LOGICAL REASONING

MODULE 12 – DATA SUFFICIENCY

DIRECTIONS (Questions 1 to 10): You have to decide whether the data given in the statements is sufficient to answer the question or draw the conclusion of the statement in the question.

- Mark 1 if data in statement I alone is sufficient to answer the question
- Mark 2 if data in statement II alone is sufficient to answer the question
- Mark 3 if data in both statements I and II are needed to answer the question
- Mark 4 if data in either statement I alone or statement II alone is sufficient to answer the question
- Mark 5 if data in both statement I and II together are not sufficient to answer the question

1. Among five friends Ajay, Binoy, Chirag, Dhanush and Eswar, who is the tallest?
   I. Dhanush is taller than Ajay and Chirag.
   II. Binoy is shorter than Eswar but taller than Dhanush.

(a) 1 (b) 2 **(c) 3** (d) 4 (e) 5

Solution:
From I, we have: D > A, D> C,
From II, we have: E >B > D.
Combining the above two, we get: E > B> D> (A and C).
So, E is the tallest.
Clearly, both the statements are needed to answer the question.

2. How many sons does D have?
   I. A's father has three children.
   II. B is A's brother and son of D.

(a) 1 (b) 2 (c) 3 (d) 4 **(e) 5**

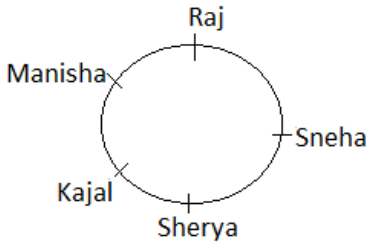
Solution:
From both I and II together, we can conclude that A and B are the children of D, but the sex of A and the third child of D is not known. So, both the statements together are also not sufficient to answer the question.

3. Who is sitting to the immediate right of Manisha among five friends sitting around a circle facing the centre?
I. Sherya is sitting exactly between Kajal and Sneha. Raj is sitting to the immediate right of Sneha.
II. Manisha is sitting exactly between Kajal and Raj. Sherya is sitting to the immediate right of Kajal.

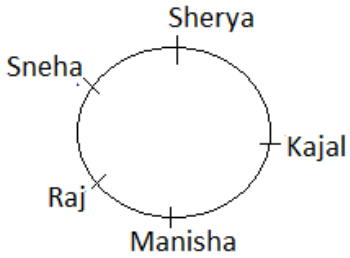
(a) 1 (b) 2 (c) 3 **(d) 4** (e) 5

Solution:

From statement I- Immediate right of Manisha is Kajal.



From statement II- Immediate right of Manisha is Kajal.



4. What is the minimum passing percentage in a test?
I. Raman scored 25% marks in the test and Sunil scored 288 marks which is 128 more than Raman.
II. Raman scored 64 marks less than the minimum passing marks.

(a) 1 (b) 2 **(c) 3** (d) 4 (e) 5

Solution:

From Statement I,

Marks scored by Sunil = 288 and marks scored by Raman = 288 - 128 = 160

∴ Maximum marks = 160 x100/25 = 640

From Statement II,

Minimum passing Marks = 160 + 64 = 224

∴ Minimum passing percentage

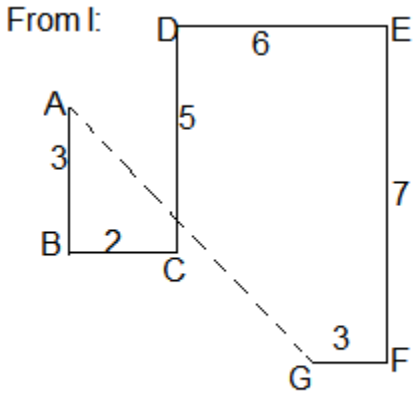
= 224 x 100 /640 = 35%

Hence, the data in both the statements are necessary to answer the question.

5. What is the distance between A and G?
I. Point A is 3 m north of point B. Point E is 8 m east of point D. Point G is 3 m west of point F. Point D is 5 m north of point C. Point F is 7 m south of point E. Point B is 2 m west of point C.
II. Point A is 6 m west of point B. Point D is 9 m north of point E. Point G is 5m north of point F. Point C is 7 m north of point B and is also 3 m west of point D.
(a) 1 (b) 2 (c) 3 (d) 4 **(e) 5**

Solution:

From I:



So AG can be determined

From II, We do not have any relation of points G and F with other points. So, cannot be determined

6. What is the position of A from the left end of row?
I: In a row having 15 people, A is sitting second to the right of B who is sitting at twelfth position from the right end of row.
II: In a row of 20 people, C will take the eighth position from the right end of row if C and A interchange their respective positions.
(a) 1 (b) 2 (c) 3 **(d) 4** (e) 5

Solution:

From Statement I, B is 12^{th} from the right end, so A is 10^{th} from right end so (15-10+1) 6^{th} from left end.

