Data Sufficiency & Quantity Based Questions

Data Sufficiency

Directions (1 - 13): For each of the following questions two statements are given. Use the data of those statements and then determine which of the following statements is necessary to answer the question.

a) Statement I is sufficient to answer the question.

b) Statement II is sufficient to answer the question.

c) Either Statement I or statement II is sufficient to answer the question.

d) Neither Statement I nor statement II is sufficient to answer the question.

e) Both Statements I and II are necessary to answer the question.

1) Find the value of $(x+2)^2$.

Statement I: $x^2-4=8$

Statement II: The average of 5 numbers-(8, 6, 4, 3x and x-4) is 6.

2) What is the present age of A?

Statement I: The ratio of the present age of A and B is 2:3. After 10 years the ratio of the ages of B and C is 2:1.

Statement II: 5 years ago the average age of A, B and C is 11 years and after 3 years the average age of B and C is 18 years.

3) What is the total investment made by three partners - A, B and C?

Statement I: A invested Rs.2000. The Ratio of time period for A, B and C is 1:2:3.

Statement II: The total profit is Rs.6000.

4) Find the rate of interest?

Statement I: The difference between the simple interest and compound interest for 2 years is Rs.800.

Statement II: The simple interest accrued on the amount Rs.3000 is Rs.500.

5) What is the three digit number?

Statement I: The three digit number is an exact multiple of 8.

Statement II: The first and third digits are 2.

6) What is Prabhu's present age?

Statement I: The ratio of the present age of Prabhu and his sister Vanitha's present age is 2:3

Statement II: Prabhu's present age is double the age of his Son Mani. Four years hence, the ratio of Vanitha's age to Mani's will be 24:13.

7) What is the rate of interest per annum?

Statement I: The difference between the compound interest and the simple interest on an amount of Rs 32000 in two years is Rs 320.

Statement II: An amount triples itself at simple interest in 14 years.

8) In what time the boat cover a distance of 120km upstream?

Statement I: A boat covers 24km downstream in 3 hours.

Statement II: The speed of the current is 25% of its downstream speed.

9) What is the number of students in the class? If the number of students in the class is cannot be more than 85.

Statement I: When students are divided in a group of 12 only 8 students are left but when divided in a group of 5 no students is left.

Statement II: When the students are divided in a group of 3, only two students are left but were divided in a group of 7 only three students are left.

10) What is the ratio of speed of the boat in still water and speed of the stream?

Statement I: The boat takes 3 hours to travel 51 km downstream

Statement II: The ratio of downstream and upstream speeds is 6:5

11) What is the population of state 'A'?

Statement I: The ratio of population of state A to that of state B is 7:13

Statement II: After 25% increase in the population state A will become 2.5 crores.

12) Find the two digits number, if the tens place digit is greater than the unit place digit.

Statement I: Tens place digit is perfect square but not equal to 1.

Statement II: The difference of the digits of the number is 8.

13) How many words are there in the page?

Statement I: Pavithra will take 5 minutes less to type the page at an average speed of 250 words per minute than the time taken to type the page at an average speed of 125 words per minute.

Statement II: Pavithra will take 14 minutes to type the first half of the page at an average speed of 130 words per minute.

Directions (14 - 25): In each of the following questions, a question is followed by three statements I, II and III. Read all the statements to find the answer to given question and then answer accordingly that which statement/s can give the answer alone/together.

14) Pipe D is opened for first 6 minutes then closed and pipe C is opened. Find the time taken by pipe C to fill the remaining part of the tank.

I. Pipe A and pipe B together can fill a tank in 15 minutes.

II. Pipe A, Pipe B and Pipe D they can fill the tank in 12 minutes.

III. Pipe C and pipe D together can fill the tank in 10 minutes.

a) All I, II and III

b) Only II and III

c) Only II

d) Any two of the three

e) Even I, II and III together are not sufficient.

15) Find the age of Rajni after 7 years.

I.Ratio of the ages of Raju and Dinesh before four years was 4:3 respectively. After four years, ratio of their ages will be 6:5 respectively.

II.Sum of the present ages of Rajni and Vikash is equal to sum of the present ages of Raju and Dinesh.

III.Rajni is six years older than Dinesh.

a) Only III

b) Only II and either I or III

c) Only I and III

d) All I, II and III

e) None is sufficient

16) Find the sum of the downstream distance travelled by the boat in 6 hours and upstream distance travelled by the boat in 4 hours.

I.The boat can travel 96 Km downstream in 8 hours.

II.The boat can travel 180 Km in still water in 18 hours.

III.The boat can travel 72 Km upstream in 9 hours.

a) All I, II and III

b) Any two of the three

c) Only II

d) Only III

e) None is sufficient.

17) Find the difference between the quantity of milk and water in the final mixture.

I.A mixture contains milk and water in the ratio 8:7 respectively. The milk man added six litres of milk and four litres of water to the mixture and hence the ratio becomes 7:6 respectively.

II.The milkman sold 20% of the mixture and added 4 litres of milk to the remaining mixture.

III.The milkman again added 2 litres of water to the mixture.

a) Only I and II

b) Only I and III

c) Only II and III

d) Any two of the three

e) All I, II and III

18) Find the present age of Rani.

I.Average of the present ages of Rani, Meena, Diya and Sara is 18 years.

II.Average of the ages of Meera and Sara before 3 years was 16 years. Tina is 4 years older than Diya.

III.Average of the present ages of Tina and Diya is 17 years.

a) Only I and II

b) Only I and III

c) Only II and III

d) Any two of the three

e) All I, II and III

19) Find the number of days taken by Kunal and Mini to complete 3/4th of the work.

I.Kunal and Sonam together can complete the work in 12 days.

II.Mini and Reena together can complete the work in 10 days.

III.Efficiency of Reena is twice the efficiency of Sonam.

a) All I, II and III

b) Any two of the three

c) Only III

d) Only II

e) None is sufficient.

20) Find the amount earned by Rohan on the sum on compound interest at 8% per annum after 3 years.

I.The same sum amounts to Rs.58427.2 on compound interest at 6% per annum after 2 years.

II.The same sum amounts to Rs.68640 on simple interest at 8% per annum after 4 years.

III.Difference between the compound interest and simple interest on that sum at 10% per annum after 2 years is Rs.520

a) Only I and II

b) Only I and III

c) Only II and III

d) Any one of the three

e) All I, II and III

21) Find the time after which both the trains meet each other for the second time.

