**2. DATA SUFFICIENCY**

**Solution Exercise – Easy**

1. (d)

Even after combining both the statements we cannot determined which box is heavy. We do not know the exact measurements & weights of balls as well as cubical boxes.

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

2. (b)

Using statement (I) alone,

4*P* + 48 = 102

4*P* = 52

*P* = 13

Using statement (II) alone,

The square of *P* lies between 150 & 250, so the value of *P* can be 13 only.

Since either of two statements are sufficient to answer the question. So, the correct answer is option (b)

3. (d)

Using statement (I), we cannot find out the month as it could be February, April, June, September or November.

Using statement (II) also nothing is known.

So, question cannot be answered even by using both the statements.

4. (d)

Statement (I) only tells about number of boys and girls. We cannot calculate number of hours required.

Statement (II) tells us only about the time taken by girls to complete the task we do not have information about time taken by boys to put up a tent.

Hence, it cannot be answered even by combining both the statements.

5. (a)

Using statement (I) alone,

The answer cannot be determined as we do not know whetehr *D* may be older than *E* or not.

However, using statement (II) alone, we can deduce that as *D* is younger than *E*, then *B* must be older than *C*.

Hence, *A* is older than *C* *i.e*. *C* is younger than *A*.

Hence, answer can be determined by statement (II) alone.

6. (c)

Using statement (I) alone,

Question cannot be answered because we do not know the position of *A*, *D* and *E*.

Using statement (II) alone, we cannot say about person in the middle.

However combining the two statements, we have:



So, by combining, we can say that *D* is standing at the middle position.

7. (d)

Let *y* be the common difference between their ages.

*P*’s age = *x*

*Q*’s age = *x + y*

*R*’s age = *x* + 2*y*

As per statement (I):

*x + x + y + x* + 2*y* = 72

3*x* + 3*y* = 72

∴ *x + y* = 

*x + y = Q*’s age = 24 years

Hence, *R*’s age cannot be determined.

Statement (II) is just a repeat of the information in the problem. Since *Q* is as older than *P* as he is younger than *R*.

Hence, even from both the statement question cannot be answered.

8. (d)

Using (I) alone nothing can be said about angles. Using (II) alone, we can only find sum of angles and not the individual angles.

Even by combining we cannot find the angles.

9. (c)

New length = 1.1 × length

New breadth = 1.3 × breadth

Percentage change in perimeter

= 

= 

= 

From statement (I): 2(l + b) = 60

But we cannot calculate the percentage.

∴ Statement (I) alone is not sufficient.

As per statement (II):

0.2*l* + 0.6*b* = 7.8

Using both the statements:

2(*l* + *b*) = 60 (From statement (I))

0.2*l* + 0.6 = (7.85) (From statement (II))

Percentage change in perimeter =  = 13%

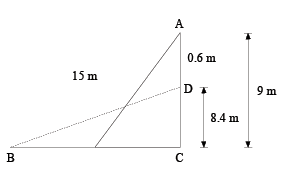
10. (d)

Using statement (I) alone, we only know the area of the right triangle.

Statement (II) we cannot calculate height unless base is known to us.

So, even by combining both the statements question cannot be answered.

11. (c)



Combining the two statements together, we can calculate the distance *BC* from 8 a.m. to 8:30 a.m., the ladderr slipped by 60 cm as it is slipping at the rate of 2 cm per minute.

So, *BC* can be calculated as follow:

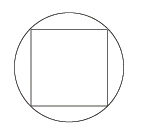
*BD*2 = *BC*2 + *CD*2

(15)2 = (*BC*)2 + (8.4)2

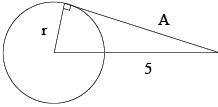
*BC* = 12.4 m

Thus questions can be answered by using both statements.

12. (b)



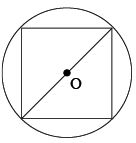
Statement (I) itself is sufficient to answer the question. As, if we know the radius of the circle we can find out the length of the diagonal of the square (which will be the diameter) and if we know the diagonal of a square we can find the length of its sides and hence the area of the square.



From the statement (II) the radius of the circle can be easily calculated. Since the tangent makes a right angle with the radius at the circumference, the triangle is a right-angled triangle. Let *A* be the length of the tangent. Hence, *A*2 = 52 + *r*2. Hence, if we know the value of *A*, we can find out *r*. Hence, both statements in itself can answer the question.

13. (b)

If we get the dimension of either the square or the circle we can get the required value.



In statement (I) we are given the diameter of circle by which we can calculate the side of the square and hence the difference between their areas.

In statement (II) we are given with the side of the squares by which we can easily calcualate the radius of the circle and hence the difference between their areas.

Therefore, question can be answered by either of the statements.

14. (c)

Let the radius of *C*1 & *C*2

The information given in the question implies that *r*1 > *r*2. By statement (I), 2π (*r*1 – *r*2) = *k* or (*r*1 – *r*2) =. Hence, this statement alone does not give the value of *r*1.

By statement (II), π (*r*12 – *r*22) = *m* or (*r*12 – *r*22) =.

Hence, again this statement alone is not sufficient to answer the question.

By combining both the statements, we simplify (*r*12 – *r*22) as (*r*1 + *r*2)(*r*1 – *r*2) and then substitute the value of (*r*1 – *r*2) from the first equation, we will get the value of (*r*1 + *r*2). Now we have two equations in *r*1 and *r*2, which can be solved simultaneously to get the value of *r*1. Hence, both the statements together can answer the question.

15. (a)

Using statement (I): (*S* has 4 uncles, *F* has two brothers. Hence, the other 2 uncles of *S* must be the brothers of *M*). Statement (II) does not give any additional information.

So, question can be answered using statement (I) alone.

**16. (a)**

**Statement (I) alone is insufficient as nothing is mentioned about son’s age.**

**According to (II),**

**Let age of son be** *S* years.

⇒ S = 16 years

Thus, statement (II) alone is sufficient.

17. (a)

Let five years back, age of son be *x*, then father’s age be 3*x*.

As per statement (I) alone,

⇒ *x* − 3 = 14

⇒ *x* = 17

So, we can easily calculate father’s age.

Using statement (II) alone, we cannot answer as we don’t know age of father is how many years more than 45 years.

Thus, question can be answered by statement (I) alone.

18. (a)

Using statement (I) alone,

We can say that

(*n* − 2) (*n* − 3) = 0

⇒ *n* = 2 or 3

So, the value of *n* cannot be determined as it has no unique value.

Using statement (II) alone,

We can say that value of *n* must be 1.

⇒ 1! + (1 − 1)!

⇒ 1! + 0!

as 0! = 1

⇒ 2

So, the question can be answered by using statement (II) alone.

19. (a)

Statement (I) does not give any unique value of *x*.

Using statement (II), we have

= 

or, 7*x* + 21 = 126

⇒ *x* = 15

Statement (II) alone is sufficeint to answer the question.

20. (d)

As per statement (I),

*P + Q = x*, an odd number ..... (1)

From statement (II),

*Q + R = x*, odd number ..... (2)

Using (1) + (2) we have

*P + R* + 2*Q* = an even number

We do not know exactly whether *Q* is even or odd.

Thus, question cannot be answered.