From statement II, C is 8^{th} from right end means before changing positions, A was at 8^{th} position from right, so (20-8+1) = 13^{th} from left end.

7. What is the average speed of a car?
I. Average speed of the car is double the average speed of a truck whereas the average speed of a bus is 30 km/hr.
II. Average speed of the truck is thrice the average speed of the bus whose speed is 30 km/hr.
(a) 1 (b) 2 **(c) 3** (d) 4 (e) 5

Solution:

The answer cannot be obtained from any statement alone.

Using both statements together, we get:

From statement II, we can find that the speed of the truck is 90 km/hr and then by using statement I, we can say that the average speed of the car is 180 km/hr.

8. Is x even?

I. $3x - 12 = 12$

II. $2x + 16 = 24$

(a) 1 (b) 2 (c) 3 **(d) 4** (e) 5

Solution:

If we follow the steps of solving a Data Sufficiency question, from statement I; we get the value of x as 8. This statement is sufficient to answer the question as we are getting a unique answer as "Yes".

Also from statement II; we get the value of x as 4. This statement is also sufficient to answer the question as we are getting a unique answer as "Yes".

Since, we are getting unique answers from both statements individually, so the answer is 4th option.

9. How is 'home' written in a given language?

I. 'go to home' is written as 'sa la da' and 'on the way' is written as 'ni da ka'

II. 'way for market' is written as 'sh da pi' and way to home is written as 'da pi ma'

(a) 1 (b) 2 (c) 3 (d) 4 **(e) 5**

Solution:

go to home → pi ma da

way to home →da pi ma

to/home →ma/pi

way for market →sh da si

way →da

10. Jindal Singh, Bhanu Singh and Pratap Singh together have ten cows. If each has at least one cow, how many cows does each person have?

I. Jindal Singh has 5 more than Pratap Singh.

II. Bhanu Singh has half as many as Jindal Singh.

(a) 1 (b) 2 **(c) 3** (d) 4 (e) 5

Solution:

Statement (A) → Jindal Singh = Pratap Singh + 5 =>Pratap Singh 1, Jindal Singh 6 or Pratap Singh 2, Jindal Singh 7.

Statement (B) → Bhanu Singh = Jindal Singh/2 => (1, 2); (2, 4); (3, 6).

Combining the two we get Pratap Singh = 1, Jindal Singh = 6, Bhanu Singh = 3.

DIRECTIONS (Questions 11 to 15): In each of the following problems, there is one question and three statements I, II and III given below the question. You have to decide whether the data given in the statements is sufficient to answer the question. Read all the statements carefully and find which of the statements is/are sufficient to answer the given question. Choose the correct alternative in each question.

11. In which year was Sanjay born?

Statements:
I. Sanjay is six years older than Gopal.
II. Gopal's brother was born in 1982.
III. Sanjay's brother is two years younger than Gopal's brother who was eight years younger than Gopal.
(a) Only I and II (b) Only II and III (c) Only I and III **(d) All I, II and III**

Solution:

From II, we know that Gopal's brother was born in 1982.

From III, we find that Gopal's brother was 8 years younger to him i.e. Gopal was born in 1974.

From I, we find that Sanjay is 6 years older than Gopal. Thus, Sanjay was born in 1968.

12. Four subjects - Physics, Chemistry, Mathematics and Biology - were taught in four consecutive periods of one hour each starting from 8.00 a.m. At what time was the Chemistry period scheduled?

Statements:
I. Mathematics period ended at 10.00 a.m., which was preceded by Biology.
II. Physics was scheduled in the last period.
III. Mathematics period was immediately followed by Chemistry.
(a) Only I (b) Either I only or II only (c) Only II and III **(d) Only I and either II or III**

Solution:

From I and II, we conclude that Mathematics period began at 9.00 a.m., Biology period began at 8.00 a.m. and Physics period began at 11 a.m. So, the Chemistry period began at 10.00 a.m.

From I and III, we conclude that Mathematics period ended, and Chemistry period began at 10.00 a.m.

13. Who is the tallest among six boys P, T, N, D, Q and R?

Statements:
I. P is taller than D and N but not-as tall as T.
II. R is taller than Q but not as tall as T.
III. Q is not taller than T and R.
(a) Only I and II (b) Only II and III (c) Only I and III (d) All I, II and III

Solution:

From I, we have: P > D, P > N, T > P i.e. T > P > D > N or T > P > N > D ...(i)

From II, we have: R > Q, T > R i.e. T > R > Q ...(ii)

From III, we have: T > Q, R > Q ...(iii)

Clearly, from (i) and (ii), we conclude that T is taller than each one of P, N, D, R and Q. So, T is the tallest.