I.Train A started from station P towards station Q with the speed 36 Km/h.

II.At the same time, train B started from station Q towards station P with the speed of 48 Km/h.

III.Speed of train B is 100/3% more than the speed of train A. After reaching their destinations both the trains returns to their initial position.

a) Only III

b) Only II and either I or III

c) Only I and III

d) All I, II and III

e) None is sufficient

22) Pipes A started to fill a tank. How many hours required filling the remaining tank by pipe B alone, if pipe A should be closed after 7 hours?

I. Pipe A alone can fill the tank in 10 hours.

II. The efficiency of pipe A is 100% more than the efficiency of pipe B.

III. Pipe B can fill 2/5 of the tank in 8 hours.

a) If either I and II or I or III is sufficient

b) If III and either I or II are sufficient

c) If I and either II or III are sufficient

d) If any two of I, II and III are sufficient.

e) None of these

23) A person invested certain sum of money in scheme which offers simple interest at the rate of 5%. What is the amount of interest earned in 5 years with same rate of interest?

I. The same amount of money gives Rs 300 as simple interest in 2 years.

II. If the difference between the S.I and CI earned at the end of 2 years on the same sum and the same rate of interest is Rs 200.

III. He invested Rs 2000 more in other scheme which offers interest at the rate 10%.

a) If only I or only II is sufficient

b) If III and either I or II are sufficient

c) If I and either II or III are sufficient

d) If any two of I, II and III are sufficient.

e) If all statements together are necessary

24) What was the price of the house A in 2008?

I. The ratio of price of A to B in 2008 was 7:8.

II. The price of house B in 2009 was 650000 and it has increased by 30% from 2008.

III. The ratio of price of houses A and B in 2009 was 6:7

a) If I and II is sufficient

b) If III and either I or II are sufficient

c) If I and either II or III are sufficient

d) If any two of I, II and III are sufficient.

e) If all statements together are necessary

25) How many students in a college did not secure first class grade in final examination?

I. 80% of the total students passed the examination and this students were classified as first, second and third class.

II. The ratio of failed students to first class grade students is 4:5

III. The total number students in the college were 600.

a) If either I or II is sufficient

b) If III and either I or II are sufficient

c) If I and either II or III are sufficient

d) If any two of I, II and III are sufficient.

e) If all statements together are necessary

Quantity Based Questions

Directions (1-15): In the following questions, two quantities are given as Quantity I and Quantity II. By finding these quantities give corresponding answer.

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

1) The perimeter of a square is equal to twice the perimeter of a rectangle of length 11 cm & breadth 10 cm

Quantity I: Find the circumference of a semicircle whose diameter is equal to the side of the square.

Quantity II: Find the circumference of another semicircle whose radius is 14 cm

2) Quantity I: The average mark obtained by 3 departments is 624. If the average marks obtained by the students of Computer department of 12 students is 56 and the average marks of the students of Commerce department of 9 students is 64. Find the average marks of the students of Zoology department having 6 students.

Quantity II: The average mark of four students in English is 63. Later it was found that, one of the students got 80 marks and due to error in marking he got 70. Find the actual average marks of the four students.

3) Quantity I: A, B and C entered into a partnership by starting a business and each of them invested Rs 18000. After 3 months A withdrew Rs 4000, after 2 months B withdrew Rs 3000 and C invested Rs 2000. At the end of the year, total profit made was Rs 85910. Find the difference between the share of A and C.

Quantity II: A, B and C entered into partnership. A invested 2 times as much as B. B invested 3 times as much as C. At the end of the year the profit is Rs 92000. Find the sum of the share of A and C.

4) There are 5 orange balls, 4 yellow balls & 3 black balls in a bag. Four balls are chosen at random

Quantity I: The probability of their being 2 orange and 2 yellow balls

Quantity II: The probability of their being 2 orange, 1 yellow & 1 black.

5) Seven Maths teachers and seven Science teachers are to be arranged in a row while seating in a conference.

Quantity I: Find the number of possible ways to arrange seven Maths teachers and seven Science teachers such that all Science teachers sit together.

Quantity II: Find the number of ways to arrange Seven Maths teachers and seven Science teachers such that no two Science teachers and no two Science teachers are adjacent to each other.

6) Quantity I: The shopkeeper sold an article at 10 % discount on marked price and he gains 20 %. If the marked price of the article is Rs. 400, then the cost price is?

Quantity II: The shopkeeper marks the price of the book Rs. 350 and his profit % is 15%. Find the cost price of the book, if he allows a discount of 8%?

7) Quantity I: A and B started a business by Rs. 4800 and Rs. 6400 respectively. A invested only 5 months and they divided their shares after a year. The ratio of profit of A and B is 3: 8. Then how many months B invested the money?

Quantity II: P and Q invested in the ratio of 5: 8. P invested the money for 8 months. The ratio of profit of P and Q is 1: 2. Then, how many months Q invested the money?

8) Quantity I: Ravi can swim at 10 km/hr in still water. The river flows at 6 km/hr and it takes 6 hours more upstream than downstream for the same distance. How far is the place?

Quantity II: A man can row 20 km/hr in still water and the river is running at 8 km/hr. If the man takes 4 hr to row to a place and back, how far is the place?

9) Quantity I: The SI on a certain sum of money for 5 years at 8 % per annum is Rs. 7500. Then the principle is?

Quantity II: The CI on a certain sum of money for 2 years at 15 % per annum is Rs. 8800. Then the principle is?

10) A box contains 7 black balls, 5 pink balls and 4 yellow balls.

Quantity I: If 3 balls are drawn randomly, then the probability of getting at least one pink balls?

Quantity II: If 2 balls are drawn randomly, then the probability of getting both the balls is either black or yellow?

11) Quantity I: The three sides of a triangular field are of lengths 15m, 20m and 25m respectively. What is the total cost of flooring in the field at the rate of Rs 7.5 per square meter?

Quantity II: A boy is riding a bicycle on a circular track and wants to cover a distance of 5.72km. The radius of circular track is 91m and he takes one bottle of soft drink for refreshment after completing every round. If one bottle soft drink costs Rs 110, then find the total amount spent by him.