21. (b)

Using statement (I) alone,

Since 90900 is divisible by 9, so *x* is also divisible by 9.

∴  is an integer.

Similarly using statement (II) alone,

693 is divisible by 9, so *x* is also divisible by 9.

∴ is an integer.

22. (d)

As per statement (I), *m* can be 3, 6, 9, 12, ....

As per statement (II), *n* can be 3, 7, 11, 15, ....

There is no unique value *m* & *n* could take.

Hence, question cannot be answered.

23. (a)

As per statement (I) *ab*2 is positive, this means that a will be positive. *b*2 is always positive, but *b* can be positive or negative.

Hence (I) alone is not sufficient as we do not know about *b*.

As per statement (II) *ab* is negative, it means either *a* or *b* is negative.

Thus, we can answer the question by second statment alone.

24. (c)

*n* must be divisible by LCM of 3, 5, 7 and 9 *i.e*. 315 and it can be even or odd. Hence, the first statement itself is not sufficient to answer the question.

By combining both the statements we can say that the number is 315 itself (as it is the only multiple that lies between 0 and 400). Hence, *n* is indeed odd. We require both the statements together to answer this.

25. (d)

Using statement (I) alone,

Question cannot be answered because we do not have any unique value for *C*.

*C* can take any value like 0, 4, 8 etc.

Using statement (II) alone,

*C* can have various values like 2, 4, 6, 8 etc.

Combining two statements also, still there is no unique value of *C*.

So, question cannot be answered even by using both the statements.

26. (d)

Using statement (I) alone, there is no unique value for *p*.

Hence, we do not have a unique value for *p* as well as *q*.

Using statement (II) alone also, we do not know anything about *p*.

Even by combining the two statements we cannot say anything as *q* can be 2 or 22.

27. (c)

Using statment (I) alone,

CP of cheaper pens = 20 × 20 = 400

CP of expensive pens = 20 × 30 = 600

Total = 1000

Nothing can be said about profit.

Using statement (II) alone,

Profit an cheaper pens is 7.5%

⇒ Profit = 

∴ Profit % = 

Hence, question can be answered using both the statements.

28. (d)

Statement (I) gives the data on the maximum amount that two of them can spend on dinner, without tax and tip.

Statement (II) gives the amount available for Rohit’s dinner.

We cannot determine the solution as expenditure made by Mohit is not mentioned in the question.

Hence, question cannot be answered.

29. (d)

Statement (I) gives a general figure of Ram and Gopal.

Statement (II) does not give any idea of how much apples Ram and Gopal purchased.

Both statements together also cannot give any answer.

30. (d)

By statement (I), we cannot find the number of students in the class as there is no indication about the number of students or to the total weight of the students.

Statement (II) is also not giving any indication about the number of students or the total weight.

Even by combining the two statements we cannot find the number of students in the class.

31. (d)

Statement (I) tells us about the CP of first quality of sugar. Statement (II) tells us about the CP of second quality of sugar.

There is no information about profit or loss and we cannot assume SP to be equal to CP.

Hence, answer cannot be determined even by combining both the statements.

32. (c)

By combining the two statements, speed of train *B* can be calculated by the concept of relative speed.





⇒

Solving this, we get *x* = 324 m/s

thus, question can be answered using both the statements.

33. (c)

Combining statement (I) and (II) one can conclude that train ‘*Q*’ travels longer distance than ‘*P*’ and that too in lesser time than ‘*P*’. thus, train ‘*Q*’ is faster. Hence option (c) is correct.

34. (c)

*x*(*F* or *R*) = *n*(*F*) + *n*(*R*) − *n*(*F* & *R*)

Using statement (I),

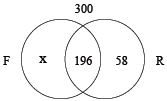
300 = *n*(*F*) + *n*(*R*) − 196

*n*(*F*) + *n*(*R*) = 496

So, the required values cannot be calculated.

Using statement (II), the required value cannot be calculated.

By combining statement (I) and (II),



300 = (*x* + 196) + (196 + 58) − 196

Thus, *x* can be calculated.

35. (c)

Using statement (I) alone, we only know the students who ahve studied C Sharp.

Using statement (II) alone, we only know the students who have studied .NET.

Combining both the statements we can get fraction of students studying both :

= 

Thus, both statements are required to answer the question.

36. (c)

Using statement (I), if the total population is 100, then 28 households have a monthly income of over Rs. 25000.

Using statement (II), 40% of 28 *i.e.*, 11.2 households have income above Rs. 25000 and own a car.

Hence, statement (I) and (II) both, are required to answer the question.

37. (a)

Using statement (I) alone,

Price of bananas cannot be determined as we do not know about price of apples.

Using statement (II), we can find out price of bananas.

Let the initial price of a banana = Rs. *x*

∴ Reduced price = 0.5*x*

⇒ 0.5*x* × 48 = 24

24*x* = 24

*x* = 1

∴ Price of a banana is Rs. 1

Only statement (II) is required to answer the question.

38. (a)

**From Statement I:**

Let the wholesale price is *x*.

Thus, listed price = 1.2*x*

After a discount of 10%, new price = 0.9 × 1.2*x* = 1.08*x*

1.08*x* – *x* = 10$. Thus, we can find the value of *x*.

**From Statement II:**

We do not know at what percentage profit, or at what amount of profit was the dress actually sold. So, the wholesale cost of the dress cannot be calculated.

Thus, questions can be answered using statement (I) alone.

39. (c)

Statement (I) tell about the time taken by Tushar to eat 24 muffines.

Statement (II) tell about the time taken by Nakul to finish eating 24 muffins.

So, if we combine both the statements, we will get the required answer.

40. (c)

Using statement (I), we can only say either team first or team second could win the competition.

Using statement (II), we can only say either second or third team could win the competition.

By combining the two statements, we can surely say second team could win the competition.

41. (a)

From statement (I) we do not get the answer because the number of votes received by other contestants are not given. From statement (II), we can directly get the answer as we can calculate the percentage of total votes casted in favour of Rakhi.

42. (c)

Using statement (I) alone, we only know that Ajay received 15 votes.

Using statement (II) alone, we know that Charu received 13 notes.

However, combining the two statements, we can calculate the number of votes received by Mona.

So, Mona got (40 − 15 − 13) 12 votes.

We can say that Ajay recieve the most votes.

Hence, both statements are required to answer the question.

43. (d)

Using statement (I) alone,

(*a*2) + (*a + d*)2 = 116

Using statement (II) alone,

*a* + 4*d* = 7*x*

Even by combining the two, answer cannot be determined because we ahve three unknown variables *a*, *d* and *x*.

44. (b)

Using statement (I), since the distance (45 miles) between Poonam’s school and her house and also the speed (40 miles per hr) at which she was travelling are known, We can find the total time spent in travelling.

Speed = 

Using statement (II), it is obvious that speed of Poonam is 50 mph, hence statement (II) is also sufficient.

Hence, question can be answered by any of the statements.

45. (d)

Statement (I) tells about the production per hour when machine is set on low speed.

Statement (II) tells about the production per hour when machine moved to a higher speed.

However, question cannot be answered as it is not known whether low & high speeds are the only two speeds at which the machine operates.

46. (a)

The units digit of the number (548)64 can be determined as 6.

Statement (I) *x* can be 3, 6, or 9.