14. What is the total monthly salary of Vasu?

Statements:
I. Vasu's basic salary is Rs 100 more than Rajan's salary who also serves in Vasu's company.
II. Other allowances drawn by Rajan besides his basic salary are Rs 2000 per month which is Rs 50 less than Vasu's salary.
III. Rajan's basic salary is Rs 1550 per month.
(a) Only II and III (b) Only I and II (c) Only I and III **(d) All I, II and III**

Solution:

From III, we have: Rajan's basic salary = Rs. 1550.

From I, we have: Vasu's basic salary = Rs. (1550 + 100) = Rs. 1650.

From II, we have: Rajan's other allowances = Rs. 2000 and Vasu's other allowances = Rs. 2050.

Therefore, Vasu's monthly salary = Rs. (1650 + 2050) = Rs. 3700.

15. What does 'come' represent in a code language?

Statements:
I. 'pit na tac' means 'come and go' in that code language.
II. 'ja ta da' means 'you are good' in that code language.
III. 'na da rac' means 'you can come' in that code language.
(a) Only I and II (b) Only II and III **(c) Only I and III** (d) All I, II and III

Solution:

To find the code for 'come', we need to have two statements which have one common code word and 'come' as the common word, which is there in I and III.

HOME WORK

DIRECTIONS (Questions 16 and 17): The given question is followed by two statements (A) and (B). Answer each question using the following instructions. Mark your answer as:
1. If statement (A) alone is sufficient to solve the question, but statement (B) alone is not.
2. If statement (B) alone is sufficient to solve the question, but statement (A) alone is not.
3. If both statement (A) and statement (B) are required to solve the question.
4. If both the statements taken together are not sufficient and more information is required to solve the question.

16. In a school election, if each of the 900 voters voted for either A or B (but not both), what percent of the female voters in this election voted for B?
(A) Eighty percent of the female voters voted for A.
(B) Sixty percent of the male voters voted for B.
(a) 1 (b) 2 (c) 3 (d) 4

Solution:

Statement (A) is sufficient, since if 80 percent of the female voters voted for A, then 100% - 80% = 20% of the female voters voted for B. Thus, the answer must be 1. Statement (B) alone is not sufficient to answer the question, since it gives no information about female voters.

17. If X and Y are integers, then what is the value of Y?
(A) XY = 27
(B) X = Y2
(a) 1 (b) 2 **(c) 3** (d) 4

Solution:

Statement (A) alone is not sufficient to determine the value of Y, since j different pairs of integers could have the product 27, i.e. (-3) (-9) or (1) (27). Thus, the answer must be 2,3, or 5. Clearly statement (B), which states that X = Y2, does not determine the value of Y, since X could have many different values. Hence, the answer must be 3 or 5. From (B), if Y2 is substituted for X in statement (A), the result, Y3 = 27, implies that Y = 3. Thus, both (A) and (B) j together are sufficient to determine the value of Y.

DIRECTIONS (Questions 18 and 19): The question below consists of a question and two statements numbered I and II given below it. You have to decide whether the data provided in the statements are sufficient to answer the question. Read both the statements and give answers if:
a) The data in Statement I alone are sufficient to answer the question, while the data in Statement II alone are not sufficient to answer the question
b) The data in Statement II alone are sufficient to answer the question, while the data in Statement I alone are not sufficient to answer the question.
c) The data in Statement I alone or in Statement II alone are sufficient to answer the question.

d) The data in both the Statements I and II together are necessary to answer the question.

19. Among P, Q, R, S and T, which bag is the lightest?

I. P is heavier than Q, R is as heavy as Q, T is lighter than R.

II. S is lighter than Q but heavier than T.

Answer: Option D

Solution:

From Statement I → P > Q = R > T

From Statement II → P > Q = R > S > T

Bag 'T' is the lightest among all of those.

20. When did Sourav visit Delhi?

I. Sourav visited Delhi after Monday, but before Thursday, but not on an odd day of the week.

II. Sourav visited Delhi before Friday, but after Monday.

Answer: Option A

Solution:

From I, Sourav visited Delhi either on Tuesday or Wednesday. But Tuesday is an odd day. Hence he visited on Wednesday. From II, he visited Delhi either on Tuesday, Wednesday, or Thursday. But we cannot definitely say which among them. So, only I is sufficient to answer the question, and not II.