12) Quantity I: Three pipes P, Q and R are attached to a tank. Pipe P alone and Pipe Q alone can fill the tank in 30 hours and 20 hours respectively. If pipe P opened for 10 hours and closed, then pipe Q opened for 5 hours and closed and pipe R alone can fill the remaining tank in 5 hours. How many time pipe R alone take to fill the whole tank?

Quantity II: Three pipes A, B and C can fill a tank in 10 hours. After working at it together for 3 hours, C is closed and A and B can fill the remaining part in 14 hours. How much time taken by C to fill the tank alone?

13) Quantity I: Ram borrowed Rs.1000 at 10% rate of interest. He repaid Rs.420 at the end of the first year. What is the amount required to pay at the end of the

second year to discharge his loan which was calculated at compound interest?

Quantity II: In an election a candidate who got 35% of the total votes polled is defeated his rival by 270 votes. Then find the total number of votes polled in the election?

14) Quantity I: Area of the square is 7200 cm^2 which is four times the area of the rectangle whose length and breadth is in the ratio of 9:8. What is the sum of length and breadth of the rectangle?

Quantity II: A rectangular water tank is 300 cm*488 cm is dug inside a circular field. The area of the remaining portion is 12000cm^2. Find the radius of the circular field.

15) Quantity I: A train can cover distance X km in t hours with the speed of S km/hr. If the train increased the speed by 3km/hr, it will cover the distance in 3 hour less than the actual time. If the train decreased the speed by 2km/hr, it will cover the distance in 1.5 hours more than the actual time. Find the actual speed of the train.

Quantity II: A train can cover distance X km in t hours with the speed of S km/hr. If the train increased the speed by 2 km/hr, it will cover the distance in 2 hour less than the actual time. If the train decreased the speed by 3km/hr, it will cover the distance in 5 hours more than the actual time. Find the actual speed of the train.

Directions (16 - 20): Each question contains a statement followed by Quantity I, II and III. Read the information clearly and answer your questions accordingly.

The options represent the relations between these three quantities

A) >

B) <

C) =

D) ≤

E) ≥

For example:

Quantity I = 200

Quantity II = 300

Quantity III = 100

Hence, Quantity I < Quantity II > Quantity III

a) A, B

b) B, C

c) B, A
d) E, B
e) B, D

16)
Quantity I: A, B and C begin to around a circular stadium and they complete their revolutions in 15seconds, 30 seconds and 20 seconds respectively. How many minutes will they come together at the starting point?

Quantity II: Average speed of car A is 30kmph and reaches the destination in 6 hours and car B cover the same distance in 4 hours. If car A increases the average speed by 10kmph and car B increases the average speed by 5kmph, what would be the difference in its time taken to reach the destination?

Quantity III: Two pipes A and B can fill a tank in 8 minutes and 6 minutes respectively. If they are opened in alternate minutes and pipe A is opened first, in how many minutes will the tank be full?

a) A, B
b) B, C
c) B, A
d) E, B
e) B, B

17)
Quantity I: 4 men can complete a piece of work in 40 days and 16 women can complete the same work in 16 days. In how many days will 5 men and 16 women together complete the same work?

Quantity II: Four men and four boys can earn Rs.6000 in 10 days. 10 men and 8 boys can earn Rs.11200 in 8 days. In how many days will 6 men and 8 boys earn Rs.12000?

Quantity III: A and B can do a piece of work in 80 days and 60 days respectively. They started working together but after some days B left the work. A alone completed the remaining work in 10 days. Find after how many days B left the work?

a) A, B
b) B, C
c) B, B
d) E, B
e) B, D

18)

A box contains 6 red, 4 blue, 2 green and 3 yellow balls.
Quantity I: If four balls are picked at random, what is the probability that at least one is blue?
Quantity II: If two balls are picked at random, what is the probability that both are red?
Quantity III: If three balls are picked at random, what is the probability that two are blue and one is yellow?
a) A, A
b) B, C
c) B, A
d) E, B
e) B, B

19)
Quantity I: A, B and C invested Rs.4500, Rs.7000 and Rs.9000 respectively to start a business. At the end of one year they earned a profit of Rs. 16400. What will be B's share in the profit?

Quantity II: Sam spent 20% of his monthly income on food and 15% on children's education. 40% of the remaining he spent on entertainment and transport together and 30% on medical. He is left with an amount of Rs.975 after all these expenditures. What is Sam's monthly income?

Quantity III: 50% of10000=?
a) A, B
b) A, C
c) B, A
d) E, B
e) B, D

20) Quantity I: If the compound interest accrued on an amount of Rs.15000 in two years is Rs.3150, what is the rate of interest per annum?

Quantity II: The area of a rectangle is equal to the area of a circle whose radius is 7cm. If breadth of the rectangle is 11cm, what is its length?

Quantity III: 65% of 120+?% of 150=105
a) B, B
b) B, C
c) B, A
d) E, B
e) B, D

Directions (21 – 25): Each question contains a statement followed by Quantity I, Quantity II and

Quantity III. Which of the following should be placed in the blank spaces of the expression "Quantity I__ Quantity II ___ Quantity III" from left to right with respect to the above statements?

21) Quantity I: Ram borrowed the money from Prem at the rate of 12% per annum simple interest. Then Ram deposited that money from the bank of simple interest at 20%. At the end of 18 years, Ram earned the profit of Rs. 540. Find the Sum?

Quantity II: The CI and SI on a certain sum for two years at the rate of 5 % is Rs.165 and Rs.150 respectively. Find the sum?

Quantity III: A and B started the business by investing Rs. 4000 and Rs. 2000 respectively. After six months A withdrew Rs. 800. The total profit at the end of a year is Rs. 2800, then find the profit share of B?

a) <, <
b) <, >
c) >, >
d) =, <
e) =, >

22) Quantity I: Anu has Rs. 6200 in the form of Rs.10, Rs.50 and Rs.100 notes. The ratio of the number of these notes is 7 : 5 : 3. What is the amount of Rs. 50 notes?

Quantity II: The profit earned after selling a mobile for Rs. 2540 is the same as loss incurred after selling the same mobile for Rs.2326. What is the cost price of the mobile?

Quantity III: The ratio of the radius of circle and sphere is 1: 2. The curved surface area of the sphere is 61600 cm. Find the area of the circle?

a) <, <
b) >, <
c) >, >
d) =, <
e) >, =

23) Quantity I: In the year 2017, the ratio of males to females in Kolkata is 4:5. In the year 2018 the male population increased by 20% and the female population increased by 10%. If the total population in the year 2018 was 103000, then find the male population in Kolkata in the year 2018?