But this is not sufficient to answer the question.

Statement (II) *x* is an odd number *i.e.*, 1, 3, 5, 7, 9 the units digit of the number (789)*x* will be 9.

The units digit of the product can be determined to be

6 × 9 = 4, with the help of the second statement alone.

Thus, question can be answered with the help of second statement alone.

47. (d)

Combining the two statements together, we can say that between 3 O’ clock & 4 O’ clock, the clock makes an angle of 80° at  minutes and  minutes. There is no unique answer. Hence, question cannot be answered even by using both the statements together.

48. (c)

Either of the two statements alone cannot give us the values of *m* and *n*.

Now, combing the two statements

*m* × *n* = 30

(*m*, *n*) can be (1, 30), (2, 15), (3, 10) & (5, 6) or vice versa.

But from statement (I) *m* > *n* and *m* is odd & *n* is even.

so, (*m, n*) will be (15, 2).

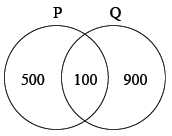
49. (c)

*n*(*P* or *Q*) = *n*(*P*) + *n*(*Q*) − *n*(*P* & *Q*)

To find the number of people who are watching TV program *P* we have to combine the two statements.

1500 = *n*(*P*) + 1000 − 100

*n*(*P*) = 600



So, we can say that the number of people watching TV program *P* is 600.

50. (a)

Using statement (I) alone,

If we put *b* = 2 in equation, we get



Using statement (II) alone,

Put *c* = 1 in equation, we get,



Thus, question can be answered using statement (II) alone.

**Solution Exercise – Medium**

1. (a)

Using statement (I), we can get

7*b* = 7 (3*a* + 67)

7*b* = 21*a* + 469

So, *a* cannot be calculated.

Using statement (II),

*a + b = b − a*

We can say *a* = 0

Thus, only statement (II) is sufficient.

2. (a)

From statement (I):

(*x + y*) = 4 or (*x + y*)  = 4

⇒ (*x + y*)2 = 4*xy*

⇒ (*x* – *y*)2 = 0

⇒ *x* = *y .....* (1)

From statement (II):

(*x* – 50)2 = (*y* – 50)2

On solving

*x*(*x* – 100) = *y*(*y* – 100) ..... (2)

This suggests that the values of x and y can either be 0 or 100.

So, only statement (I) alone is sufficient to answer the question.

**3. (a)**

**From statement (I), if**  **is even, a has to be even.**

**Thus,** *abc* is even.

From statement (II), we cannot say anything about a whether it is even or odd.

Thus, only statement (I) is sufficient.

4. (a)

Using statement (I):

*abc* = 

∴ *abc* = ± 45

Hence, statement (I) alone is insufficient as there is no unique value.

Using statement (II):

(*a + b + c*) = 0

Substituting this value in the equation:

*a*3 + *b*3 + *c*3 –3*abc*

= (*a + b + c*) (*a*2 + *b*2 + *c*2 – *ab – bc – ca*)

∴ *a*3 + *b*3 + *c*3 = 3*abc*

∴ 3*abc* = 135

∴ *abc* = 45

⇒ Statement (II) alone is sufficient. It gives a unique value.

5. (b)

As per statement (I), numbers out of *a, b, c* and *d* can be 31, 32 and 33. Assume that they are *a, b* and *c*.

∴ *a × b × c × d* = 31 *×* 32 *×* 33 *×* *d*

= 31 *×* 4 *×* 11 *×* 24 *d*

Thus, the product of the numbers is divisble by 24, irrespective of the value of *d*.

Hence, statement (I) is alone suffcient.

As per statement (II), if *a, b, c* and *d* are consecutive numbers, then one number out of these four must be divisble by 4 and one by 3. The product must be divisible by 12. Now out of the four numbers, apart from the number divisible by 4 and 3, one must be an even number, hence divisible by 2.

Thus, the product of the four number must be divisible by 24. Hence, statement (II )alone is sufficient.

6. (a)

Using statement (I), we can say that if *K* is a negative whole number than *K*2 is definitely an integer.

From statement (II), we cannot find out whether *K*2 is an integer. It could be a fraction.

Thus, only statement (I) is sufficient to answer the question.

7. (d)

As 127 is a prime number and we are given that *n* is divisibe by 6 in statement (I) .

So, nothing can be said about divisiblity by 127.

Similarly, statement (II) tells that *n* is divisible by 7 but we do not know about divisibility by 127.

Even by combining we cannot say anything about *n*.

Hence, question cannot be answered.

8. (b)

Using statement (I):

*PQR* + *QPR* = 770  
110*P* + 110*Q* + 2*R* = 770

R.H.S. is a multiple of 11.

To make L.H.S. a multiple of 11, *R* should be zero.

Hence, statement (I) alone is sufficient to answer the question.

Using statement (II):

The ten’s digit of a square of any number ending with 5 is always 2.

Hence, statement (II) alone is sufficient to answer the question.

Hence, option (b) is the correct choice as either of the two statements can answer.

9. (c)

We cannot work the questions individually through (I) or (II). But combining the two statements, we get

(2 ⊕ 0) = (0 ⊕ 2) = 0 and 0 ⊕ (– 5 ⊕ – 6) = 0.

**10. (a)**

**Given 2 <** *p < q < r*.

From (I): If *r* < 10 *i.e*., *r* = 8 or 6 but *r* has to be 8 because two even numbers *p* and *q* also there.

Hence, *r* = 8, *q* = 6 and *p* = 4

Hence, statement (I) is sufficient.

From (II): If *p* < 16 *i.e*., 4 then *q* can take any value. Hence, only I is sufficient to answer the question.

11. (b)

For three integes *a*, *b* & *c* to be consecutive

⇒ 2*b = a + c*

The condition must holds true.

As per statement (I), as *b* is the average

∴ 2*b = a + c,* means the numbers are in A.P. and can have any common difference but for the numbers to be consecutive we need a common difference of 1.   
Hence statement (I) alone is not sufficient to answer.

Similary as per statement (II),

(*b − a*) = (*c − b*)

⇒ 2*b = a + c,* means the numbers are in A.P. and can have any common difference but for the numbers to be consecutive we need a common difference of 1.

Hence statement (II) alone is not sufficient to answer.

Even by combining both statements we cannot get the answer as both statements are stating the same thing.

12. (b)

Using statement (I), we can say that if the difference between the digit is 9 and it is a two digit number, then it must be 90. Hence, statement (I) alone is sufficient.

Similarly, statement (II) also tells that the sum of digits is 9. This also gives 90.

Hence, either of the two statements can answer the question.

13. (a)

From statement (I), we know that for all –1 < *x* < 1, we can determine | *x* – 2 | < 1 is not true.

From (II), –1 < *x* < 3, we cannot determine whether | *x* – 2 | < 1 or not. Therefore, statement (I) alone is sufficient.

14. (a)

| *X* | < 3

or − 3 < *X* < 3

Statement (I) implies that *X* must lie between – 3 and 0. Hence, it gives the answer as it lies in the required range. But from the second statement, we have either *X* < 0 or *X* > 3. This does not lie in the required range always.

So, the question can be answered using statment (I) alone.

