 60 + 2$

$= 36 - 18 + 2 = 20$ litres

Concentration of Alcohol $= \frac{50}{(50+20)} \times 100$

$= \frac{50}{70} \times 100 = 71.42\% \neq 84$

= Doesn't satisfy the given condition.

(III) Amount of Alcohol in the final mixture $= 84 - \frac{7}{10} \times 30 + 8$

$= 84 - 21 + 8 = 71$ litres

Amount of water in the final mixture $= 36 - \frac{3}{10} \times 30 + 2$

$= 36 - 9 + 2 = 29$ litres

Concentration of Alcohol $= \frac{71}{(71+29)} \times 100$

$= \frac{71}{100} \times 100 = 71\% = 71$

= Satisfies the given condition.

162. (d) Let, cost price = ₹ P

(a) $P \times \frac{120}{100} \times \frac{95}{100} = 912$

$\Rightarrow P = 912 \times \frac{100}{95} \times \frac{100}{120}$

$\Rightarrow P =$ ₹ 800

$\%$ profit $= \frac{(912-800)}{800 \times 100}$

$= \frac{112}{800} \times 100 = 14\% = 14$

= Satisfies the given condition.

(b) $P \times \frac{125}{100} \times \frac{95}{100} = 912$

$\Rightarrow P = 912 \times \frac{100}{95} \times \frac{100}{125}$

$\Rightarrow P = 768$

$\%$ profit $= \frac{(912-768)}{768 \times 100}$

$= \frac{144}{768} \times 100 = 18.75\% = 18.75$

= Satisfies the given condition.

(c) $P \times \frac{150}{100} \times \frac{95}{100} = 912$

$\Rightarrow P = 912 \times \frac{100}{95} \times \frac{100}{150}$

$\Rightarrow P = 640$

$\%$ profit $= \frac{(912-640)}{640 \times 100}$

$= \frac{272}{640} \times 100 = 42.5\% = 42.5$

= Satisfies the given condition.

163. (e) **Quantity I**

Let a be the number.

$a + \left(\frac{1}{a}\right) = 2$

$a^2 + 1 = 2a$

$a^2 - 2a + 1 = 0$

$a^2 - a - a + 1 = 0$

$a(a-1) - (a-1) = 0$

$(a-1)(a-1) = 0 = a = 1, 1$

Quantity II

Let b be the number

$\frac{(16 \times b + 16)}{6} = 8 \times b$

$\Rightarrow 16b + 16 = 48b$

$\Rightarrow b + 1 = 3b \Rightarrow b = \frac{1}{2}$

Hence, Quantity 1 > Quantity II

164. (e) **Quantity I**

Ram in 20 days and Shyam in 30 days

Taking LCM for 20 and 30, we get 60

Total work = 60

Quantity of work done by Ram in one day = 3 Unit

Quantity of work done by Shyam in one day = 2 Unit

Quantity of work done by Ram in 10 days = 30 Unit

Remaining work = 30 Unit

Number of days taken by Shyam to complete this work $= \frac{30}{2} = 15$ days

Quantity II

Aman is twice efficient as Biky

Let the quantity of work done by Biky in one day = 1

Quantity of work done by Aman in one day = 2

Aman and Biky together complete a work in 10 days

Total work = $(1 + 2) \times 10 = 30$

Number of days taken by Aman alone = $\frac{30}{2} = 15$ days.

Hence, Quantity I = Quantity II

165. (a) **Quantity I**

Upstream speed: Downstream speed = 2 : 3

$\Rightarrow \frac{48}{3x} + \frac{48}{2x} = 10$

$\Rightarrow \frac{96+144}{6x} = 10 \Rightarrow \frac{240}{6x} = 10 \Rightarrow x = 4;$

Downstream speed = 12km/hr;

Upstream speed = 8km/hr

Speed of boat in still water = (12 + 8)/2

= 10km/hr

Quantity II

Speed of boat in still water = 3 × speed of stream

Let x be the speed of the stream P = $3x$

Upstream speed = $P - x = 3x - x = 2x$

Downstream speed = $P + x = 3x + x = 4x$

Average speeed = 16km/hr.

$\frac{2 \times 2x \times 4x}{(2x + 4x)} = 16 \Rightarrow \frac{16x^2}{6x} = 16 \Rightarrow x = 6$

Speed of boat in still water = 6 × 3 = 18 km/hr.