Quantity II: A dealer purchased a Sofa for Rs. 8100. He allows a discount of 10% on its marked price and still gains 15%. Find the marked price of the Sofa?

Quantity III: If the rate of interest increased by 5%, then the simple interest increased by Rs.12000 for 5 years. If the same sum deposited in the bank for 10 years at the rate of 10%, find the simple interest for 10 years?

a) <, <
b) <, >
c) >, <
d) =, <
e) >, =

24) Quantity I: If the ratio of the present age of Ram and Suresh is 7: 8. After 10 years from now the ratio of Suresh and his sister is 3: 2. Difference between the ages of Ram and Suresh of after 15 years is 4 years. Then find the Suresh sister's age after 7 years?

Quantity II: $x^2 - 51x + 650 = 0$

Quantity III: 175 m long train crosses another train of length 100 m in 15 sec, running in same direction. If the speed of the first train is 90 km/hr, then find the speed of the second train (in km/hr)?

a) <, <
b) ≥, >
c) ≤, >
d) >, <
e) >, =

25) Quantity I: A man can row 20 kmph in still water. If the river is running at 12 kmph, it takes 9 hours more upstream than to go downstream for the same distance. Find the distance?

Quantity II: Two trains A and B run in the same direction at 60 kmph and x kmph respectively. If the train A crosses the train B in 20 seconds and the length of train A and train B is 80 m and 120 m respectively. Then find the value of x (Train B is a faster train)?

Quantity III: A man travelled a distance of 91 km in 9 hours. He travelled partly on foot at 6 km/hr and partly on bicycle at 12 km/hr. Then find the distance travelled on foot by the man.

a) >, >
b) <, <
c) >, <

d) <, > | e) =, >

Answers with Solution

Data sufficiency

1) Answer: b)

From Statement I,

$(x - 2)(x + 2) = 8$

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

From Statement II,

$(8+6+4+3x+x-4)/5=6$

$18+4x-4=30$

$4x=16$

$x=4$

From question, $(4+2)^2=36$

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

2) Answer: b)

From Statement I,

$A/B=2:3$

After 10 years, $B/C=2/1$

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

From Statement II,

Sum of the ages of (A+B+C) 5 years ago =33

Sum of the present ages of (A+B+C) =33+15=48 years

Sum of the ages of (B+C) after 3 years =36

Sum of the present ages of (B+C) =30 years

A=48-30=18 years

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

3) Answer: d)

From statement I,

A=Rs.2000

Time ratio=1:2:3

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

From Statement II,

Profit=Rs.6000

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

4) Answer: d)

From Statement I:

Sum is not given.

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

From Statement II,

Time period is not given.

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

5) Answer: d)

From Statement I,

The three digit number is an exact multiple of 8.

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

From Statement II,

The number=2?2

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

From I and II,

The number can be = either 232 or 272.

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

6) Answer: e)

Let x be the age of Prabhu and y be the age of Mani and z be the age of Vanitha.

From Statement I,

$x= 2/3*z => z = 3x/2$

From Statement II,

$x=2y => x/2 = y$

$(z + 4)/(y + 4) = 24/13$

From I and II,

$(3x/2+4)/(x/2 +4) = 24/13$

After solving all the above equations, we can find the present age of Prabhu.

Hence, **Both Statements I and II are necessary to answer the question**

7) Answer: c)

Statement I:

We know that, difference between the compound interest and the simple interest= $(PR^2)/100^2$

$320 = (32000* R^2)/100*100$

R= 10%

Statement II:

Let P=100

n=14

We know that, SI= pnr/100

Amount = 3P = 300

Interest = 300 – 100 = 200

If we substitute these values we can find the rate of interest per annum.

Hence **Either Statement I or statement II is sufficient to answer the question.**

8) Answer: e)

Let x be the speed of the boat in still water and y be the speed of the current

From Statement I,

Downstream speed= 24/3= 8 km/hr

(i.e) x + y=8

From Statement II,

Speed of the current = 25/100 * downstream speed

From statement I and II,

Speed of the current= 25% of 8 km= 2 km/hr

Then speed of the boat in still water=6 km/hr

Thus required time= 120/4= 30 hour

Hence **Both Statements I and II are necessary to answer the question**

9) Answer: e)

From statement I,

When students are divided in a group of 12, we get

(12, 24, 36, 48, 60 and 72)+8 ----- (1)

Since no student is left, when divided in group of 5, we get --- (2)

From the equations (1) and (2), we get two possibilities,

(12+8)/5 = 0 students left

(72+8)/5 = 0 students left

So the possibility is either 20 or 80.

From statement I, we cannot find the answer.

From statement II,

Let the total number of students=X

(LCM of 3, 7=21) when divided 3 remaining 2 and divided by 7 remaining three

So the number of students becomes=21k-4

K=1, X=17

K=2, X=38

K=3, X=59

K=4, X=80

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

From I and II,

X=80

10) Answer: b)

Let the speed of the boat in still water and speed of the stream be x km/hr and y km/hr respectively.

Statement I:

According to the question,

$[51/(x+y)]=3$

x+y=17 …………….. (1)

Using this we cannot find the required speeds.

Statement II:

According to the question,

$[(x+y)/(x-y)]=6/5$

5(x+y)=6(x-y)

x/y= 11/1

Thus Statement II is sufficient to answer the question.

11) Answer: b)

From Statement I, we have

Since, we don't know the population of state B, we cannot find the population of state A.

From Statement II, we have

Population of State A=2.5*(100/125)

= 2 crores

Hence Statement II is sufficient to answer the question.

12) Answer: e)

Let the digits be 10x and y.

Statement I:

We have two possibilities in tens place digit 4 and 9

Statement II:

We have two possibilities of (8, 0) and (9, 1)

From statement I and II,

The two digit number is 91

Hence Statement I and statement II are necessary to answer the question.

13) Answer: c)

Let t be the time taken by Pavithra to type at the rate of 125 words per minute.

From Statement I, we have

(t-5)*250=t*125

t=10 minutes

Thus total number of words in the application=10*125=1250 words

From Statement II, we have

Half the work=130*14=1820 words

So total work= 1820*2=3640 words

Hence Either Statement I or statement II is sufficient to answer the question.