**15. (c)**

**Statement (I) tells us that the set of point on the line** *l*1 and line *l*2 are disjoint sets. *i.e.*, there is no common point and they have one to one correpondence. This is possible in case of parallel lines in a plane or two lines in two different planes.

Hence (I) alone is not sufficient.

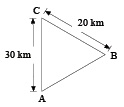
As per statement (II), two lines are coplanar. But, they may be parallel or intersecting. Thus, statement (II) alone is also not sufficient.

Combining both the statements,

It is clear that the two lines are parallel. Thus statement (I) and (II) are together sufficient to answer the question.

16. (d)

Using Statement (I), we can not calculate *AB* as there can be multiple cases, one of which has been shown below.



Statement (II) tells that there is a railway line between town *A* and town *B*. It is of no use.

So, both statements are not sufficient to answer the question.

17. (d)

Using statement (I), we cannot find out the perimeter as we do not know the measurements.

Using statement (II) also, we cannot calculate the perimeter.

Thus, both statements are not sufficient to answer the question.

18. (d)

Both the statements combined also do not tell us if they are intersecting or not. The two lines can be parallel also depending on the values of *a, b, d, e*.

19. (a)

Let the income of Zakib & Supriyo be *Z* & *S* respectively.

Using statement (I) alone,

20% of *Z* > 25% of *S*

Multiply both sides by 1.5

20 × 1.5% *Z* > 25 × 1.5% of *S*

or 30% of *Z* > 37.5% of *S*

Now by this we cannot say that 30% of *Z* > 40% of *S* of vice versa as it will depend on the values of *Z* & *S*.

Using statement (II) alone,

13% of *S* > 10% of *Z*

Multiply both sides by 3.

13 × 3% of *S* > 10 × 3% of *Z*

39% of *S* > 30% of *Z*

Now 39% of *S*, so it will be obviously less than 40% of *S*.

Hence now we can say that 30% of *Z* < 40% of *S*.

So, by using statement (II) alone, we can say that Supriyo spends more than Zakib.

20. (d)

Even using both the statements we cannot determine the height of ∆*PQR* as we do not know how the triangle is placed.

Once we know how it is placed, then only we can calculate its height.

21. (d)

We only know about the the highest and the lowest scores. It tells us nothing about the other scores. So, statement (I) is not enough.

Statement (II) is very tempting but we must think that suppose 2 people take the CMAT, one scores 2400 and the other scores 800. Surely the average is not 2000.

So, statement (II) cannot give us the answer.

The two statements taken together also cannot answer the question.

22. (b)

As per statement (I), the number of families are increasing by 12 and the expenditure decreases by 25%, so the 12 must have been 33.33% of the orignal number of families. Hence the total number of families intially was 36.

Per family expenditure = 

So, statement (I) alone is sufficient.

Using the same logic, for statement (II), if the number of families decrease by 10% each family will pay 70 rupees more. So, if the families are decreasing by 10% the expenditure will increase by 11.11%. So each family must have orignally paid = 

So, statement (II) alone is sufficient.

Thus, both statements are sufficient.

23. (a)

As per statement (I):

Since the number of mangoes sold isn’t given anywhere, data is insufficient in statement (I).

As per statement (II):

If the number of plucked mangoes is *x*, then

 *x* = *x* – 12 or *x* = 12 ⇒ *x* = 16

∴ Number of mangoes eaten = 

Thus, only statement (II) is suffcient to answer.

24. (a)

From (I), if by adding 12 students, the total number of students is divisible by 8, that means earlier 4 students were less than required number.

From (II), nothing can be known.

So, only statement (I) is sufficient.

**25. (b)**

**Using statement (I):**

**Average speed** = **= 40 miles/hour**

**Using statement (II):**

**Average speed =** 

**Hence, question can be answered using both the statements.**

**26. (c)**

**Using statement (I), let the profits in 2001 be** *x*.

then profit in 2002 be 3*x*.

Using statement (II), we can say profit in 2000 = 8*x*.

So, using both the statements together, we can say Zenith Ltd. have higher profits in 2000.

27. (b)

Let wholesale price of commodity (I) is *x* and retail price of commodity (II) is *y* than

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Wholesale Price** | **Retail Price** | **Discounted Price** |
| I | *x* | 1.2x |  |
| II |  | *y* | 0.8*y* |

Using statement (I), we get a relation between ‘*x*’ and ‘*y*’ (*y* = 2.4*x*), hence sufficient to answer the question.

From statement (II) also, we get a relation between ‘*x*’ and ‘*y*’ *i.e*. 0.8*y* = 1.6*x*. Hence, sufficient to answer the question.

28. (c)

Using statement (II), let the sales in 1989 be *x*.

Then sales in 1990 would be 3*x*.  
Now, using statement (I),

Sales in 1988 = 

Thus, questions can be answered using both the statements.

29. (c)

Using statement (I),

|  |  |  |
| --- | --- | --- |
| *D* | *E* | *F* |
| (1) *D* = 6 | *E* = ? | *F* = 2 |
| (2) *D* = 5 | *E* = ? | *F* = 1 |

Since, dice *D* shows 4 more than dice *F*, the possible combinations are as above.

Since *E* is not known, this statement alone is not sufficient as *E* can take any value.

Statement (II) alone is not sufficient as *D*, *E* and *F* can take any value satisfying the condition

*D = E × F*.

Combining both statements, we have the value of *E* in the two cases as

(1) *E* = 3

(2) *E* = 5

In both cases, the sum *D + E + F* comes out to be 11. Since, both the statements required to answer the question.

30. (b)

From statement (I), their ranks will be *A* - 4, *B* -1, *C* - 2,

*D* - 3.

From statement (II), also their ranks will be *A* - 4, *B* - 1,

*C* - 2, *D* - 3.

Questions can be answered using any of the two statements.

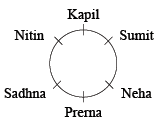
31. (a)

The issue at hand is to make *C*2 identify in which envelope is the letter *L*2. The first statement actually tells him this. Hence, is sufficient to answer the question. The second statement only implies that his letter would be in either *E*1, *E*2 or *E*4 and hence is not sufficient to answer the question.

Hence, only statement (I) is sufficient.

**32. (c)**

**Using both the statements together, sitting arrangements:**



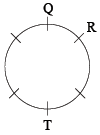
**Thus, Kapil and Neha are neighbours of Sumit.**

**Both statements are required to answer the question.**

33. (c)

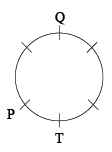
Given that *Q* and *T* sit opposite to each other.

As per statement (I) alone, we get *R* is to the immediate left of *Q*.



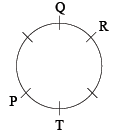
Hence, from statement (I) alone, we cannot say whether *R* sits opposite to *S* or not.

From statement (II) alone, we get *P* is to the immediate left of *T*.



So, statement (II) alone is not sufficient.

Combining statement (I) and (II) we get.



*P* and *R* are opposite each other. So, we can determine that *R* does not sit opposite to *S*.

Hence, both statements are required.

34. (c)

Statement (I) and (II) alone are not sufficient but if both

are combined, then we can form the following sequence:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 1 | 2 | 3 | 4 | 5 |
| D | E | B | C | A |

Thus, using both the statements question can be answered.