Hence, Quantity I < Quantity II

166. (a) **Quantity I**

Volume of cylinder = $\pi r_1^2 h_1$

Volume of cone

$= \pi \times \left(\frac{2}{3}r_1\right)^2 \times \left(\frac{8}{5}h_1\right) = \frac{32}{135} \times$ Volume of cylinder

$\therefore$ Volume of cylinder = $\frac{135}{32} \times$ Volume of cone

$= \frac{135}{32} \times 320 = 1350\ \text{cm}^3$

Quantity II

Volume of cone = $\frac{1}{3}\pi r^2 h$

$\frac{1}{3} \times \frac{22}{7} \times 18 \times 18 \times 7 = 2376\ \text{cm}^3$

Hence, Quantity I < Quantity II

167. (b) **Quantity I**

Let $5x$ and $4x$ be the ages of Rahul and Vijay respectively.

$\frac{5x+2}{4x+2} = \frac{11}{9} \Rightarrow 45x + 18 = 44x + 22 \Rightarrow x = 4$

Sum of their ages = $9x = 9 \times 4 = 36$ years

Quantity II

Average of present ages = 22

Sum of present ages = $2 \times 22 = 44$

Sum of their ages three years ago = 44 – 12 = 32

Hence, Quantity I > Quantity II

168. (b) **Quantity A:**

CP = ₹ 20000,

SP = ₹ 24000

Initial discount percentage = 20%

$24000 \times \frac{100}{80} \Rightarrow$ MP = ₹ 30000

New discount percentage = 30%

$\Rightarrow$ New SP = ₹ 21000

$\Rightarrow$ Profit % = $\frac{1000}{20000} \times 100 = 5\%$

Quantity B:

The selling price is increased by 20%

$24000 \times \frac{120}{100} \Rightarrow$ New SP = ₹ 28800

$\Rightarrow$ Profit% = $\frac{8800}{20000} \times 100 = 44\%$

$\therefore$ Quantity B > Quantity A

169. (b) **Quantity A:**

A person saves 120 minutes when he increases his speed from 20 km/hr to 30 km/hr to cover a certain distance.

Let the distance covered be 'd' km

$\Rightarrow$ Time to cover when speed is 20 km/hr = $d/20$

$\Rightarrow$ Time to cover 30 km/hr = $\frac{d}{30}$

Difference in time = 120 minutes

$\frac{d}{20} - \frac{d}{30} = \frac{120}{60} \Rightarrow \frac{d}{60} = \frac{120}{60}$

$\therefore d = 120$ km.

Quantity B:

He covers at a speed of 60 km/hr for 3 hours.

$\Rightarrow d = 180$ km

$\therefore$ Quantity B > Quantity A

170. (a) **Quantity A:** If the compound interest for 2 years at 20% rate of interest is ₹ 1210

$CI = P(1 + R/100)^t - P \quad \Rightarrow 1210 = P\left[\frac{144}{100} - 1\right]$

$1210 = P\left(\frac{44}{100}\right)$

$1210 = P \times 11/25$

$P = \frac{1210 \times 25}{11} = 2750$

Quantity B: The sum of money will produce ₹ 600 interest in 4 years at 6% simple interest.

$S.I. = \frac{P \times R \times T}{100}; 600 = \frac{P \times 6 \times 4}{100}$

$P = \frac{600 \times 100}{6 \times 4} = 2500$

Quantity B < Quantity A

171. (a) **Quantity A:**

Four years before, the ratio of ages of X and Y was 5 : 6,

Four years hence this ratio will become 6 : 7,

5 : 6

6 : 7

Difference in ratio for X = 1 and

Difference in years = 8

1 = 8

Present age of X = 5 × 8 + 4 = 44 years.

Quantity B :

6 years before the ratio of ages of X and Y was 2 : 3

6 years hence the ratio will become 3 : 4

2 : 3

3 : 4

Difference in ratio for X = 1 and

Difference in years = 12

1 = 12

Present age of X = 2 × 12 + 6 = 30 years

∴ Quantity A > Quantity B

172. (a) **Quantity A:** Let he answers x% of the remaining questions to score 75% on entire test

$\Rightarrow \frac{x}{100} \times 50 + \frac{60}{100} \times 50 = \frac{75}{100} \times 100$

$\frac{x}{2} = 75 - 30$

∴ x = 90%

Quantity B:

The price of an article is reduced by 30%

⇒ Change in price = 100 : 70 = 10 : 7

The daily sale of the article is increased by 40%

⇒ Change in sale = 100 : 140 = 5 : 7

⇒ Net effect = 50 : 49

$\Rightarrow$ Percentage change = $\frac{1}{50} \times 100 = 2\%$

∴ Quantity A > Quantity B