14) Answer: a)

From I:

$1/A + 1/B = 1/15$

From II:

$1/A + 1/B + 1/D = 1/12$

From III:

$1/C + 1/D = 1/10$

From I, II and III

$1/A + 1/B = 1/15$ ---- (i)

$1/A + 1/B + 1/D = 1/12$ ---- (ii)

$1/C + 1/D = 1/10$ ----- (iii)

Now,

$1/A + 1/B + 1/D – 1/A – 1/B = 1/12 – 1/15$

$=> 1/D = (5 – 4)/60$

$=> 1/D = 1/60$

Putting this value in equation (iii)

$=> 1/C + 1/60 = 1/10$

$=> 1/C = 1/10 – 1/60$

$=> 1/C = (6 – 1)/60$

$=> 1/C = 5/60$

$=> 1/C = 1/12$

Let, the required time = t minutes

$6/60 + t/12 = 1$

$=> 1/10 + t/12 = 1$

$=> t/12 = 1 – 1/10$

$=> t/12 = (10 – 1)/10$

$=> t/12 = 9/10$

$=> t = 9/10 \times 12$

$=> t = 54/5$ minutes

Hence, All I, II and III are required.

15) Answer: c)

From I:

Let the present ages of Raju and Dinesh be 4x years and 3x years respectively.

$(4x + 8)/(3x + 8) = 6/5$

$=> 20x + 40 = 18x + 48$

$=> 20x – 18x = 48 – 40$

$=> 2x = 8$

$=> x = 4$

From II:

Rajni + Vikash = Raju + Dinesh

From III:

Rajni = Dinesh + 6

From I and III:

Let the present ages of Raju and Dinesh be 4x years and 3x years respectively.

$(4x + 8)/(3x + 8) = 6/5$

$=> 20x + 40 = 18x + 48$

$=> 20x – 18x = 48 – 40$

$=> 2x = 8$

$=> x = 4$

Present age of Dinesh = 3x + 4 = 3 x 4 + 4 = 16 years

Present age of Rajni = 16 + 6 = 22 years

Age of Rajni after 7 years = 22 + 7 = 29 years

Hence, Only I and III are required.

16) Answer: b)

Let the speed of the boat in still water = x km/h

And speed of the stream = y km/h

From I:

x + y = 96/8

=> x + y = 12

From II:

x = 180/18 = 10

From III:

x – y = 72/9

=> x – y = 8

From I and II:

x + y = 96/8

=> x + y = 12 ---- (i)

x = 180/18 = 10 --- (ii)

From (i) and (ii)

10 + y = 12

=> y = 2 km/h

Required sum = (10 + 2) x 6 + (10 – 2) x 4

= 72 + 32

= 104 Km
From I and III:
x + y = 96/8
=> x + y = 12
And
x – y = 72/9
=> x – y = 8
2x = 20 = > x = 10 km/hr
Y = 2 km/hr
Required sum = 12 x 6 + 8 x 4
= 72 + 32
= 104 Km
From II and III:
x = 180/18 = 10 ---- (i)
x – y = 72/9
=> x – y = 8 ----- (ii)
From (i) and (ii)
10 – y = 8
=> y = 2 km/h
Required sum = (10 + 2) x 6 + (10 – 2) x 4
= 72 + 32
= 104 Km
Hence, any two of the three are required.
17) Answer: e)
From I:
Let the quantity of milk and water in the initial mixture
be 8x litres and 7x litres respectively.
According to the question
(8x + 6)/(7x + 4) = 7/6
=> 6 x (8x + 6) = 7 x (7x + 4)
=> 48x + 36 = 49x + 28
=> 49x – 48x = 36 – 28
=> x = 8
Quantity of milk in the initial mixture = 8x = 8 x 8 = 64
litres
Quantity of water in the initial mixture = 7x = 7 x 8 =
56 litres
From II:
The milkman sold 20% of the mixture and added 4 litres
of milk to the remaining mixture.
From III:
The milkman again added 2 litres of water to the
mixture.
From I, II and III:

Let the quantity of milk and water in the initial mixture
be 8x litres and 7x litres respectively.
According to the question
(8x + 6)/(7x + 4) = 7/6
=> 6 x (8x + 6) = 7 x (7x + 4)
=> 48x + 36 = 49x + 28
=> 49x – 48x = 36 – 28
=> x = 8
Quantity of milk in the initial mixture = 8x = 8 x 8 = 64
litres
Quantity of water in the initial mixture = 7x = 7 x 8 =
56 litres
Quantity of milk in the new mixture = 64 + 6 = 70 litres
Quantity of water in the new mixture = 56 + 4 = 60
litres
Total quantity of mixture = 70 + 60 = 130 litres
Milk : water = 70 : 60 = 7:6
After selling 20% of the mixture, remaining mixture =
(100 – 20)/100 x 130
= 80/100 x 130
= 104 litres
Quantity of milk in the final mixture = 7/(7 + 6) x 104 +
4
= 7/13 x 104 + 4
= 56 + 4 = 60 litres
Quantity of water in the final mixture = 6/(7 + 6) x 104
+ 2
= 6/13 x 104 + 2
= 48 + 2
= 50 litres
Required difference = 60 – 50 = 10 litres
Hence, All I, II and III are required.
18) Answer: e)
From I:
Rani + Meena + Diya + Sara = 4 x 18 = 72 years
From II:
Meera + Sara = 2 x 16 + 2 x 3
=>Meera + Sara = 32 + 6 = 38 years
Tina = 4 + Diya
From III:
Tina + Diya = 2 x 17 = 34 years
From I, II and III:
Rani + Meena + Diya + Sara = 4 x 18 = 72 years ----- (i)
Meera + Sara = 2 x 16 + 2 x 3

=> Meera + Sara = 32 + 6 = 38 years ----- (ii)

Tina = 4 + Diya ------ (iii)

Tina + Diya = 2 x 17 = 34 years ------ (iv)

From (iii) and (iv)

4 + Diya + Diya = 34

=> 2 x Diya = 34 – 4

=> 2 x Diya = 30

=> Diya = 15 years ----- (v)

From (i), (ii) and (v)

Rani + 38 + 15 = 72

=> Rani = 72 – 53

=> Rani = 19 years

Hence, All I, II and III are required.