**35. (b)**

**Using statement (I):**

**If Anuj and Vikas sit together. Considering these two as one unit, we have 4 units (3 friends) to be arranged which can be done in 4! ways. Anuj and Vikas can be permuted among themselves in 2!. Therefore, the total number of ways = 4! 2!.**

**Using statement (II), fix Anuj and Vikas in the extreme positions.**

**This can be done in 2! ways. The other three can be the total number of ways = 2! 3!.**

**Thus, it can be answered by either of the statements.**

**36. (b)**

**Using statement (I), we can calculate the probability that second car is a king.**

**If first card is king required probability is ⇒** .

Using statement (II) also required probability is **⇒** .

Each statement alone is sufficient to answer the question.

37. (c)

Using statement (I), we can say that number of blue marbles in the bag can be 8, 9, 10, 11, 12 etc. marbles.

Using statement (II), we can say that number of green marbles in the bag is 1 marble because probability is.

Now combining the two number of red marbles are = 24 − 1 − 8 = 15 marbles

So, probability = 

Thus questions can be answered by combining both the statements.

38. (c)

From (I), we know *A* and *B* passed the examination.

From (II), we know the condition that among *C* and *D* at least one passed (or both passed) is false.

Therefore, it is obvious that both *C* and *D* have failed. Thus, both statements are necessary to find the answer.

39. (c)

Statement (I):

2 kg potato cost + 1 kg gourd cost < 1 kg potato cost + 1 kg gourd cost

⇒ 1 kg potato cost < 1 kg gourd cost.

So statement I is not sufficient.

Statement (II):

1 kg potato cost + 2 kg onion cost = 1 kg onion cost + 2 kg gourd cost

1 kg potato cost + 1 kg onion cost = 2 kg gourd cost.

So, statement (II) is also not sufficient.

Combining both statements we get

1 kg potato cost < 1 kg gourd cost ..... (1)

1 kg potato cost + 1 kg onion cost

= 2 kg gourd cost ..... (2)

So, the onion is costliest.

**40. (d)**

**As per statement (I), we are given that the album she bought was Rs. 25 less than the best album. Percentage of sales tax per copy is cannot be known.**

**As per statement (II), we are given amount paid for the whole transaction.**

**Hence, both statements are not sufficient to answer the question.**

**41. (d)**

**Statement (I) gives the similar information as given in the question.**

**From statement (II), 20% of weight of cartons = 4580 pounds.**

**So, total weight of cartons can be known but the number of cartons cannot be found.**

**42. (a)**

**Using statement (I) alone, sum cannot be found.**

**Using statement (II), we can find the** *n*th term of GP - 1, 3, 9, 27, .... 2187

2187 will be the 8th term of the GP.

Now sum can be calculated.

The given GP is 1, 3, 9, 27, 81, 243....

Sum of 8 terms of the GP = *S*8 =.

Hence question can be answered by using statement (II) alone.

43. (c)

Using statement (I) alone, the day cannot be Sunday, Tuesday, Thursday or Saturday. It can be one of Monday, Wednesday or Friday.

Hence, statement (I) alone is not sufficient as there is no unique day.

Using statement (II) alone, this day cannot be Monday or Friday.

It can be any one of the other five days of the week.

Combining both the statement together, the day is Wednesday.

44. (c)

Using both the statements together we can say that if they work on alternate days starting with Ram, it takes  days.

Starting with Mohan, it will take 29 days.

It simply means Ram does the same work in half a day which Mohan does in 1 day.

If Mohan makes 1 unit in a day, Ram makes 2 units.

In 2 days, Ram & Mohan together make 3 units.

In 28 days, they make 42 units.

In  days, they will make 43 units.

So, working together work will be completed in

**⇒ ** days *i.e*.  days *i.e*. less than  days.

Both statements are required to answer the question.

45. (c)

Using statement (I), *N* will do the work in

⇒ 60 days.

But we cannot find days taken by *M*.

As per statement (II), we only know that *P* will take twice as many days as *N*, but we cannot find the number of days that *M* will take to complete the work.

Using both the statements,







*M* takes 40 days to complete the work, working alone.

Both statements are required to answer the question.

46. (c)

If *A* takes *x* seconds then *B* takes (*x* + 60) seconds to

run 1000 m.

Ratio of speeds of *A* and *C* = 1000 : 625 = 8 : 5

Ratio of times taken by *A* and *C* = 5 : 8

If *B* takes *y* second then *C* takes *y* + 30 seconds to run

1000 m.

Hence 5 (*y* + 30) = 8*x* ..... (1)

and =  ..... (2)

Solving the two equations, we can find the values of *x* and *y*.

Hence, both statements are required.

47. (d)

From (I) nothing can be said since exact figures are not given.

From (II) since *X > Y*, we do not know how much *X* is greater than *Y*, because if it is slightly greater than it will be less than *Y* after 5 years whereas if the difference is very high, then *X* will be greater than *Y* even after 5 years.

Hence, answer cannot be determined.

48. (a)

Assume *A, B, C, D* get score 10, 8, 6, 4 respectively.

|  |  |  |  |
| --- | --- | --- | --- |
| A | B | C | D |
| 10 | 8 | 6 | 4 |

Statement (I):

With the conditions *A* will give vote to *B*

With the conditions *B* will give vote to *A*

With the conditions *C* will give vote to *A*

Even if *D* gives to *A/B/C* - 2 situation arises.

Either *A* will win or there will a tie when *D* gives vote to *B*.

Even then *A* will win.

So, we are getting the answer.

Statement (II):

Can’t conclude anything.

So, questions can be answered using statement (I) alone.

**49. (c)**

**Using statement (I) alone,**

**(If 5 more books are placed)** *N* could be

= 25, 26, 27, 28, 29, 30

Using statement (II) alone,

(If 6 books removed) *N* could be

= 25, 24, 22, 21, 20, 19

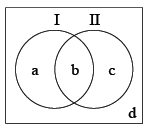
Using both the statements

*i.e*. *N* can only be 25.

Question can be answered by using both the statements.

50. (b)

Using the information, diagram is as follows:



Given, *a + b + c + d* = 180 and *a* = 60 and *b + c* = 70 required, *a + b + c + d* = ?

From statement (I), alone *a + b* = 100 ⇒ *b* = 100 – *a*

= 100 – 60 = 40.

∴ *a + c + d* = 180 – 40 = 140

∴ Statement (I) alone is sufficient.

From statement (II), alone we get *b* = 30 which gives *a* + *c* + *d* = 180 – 30 = 150

∴ Statement (II) is sufficient.

Both statements alone are sufficient.

**Solution Exercise – Difficult**

1. (c)

Using statement (I):

*f* (*x*) = *x*2 + 1 for odd *x*

*f* (5) = 52 + 1 = 26

*f* [*f* (5)] = *f* (26). 26 is an even number, but

*f* (*x*) = *x*2 + 1 is true only for odd values of *x*. Thus statement (I) alone is not sufficient to answer the question.

Using statement (II):

*f* (*x*) = 4*x* + 1 for even *x*

*f* (5) cannot be calculated as 5 is an odd number.

Using statement (I) and (II) together,

*f* (5) = 26

*f* [*f* (5)] = *f* (26)

= 4 × 26 + 1 = 105.

Thus statement (I) and (II) are together sufficient to answer the question.

2. (a)

From statement (I) alone, if 2, 3 and 5 are in same row or column the square and cube of one number can be written in the column or row of another number. Similar arrangement can be made by placing 2, 3 and 5 diagonally.

Hence, statement (I) alone is not sufficient.

From statement (II) alone, if the position in the matrix are indicated as follows.

*a* *b* *c*

*d* *e* *f*

*g* *h* *i*

If all cubes take the positions *a*, *e* and *i*, then squares take the positions *c*, *d* and *h* or vice versa. Then 2, 3 and 5 necessarily take positions of *b*, *f* and *g*.

Hence, statement (II) alone is sufficient.

3. (a)

Using statement (I), we cannot say anything about which are is costly.

Statement (II), clearly says that two cans of beer can be exchanged for 8 cans of corns.

Thus, it is clear that a can of beer is costlier.

So, only statement (II) is sufficient.

4. (a)

Using statement (I), we know that 1.4*x + x* = 8

[where *x* is the time taken from *Y* to *X*]

⇒ 2.4*x* = 8

⇒ *x* = 

Using statement (II), time from *Z* to *Y* is not given.

Thus, only statement (I) is sufficient.

5. (c)

using statement (I):

*Y* = *T* 3 − 4*T* 2 + 16*T* − 2 ..... (1)

Velocity can be calculated by using statement (II).



..... (2)

Acceleration = 

From statement (I) and (II), acceleration can be found.

Thus, both statements are required.

6. (c)

As per statement (I), if 5 min remaining the score was 0 – 2. But we do not know about Korean’s score. So, we do not know whether they win the match or not.

But as per statement (II), score before 5 min was 1 – 3, then final score could have been 4 – 3 because it is given that Korea scored a total of 3.

Both statements are required to answer the question.

7. (a)

Using statement (I) alone,

We cannot tell which colour is opposite to Black as it can be one among Red, Yellow and Green.

Using statement (II) alone,

As Pink is the common colour, we can find out the colour opposite to Black to be Green.

So, only statement (II) is sufficient.

8. (a)

As per statement (I),

Number of students who are passed in paper are

= Total students − Students who failed

= 150 − 30 = 120

Now,

*n*(*P**C*) = *n*(*P*) + *n*(*C*) − *n*(*P**C*)

where *n*(*P*) is number of students in Physics

*n*(*C*) is number of students in Chemistry

120 = 50 + 90 − *n*(*P**C*)

⇒ *n*(*P**C*) = 20

Statement (II) does not give any information.

Thus, only statement (I) is sufficient to answer the question.

9. (b)

As per statement (I),

If Pradeep paint a house = 15 hours

Ravi paint the house = 20 hours

LCM of 15 & 20 = 300

Therefore both will paint the house in = 

Using statement (II),

Ratio of efficiencies of Pradeep & Ravi = 4 : 3

∴ Time taken by Pradeep & Ravi both to finish the work together = 

Thus, question can be answered using either of the statements.

10. (d)

In the question, there is no information about the area or any sides of the square base of pyramid, we are only provided with the distance from the square base in statement (II).

Hence, both statements are not sufficient to answer the question.

11. (c)

Statement (I) gives the information about interest rate on savings acccount and interest rate on term deposits.

Statement (II) tells about that interest rate is compounded quarterly.

So, both the statements are needed to answer the question.

12. (a)

Statement (I):

(*a, b*) ≡ {(2, 3), (2, 6), (1, 12), (2, 12)}

This implies *a + b* may be even or odd.

Statement (I) alone is not sufficient.

Statement (II):

(*a, b*) ≡ {(2, 2), (2, 4), (2, 8), (4, 6), .......}, *i.e.*, *a* and *b* are both even numbers.

Statment (II) alone is sufficient.

13. (d)

From statement (I):

*ab + bc* = even

⇒ even + even = even

odd + odd = even

but as ‘*ca*’ may be odd or even we cannot answer the question.

From statement (II):

⇒ even + even = even

odd + odd = even

Since ‘*ab*’ can be odd or even we cannot answer the question.

∴ Using both the statements *ab + bc + ca*

odd + odd + odd = odd

even + even + even = even

Both the statement are also not sufficient.

14. (c)

Using statement (I):   
As 2*n* + *p* is odd. 2*n* is even & *p* must be odd and *n* can be even or odd. Thus *n*2 + *p* is odd if *n* is even or *n*2 + *p* is even if *n* is odd. Thus statement (I) alone is sufficient.

Using statement (II):

*n* – 2*p* is odd. Since 2*p* is even. *n* can be even or odd and accordingly *n*2 + *p* will be odd or even. Thus statement (II) alone is not sufficient.

Combining statement (I) and (II):

*p* and *n* are both odd.

So, *n*2 + *p* is even.

Hence, option (c) is the correct answer.

Both statements are required.

15. (c)

Using statement (I):

*a + b* = 9 is not sufficient to give the value of *a* and *b*.

Therefore, statement (I) is not sufficient to a answer the question because we need two-equations to find two variables.

Using statement (II):

*a*2 = *b*2 + 9 ⇒ *a*2 – *b*2 = 9 ⇒ (*a – b*)(*a + b*) = 9 which is also not sufficient to answer the question

Combining statement (I) and statement (II):

*a*2 – *b*2 + 9 ⇒ (*a – b*)(*a + b*) = 9 ⇒ *a – b* = 1

∴ 2*a* = 10 or *a* = 5 and *b* = 4

Hence, the value of *a*2 – 2*b*2 + 2*ab* can be calculated which is 33.

16. (a)

Statement (I) clearly shows that *n* is either zero or negative, *i.e.*, not positive.

We do not get any information from statement (II).

Thus, only statement (I) is sufficient.

17. (a)

Statement (I) tells *A* + *G* > 0. Now assuming seven terms of AP as *a* – 3*d*, *a* – 2*d*, *a* – *d*, *a*, *a + d*, *a* + 2*d*, *a* + 3*d*, *A* and *G* are first and seven terms.

So, *A + G* = *a* – 3*d* + *a* + 3*d* = 2*a* > 0. hence, middle term *a* is positive. If *B* is negative (given), common difference would be positive for sure. Thus we can solve it through statement (I).

Statment (II) tells *ABC* is > 0. Now we know that *B* is negative. So, either *A* is positive and *C* is negative or vice versa. Hence common difference can be positive or negative and we cannot tell. So, statement (II) alone is not sufficient.

18. (b)

Using statement (I): (*b* − *a*) (*a + b*) = 40% of 60 − 120% of 20

⇒ b2 − a2 = 24 − 24

Or *b*2 − *a*2 = 0

Or *b*2 = *a*2 or *a*2 : *b*2 = 1

Using statement (II): 

Thus, question can be solved either using of the statements.

19. (d)

Using statement (I):



∴ *a* = – *b*

∴ If *a* is positive, *a* > *b* and if *a* is negative *a* < *b*.

Thus statement (I) alone is not sufficient.

From statement (II):

 statement (II) alone is not sufficient.

Both statements are not sufficient.

20. (c)

Both statements are also required here.

Let’s



*a* = 98

∴

∴

This defeats the given case. Thus, both statements (I) and (II) are required to answer the question.