19) Answer: e)

From I:

1/Kunal + 1/Sonam = 1/12

From II:

1/Mini + 1/Reena = 1/10

From III:

Efficiency (Reena) = 2 x Efficiency (Sonam)

From I, II and III:

1/Kunal + 1/Sonam = 1/12

1/Mini + 1/Reena = 1/10

Efficiency (Reena) = 2 x Efficiency (Sonam)

1/Reena = 2/Sonam

Hence, answer cannot be determined even after combining all the three statements.

20) Answer: d)

From I:

We know that

Amount on CI = $P \times (1 + r/100)^t$

=> $58427.2 = P \times (1 + 6/100)^2$

=> 58427.2 = P x 106/100 x 106/100

=> P = 58427.2 x 100/106 x 100/106

=> P = Rs.52000

Required amount = $52000 \times (1 + 8/100)^3$

= 52000 x 108/100 x 108/100 x 108/100

= Rs.65505.024

From II:

We know that

Amount on SI = P + (P x r x t)/100

=> 68640 = P + (P x 8 x 4)/100

=> 68640 = P + 32P/100

=> 68640 = (100P + 32P)/100

=> 68640 = 132P/100

=> P = 68640 x 100/132

=> P = Rs.52000

Required amount = $52000 \times (1 + 8/100)^3$

= 52000 x 108/100 x 108/100 x 108/100

= Rs.65505.024

From III:

We know that, for two years

CI – SI = $P \times (r/100)^2$

=> $520 = p \times (10/100)^2$

=> $520 = P \times (1/10)^2$

=> 520 = P x 1/100

=> P = Rs.52000

Required amount = $52000 \times (1 + 8/100)^3$

= 52000 x 108/100 x 108/100 x 108/100

= Rs.65505.024

Hence, any one of the three statements are sufficient to answer.

21) Answer: e)

From I:

Train A started from station P towards station Q with the speed 36 Km/h.

From II:

At the same time, train B started from station Q towards station P with the speed of 48 Km/h.

From III:

Speed of train B is 100/3% more than the speed of train A.

Since, distance between the two stations is not known, answer cannot be determined even after combining all the statements.

22) Answer: d)

From statement I and II:

Time taken by A alone = 10 hours

Time taken by B alone = 20 hours (100% more efficient)

Total units of work= 20 units

A's one hour work= 2 units

B' one hour work= 1 units

Work done by pipe A alone in 7 hours= 14 units

Remaining units has to be done with B= 6/1= 6 hours

After 6 hours pipe B should be closed.

From Statement I and III:

Time taken by pipe B alone

= 2/5 in 8 hours

= 1 in 8*5/2= 20 hours

So, we can find the answer by using statement I and III.

From II and III:

We can also find out the answer by II and III because efficiency comparison between pipe A and B is given in statement II.

23) Answer: a)

From statement I:

Principal= 100*300/5*2=Rs 3000

Interest earned in four years

= 3000*5*5/100

= Rs 750

Statement II:

$200 = P(R/100)^2$

$200 = P (5/100)^2$

$200 * 100*100 /25 = P$

P =80000

Statement III:

No information is given about the sum invested in other scheme.

24) Answer: a)

From statement I and II:

Price of house B in 2008= 650000*100/130= Rs 500000

Price of house A in 2008= 500000*7/8= Rs 437500

25) Answer: e)

From statement I, II and III:

Number of failed students= 600*20/100= 120

Number of students who secured first class= 120*5/4= 150 students

So, number of students who did not secure first class grade= 600-120-150= 330 students

Quantity based Questions:

1) Answer: c)

Perimeter of square= 2* perimeter of rectangle

4a=2*(2(l+b))

4a=4*(11+10)

a=21

Circumference of semicircle= πr+d

Quantity I:

d=21; r=21/2

C= [(22/7)*(21/2)]+21

C=33+21=54

Quantity II:

 r=14; d=28

C=[(22/7)*14]+28

C=44+28=72

Hence Quantity I < Quantity II

2) Answer: a)

Quantity I:

Let x be the average marks obtained in Zoology department students.

Then according to the question,

624*3=12*56+9*64+6x

1872=672+576+6x

1872= 1248+6x

x= 104

Quantity II:

Required average = [(4*63)-70+80]/4

= 65.5 marks

Hence Quantity I > Quantity II

3) Answer: c)

Quantity I:

The ratio of investment of A, B and C is as follows:

A	:	B	:	C
18000*3+14000*9	:	18000*5+15000*7	:	18000*5+ 20000*7
36	:	39	:	46

Thus according to the question,

121x=85910

x=710

Then required difference= 46x-36x

= 10x

= Rs 7100

Quantity II:

We observe that,

A= 2B

B=3C

Then ratio of A, B and C is as follows:

A: B: C

6   : 3 : 1

Then according to the question,

10x= 92000

x= Rs 9200

Hence 7x= Rs 64400

Hence Quantity I < Quantity II

4) Answer: c)

 Quantity I:

$= (5c_2*4c_2)/12c_4$

$= ((5*4/1*2)*(4*3/1*2))/(12*11*10*9/1*2*3*4)$

$=4/33$

 Quantity II:

$= (5c_2*4c_1*3c_1)/12c_4$

$=8/33$

 Hence Quantity I < Quantity II

5) Answer: a)

Quantity I:

Number of possible ways=8!*7!

$= 40320*5040$

Quantity II:

Number of possible ways= 7!*7!*2

$= 5040*5040*2$

Hence Quantity I > Quantity II

6) Answer: a)

Quantity I:

Selling price of the article = 400*(90/100) = Rs. 360

Cost price of the article

$=> CP*(120/100) = 360$

$=> CP = 360*(100/120)$

$=> CP = Rs. 300$

Quantity II:

Selling price of the book = 350*(92/100) = Rs. 322

Cost price of the book = 322*(100/115) = Rs. 280

Quantity I > Quantity II

7) Answer: e)

Quantity I:

According to the question,

$(4800*5)/(6400*x) = (3/8)$

$24000/6400x = 3/8$

$24000*8 = 6400x*3$

$X = (24000*8)/(6400*3)$

$X = 10$ months

Quantity II:

According to the question,

$(5*8)/(8x) = (1/2)$

$X = 10$ months

Quantity I = Quantity II

8) Answer: c)

Quantity I:

$x/(10-6) – x/(10+6) = 6$

$x/4 – x/16 = 6$

$3x/16 = 6$

$X= 32$ km

Quantity II:

Speed of still water (x) = 20 km/hr,

Speed of stream (y) = 8 km/hr

$D = t*[(x^2 – y^2)/2x]$

$=> 4*[(20^2 – 8^2)/(2*20)]$

$=> 4*(400 – 64)/40$

$=> 4*(336/40)$

$=> 33.6$ km

Quantity I < Quantity II

9) Answer: c)

Quantity I:

$SI = (P*n*r)/100$

$7500 = (P*5*8)/100$

$P = (7500*100)/40 = Rs. 18750$

Quantity II:

$C.I = P*[(1 + (r/100))^2 – 1]$

$8800 = P*[(1 + 15/100)^2 – 1]$

$8800 = P*[(115/100)^2 – 1]$

$8800 = P*[(23/20)^2 – 1]$

$8800 = P*[(576/400) – 1]$

$8800 = P*[176/400]$

$P = (8800*400)/176 = Rs. 20000$

Quantity I < Quantity II

10) Answer: a)

Quantity I:

Total probability $n(S) = 16C_3$

Required probability $n(E) = 1 – P(none is Pink)$

Probability of getting none is Pink balls,

$P(E) = n(E)/n(S) = 11C_3/16C_3$

=> 33/112

Required probability = 1 – (33/112) = 79/112

Quantity II:

Total probability n(S) = $16C_2$

Required probability n(E) = $7C_2$ or $4C_2$

P(E) = n(E)/n(S) = $7C_2$ or $4C_2$ / $16C_2$

=> (21 + 6)/120 = 27/120

=> 9/40

Quantity I > Quantity II

11) Answer: a)

Quantity I:

Let x, y and z be the lengths of the sides of the triangular field.

Then p=(x+y+z)/2

= (15+20+25)/2

= 30m

Then area= $\sqrt{[30*(30-15)*(30-20)*(30-25)]}$

= 150 m^2

  Required total cost= 150*7.5=Rs 1125

Quantity II:

Circumference of the track= 2*(22/7)*91

= 572 m

Thus Number of rounds completed by him=5720m/572m

= 10

Hence required cost=10*110= Rs 1100

Hence Quantity I > Quantity II

12) Answer: c)

Quantity I:

Let the pipe R alone can fill the tank in x hours.

Then according to the question,

(10/30)+(5/20)+(5/x)=1

After solving this we have x= 12 hours

Quantity II:

Three pipes A, B and C can fill a tank in 8 hours.

A, B and C's 1 hour work=1/10

A, B and C's 3 hour work= 3/10

Remaining work= 1 - (3/10) = 7/10

The remaining part will be filled by A and B in 6 hours.

Then,

=> (7/10) *(A+B) = 14

=> (A+B)'s whole work= 14*(10/7) = 20 hr

(A+B)'s 1 hour work= 1/20

A, B and C's 1 hour work = 1/10

C's 1 hour work= (A+B+C) - (A+B)

=> (1/10) – (1/20)

=> 1/20

C can fill the tank in 20 hours.

Hence Quantity I < Quantity II

13) Answer: c)

From quantity I,

Amount to paid at the end of 2 years=1000*10*2/100+1000=1200

Amount left as principal for the second year=1200-420=780

Amount paid after 2nd year=780+780 *(1+10/100)=780+78=Rs.858

From quantity II,

Total votes polled=x

65x/100-35x/100=270

30x=27000

x=900

Hence Quantity I < Quantity II

14) Answer: c)

Quantity I:

Let the length and breadth of the rectangle is 9x and 8x respectively.

According to the question,

4*Area of the rectangle =Area of the square.

Then Area of the rectangle= 7200/4= 1800 cm^2.

(i.e)9x*8x= 1800

x=5

Thus Length= 45cm

And breadth= 40cm

Required sum=45+40=85cm

Quantity II:

Let r be the radius of the circular field.

Then 12000= πr^2 – (300*488)

12000= πr^2-146400

πr^2= 158400

r^2=158400*7/22

r^2= 50400

r= 225 cm

Hence Quantity I < Quantity II

15) Answer: a)

Quantity I:

According to the question,

S*t= (S+5)*(t-3)

5t-3s-15=0 ……. (1)

Similarly,

S*t= (S-2)*(t+1.5)

-2t+1.5s-3=0 ……. (2)

After solving (1) and (2), we have S= 30kmph

Quantity II:

According to the question,

S*t= (S+2)*(t-2)

S-t+1=0 ……. (1)

Similarly,

S*t= (S-3)*(t+5)

5S-3t-15=0=0 ……. (2)

After solving (1) and (2), we have S= 9 kmph

Hence Quantity I > Quantity II

16)

Answer: c)

Quantity I: A, B and C begin to around a circular stadium and they complete their revolutions in 15seconds, 30 seconds and 20 seconds respectively. How many minutes will they come together at the starting point?

LCM of (15, 30, 20) =60seconds

Time=1 minutes

Quantity II: Average speed of car A is 30kmph and reaches the destination in 6 hours and car B cover the same distance in 4 hours. If car A increases the average speed by 10kmph and car B increases the average speed by 5kmph, what would be the difference in its time taken to reach the destination?

Distance=180km

Car B speed=180/4=45kmph

Time taken by car A=180/40=4.5hours

Time taken by car B=180/50=3.6 hours

Difference=4.5-3.6=0.9 hours

=0.9*60=54 minutes

Quantity III: Two pipes A and B can fill a tank in 8 minutes and 6 minutes respectively. If they are opened in alternate minutes and pipe A is opened first, in how many minutes will the tank be full?

A+B fill the tank in 2 minutes=1/8+1/6=7/24

A+B fill the tank in 6 minutes=21/24=7/8

Remaining =1/8

A will fill the tank in 1/8*8=1minutes

Total time=6+1=7 minutes.

Quantity I < Quantity II > Quantity III

17) Answer: c)

Quantity I: 4 men can complete a piece of work in 40 days and 16 women can complete the same work in 16 days. In how many days will 5 men and 16 women together complete the same work?

4 men complete the work=1/40

5 men complete the same work=1/32

16 women=1/16

5 men and 16 women complete the work=1/32+1/16=3/32

=32/3 days=10(2/3) days

Quantity II: Four men and four boys can earn Rs.6000 in 10 days. 10 men and 8 boys can earn Rs.11200 in 8 days. In how many days will 6 men and 8 boys earn Rs.12000?