21. (b)

Using statement (I):

*g*(*a, b, c, d*) = *h*(*a, b, c, d*)

*i.e.*, max (*a, b, c*) = min (*c, d*)

That means in ‘*a*’, ‘*b*’, ‘*c*’ → ‘*c*’ is max and in ‘*c*’, ‘*d*’ → ‘*c*’ is min, *i.e.* ‘*d*’ is the largest.

Using statement (II):

*f*(*a + b + c + d*) =  > maximum of *a, b, c*, this shows clearly that ‘*d*’ is the greatest. Thus, it can be answered using either of the statements.

22. (c)

Statement (I) tells us that both *a* and *b* are positve and less than 1.

Statement (II) says that *a > b, n* > 0.

Since *a > b, a* > 0, *b* > 0, *n* > 0, *an* > *bn*.

So, using both statements question can be answered.

23. (a)

Using statement (I), wen can say

*a*2 + *b*2 + *c*2 = 0 only

If *a = b = c*

Thus questions can be answered.

Statement (II) does not give much information. So, it is not sufficient.

24. (d)

Using statement (I):

 = *b* + *c* cannot be said if *b* > *c*.

Using statement (II):

*b* > *a*, *i.e.*, *b* = *ka* where *k* > 1

Again it cannot be said if *b* > *c*.

Combining 

∴  = *b* + *c*, *i.e.*, *b* + *c* < 1

It cannot be determined if *b* > *c*. Both statements are not sufficient.

25. (a)

If we consider statement (I) alone then if | *x* | < 1, | *x* – 2| is always greater than 1. But if we consider statement (II) alone then if | *x* – 1| < 2 or *x* < 3, then | *x* – 2| may be less than 1 or greater than 1 depending upon the value of *x*. Hence, statement (I) alone is sufficient to answer the question.

26. (a)

As per statement (I),

| *x*2 – 4*x* | > *x*2 – 4*x* ⇒ *x*2 – 4*x* is negative

*i.e.*, *x*2 – 4*x* < 0 ⇒ *x*(*x* – 4) < 0

Now, if *x* < 0 then *x* – 4 is also negative.

∴ *x* > 0 and (*x* – 4) < 0, *i.e.*, *x* < 0 ⇒ 0 < *x* < 4

Thus its a repetition, this is already given in the question itself.

Statement (I) alone is not sufficient.

As per statement (II): *x* is an integer. If *x* is an integer, then in the interval 0 to 4, the only possible value that *x* can take is 1.

thus, statement 2 is alone sufficient.

27. (b)

On solving we get the value of *r* as 0 or 

Here, each condition is individually sufficient as both indicates that *r* cannot be zero and it has to be less than 0. Therefore it has to be 

28. (d)

Using statement (I), we can say that *x + y* > 0

Using statement (II), we can say that *x – y* > 0

Combining the two, we can say *x > y* and *x* > 0.

But we do not know whether *y* > 0 or *y* < 0.

So, question cannot be answered even by using both the statements.

29. (a)



Therefore, value of log96 70 should be known.

Hence, statement (I) is sufficient to answer the question.

Therefore, statement (II) is not sufficient only (I) is required

30. (a)

According statement (I):

36 *A* + 6 *C* + *B* = 49 *A* + 7 *B* + *C*

⇒ 13 *A* + 6 *B* = 5 *C*

So, *C* can take values from 0 to 5.

But, 0 is not possible. If *C*’s values are from 1 to 4 then the condition is not satisfied.

So, only possible values of *A*, *B* and *C* are 1, 2, 5 respectively.

Hence, statement (I) alone is sufficient to answer the question.

Using statement (II):

The possible values of ‘*ABC*’ are

4*B*0, 1*B*5, 5*B*1, 2*B*6, and 6*B*2.

So, the value of *B* cannot be determined.

Hence, statement (II) alone is not sufficient to answer the question.

31. (a)

Using statement (I):

If 7 is the highest common factor of these two numbers, then we get the following:

6*x* + 1 = 7*a* and 4*x* + 3 = 7*b*

It gives integer values of ‘*a*’ and ‘*b*’ for *x* = 8, 15, 22 and so on.

Hence, statement (I) alone is not sufficient to answer the question.

Using statement (II):

There is no carry forward for 1 + 3 = 4, so this addition is in the base in which 6 + 4 = 12.

In octal system, *i.e.* in base 8, 6 + 4 is equal to (12)8

Hence, the value of *x* is 8.

Hence, statement (II) alone is sufficient to answer the question.

32. (a)

From statement (I), we come to know that Virat’s average dropped below 50. Hence, he did not score 100 even in both the innings combined of his 100th test match.

Hence, he did not score any century.

From statement (II), it cannot be found out.

Hence, only statement (I) is sufficient

33. (b)

From statement (I) alone, *C* cannot be in the neighbouring position to *A* or *D*. If *A* and *D* interchange their positions then only place available for *C* is the first in the row, which is not possible. Hence, *A* and *D* has to take the first and the second positions in any order and *C* takes the last position. Then *B* will be in the third position. Hence, statement (I) alone is sufficient to answer the question.

From statement (II) alone, *B* cannot be in the first or third positions while going in, hence it has to be in the fourth position, then *C* has to be in the third position.

Hence, statement (II) alone is sufficient. Thus, either statement can answer the question.

34. (c)

Let the number of runs scored by Amit, Beenu, Chandu and Deepak be denoted by *A, B, C* and *D* respectively.

Using statement (I):

 ⇒ *A + C* = 2*D*.

From this statement we have no clue about the number of runs scored by Beenu.

Using statement (II):



⇒ 2*A = B + C*

Also, *B < C* ⇒ *A* must lie between *B* and *C*.

Hence, the order is *B < A < C*.

But we have no clue about the number of runs scored by Deepak.

Combining both the statements together:

We know that *A < C* from the second statement.

Hence, using statement (I), *D* must lie between *A* and *C*.

Hence, the over all order is *B < A < D < C* and therefore rank of Beenu is 1.

35. (c)

In this case there are two truth tellers and one liar among Anuj, Dev and Vikas.

From statment (I) alone, we do not know whether Anuj is a truth teller or a liar.

From statement (II) alone, we do not know whetherVikas is a truth teller or a liar.

By combining statement (I) and (II):

We know that at least one person among Anuj and Vikas is a truth teller.

If Anuj is the truth teller, then Anuj is to the immediate right of Dev.

If Vikas is the truth teller, then also Anuj is to the immediate right of Dev.

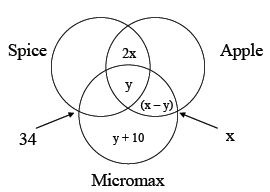
Therefore, we can answer the question by using both the statements together.

36. (a)

The number of people using Apple and Micromax be *x*.

Let, the number of people using all the three mobile phones be *y*.

Using statement (I):



The number of people using only ‘Spice and Micromax’.

⇒ (34 – *y*) = 50 – (*x*) – (*y* + 10)

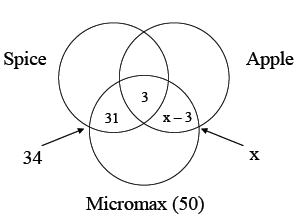
⇒ *x* = 6

⇒ Number of people using only ‘Spice and Apple’

⇒ 2*x* = 12

Hence, statement (I) alone is sufficient to answer the question.

Using statement (II):



Given that the value of *y* = 3.

There is no information available, therefore we cannot find the number people who use only ‘Spice and Apple’.

Hence, statement (II) alone is not sufficient to answer the question.

Only statement (I) is sufficient.

37. (c)

Both the statements are required to answer the questions. Let the number trips made by two trucks be *x* and *y*.

Using statement (I), 5*x* + 8*y* = 160

Using statement (II), 5*x* = 8*y*

Combining (I) and (II),

*x* = 16, *y* = 10

∴ *x* + *y* = 26

Both are required to answer the question.

38. (c)

From statement (I) alone, we know only one among *P*, *Q*, *R* and *S* is a truth teller. Between *R* and *S* there is exactly one person who always lies means the other person is a truth teller. The remaining two persons *P* and *Q* are liars. From *P*, either *R* or *S* gets the highest mark.

From statement (II) alone, we do not know if *P* is a liar or a truth teller.

So, statement (II) alone is not sufficient.

Combining statements (I) and (II), we get *P* is a liar and he says neither *Q* nor *S* got the highest mark which implies that either *Q* or *S* gets the highest mark. But from statement *P*, *Q* is a liar. Hence, *S* gets the highest mark.

Both statements are necessary to answer the question.

39. (a)

Let the two digit number using statement (I) be (10*a* + *b*)

Given, *b* = (*a* + 4) ..... (1)

Using statement (I), *a* + *b* = 10 ..... (2)

From equations (1) and (2), we find *a* = 3 and *b* = 7,

Hence, number is 37.

Using statement (II), we get (10*a* + *b*) − (10*b* + *a*) = 36

or 9*a* − 9*b* = 36 ⇒ *a* − *b* = 4

Value of *a* and *b* cannot be found out from (*a* − *b* = 4)

and *b* = (*a* + 4)

Hence, only statement (I) is sufficient to answer the question.

40. (c)

We will check for the chances of getting a blue marble in both the boxes as it will give 2 $.

Now using statement (I), probability of getting a blue marble (Box *A*) ⇒ 

Using statement (II), probability of getting blue marble (Box *B*)

⇒ 

∴ Probability of getting a blue marble is more in Box *B*.

Hence, both statements are required to answer the question.

41. (a)

Question can be solved by using statement (I) only

(*k* × π × 52 × *t*) ×  = *k* × π × (52 – *r*2) × *t*

Solving this we can find *r*.

*k* is constant of proportionality to convert volume into weight.

Statement (II) is not sufficient.

42. (c)

Using (I) alone,

Since Rajan got four medals

Then Jimmy got 5 or more, since Jimmy got more medals than Rajan.

But we do not know if Jimmy got more than Ponting or Ramesh.

Using statement (II) alone also, we cannot conclude if Jimmy got the highest or not.

Using statement (I) and (II0,

Given Rajan + Jimmy + Ponting + Ramesh = 15

Ponting + Ramesh ≤ 6 medals

[as 4 medals are given to Rajan and atleast 5 must be given to Jimmy]

So, 15 − 4 − 5 = 6 medals

∴ Jimmy got the highest.

43. (a)

Since we know that only possible outcomes are black, blue and white and all of these are independent,

*P* (black) + *P* (blue) + *P* (white) = 1

Since *P* (white) + *P* (blue) + *P* (white) = 1;

Data is not sufficient in statement (I)

Statement (II): gives us *P* (black) + *P* (blue) =.

So, *P* (white) = 

So, only statement (II) is sufficient.

44. (a)

*F + n* = 4 (*k + n*) ..... (1)

*M + n* = 3 (*k + n*) ..... (2)

From the above equations

*F – M* = (*k + n*)

From statement (I),

*F – M* = 10 ⇒ *k + n* = 10

*F + n* = 40

*M + n* = 30

⇒ *F + M* + 2*n* = 70

Hence, from statement (I) alone, we can get the answer.

Statement (II) does not help much only statement (I) is sufficient.

45. (d)

Using statement (I), we can say that junction *R* and *Q* are consecutive junctions as the train moves from stoppage one to stoppage five.

Using statement (II), we can say that junction *P* is not at the extreme and ther are two junctions between *P* and *S*.

Even by combining both the statements together we will not be able to exactly determine the junction which distinguishes stoppage three.

Hence, question cannot be asnwered.

46. (a)

From statement (I) alone: 1st of this month is a Sunday and 1st of next month is Wednesday *i.e.*, the gap between the month and next month (one month) must be of 32 days. As the number of odd days between Sunday and Wednesday is 3. This month can be January, March, May and so on.

From statement (II) alone: 1st of previous month is Saturday and 1st of a Sunday *i.e.*, odd days is one. The previous month is Febuary and this month is March and we can find the day on 1st of January.

Hence, (II) alone is sufficient.

47. (d)

Statement (II) tells us that mathematicians can make mistakes which are always errors of +1 and –1.

Also statement (I) tells us that mathematicians can never add 2 numbers correctly but we know he can make mistakes also.

Again he can always add 3 numbers correctly. Therefore, as mistakes can be made here too, we cannot decide as to who is a mathematician. So, question cannot be answered.

48. (d)

Using statement (I), the question canot be answered because we do not know if any three points, each lying on the three different lines are collinear or not. If they are collinear we cannot form a triangle, but if they are not collinear, we can form a triangle.

Statement (II) is irrelevant to the question asked. It is of no use. Thus, question cannot be answered.

49. (c)

Using statement (I) alone, *a* is a positive integral power of 3. There are 8 positive integral powers of 3 which are less than 7000 & infinite integral powers of 3 which are greater than 7000. So, we cannot find the answer to the question using statment (I) alone.

Using statement (II) alone, *a* has less than 9 divisors. We cannot find any answer on basis of this.

Combining two statements,

*a* can have atmost 8 divisors. So, *a* can be anything from 31 to 38 i.e. 3, 9, 27, ......,2187, 6561. So the question can be answers as all values are less than 7000.

50. (c)

From the information given in the question, we can conclude that the rightmost digit of the number *N* is 5 because when the number is expressed in base 5 the righmost digit of the number is 0.

So, (*N*)10 is a multiple of 5.

Using statement (I):

When the number is expressed in base 8, the leftmost digit of the number (*N*)8 is 1.

So, the number has to be in the form of 1*xy*.

Since the leftmost digit of the number is 1, therefore (*N*)10 has to be less than 128 because when 128 is expressed in base 8, the resulting number is 200.

Therefore, (100)10 < (*N*)10 < (128)10.

No fixed value of *N* is obtained.

Using statement (II):

The number (*N*)10 when expressed in base 11 is 1*ab*.

Since the number in base 11 is a three-digit number, therefore (*N*)10 has to be greater than (121)10, because if (*N*)10 is less than (121)10, the number when expressed in base 11 will be less than 100.

So, (*N*)10 > (121)10

Hence, statement (II) alone is not sufficient to answer the question.

Combining both the statements together:

We get that (121)10 < (*N*)10 < (127)10.

Only multiple of 5 in the above range is 125, hence the value of (*N*)10 is (125)10.

Therefore, option (c) is the correct answer.