 (4m+4b)*10=6000

4m+4b=600

m+b=150

(10m+8b)*8=11200

10m+8b=1400

5m+4b=700

m=Rs.100

b=Rs.50

6m+8b=6*100+8*50=1000

Number of days= 12000/1000=12 days

Quantity III: A and B can do a piece of work in 80 days and 60 days respectively. They started working together but after some days B left the work. A alone completed the remaining work in 10 days. Find after how many days B left the work?

A+B=(x+10)/80+x/60=1

3x+30+4x=240

7x=210

X=30 days

Quantity I < Quantity II < Quantity III

18) Answer: a)

Quantity I: If four balls are picked at random, what is the probability that at least one is blue?

Required probability =1-(11C$_4$/15C$_4$)

=1-(11*10*9*8/15*14*13*12)

=1-(22/91)=69/91=0.75

Quantity II: If two balls are picked at random, what is the probability that both are red?

Required probability=$6C_2/15C_2$=1/7=0.143

Quantity III: If three balls are picked at random, what is the probability that two are blue and one is yellow?

Required probability=$4C_2*3C_1/15C_3$

=18/455=0.03

Quantity I > Quantity II > Quantity III

19) Answer: b)

Quantity I: A, B and C invested Rs.4500, Rs.7000 and Rs.9000 respectively to start a business. At the end of one year they earned a profit of Rs. 16400. What will be B's share in the profit?

Profit ratio=4500*12:7000*12:9000*12

=9:14:18

B's Share=14/41*16400=Rs.5600

Quantity II: Sam spent 20% of his monthly income on food and 15% on children's education. 40% of the remaining he spent on entertainment and transport together and 30% on medical. He is left with an amount of Rs.975 after all these expenditures. What is Sam's monthly income?

X*30/100*65/100=975

X=9750000/30*65=Rs.5000

Quantity III: 50% of10000=?

50/100*10000=?

5000=?

Quantity I > Quantity II = Quantity III

20) Answer: a)

Quantity I: If the compound interest accrued on an amount of Rs.15000 in two years is Rs.3150, what is the rate of interest per annum?

$3150=15000(1+r/100)^2$-15000

$3150=15000((1+r/100)^2$-1)

$18150=15000 *(1+r/100)^2$

$121/100 = (1 + r/100)^2$

$11/10 = (1 + r/100)$

110 = 100 + r

=> r = 110 – 100 = 10%

Quantity II: The area of a rectangle is equal to the area of a circle whose radius is 7cm. If breadth of the rectangle is 11cm, what is its length?

22/7*7*7=l*11

L=14 cm

Quantity III: 65% of 120+?% of 150=105

65/100*120+?/100*150=105

?/2*3=27

?=18

Quantity I < Quantity II < Quantity III

21) Answer: b)

From quantity I,

(P*20*18/100) – (P*12*18/100) = 540

P*18*8 = 54000

P = 54000 / (18*8) = Rs. 375

From quantity II,

Difference of SI and CI = 165 – 150 = 15

Diff = Sum*$(r/100)^2$

15 = Sum*$(5/100)^2$

(15*100*100)/25 = Sum

Sum = 6000

From Quantity III,

Profit ratio of A and B = (4000*6 + 3200*6) : (2000*12) = 9 : 5

B's share = (5/14) * 2800 = Rs. 1000

Quantity I < Quantity II > Quantity III

22) Answer: b)

From quantity I,

Ratio = 7x : 5x : 3x

10*7x + 50*5x + 3x*100 = 6200

620x = 6200

X=10

Rs.50 notes = 10*5*50 = Rs. 2500

From quantity II,

Profit = Loss

SP1 – CP = CP – SP2

2540 + 2326 = 2CP

CP = (2540 + 2326)/2 = Rs. 2433

From quantity III,

4*(22/7)*r*r = 61600

r =70 cm

Radius of the circle = (½)*70 = 35 cm

Area of the circle = (22/7)*35*35 = 3850 cm^2

Quantity I > Quantity II < Quantity III

23) Answer: c)

From quantity I

4x*(120/100 + 5x*110/100 =103000

4.8x + 5.5x = 103000

10.3x=103000

X = 10000
Male population = 4*10000*120/100 = 48000
From quantity II,
Selling price of Sofa = 8100*(115/100) = Rs. 9315
Marked price*(90/100) = 9315
Marked price of Sofa = 9315*(100/90) = Rs. 10350
From quantity III,
(P*5*(R+5)/100) – (P*5*R/100) =12000
5PR + 25P – 5PR = 120000
25P = 1200000
P = 48000
SI = 48000*10*10/100 = 48000
Quantity I > Quantity II < Quantity III
24) Answer: c)
From quantity I,
Present age of Ram=7x
Present age of Suresh=8x
Present age of Suresh's sister=y
Difference = (8x+15) – (7x+15) = 4
X=4 years
Suresh age=8*4=32
After 10 years the age will be=32+10 = 42 years
Suresh's sister age after 10 years = (2/3)*42 = 28 years
Suresh's sister age after 7 years = 28 – 3 = 25 years
From quantity II,
X^2 – 51y + 650 = 0
(x – 26) (x – 25) = 0
X = 26, 25
From quantity III,

T = D/S
According to the question,
15 = (175 + 100) / [(90 – x)*(5/18)]
15* [(90 – x)*(5/18)] = 275
[(90 – x)*(5/18)] = 275/15
(90 – x) = (275/15)*(18/5)
90 – x = 66
X = 24 km/hr
The speed of the second train = 24 km/hr
Quantity I ≤ Quantity II > Quantity III
25) Answer: e)
From quantity I,
d/(20 – 12) – d/(20 + 12) = 9
d/8 – d/32 = 9
3d/32 = 9
d = 32*3 = 96 km
From quantity II,
200 = (x – 60)*5/18*20
36= (x – 60)
X= 96 kmph
From quantity III,
Let the distance travelled on foot be x km.
Then distance travelled on bicycle= (91 – x) km
Now, (x/6) + ((91 – x)/12) = 9
(2x + 91 – x)/12 = 9
(X + 91)/12 = 9
X + 91 = 108
X = 17 km
Quantity I = Quantity II > Quantity III